AIRBUS

A350

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FLIGHT CREW
OPERATING MANUAL

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This is the FLIGHT CREW OPERATING MANUAL at issue date 06 AUG 20 for the A350 and replacing last issue dated 05 MAY 20

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FILING INSTRUCTIONS

Please incorporate this revision as follow:

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	DSC-22-FG-90-60	**Sidestick**	06 MAY 15
	DSC-22-FG-90-70	**Thrust Levers**	06 MAY 15
	DSC-22-FG-90-130	**SPEED BRAKE Panel**	06 FEB 20
	DSC-22-FG-100-10	**AFS CP Backup Function**	06 MAY 15
	DSC-22-FG-100-20	**Failure Indications During Approach**	10 NOV 16
	DSC-22-FG-110	**How to**	06 MAY 15
	DSC-22-FMS-10-10	**Overview**	05 FEB 19
	DSC-22-FMS-10-20	**Architecture**	10 NOV 16
	DSC-22-FMS-10-30-10	**Aircraft Position**	06 MAY 15
	DSC-22-FMS-10-30-20	**Radio Navigation Tuning**	04 MAY 16
	DSC-22-FMS-10-30-30	**Polar Navigation**	04 MAY 16
	DSC-22-FMS-10-30-40	**FLS Function within FMS**	04 MAY 17
	DSC-22-FMS-10-30-50	**RNP AR Function**	06 MAY 15
	DSC-22-FMS-10-40-10	**General**	08 AUG 18
	DSC-22-FMS-10-40-20	**Lateral Revisions**	06 FEB 20
	DSC-22-FMS-10-40-30	**Vertical Revisions**	06 AUG 15
	DSC-22-FMS-10-40-40	**Diversion**	06 MAY 15
	DSC-22-FMS-10-40-50	**Temporary Flight Plan**	06 MAY 15
	DSC-22-FMS-10-40-60	**Secondary Flight Plans**	06 MAY 15
	DSC-22-FMS-10-40-70	**Flight Plan Predictions**	06 MAY 15
	DSC-22-FMS-10-40-80	**Datalink with Company Ground Station**	04 MAY 16
R	DSC-22-FMS-10-40-90	**Datalink with ATC Center**	06 AUG 20
	DSC-22-FMS-10-50-10	**Overview**	06 MAY 15
	DSC-22-FMS-10-50-20	**FMS Speed Mode (ECON/LRC)**	06 MAY 15
	DSC-22-FMS-10-50-30	**Flight Phases and Speed/Mach Profiles**	09 MAY 18
	DSC-22-FMS-10-50-40	**Auto-Derated Thrust during Climb**	06 MAY 15
	DSC-22-FMS-10-50-50	**Optimum Flight Level and Recommended Maximum Flight Level**	06 MAY 15
	DSC-22-FMS-10-50-60	**NOISE Function**	06 MAY 15
	DSC-22-FMS-10-50-70	**PERF Factor, IDLE Factor, and FUEL PENALTY Factor**	06 MAY 15
R	DSC-22-FMS-10-60	**Engine-Out (EO) Mode**	06 AUG 20
	DSC-22-FMS-10-70-10	**Takeoff Monitoring Function**	05 FEB 19
	DSC-22-FMS-10-70-20	**Takeoff Surveillance Function**	05 MAY 20
	DSC-22-FMS-10-70-30	**Controls and Indicators**	05 MAY 20
	DSC-22-FMS-10-80	**Time Function**	06 MAY 15
	DSC-22-FMS-10-90	**Print Function**	10 NOV 16
	DSC-22-FMS-20-10	**Cockpit View**	08 FEB 18
	DSC-22-FMS-20-95	**Audio Indicators**	06 MAY 15
	DSC-22-FMS-20-80	**Data Entry Format**	08 AUG 19

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	DSC-22-FMS-20-60	**EFIS CP**	06 MAY 15
R	DSC-22-FMS-20-90	**FMS Messages**	06 AUG 20
	DSC-22-FMS-20-70	**FMS Selector**	06 MAY 15
	DSC-22-FMS-20-30	**KCCU**	06 MAY 15
	DSC-22-FMS-20-100	**MEMO**	06 MAY 15
	DSC-22-FMS-20-20-10	**Overview**	06 MAY 15
R	DSC-22-FMS-20-20-20	**FMS Pages**	06 AUG 20
	DSC-22-FMS-20-50	**ND**	06 MAY 15
	DSC-22-FMS-20-40	**PFD**	06 MAY 15
	DSC-22-FMS-20-75	**Printer**	06 MAY 15
R	DSC-22-FMS-30	**How To**	06 AUG 20
R	DSC-22-FMS-40	**Abnormal Operations**	06 AUG 20
R	DSC-22-FMS-45	**Temporary Abnormal Behaviors**	06 AUG 20
R	DSC-23-10-10	**Overview**	06 AUG 20
	DSC-23-10-20	**Internal Communication**	08 NOV 18
	DSC-23-10-30-10	**Radiocommunication**	08 NOV 18
	DSC-23-10-30-20	**SATCOM**	06 MAY 15
	DSC-23-10-30-30	**SELCAL**	06 MAY 15
R	DSC-23-20	**Controls and Indicators**	06 AUG 20
	DSC-23-25	**Temporary Abnormal Behaviors**	05 MAY 20
	DSC-23-30-10	**RMP Failures**	09 MAY 18
	DSC-23-30-20	**RMP Connection Failures**	06 MAY 15
	DSC-24-10-10	**Overview**	05 NOV 15
	DSC-24-10-20	**AC Generation**	08 AUG 19
	DSC-24-10-30	**DC Generation**	07 NOV 19
	DSC-24-10-40	**Emergency Generation**	07 NOV 19
	DSC-24-10-50	**Electrical Networks and Supply Centers**	06 MAY 15
	DSC-24-10-60	**Electrical Network Management**	06 MAY 15
R	DSC-24-20	**Controls and Indicators**	06 AUG 20
	DSC-24-30	**Normal Operations**	04 MAY 17
	DSC-24-40	**Abnormal Operations**	21 MAY 19
	DSC-25-10	**Cockpit**	05 FEB 19
	DSC-25-20	**Emergency Equipment**	26 JAN 16
	DSC-25-30-10	**Flight Crew Rest Compartment**	06 MAY 15
	DSC-26-10	**Overview**	04 AUG 16
	DSC-26-20	**Architecture**	06 MAY 15
	DSC-26-30-10	**System Description**	06 MAY 15
	DSC-26-30-20	**Controls and Indicators**	06 MAY 15
	DSC-26-40-10	**System Description**	26 JAN 16

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	DSC-26-50-10	**System Description**	06 MAY 15
	DSC-26-50-20	**Controls and Indicators**	22 NOV 17
	DSC-26-60-10	**System Description**	06 MAY 15
	DSC-26-60-20	**Controls and Indicators**	06 MAY 15
	DSC-26-70-10	**System Description**	21 MAY 19
	DSC-26-70-20	**Controls and Indicators**	06 MAY 15
	DSC-26-80-10	**Lavatory**	06 MAY 15
	DSC-26-80-20	**Crew Rest Compartments**	04 MAY 16
	DSC-26-90-10	**System Description**	04 AUG 16
R	DSC-26-90-20	**Controls and Indicators**	06 AUG 20
	DSC-27-10-10	**System Description**	06 FEB 20
	DSC-27-10-20	**Controls and Indicators**	06 FEB 20
	DSC-27-10-30	**Normal Law**	08 AUG 19
	DSC-27-10-40	**Reconfiguration Control Laws**	05 MAY 20
	DSC-27-20-10	**System Description**	06 MAY 15
R	DSC-27-20-20	**Configurations**	06 AUG 20
R	DSC-27-20-30	**Controls and Indicators**	06 AUG 20
R	DSC-27-20-33	**Abnormal Operations**	06 AUG 20
	DSC-28-10	**System Description**	08 AUG 19
	DSC-28-20	**Controls and Indicators**	06 FEB 20
	DSC-28-30	**Normal Operations**	08 AUG 19
	DSC-28-40	**Abnormal Operations**	06 FEB 20
	DSC-28-50-30	**Refuel/Defuel**	09 MAY 18
	DSC-29-10	**System Description**	07 NOV 19
	DSC-29-20	**Controls and Indicators**	07 NOV 19
R	DSC-29-30	**Abnormal Operations**	06 AUG 20
	DSC-29-40	**Temporary Abnormal Behaviors**	04 AUG 16
	DSC-30-20-10	**System Description**	05 MAY 20
	DSC-30-20-20	**Controls and Indicators**	05 MAY 20
	DSC-30-30-10	**System Description**	02 AUG 17
	DSC-30-30-20	**Controls and Indicators**	02 AUG 17
	DSC-31-CDS-10	**Overview**	21 MAY 19
	DSC-31-CDS-20	**Architecture**	04 MAY 16
	DSC-31-CDS-30-10	**System Description**	08 AUG 19
	DSC-31-CDS-30-20	**Controls and Indicators**	04 MAY 17
	DSC-31-CDS-30-30	**Normal Operations**	09 MAY 18
	DSC-31-CDS-30-40	**Abnormal Operations**	13 SEP 17
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	DSC-31-CDS-40-20-20	**On Ground Indications**	26 JAN 16
	DSC-31-CDS-40-20-30	**Attitude**	05 MAY 20
R	DSC-31-CDS-40-20-40	**Airspeed**	06 AUG 20
	DSC-31-CDS-40-20-50	**Altitude**	04 MAY 16
	DSC-31-CDS-40-20-60	**Altitude Alerts**	06 MAY 15
	DSC-31-CDS-40-20-70	**RA Height**	06 MAY 15
	DSC-31-CDS-40-20-80	**Vertical Speed**	21 MAY 19
	DSC-31-CDS-40-20-90	**Heading/Track**	21 MAY 19
	DSC-31-CDS-40-20-100	**Guidance**	05 NOV 15
R	DSC-31-CDS-40-20-110	**Departure and Approach Guidance**	06 AUG 20
	DSC-31-CDS-40-20-120	**Flight Mode Annunciator (FMA)**	06 MAY 15
	DSC-31-CDS-40-20-130	**PFD Messages**	06 FEB 20
	DSC-31-CDS-40-30	**Lower Part of the PFD**	10 NOV 16
	DSC-31-CDS-40-40-10	**Overview**	04 MAY 16
R	DSC-31-CDS-40-40-20	**ARC Mode**	06 AUG 20
	DSC-31-CDS-40-40-30	**PLAN Mode**	06 MAY 15
R	DSC-31-CDS-40-40-40	**ROSE-NAV Mode**	06 AUG 20
R	DSC-31-CDS-40-40-50	**ROSE-VOR Mode**	06 AUG 20
R	DSC-31-CDS-40-40-60	**ROSE-LS Mode**	06 AUG 20
	DSC-31-CDS-40-40-70	**Common Data**	04 MAY 16
	DSC-31-CDS-40-40-80	**FMS Data**	22 NOV 17
R	DSC-31-CDS-40-40-90	**BACKUP TRAJ**	06 AUG 20
	DSC-31-CDS-40-40-100	**Interactive ND**	06 MAY 15
	DSC-31-CDS-40-40-110	**Weather**	06 MAY 15
	DSC-31-CDS-40-40-120	**Terrain**	06 MAY 15
	DSC-31-CDS-40-40-130	**Traffic**	06 MAY 15
	DSC-31-CDS-40-40-140	**Airport Navigation**	06 MAY 15
	DSC-31-CDS-40-40-150	**ND Messages**	22 NOV 17
	DSC-31-CDS-40-50	**VD**	06 MAY 15
	DSC-31-CDS-40-60	**Controls and Indicators**	09 MAY 18
	DSC-31-CDS-40-70	**Abnormal Operations**	06 MAY 15
	DSC-31-CDS-50-10	**Overview**	08 FEB 18
	DSC-31-CDS-50-20	**Architecture**	08 FEB 18
	DSC-31-CDS-50-30-10	**Overview**	08 FEB 18
	DSC-31-CDS-50-30-20	**On Ground Indications**	05 MAY 20
	DSC-31-CDS-50-30-30	**Attitude**	05 MAY 20
	DSC-31-CDS-50-30-40	**Airspeed**	08 FEB 18
	DSC-31-CDS-50-30-50	**Altitude**	08 FEB 18

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	DSC-31-CDS-50-30-60	**Altitude Alerts**	08 FEB 18
	DSC-31-CDS-50-30-70	**RA Height**	08 FEB 18
	DSC-31-CDS-50-30-80	**Vertical Speed**	21 MAY 19
	DSC-31-CDS-50-30-90	**Heading/Track**	21 MAY 19
	DSC-31-CDS-50-30-100	**Guidance**	05 MAY 20
R	DSC-31-CDS-50-30-110	**Departure and Approach Guidance**	06 AUG 20
	DSC-31-CDS-50-30-120	**Flight Mode Annunciator**	08 FEB 18
	DSC-31-CDS-50-30-130	**Wind Indications**	21 MAY 19
	DSC-31-CDS-50-30-140	**HUD Messages**	06 FEB 20
	DSC-31-CDS-50-30-150	**HUD Reduced Display Modes**	08 AUG 19
	DSC-31-CDS-50-40	**Controls and Indicators**	08 FEB 18
R	DSC-31-CDS-50-70	**How to**	06 AUG 20
	DSC-31-CDS-60-10-00	**General**	06 MAY 15
	DSC-31-CDS-60-10-20	**Architecture**	06 MAY 15
	DSC-31-CDS-60-10-10	**ECAM Function**	05 MAY 20
	DSC-31-CDS-60-10-30	**MFD**	08 NOV 18
	DSC-31-CDS-60-10-40	**WD**	21 MAY 19
	DSC-31-CDS-60-10-50	**SD**	09 MAY 18
	DSC-31-CDS-60-10-80	**Permanent Data**	04 MAY 16
R	DSC-31-CDS-60-20	**Controls and Indicators**	06 AUG 20
	DSC-31-CDS-60-30	**Normal Operations**	05 MAY 20
	DSC-31-CDS-60-40	**Abnormal Operations**	06 MAY 15
	DSC-31-CDS-60-50	**How to**	06 MAY 15
	DSC-31-CDS-70-10	**System Description**	06 MAY 15
	DSC-31-CDS-70-20	**How to**	06 MAY 15
	DSC-31-CDS-80	**OIS**	06 MAY 15
	DSC-31-CDS-90-10	**System Description**	06 MAY 15
	DSC-31-CDS-100-10	**System Description**	26 JAN 16
	DSC-31-CDS-100-20	**Controls and Indicators**	09 MAY 18
	DSC-31-CDS-100-30	**Abnormal Operations**	02 NOV 17
	DSC-31-CDS-110-10	**System Description**	04 MAY 17
	DSC-31-CDS-110-20	**Controls and Indicators**	04 AUG 16
	DSC-31-REC-10	**System Description**	06 MAY 15
	DSC-31-REC-20	**Controls and Indicators**	06 MAY 15
	DSC-31-REC-30	**Normal Operations**	06 MAY 15
	DSC-32-10-10-10	**Overview**	06 MAY 15
	DSC-32-10-10-20	**Landing Gear Extension Retraction System (LGERS)**	05 MAY 20
	DSC-32-10-20	**Controls and Indicators**	22 NOV 17
	DSC-32-20-10-10	**Overview**	06 MAY 15

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	DSC-32-20-10-20	**System Architecture**	06 MAY 15
	DSC-32-20-10-30	**Braking System Hydraulic Architecture**	10 NOV 16
	DSC-32-20-10-40	**Braking Modes**	04 MAY 16
	DSC-32-20-10-50	**Braking Functions**	06 FEB 20
	DSC-32-20-20	**Controls and Indicators**	05 MAY 20
R	DSC-32-20-25	**Temporary Abnormal Behaviors**	06 AUG 20
	DSC-32-30-10	**System Description**	06 MAY 15
	DSC-32-30-20	**Controls and Indicators**	06 FEB 20
	DSC-32-30-30	**Normal Operations**	06 MAY 15
	DSC-32-30-40	**Abnormal Operations**	05 FEB 19
	DSC-32-40-10	**System Description**	04 MAY 16
	DSC-32-40-20	**Controls and Indicators**	04 MAY 16
	DSC-33-10	**Overview**	06 MAY 15
	DSC-33-20-10	**System Description**	08 AUG 19
	DSC-33-20-20	**Controls and Indicators**	06 MAY 15
	DSC-33-30-10	**System Description**	07 NOV 19
	DSC-33-30-20	**Controls and Indicators**	04 MAY 16
	DSC-33-40-10	**System Description**	07 NOV 19
	DSC-33-40-20	**Controls and Indicators**	06 MAY 15
	DSC-33-40-30	**Normal Operations**	09 MAY 18
	DSC-33-50-10	**System Description**	04 MAY 16
	DSC-33-50-20	**Controls and Indicators**	09 MAY 18
	DSC-34-NAV-10	**General**	06 MAY 15
	DSC-34-NAV-20-10-10	**Overview**	06 MAY 15
	DSC-34-NAV-20-10-20	**Architecture**	05 MAY 20
	DSC-34-NAV-20-10-30	**ADR**	05 MAY 20
	DSC-34-NAV-20-10-40	**IR**	08 AUG 19
	DSC-34-NAV-20-10-50	**ADIRS Monitoring**	21 MAY 19
	DSC-34-NAV-20-10-60	**Aircraft Position**	04 AUG 16
	DSC-34-NAV-20-10-70	**Time Function**	06 MAY 15
R	DSC-34-NAV-20-20	**Controls and Indicators**	06 AUG 20
	DSC-34-NAV-20-30	**Abnormal Operations**	08 AUG 19
	DSC-34-NAV-30-10	**Overview**	06 MAY 15
	DSC-34-NAV-30-20	**Architecture**	04 MAY 16
	DSC-34-NAV-30-30	**SFD**	06 FEB 20
	DSC-34-NAV-30-50	**Standby Compass**	06 MAY 15
	DSC-34-NAV-30-60	**Controls and Indicators**	04 MAY 16
	DSC-34-NAV-30-70	**Abnormal Operations**	06 MAY 15
	DSC-34-NAV-30-80	**How to**	06 MAY 15

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	DSC-34-NAV-50	**Landing Systems**	08 FEB 18
	DSC-34-NAV-60-10	**System Description**	06 MAY 15
	DSC-34-NAV-60-20	**Controls and Indicators**	06 MAY 15
	DSC-34-NAV-70-10	**System Description**	05 MAY 20
	DSC-34-NAV-70-20	**Controls and Indicators**	04 MAY 16
	DSC-34-NAV-70-30	**How to**	07 NOV 19
	DSC-34-NAV-80-10	**System Description**	22 NOV 17
	DSC-34-NAV-80-20	**Controls and Indicators**	08 AUG 18
	DSC-34-NAV-90	**RNP AR**	06 MAY 15
	DSC-34-SURV-10	**Overview**	04 AUG 16
	DSC-34-SURV-20-10	**System Description**	08 AUG 19
	DSC-34-SURV-20-20	**Controls and Indicators**	04 MAY 17
	DSC-34-SURV-30-10	**System Description**	06 FEB 20
R	DSC-34-SURV-30-20	**Controls and Indicators**	06 AUG 20
	DSC-34-SURV-40-10	**System Description**	14 MAR 18
	DSC-34-SURV-40-20	**Controls and Indicators**	09 MAY 18
	DSC-34-SURV-50-10	**System Description**	06 MAY 15
R	DSC-34-SURV-50-20	**Controls and Indicators**	06 AUG 20
	DSC-34-SURV-60-10	**System Description**	07 NOV 19
	DSC-34-SURV-60-20	**Controls and Indicators**	07 NOV 19
	DSC-34-SURV-60-30	**How to**	07 NOV 19
	DSC-34-SURV-70-10	**Cockpit View**	06 MAY 15
	DSC-34-SURV-70-30	**EFIS Control Panel**	08 AUG 18
	DSC-34-SURV-70-40	**KCCU**	06 MAY 15
R	DSC-34-SURV-70-50	**MFD**	06 AUG 20
	DSC-34-SURV-70-90	**ND**	09 MAY 18
	DSC-34-SURV-70-110	**PFD**	06 MAY 15
	DSC-34-SURV-70-120	**RMP**	06 MAY 15
	DSC-34-SURV-70-20	**SURV Panel**	06 MAY 15
	DSC-34-SURV-70-100	**VD**	06 MAY 15
	DSC-34-SURV-80	**Normal Operations**	08 AUG 18
	DSC-34-SURV-90	**Abnormal Operations**	06 MAY 15
	DSC-34-32-10	**General**	05 MAY 20
	DSC-34-32-20-10	**System Description**	08 AUG 19
	DSC-34-32-20-20-10	**Cockpit View**	22 NOV 17
	DSC-34-32-20-20-20	**Audio Indicators**	22 NOV 17
	DSC-34-32-20-20-30	**Brake Panel**	22 NOV 17
R	DSC-34-32-20-20-35	**FMA**	06 AUG 20

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	DSC-34-32-20-20-40	**MFD**	06 MAY 15
	DSC-34-32-20-20-50	**ND**	22 NOV 17
	DSC-34-32-20-20-60	**PFD**	22 NOV 17
	DSC-34-32-20-20-70	**RWY CONDITION/BRAKING ACTION Matrix**	22 NOV 17
	DSC-34-32-20-20-80	**SURV Panel on Overhead Panel (if installed)**	09 MAY 18
	DSC-34-32-20-20-90	**MEMO**	09 MAY 18
	DSC-34-32-30-10	**System Description**	05 MAY 20
	DSC-34-32-30-20-10	**Cockpit View**	06 MAY 15
	DSC-34-32-30-20-20	**Audio Indicators**	22 NOV 17
	DSC-34-32-30-20-30	**Brake Panel**	08 AUG 19
	DSC-34-32-30-20-40	**FMA**	22 NOV 17
	DSC-34-32-30-20-50	**MEMO**	06 MAY 15
	DSC-34-32-30-20-60	**ND**	22 NOV 17
	DSC-34-32-35	**Abnormal Operations**	21 MAY 19
	DSC-34-32-40	**Temporary Abnormal Behaviors**	05 MAY 20
	DSC-35-10	**Overview**	06 MAY 15
	DSC-35-20-10	**System Description**	06 MAY 15
	DSC-35-20-20	**Controls and Indicators**	05 FEB 19
	DSC-35-20-40	**How to**	06 MAY 15
	DSC-35-30-10	**System Description**	08 NOV 18
R	DSC-35-30-20	**Controls and Indicators**	06 AUG 20
	DSC-35-40-10	**System Description**	08 AUG 19
	DSC-35-40-20	**How to**	06 MAY 15
	DSC-36-10-10	**Overview**	06 MAY 15
	DSC-36-10-20	**Engine Bleed Air System**	06 MAY 15
	DSC-36-10-30	**APU Bleed Air Supply**	10 NOV 16
	DSC-36-10-40	**HP Ground Air Supply**	06 MAY 15
	DSC-36-10-50	**Crossbleed**	06 MAY 15
	DSC-36-10-60	**Leak Detection**	06 MAY 15
	DSC-36-20	**Controls and Indicators**	21 MAY 19
	DSC-38-10	**System Description**	22 NOV 17
	DSC-38-20	**Controls and Indicators**	06 MAY 15
	DSC-42-10	**System Description**	07 NOV 19
	DSC-42-20	**Abnormal Operations**	05 MAY 20
	DSC-44-10-10	**Overview**	04 AUG 16
	DSC-44-10-20	**Cabin Communication and Signs**	13 SEP 17
R	DSC-44-10-30	**In-Flight Entertainment and Cabin Connectivity**	06 AUG 20
	DSC-44-10-40	**Video Monitoring System**	08 AUG 19
R	DSC-44-20	**Controls and Indicators**	06 AUG 20

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	DSC-46-ATC-10-10	**General**	08 NOV 18
	DSC-46-ATC-10-20	**Notification**	06 MAY 15
	DSC-46-ATC-10-30	**Controller/Pilot Datalink Communication (CPDLC)**	06 MAY 15
	DSC-46-ATC-10-40	**Message Record**	06 MAY 15
	DSC-46-ATC-10-50	**A623**	10 NOV 16
	DSC-46-ATC-10-60	**Automatic Dependent Surveillance - Contract (ADS-C)**	06 MAY 15
	DSC-46-ATC-10-70	**Mailbox**	06 MAY 15
	DSC-46-ATC-20-10	**Cockpit View**	06 MAY 15
	DSC-46-ATC-20-70	**ATC MSG pb**	06 MAY 15
	DSC-46-ATC-20-90	**Audio Indicators**	06 MAY 15
	DSC-46-ATC-20-80	**KCCU**	06 MAY 15
	DSC-46-ATC-20-60	**Mailbox**	06 MAY 15
	DSC-46-ATC-20-40	**MFD - ATC COM Messages**	06 MAY 15
	DSC-46-ATC-20-30-10	**Overview**	06 MAY 15
	DSC-46-ATC-20-30-20	**CONNECT Page**	06 MAY 15
	DSC-46-ATC-20-30-30	**REQUEST Page**	04 AUG 16
	DSC-46-ATC-20-30-40	**REPORT & MODIFY Page**	06 MAY 15
	DSC-46-ATC-20-30-50	**MSG RECORD Page**	06 MAY 15
	DSC-46-ATC-20-30-60	**D-ATIS Page**	06 MAY 15
	DSC-46-ATC-20-30-70	**EMERGENCY Page**	06 MAY 15
	DSC-46-ATC-20-50	**MFD - Data Entry Format**	06 MAY 15
	DSC-46-ATC-20-20	**MFD - Overview**	06 MAY 15
	DSC-46-ATC-30	**Abnormal Operations**	10 NOV 16
	DSC-46-OIS-10-10	**Overview**	06 MAY 15
	DSC-46-OIS-10-20	**Architecture**	04 MAY 16
	DSC-46-OIS-10-30	**Applications on EFB Side**	06 MAY 15
	DSC-46-OIS-10-40	**Applications on AVNCS Side**	06 MAY 15
	DSC-46-OIS-20-10	**Cockpit View**	06 MAY 15
	DSC-46-OIS-20-20	**Audio Indicators**	06 MAY 15
	DSC-46-OIS-20-30	**COM GND CONNECTION pb-sw**	06 MAY 15
	DSC-46-OIS-20-50	**KCCU**	06 MAY 15
	DSC-46-OIS-20-60	**Laptop Package**	02 NOV 17
	DSC-46-OIS-20-70	**MEMO**	26 JAN 16
	DSC-46-OIS-20-80-09	**General**	12 JUL 17
	DSC-46-OIS-20-80-10	**Overview**	08 AUG 19
	DSC-46-OIS-20-80-20	**OIS MENU**	06 MAY 15
	DSC-46-OIS-20-80-30	**OIS MENU BACKUP**	06 MAY 15
	DSC-46-OIS-20-80-40	**AVNCS - COMPANY COM**	12 JUL 17
	DSC-46-OIS-20-80-50	**EFB - FLT OPS MENU**	12 JUL 17

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M(1)	Localization	Subsection Title	Rev. Date
R	DSC-46-OIS-20-80-60	**EFB - FLT OPS STS**	06 AUG 20
	DSC-46-OIS-20-80-70	**EFB - OPS LIBRARY**	12 JUL 17
	DSC-46-OIS-20-80-80	**EFB - FLT FOLDER**	26 JAN 16
R	DSC-46-OIS-20-80-90	**EFB - T.O PERF**	06 AUG 20
R	DSC-46-OIS-20-80-100	**EFB - IN-FLT PERF**	06 AUG 20
R	DSC-46-OIS-20-80-110	**EFB - LDG PERF**	06 AUG 20
	DSC-46-OIS-20-80-120	**EFB - LOADSHEET**	12 JUL 17
	DSC-46-OIS-20-80-130	**EFB - LOAD BOX**	12 JUL 17
	DSC-46-OIS-20-80-140	**EFB - EXPORT BOX**	12 JUL 17
	DSC-46-OIS-20-80-150	**OIS Messages**	22 NOV 17
	DSC-46-OIS-20-90	**OIS Controls on Main Instrument Panel**	06 MAY 15
	DSC-46-OIS-20-100	**OIS Keyboards**	06 MAY 15
	DSC-46-OIS-20-110	**OIS Panel on Overhead Panel**	06 MAY 15
	DSC-46-OIS-20-120	**Printer**	06 MAY 15
	DSC-46-OIS-30	**How To**	08 AUG 19
N	DSC-46-OIS-35	**Abnormal Operations**	06 AUG 20
	DSC-49-10	**System Description**	05 MAY 20
	DSC-49-20	**Controls and Indicators**	26 JAN 16
	DSC-49-30	**Normal Operations**	06 FEB 20
	DSC-49-40	**Abnormal Operations**	12 JUL 17
	DSC-52-10	**Overview**	04 MAY 17
	DSC-52-20-10	**System Description**	06 MAY 15
	DSC-52-20-20	**Controls and Indicators**	08 AUG 19
	DSC-52-30-10	**System Description**	07 NOV 19
	DSC-52-30-20	**Controls and Indicators**	09 MAY 18
	DSC-52-30-30	**How to**	06 MAY 15
	DSC-52-30-40	**Temporary Abnormal Behavior**	09 MAY 18
	DSC-52-40-10	**System Description**	04 MAY 16
	DSC-52-40-20	**Controls and Indicators**	04 MAY 16
	DSC-52-40-30	**How to**	04 MAY 16
	DSC-52-50-10	**System Description**	04 MAY 17
	DSC-52-50-20	**Controls and Indicators**	08 AUG 19
	DSC-52-50-30	**How to**	04 MAY 17
	DSC-52-60-10	**System Description**	06 MAY 15
	DSC-52-60-20	**Controls and Indicators**	08 AUG 19
R	DSC-56-10	**System Description**	06 AUG 20
	DSC-70-10-10	**Overview**	04 AUG 16
	DSC-70-10-20	**Engine**	06 MAY 15
	DSC-70-10-30-10	**General**	06 MAY 15

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M[(1)]	Localization	Subsection Title	Rev. Date
R	DSC-70-10-30-20	**Engine Protection**	06 AUG 20
	DSC-70-10-30-30	**Power Management**	05 FEB 19
	DSC-70-10-40	**Fuel System**	06 MAY 15
	DSC-70-10-50	**Oil System**	06 MAY 15
R	DSC-70-10-60	**Air System**	06 AUG 20
	DSC-70-10-70-10	**General**	06 MAY 15
	DSC-70-10-70-20	**Protection of the Thrust Reverser System**	06 MAY 15
	DSC-70-10-70-30	**Deployment and Stowage**	06 MAY 15
	DSC-70-10-80-10	**General**	06 MAY 15
R	DSC-70-10-80-20	**Ignition System**	06 AUG 20
	DSC-70-10-80-30	**Start System**	05 NOV 15
	DSC-70-20	**Controls and Indicators**	05 MAY 20
	DSC-70-30	**Normal Operations**	06 MAY 15
	DSC-70-40	**Abnormal Operations**	04 MAY 16
R	PRO-PLP-LETDU	**LIST OF EFFECTIVE TEMPORARY DOCUMENTARY UNITS**	06 AUG 20
	PRO-ABN-ABN-00	**INTRODUCTION**	21 MAY 19
	PRO-ABN-ABN-ABN	**[ABN] ECAM NOT-SENSED PROCEDURES**	08 AUG 19
	PRO-ABN-ABN-ADV	**[ADV] ECAM ADVISORY**	05 MAY 20
	PRO-ABN-ABN-MEM	**[MEM] MEMORY ITEMS**	10 NOV 16
	PRO-ABN-ABN-QRH	**[QRH] PROCEDURES**	21 MAY 19
R	PRO-ABN-ABN-RESET	**[RESET] SYSTEM RESET**	06 AUG 20
E	PRO-ABN-A-ICE	**A-ICE**	06 AUG 20
R	PRO-ABN-AIR	**AIR**	06 AUG 20
	PRO-ABN-APU	**APU**	05 MAY 20
	PRO-ABN-APUF	**APU FIRE**	10 NOV 16
	PRO-ABN-AUTO_FLT	**AUTO FLT**	06 FEB 20
	PRO-ABN-AVNCS	**AVIONICS NETWORK**	05 MAY 20
R	PRO-ABN-BRAKES	**BRAKES**	06 AUG 20
	PRO-ABN-CAB_COM	**CAB COM**	10 NOV 16
R	PRO-ABN-CAB_PRESS	**CAB PRESS**	06 AUG 20
	PRO-ABN-CDS	**CDS**	05 MAY 20
	PRO-ABN-CDS_AFLT	**CDS & AUTO FLT**	22 NOV 17
	PRO-ABN-COM	**COM**	07 NOV 19
R	PRO-ABN-COND	**COND**	06 AUG 20
R	PRO-ABN-CONFIG	**CONFIG**	06 AUG 20
	PRO-ABN-DISPATCH	**DISPATCH**	06 MAY 15
	PRO-ABN-DOOR	**DOOR**	22 NOV 17
R	PRO-ABN-ELEC	**ELEC**	06 AUG 20
R	PRO-ABN-ENG	**ENG**	06 AUG 20

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M[(1)]	Localization	Subsection Title	Rev. Date
	PRO-ABN-ENGF	**ENG FIRE**	21 MAY 19
	PRO-ABN-EXT_LT	**EXT LT**	06 MAY 15
R	PRO-ABN-F_CTL	**F/CTL**	06 AUG 20
	PRO-ABN-FIRE	**FIRE**	21 MAY 19
R	PRO-ABN-FUEL	**FUEL**	06 AUG 20
	PRO-ABN-FWS	**FWS**	05 MAY 20
R	PRO-ABN-HYD	**HYD**	06 AUG 20
	PRO-ABN-IMA	**IMA**	06 MAY 15
	PRO-ABN-LG	**L/G**	05 MAY 20
R	PRO-ABN-MISC	**MISC**	06 AUG 20
	PRO-ABN-MLG_BAY	**MLG BAY**	06 MAY 15
	PRO-ABN-MLG_BAYF	**MLG BAY FIRE**	21 MAY 19
R	PRO-ABN-NAV	**NAV**	06 AUG 20
R	PRO-ABN-OIS	**OIS**	06 AUG 20
	PRO-ABN-OVERSPEED	**OVERSPEED**	06 MAY 15
	PRO-ABN-OXY	**OXY**	06 MAY 15
	PRO-ABN-SMOKE	**SMOKE**	21 MAY 19
	PRO-ABN-STEER	**STEER**	05 MAY 20
R	PRO-ABN-SURV	**SURV**	06 AUG 20
	PRO-ABN-TAIL_STRK	**TAIL STRIKE**	10 NOV 16
	PRO-ABN-T-O	**T.O**	21 MAY 19
	PRO-ABN-VENT	**VENT**	22 NOV 17
R	PRO-ABN-WHEEL	**WHEEL**	06 AUG 20
	PRO-NOR-SOP-10	**General Information**	04 MAY 16
	PRO-NOR-SOP-30	**Safety Exterior Inspection**	06 MAY 15
R	PRO-NOR-SOP-40	**Preliminary Cockpit Preparation**	06 AUG 20
	PRO-NOR-SOP-50	**Exterior Walkaround**	05 MAY 20
R	PRO-NOR-SOP-60	**Cockpit Preparation**	06 AUG 20
R	PRO-NOR-SOP-70	**Before Pushback or Start**	06 AUG 20
E	PRO-NOR-SOP-80	**Engine Start**	06 AUG 20
R	PRO-NOR-SOP-90	**After Start**	06 AUG 20
	PRO-NOR-SOP-100	**Taxi**	08 NOV 18
	PRO-NOR-SOP-110	**Before Takeoff**	05 FEB 19
	PRO-NOR-SOP-120	**Takeoff**	08 AUG 19
	PRO-NOR-SOP-130	**After Takeoff**	06 MAY 15
R	PRO-NOR-SOP-140	**Climb**	06 AUG 20
	PRO-NOR-SOP-150	**Cruise**	08 NOV 18
R	PRO-NOR-SOP-160	**Descent Preparation**	06 AUG 20
	PRO-NOR-SOP-170	**Descent**	08 AUG 19

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M[1]	Localization	Subsection Title	Rev. Date
	PRO-NOR-SOP-180-A	**Approach General**	08 AUG 19
	PRO-NOR-SOP-180-B	**Aircraft Configuration Management**	05 FEB 19
R	PRO-NOR-SOP-180-C	**Aircraft Guidance Management**	06 AUG 20
	PRO-NOR-SOP-210	**Landing**	08 AUG 19
R	PRO-NOR-SOP-220	**Go-Around**	06 AUG 20
	PRO-NOR-SOP-230	**After Landing**	05 FEB 19
R	PRO-NOR-SOP-250	**Parking**	06 AUG 20
R	PRO-NOR-SOP-260	**Securing the Aircraft**	06 AUG 20
	PRO-NOR-C-L	**Normal Checklists**	05 MAY 20
R	PRO-NOR-SCO	**Standard Callouts**	06 AUG 20
R	PRO-NOR-TSK	**Tasksharing**	06 AUG 20
	PRO-NOR-SUP-SUP-SUP	**[SUP] Supplementary Procedures Menu**	08 NOV 18
R	PRO-NOR-SUP-SUP-ADVWXR	**Adverse Weather**	06 AUG 20
R	PRO-NOR-SUP-SUP-ENG	**Engine**	06 AUG 20
R	PRO-NOR-SUP-SUP-FUEL	**Fuel**	06 AUG 20
R	PRO-NOR-SUP-SUP-LG	**Landing Gear**	06 AUG 20
	PRO-NOR-SUP-SUP-MISC	**Miscellaneous**	08 AUG 19
	PRO-SPO-ETOPS	**Extended Range Operations**	04 OCT 17
R	PRO-SPO-PBN	**PBN**	06 AUG 20
	PRO-SPO-RVSM	**RVSM**	06 FEB 20
	PRO-SPO-PRM	**Simultaneous Parallel Approach Operations**	06 FEB 20
	PRO-SPO-PBCS	**Performance-Based Communication and Surveillance**	08 AUG 19
	LIM-PLP-LETDU	**LIST OF EFFECTIVE TEMPORARY DOCUMENTARY UNITS**	07 NOV 19
	LIM-INT	**Introduction**	21 AUG 17
	LIM-AG-F_CTL	**Flight Maneuvering Load Acceleration Limits**	06 MAY 15
	LIM-AG-OPS	**Operational Parameters**	08 AUG 19
	LIM-AG-SPD	**Speeds**	07 NOV 19
	LIM-AG-WGHT	**Weights**	06 FEB 20
	LIM-AIR	**Air BLEED/COND/PRESS/VENT**	21 MAY 19
	LIM-AFS-10	**General**	09 MAY 18
R	LIM-AFS-20	**Automatic Approach, Automatic Landing and Automatic Roll-Out**	06 AUG 20
	LIM-APU	**Auxiliary Power Unit**	06 MAY 15
	LIM-CAB	**Cabin Systems**	09 MAY 18
	LIM-CDS	**Control and Display System**	08 FEB 18
	LIM-COM	**Communication**	04 AUG 16
	LIM-DOORS	**Doors**	06 MAY 15
R	LIM-ENG	**Engines**	06 AUG 20

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M[(1)]	Localization	Subsection Title	Rev. Date
	LIM-F-CTL	**Flight Controls**	06 MAY 15
R	LIM-FUEL	**Fuel**	06 AUG 20
	LIM-ICE_RAIN	**Ice and Rain Protection**	08 FEB 18
	LIM-LG	**Landing Gear**	05 FEB 19
	LIM-LT	**Lights**	06 MAY 15
	LIM-NAV	**Navigation**	06 MAY 15
	LIM-OIS	**Onboard Information System**	06 MAY 15
	LIM-OXY	**Oxygen**	06 AUG 15
	LIM-ROW-ROP	**ROW/ROP - BTV**	07 NOV 19
	LIM-SURV	**Surveillance**	26 JAN 16
	LIM-T-PED	**Transmitting Portable Electronic Device**	04 MAY 17
	PER-PLP-LETDU	**LIST OF EFFECTIVE TEMPORARY DOCUMENTARY UNITS**	21 MAY 19
	PER-PN1	**Pitch-N1 Tables**	05 FEB 19
	PER-OPS	**Operating Speeds**	05 NOV 15
	PER-TOF-10	**Takeoff Performance Optimization**	05 FEB 19
	PER-TOF-20-10	**Takeoff at Maximum Thrust**	06 MAY 15
	PER-TOF-20-20-10	**General**	06 MAY 15
	PER-TOF-20-20-20	**Flexible Takeoff**	13 SEP 17
	PER-TOF-20-20-30	**Derated Takeoff**	06 MAY 15
	PER-TOF-20-20-40	**Flexible Takeoff vs Derated Takeoff**	22 NOV 17
R	PER-TOF-30-10	**Takeoff on Dry Runway**	06 AUG 20
R	PER-TOF-30-20	**Takeoff on Wet Runway**	06 AUG 20
	PER-TOF-30-30	**Takeoff on Contaminated Runway**	08 AUG 19
	PER-TOF-40	**Takeoff with MEL or CDL Item**	06 MAY 15
	PER-TOF-50	**Takeoff Recommendations**	06 MAY 15
	PER-IFT-10	**In-Flight Performance Calculation**	06 MAY 15
	PER-IFT-20-10-10	**General**	06 MAY 15
	PER-IFT-20-10-20	**Climb Thrusts**	08 NOV 18
	PER-IFT-20-20-10	**Speeds**	05 NOV 15
	PER-IFT-20-20-20	**Altitude/Ceilings**	08 NOV 18
	PER-IFT-20-30	**Descent**	06 MAY 15
	PER-IFT-20-40	**Holding**	06 MAY 15
	PER-IFT-30	**One Engine Inoperative Operations**	13 SEP 17
	PER-IFT-FP	**Fuel Penalty Tables - Fuel Consumption Increased**	22 NOV 17
	PER-LDG-10	**Landing Performance Calculation**	08 NOV 18
	PER-LDG-20	**Landing Speeds and Distances Definitions**	04 MAY 17
R	PER-LDG-30	**Runway Conditions**	06 AUG 20
	PER-LDG-40	**Dispatch Requirements**	06 MAY 15
	PER-LDG-50	**In-Flight Performance Assessment**	21 MAY 19

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M(1)	Localization	Subsection Title	Rev. Date
	OEB-PLP-LETDU	**LIST OF EFFECTIVE TEMPORARY DOCUMENTARY UNITS**	06 MAY 15
R	OEB-PLP-LEOEB	**LIST OF EFFECTIVE OPERATIONS ENGINEERING BULLETIN**	06 AUG 20
	TAB-PLP-LETDU	**LIST OF EFFECTIVE TEMPORARY DOCUMENTARY UNITS**	12 MAY 16
R	TAB	**Temporary Abnormal Behaviors**	06 AUG 20

(1) Evolution code : N=New, R=Revised, E=Effectivity, M=Moved

PRELIMINARY PAGES

AIRCRAFT ALLOCATION TABLE

This table gives, for each delivered aircraft, the cross reference between:

- The Manufacturing Serial Number (MSN).
- The Fleet Serial Number (FSN) of the aircraft as known by AIRBUS S.A.S.
- The registration number of the aircraft as known by AIRBUS S.A.S.
- The aircraft model.

M[1]	MSN	FSN	Registration Number	Model
	0040		ET-ATQ	350-941
	0043		ET-ATR	350-941
	0089		ET-ATY	350-941
	0103		ET-AUA	350-941
	0120		ET-AUB	350-941
	0147		ET-AUC	350-941
	0180		ET-AVB	350-941
	0196		ET-AVC	350-941
	0205		ET-AVD	350-941
	0259		ET-AVE	350-941
	0289		ET-AWM	350-941
	0310		ET-AWN	350-941
	0345		ET-AWO	350-941
	0375		ET-AWP	350-941
	0412		ET-AYB	350-941
	0431		ET-AYA	350-941

(1) Evolution code : N=New, R=Revised

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M(1)	MODIFICATION	Linked SB	Incorp. Date	Title
	L04011		21 MAY 19	LANDING GEAR - LANDING GEAR MANAGEMENT SYSTEM - INTRODUCE REMOTE BRAKING CONTROL UNIT (RBCU) STANDARD H4-3
	Applicable to: ET-AWO, ET-AWP, ET-AYA, ET-AYB			
E	L04027	32-P037 00	21 MAY 19	LANDING GEAR - LANDING GEAR MANAGEMENT SYSTEM - INTRODUCE BCS SOFTWARE STANDARD S5B.
	Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB			
E	L06001	42-P013 00	21 MAY 19	FUEL - FUEL QUANTITY AND MANAGEMENT SYSTEM (FQMS) - DEFINE AND INSTALL FQMS V5.1 SOFTWARE STANDARD.
	Applicable to: ET-ATQ, ET-AUC, ET-AVB, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB			
E	L06006	42-P013 00	21 MAY 19	FUEL - FUEL QUANTITY AND MANAGEMENT SYSTEM (FQMS) - DEFINE AND INSTALL FQMS V5.1.1 SOFTWARE STANDARD.
	Applicable to: ET-ATQ, ET-AUC, ET-AVB, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB			
	L31465		10 NOV 16	AIR CONDITIONING - COCKPIT AIR DISTRIBUTION - Remove Cockpit Restrictor Valve in S.13/14
	Applicable to: ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB			
	L41091		02 AUG 17	AIR CONDITIONING-LOWER DECK CARGO COMPARTMENT VENTILATION:DEFINE AND INSTALL LOWER DECK FORWARD CARGO COMPARTMENT VENTILATION AND TEMPERATURE CONTROL
	Applicable to: ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB			
	L41105		04 MAY 16	AIR CONDITIONING - HUMIDIFICATION: DEFINE AND INSTALL COCKPIT HUMIDIFICATION SYSTEM
	Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB			
	L41114		06 MAY 15	COMMUNICATIONS - HF SYSTEM - Define and install a second HF system
	Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP			
	L41135		04 MAY 16	FUEL - REFUEL/DEFUEL SYSTEM - Define and Install refuel/defuel coupling on LH wing
	Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP			
	L41136		06 MAY 15	FUEL - JETTISON SYSTEM: Define and install Jettison Fuel System
	Applicable to: ALL			
	L41142		06 MAY 15	INDICATING/RECORDING SYSTEMS - HEAD UP DISPLAY (HUD): Define and install dual HUD
	Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC			

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M(1)	MODIFICATION	Linked SB	Incorp. Date	Title
	L41151		06 MAY 15	NAVIGATION - MULTI MODE RECEIVER (MMR) FUNCTIONS - Activate GLS function in the MMR.
	Applicable to: ALL			
	L41152		06 MAY 15	NAVIGATION - MULTI MODE RECEIVER (MMR) FUNCTIONS - Activate Satellite Landing System (SLS) in the MMR
	Applicable to: ALL			
	L41155		06 MAY 15	NAVIGATION - AUTOMATIC DIRECTION FINDING (ADF) - Define and install single ADF
	Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB			
	L41157		06 MAY 15	NAVIGATION - AUTOMATIC DIRECTION FINDING (ADF) - Define and install second ADF
	Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB			
	L41159		06 MAY 15	NAVIGATION - VOR/MARKER: Define and install VOR2/DME2
	Applicable to: ET-ATQ, ET-ATR			
	L41208		06 MAY 15	Air Conditioning - Commercial Equipment Ventilation - Define And Install Isolation Valve ISO1 For IFE Center Rack Ventilation
	Applicable to: ALL			
	L41387		08 NOV 18	LIGHTS - EXTERIOR - Define and Install Integrated Tail Cone Light and Single FWD Strobe Light
	Applicable to: ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB			
	L41612		06 MAY 15	Miscellaneous - Additional certification items - Certify 15 Knots Tailwind operation at Take-Off (RR ENGINES)
	Applicable to: ALL			
	L41830	31-P015 01	10 NOV 16	INDICATING/RECORDING SYSTEMS - CONTROL AND DISPLAY SYSTEM (CDS) - Define and install CDS S4 standard
	Applicable to: ALL			
	L41831	22-P006 01	04 AUG 16	AUTO FLIGHT - FLIGHT MANAGEMENT (FM) - Define FMS S4 standard
	Applicable to: ALL			
	L41838	22-P012 01	02 AUG 17	AUTO FLIGHT - Define and install Automatic Emergency Descent function
	Applicable to: ALL			
	L41839	42-P005 01	04 AUG 16	INDICATING/RECORDING SYSTEMS - FWS - ACQUISITION/INTERFACE - Define and install FWS S4/2.0 standard
	Applicable to: ALL			

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M(1)	MODIFICATION	Linked SB	Incorp. Date	Title
	L41917		06 MAY 15	LANDING GEAR - WHEELS AND BRAKES - Define and install Messier Bugatti (MBD) Wheels and Brakes
	Applicable to: ALL			
	L41944		06 MAY 15	INDICATING/RECORDING SYSTEMS - FLIGHT WARNING SYSTEM (FWS)- Activate Dual Operator Customized ECAM Database (OCED)
	Applicable to: ALL			
	L41953	22-P012 01	04 MAY 17	FLIGHT CONTROLS - PFCS - CONTROL INPUTS - Define new SBTU with EMER DESCENT push-button
	Applicable to: ALL			
	L42048		26 JAN 16	ELECTRICAL POWER - BATTERY MAIN GENERATION - Define and install Li-Ion Batteries system with a single exhaust pipe per side
	Applicable to: ALL			
	L42209		04 AUG 16	INDICATING/RECORDING SYSTEMS - INTEGRATED CONTROL PANELS (ICP) - Remove « No smoking » toggle switch from ICP LOWER CENTER
	Applicable to: ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB			
	L42260		06 MAY 15	NAVIGATION - AIRCRAFT ENVIRONMENT SURVEILLANCE SYSTEM (AESS): Define & install ATSAW Step 2A activation based on AESS EIS standard
	Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP			
	L42278		06 AUG 15	LANDING GEAR - WHEELS AND BRAKES - Introduce S3B software Standard for BCS (Braking Control System)
	Applicable to: ALL			
	L42332	32-P022 01	12 JUL 17	LANDING GEAR - STEERING - Introduce Wheel Steering Control System (WSCS) Software (S4)
	Applicable to: ALL			
	L42425		06 MAY 15	INDICATING/RECORDING SYSTEMS - CENTRAL WARNING SYSTEMS ¿ Introduce ATQC V2 for EIS
	Applicable to: ALL			
	L42430		06 MAY 15	INDICATING/RECORDING SYSTEMS - FWS - ACQUISITION/INTERFACE - Define and install FWS S3/5.0 standard
	Applicable to: ALL			

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M(1)	MODIFICATION	Linked SB	Incorp. Date	Title
	L42454		04 MAY 17	HYDRAULIC POWER - Increase robustness of HYDRAULICS architecture to improve ATA42 OR define wiring impacts for CRDC
	Applicable to: ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB			
	L42471	42-P003 01	04 AUG 16	HYDRAULIC POWER - Define new HMCA S4.0 software
	Applicable to: ALL			
	L42492		04 MAY 16	INDICATING/RECORDING SYSTEMS - INTEGRATED CONTROL PANELS (ICP)- Define and install ICP-LOWER CTR S3.2 configuration 1 with toggle switches re-oriented
	Applicable to: ET-ATQ, ET-ATR			
	L42495	42-P012 01	21 MAY 19	FLIGHT CONTROLS - PRIMARY FLIGHT CONTROL SYSTEM (PFCS) - Activate Take Off Monitoring (TOM) function
	Applicable to: ALL			
	L42544		06 MAY 15	FLIGHT CONTROLS - PRIMARY FLIGHT CONTROL SYSTEM (PFCS) - INTRODUCE FCGS 6.1 SW STD
	Applicable to: ALL			
	L42552		05 NOV 15	ICE AND RAIN PROTECTION - ICE DETECTION - Define and install AICF S3.1 standard
	Applicable to: ALL			
	L42571	28-P006 01	04 AUG 16	FUEL - FUEL QUANTITY AND MANAGEMENT SYSTEM (FQMS) - Define FQMS V4 Software Standard
	Applicable to: ALL			
	L42655		04 AUG 16	NAVIGATION - VOR/MARKER - Define and install VOR2/DME2 and uninstall the 50 ohms load
	Applicable to: ET-ATY, ET-AUA, ET-AUB, ET-AUC			
	L42665		09 MAY 18	FLIGHT CONTROLS - SPOILER - Introduce new std of Spoiler EBHA to solve undue active mode.
	Applicable to: ALL			
	L42666	24-P024 01	04 AUG 16	ELECTRICAL POWER - AC MAIN GENERATION - Define and install GCU S4
	Applicable to: ALL			
R	L42669		09 MAY 18	INDICATING/RECORDING SYSTEMS - FWS - ACQUISITION/INTERFACE - Activate ETC code n° 27SP Undue active mode on spoiler EBHA
	Applicable to: ALL			
	L42746	22-P008 01	04 MAY 17	AUTO FLIGHT - GENERAL - Upgrade BTV-ROPS function to Step 3 with all runway states
	Applicable to: ALL			

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M(1)	MODIFICATION	Linked SB	Incorp. Date	Title
	L42771		08 FEB 18	ICE AND RAIN PROTECTION - WINDSHIELD RAIN PROTECTION - Remove rain repellent system (Equipments only)
	Applicable to: ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB			
	L42782		22 NOV 17	NAVIGATION - VOR/MARKER - Define and install VOR2 receiver and uninstall 50 ohms load
	Applicable to: ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB			
	L42820		22 NOV 17	NAVIGATION - DISTANCE MEASURING EQUIPMENT (DME) - .Define and Install DME2 interrogator
	Applicable to: ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB			
	L42834		08 FEB 18	INDICATING/RECORDING SYSTEMS - HEAD UP DISPLAY (HUD) - Define and install Dual HUD compliant with optimized complete provisions
	Applicable to: ET-AVB			
	L42865		21 MAY 19	LIGHTS - EXTERIOR - Define and Install 3HID (Landing, Take-Off and RTO-Taxi lights) and 1HID (WES and Logo lights) in LED technology
	Applicable to: ET-AWO, ET-AWP, ET-AYA, ET-AYB			
	L42875	27-P013 01	12 JUL 17	FLIGHT CONTROLS - PRIMARY FLIGHT CONTROL SYSTEM (PFCS) - Define and Install FCGS SW X8.0.2 standard
	Applicable to: ALL			
	L42959		20 FEB 18	NAVIGATION - RADIO ALTIMETER - Define and install DLRA S3.2 standard
	Applicable to: ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB			
	L42973		12 MAY 16	LANDING GEAR - PARKING BRAKING - INTRODUCE NEW PARK BRAKE SELECTOR VALVE (PBSELV) CHECK VALVES
	Applicable to: ALL			
	L42980		08 FEB 18	ELECTRICAL POWER - BATTERY MAIN GENERATION - Define and Install Ni-Cad Batteries
	Applicable to: ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB			
	L43001		04 AUG 16	INDICATING/RECORDING SYSTEMS - FWS - ACQUISITION/INTERFACE - Activate ETC code 22TS - Inhibit TOS Pack 2 alerts
	Applicable to: ALL			
	L43174		08 AUG 19	NAVIGATION - SENSORS, POWER SUPPLY AND SWITCHING - Remove SSA probes and replace them by obturators
	Applicable to: ET-AWO, ET-AWP, ET-AYA, ET-AYB			

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M(1)	MODIFICATION	Linked SB	Incorp. Date	Title
	L43207	32-P024 01	09 MAY 18	LANDING GEAR - PARKING BRAKING - INTRODUCE MODIFIED PARK BRAKE SELECTOR VALVE (PBSELV)
	Applicable to: ALL			
	L43234	27-P023 01	09 MAY 18	FLIGHT CONTROLS - PRIMARY FLIGHT CONTROL SYSTEM (PFCS) - DEFINE AND INSTALL FCGS X10 STANDARD
	Applicable to: ALL			
	L43237	34-P016 00	09 MAY 18	NAVIGATION - AIR DATA/INERTIAL REFERENCE SYSTEM (ADIRS) - DEFINE AND INSTALL ADIRS S4.2 STANDARD
	Applicable to: ALL			
	L43238	42-P014 00	21 MAY 19	NAVIGATION - AIR DATA/INERTIAL REFERENCE SYSTEM (ADIRS) - DEFINE AND INSTALL ADIRS S6 STANDARD
	Applicable to: ALL			
	L43246	42-P007 01	14 MAR 18	FLIGHT CONTROLS - PRIMARY FLIGHT CONTROL SYSTEM (PFCS) - Define and install FCGS SW X9.1 standard
	Applicable to: ALL			
	L43253	32-P022 01	04 MAY 17	LANDING GEAR - LANDING GEAR MANAGEMENT SYSTEM - INTRODUCE S4A2 SOFTWARE FOR BRAKING CONTROL SYSTEM (BCS)
	Applicable to: ALL			
R	L43254	42-P007 01	02 AUG 17	INDICATING/RECORDING SYSTEMS - FWS - ACQUISITION/INTERFACE - Deactivate ETC code 22TS - Inhibit TOS Pack 2 alerts
	Applicable to: ALL			
	L43257	31-P022 02 42-P007 01	22 NOV 17	EQUIPMENT/FURNISHINGS - LININGS AND FURNISHINGS - Remove of «DEACT » sticker for T.O SURV push button
	Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB			
	L43388		09 MAY 18	LANDING GEAR - EXTENSION AND RETRACTION - REVISE COCKPIT PLACARD DISPLAY INFORMATION AND AIRBUS FLIGHT MANUAL (AFM).
	Applicable to: ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB			
R	L43407	31-P019 01	04 MAY 17	INDICATING/RECORDING SYSTEMS - FWS - ACQUISITION/INTERFACE - Activate ETC code 34AD - Modify double IR FAULT procedures
	Applicable to: ALL			

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M[(1)]	MODIFICATION	Linked SB	Incorp. Date	Title
	L43487	42-P007 01	21 AUG 17	INDICATING/RECORDING SYSTEMS - FWS - ACQUISITION/INTERFACE - DEFINE AND INSTALL FWS S5/2.2 STANDARD
	Applicable to: ALL			
	L43488	42-P007 01	02 AUG 17	INDICATING/RECORDING SYSTEMS - DISPLAY SYSTEMS - DEFINE AND INSTALL CDS S5.1 STANDARD
	Applicable to: ALL			
	L43494		21 MAY 19	INTEGRATED MODULAR AVIONICS - AFDX NETWORK - REMOVE 4 AFDX SWITCHES ON ONE NETWORK AND THE ASSOCIATED WIRING
	Applicable to: ET-AWO, ET-AWP, ET-AYA, ET-AYB			
E	L43510	30-P007 00	09 MAY 18	ICE AND RAIN PROTECTION - WING ICE PROTECTION - Add hole through WIPV butterfly to increase heating flow across the valve
	Applicable to: ALL			
	L43538	27-P023 01 31-P022 02	09 MAY 18	EQUIPMENT/FURNISHINGS - LININGS AND FURNISHINGS - REMOVE « DEACT » STICKER FOR ROPS PUSH BUTTON
	Applicable to: ALL			
	L43543	29-P012 01	02 NOV 17	HYDRAULIC POWER - Define and install HMCA S/W upgrade to avoid excessive heat rejection
	Applicable to: ALL			
	L43580		14 MAR 18	ELECTRICAL POWER - BATTERY MAIN GENERATION - ADAPT NI-CAD BATTERIE INSTALLATION
	Applicable to: ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB			
	L43587	34-P022 00	07 NOV 19	NAVIGATION - AIRCRAFT ENVIRONMENT SURVEILLANCE SYSTEM (AESS) - Define and install AESS S4 standard
	Applicable to: ALL			
N	L43594	42-P007 01	06 AUG 20	INDICATING/RECORDING SYSTEMS - FWS - ACQUISITION/INTERFACE - DEFINE AND INSTALL ATQC VERSION V2 FOR FWS S5/2.2
	Applicable to: ALL			
	L43634	42-P007 01	14 MAR 18	FLIGHT CONTROLS - PRIMARY FLIGHT CONTROL SYSTEM (PFCS) - DEFINE AND INSTALL FCGS P9.1.3 STD
	Applicable to: ALL			

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M(1)	MODIFICATION	Linked SB	Incorp. Date	Title
	L44214	27-P030 00	05 FEB 19	FLIGHT CONTROLS - HIGH LIFT CONTROL AND MONITORING - INTRODUCE NEW SFCC S/W STANDARD 5.2
	Applicable to: ALL			
	L44215		07 NOV 19	HYDRAULIC POWER DEFINE AND INSTALL HMCA STANDARD 5.0
	Applicable to: ET-AWP, ET-AYA, ET-AYB			
	L44317		05 MAY 20	AIR CONDITIONING - PRESSURE CONTROL AND MONITORING- DEFINE AND INSTALL CPCS SW5.0
	Applicable to: ET-AYA			
	L48016	34-P018 00	20 FEB 18	NAVIGATION - RADIO ALTIMETER - REVERSE TO DLRA S3.1 STANDARD (ANTI-MOD)
	Applicable to: ALL			
	L48065	31-P025 00	09 MAY 18	INDICATING/RECORDING SYSTEMS - FWS - ACQUISITION/INTERFACE - Define and install ATQC V3 for FWS S5/2.2
	Applicable to: ALL			
	L48109	42-P012 01	21 MAY 19	INDICATING/RECORDING SYSTEMS - CONTROL AND DISPLAY SYSTEM (CDS) - DEFINE AND INSTALL CDS S6 STANDARD
	Applicable to: ALL			
	L48116	42-P012 01	21 MAY 19	INDICATING/RECORDING SYSTEMS - FWS - ACQUISITION/INTERFACE - DEFINE AND INSTALL FWS S6/2.0 STANDARD
	Applicable to: ALL			
N	L48121	42-P014 00	06 AUG 20	ENGINE FUEL AND CONTROL - FUNCTIONAL INTERFACES - DEFINE AND INSTALL ENGINE INTERFACE FUNCTION STANDARD S6-0
	Applicable to: ALL			
	L48124	42-P012 01	21 MAY 19	FLIGHT CONTROLS - PRIMARY FLIGHT CONTROL SYSTEM (PFCS) - Define and Install FCGS SW X11 Standard
	Applicable to: ALL			
E	L48136	42-P013 00	21 MAY 19	ICE AND RAIN PROTECTION - WING ICE PROTECTION - DEFINE AND INSTALL WING ICE PROTECTION SYSTEM STANDARD S5
	Applicable to: ET-ATQ, ET-AUC, ET-AVB, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB			
	L48211	31-P029 00	08 AUG 18	INDICATING/RECORDING SYSTEMS - FWS - ACQUISITION/INTERFACE - DEFINE AND INSTALL ATQC V4 FOR FWS S5/2.2
	Applicable to: ALL			

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M(1)	MODIFICATION	Linked SB	Incorp. Date	Title
	L48350	42-P012 01	21 MAY 19	INDICATING/RECORDING SYSTEMS - DISPLAY SYSTEMS DEFINE AND INSTALL CDS S6.1.1 STANDARD
	Applicable to: ALL			
N	L48352	42-P012 01	06 AUG 20	INDICATING/RECORDING SYSTEMS - FWS - ACQUISITION/INTERFACE - DEFINE AND INSTALL ATQC VERSION V2 FOR FWS S6/2.0
	Applicable to: ALL			
	L48369	31-P032 00	05 FEB 19	INDICATING/RECORDING SYSTEMS - FWS - ACQUISITION/INTERFACE - DEFINE AND INSTALL ATQC VERSION 5 FOR FWS S5/2.2
	Applicable to: ALL			
	L48399		05 MAY 20	FLIGHT CONTROLS - PRIMARY FLIGHT CONTROL SYSTEM (PFCS) - DEFINE AND INSTALL FCGS SW X12 STANDARD
	Applicable to: ET-AYA			
N	L48618		06 AUG 20	INDICATING/RECORDING SYSTEMS - INTEGRATED CONTROL PANELS (ICP) - Define and install water resistant ICP ENG START & ECAM CONTROL PANEL
	Applicable to: ET-AYA, ET-AYB			
	L60118		04 AUG 16	CABIN SYSTEMS - INFLIGHT ENTERTAINMENT SYSTEM - Define IFE system
	Applicable to: ALL			
	L60138		06 FEB 20	INFORMATION SYSTEMS - INTERNAL WIRELESS DATA LINK - Define and Install nWLU for Crew Wireless System
	Applicable to: ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB			
	L60206		04 MAY 16	CABIN SYSTEMS - CDSS - Define and install equipment and wiring for ADU1 and 3 cameras
	Applicable to: ALL			
	L60258		06 MAY 15	FIRE PROTECTION - AVIONICS COMPARTMENT FIRE AND SMOKE DETECTION - Define and install connectivity rack smoke detection
	Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB			
	L60271		06 MAY 15	E/F - ADDITIONAL COMPARTMENTS Integrate FCRC in DMU and adapt secondary structure for FCRC at Z1
	Applicable to: ALL			
	L60411		06 FEB 20	CABIN INFORMATION NETWORK SYSTEM - INFORMATION SYSTEMS - Define and Install HESU
	Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB			

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M(1)	MODIFICATION	Linked SB	Incorp. Date	Title
	L60414		06 MAY 15	CABIN SYSTEMS - ON-BOARD MOBILE TELEPHONY SYSTEM - Define On-Board Mobile Telephony System
	Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB			
	L60527		02 AUG 17	FIRE PROTECTION - LDCC FIRE EXTINGUISHING - Define & Install extended cargo fire suppression capacity (300 min ETOPS, 290 min suppr. time)
	Applicable to: ALL			
	L60655		06 MAY 15	CABIN SYSTEMS - IFE - HEAD END AND CABIN DISTRIBUTION - Define and install 6 WAPs for supplier Thales
	Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP			
	L60718		04 AUG 16	INFORMATION SYSTEMS - INTERNAL WIRELESS DATA LINK - Install SPP Software for activation of Cabin Operation Appplications (COA)
	Applicable to: ALL			
	L62142		06 MAY 15	CABIN SYSTEMS - CIDS - Define "NO PED" sign on DBPS functionality
	Applicable to: ALL			
	L62156		06 MAY 15	CABIN SYSTEMS - IFE - HEAD END AND CABIN DISTRIBUTION - Define PAX INFO switch in cockpit
	Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP			
	L62912		08 NOV 18	CABIN SYSTEMS - TV/ DATA BROADBAND TRANSCEIVER SYSTEM - Activation of KA-Band System Equipment
	Applicable to: ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB			
	L62914		06 MAY 15	OXYGEN - CREW OXYGEN DISTRIBUTION - DEFINE AND INSTALL CREW OXYGEN MASKS IN COCKPIT
	Applicable to: ALL			
	L62965		06 MAY 15	FIRE PROTECTION - DETECTION - Change of SDS application logic in AFT LDCC
	Applicable to: ALL			
	L63018	26-P003 01	10 NOV 16	FIRE PROTECTION - DETECTION - Optimise AFT LDCC Smoke detection System (SDS)
	Applicable to: ALL			
	L63047	44-P017 01	09 MAY 18	CABIN SYSTEMS - CIDS COCKPIT AND INTERCONNECTION - Define CIDS Software Release 5
	Applicable to: ALL			

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M(1)	MODIFICATION	Linked SB	Incorp. Date	Title
	L63782		07 NOV 19	CABIN SYSTEMS - INFLIGHT ENTERTAINMENT (IFE) - HEAD END AND CABIN DISTRIBUTION - Define and Install Thales AC-WAP
	Applicable to: ET-AYA, ET-AYB			
	L64738	44-P017 01	09 MAY 18	CABIN SYSTEMS - CIDS COCKPIT AND INTERCONNECTION - DEFINE CIDS SOFTWARE RELEASE 5.0.6
	Applicable to: ALL			
	L80519		04 AUG 16	FUSELAGE - CENTER FUSELAGE - Remove ventilation Grid for aerodynamic improvement in belly fairing
	Applicable to: ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB			
	L85320	73-P007 00	21 MAY 19	ENGINE FUEL AND CONTROL - ENGINE CONTROL AND FAULT MONITORING - INTRODUCE EEC SOFTWARE STANDARD 6.1.1
	Applicable to: ALL			
	L91040	49-P006 01	02 FEB 17	AIRBORNE AUXILIARY POWER - CONTROL AND MONITORING - Introduce new APS ECB SW Standard 4.0
	Applicable to: ALL			
E	L91102	42-P013 00	21 MAY 19	PNEUMATIC - ENGINE BLEED AIR SUPPLY SYSTEM - INTRODUCE SW STANDARD 5.0 FOR EBAS AND OHDS
	Applicable to: ET-ATQ, ET-AUC, ET-AVB, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB			
	L92178	42-P005 01	10 NOV 16	AIR CONDITIONING - PRESSURIZATION CONTROL - Introduce in-service needs for CPCS post-EIS SW S4
	Applicable to: ALL			
	L95012		26 JAN 16	MISCELLANEOUS - DESIGN WEIGHTS - INTRODUCE WEIGHT VARIANT 001: MTOW 275 T, MLW 207 T, MZFW 195.7 T
	Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE			
	L95014		04 MAY 16	MISCELLANEOUS - ADDITIONAL CERTIFICATION ITEMS - Implement capability for revenue flight with the landing gear extended
	Applicable to: ALL			
	L95029		04 MAY 16	MISCELLANEOUS - DESIGN WEIGHTS - CERTIFY THE AIRCRAFT WITH DUAL OPERATIONAL WEIGHTS: MTOW 275 t AND 255 t
	Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE			

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M(1)	MODIFICATION	Linked SB	Incorp. Date	Title
	L95043		08 NOV 18	MISCELLANEOUS - DESIGN WEIGHTS - INTRODUCE A350-900 WEIGHT VARIANT 016: MTOW 278 T, MLW 207 T, MZFW 195.7 T
	Applicable to: ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB			
	L95103		05 FEB 19	MISCELLANEOUS - DESIGN WEIGHTS - CERTIFY THE A350-900 A/C WITH DUAL OPERATIONAL WEIGHTS: MTOW 278 T (WV016) AND 255 T (WV011)
	Applicable to: ET-AWM, ET-AWN, ET-AWO, ET-AWP			
	22-P006 01		08 FEB 18	FLIGHT MANAGEMENT (FM) - INTRODUCE FMS S4 STANDARD
	Applicable to: ET-ATQ, ET-ATR			
	22-P008 01		08 FEB 18	GENERAL - UPGRADE BTV-ROPS FUNCTION TO STEP 3 WITH ALL RUNWAY STATES FOR POST-EIS
	Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA			
	22-P012 01		08 AUG 19	FLIGHT CONTROLS - PRIMARY (PRIM) PFCS COMPUTER - DEVELOP AUTOMATIC EMERGENCY DESCENT (AED) FUNCTION
	Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB			
	24-P024 01		08 NOV 18	AC MAIN GENERATION -DEFINE GCU S4
	Applicable to: ET-ATQ, ET-ATR, ET-ATY			
	26-P003 01		21 MAY 19	DETECTION - OPTIMISE AFT LDCC SMOKE DETECTION SYSTEM (SDS)
	Applicable to: ET-ATQ, ET-ATR			
	27-P013 01		05 MAY 20	PRIMARY FLIGHT CONTROL SYSTEM (PFCS) -DEFINE AND INSTALL FCGS STANDARD 8
	Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA			
	27-P023 01		21 MAY 19	PRIMARY FLIGHT CONTROL SYSTEM (PFCS) - INSTALL FLIGHT CONTROL AND GUIDANCE SYSTEM (FCGS) X10 STANDARD
	Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD			
	27-P030 00		08 AUG 19	HIGH LIFT CONTROL AND MONITORING - INTRODUCE NEW SFCC SOFTWARE STANDARD 'S5.2'
	Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM			
	28-P006 01		08 FEB 18	FUEL QUANTITY AND MANAGEMENT SYSTEM (FQMS) -DEFINE FQMS V4 SOFTWARE STANDARD
	Applicable to: ET-ATQ, ET-ATR			
	29-P012 01		08 FEB 18	DEFINE AND INSTALL HMCA S/W UPGRADE TO AVOID EXCESSIVE HEAT REJECTION
	Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB			

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M(1)	MODIFICATION	Linked SB	Incorp. Date	Title
E	30-P007 00		21 MAY 19	WING ICE PROTECTION - ADD HOLE THROUGH WING ICE PROTECTION VALVE BUTTERFLY TO INCREASE HEATING FLOW ACROSS THE VALVE
	Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC			
	31-P015 01		05 MAY 20	CONTROL AND DISPLAY SYSTEM (CDS) - DEFINE AND INSTALL CDS S4 STANDARD
	Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA			
	31-P019 01		14 MAR 18	FLIGHT WARNING SYSTEM (FWS) - ACTIVATE THE ECAM TEMPORARY CHANGE (ECAM TC) CODE NO 34AD FOR AIRBUS TEMPORARY QUICK CHANGE (ATQC) ENVELOPE
	Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA			
	31-P022 02		07 NOV 19	INTEGRATED CONTROL PANELS (ICP) - INSTALL NEW ICP MID R AND STICKERS FOR TOS2/TOM AND ROPS FUNCTION MANUAL INHIBITION
	Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB			
	31-P025 00		05 FEB 19	FLIGHT WARNING SYSTEM (FWS) - INSTALL NEW AIRBUS TEMPORARY QUICK CHANGE (ATQC) STANDARD (STD) V3 FOR FWS STD S5/2.2
	Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD			
	31-P029 00		05 FEB 19	FLIGHT WARNING SYSTEM (FWS) - INSTALL NEW AIRBUS TEMPORARY QUICK CHANGE (ATQC) STANDARD (STD) V4 FOR FWS STD S5/2.2
	Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD			
	31-P032 00		21 MAY 19	FLIGHT WARNING SYSTEM (FWS) - INSTALL NEW AIRBUS TEMPORARY QUICK CHANGE (ATQC) STANDARD (STD) V5 FOR FWS STD S5/2.2
	Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE			
	32-P022 01		14 MAR 18	LANDING GEAR MANAGEMENT SYSTEM -INTRODUCE S4A2 SOFTWARE FOR BRAKING CONTROL SYSTEM (BCS) AND S4A1 SOFTWARE FOR WHEEL STEERING CONTROL SYSTEM (WSCS)
	Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB			
	32-P024 01		21 MAY 19	PARKING BRAKING - INTRODUCE MODIFIED PARK BRAKE SELECTOR VALVE
	Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC			
E	32-P037 00		05 MAY 20	LANDING GEAR MANAGEMENT SYSTEM - INTRODUCE BCS SOFTWARE STANDARD S5B, WSCS SOFTWARE STANDARD S5B AND LGERS SOFTWARE S5A
	Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AWM, ET-AWN			

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M(1)	MODIFICATION	Linked SB	Incorp. Date	Title
	34-P016 00		09 MAY 18	AIR DATA/INERTIAL REFERENCE SYSTEM (ADIRS) - INSTALL ADIRS STANDARD S4.2
	Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC			
	34-P018 00		05 FEB 19	RADIO ALTIMETER - REVERSE TO DLRA S3.1 STANDARD (ANTI-MOD)
	Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD			
	34-P022 00		06 FEB 20	AIRCRAFT ENVIRONMENT SURVEILLANCE SYSTEM - DEFINE AND INSTALL AESS S4 STANDARD
	Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO			
	42-P003 01		07 NOV 19	AVIONICS BATCH 2 (PART1)
	Applicable to: ET-ATQ, ET-ATR			
	42-P005 01		06 FEB 20	AVIONICS BATCH 2 (PART2)
	Applicable to: ET-ATQ, ET-ATR			
	42-P007 01		05 FEB 19	AVIONICS BATCH 5 (PART2)
	Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB			
	42-P012 01		05 MAY 20	AVIONICS BATCH 6 - PART 1
	Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN			
E	42-P013 00		05 MAY 20	AVIONICS BATCH 6 - PART 2
	Applicable to: ET-ATQ, ET-AUC, ET-AVB, ET-AWN			
	42-P014 00		05 MAY 20	AVIONICS BATCH 6 - PART 3
	Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN			
	44-P017 01		21 MAY 19	CIDS COCKPIT AND INTERCONNECTION - INSTALL CIDS SOFTWARE RELEASE 5
	Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB			
	49-P006 01		05 FEB 19	CONTROL AND MONITORING -INTRODUCE NEW ECB S/W STD 4.0
	Applicable to: ET-ATQ, ET-ATR			
	73-P007 00		08 AUG 19	ENGINE CONTROL AND FAULT MONITORING - INTRODUCE EEC SOFTWARE STANDARD 6.1.1
	Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM			

(1) Evolution code : N=New, R=Revised, E=Effectivity

GENERAL INFORMATION

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Localization Title	Toc Index	ID	Reason
GEN-PLP-TOC Main FCOM Changes		1	Documentation update: Deletion of the "00025393 January 2020" table of content entry.
			Documentation update: Deletion of the "00025359 December 2019" table of content entry.
			Documentation update: Deletion of the "00025342 November 2019" table of content entry.
			Documentation update: Deletion of the "00025393.0001001 January 2020" documentary unit.
			Documentation update: Deletion of the "00025359.0001001 December 2019" documentary unit.
			Documentation update: Deletion of the "00025342.0001001 November 2019" documentary unit.
			Simplification of configuration management
GEN Automatic Emergency Descent Function	B	1	Documentation update: Addition of "Automatic Emergency Descent Function" documentary unit
GEN Cabin Crew Wi-Fi	B	2	Revision of the abbreviation to be in accordance with the abbreviation list.
GEN EVAC Panel	B	3	Update of the EVAC panel if-installed table to add the HORN OFF pb and the CAPT and PURS switch that are part of the panel.
GEN Passenger Wi-Fi	B	4	Revision of the abbreviation to be in accordance with the abbreviation list.
GEN July 2020	C	5	Documentation update: Addition of "July 2020" documentary unit
GEN June 2020	C	6	Documentation update: Addition of "June 2020" documentary unit
GEN May 2020	C	7	Documentation update: Addition of "May 2020" documentary unit
GEN Definitions	I	8	Update of the definition from "Next" to "Nearest" suitable airport for harmonization purpose and consistency with latest AFM definition and other Airbus aircraft.
GEN Abbreviations	L	9	Addition of the abbreviation APP.
			Addition of the abbreviation ANSA.
			Addition of the abbreviation ASAP.
GEN Abbreviations	L	10	Addition of the abbreviation EQPT.
GEN Abbreviations	L	11	Addition of the abbreviation FCGS.
GEN Abbreviations	L	12	Addition of the abbreviation PLT.

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AIRCRAFT CONFIGURATION SUMMARY

Ident.: GEN-ACS-00022827.0001001 / 09 MAR 16
Applicable to: ALL

For awareness and for the specified aircraft, the following table provides the flight crew with a list of optional aircraft systems and functions related to flight and aircraft operations.

Ident.: GEN-ACS-00022828.0001001 / 09 MAR 16
Applicable to: ALL

Name	System	Installed

Ident.: GEN-ACS-00022832.0001001 / 09 MAR 16
Applicable to: ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB

ADF	NAV	No

Ident.: GEN-ACS-00022832.0003001 / 09 MAR 16
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB

ADF (2 receivers)	NAV	Yes

Ident.: GEN-ACS-00024231.0002001 / 27 JUN 17
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD

Battery Type - Ni-Cad	ELEC	No

Ident.: GEN-ACS-00024231.0001001 / 27 JUN 17
Applicable to: ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB

Battery Type - Ni-Cad	ELEC	Yes

Ident.: GEN-ACS-00023275.0001001 / 27 JUN 17
Applicable to: ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB

Battery Type - Li-Ion	ELEC	No

Ident.: GEN-ACS-00023275.0002001 / 27 JUN 17
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD

Battery Type - Li-Ion	ELEC	Yes

Ident.: GEN-ACS-00022833.0001001 / 09 MAR 16
Applicable to: ALL

FMS - Continuous Descent Approach (CDA)	AUTO FLT	No

Ident.: GEN-ACS-00022834.0003001 / 09 MAR 16
Applicable to: ALL

GLS	NAV	Yes

Ident.: GEN-ACS-00024693.0001001 / 09 MAR 18
Applicable to: ALL

HPFD	CDS	No

Ident.: GEN-ACS-00022835.0001001 / 09 MAR 16
Applicable to: ALL

QFE Baro Setting	CDS	No

Ident.: GEN-ACS-00022839.0002001 / 22 MAR 16
Applicable to: ALL

SLS	NAV	Yes

IF INSTALLED TABLE

Ident.: GEN-IFIT-00022829.0001001 / 09 MAR 16
Applicable to: ALL

The "If Installed" Table below provides a list of optional systems and functions of the aircraft. For most of the optional systems or functions associated with the "if installed" ◁ symbol in the FCOM, the table indicates if the optional systems or functions are installed, or not installed.

Note: *Highly customized options such as cabin installations are not covered in the following table.*

Ident.: GEN-IFIT-00022830.0001001 / 09 MAR 16
Applicable to: ALL

Item	System	Installed

Ident.: GEN-IFIT-00022973.0001001 / 09 MAR 16
Applicable to: ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB

L13

ADF ADFs ADF1 ADF1 pb ADF 1 ADF 1(2) FREQ ENTRY FIELD ADF 1(2) IDENT ENTRY FIELD ADF2 ADF2 pb ADF 2 ADF BEARING DISPLAY ADF FREQ ADF FREQ ENTRY FIELD ADF IDENT ENTRY FIELD ADF Pointer ADF Pointers ADF TUNING Automatic Direction Finder (ADF) BFO Dual ADF system NDB NDB1 NDB2 NDBS NDB-DME Only one ADF Single Automatic Direction Finder (ADF) system SPECIF NDB NOT AVAIL	NAV	No

Ident.: GEN-IFIT-00022973.0003001 / 09 MAR 16

Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB

L13

ADF 2 ADF ADF1 ADF2 ADF1 pb ADF2 pb ADFs ADF 1 ADF 2 ADF 1(2) FREQ ENTRY FIELD ADF 1(2) IDENT ENTRY FIELD ADF BEARING DISPLAY ADF FREQ ADF FREQ ENTRY FIELD ADF IDENT ENTRY FIELD ADF Pointer ADF Pointers ADF TUNING Automatic Direction Finder (ADF) BFO Dual ADF system NDB NDB1 NDB2 NDBS NDB-DME SPECIF NDB NOT AVAIL	NAV	Yes

Ident.: GEN-IFIT-00022947.0001001 / 04 SEP 17

Applicable to: ET-AYA, ET-AYB

L13

ADS-B Traffic ADS-B TRAFFIC 1 ADS-B TRAFFIC 2 ADS-B TRAFFIC 1(2) ADS-B TRAFFIC 1+2 ADS-B TRAFFIC 1(2) FAULT ADS-B TRAFFIC 1+2 FAULT ADS-B TRAFFIC Button TRAFFIC Page	SURV	No

Ident.: GEN-IFIT-00022947.0002001 / 17 NOV 17
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP

L13

ADS-B Traffic ADS-B TRAFFIC 1 ADS-B TRAFFIC 2 ADS-B TRAFFIC 1(2) ADS-B TRAFFIC 1+2 ADS-B TRAFFIC 1(2) FAULT ADS-B TRAFFIC 1+2 FAULT ADS-B TRAFFIC Button TRAFFIC Page	SURV	Yes

Ident.: GEN-IFIT-00022958.0001001 / 09 MAR 16
Applicable to: ALL

L13

Aft Cargo Compartment Ventilation Aft cargo compartment AFT CARGO ISOL AFT CARGO ISOL FAULT AFT CARGO VENT AFT CARGO VENT DEGRADED AFT CARGO VENT FAULT Aft Cargo Ventilation CARGO AFT ISOL VALVES	COND	No

1 Ident.: GEN-IFIT-00025505.0002001 / 08 JUL 20
Applicable to: ALL

L13

Automatic Emergency Descent Function AUTO EMER DES	FG	Yes

Ident.: GEN-IFIT-00022962.0001001 / 09 MAR 16
Applicable to: ALL

Avionics Ground Cooling Unit	VENT	No

Ident.: GEN-IFIT-00023283.0001001 / 09 MAR 16
Applicable to: ALL

Bank Angle Audio Indicator	Flight Envelope	No

Ident.: GEN-IFIT-00022886.0001001 / 09 MAR 16
Applicable to: ALL

L13

Brake Fan Brake Fans BRAKE FAN pb	BRAKES	No

Ident.: GEN-IFIT-00023264.0001001 / 08 NOV 18
Applicable to: ALL
L13

Cabin Crew Rest Compartment CAB REST TEMP CTL CAB REST pb CAB REST FLT(CABIN) REST DET FAULT FLT(CABIN) REST SMOKE	N/A	No

Ident.: GEN-IFIT-00023414.0002001 / 03 JUL 20
Applicable to: ALL

2 Cabin crew Wi-Fi	CAB COM	Yes

Ident.: GEN-IFIT-00023296.0001001 / 07 JUL 16
Applicable to: ALL
L13

CABIN : READY Indication in T.O/LDG Memos and Checklists CABIN : READY CABIN : READY indication	CABIN	No

Ident.: GEN-IFIT-00023271.0001001 / 09 MAR 16
Applicable to: ALL
L13

CABIN READY memo CABIN READY	CAB COM	Yes

Ident.: GEN-IFIT-00022904.0001001 / 09 MAR 16
Applicable to: ALL
L13

Cabin Video Cabin Video Monitoring System Cabin Video Monitoring System (CVMS) CVMS CVMS pb VIDEO pb	CDS-VIDEO	No

Ident.: GEN-IFIT-00024374.0002001 / 17 NOV 17
Applicable to: ALL
L13

Cargo Fire Extinguishing System Suppression Time 290 min 290 min	FIRE	Yes

Ident.: GEN-IFIT-00024375.0001001 / 17 NOV 17
Applicable to: ALL
L13

Cargo Fire Extinguishing System Suppression Time 360 min 360 min	FIRE	No

Ident.: GEN-IFIT-00022905.0001001 / 09 MAR 16
Applicable to: ALL
L13

Cargo Video Lower Deck Surveillance Function	CDS-VIDEO	No

Ident.: GEN-IFIT-00024741.0001001 / 07 MAY 18
Applicable to: ALL
L13

Chemical Oxygen System 15 min 15 min	OXY	No

Ident.: GEN-IFIT-00022906.0002001 / 09 MAR 16
Applicable to: ALL
L13

Cockpit Door Video Cockpit Door Surveillance System Cockpit Door Surveillance System (CDSS) CDSS	CDS-VIDEO	Yes

Ident.: GEN-IFIT-00023399.0001001 / 09 MAR 16
Applicable to: ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB
L13

Cockpit Humidifier HUMIDIFIER sw	COND	No

Ident.: GEN-IFIT-00023399.0002001 / 09 MAR 16
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB
L13

Cockpit Humidifier HUMIDIFIER sw	COND	Yes

Ident.: GEN-IFIT-00023555.0001001 / 14 JUN 16
Applicable to: ALL
L13

Continuous Descent Approach CDA	FMS	No

Ident.: GEN-IFIT-00023602.0001001 / 14 JUN 16
Applicable to: ALL

Crash Axe	N/A	Yes

Ident.: GEN-IFIT-00023634.0002001 / 07 JUL 16
Applicable to: ALL

Crew rest compartments	N/A	Yes

Ident.: GEN-IFIT-00023603.0001001 / 14 JUN 16
Applicable to: ALL

Crow Bar	N/A	No

Ident.: GEN-IFIT-00023700.0001001 / 17 NOV 17
Applicable to: ALL
L13

Emergency Crew Alerting System (ECAS) ECAS	CAB COM	No

Ident.: GEN-IFIT-00023861.0001001 / 03 JUL 20
Applicable to: ALL
3 L13

EVAC Panel COMMAND PB-SW HORN OFF PB CAPT and PURS Switch Evacuation (EVAC) Panel Evacuation (EVAC) signaling EVAC HORN COMMAND EVAC EVAC COMMAND	CAB COM	Yes

Ident.: GEN-IFIT-00025413.0001001 / 04 MAR 20
Applicable to: ALL
L13

Fan Cowl Doors (FCD) keys FCD keys	N/A	No

Ident.: GEN-IFIT-00023265.0002001 / 08 NOV 18
Applicable to: ALL
L13

Flight Crew Rest Compartment FLT REST pb FLT(CABIN) REST DET FAULT FLT(CABIN) REST SMOKE	N/A	Yes

Ident.: GEN-IFIT-00023425.0001001 / 17 NOV 17
Applicable to: ALL

Fourth occupant ACP	COM	No

Ident.: GEN-IFIT-00022957.0001001 / 04 MAY 16
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB
L13

FWD Cargo Compartment Ventilation and Temperature Regulation CARGO FWD ISOL VALVES CARGO FWD TEMP REGUL CARGO FWD TEMP REGUL AVAIL IN FLT Forward cargo compartment FWD Cargo Compartment Temperature Regulation FWD Cargo Compartment Ventilation FWD CARGO ISOL FWD CARGO ISOL FAULT FWD CARGO TEMP FWD CARGO TEMP REGUL FWD CARGO TEMP REGUL DEGRADED FWD CARGO TEMP REGUL FAULT FWD CARGO VENT FWD CARGO VENT DEGRADED FWD CARGO VENT FAULT FWD Cargo Ventilation and Temperature Regulation Temperature regulation in the forward cargo compartment Temperature regulation of the forward cargo compartment	COND	No

Ident.: GEN-IFIT-00022957.0002001 / 04 MAY 16
Applicable to: ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB
L13

FWD Cargo Compartment Ventilation and Temperature Regulation CARGO FWD ISOL VALVES CARGO FWD TEMP REGUL CARGO FWD TEMP REGUL AVAIL IN FLT Forward cargo compartment FWD Cargo Compartment Temperature Regulation FWD Cargo Compartment Ventilation FWD CARGO ISOL FWD CARGO ISOL FAULT FWD CARGO TEMP FWD CARGO TEMP REGUL FWD CARGO TEMP REGUL DEGRADED FWD CARGO TEMP REGUL FAULT FWD CARGO VENT FWD CARGO VENT DEGRADED FWD CARGO VENT FAULT FWD Cargo Ventilation and Temperature Regulation Temperature regulation in the forward cargo compartment Temperature regulation of the forward cargo compartment	COND	Yes

Ident.: GEN-IFIT-00023266.0001001 / 09 MAR 16
Applicable to: ALL

L13

Glareshield PTT pb PTT pb	COM	No

Ident.: GEN-IFIT-00022960.0002001 / 09 MAR 16
Applicable to: ALL

L13

GLS channel GBAS Landing System (GLS) GLS 1(2) GLS 1(2) FAULT GLS 1+2 GLS 1+2 FAULT GLS Approach GLS AUTOLAND GLS CAT I GLS LIMITED TO APPR 1 NAV GLS 1(2) FAULT NAV GLS 1+2 FAULT	NAV	Yes

Ident.: GEN-IFIT-00022940.0001001 / 09 MAR 16
Applicable to: ET-AYA, ET-AYB

HF 2	COM	No

Ident.: GEN-IFIT-00022940.0002001 / 09 MAR 16
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP

HF 2	COM	Yes

Ident.: GEN-IFIT-00023491.0001001 / 08 NOV 18
Applicable to: ALL

L13

HF Datalink HF Data mode Data mode GND HF DATALINK pb-sw DATALINK DATALINK FAULT GND HF DATALINK	COM	Yes

Ident.: GEN-IFIT-00022909.0001001 / 28 APR 17
Applicable to: ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB

L13

HUD CAPT + F/O HUDs CAPT+F/O HUDs CAPT HUD F/O HUD HUD Control Panel Head Up Display Head Up Display (HUD) NAV CAPT(F/O) HUD FAULT NAV CAPT + F/O HUDs FAULT NAV CAPT(F/O) HUD NAV CAPT + F/O HUDs	CDS	No

Ident.: GEN-IFIT-00022909.0002001 / 28 APR 17
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB

L13

HUD CAPT + F/O HUDs CAPT+F/O HUDs CAPT HUD F/O HUD HUD Control Panel Head Up Display Head Up Display (HUD) NAV CAPT(F/O) HUD FAULT NAV CAPT + F/O HUDs FAULT NAV CAPT(F/O) HUD NAV CAPT + F/O HUDs	CDS	Yes

GENERAL INFORMATION

Ident.: GEN-IFIT-00022831.0002001 / 09 MAR 16
Applicable to: ALL
L13

Jettison FUEL JETTISON PANEL JETTISON ACTIVE JETTISON ARM JETTISON ARM pb-sw JETTISON ACTIVE pb-sw JETTISON FAULT JETTISON COMPLETED JETTISON OUTLET JTSN GW JTSN GW ENTRY FIELD JETTISON IN PROGRESS JETTISON INDICATION JETTISON PROC	FUEL	Yes

Ident.: GEN-IFIT-00022910.0001001 / 14 JUN 16
Applicable to: ALL

Landscape Camera	CDS-VIDEO	No

Ident.: GEN-IFIT-00023633.0001001 / 14 JUN 16
Applicable to: ALL

Landscape Camera pb-sw	CDS-VIDEO	No

Ident.: GEN-IFIT-00022961.0001001 / 09 MAR 16
Applicable to: ALL

LAV and Galleys Air Extraction Outlet	VENT	No

Ident.: GEN-IFIT-00025096.0002001 / 15 APR 19
Applicable to: ET-AWO, ET-AWP, ET-AYA, ET-AYB
L13

LED Landing Lights LED-based landing lights	LIGHTS	Yes

Ident.: GEN-IFIT-00025096.0001001 / 15 APR 19
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN
L13

LED Landing Lights LED-based landing lights	LIGHTS	No

Ident.: GEN-IFIT-00025097.0002001 / 15 APR 19
Applicable to: ET-AWO, ET-AWP, ET-AYA, ET-AYB
L13

LED Takeoff Lights LED-based takeoff lights units	LIGHTS	Yes

Ident.: GEN-IFIT-00025097.0001001 / 15 APR 19
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN

L13

LED Takeoff Lights LED-based takeoff lights units	LIGHTS	No

Ident.: GEN-IFIT-00025098.0002001 / 15 APR 19
Applicable to: ET-AWO, ET-AWP, ET-AYA, ET-AYB

L13

LED Taxi and Runway Turn Off Lights LED-based taxi and runway turn off lights	LIGHTS	Yes

Ident.: GEN-IFIT-00025098.0001001 / 15 APR 19
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN

L13

LED Taxi and Runway Turn Off Lights LED-based taxi and runway turn off lights	LIGHTS	No

Ident.: GEN-IFIT-00023398.0001001 / 09 MAR 16
Applicable to: ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB

Li-Ion Batteries	ELEC	No

Ident.: GEN-IFIT-00023398.0002001 / 09 MAR 16
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD

Li-Ion Batteries	ELEC	Yes

Ident.: GEN-IFIT-00023295.0002001 / 09 MAR 16
Applicable to: ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB

MLG Bay Ventilation Air Outlet	VENT	No

Ident.: GEN-IFIT-00023295.0001001 / 09 MAR 16
Applicable to: ET-ATQ, ET-ATR, ET-ATY

MLG Bay Ventilation Air Outlet	VENT	Yes

Ident.: GEN-IFIT-00023411.0002001 / 19 MAY 16
Applicable to: ALL

L13

MOBILE COM pb-sw PAX MOBILE COM DISC memo PAX MOBILE COM DISC	CAB COM	Yes

Ident.: GEN-IFIT-00023336.0001001 / 14 APR 16
Applicable to: ET-ATQ, ET-ATR

NO PED sw	LIGHTS	No

Ident.: GEN-IFIT-00023336.0002001 / 14 APR 16
Applicable to: ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB

NO PED sw	LIGHTS	Yes

Ident.: GEN-IFIT-00023471.0002001 / 07 JUL 16
Applicable to: ALL
L13

NO PORTABLE DEVICES memo NO PORTABLE DEVICES No Portable Electronic Devices NO PED NO PED signs	LIGHTS	Yes

Ident.: GEN-IFIT-00023337.0001001 / 14 APR 16
Applicable to: ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB

NO SMKG/NO PED sw	LIGHTS	No

Ident.: GEN-IFIT-00023337.0002001 / 14 APR 16
Applicable to: ET-ATQ, ET-ATR

NO SMKG/NO PED sw	LIGHTS	Yes

Ident.: GEN-IFIT-00023335.0001001 / 14 APR 16
Applicable to: ALL
L13

NO SMOKING memo NO SMOKING	LIGHTS	Yes

Ident.: GEN-IFIT-00023338.0002001 / 14 APR 16
Applicable to: ALL

NO SMOKING sw	LIGHTS	No

Ident.: GEN-IFIT-00023267.0001001 / 08 NOV 18
Applicable to: ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB
L13

On-board Mobile Telephony System On-board Mobile Telephony System (OMTS) OMTS NO MOBILE NO MOBILE sw NO MOBILE signs Mobile telephony	CAB COM	No

Ident.: GEN-IFIT-00023267.0002001 / 08 NOV 18
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB
L13

On-board Mobile Telephony System On-board Mobile Telephony System (OMTS) OMTS NO MOBILE NO MOBILE sw NO MOBILE signs Mobile telephony	CAB COM	Yes

Ident.: GEN-IFIT-00023294.0002001 / 09 MAR 16
Applicable to: ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB

Pack Bay Ventilation Air Outlets	VENT	No

Ident.: GEN-IFIT-00023294.0001001 / 09 MAR 16
Applicable to: ET-ATQ, ET-ATR, ET-ATY

Pack Bay Ventilation Air Outlets	VENT	Yes

Ident.: GEN-IFIT-00023415.0002001 / 03 JUL 20
Applicable to: ALL
4 L13

Passenger Wi-Fi Internet	CAB COM	Yes

Ident.: GEN-IFIT-00022968.0002001 / 08 NOV 18
Applicable to: ALL
L13

PAX BBAND PAX BBAND bay PAX BBAND pb-sw PAX BBAND DET FAULT PAX BBAND SMK DET PAX BBAND SMOKE PAX BBAND VENT PAX BBAND VENT FAULT SMOKE PAX BBAND DET SMOKE PAX BBAND DET FAULT SMOKE PAX BBAND DET REDUNDANCY SMOKE PAX BBAND SMOKE	CAB COM	Yes

Ident.: GEN-IFIT-00023268.0002001 / 09 MAR 16
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP

PAX INFO pb-sw	CAB COM	Yes

Ident.: GEN-IFIT-00023268.0001001 / 09 MAR 16
Applicable to: ET-AYA, ET-AYB

PAX INFO pb-sw	CAB COM	No

Ident.: GEN-IFIT-00023359.0001001 / 07 JUL 16
Applicable to: ALL

L13

PAX PERS ELEC SPLY pb-sw PED power outlets	ELEC	No

Ident.: GEN-IFIT-00023416.0001001 / 07 JUL 16
Applicable to: ALL

PED power outlets inhibition at slats extension	ELEC	No

Ident.: GEN-IFIT-00023325.0001001 / 09 MAR 16
Applicable to: ALL

L13

Privacy Door Privacy Area Privacy Door Keypad	DOOR	No

Ident.: GEN-IFIT-00023224.0001001 / 09 MAR 16
Applicable to: ALL

L13

QFE Baro Setting QFE	CDS	No

Ident.: GEN-IFIT-00024130.0002001 / 30 JAN 18
Applicable to: ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB

L12

Rain Repellent RAIN RPLNT LEVEL RAIN RPLNT PB Rain repellent system RAIN RPLNT LEVEL INDICATION	Ice and Rain Protection	No

Ident.: GEN-IFIT-00024130.0001001 / 30 JAN 18
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD

L12

Rain Repellent RAIN RPLNT LEVEL RAIN RPLNT PB Rain repellent system RAIN RPLNT LEVEL INDICATION	Ice and Rain Protection	Yes

Ident.: GEN-IFIT-00022868.0001001 / 09 MAR 16
Applicable to: ET-AYA, ET-AYB

L13

Refuel Coupling (Left Wing) Left Wing Refuel Coupling Second Refuel Coupling Refuel Coupling Door	FUEL	No

Ident.: GEN-IFIT-00022868.0002001 / 09 MAR 16
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP

L13

Refuel Coupling (Left Wing) Left Wing Refuel Coupling Second Refuel Coupling Refuel Coupling Door	FUEL	Yes

Ident.: GEN-IFIT-00022867.0001001 / 09 MAR 16
Applicable to: ALL

L13

Refuel pb-sw Refuel Refuel Panel	FUEL	No

Ident.: GEN-IFIT-00024731.0002001 / 08 NOV 18
Applicable to: ALL

L13

ROW/ROP pb-sw ROW/ROP & BTV OFF ROW/ROP	ROW/ROP	Yes

Ident.: GEN-IFIT-00022959.0002001 / 08 JUL 19
Applicable to: ALL

L13

SLS DESELECT SLS BUTTON LP LPV LPV minima LPV-SLS NAV SLS 1(2) FAULT NAV SLS 1+2 FAULT NO SLS FOR THIS APPR FOR FLS: DESELECT SLS ON NAVAIDS Satellite Landing System (SLS) SBAS SLS 1 SLS 1(2) SLS 1(2) FAULT SLS 1+2 SLS 1+2 FAULT SLS function SLS MANUAL TUNING NOT ALLOWED SLS NOT AVAIL: SBAS DESELECTED FOR FLS: DESELECT SLS ON NAVAIDS	NAV	Yes

Ident.: GEN-IFIT-00022967.0001001 / 09 MAR 16
Applicable to: ALL

L13

Spare EFB (EFB3) Spare EFB Spare EFB Button Spare Status Column	OIS	No

Ident.: GEN-IFIT-00023400.0001001 / 09 MAR 16
Applicable to: ALL

L13

SND Standby Navigation Display Standby Navigation Display(SND)	CDS	No

Ident.: GEN-IFIT-00024961.0002001 / 03 JAN 19
Applicable to: ALL

L13

Takeoff Monitoring TAKEOFF MONITORING FUNCTION T.O ACCELERATION DEGRADED	FMS	Yes

Ident.: GEN-IFIT-00022945.0001001 / 14 APR 16
Applicable to: ALL
L13

Taxi Video Taxi Camera Taxi Camera Light Taxi Camera Lights External and Taxiing Aid Camera System External and Taxiing Aid Camera System (ETACS) ETACS Belly Taxi Aid Camera Belly TAC Vertical Stabilizer Taxi Aid Camera Vertical Stabilizer TAC Taxi Aid Camera Taxi Aid Cameras TAC TAXI pb	CDS-VIDEO	No

Ident.: GEN-IFIT-00023468.0001001 / 07 JUL 16
Applicable to: ALL

Telemedicine	CAB COM	No

Ident.: GEN-IFIT-00025313.0001001 / 06 NOV 19
Applicable to: ALL

TURB Button	SURV	Yes

Ident.: GEN-IFIT-00023252.0001001 / 09 MAR 16
Applicable to: ALL

US Unit of Length	CDS	No

Ident.: GEN-IFIT-00023251.0001001 / 16 APR 19
Applicable to: ALL

US Unit of Temperature	CDS	No

Ident.: GEN-IFIT-00023250.0001001 / 09 MAR 16
Applicable to: ALL

US Unit of Weight	CDS	No

Ident.: GEN-IFIT-00023417.0002001 / 28 APR 17
Applicable to: ALL

Video monitoring system	CDS-VIDEO	Yes

Ident.: GEN-IFIT-00023307.0002001 / 14 APR 16
Applicable to: ALL

L13

VOR 2 DME 2 DME2 Dual DME system Dual VOR system VOR VOR2 VOR pb VORs	NAV	Yes

Ident.: GEN-IFIT-00025312.0001001 / 06 NOV 19
Applicable to: ALL

L13

Weather Hazard Prediction Function Weather Hazard Prediction Indications HZD tick box TURB tick box WXR HZD OFF WX+H WX+T+H	SURV	No

Ident.: GEN-IFIT-00023469.0002001 / 07 JUL 16
Applicable to: ALL

Wireless access to the Cabin Crew Mail Application	CAB COM	Yes

MAIN FCOM CHANGES

Applicable to: ALL

Ident.: GEN-GMAIN-00020946.0001001 / 28 APR 14

INTRODUCTION

PURPOSE

The purpose of the MAIN FCOM CHANGES section is to provide general information about the latest FCOM revisions, and to highlight the main changes.

L12

Note: *In addition, each Documentary Unit (DU) highlights the reason(s) for change, and contains revision bars to indicate the revised sections.*
For more information, Refer to GEN FCOM Revision Management.

TIMEFRAME

The MAIN FCOM CHANGES section is updated on a monthly basis, regardless of the revision cycle that is applicable to each Operator.
The subjects in the MAIN FCOM CHANGES are categorized by month, but include revision information only from the previous 6 months.

5 Ident.: GEN-GMAIN-00025533.0001001 / 07 JUL 20

JULY 2020

PROCEDURES - ABNORMAL PROCEDURES

Several Temporary Documentary Units (TDU) associated with Abnormal procedures are modified into classical DU in order to be in line with the new definition of the TDU published in January 2020.
For more information about the TDU standard definition, *Refer to GEN TDU General Description*.

PROCEDURES - ABNORMAL AND EMERGENCY PROCEDURES - OIS

Correction of the OIS CAPT + F/O OIS DISPLAY FAULT ECAM alert in order to reflect the ECAM actions that are displayed on the WD.
Since the FWS Standard S4.2, the procedure offers the possibility to perform a reset of the OIS if the failure of the display is caused by the OIS.

6 Ident.: GEN-GMAIN-00025502.0001001 / 10 JUN 20

JUNE 2020

AIRCRAFT SYSTEMS - ENGINES - TEMPORARY ABNORMAL BEHAVIORS

Introduction of a new Temporary Abnormal Behavior “Erroneous Detection of Engine Fuel Leak” to indicate a possible spurious display of the ENG 1(2) FUEL LEAK SUSPECTED ECAM alert in case of fuel flow discrepancy between the engines, due to an engine misbehavior.
This enables to keep the affected engine running if the alert is confirmed spurious.

NORMAL PROCEDURES - STANDARD OPERATING PROCEDURES - DESCENT PREPARATION - ROP

Introduction of a new TDU to modify the tasksharing when a pilot enters a runway shift on the ANF. As the offside ANF is not fully synchronized, the CM2 enters the runway shift, instead of PF.
This avoids a possible spurious ROW/ROP alert and a strong deceleration rate in BTV mode.

NORMAL PROCEDURES - STANDARD OPERATING PROCEDURES - DESCENT PREPARATION - AUTOBRAKE

Introduction of a new TDU to modify the tasksharing when a runway shift is entered during ROW/ROP preparation. After CM2 enters the runway shift, CM2 continues with BTV preparation and arming (if BTV is used).
This ensures a continuous flow and avoids a possible spurious ROW/ROP alert and a strong deceleration rate in BTV mode.

NORMAL PROCEDURES - STANDARD OPERATING PROCEDURES - TASKSHARING

Introduction of a new TDU to take into account the modifications of the "Descent Preparation" tasksharing when a runway shift is entered during ROW/ROP preparation.

NORMAL PROCEDURES - SUPPLEMENTARY PROCEDURES - FLIGHT WITH GEAR DOWN

Modification of the environmental temperature envelope of the A350-900 to ensure that the temperature of the aircraft components exposed to the outside air is above their qualification temperature.

7 Ident.: GEN-GMAIN-00025480.0001001 / 01 JUN 20

MAY 2020

No major change in this revision.

Ident.: GEN-GMAIN-00025469.0001001 / 09 APR 20

APRIL 2020

AIRCRAFT SYSTEMS - ROW/ROP - BTV - TEMPORARY ABNORMAL BEHAVIORS

Introduction of a new Temporary Abnormal Behavior for A350-900 equipped with PRIM P12. On the RWY CONDITION / BRAKING ACTION matrix, the “Too Short Selection” indication (amber and black barber pole) may not appear in front of the WET / GOOD line when the runway is too short.

Ident.: GEN-GMAIN-00025450.0001001 / 05 MAR 20

MARCH 2020

AIRCRAFT SYSTEMS - AFS - FLIGHT MANAGEMENT SYSTEM - TEMPORARY ABNORMAL BEHAVIOR

Introduction of a new Temporary Abnormal Behavior. On ground or in flight, when the distance between two successive waypoints of the flight plan (active or secondary) is less than 2 NM with a predicted speed of more than 250 kt and a course change equal or above 3 °, the FMS may reset as long as the conditions listed above are present.

If this situation is identified by the Flight Crew, they should delete one of the two waypoints in each F-PLN containing these conditions (active, secondary, or uplinked).

PROCEDURES - NORMAL PROCEDURES - SUPPLEMENTARY PROCEDURES - ENGINES - CROSSBLEED ENGINE START

Modification of the temporary (TDU) procedure CROSSBLEED ENGINE START - AFTER START . The time during which the thrust lever is set above idle changes from 1 min to 30 s. This time is sufficient to avoid triggering the ENG STATOR A-ICE VLV CLOSED ECAM alert.

Ident.: GEN-GMAIN-00025411.0001001 / 06 FEB 20

FEBRUARY 2020

AIRCRAFT SYSTEMS - LANDING GEAR - BRAKING SYSTEM - TEMPORARY ABNORMAL BEHAVIOR

Introduction of two Temporary Abnormal Behaviors. In some failure modes of the landing gear lever, the Brake Control System (BCS) may consider the landing gear lever in an erroneous position. Each TAB provides a procedure to be applied in this situation to identify the failure mode.

FCOM PURPOSE

Applicable to: ALL

Ident.: GEN-GPURP-00020640.0001001 / 28 APR 14

GENERAL

The Flight Crew Operating Manual (FCOM) is a support documentation for flight crew.

The purpose of the FCOM is to:
- Provide all necessary operating limitations, procedures, techniques, performance and system information the flight crew needs to safely and efficiently operate the A350 during normal, abnormal and emergency situations.
- Serve directly as a Flight Crew Operating Manual, or as a basis for Operators to develop their own customized Airline Operations Manual, in accordance with applicable requirements
- Serve as a comprehensive reference guide during initial and refresher flight crew training.

Note: *This manual is not designed:*
- *To teach basic piloting skills*
- *To provide basic piloting techniques applicable to jet aircraft , or information, that are considered as basic airmanship for trained flight crews who are familiar with that type of aircraft and its general handling characteristics.*

The Flight Crew Operating Manual (FCOM) complements the Airplane Flight Manual (AFM).
If the FCOM data differs from the AFM data, the AFM remains the reference.

As a supplement to the FCOM, the FCTM may provide additional information that the flight crew should read in conjunction with the FCOM. For more information, *Refer to FCTM/GI FCTM Purpose*.

Ident.: GEN-GPURP-00020800.0001001 / 07 JUL 16

QUESTIONS AND SUGGESTIONS

For any questions or comments related to this manual, the Operator’s Flight Operations Management can contact the Airbus Flight Operations Support and Training Standard department.

FCOM CONTENTS

Ident.: GEN-00020808.0001001 / 03 JAN 20

Applicable to: ALL

The FCOM has four sections:

L12
- Aircraft Systems : This section is divided into ATA chapters for each aircraft system. This section includes a specific description of each system and its associated cockpit interfaces.
  When several layouts are possible for the same cockpit interface (e.g. when the position of the ON/OFF label of a switch changes depending on the aircraft configuration), the FCOM may describe only one typical layout.
- Procedures : This section contains the following chapters:
  - Normal Procedures that include the SOPs and Supplementary Procedures
  - Abnormal and Emergency Procedures
  - Special Operations.

L12
- Limitations : This section provides the aircraft and system limitations that the flight crew must know or refer to in operations.
  This section is divided into aircraft and system-related limitations in a similar way to the ABNORMAL And EMERGENCY PROCEDURES section.
- Performance : This section includes the aircraft performance for each flight phase.

Note: *The Operators are responsible for customizing the structure and the content of their documentation at their convenience, in accordance to their fleet configuration and applicable local requirements.*

In addition, the FCOM has the following chapters, as required:

L12	List of Modifications (LOM)	:	The LOM provides a list of aircraft modifications, also referred to as criteria (Modification Proposals (MPs) and Service Bulletins (SBs), that affect the FCOM. For more information, *Refer to GEN FCOM Revision Management*.
L12	General Summary of Highlights (SOH)	:	The General SOH chapter provides a list of all changes and associated reasons of the FCOM revision. For more information, *Refer to GEN FCOM Revision Management*.
L12	Operations Engineering Bulletins (OEBs)	:	The OEB chapter provides a list and description of all applicable Operations Engineering Bulletins (OEBs). For more information, *Refer to OEB-000 Introduction*.
L12	Temporary Abnormal Behaviors	:	This section provides the list of all abnormal behaviors of the FCOM with a link to access the appropriate FCOM section. For more information, *Refer to GEN TAB General Description*
L12	Temporary Documentary Units (TDUs)	:	The TDU chapter provides a list of all applicable Temporary Documentary Units (TDUs). For more information, *Refer to GEN TDU General Description*.

HOW CAN AN OPERATOR OBTAIN AN UPDATED FCOM?

Ident.: GEN-00020936.0001001 / 13 MAY 14
Applicable to: ALL

Airbus provides the Operator/aircraft owner with a FCOM that corresponds to the aircraft configuration at delivery, and the necessary revisions further to any configuration change associated to Airbus-approved modifications.
The Operator/owner must inform Airbus without delay of the effective changes to the aircraft delivery configuration made through Airbus Service Bulletin (SB). This permits Airbus to provide the Operator/owner with the FCOM revisions/updates.
The Operator/owner must timely report any SB installation to the following address:

e-mail : sb.reporting@airbus.com

Airbus will not provide revisions, and will not take responsibility for any effect on the FCOM:
- Due to modifications installed by third parties without an Airbus SB, and/or
- Due to modifications installed through an Airbus SB, if Airbus is not informed of the SB installation.

FCOM USE AND ORGANIZATION

Applicable to: ALL

Ident.: GEN-GUSEO-00020932.0001001 / 28 APR 14

DOCUMENTARY UNIT (DU)

The FCOM is made of Documentary Units (DU). The DU is the smallest part of information with a technical content.

DU IDENTIFICATION STRIP

The information is available in the OPS LIBRARY consultation toolbar by selecting the “DOC REF” option in the INFO drop down list. Once "DOC REF" is selected, above the title of the DU, the gray identification strip indicates for each DU:

- The DU identification (Id.). Each DU is identified by its unique identification number.
- The DU date. This date corresponds to the date at which the DU has been revised.
- The “Criteria” field that indicates the aircraft configuration to which the DU applies.

Note: *XW stands for Xtra Widebody meaning that this DU is applicable to the A350 family.*

- The "Applicable to" field that provides the list of the aircraft to which the DU applies.

Note: *This field may indicate either MSN or aircraft registration number, depending on customization. When MSN is used, the field may display a range of values, for e.g. 0012-0220 that indicates all MSNs from MSN 0012 up to and including MSN 0220.*

Ident.: GEN-GUSEO-00020843.0001001 / 28 APR 14

INFORMATION TYPES AND LAYERS

The FCOM has technical information that may be used for:

- Flight crew operations in flight, or on ground
- Refresher training.

Therefore, the FCOM is organized in three layers as follows:

- Layer 1: "Need to know"
  Layer 1 presents information that is necessary in the cockpit.
- Layer 2: "Nice to know"
  Layer 2 presents information that is used as a reference, in order to fully understand the logic of the aircraft and pilot interfaces.
- Layer 3: Detailed information.
  Layer 3 provides more detailed explanations, that are not necessarily needed in flight.

The text in each layer appears on a different colored background.

When the flight crew selects a layer of information, it remains selected during the consultation of several documentary units.

Ident.: GEN-GUSEO-00020849.0001001 / 02 MAY 14

HOW TO USE THE FCOM

For more information on the EFB "OPS LIBRARY" application that hosts the FCOM manual, *Refer to DSC-46-OIS-20-80-70 OPS LIBRARY*.

Ident.: GEN-GUSEO-00020852.0001001 / 09 MAR 16

OPTIONAL EQUIPMENT

The legend ◁ (If Installed) indicates that a paragraph or an illustration is applicable only if the related optional equipment is installed.

FCOM REVISION MANAGEMENT

Applicable to: ALL

Ident.: GEN-GREVM-00020882.0001001 / 18 JUN 15

FCOM REVISION CYCLE

The FCOM revision adds, updates, or deletes information. The Operator determines the revision cycle.
When necessary (e.g. need for urgent update), Airbus issues an immediate revision regardless of the revision cycle.

FCOM ISSUE DATE

An issue date identifies each FCOM revision.
The issue date appears at the top of the Navigation Tree of the EFB OPS LIBRARY application.

HIGHLIGHTS AND REVISION MARKS

A vertical bar in the margin of the DU identifies the modified part.
The vertical bar is available in the OPS LIBRARY consultation toolbar by ticking the “REV MARKS” option in the INFO drop down list.
L2 For more information, *Refer to DSC-46-OIS-20-80-70 INFO List*.
L1 The user can display the associated reason of the change by clicking on the bar.
L2 If the change is significant, the reason for the change is in bold.
L1 The General Summary Of Highlights (General SOH) provides a list of all changes and associated reasons of the FCOM revision.

FCOM REVISION CONTENTS

Each FCOM revision contains the following information that is useful to update the FCOM and to identify the changes that the revision has inserted:
- The General SOH
- The List of Modifications (LOM).

GENERAL SUMMARY OF HIGHLIGHTS (GENERAL SOH)

The General SOH chapter provides the list of all the changes inserted by a FCOM revision. For each change, the General SOH provides:
- A link to the applicable part of the manual affected by the change
- The technical reason for each revision.

LIST OF MODIFICATIONS (LOM)

The LOM provides a list of aircraft modifications, also referred to as criteria (Modification Proposals (MPs) and Service Bulletins (SBs), that affect the FCOM.

The LOM also indicates:
- The title of the criteria
- The date of incorporation of the criteria in the FCOM
- The list of aircraft that have the criteria
- The “M” field that may indicate the following Evolution Code:
  - The “E” letter indicates an aircraft effectivity change for the criteria: The list of aircraft to which the criteria applies has changed compared to the previous FCOM revision, by addition or deletion of one or several aircraft
  - The “N” letter indicates new criteria added by this FCOM revision
  - The “R” letter indicates a change in the criteria title or associated SB.

Ident.: GEN-GREVM-00020886.0001001 / 28 APR 14

OPERATIONS ENGINEERING BULLETINS

Operations Engineering Bulletins (OEB) are issued when it is necessary to rapidly transmit technical and procedural information.
The OEB chapter provides a list of all applicable OEBs.
L2 For more information, *Refer to OEB-000 Introduction*.

DEFINITIONS

Ident.: GEN-00020887.0001001 / 03 JUL 20
Applicable to: ALL

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CAUTION	:	An operating procedure, technique, or information that may result in damage to equipment if not followed.
Daylight operations	:	Period between the beginning of the morning civil twilight and the end of the evening civil twilight relevant to the local aeronautical airspace, or such other period, as may be prescribed by the appropriate Authority.
Extended overwater flight	:	A flight where the aeroplane is operated over water at a distance away from land greater than 400 NM.
Icing conditions	:	Icing conditions exist when OAT on the ground and for takeoff, or TAT in flight is 10 °C (50 °F) or below and visible moisture in any form is present (such as clouds, fog with visibility of 1 sm/1 600 m or less, rain, snow, sleet or ice crystals). Icing conditions also exist when the OAT on the ground and for takeoff is 10 °C (50 °F) or below when operating on ramps, taxiways, or runways where surface snow, ice, standing water or slush may be ingested by the engines or freeze on engines, nacelles or engine sensor probes.
LAND ANSA	:	Land At Nearest Suitable Airport. Consider landing at the nearest suitable airport. *Note:* *The suitability criteria should be defined in accordance with the Operator's policy.*
LAND ASAP	:	Land As Soon As Possible. Land as soon as possible at the nearest airport at which a safe landing can be made. *Note:* *LAND ASAP information is applicable to a time-critical situation.*
Note	:	An operating procedure, technique, or information that is considered essential to emphasize. Information contained in notes may also be safety related.
VMC	:	Under IFR or VFR, the crew must maintain Visual Meteorological Conditions (VMC).

WARNING	:	An operating procedure, technique, or information that may result in personal injury or loss of life if not followed.

TDU GENERAL DESCRIPTION

Ident.: GEN-00025364.0001001 / 03 JAN 20
Applicable to: ALL

A TDU in the FCOM informs the flight crew about a temporary change in a normal Standard Operation Procedure, Advisory or Limitations. The TDU contains the reason for change in order to better understand and memorize this temporary change.

The TDU contains several indications:
- The date of application of the new or revised content
- The reason for change explains why the section is updated with a short general description of the malfunction
- The yellow dash line indicates the affected documentary unit
- When applicable, the arrow link provides a link to the previous content.

TAB GENERAL DESCRIPTION

Ident.: GEN-00025365.0001001 / 03 JAN 20
Applicable to: ALL

A TAB is a description of a system behavior that temporarily deviates from the intended system design and that the flight crew can notice.
The TAB enables the flight crew to better recognize, understand and if applicable, react to the abnormal system behavior in order to avoid any undue operational delay.
When applicable, temporary abnormal behaviors are described in the related section of the Aircraft System in a dedicated product folder identified as "Temporary Abnormal Behaviors".
Each TAB contains a description of the malfunction with an alternative instruction called "Operational recommendation" (if applicable).

ABBREVIATIONS

Ident.: GEN-00000085.0001001 / 09 JUL 20
Applicable to: ALL

9 **A**

Abbreviation	Term
AAL	Above Aerodrome Level
AAP	Additional Attendant Panel
A.FLOOR	Alpha Floor
A/BRK	Autobrake

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Abbreviation	Term
A/C	Aircraft
A/THR	Autothrust
A623	ARINC 623 format for FANS A+
ABSELV	Alternate Brake Selector Valve
ABV	Above
ABN	Abnormal
AC	Alternating Current
ACARS	Aircraft Communication Addressing and Reporting System
ACC	Active Clearance Control, Acceleration
ACCEL	Acceleration
ACCU	Accumulator
ACD	Airworthiness Compliance Document
ACFT	Aircraft
ACM	Air Cycle Machine
ACMS	Aircraft Condition Monitoring System
ACP	Area Control Panel
ACQ	Acquisition
ACR	Avionics Communication Router
ACS	Air Conditioning System
ADF	Automatic Direction Finder
ADGB	Active Differential GearBox
ADHF	Adaptive Droop Hinge Function
ADIRS	Air Data/Inertial Reference System
ADIRU	Air Data/Inertial Reference Unit
ADK	Activate/Dialing Key
ADR	Air Data Reference
ADS	Automatic Dependent Surveillance
ADS-B	Automatic Dependent Surveillance - Broadcast
ADS-C	Automatic Dependent Surveillance - Contract
ADV	Advisory
AECM	Alternate Extension Control Module
AES	Automatic Extension System
AESS	Aircraft Environment Surveillance System
AESU	Aircraft Environment Surveillance Unit
AFM	Airplane Flight Manual
AFS	Automatic Flight System
AGL	Above Ground Level
A-ICE	Anti-Ice
AICF	Anti-Ice Control Function
AIP	Attendant Indication Panel, Aeronautical Information Publication

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Abbreviation	Term
AIR COND	Air Conditioning
ALL ENG FF	All Engines Fuel Flow
ALD	Actual Landing Distance
ALT	Altitude
ALT CRZ	Altitude Hold of the Cruise Flight Level
ALT CRZ*	Altitude Capture of the Cruise Flight Level
ALT CST	Altitude Constraint Hold Mode
ALT CST*	Altitude Constraint Capture Mode
ALT*	Altitude capture Mode
ALTN	Alternate
AM	Amplitude Modulation
AMI	Airline Modifiable Information
AMSL	Above Mean Sea Level
AMU	Audio Management Unit
ANF	Airport Navigation Function
ANSA	At Nearest Suitable Airport
AOA	Angle-Of-Attack
AOC	Airline Operational Control
AP	Autopilot
APP	Approach
APPR	Approach
APU	Auxiliary Power Unit
ARINC	Aeronautical Radio Incorporated
ARP	Airport Reference Point
ARPT	Airport
ARS	Auto Retraction System
ARV	Alternate Refill Valves
ASAP	As Soon As Possible
ASCU	Air System Control Unit
ASD	Accelerate Stop Distance
ASDA	Accelerate Stop Distance Available
A-SKID	Antiskid
ASPSU	Autonomous Standby Power Supply Unit
ASV	Alternate Servo Valve
ATA	Air Transport Association
ATC	Air Traffic Control
ATIS	Automatic Terminal Information Services
ATM	Air Traffic Management
ATN	Aeronautical Telecommunications Network
ATQC	Airbus Temporary Quick Change

Continued on the following page

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Abbreviation	Term
ATS	Air Traffic Service
ATT	Attitude
ATU	Auto Transformer Unit
AUTO	Automatic
AUTO BRK	Autobrake
AVAIL	Available
AVNCS	Avionics
AZIM	Azimuth

B

Abbreviation	Term
B/C	Back Course
BAC	Back Course
BARO	Barometric
BAS	Bleed Air System
BAT	Battery
BBAND	Broadband
BCF	Brake Cooling Fans
BCM	Backup Control Module
BCS	Brake Control System
BFO	Beat Frequency Oscillator
BKUP	Backup
BLK	Block
BOMU	Bleed and Overheat Monitoring Unit
BLW	Below
BPS	Backup Power Supply
BRG	Bearing
BRK	Brake
BRAKES CTL	Brakes Control
BRT	Bright, Brightness
BSF	Backup Steering Function
BTMS	Brake Temperature Monitoring System
BTV	Brake to Vacate

C

Abbreviation	Term
C/B	Circuit Breaker
C/L	Checklist
CAB	Cabin
CAPT	Captain

Continued on the following page

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Abbreviation	Term
CAS	Calibrated Air Speed
CAT	Category, Clear Air Turbulence
CAUT	Caution
CBMF	Circuit Breaker Monitoring Function
CCD	Cursor Control Device
CCOM	Cabin Crew Operating Manual
CCRC	Cabin Crew Rest Compartment
CDA	Continuous Descent Approach
CDL	Configuration Deviation List
CDLS	Cockpit Door Locking System
CDM	Coolant Distribution Module
CDO	Continuous Descent Operations
CDS	Control and Display System
CDSS	Cockpit Door Surveillance System
CF	Cost of Fuel
CG	Center of Gravity
CI	Cost Index
CIDS	Cabin Intercommunication Data System
CINS	Cabin Information Network System
CKPT	Cockpit
CL	Coefficient of Lift, Climb Detent on Thrust Levers
CLB	Climb
CLR	Clear
CM	Conversion Module
CM1	Crewmember 1 (Left Seat)
CM2	Crewmember 2 (Right Seat)
CMS	Constant Mach Segment, Central Maintenance System
CMV	Concentrator and Multiplexer for Video
CNS	Communication Navigation and Surveillance
COM	Communication
COND	Conditioning
CONF	Configuration
CONFIG	Configuration
CP	Control Panel
CPA	Closest Point of Approach
CPCS	Cabin Pressure Control System
CPDLC	Controller/Pilot Datalink Communication
CPIOM	Core Processing Input/Output Module
CPNY	Company
CRC	Continuous Repetitive Chime

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Abbreviation	Term
CRDC	Common Remote Data Concentrator
CRS	Course
CRZ	Cruise
CST	Cabin Service Trainer
CSAS	Conditioned Service Air System
CSTR	Constraint
CT	Cost of Time
CTL	Control
CTR TK	Center Tank
CVMS	Cabin Video Monitoring System
CVR	Cockpit Voice Recorder
CWY	Clearway

D

Abbreviation	Term
DA	Decision Altitude
D-ATIS	Digital Automatic Terminal Information Services
DC	Direct Current
DCLB	Derated Climb
DCT	Direct
DD	Day (entry format)
DDD	Decompression Deceleration Device
DECEL	Decelerate, Deceleration Point
DES	Descend, Descent
DEST	Destination
DEU	Decoder/Encoder Unit
DEV	Deviation
DFDR	Digital Flight Data Recorder
DFS	Differential Flap Setting
DGPS	Differential Global Positioning System
DH	Decision Height
DIR	Direction, Direct, Director
DIR TO	Direct To
DISA	Deviation from ISA law
DIST	Distance
DLCS	Data Loading and Configuration System
DME	Distance Measuring Equipment
DOC	Direct Operating Cost
DSCS	Doors and Slides Control System
DTO	Derated Takeoff
DU	Display Unit, Documentary Unit

10 E

Abbreviation	Term
EASA	European Aviation Safety Agency
EBAS	Engine Bleed Air System
EBHA	Electrical Backup Hydraulic Actuator
ECAM	Electronic Centralized Aircraft Monitoring
ECAS	Emergency Crew Alerting System
ECB	Electronic Control Box
ECON	Economy
ECP	ECAM Control Panel
ED	Engine Display
EDP	Engine Driven Pump
EEC	Engine Electronic Controller
EFB	Electronic Flight Bag
EFF	Electronic Flight Folder
EFIS	Electronic Flight Instrument System
EFOB	Estimated Fuel On Board
EGPWS	Enhanced Ground Proximity Warning System
EGT	Exhaust Gas Temperature
EHA	Electro-Hydrostatic Actuator
EHS	Enhanced Surveillance
EIF	Engine Interface Function
EIM	Engine Interface Management
EIU	Engine Interface Unit
ELCO	Exterior Light Controller
ELEC	Electrical
ELEVN	Elevation
ELMF	Electrical Load Management Function
ELT	Emergency Locator Transmitter
ELS	Elementary Surveillance
ENMF	Electrical Network Management Function
EMER	Emergency
EMU	Engine Monitoring Unit
ENG	Engine
ENT	Entry
EO	Engine-Out
EOSID	Engine-Out Standard Instrument Departure
EP	End Point
EPCU	External Power Control Unit
EPDC	Electrical Power Distribution Center
EPDS	Electrical Power Distribution System

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Continued from the previous page

Abbreviation	Term
EPSU	Emergency Power Supply Unit
EPU	Estimated Position Uncertainty
EQPT	Equipment
ERAI	Emergency Ram Air Inlet
ERP	External Refuel Panel
ESC	Escape
ESS	Essential
ESSAI	Engine Stator Anti-Ice
ETA	Estimated Time of Arrival
ETACS	External and Taxiing Aid Camera System
ETOPS	Extended Twin Engine Operation
ETP	Equi-Time Point
ETT	Estimated Takeoff Time
ETRAC	Electrical Thrust Reverser Actuation Controller
ETRAS	Electrical Thrust Reverser Actuation System
EVAC	Evacuate
EXT	External

11 **F**

Abbreviation	Term
F	Minimum Flap Retract Speed
F/CTL	Flight Controls
F/O	First Officer
FAA	Federal Aviation Administration
FADEC	Full Authority Digital Engine Control
FAF	Final Approach Fix
FANS	Future Air Navigation System
FAP	Final Approach Point, Flight Attendant Panel, Forward Attendant Panel
FAR	Federal Aviation Regulations
FCDC	Flight Control Data Concentrator
FCGS	Flight Control and Guidance System
FCOM	Flight Crew Operating Manual
FCRC	Flight Crew Rest Compartment
FCTM	Flight Crew Techniques Manual
FCU	Flight Control Unit, Fuel Control Unit
FD	Flight Director
FDP	Final Descent Point
FDRS	Flight Data Recording System
FE	Flight Envelope
FEP	Final End Point

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Abbreviation	**Term**
FF	Fuel Flow
FG	Flight Guidance
F-G/S	FLS Glide Slope, FLS Glide Slope Track Mode
F-G/S*	FLS Glide Slope Capture Mode
FIN	Functional Identification Number
FL	Flight Level
FLD	Factored Landing Distance
FLEX	Flexible
F-LOC	FLS Localizer, FLS Localizer Track Mode
F-LOC*	FLS Localizer Capture Mode
FLRS	Flap Load Relief System
FLS	FMS Landing System
FLT	Flight
FLX	Flexible
FM	Flight Management, Frequency Modulation
FMA	Flight Mode Annunciator
FMC	Flight Management Computer
FMS	Flight Management System
FMV	Fuel Metering Valve
FO	Fully Open
FOB	Fuel On Board
FOD	Foreign Object Damage
FOHE	Fuel/Oil Heat Exchanger
FPA	Flight Path Angle
FPD	Flight Path Director
FPF	Fire Protection Function
FPMF	Fuel Penalty Monitoring Function
F-PLN	Flight Plan
FPMU	Fuel Properties Measurement Unit
FPS	Fire Protection System
FPV	Flight Path Vector
FQI	Fuel Quantity Indication
FQMS	Fuel Quantity and Management System
FREQ	Frequency
FSM	Flight System Message
FSOV	Fire Shut Off Valve
FTIS	Fuel Tank Inerting System
FTO	Flexible Takeoff
FU	Fuel Used
FWC	Flight Warning Computer

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Abbreviation	Term
FWD	Forward
FWS	Flight Warning System
FZFG	Freezing Fog

G

Abbreviation	Term
G/S	Glide Slope
G/S*	Glide Slope Capture Mode
GA	Go-Around
GBAS	Ground Based Augmentation System
GCU	Ground Control Unit, Generator Control Unit
GD	Green Dot
GDOT	Green Dot
GEN	Generator
GES	Ground Earth Station
GLA	Gust Load Alleviation
GLS	GBAS Landing System
GND	Ground
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
GPIRS	Global Positioning and Inertial Reference System
GPRS	General Packet Radio Service
GPWS	Ground Proximity Warning System
GRVTY	Gravity
GS	Ground Speed, Ground Servicing
GSM	Global System for Mobile communications
GW	Gross Weight
GWCG	Gross Weight Center of Gravity

H

Abbreviation	Term
HA	Holding pattern to an Altitude termination
HCU	Head-up Combiner Unit
HCF	Heading Control Function
HDG	Heading
HF	High Frequency, Holding pattern to a Fixed waypoint
HGA	High Gain Antenna
HH	Hours (entry format)
HHX	Hydraulic Heat Exchanger
HI	High

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Abbreviation	Term
HM	Holding pattern with a Manual termination
HMC	Hydraulic Monitoring and Control
HMCA	Hydraulic Monitoring and Control Application
HMCRF	Hydraulic Monitoring and Control Remote Function
HMU	Hydromechanical Unit
HP	High Pressure
HPA	High Power Amplifier
hPFD	harmonized Primary Flight Display
HPU	Head-up Projection Unit
HUD	Head-Up Display
HYD	Hydraulic

I

Abbreviation	Term
IAF	Initial Approach Fix
IAS	Indicated Airspeed
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
IDENT	Identification
IFE	In-Flight Entertainment
IFEC	In-Flight Entertainment Center
IFR	Instrument Flight Rules
IGGS	Inert Gas Generation System
IGN	Ignition
IGS	Instrument Guidance System
IGV	Inlet Guide Vane
ILS	Instrument Landing System
IMA	Integrated Modular Avionics
IMC	Instrument Meteorological Conditions
IN-BND	Inbound
IN-FLT	In Flight
INFO	Information
INIT	Initialization
INOP	Inoperative
INT	Interphone
INTCPT	Intercept
INV	Inverter
IP	Intermediate Pressure
IPCU	Ice Protection Control Unit
IR	Inertial Reference

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Abbreviation	Term
IRS	Inertial Reference System
ISA	International Standard Atmosphere
ISIS	Integrated Standby Instrument System
ITP	In-Trail Procedure

J

Abbreviation	Term
JAA	Joint Aviation Authorities
JTSN	Jettison

K

Abbreviation	Term
KBD	Keyboard
KCCU	Keyboard and Cursor Control Unit
KOZ	Keep Out Zone

L

Abbreviation	Term
L	Left
L/G	Landing Gear
L/G CTL	Landing Gear Control
LAF	Load Alleviation Function
LAND	Landing
LAT	Latitude, Lateral
LAV	Lavatory
LCD	Liquid Crystal Display
LCTR	Locator
LD	Landing Distance
LDA	Landing Distance Available, LOC type Directional Aid
LDEV	Lateral Deviation
LDG	Landing
LGCIS	Landing Gear Control Indication System
LGERS	Landing Gear Extension and Retraction System
LGMS	Landing Gear Monitoring System
LH	Left Hand
LIM	Limit, Limitation
LL	Latitude/Longitude
LNAV	Lateral Navigation
LO	Low
LOC	Localizer, Localizer Track Mode

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Abbreviation	**Term**
LOC B/C	Localizer Back Course Track Mode
LOC B/C*	Localizer Back Course Capture Mode
LOC*	Localizer Capture Mode
LOM	List Of Modifications
LONG	Longitude
LP	Localizer Performance, Low Pressure
LPV	Localizer Performance with Vertical Guidance
LRC	Long Range Cruise
LS	Landing System
LSK	Line Selection Key
LT	Light
LVR	Lever
LW	Landing Weight

M

Abbreviation	**Term**
MAG	Magnetic
MAN	Manual
MAINT	Maintenance
MAP	Missed Approach Point
MAX	Maximum
MCL	Maximum Climb Thrust
MCT	Maximum Continuous Thrust
MD	Maximum Dive Speed
MDA	Minimum Descent Altitude
MDH	Minimum Descent Height
MEA	Minimum En Route Altitude
MEL	Minimum Equipment List
MEM	Memory Items
MFD	Multifunction Display
MFP	Multifunction Probe
MIN	Minimum
MKR	Marker beacon
MLA	Maneuver Load Alleviation
MLE	Maximum Landing Gear Extended Mach
MLG	Main Landing Gear
MLO	Maximum Landing Gear Operating Mach
MLW	Maximum Landing Weight
MM	Middle Marker, Minutes (entry format)
MMEL	Master Minimum Equipment List

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Abbreviation	Term
MMM	Month (entry format)
MMO	Maximum Operating Mach
MMR	Multi-Mode Receiver
MP	Modification Proposal
MORA	Minimum Off Route Altitude
MRA	Recommended Turbulence Penetration Mach
MRP	Map Reference Point
MSA	Minimum Safe Altitude
MSG	Message
MSL	Mean Sea Level
MSN	Manufacturer Serial Number
MTOW	Maximum Takeoff Weight
MTW	Maximum Taxi Weight
MZFW	Maximum Zero Fuel Weight

N

Abbreviation	Term
N	North, Rotor Speed
N/A	Not Applicable
N1	Engine Low Pressure Rotor Speed
N2	Engine Intermediate Pressure Rotor Speed
N3	Engine High Pressure Rotor Speed
NADP	Noise Abatement Departure Procedure
NAI	Nacelle Anti-Ice
NAV	Navigation
NAVAID	Navigation Aid
NAVAIDS	Navigation Aids
NBPT	No Break Power Transfer
NBSELV	Normal Brake Selector Valve
ND	Navigation Display
NDB	Non-Directional Beacon
NEA	Nitrogen Enriched Air
NIV	Nose Isolation Valve
NLG	Nose Landing Gear
NORM	Normal
NOTAM	Notice To Airmen
NPA	Non Precision Approach
NSV	Normal Servo Valve
NWS	Nose Wheel Steering
NWSSV	Nose Wheel Steering Servo Valve

O

Abbreviation	Term
OAT	Outside Air Temperature
OCED	Operator-Customized ECAM Database
OCU	Outflow valve Control Unit
OEB	Operations Engineering Bulletin
OEI	One Engine Inoperative
OFV	Outflow Valve
OHDS	OverHeat Detection System
OIS	Onboard Information System
OLB	OPS Library Browser
OMS	Onboard Maintenance System
OMTS	On-Board Mobile Telephony System
OOOI	Out-Off-On-In
OP	Open
OPC	Operational Program Configuration
OP CLB	Open Climb
OPS	Operations
OPT	Optimum
OPU	Overvoltage Protection Unit
OSCM	Oxygen System Control and Monitoring
OSFC	Open world Server Function Cabinet
OUT-BND	Outbound
OVHT	Overheat
OVRD	Override
OXY	Oxygen

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P

Abbreviation	Term
P.POS	Present Position
PA	Passenger Address, Pressure Altitude
PARK	Parking
PAX	Passenger
pb	Pushbutton
PB	Place/Bearing, Pushbutton
PBCS	Performance-Based Communication and Surveillance
PBD	Place/Bearing/Distance
PBE	Protective Breathing Equipment
PBN	Performance-Based Navigation
PBSELV	Parking Brake Selector Valve
PCS	Propulsion Control System

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Abbreviation	Term
PD	Place/Distance
PDF	Portable Document Format
PDHV	Pack Discharge Heating Valve
PDLS	Privacy Door Lock System
PDMF	Power Distribution Maintenance Function
PDT	Probe Dual Temperature
PED	Portable Electronic Device
PERF	Performance
PF	Pilot Flying
PFC	Porous Friction Course
PFD	Primary Flight Display
PFQ	Preselected Fuel Quantity
PFTU	Pedal Feel and Trim Unit
PLS	Primary Locking System
PLT	Pre-Land Test
PM	Pilot Monitoring
PMG	Permanent Magnet Generator
PMP	Pump
POB	Power-Off Brake
POS	Position
PPOS	Present Position
PRED	Prediction
PRED W/S	Predictive Windshear
PRESS	Pressurization
PREV	Previous
PRIM	Primary Flight Control and Guidance Computer
PRM	Precision Runway Monitor
PROC	Procedure
PRSOV	Pressure Regulating and Shut Off Valve
PSI	Pound per Square Inch
PTT	Push-To-Talk
PURS	Purser
PWR	Power
PWS	Predictive Windshear

Q

Abbreviation	Term
QFE	Field Elevation Atmospheric Pressure
QFU	Runway Heading
QNH	Sea Level Atmospheric Pressure

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Abbreviation	**Term**
QRH	Quick Reference Handbook
QTY	Quantity

R

Abbreviation	**Term**
R	Right
RA	Radio Altimeter, Resolution Advisory
RAD	Radio
RAM	Random Access Memory
RAT	Ram Air Turbine
RCAM	Runway Condition Assessment Matrix
RBCU	Remote Braking Control Unit
RCCB	Remote Control Circuit Breaker
RCDR	Recorder
RCL	Recall
RCO	Remote Communications Outlet
RCP	Required Communication Performance
REACT	Rain Echo Attenuation Compensation Technique
REC	Recommended
RED	Reduction
REF	Reference
REG	Registration
REGUL	Regulation
REV	Revise, Revision, Reverse
RF	Radius to Fix
RFCF	Runway Field Clearance Floor
RGAU	Rate Gyrometer and Accelerometer Unit
RH	Right Hand
RLA	Roll Load Alleviation
RLD	Required Landing Distance
RMP	Radio Management Panel
RNAV	Area Navigation
RNG	Range
RNP	Required Navigation Performance
RNP AR	Required Navigation Performance with Authorization Required
RNV	Area Navigation
ROC	Rate of Climb
ROD	Rate of Descent
ROP	Runway Overrun Protection
ROT	Runway Occupancy Time

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Abbreviation	Term
ROW	Runway end Overrun Warning
RPTG	Reporting
RSP	Required Surveillance Performance
RST	Reset
RSV	Reserve
RSVR	Reservoir
RTA	Required Time of Arrival
RTE	Route
RTO	Rejected Takeoff
RTU	Radar Transceiver Unit
RVR	Runway Visual Range
RVSM	Reduced Vertical Separation Minimum
RWY	Runway, Runway Mode
RWY TRK	Runway Track Mode

S

Abbreviation	Term
S	Minimum Slat Retract Speed, South
S/C	Step Climb
S/D	Step Descent
S/G	Starter Generator
SACU	Semi-Automatic Control Unit
SAOHE	Surface Air/Oil Heat Exchanger
SAT	Static Air Temperature
SATCOM	Satellite Communication
SB	Service Bulletin
SBAS	Satellite Based Augmentation System
SC	Single Chime
SCI	Secure Communication Interface
SCS	Supplemental Cooling System
SD	System Display
SDF	Smoke Detection Function, Simplified Directional Facility
SDU	Satellite Data Unit
SDP	Steering Disconnect Panel
SDS	Smoke Detection System
SEC	Secondary Flight Control Computer, Secondary Flight Plan
SEL	Select
SELCAL	Selective Calling
SFCC	Slat Flap Control Computer
SFD	Standby Flight Display

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Abbreviation	Term
SG	Starter Generator
SGCU	Starter Generator Control Unit
SGS	Starter Generator System
SHED	Shedding
SID	Standard Instrument Departure
SLS	Satellite Landing System
SMI	Stall Margin Indicator
SND	Standby Navigation Display
SOH	Summary Of Highlights
SOP	Standard Operating Procedure
SP	Space
SPD	Speed
SPDLIM	Speed Limit
SPLR	Spoiler
SPU	Starter Power Unit
SQWK	Squawk
SR	Specific Range
SRS	Speed Reference System
SS	Seconds (entry format), Sky/Shading
SSA	Sideslip Angle
SSB	Single Side Band
SSPC	Solid State Power Controller
STAR	Standard Terminal Arrival Route
STAT	Static
STBY	Standby
STD	Standard
STEER	Steering
STS	Status
SURV	Surveillance
SVCE	Service
SWY	Stopway
SYS	System

T

Abbreviation	Term
T-P	Turning Point
T.O	Takeoff
T.WIND	True Wind
T/C	Top of Climb
T/D	Top of Descent, Touchdown

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Abbreviation	**Term**
TA	Traffic Advisory
TAB	Temporary Abnormal Behavior
TAC	Taxiing Aid Camera
TACAN	Tactical Air Navigation
TAD	Terrain Awareness and Display
TAS	True Airspeed
TASOV	Trim Air Shut-Off Valves
TAT	Total Air Temperature
TAU	Estimated Time to Intercept
TAV	Trim Air Valve
TAWS	Terrain Awareness and Warning System
TCAS	Traffic Alert and Collision Avoidance System
TCF	Terrain Clearance Floor
TCH	Threshold Crossing Height
TCV	Temperature Control Valve
TDU	Temporary Documentary Unit
TEL	Telephone
TEMP	Temperature
TERML	Terminal
TERR	Terrain
TFLEX	Flex Temperature
THR	Thrust
THS	Trimmable Horizontal Stabilizer
TK	Tank
TMAX	Maximum Temperature
TMPY	Temporary
TO	Takeoff
TOC	Top Of Climb
TOCG	TakeOff Center of Gravity
TOD	Takeoff Distance, Top Of Descent
TODA	Takeoff Distance Available
TOGA	Takeoff/Go-Around
TOM	Takeoff Monitoring
TOR	Takeoff Run
TORA	Takeoff Run Available
TOS	Takeoff Surveillance
TOW	Takeoff Weight
TPIS	Tire Pressure Indicating System
TR	Transformer Rectifier
TRAJ	Trajectory

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Abbreviation	Term
TRANS	Transition
TREF	Reference Temperature, Flat-Rating Temperature
TRK	Track
TROPO	Tropopause
TRU	Transformer Rectifier Unit
TURB	Turbulence
TWDC	Tank Wall Data Concentrator

U

Abbreviation	Term
UERF	Uncontained Engine Rotor Failure
USB	Universal Serial Bus
UTC	Universal Time Coordinated

V

Abbreviation	Term
V/S	Vertical Speed
V1	Decision Speed, Critical Engine Failure Speed
V2	Takeoff Safety Speed
VA	Maximum Design Maneuvering Speed
VAPP	Approach Speed
VBV	Variable Bleed Valve
VCRU	Vapor Cycle Refrigeration Unit
VCS	Ventilation Control System
VD	Vertical Display, Maximum Dive Speed
VDEV	Vertical Deviation
VENT	Ventilation
VERT	Vertical
VERT REV	Vertical Revisor
VFE	Maximum Flap Extended Speed
VFG	Variable Frequency Generator
VFR	Visual Flight Rules
VHF	Very High Frequency
VIGV	Variable Inlet Guide Valve
VLE	Maximum Landing Gear Extended Speed
VLO	Maximum Landing Gear Operating Speed
VLOF	Liftoff Speed
VLS	Lowest Selectable Speed
VLV	Valve
VMAX	Maximum Allowable Speed

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Abbreviation	Term
VMC	Visual Meteorological Conditions
VMCA	Minimum Control Airspeed in Flight / Minimum Control Airspeed in the Air
VMCG	Minimum Control Airspeed on Ground
VMCL	Minimum Control Airspeed for Landing
VMO	Maximum Operating Speed
VMU	Minimum Unstick Speed
VNAV	Vertical Navigation
VOR	VHF Omnidirectional Range
VORTAC	Co-Located VOR and TACAN
VR	Rotation Speed
VRA	Recommended Turbulence Penetration Speed
VREF	Landing Reference Speed
VSA	Visual Separation Approach
VS1G	Stall Speed with a Load Factor of 1 g
VSMIN	Reference Stall Speed
VSV	Variable Stator Vanes
VV	Velocity Vector
VQAR	Virtual Quick Access Recorder

W

Abbreviation	Term
WACS	Wireless Airport Communication System
WADU	Weather Antenna Drive Unit
WARN	Warning
WBM	Weight and Balance Manual
WBBC	Weight and Balance Backup Computer
WD	Warning Display
WGS	World Geodetic System
WHC	Window Heating Computer
Wi-Fi	Wireless Fidelity
WIPS	Wing Ice Protection System
WPT	Waypoint
WSCS	Wheel Steering Control System
WTB	Wing Tip Brake
WX	Weather Mode
WXR	Weather Radar
WV	Weight Variant

X

Abbreviation	Term
XCHECK	Cross Check
XFR	Transfer
XLS	x Landing System (e.g. ILS, GLS, ...)
XPDR	Transponder
XTK	Cross Track

Y

Abbreviation	Term
YYYY	Year (entry format)

Z

Abbreviation	Term
ZFCG	Zero Fuel Center of Gravity
ZFW	Zero Fuel Weight
ZFWCG	Zero Fuel Weight Center of Gravity

AIRCRAFT SYSTEMS

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R	DSC-22-FMS-20-20-20	**OPT**	00024902.0001001	03 JUL 20
	Criteria: XW **Applicable to: ALL** *Impacted DU: 00004085 OPT*			
	Reason for issue: *In certain conditions, the OPT FL is indicated as XXX. The next FMS standard S6 will correct this issue.*			

(1) Evolution code : N=New, R=Revised, E=Effectivity

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AIRCRAFT SYSTEMS

20 - AIRCRAFT GENERAL

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OVERVIEW

Ident.: DSC-20-10-00000001.0001001 / 24 APR 14
Applicable to: ALL

The Airbus A350 is a subsonic, medium to long range aircraft designed for commercial transportation of passengers and cargo.

ENGINES

Ident.: DSC-20-10-00016612.0001001 / 24 APR 14
Applicable to: ALL

The aircraft has two high bypass turbofan engines, mounted under the wings.

COCKPIT

Ident.: DSC-20-10-00000088.0001001 / 24 APR 14
Applicable to: ALL

The cockpit has:
- One seat for the captain
- One seat for the first officer
- Two additional seats for the observers.

CABIN

Ident.: DSC-20-10-00000095.0001001 / 01 MAR 17
Applicable to: ALL

The passenger seating layout may vary, depending on Operator requirements.

CARGO

Ident.: DSC-20-10-00000096.0001001 / 24 APR 14
Applicable to: ALL

The aircraft has three cargo compartments:
- Forward cargo compartment
- Aft cargo compartment
- Bulk cargo compartment.

CREW REST COMPARTMENT

Ident.: DSC-20-10-00000097.0002001 / 14 JUN 16
Applicable to: ALL

The aircraft can have two crew rest compartments:
- A Flight Crew Rest Compartment ◁ for the flight crew members
- A Cabin Crew Rest Compartment ◁ for the cabin crew members.

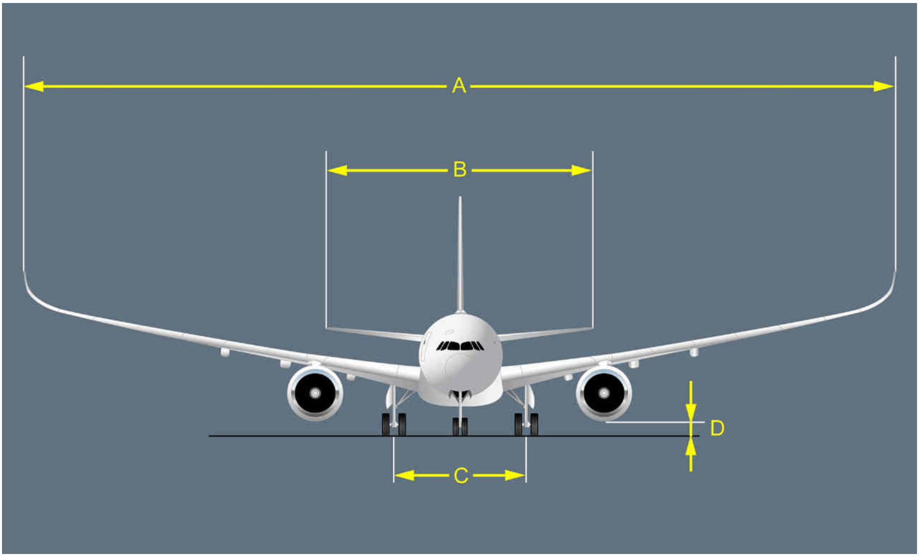
Both types of crew rest compartments are installed in the overhead area with access from the main deck.

Note: *These crew rest compartments may not correspond to the customized configuration of a specific aircraft. For more information on the installed equipment, refer to the relevant chapter's system description.*

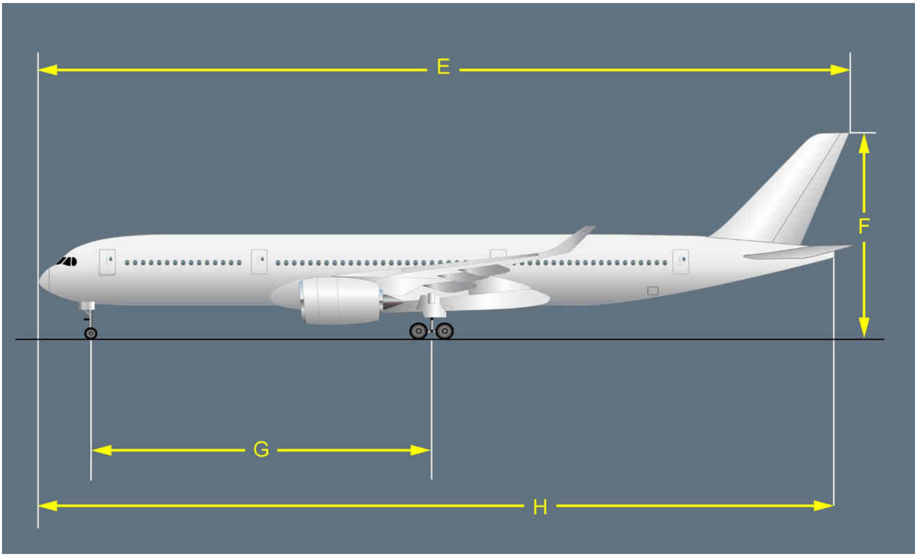
MAIN DIMENSIONS

Ident.: DSC-20-20-10-00000098.0001001 / 03 NOV 16
Applicable to: ALL

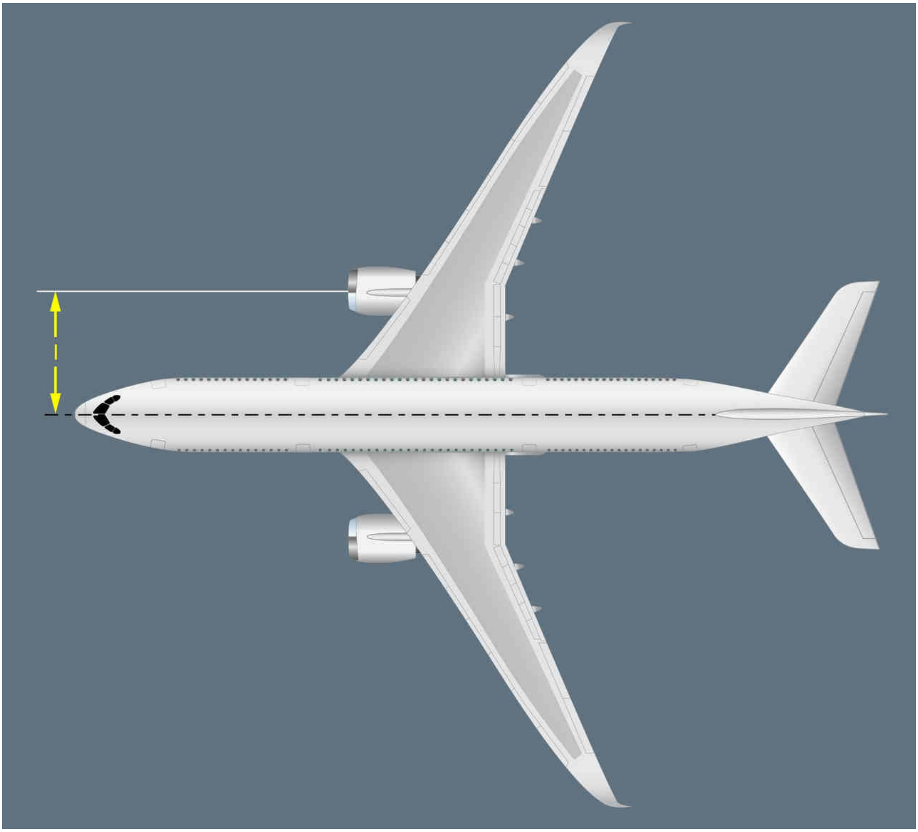
Front View



Side View (Typical)



Top View



	A350-900	A350-1000
A	64.75 m (212 ft 5 in)	
B	18.79 m (61 ft 8 in)	
C	10.60 m (34 ft 9 in)	10.73 m (35 ft 2 in)
D	0.75 m (2 ft 5.5 in)	0.78 m (2 ft 6.7 in)
E	66.61 m (218 ft 6 in)	75.59 m (248 ft)
F	17.05 m (55 ft 11 in)	17.08 m (56 ft)
G	28.66 m (94 ft)	32.48 m (106 ft 7 in)
H	65.26 m (214 ft 1 in)	72.25 m (237 ft)
I	10.5 m (34 ft 5 in)	

FUSELAGE

Ident.: DSC-20-20-10-00000099.0001001 / 24 APR 14
Applicable to: ALL

The aircraft fuselage has:
- In the cabin : 8 passengers doors
- In the cargo compartments: 3 cargo doors (forward, aft and bulk cargo doors).

The cabin can have up to 10 seats abreast in each row.

WING

Ident.: DSC-20-20-10-00000513.0001001 / 24 APR 14
Applicable to: ALL

The wing has two engine pylons.

L2 It has an area of 432.1 m^2 (4 652 ft^2) and spans 64.75 m (212.44 ft) with winglet (59 m (194 ft) without winglet).

L1 Each half-wing has the following moving surfaces:
- Two ailerons
- Seven upper wing control surfaces that are used in various combinations as spoilers, air brakes, or lift dumpers
- Seven slat surfaces for high-lift configurations
- Two flap surfaces for high-lift configurations.

The wing is also used as a fuel tank.

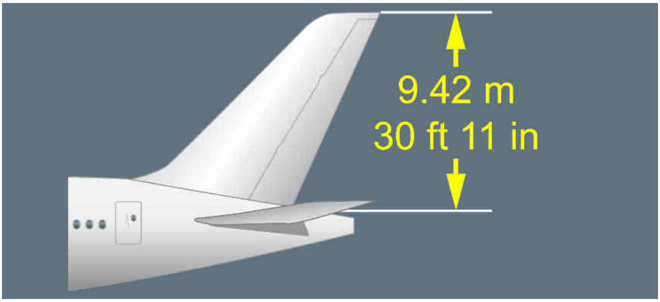
TAIL

Ident.: DSC-20-20-10-00000515.0001001 / 04 DEC 14
Applicable to: ALL

VERTICAL STABILIZER

The vertical stabilizer has one rudder.

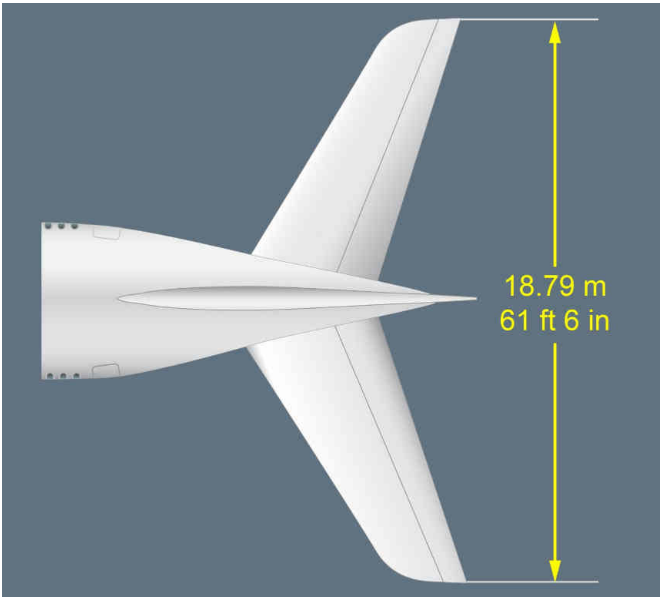
Vertical Stabilizer



HORIZONTAL STABILIZER

The horizontal stabilizer has two elevators.

Horizontal Stabilizer



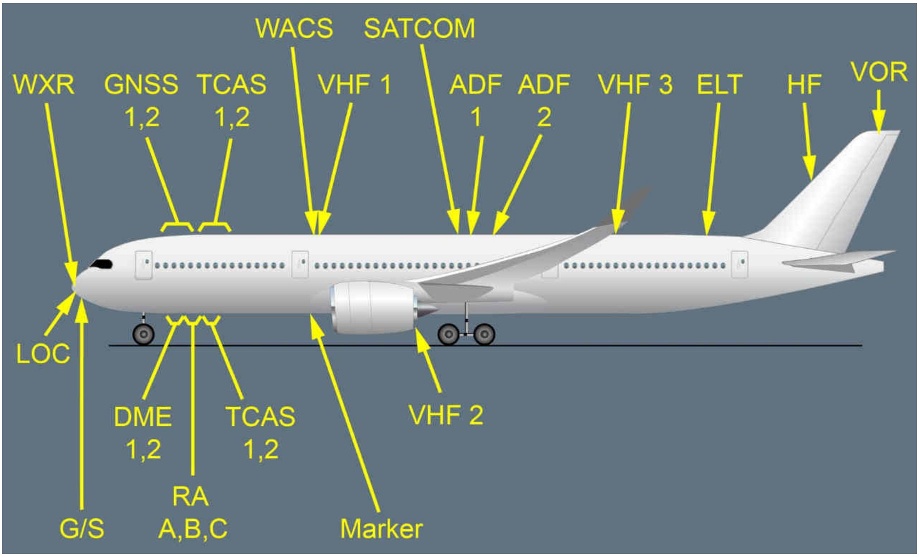
L2 DIMENSIONS

Vertical Stabilizer Area	Horizontal Stabilizer Area
51.0 m^2 548.9 ft^2	81.5 m^2 877.2 ft^2

ANTENNA LOCATIONS

Ident.: DSC-20-20-20-00016209.0001001 / 24 APR 14
Applicable to: ALL

Antenna Locations


WACS
SATCOM
WXR
GNSS 1,2
TCAS 1,2
VHF 1
ADF 1
ADF 2
VHF 3
ELT
HF
VOR
LOC
DME 1,2
TCAS 1,2
VHF 2
RA A,B,C
G/S
Marker

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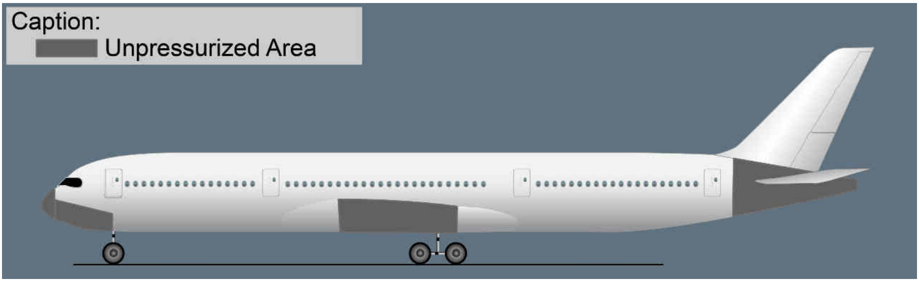
UNPRESSURIZED AREAS

Ident.: DSC-20-20-30-00016210.0001001 / 24 APR 14
Applicable to: ALL

Unpressurized Areas



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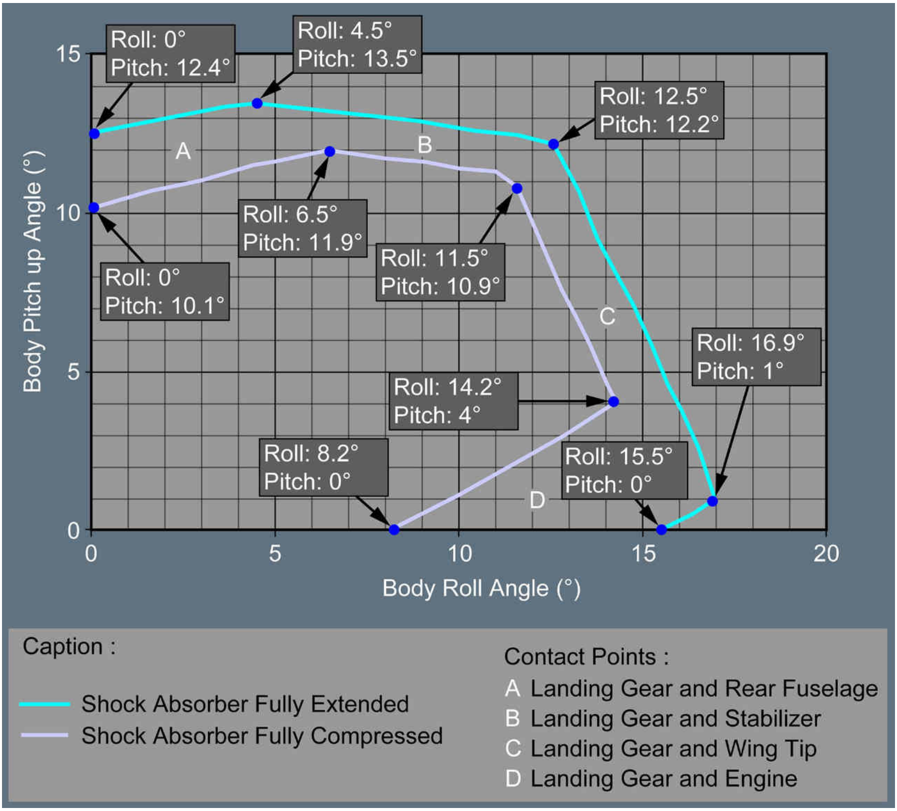
GROUND CLEARANCE DIAGRAM

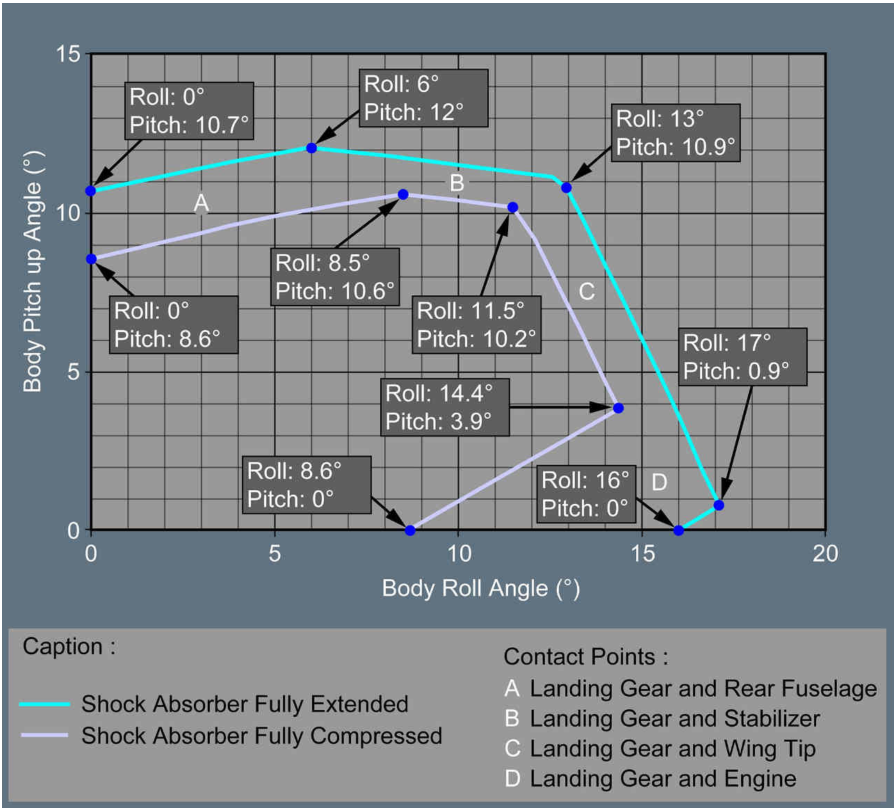
Ident.: DSC-20-20-40-00020996.0001001 / 08 JUL 19
Applicable to: ALL

A350-900

Ground Clearance Diagram

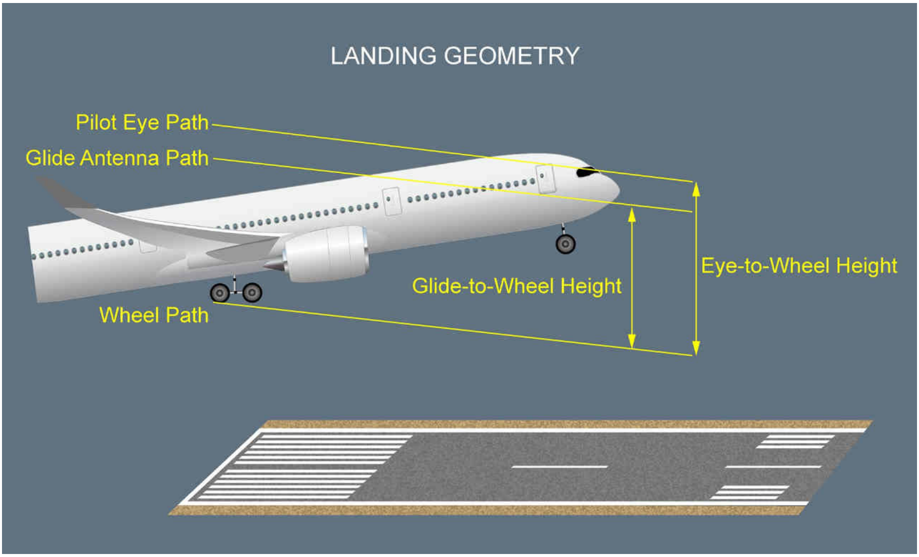


A350-1000


15
10
5
0
Body Pitch up Angle (°)
0
5
10
15
20
Body Roll Angle (°)
Roll: 0°
Pitch: 10.7°
Roll: 6°
Pitch: 12°
Roll: 13°
Pitch: 10.9°
A
B
C
D
Roll: 8.5°
Pitch: 10.6°
Roll: 0°
Pitch: 8.6°
Roll: 11.5°
Pitch: 10.2°
Roll: 17°
Pitch: 0.9°
Roll: 14.4°
Pitch: 3.9°
Roll: 8.6°
Pitch: 0°
Roll: 16°
Pitch: 0°
Caption :
Shock Absorber Fully Extended
Shock Absorber Fully Compressed
Contact Points :
A Landing Gear and Rear Fuselage
B Landing Gear and Stabilizer
C Landing Gear and Wing Tip
D Landing Gear and Engine

LANDING GEOMETRY

Ident.: DSC-20-20-50-00023854.0001001 / 27 OCT 17
Applicable to: ALL


LANDING GEOMETRY
Pilot Eye Path
Glide Antenna Path
Eye-to-Wheel Height
Glide-to-Wheel Height
Wheel Path

The table below is based on the following conditions:
- Glide path 3 °
- CONF FULL
- MLW
- No wind
- The glide antenna crosses the runway threshold at 50 ft
- The Glide-to-Wheel Height is computed at the runway threshold
- The Eye-to-Wheel Height is computed during approach.

	Glide-to-Wheel Height		Eye-to-Wheel Height	
	m	ft	m	ft
A350-900	< 7	< 23	10.81	35.5
A350-1000	< 7	< 23	11.45	37.6

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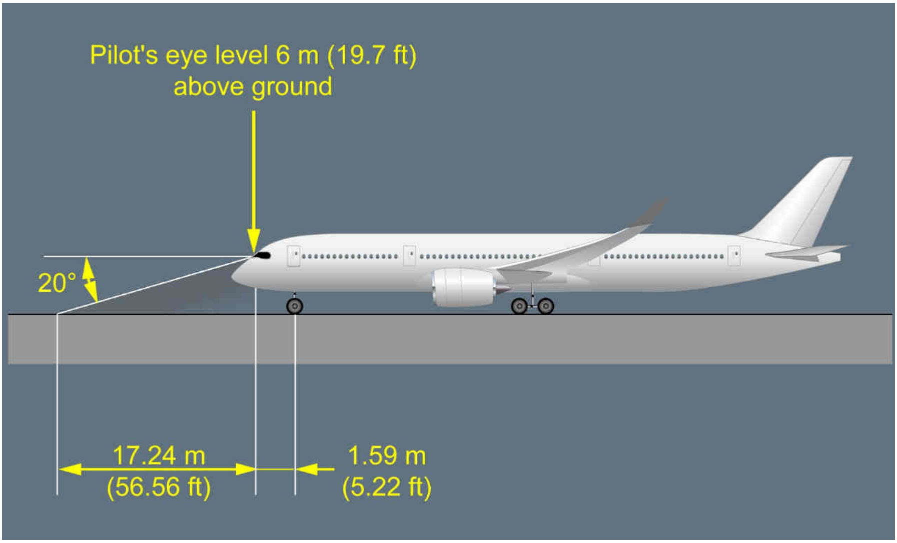
TAXI - VISUAL GROUND GEOMETRY

Ident.: DSC-20-20-60-00020909.0001001 / 04 DEC 14
Applicable to: ALL

VISUAL GROUND GEOMETRY

Taxi - Visual Ground Geometry


Pilot's eye level 6 m (19.7 ft)
above ground
20°
17.24 m
(56.56 ft)
1.59 m
(5.22 ft)

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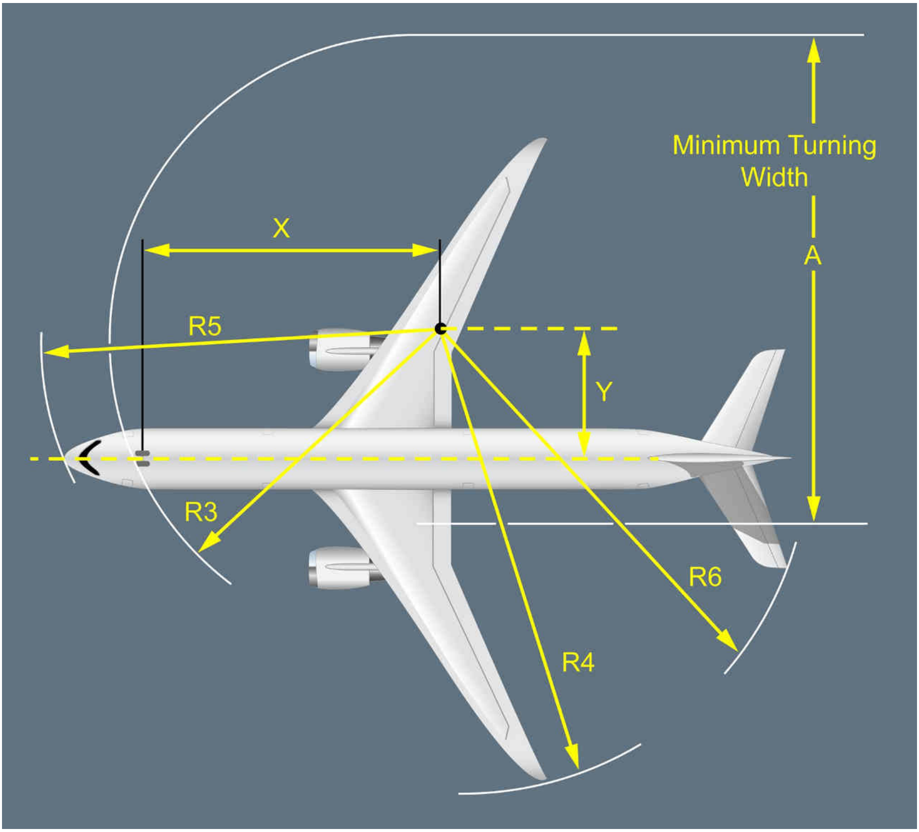
TAXIING

Ident.: DSC-20-30-00016207.0001001 / 01 MAR 17
Applicable to: ALL

Taxiing



	Maximum Nose Wheel Steering Angle	Effective Steering Angle	X	Y	A	R3	R4	R5	R6
A350-900	72 °	66.1 °	28.7 m 94 ft	12.7 m 42 ft	51.1 m 168 ft	31.6 m 104 ft	47 m 154 ft	35.6 m 117 ft	40.2 m 132 ft
A350-1000	75 °	63.7 °	32.5 m 107 ft	16.1 m 53 ft	59.2 m 194 ft	36.5 m 120 ft	50.3 m 165 ft	40.4 m 133 ft	44.6 m 146 ft

The above values assume symmetric thrust and no differential braking.

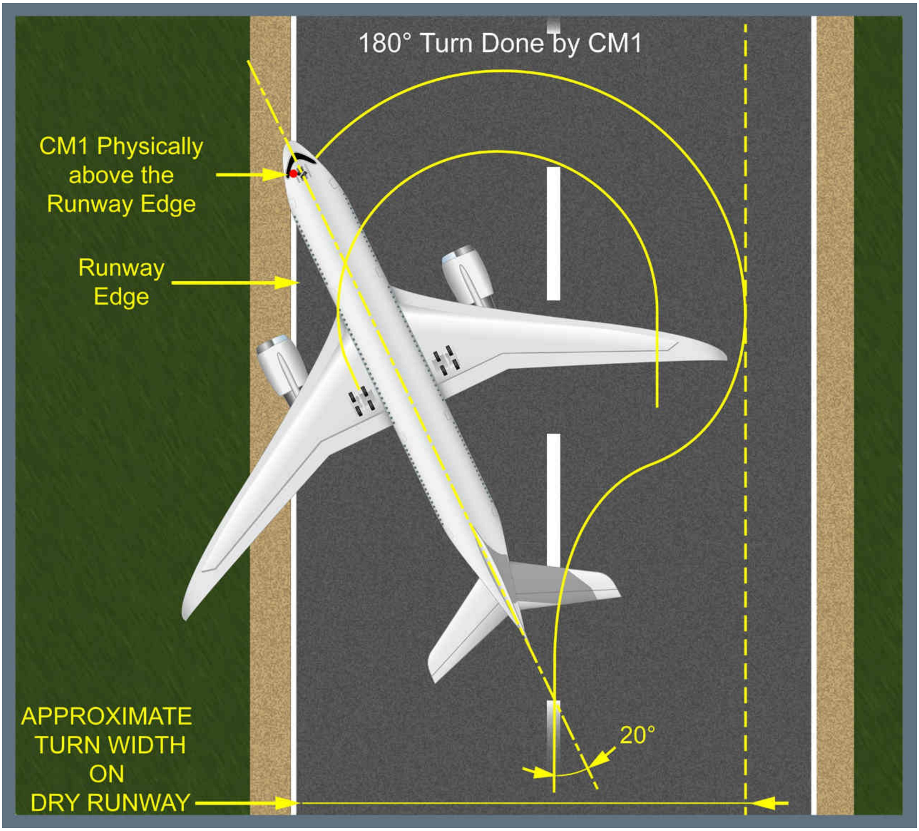
180 DEGREES TURN ON RUNWAY

Ident.: DSC-20-30-00023473.0001001 / 27 JUN 17
Applicable to: ALL

With the recommended 180° turn technique, on dry runway, the approximate turn width without margin is:
- For the A350-900, 53 m (174 ft)
- For the A350-1000, 59 m (194 ft).

Note: *The flight crew should consider additional margin when the runway is wet or contaminated.*

For more info on the recommended 180° turn technique, *Refer to FCTM/PR-NP-SOP-100 180 degrees Turn on Runway*.


180° Turn Done by CM1
CM1 Physically above the Runway Edge
Runway Edge
APPROXIMATE TURN WIDTH ON DRY RUNWAY
20°

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AIRCRAFT SYSTEMS

21 - AIR CONDITIONING

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DSC-21-COND-10 System Description

DSC-21-COND-10-10 Overview

Overview.......A

DSC-21-COND-10-20 Air Conditioning Generation

Packs.......A
Mixer Unit.......B
Trim Air System.......C
Emergency Ram Air.......D

DSC-21-COND-10-30 Temperature and Flow Regulation

Cockpit and Cabin Zones.......A
Bulk Cargo Compartment.......B
FWD Cargo Compartment Ventilation and Temperature Regulation ◁ C

DSC-21-COND-10-40 Supplemental Cooling System

Supplemental Cooling System.......A

DSC-21-COND-20 Controls and Indicators

Cockpit View.......A
AIR Panel.......B
BLEED SD Page.......C
CAB PRESS SD Page.......D
CAPT(F/O) INDIVIDUAL VENT Panel.......E
CARGO AIR COND Panel.......F
COND SD Page.......G
CRUISE Page.......H
VENT Panel.......I
MEMO.......J

DSC-21-COND-30 Abnormal Operations

Air Cycle Machine (ACM) Failure.......A
Trim Air Valve (TAV) Failures.......B

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Localization Title	Toc Index	ID	Reason
DSC-21-COND-10-30 Bulk Cargo Compartment	B	1	Correction of the procedure color from Amber to Red.
DSC-21-COND-10-30 FWD Cargo Compartment Ventilation and Temperature Regulation	C	2	Correction of the procedure color from Amber to Red.
DSC-21-COND-20 Pack Indications	C	1	Addition of the missing list of abnormal indications of the pack regulation.
DSC-21-COND-20 Pack Values	C	2	Addition of the missing reference to the procedure associated to the ECAM alert. Documentation update: Deletion of information.
DSC-21-COND-20 Pack Indications	G	3	Addition of the missing list of abnormal indications of the pack regulation.

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OVERVIEW

Ident.: DSC-21-COND-10-10-00001535.0001001 / 24 APR 17
Applicable to: ALL

The aircraft is equipped with an Air Conditioning System (ACS) supplied by the Bleed Air System (BAS), and a Supplemental Cooling System (SCS) which is electrically powered.

AIR CONDITIONING SYSTEM

The ACS is fully automatic. It provides continuous air renewal, and maintains a constant selected temperature in the cockpit and in the cabin zones.

L3 The control of the ACS functions is hosted in CPIOMs H41 and H42.

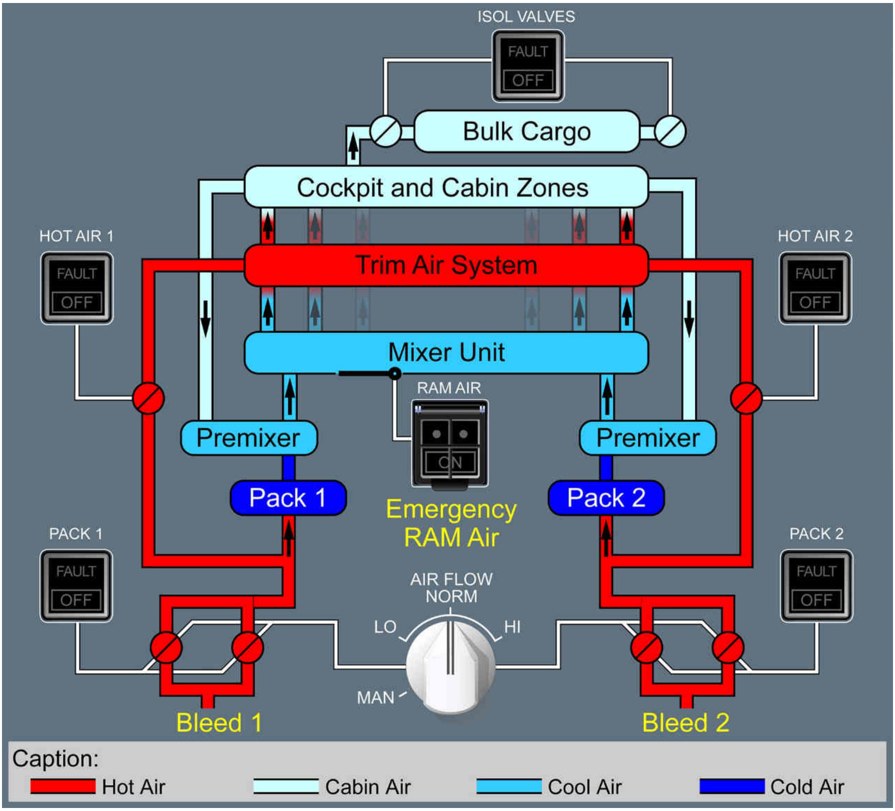
L1 Air from the ACS is also used for cargo temperature control.
The BAS supplies two air conditioning packs, with air from the engines, the APU, or the ground air supply. For more information, *Refer to DSC-36-10-10 Overview*. This air is cooled in the packs.

L2 The Air System Control Unit (ASCU) controls the pack. There is one ASCU per pack. The ASCU is a dual-lane controller.
The ASCU controls the Conditioned Service Air Supply (CSAS). The (CSAS) supplies pressurizes and cools air to the Inert Gas Generation System (IGGS). For more information, *Refer to DSC-28-10 Fuel Tank Inerting System*.

L1 This cooled air then flows out of the packs, and is combined with recycled cockpit and cabin air in the Mixer unit.

L2 The mixer unit has two mixing stages: The two premixer stages and the mixer unit. In the premixer, the air from the pack is combined with the recycled air.

L1 Then, hot air from the bleed system is added to the mixed air, to obtain the selected temperature throughout the cockpit and cabin zones.
There are temperature selectors on the overhead panel, and in the cabin on the Flight Attendant Panels (FAPs).
In case both packs fail, the mixer unit can directly receive air from outside the aircraft, through the emergency ram air inlet.


ISOL VALVES
FAULT
OFF
Bulk Cargo
Cockpit and Cabin Zones
HOT AIR 1
FAULT
OFF
HOT AIR 2
FAULT
OFF
Trim Air System
Mixer Unit
RAM AIR
Premixer
Premixer
ON
Pack 1
Pack 2
Emergency
RAM Air
PACK 1
FAULT
OFF
PACK 2
FAULT
OFF
AIR FLOW
NORM
LO
HI
MAN
Bleed 1
Bleed 2
Caption:
Hot Air
Cabin Air
Cool Air
Cold Air

SUPPLEMENTAL COOLING SYSTEM

The aircraft is equipped with a liquid cooling system which supplies cooling to the galleys. For more information, *Refer to DSC-21-COND-10-40 Supplemental Cooling System*.

PACKS

Ident.: DSC-21-COND-10-20-00001536.0001001 / 31 MAY 16
Applicable to: ALL

The packs provide cold air by cooling hot bleed air.
There are two packs, and they operate automatically and independently of each other.
Each pack has two heat exchangers, one cooling unit (or Air Cycle Machines (ACM)), and one pack controller.

L2 The pack controller is part of the Air System Control Unit (ASCU). There is one ASCU per pack.

L1 In the event ACM fails, bleed air is cooled by the heat exchangers only: The pack operates in bypass mode. For more information, *Refer to DSC-21-COND-30 Air Cycle Machine (ACM) Failure*.
The pack controllers each have two independent channels, and each of these channels can control the entire pack.
In the event a pack controller fails, the associated pack is lost.
For each pack, there are two pack valves. Only one is active, the other is in standby. The pack valve regulates the quantity of hot bleed air that flows into each pack. The pack valves are automatically controlled by the pack controller, in accordance with the AIR FLOW selector position.

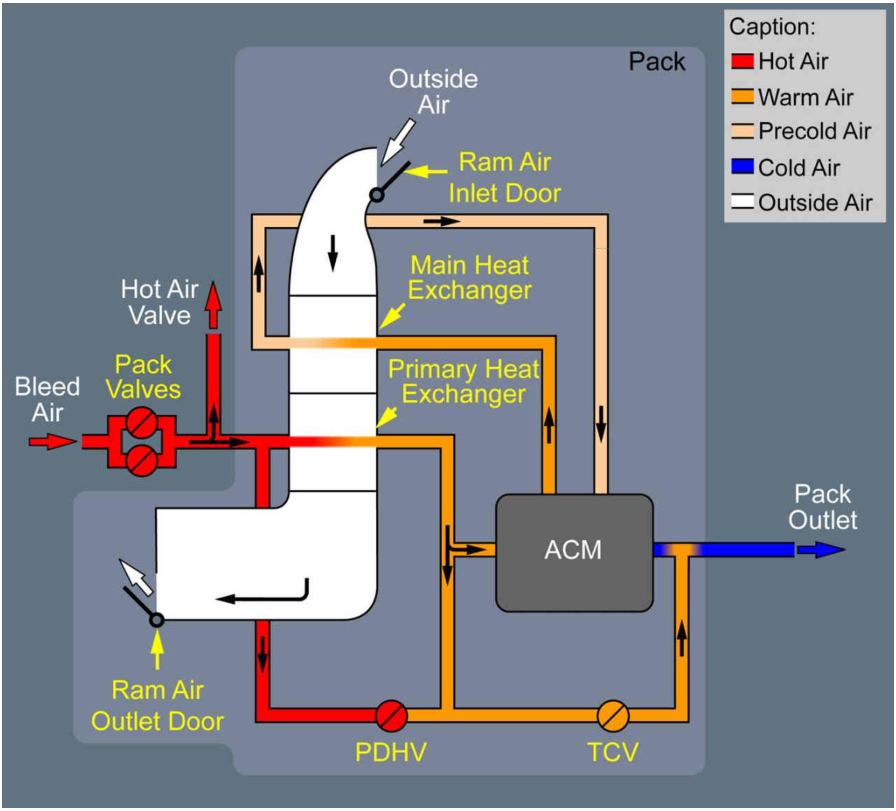
L2 The active pack valve of a pack will automatically close, if:
- There is not sufficient upstream pressure, or
- The FIRE pb-sw of the associated engine is pressed, or
- The associated PACK pb is set to OFF, or
- The associated pack overheats, and the aircraft is on ground, or
- There is a leak detection, or
- The onside engine starts.

All active pack valves (of both packs) will automatically close, if:
- The DITCHING pb-sw is set to ON, or
- During any engine start, and the crossbleed valve is open, or
- The FIRE pb-sw of any engine is pressed, and the crossbleed valve is opened.

L3 PACK DESCRIPTION

The hot bleed air flows into each pack, via the two pack valves, then enters the primary heat exchanger. This primary heat exchanger precools the air using external air. This external air enters through a ram air inlet door, and is then discharged overboard through a ram air outlet door.

Pack


Caption:
🟥 Hot Air
🟧 Warm Air
▭ Precold Air
🟦 Cold Air
☐ Outside Air
Pack
Outside Air
Ram Air Inlet Door
Main Heat Exchanger
Hot Air Valve
Pack Valves
Bleed Air
Primary Heat Exchanger
ACM
Pack Outlet
Ram Air Outlet Door
PDHV
TCV

The cooled bleed air then enters the ACM for further cooling.

A Temperature Control Valve (TCV) adjusts the pack outlet temperature, by adding air to the pack outlet flow:

- Below FL 220, air for temperature adjustment comes from the pack valves via the Pack Discharge Heating Valve (PDHV) to prevent ice formation.
- Above FL 220, the air is sufficiently dry. The (PDHV) is full closed, therefore air for temperature adjustment comes from the primary heat exchanger.

For pack operation, the pack controller controls all the above-mentioned valves and doors.

MIXER UNIT

Ident.: DSC-21-COND-10-20-00001537.0001001 / 15 APR 14
Applicable to: ALL

A mixer unit combines cold air from the packs with recycled air from the cabin.

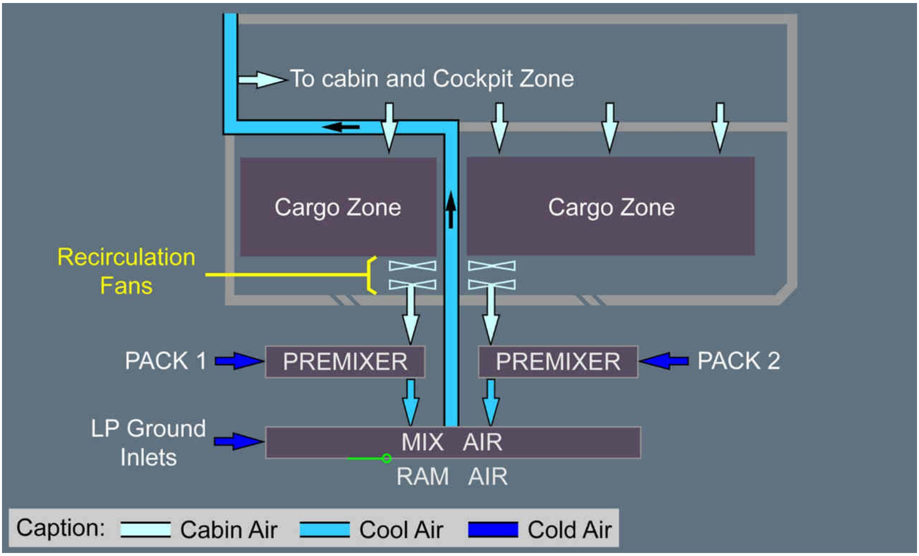
L2 The mixer has two mixing stages: The premixer and the mixer unit. In the premixer, the air from the pack is combined with the recycled air. The premixer is designed to cope with the flow range of recirculation fans and packs, for normal and abnormal operation. It also prevents any ice aggregation.

The cabin air recirculates to reduce the bleed air demand from the packs.

L1 There are four recirculation fans that recirculate cabin air to the mixer unit.

L2 For more information about cabin air recirculation, *Refer to DSC-21-VENT-10-30 Cabin Air Recirculation*.

Mixer Unit


To cabin and Cockpit Zone
Cargo Zone
Cargo Zone
Recirculation Fans
PACK 1
PREMIXER
PREMIXER
PACK 2
LP Ground Inlets
MIX AIR
RAM AIR
Caption:
Cabin Air
Cool Air
Cold Air

L3 The recirculation fans are in the underfloor area of the deck.

The recirculation fans are controlled by the ASCU.

L1 On ground, when the packs are off, the mixer unit can obtain cold air through the Low Pressure (LP) ground inlets that are connected to the ground carts.

In case both packs fail in flight, the mixer unit can obtain external air through an emergency ram air inlet. For more information, *Refer to DSC-21-COND-10-20 Emergency Ram Air*.

TRIM AIR SYSTEM

Ident.: DSC-21-COND-10-20-00001538.0001001 / 21 SEP 16
Applicable to: ALL

The trim air system adjusts the temperature of the air in each cockpit and cabin zone. Temperature is adjusted by adding hot air from the bleed system to air from the mixer unit. Hot air is added via two hot-air valves and one trim air valve per zone.

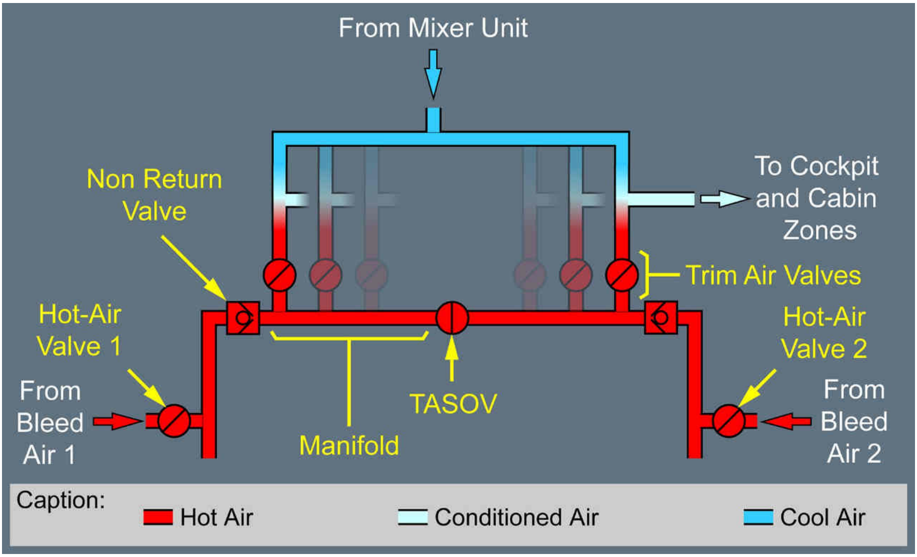
L3 The hot-air valves regulate and shut off the hot-air pressure in the trim air system.

Distribution to the cockpit and cabin zones is made via:

- Two hot-air manifolds
  Each hot-air valve feeds one of the manifolds.
  The two manifolds are interconnected by a Trim Air Shut-Off Valve (TASOV).
  The TASOV is closed, but it opens, in case one hot-air valve fails.
  Associated with the following ECAM alert: COND HOT AIR 1(2) FAULT (*Refer to procedure*).
- Trim air valves
  There is one trim air valve for each one of the cockpit and cabin zones. Each trim air valve adds hot bleed air, from the hot-air manifold, to the air that comes from the mixer unit, to obtain the selected temperature in its assigned zone.

The ASCUs control the temperature. Each ASCU controls one-half of the temperature sensors.

Trim Air System


From Mixer Unit
Non Return Valve
To Cockpit and Cabin Zones
Trim Air Valves
Hot-Air Valve 1
Hot-Air Valve 2
From Bleed Air 1
TASOV
Manifold
From Bleed Air 2
Caption:
Hot Air
Conditioned Air
Cool Air

EMERGENCY RAM AIR

Ident.: DSC-21-COND-10-20-00001539.0001001 / 23 APR 14
Applicable to: ALL

An emergency ram air inlet ventilates the cockpit and cabin, in the event that both packs fail.
The RAM AIR pb-sw on the AIR panel activates the emergency ram air. When set to ON, air from outside the aircraft flows through the emergency ram air inlet, to the mixer unit, to continue ventilating and cooling both the cockpit and cabin.

L3 The ram air inlet is on the belly fairing.

L1 The ram air inlet opens, only if differential pressure is less than 2 PSI.

L3 If differential pressure is more than 2 PSI, a check valve, downstream of the emergency ram air inlets, will not open. Therefore, no air will be supplied to the mixer unit.

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COCKPIT AND CABIN ZONES

Ident.: DSC-21-COND-10-30-00001540.0001001 / 29 MAY 17
Applicable to: ALL

TEMPERATURE REGULATION

The flight crew can:
- Select the cockpit temperature with the COCKPIT selector on the AIR panel
- Select the cabin temperature with the CABIN selector, if the temperature of each cabin zone cannot be selected from the Flight Attendant Panels (FAPs)
- Set the CABIN selector to PURS SEL. In this case, the cabin crew can directly select the temperature of each cabin zone from the FAPs.

L2 The temperature selection ranges from 18 °C to 30 °C.

L3 The pack controller automatically controls the pack outlet temperature to set the temperature of the mixer unit to the lowest cabin zone temperature demand. Therefore, the zone with the lowest heating demand does not receive any trim air.

The pack controller regulates the outlet temperature of its associated pack by adjusting:
- The Temperature Control Valve (TCV)
- The ram air inlet
- The ram air outlet
- The Pack Discharge Heating Valve (PDHV)

Each trim air valve adjusts the temperature of its assigned cockpit and cabin zone.

L1 FLOW REGULATION

The flight crew can use the AIR FLOW selector on the AIR panel to adjust the flow of cold air from the packs, and recirculated air from the cabin.

L2 If only one pack operates, or if the APU supplies bleed air, the pack controller automatically adjusts the airflow to high (HI) demand, regardless of the selection on the AIR FLOW selector.

L1 AUTOMATIC MODE

When the flight crew sets the AIR FLOW selector to NORM, the airflow in the cabin/cockpit is automatically controlled, depending on the number of passengers entered on the MFD, the aircraft flight level, and the temperature regulation of the forward cargo compartment ❄ on the CARGO AIR COND panel.

L2 The airflow in the cockpit and cabin is automatically controlled by:
- The pack controllers, that control the pack valves
- The ventilation controllers, that control the rotation speed of the cabin fans.

L1 MANUAL MODE

When the flight crew sets the AIR FLOW selector to one of the following positions, the airflow in the cockpit/cabin is manually selected:

- AIR FLOW selector set to MAN: The pack airflow is at a default value
  L2 The default value corresponds to an airflow rate for a typical three-class cabin layout with all seats occupied.
- L1 AIR FLOW selector set to LO: The pack airflow is 80 % of the MAN value.
  The selection of the LO air flow with more than 340 cabin occupants is not permitted
- AIR FLOW selector set to HI: The pack airflow is equal to or more than 120 % of the MAN value.

BULK CARGO COMPARTMENT

Ident.: DSC-21-COND-10-30-00001541.0001001 / 03 JUL 20
Applicable to: ALL

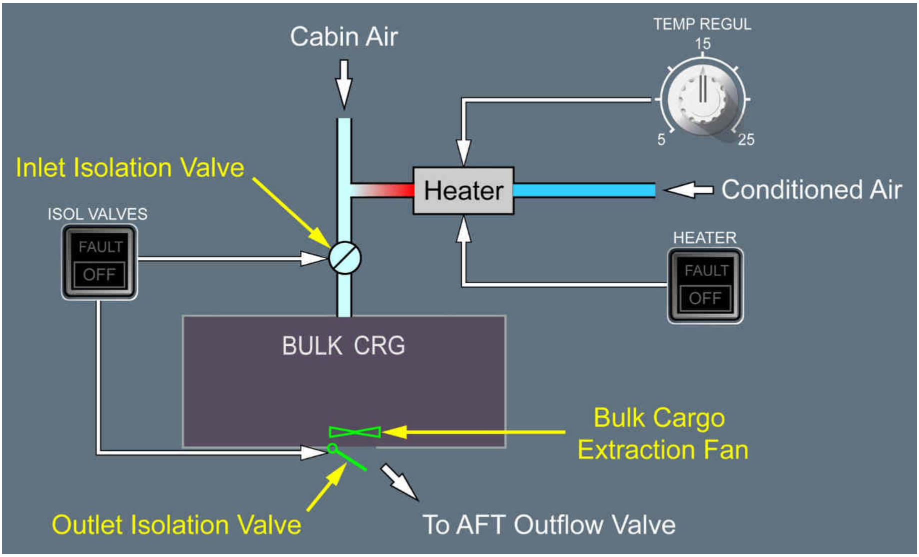
1 The bulk cargo compartment has a heating system.
L2 The aft ventilation controller controls this system.
L1 Some air from the cabin recirculates into the bulk cargo compartment for ventilation and temperature control. This air is extracted by the bulk cargo extraction fan.
The TEMP REGUL selector on the cargo AIR COND panel controls the minimum air temperature in the bulk cargo compartment.
If the temperature is lower than the minimum air temperature set on the TEMP REGUL selector, an electrical heater heats the air that flows into the bulk cargo compartment.

Note: *The bulk cargo temperature control system cannot cool down the temperature.*

Two isolation valves (one inlet and one outlet isolation valve) permit the isolation of the bulk cargo compartment. These valves are manually controlled using the BULK ISOL VALVES pb-sw on the CARGO AIR COND panel.

Note: *In case of SMOKE AFT/BULK CARGO SMOKE ECAM alert:*
- *The isolation valves close automatically*
- *The heater and the extraction fan stop.*

Bulk Cargo


Cabin Air
TEMP REGUL
15
5
25
Inlet Isolation Valve
Heater
Conditioned Air
ISOL VALVES
FAULT
OFF
HEATER
FAULT
OFF
BULK CRG
Bulk Cargo
Extraction Fan
Outlet Isolation Valve
To AFT Outflow Valve

FWD CARGO COMPARTMENT VENTILATION AND TEMPERATURE REGULATION ◅

Ident.: DSC-21-COND-10-30-00001542.0001001 / 03 JUL 20
Applicable to: ALL

2 The forward cargo compartment has a temperature regulation system, that uses air from the air conditioning system.

L2 The forward ventilation controller controls this system.

L1 Some air from the air conditioning system flows into the forward cargo compartment for ventilation and temperature regulation. This air is extracted by the forward cargo extraction fan.

L2 The temperature of the forward cargo compartment is regulated with air from the:
- Cabin
- Mixer unit
- Trim air system.

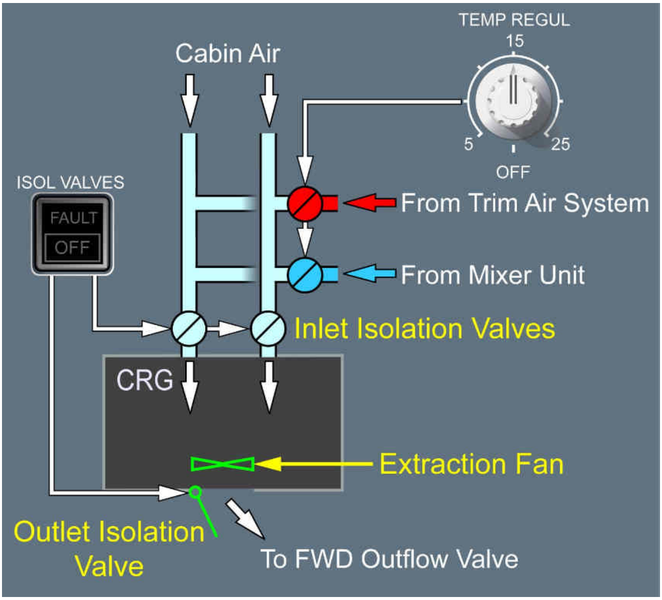
L3 A trim air valve is assigned to the forward cargo compartment.

L1 The flight crew selects the temperature of the forward cargo compartment with the FWD TEMP REGUL selector on the CARGO AIR COND panel.

If necessary, it is possible to isolate the forward cargo compartment, by closing the three isolation valves (two inlet isolation valves and one outlet isolation valve) of the forward cargo via the FWD ISOL VALVES pb-sw on the CARGO AIR COND panel.

Note: *In case of SMOKE FWD CARGO SMOKE ECAM alert:*
- *The isolation valves close automatically*
- *The extraction fan stops.*

FWD Cargo


TEMP REGUL
15
5
25
OFF
Cabin Air
ISOL VALVES
FAULT
OFF
From Trim Air System
From Mixer Unit
Inlet Isolation Valves
CRG
Extraction Fan
Outlet Isolation Valve
To FWD Outflow Valve

SUPPLEMENTAL COOLING SYSTEM

Ident.: DSC-21-COND-10-40-00001633.0001001 / 30 APR 14
Applicable to: ALL

The Supplemental Cooling System (SCS) is a fully electrical system which supplies cooling to the galleys.

L3 The control of the SCS function is hosted in CPIOMs H43 and H44.

L1 The SCS has:

- Two cooling units that cool the fluid of the system.
  L2 The Vapor Cycle Refrigeration Unit (VCRU) cools the coolant who supplies the galleys.
- L1 One distribution unit that supplies this coolant to the galleys.
  L2 The Coolant Distribution Module (CDM) supplies the coolant to the galleys.

L1 If one cooling unit fails, the performance of the SCS will be degraded.
Provided that COOLG pb-sw is set to AUTO, the SCS operates as soon as the aircraft is electrically powered.

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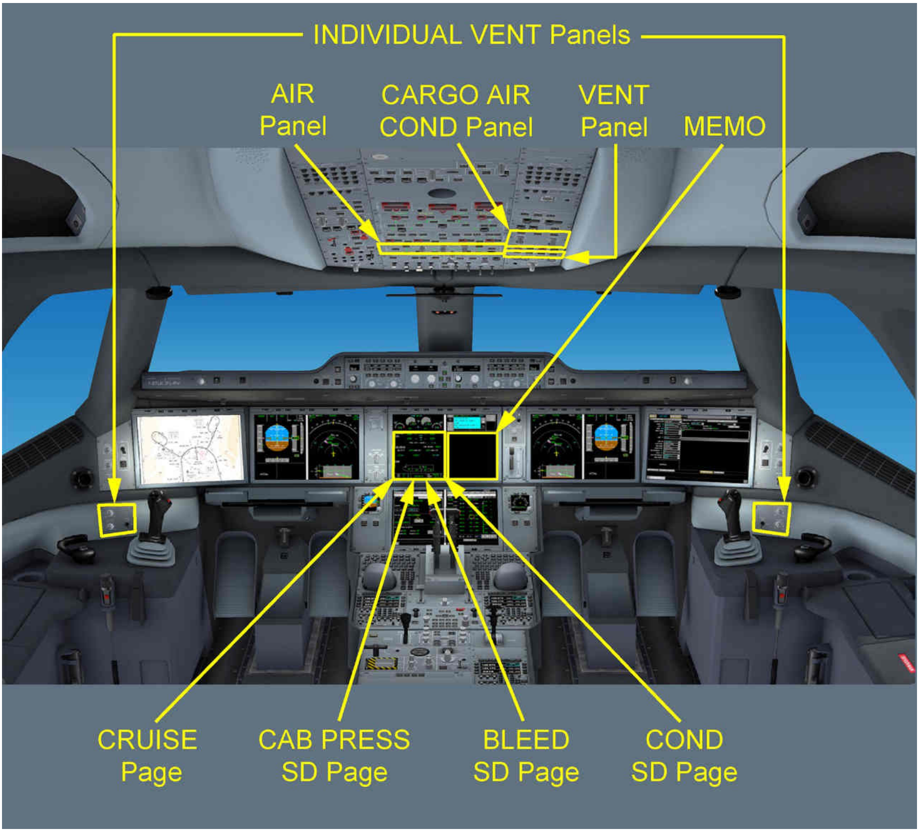
COCKPIT VIEW

Ident.: DSC-21-COND-20-00001544.0001001 / 09 MAR 16
Applicable to: ALL

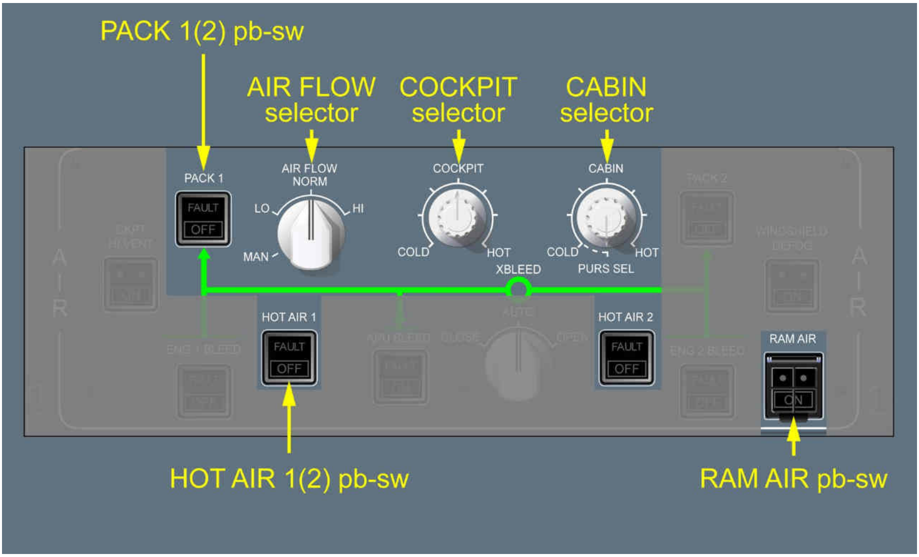

INDIVIDUAL VENT Panels
AIR Panel
CARGO AIR COND Panel
VENT Panel
MEMO
CRUISE Page
CAB PRESS SD Page
BLEED SD Page
COND SD Page

AIR PANEL

Applicable to: ALL

Ident.: DSC-21-COND-20-10-00001545.0001001 / 15 APR 14

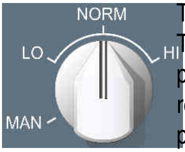
AIR Panel


PACK 1(2) pb-sw
AIR FLOW selector
COCKPIT selector
CABIN selector
PACK 1
FAULT
OFF
AIR FLOW NORM
LO
HI
MAN
COCKPIT
COLD
HOT
CABIN
COLD
HOT
XBLEED
PURS SEL
HOT AIR 1
FAULT
OFF
HOT AIR 2
FAULT
OFF
RAM AIR
ON
HOT AIR 1(2) pb-sw
RAM AIR pb-sw

Ident.: DSC-21-COND-20-10-00001550.0001001 / 28 APR 17

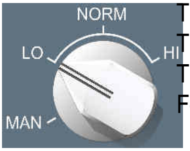
AIR FLOW SEL

L123


NORM
LO
HI
MAN

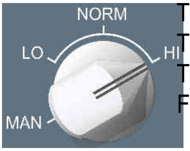
The airflow in the cabin/cockpit is automatically controlled.
The pack airflow is automatically controlled, depending on the number of passengers entered on the MFD, the aircraft flight level, and the temperature regulation of the forward cargo compartment ❄ on the CARGO AIR COND panel.
For additional information, *Refer to Flow Regulation / Automatic Mode*.

L12


NORM
LO
HI
MAN

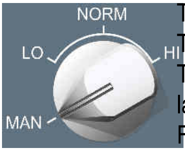
The airflow in the cabin/cockpit is in manual mode.
The pack airflow is reduced.
The pack airflow is 80 % of the MAN value.
For additional information, *Refer to Flow Regulation / Manual Mode*.

L12



The airflow in the cabin/cockpit is in manual mode.
The pack airflow is increased.
The pack airflow is equal to or more than 120 % of the MAN value.
For additional information, *Refer to Flow Regulation / Manual Mode*.

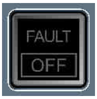
L123



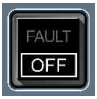
The airflow in the cabin/cockpit is in manual mode.
The pack airflow is at a default value.
The default value corresponds to an airflow rate for a typical three–class cabin layout with all seats occupied.
For additional information, *Refer to Flow Regulation / Manual mode*.

Ident.: DSC-21-COND-20-10-00001551.0001001 / 15 APR 14

PACK 1(2) PB-SW

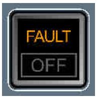


The pack is on, and automatically regulated.



The pack is off.

L12



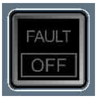
Comes on:

- When any pack valve position disagrees with the requested position, or
- When the pack overheats, or
  Associated with the following ECAM alert: AIR PACK 1(2) OVHT (*Refer to procedure*).
  The FAULT light goes off, when the overheat disappears.
- When the pack is failed, or

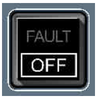
  Associated with one of the following ECAM alerts:
  - AIR PACK 1(2) FAULT (*Refer to procedure*), or
  - AIR PACK 1+2 FAULT (*Refer to procedure*).
- When there is a bleed leak on one pack.
  Associated with the following ECAM alert: AIR PACK 1(2) LEAK (*Refer to procedure*).

Ident.: DSC-21-COND-20-10-00001552.0001001 / 15 APR 14

HOT AIR 1(2) PB-SW

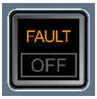


The hot-air valve operates, and is automatically-controlled.



The hot-air valve is closed.

L12



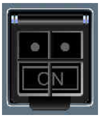
An overheat is detected in the applicable duct.

Associated with one of the following ECAM alerts:
- COND HOT AIR 1(2) FAULT (*Refer to procedure*), or
- COND DUCT OVHT (*Refer to procedure*).

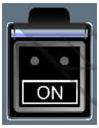
The FAULT light goes off, when the temperature decreases below 60 °C, and the HOT AIR 1(2) pb-sw is reset (set to OFF and then pressed again).

Ident.: DSC-21-COND-20-10-00001553.0001001 / 07 MAY 18

RAM AIR PB-SW



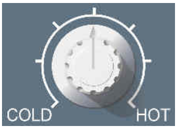
The ram air inlet is closed.



Comes on:
- When the differential pressure is less than 2 PSI, and provided the DITCHING pb-sw, on the CABIN PRESS panel, is not set to ON: The ram air inlet will open, and each outflow valve will open to approximately 50 %.
- If the differential pressure is more than, or equal to, 2 PSI: Each outflow valve will continue to operate normally. The ram air inlet will open but the check valve downstream of the emergency ram air inlet will not open. Therefore, no air will be supplied to the mixer unit.

Ident.: DSC-21-COND-20-10-00001554.0001001 / 01 JUN 16

COCKPIT SEL

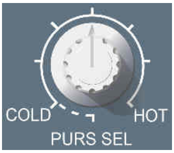


The cockpit temperature is 24 °C.
Each gradation corresponds to 2 °C.

Note: *Any selection change makes the system blow colder, or hotter air into the cockpit. This may result in temporary discomfort for the flight crew. To reach a stabilized temperature in the cockpit, the air conditioning system needs approximately 20 min: 10 min are necessary for cockpit temperature adjustment, and 10 min are necessary to compensate heat dissipation from the cockpit systems. After selecting a temperature value, wait until the cockpit temperature stabilizes, before selecting a new temperature.*

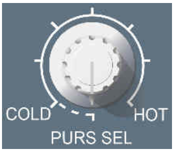
Ident.: DSC-21-COND-20-10-00001555.0001001 / 19 SEP 14

CABIN SEL



The cabin temperature is 24 °C.
Each gradation corresponds to 2 °C.

Note: *Any selection change makes the system blow colder, or hotter air into the cabin. This may result in temporary discomfort for the passengers. To reach a stabilized temperature in the cabin, the air conditioning system needs approximately 20 min: 10 min are necessary for cabin temperature adjustment, and 10 min are necessary to compensate heat dissipation from the cabin systems. After selecting a temperature value, wait until the cabin temperature stabilizes before selecting a new temperature.*



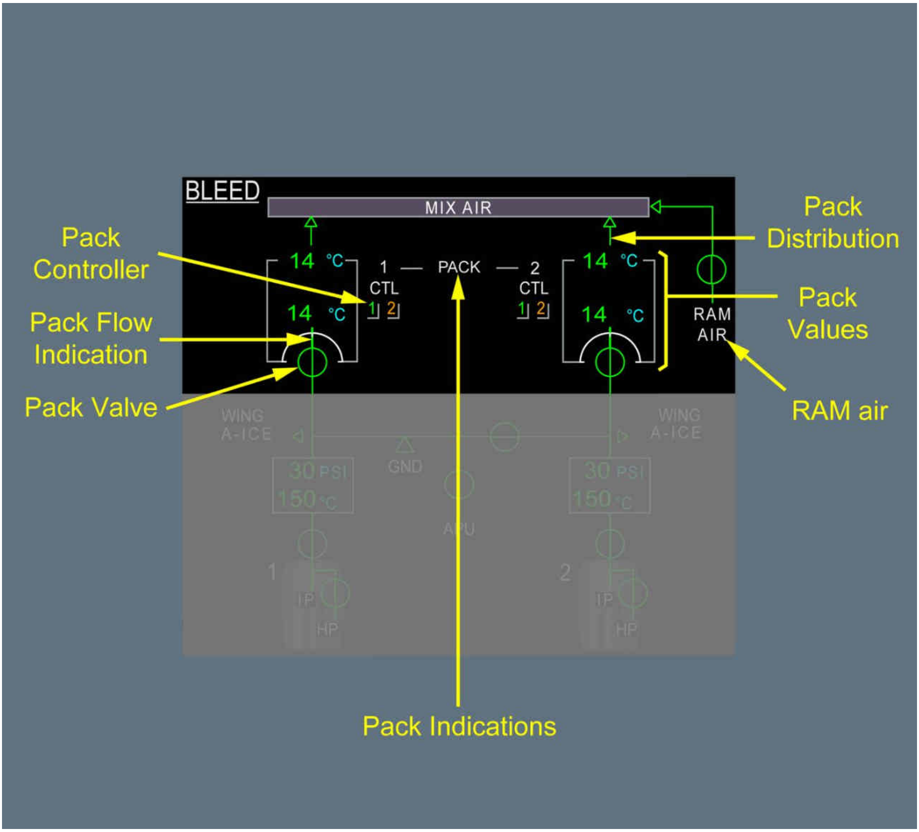
Cabin temperature regulation is only controlled from the Flight Attendant Panel (FAP).

BLEED SD PAGE

Applicable to: ALL

Ident.: DSC-21-COND-20-40-00001548.0001001 / 15 APR 14

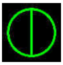
BLEED SD Page


BLEED
MIX AIR
14 °C
1 — PACK — 2
CTL
1 2
14 °C
RAM AIR
WING A-ICE
GND
APU
30 PSI
150 °C
1
2
IP
HP
Pack Controller
Pack Flow Indication
Pack Valve
Pack Distribution
Pack Values
RAM air
Pack Indications

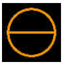
Ident.: DSC-21-COND-20-40-00001560.0001001 / 08 JUL 19

PACK VALVE INDICATIONS

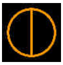
Note: *There are two pack valves per pack, but only one per pack is active. Therefore only one symbol is displayed to represent the state of both valves.*



The active pack valve is open.



Both pack valves of the same pack are closed failed or not.

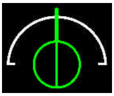


At least one pack valve of the same pack is failed open.

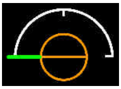
Ident.: DSC-21-COND-20-40-00001561.0001001 / 08 JUL 19

PACK FLOW INDICATIONS

The needle indicates the airflow through the pack valve.



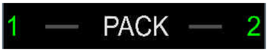
The pack flow is normal.



There is no flow rate.
The pack valve is closed.

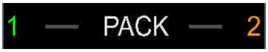
Ident.: DSC-21-COND-20-40-00001564.0001001 / 07 JUL 20

1 PACK INDICATIONS



Both packs 1 and 2 are operative.

L12



The regulation of the pack 2 is:

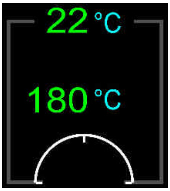
- lost, or
- degraded, or
- failed, or
- not supplied with bleed air.

Associated with the following ECAM alert: AIR PACK 1(2) REGUL FAULT (*Refer to procedure*).

Ident.: DSC-21-COND-20-40-00001562.0001001 / 07 JUL 20

2 PACK VALUES

L12

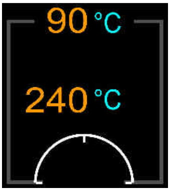


The pack outlet temperature is 22 °C.

Note: The pack outlet temperature is the ACM outlet temperature.

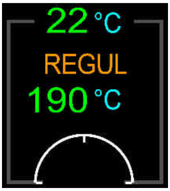
The pack compressor outlet temperature is 180 °C.

L12



The pack outlet temperature and the pack compressor outlet temperature are overheating.
The pack is overheating when the outlet temperature is above 88 °C for at least 10 s.

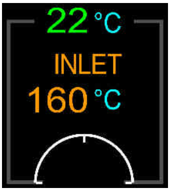
L12



Comes on:

- When pack regulation is lost or degraded, or
- When the pack is in bypass mode.

Associated with the following ECAM alert: AIR PACK 1(2) REGUL FAULT (*Refer to procedure*).



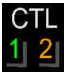
The pack compressor inlet temperature is overheating.

Note: In this case the pack compressor inlet temperature replaces the pack compressor outlet temperature.

Ident.: DSC-21-COND-20-40-00001565.0001001 / 15 APR 14

PACK CONTROLLER INDICATIONS

Nothing appears, when both channels of the pack controller operate.



Channel 2 of the pack controller is failed. Channel 1 of the pack controller operates.
There is no operational impact.

CTL 1 2	The pack controller is inoperative: Both channels are failed.

Ident.: DSC-21-COND-20-40-00001566.0001001 / 04 NOV 14

PACK DISTRIBUTION INDICATIONS

Nothing appears, when the pack is not supplied with bleed air.

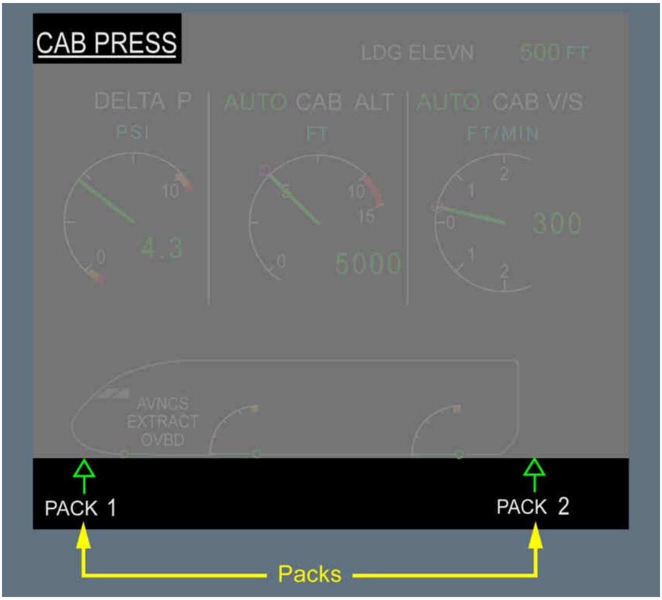
↑	The pack operates and cool air is supplied to the mixer unit.
↑	The pack is failed.

CAB PRESS SD PAGE

Applicable to: ALL

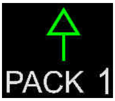
Ident.: DSC-21-COND-20-80-00001577.0001001 / 15 APR 14

CAB PRESS SD Page

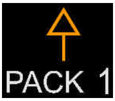

CAB PRESS
LDG ELEVN
500 FT
DELTA P
PSI
AUTO CAB ALT
FT
AUTO CAB V/S
FT/MIN
10
0
4.3
5
10
15
0
5000
2
1
0
1
2
300
AVNCS
EXTRACT
OVBD
PACK 1
PACK 2
Packs

Ident.: DSC-21-COND-20-80-00001590.0001001 / 15 APR 14

PACK INDICATIONS



The pack valves associated with the pack are open.



The pack valves associated with the pack are closed.

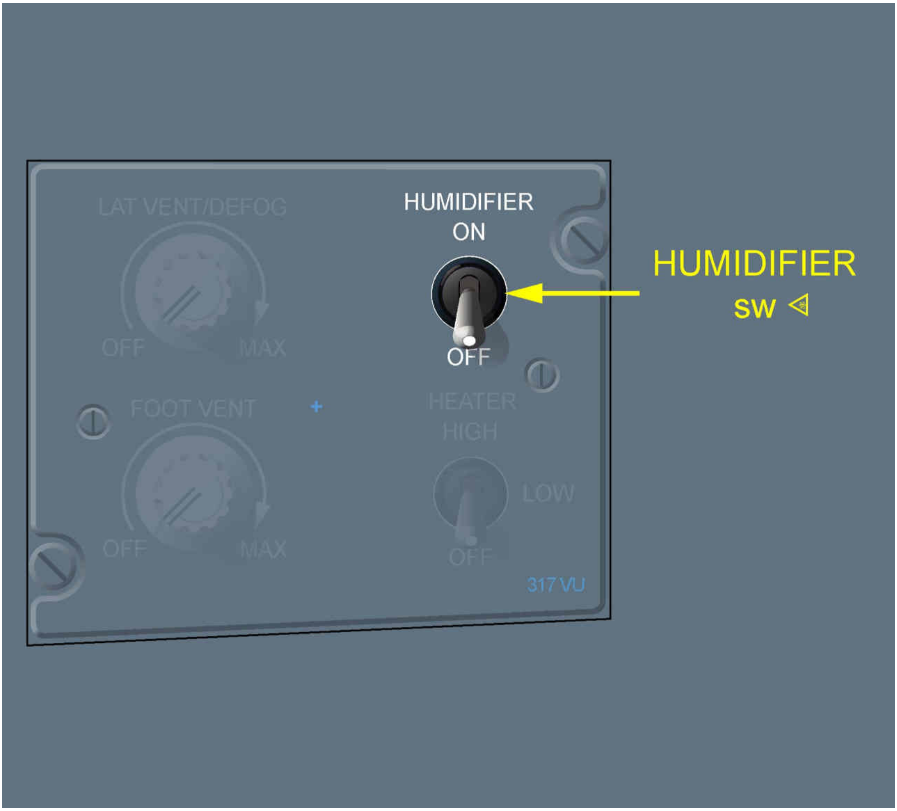
CAPT(F/O) INDIVIDUAL VENT PANEL

Applicable to: ALL

Ident.: DSC-21-COND-20-35-00019993.0001001 / 09 MAR 16

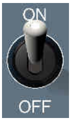
CAPT(F/O) INDIVIDUAL VENT PANEL

CAPT(F/O) INDIVIDUAL VENT Panel

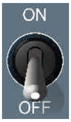

LAT VENT/DEFOG
OFF
MAX
HUMIDIFIER
ON
OFF
FOOT VENT
OFF
MAX
HEATER
HIGH
LOW
OFF
317 VU
HUMIDIFIER
SW ◁

Ident.: DSC-21-COND-20-35-00019994.0001001 / 09 MAR 16

HUMIDIFIER SW



The cockpit humidifier is on.

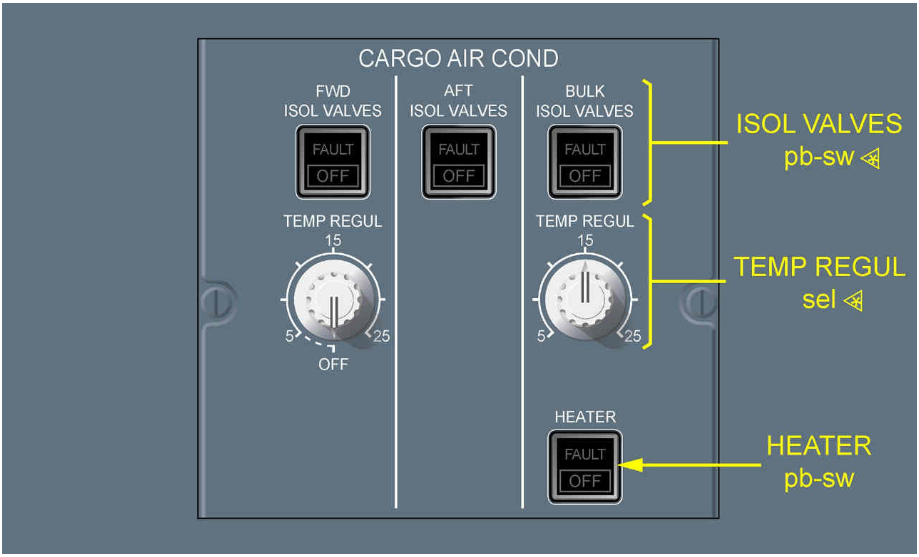


The cockpit humidifier is off.

CARGO AIR COND PANEL

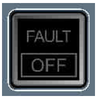
Applicable to: ALL

Ident.: DSC-21-COND-20-30-00001547.0001001 / 09 MAR 16

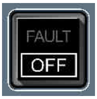

CARGO AIR COND
FWD ISOL VALVES
AFT ISOL VALVES
BULK ISOL VALVES
FAULT
OFF
TEMP REGUL
15
5
25
OFF
HEATER
ISOL VALVES pb-sw
TEMP REGUL sel
HEATER pb-sw

Ident.: DSC-21-COND-20-30-00001557.0001001 / 09 MAR 16

ISOL VALVES PB-SW

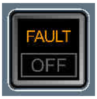


The cargo isolation valves are open, and the cargo extraction fan is ON.



The cargo isolation valves are closed, and the cargo extraction fan stops.

L12



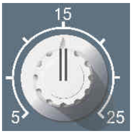
The cargo isolation valves are failed or disagree with commanded position.

Associated with one of the following ECAM alerts:
- COND AFT CARGO ISOL FAULT ◁✳ (*Refer to procedure*), or
- COND AFT CARGO VENT FAULT ◁✳ (*Refer to procedure*), or
- COND BULK CARGO ISOL FAULT (*Refer to procedure*), or
- COND BULK CARGO VENT FAULT (*Refer to procedure*), or
- COND FWD CARGO ISOL FAULT ◁✳ (*Refer to procedure*), or
- COND FWD CARGO VENT FAULT ◁✳ (*Refer to procedure*).

Ident.: DSC-21-COND-20-30-00001558.0001001 / 02 MAY 17

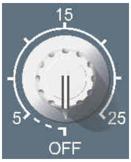
TEMP REGUL SEL

L12



Used to select the desired minimum temperature in the bulk cargo compartment.
The selected bulk cargo minimum temperature is 15 °C.

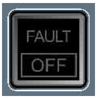
Note: *The bulk cargo temperature control system cannot cool down the temperature.*



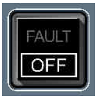
Used to select the desired temperature in the forward cargo compartment ◁✳ .
The temperature regulation stops, when the TEMP REGUL selector is set to OFF.

Ident.: DSC-21-COND-20-30-00001559.0001001 / 15 APR 14

HEATER PB-SW

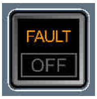


The bulk cargo heater automatically operates.



The bulk cargo heater is off.

L12



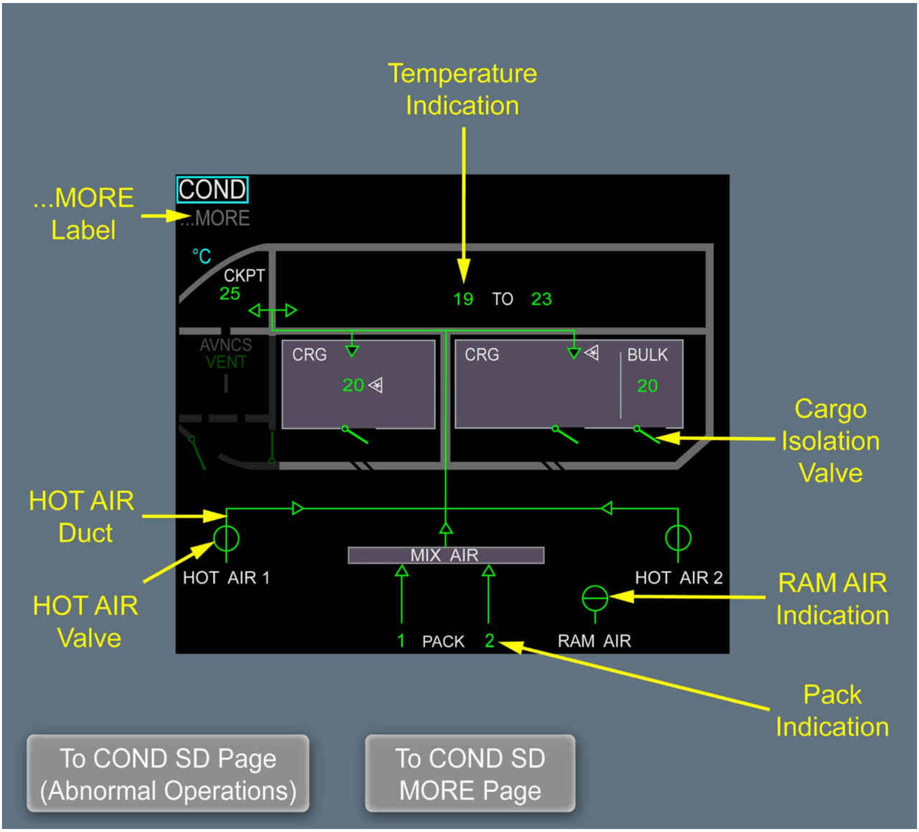
The bulk cargo heater is failed.

Associated with one of the following ECAM alerts:
- COND BULK CARGO DUCT OVHT (*Refer to procedure*), or
- COND BULK CARGO HEATER FAULT (*Refer to procedure*).

COND SD PAGE

Applicable to: ALL

Ident.: DSC-21-COND-20-50-00001549.0001001 / 24 APR 17


Temperature Indication
...MORE Label
COND
...MORE
°C
CKPT
25
19 TO 23
AVNCS VENT
CRG
20
CRG
BULK
20
Cargo Isolation Valve
HOT AIR Duct
HOT AIR Valve
HOT AIR 1
MIX AIR
HOT AIR 2
RAM AIR Indication
1 PACK 2
RAM AIR
Pack Indication
To COND SD Page (Abnormal Operations)
To COND SD MORE Page

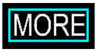
Ident.: DSC-21-COND-20-50-00019131.0001001 / 15 APR 14

...MORE LABEL

Indicates that more information is available on the COND SD MORE page. In order to display the COND SD MORE page, the flight crew presses the MORE pb on the ECP.

Ident.: DSC-21-COND-20-50-00019132.0001001 / 15 APR 14

MORE LABEL

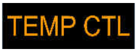


Indicates that the COND SD MORE page is displayed. The COND SD MORE page displays additional information compared to the COND SD page.
To remove the COND SD MORE page, the flight crew presses the MORE pb on the ECP. Then, the COND SD page appears.

Ident.: DSC-21-COND-20-50-00001569.0001001 / 15 APR 14

TEMP CTL INDICATION

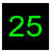
L12



The temperature control is failed.
Associated with the following ECAM alert: COND TEMP CTL FAULT (*Refer to procedure*).

Ident.: DSC-21-COND-20-50-00001572.0001001 / 15 APR 14

TEMPERATURE INDICATION

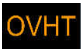


Indicates the temperature in the corresponding area (cockpit, cabin, or cargo compartment).

Ident.: DSC-21-COND-20-50-00001573.0001001 / 15 APR 14

OVHT INDICATION

L12



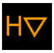
There is a duct overheat in the corresponding area (cockpit, cabin, or cargo compartment).

Associated with the following ECAM alerts:
- COND DUCT OVHT (*Refer to procedure*)
- COND BULK CARGO DUCT OVHT (*Refer to procedure*).

Ident.: DSC-21-COND-20-50-00001574.0001001 / 09 MAR 16

TRIM AIR VALVE INDICATION

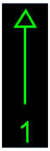
L12



The trim air valve in the corresponding area (cockpit or cabin zone) is failed.
Associated with the following ECAM alert: COND FWD CARGO TEMP REGUL FAULT ◁✱ (*Refer to procedure*), if the trim air valve that failed is in the FWD cargo compartment.

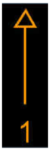
Ident.: DSC-21-COND-20-50-00001579.0001001 / 07 JUL 20

3 PACK INDICATIONS



The associated pack operates normally.

L12



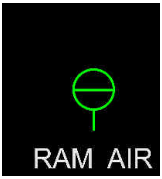
The regulation of the associated pack is:

- lost, or
- degraded, or
- failed, or
- not supplied with bleed air.

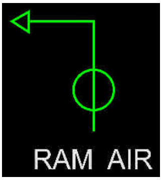
Associated with the following ECAM alert: AIR PACK 1(2) REGUL FAULT (*Refer to procedure*).

Ident.: DSC-21-COND-20-50-00001580.0001001 / 04 MAY 18

RAM AIR INDICATIONS

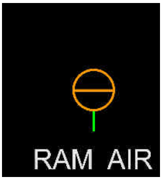


The emergency ram air inlet is closed.



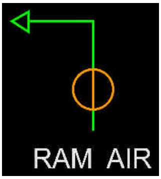
The emergency ram air inlet is open.

L12

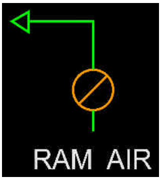


The emergency ram air inlet is abnormally closed.
Associated with the following ECAM alert: COND RAM AIR FAULT (*Refer to procedure*).

L12



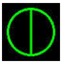
The emergency ram air inlet is abnormally open.
Associated with the following ECAM alert: COND RAM AIR FAULT (*Refer to procedure*).



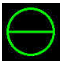
The emergency ram air inlet is in transition.

Ident.: DSC-21-COND-20-50-00001581.0001001 / 04 MAY 18

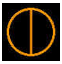
HOT AIR VALVE INDICATIONS



The hot air valve is open.

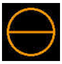


The hot air valve is closed.



The associated hot air valve is abnormally open.

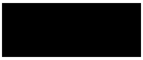
L12



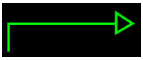
The hot air valve is abnormally closed.
Associated with the following ECAM alert: COND HOT AIR 1(2) FAULT (*Refer to procedure*).

Ident.: DSC-21-COND-20-50-00019274.0001001 / 15 APR 14

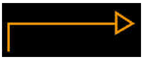
HOT AIR DUCT INDICATIONS



The associated hot air valve is closed.



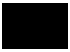
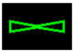
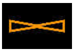
The associated hot air valve is open, and operates normally.



The associated hot air valve is open, and both associated pack valves are closed.

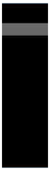
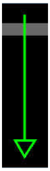
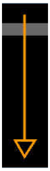
Ident.: DSC-21-COND-20-50-00001582.0001001 / 15 APR 14

RECIRCULATION FAN INDICATIONS

	All the recirculation fans operate normally.
	The associated fan operates, but at least one other recirculation fan is failed.
L12 	The associated fan is failed. Associated with one of the following ECAM alerts: - COND TWO CABIN FANS FAULT (*Refer to procedure*), if two recirculation fans are failed, or - COND CABIN FANS FAULT (*Refer to procedure*), if at least three recirculation fans are failed.

Ident.: DSC-21-COND-20-50-00019197.0001001 / 19 OCT 16

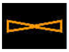
RECIRCULATION DUCT INDICATIONS

	All the recirculation fans (the two forward recirculation fans and the two aft recirculation fans) operate normally.
	At least one of the associated recirculation fans operates normally and at least one fan among four is failed.
	Both associated recirculation fans are failed.

Ident.: DSC-21-COND-20-50-00001584.0001001 / 09 MAR 16

CARGO EXTRACTION FAN INDICATION

L12

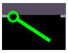


The associated cargo extraction fan is failed.

Associated with one of the following ECAM alerts:
- COND FWD CARGO VENT FAULT ◁✱ (*Refer to procedure*), or
- COND AFT CARGO VENT FAULT ◁✱ (*Refer to procedure*), or
- COND BULK CARGO VENT FAULT (*Refer to procedure*).

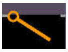
Ident.: DSC-21-COND-20-50-00001585.0001001 / 09 MAR 16

CARGO ISOLATION VALVE INDICATIONS



The bulk cargo isolation valve is open.

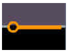
L12



The associated cargo isolation valve is abnormally open.

Associated with one of the following ECAM alerts:
- COND FWD CARGO ISOL FAULT ◁✱ (*Refer to procedure*), or
- COND AFT CARGO ISOL FAULT ◁✱ (*Refer to procedure*), or
- COND BULK CARGO ISOL FAULT (*Refer to procedure*).

L12



The associated cargo isolation valve is closed.

Can be associated with one of the following ECAM alerts:
- COND FWD CARGO VENT FAULT ◁✱ (*Refer to procedure*), or
- COND AFT CARGO ISOL FAULT ◁✱ (*Refer to procedure*), or
- COND BULK CARGO VENT FAULT (*Refer to procedure*).

Ident.: DSC-21-COND-20-50-00001586.0001001 / 15 APR 14

HEATER INDICATION

L12

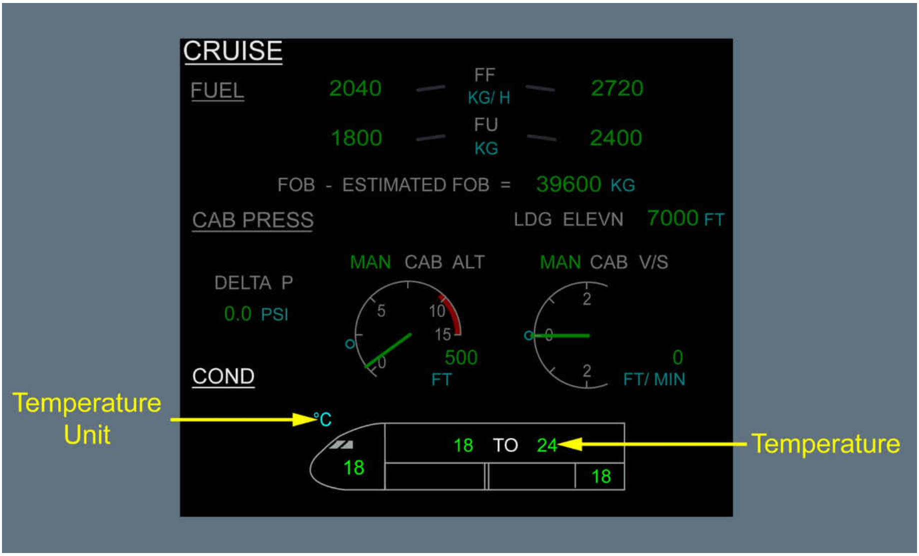
HEATER

The bulk cargo heater is failed, and the temperature in the bulk cargo compartment cannot be regulated.
Associated with the following ECAM alert: COND BULK CARGO HEATER FAULT (*Refer to procedure*).

CRUISE PAGE

Applicable to: ALL

Ident.: DSC-21-COND-20-55-00001568.0001001 / 15 APR 14


CRUISE
FUEL
2040
FF
KG/ H
2720
1800
FU
KG
2400
FOB - ESTIMATED FOB = 39600 KG
CAB PRESS
LDG ELEVN 7000 FT
MAN CAB ALT
MAN CAB V/S
DELTA P
0.0 PSI
5
10
15
0
500
FT
2
0
2
0
FT/ MIN
COND
Temperature Unit
°C
18
18 TO 24
18
Temperature

Ident.: DSC-21-COND-20-55-00011868.0001001 / 15 APR 14

TEMPERATURE INDICATION

25	Indicates the temperature in the corresponding area (cockpit, cabin, or cargo compartment).

Ident.: DSC-21-COND-20-55-00011866.0001001 / 15 APR 14

TEMPERATURE UNIT

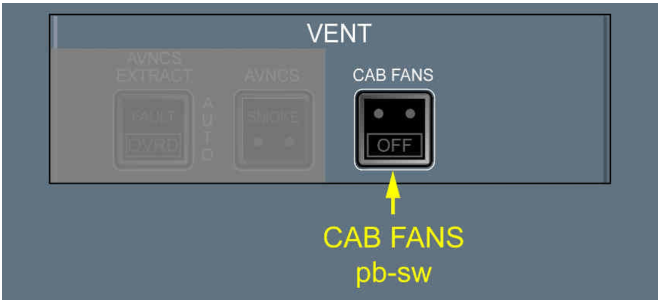
°C	All the temperatures displayed on CRUISE page are in Deg. C.

VENT PANEL

Applicable to: ALL

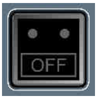
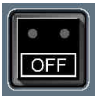
Ident.: DSC-21-COND-20-20-00001546.0001001 / 15 APR 14

VENT Panel


VENT
AVNCS EXTRACT
FAULT
OVRD
AUTO
AVNCS
SMOKE
CAB FANS
OFF
CAB FANS pb-sw

Ident.: DSC-21-COND-20-20-00001556.0001001 / 15 APR 14

CAB FANS PB-SW

	All cabin fans operate.
	All cabin fans are off.

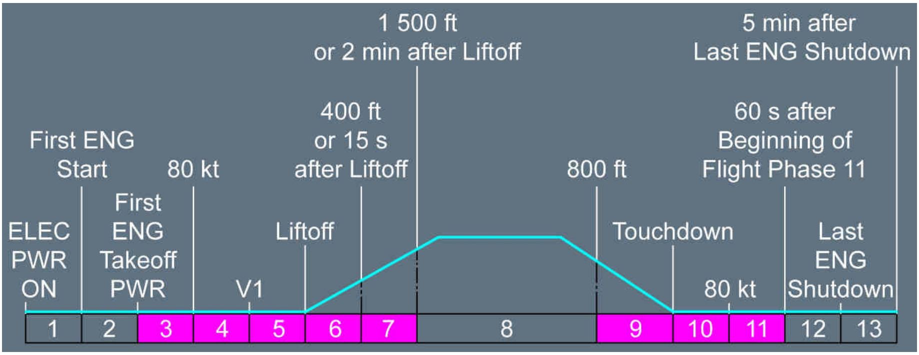
MEMO

Ident.: DSC-21-COND-20-00001578.0001001 / 26 JUL 17
Applicable to: ALL

RAM AIR	The emergency ram air inlet is open.
L12 RAM AIR	Appears in amber if the emergency ram air inlet is open before takeoff. Appears on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
2
3
4
5
6
7
8
9
10
11
12
13

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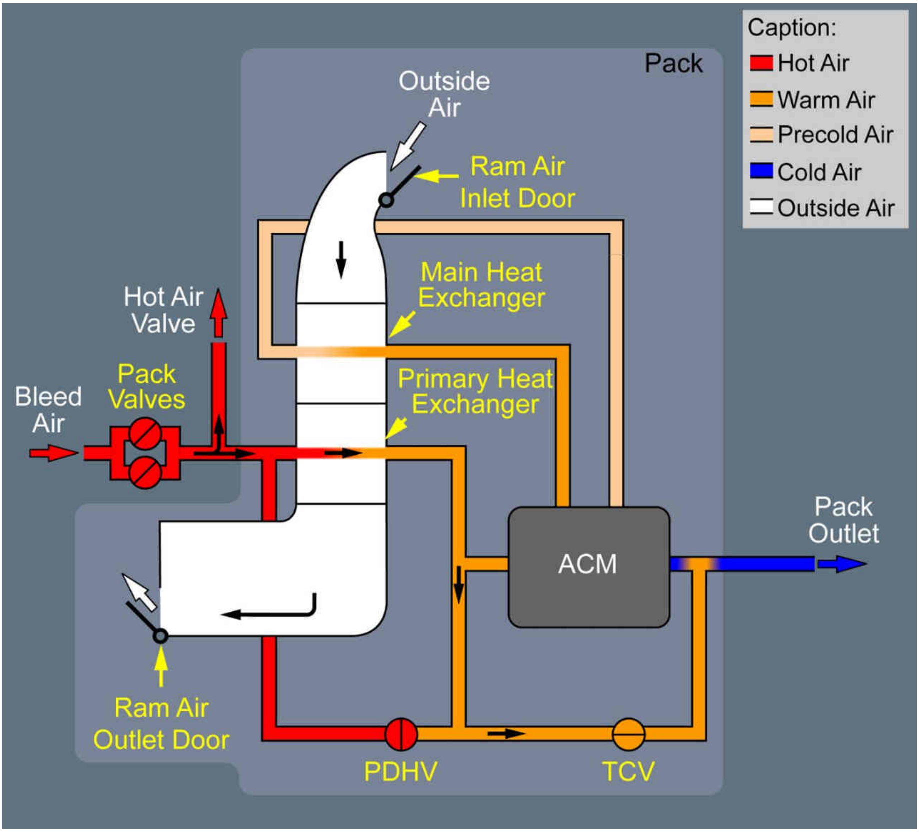
AIR CYCLE MACHINE (ACM) FAILURE

Ident.: DSC-21-COND-30-00001591.0001001 / 15 APR 14
Applicable to: ALL

In the case the ACM fails, the pack operates in degraded mode. Only the heat exchanger is used to cool the air from the bleed system.

In this configuration:
- Below FL 220: The pack must be set to OFF.
- Above FL 220: The pack can be used but pack performance is degraded.

Above FL 220 – Bypass Mode


Caption:
🟥 Hot Air
🟧 Warm Air
Precold Air
🟦 Cold Air
☐ Outside Air
Pack
Outside Air
Ram Air Inlet Door
Main Heat Exchanger
Primary Heat Exchanger
Hot Air Valve
Pack Valves
Bleed Air
ACM
Pack Outlet
Ram Air Outlet Door
PDHV
TCV

L2 An ACM failure can cause a pack overheat. If the pack overheats, the pack must be set to OFF.

Overheat of the pack is associated with the AIR PACK 1(2) OVHT alert (*Refer to procedure*)

TRIM AIR VALVE (TAV) FAILURES

Ident.: DSC-21-COND-30-00001592.0001001 / 15 APR 14
Applicable to: ALL

If one TAV is jammed in closed position: Optimized temperature regulation will be lost in the affected zone.

L2 The affected zone is indicated on the COND system display (For more information *Refer to DSC-21-COND-20 Trim Air Valve Indication*).

L1 If one TAV is jammed in open position: Temperature regulation in some cabin zones may be slightly degraded.

AIRCRAFT SYSTEMS

21 - VENTILATION

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DSC-21-VENT-10 System Description

DSC-21-VENT-10-10 Overview

Overview........A

DSC-21-VENT-10-25 Cockpit Ventilation

Cockpit Ventilation........A

DSC-21-VENT-10-30 Cabin Ventilation

Cabin Air Recirculation........A
Lavatory and Galleys Air Extraction........B

DSC-21-VENT-10-40 Aft Cargo Ventilation

Aft Cargo Compartment Ventilation ❄ ....A

DSC-21-VENT-10-45 Bulk Cargo Ventilation

Bulk Cargo Compartment Ventilation........A

DSC-21-VENT-10-50 FWD Cargo Ventilation

FWD Cargo Compartment Ventilation ❄ ....A

DSC-21-VENT-10-60 Avionics Ventilation

DSC-21-VENT-10-60-10 System Description

Avionics Ventilation Description........A

DSC-21-VENT-10-60-20 Abnormal Operations

Override configuration ....A

DSC-21-VENT-10-65 Commercial Equipment Ventilation

Commercial Equipment Ventilation........A

DSC-21-VENT-10-70 Pack Bay Ventilation

Pack Bay Ventilation........A

DSC-21-VENT-20 Controls and Indicators

Cockpit View........A
AIR Panel........B
CAB PRESS SD Page........C
CAPT(F/O) INDIVIDUAL VENT Panel........D
COND SD Page........E
VENT Panel........F

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OVERVIEW

Ident.: DSC-21-VENT-10-10-00001621.0001001 / 09 MAR 16
Applicable to: ALL

The aircraft has a fully automatic ventilation system for:
- The cockpit and cabin
- The Flight Crew Rest Compartment ◁ (FCRC)
- The Cabin Crew Rest Compartment ◁ (CCRC)
- The bulk cargo compartment
- The forward cargo compartment ◁
- The aft cargo compartment ◁
- The avionics bay
- The IFE and Connectivity center rack, and
- The pack bays.

L3 The ventilation control and monitoring is performed by the Ventilation Control System (VCS) application software which is hosted on CPIOMs H41 and H42. In normal operation, one CPIOM is active and the other one is in standby.

In addition, there are several pairs of CRDCs that:
- Gather and convert analog/discrete sensor signals to digital signal for transfer to the VCS via the avionics network.
- Send some analog/discrete signals for VCS directly to some aircraft systems, as backup in the case of VCS CPIOMs loss or avionics network failure.

Intentionally left blank

COCKPIT VENTILATION

Ident.: DSC-21-VENT-10-25-10-00019984.0001001 / 15 APR 14
Applicable to: ALL

The cockpit is automatically ventilated, with air from the mixer unit.
If necessary, the flight crew can manually force the cockpit ventilation.

In addition, each flight crew can locally increase the airflow, for the following purposes:
- Windshield defogging
- Lateral window defogging, and lateral individual ventilation
- Foot ventilation.

Ident.: DSC-21-VENT-10-25-10-00019985.0001001 / 30 JUL 15
Applicable to: ET-ATQ, ET-ATR

COCKPIT HI VENTILATION MODE

The flight crew can manually increase the airflow which supplies the cockpit.
On ground, the flight crew can also use the forced ventilation to defog the windshields and lateral windows.
The flight crew triggers the cockpit forced ventilation with the CKPT HI VENT pb-sw on the AIR panel.

L2 The cockpit HI VENT valve moves to the fully open position and all bypass valves, which supply the individual air outlets, are commended to fully open.

Ident.: DSC-21-VENT-10-25-10-00019986.0001001 / 15 APR 14
Applicable to: ALL

WINDSHIELD DEFOGGING

The flight crew can manually force the windshield defogging, with the WINDSHIELD DEFOG pb-sw on the AIR panel.

Ident.: DSC-21-VENT-10-25-10-00019987.0001001 / 15 APR 14
Applicable to: ALL

LATERAL WINDOW DEFOGGING AND LATERAL INDIVIDUAL VENTILATION

Each flight crew can manually adjust the airflow:
- To defog their onside lateral window, and
- To supply the lateral individual air outlet.

The airflow is adjusted with the LAT/VENT DEFOG selector on the onside CAPT(F/O) INDIVIDUAL VENT panel.
Each flight crew can increase the temperature of this airflow, with an electrical heater controlled from a dedicated switch on the onside CAPT(F/O) INDIVIDUAL VENT panel.

Ident.: DSC-21-VENT-10-25-10-00019988.0001001 / 15 APR 14
Applicable to: ALL

FOOT VENTILATION

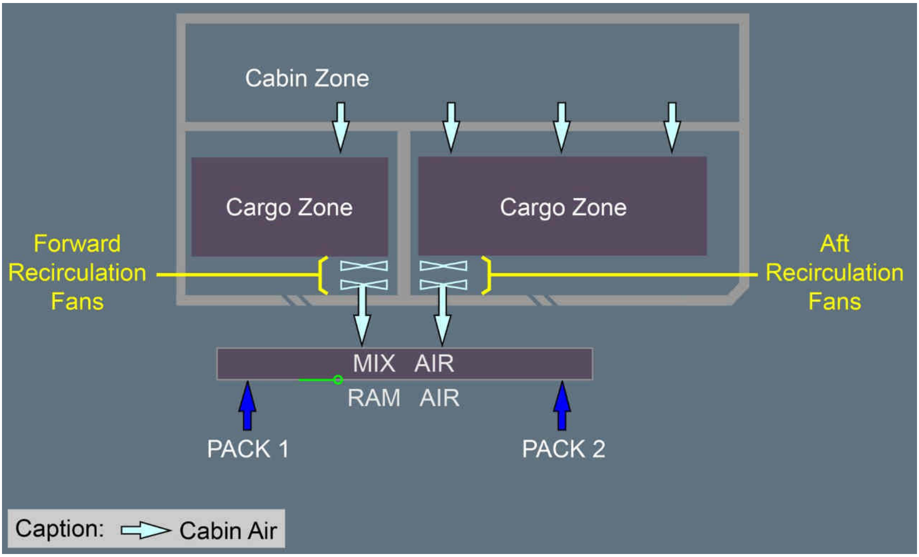
Each flight crew can manually adjust the airflow which goes around the onside rudder pedals.
The airflow is adjusted with the FOOT VENT selector on the onside CAPT(F/O) INDIVIDUAL VENT panel.
Each flight crew can increase the temperature of this airflow, with an electrical heater controlled from a dedicated switch on the onside CAPT(F/O) INDIVIDUAL VENT panel.

CABIN AIR RECIRCULATION

Ident.: DSC-21-VENT-10-30-00001629.0001001 / 15 APR 14
Applicable to: ALL

There are four recirculation fans that recirculate cabin air to the mixer unit (*Refer to Mixer Unit*).

Cabin Air Recirculation


Cabin Zone
Cargo Zone
Cargo Zone
Forward Recirculation Fans
Aft Recirculation Fans
MIX AIR
RAM AIR
PACK 1
PACK 2
Caption: Cabin Air

LAVATORY AND GALLEYS AIR EXTRACTION

Ident.: DSC-21-VENT-10-30-00001630.0001001 / 23 APR 14
Applicable to: ALL

In some cabin areas (e.g. lavatories, galleys) to avoid bad smells, air is extracted and then directly discharged overboard.

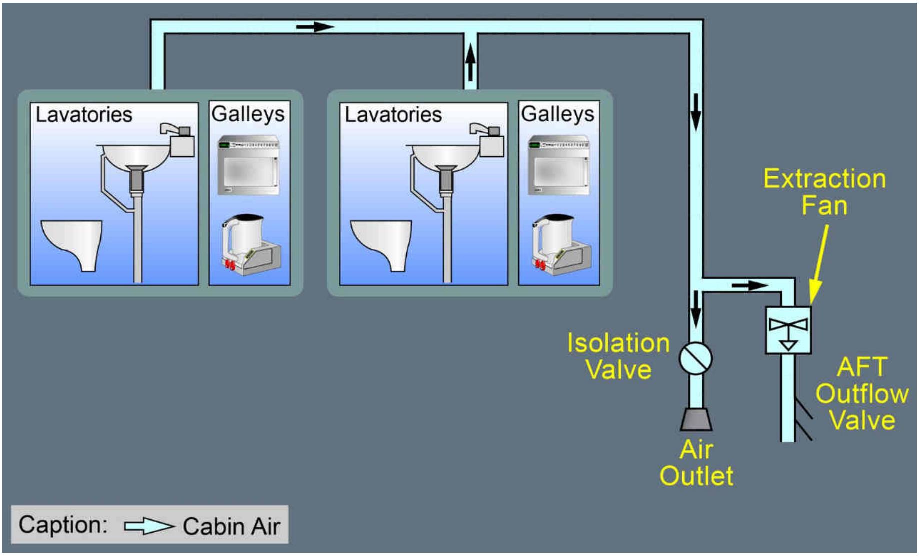
L3 On ground, or when the differential pressure is less than a precise value:
- The air is discharged overboard via the outflow valve
- The extraction fan operates
- The isolation valve is closed.

In flight, when the differential pressure is more than a precise value:
- The air is discharged directly overboard through an assigned air outlet, via differential pressure
- The extraction fan automatically stops
- The isolation valve automatically opens.

The air outlet is on the skin of the aft part of the aircraft.

L1 *Note:* *When the DITCHING pb-sw is set to ON, the isolation valve will close.*

Cabin Air Extraction


Lavatories
Galleys
Lavatories
Galleys
Extraction Fan
Isolation Valve
AFT Outflow Valve
Air Outlet
Caption: Cabin Air

AFT CARGO COMPARTMENT VENTILATION ⩤

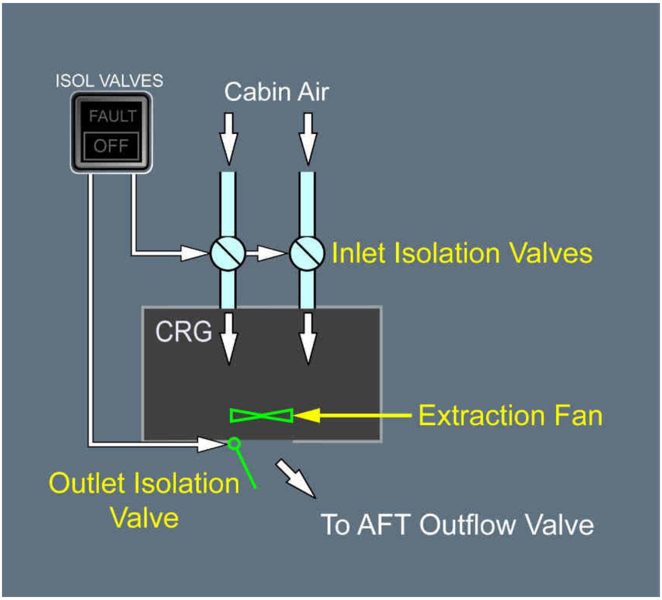
Ident.: DSC-21-VENT-10-40-00016500.0001001 / 09 MAR 16
Applicable to: ALL

The aft cargo compartment is automatically ventilated, with air from the air-conditioning system.

L2 Air flows into the aft cargo compartment, via two cargo inlet isolation valves.
An extraction fan then extracts this air, via an outlet isolation valve, and discharges this air overboard through the outflow valve.

L1 If necessary (e.g. smoke is detected in the cargo area), it is possible to isolate the aft cargo compartment, via the AFT ISOL VALVES pb-sw on the CARGO AIR COND panel.

Aft Cargo


ISOL VALVES
FAULT
OFF
Cabin Air
Inlet Isolation Valves
CRG
Extraction Fan
Outlet Isolation Valve
To AFT Outflow Valve

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BULK CARGO COMPARTMENT VENTILATION

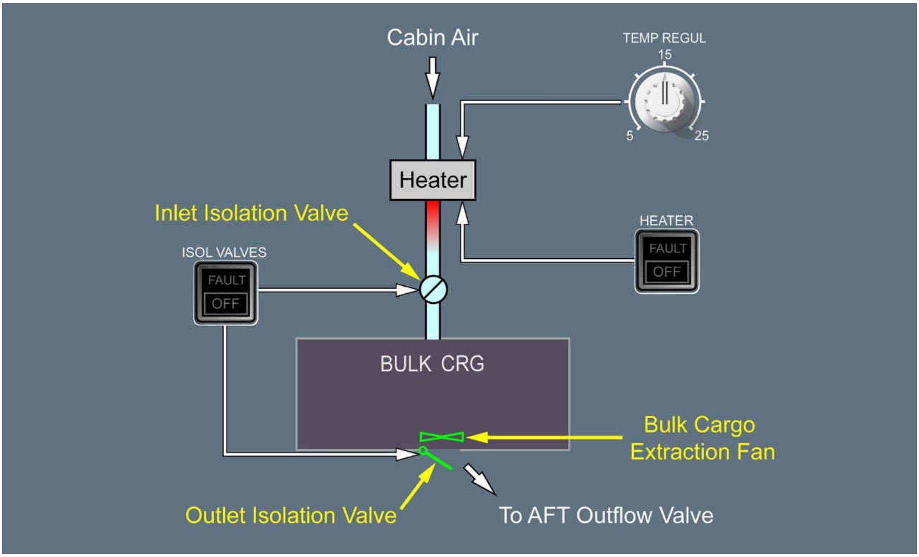
Ident.: DSC-21-VENT-10-45-00001635.0001001 / 29 NOV 18
Applicable to: ALL

The bulk cargo compartment is automatically ventilated.

L2 Some air from the cabin flows into the bulk cargo compartment via an inlet isolation valve.
An extraction fan then extracts air, via an outlet isolation valve, and discharges this air overboard through the outflow valve.

L1 Heating is possible for the bulk cargo (*Refer to Temperature and Flow Regulation*).
Two isolation valves (one inlet and one outlet) permit the isolation of the bulk cargo compartment.
Theses valves are manually controlled using the BULK ISOL VALVES pb-sw on the CARGO AIR COND panel (*Refer to CARGO AIR COND panel*).

Bulk Cargo


Cabin Air
TEMP REGUL
15
5
25
Heater
HEATER
FAULT
OFF
Inlet Isolation Valve
ISOL VALVES
FAULT
OFF
BULK CRG
Bulk Cargo
Extraction Fan
Outlet Isolation Valve
To AFT Outflow Valve

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FWD CARGO COMPARTMENT VENTILATION ⊲

Ident.: DSC-21-VENT-10-50-00001636.0001001 / 24 APR 17
Applicable to: ALL

The forward cargo compartment is automatically ventilated, with air from the air-conditioning system.

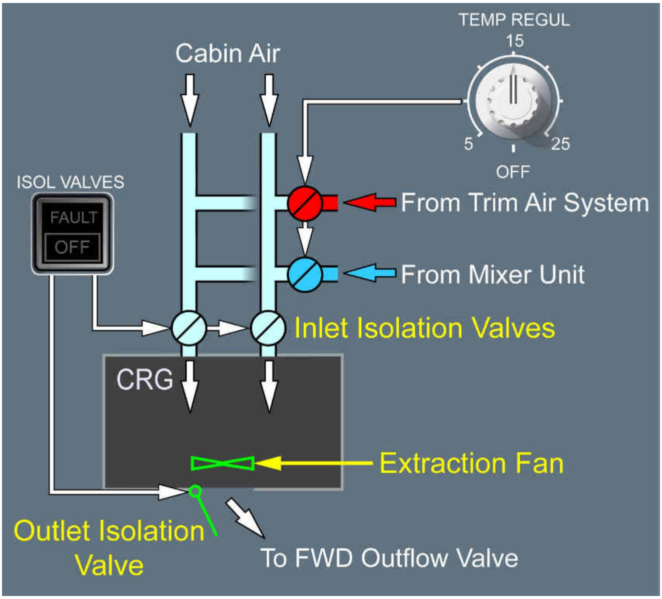
L2 Air flows into the forward cargo compartment, via two cargo inlet isolation valves.

An extraction fan then extracts this air, via an outlet isolation valve, and discharges this air overboard through the outflow valve.

L1 If necessary (e.g. smoke is detected in the cargo area), it is possible to isolate the forward cargo compartment, via the FWD ISOL VALVES pb-sw on the CARGO AIR COND panel.

The forward cargo compartment has a temperature regulation system: For more information about the forward cargo temperature regulation system, *Refer to DSC-21-COND-10-30 FWD Cargo Compartment Ventilation and Temperature Regulation*.

FWD Cargo


TEMP REGUL
15
5
25
OFF
Cabin Air
ISOL VALVES
FAULT
OFF
From Trim Air System
From Mixer Unit
Inlet Isolation Valves
CRG
Extraction Fan
Outlet Isolation Valve
To FWD Outflow Valve

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System Description

AVIONICS VENTILATION DESCRIPTION

Applicable to: ALL

Ident.: DSC-21-VENT-10-60-10-10-00001622.0001001 / 04 MAY 16

AVIONICS VENTILATION

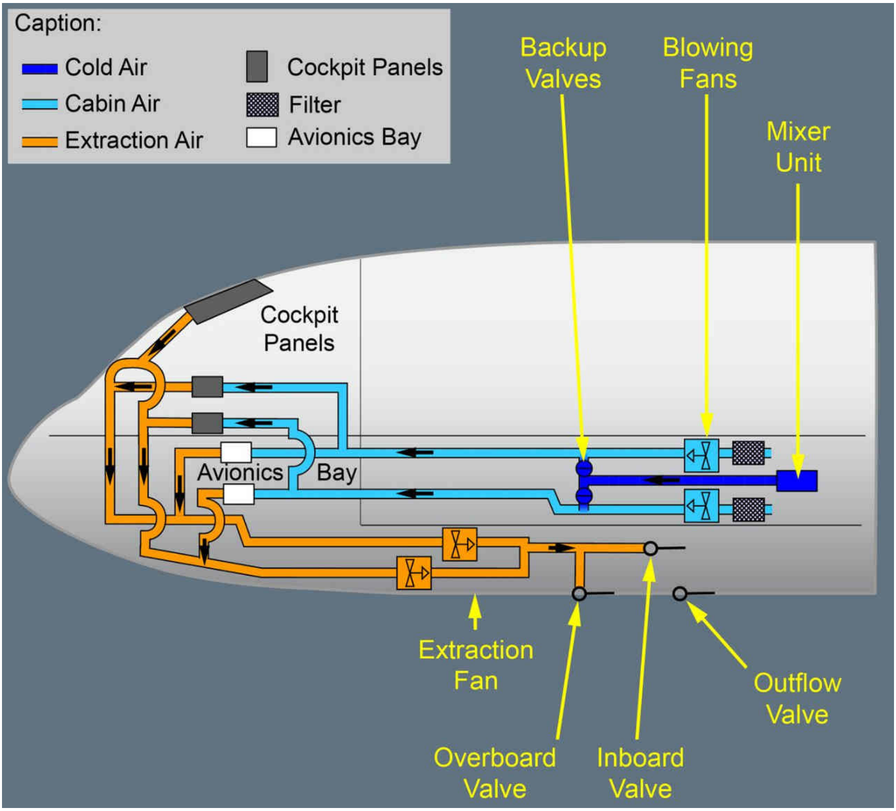
The avionics ventilation system cools the electrical and electronic equipment in the avionics bay and in the cockpit panels.
There are two avionics ventilation circuits: The left (L) and the right (R) circuit. Both the L and R circuits cool the cockpit panels, and the avionics bay.

The avionics ventilation system:
- Uses recirculated air from the cabin
- Cools the various cockpit panels and electronic equipment with the recirculated air, and
- Extracts the recirculated air.

L2 The recirculated air is discharged overboard, when the aircraft is on ground with engines not running.
If not, the recirculated air is blown into the bilge area.

L3 The batteries are ventilated during the flight by cabin air that is extracted and discharged overboard via differential pressure.

Avionics bay and cockpit panels Ventilation


Caption:
Cold Air
Cabin Air
Extraction Air
Cockpit Panels
Filter
Avionics Bay
Backup Valves
Blowing Fans
Mixer Unit
Cockpit Panels
Avionics Bay
Extraction Fan
Outflow Valve
Overboard Valve
Inboard Valve

Ident.: DSC-21-VENT-10-60-10-10-00001623.0001001 / 15 APR 14

L2 BLOWING FANS

There are two blowing fans, that blow recirculated air from the cabin in the various cockpit panels and electronic equipment. Each avionics ventilation circuit has one blowing fan.

L3 For both avionics ventilation circuits, the air is first filtered, before it enters the blowing fan.

L2 Both blowing fans automatically operate when the aircraft is powered by electricity. The active CPIOM monitors and controls both blowing fans.

The air flow and temperature in both avionics ventilation circuits are monitored.

Ident.: DSC-21-VENT-10-60-10-10-00020481.0001001 / 09 MAR 16

AVIONICS GROUND COOLING UNIT ⋪

On ground, the avionics ground cooling system cools the air that is blown in the avionics bay and the cockpit panels. The ground cooling system has two units, one for each avionics ventilation circuit.
The two units operate independently.
When the GND COOLG AVNCS pb-sw is set to AUTO, the ground cooling system will activate automatically if the temperature of the air is too high, and the air conditioning is OFF.

L3 This occurs when air temperature is more than 27 °C.

L1 The avionics ground cooling system uses the same cooling circuits, as those used to provide supplemental cooling to the galley.

L3 Each cooling unit is controlled by its own controller.

Ident.: DSC-21-VENT-10-60-10-10-00001625.0001001 / 15 APR 14

L2 BACKUP VALVES

Each ventilation circuit has one backup valve.
If the blowing fans cannot correctly cool the avionics bay, the backup valve of the affected circuit automatically opens. This enables air from the air conditioning system, to cool the avionics systems.

L3 The backup valve opens if:

- The associated blowing fan fails
- The airflow in the ventilation circuit is not sufficient. For example: The associated filter is clogged.

L2 The air from the air conditioning system comes directly from the mixer unit.
The cabin and cockpit air conditioning and ventilation system continue to operate normally.

Ident.: DSC-21-VENT-10-60-10-10-00001626.0001001 / 15 APR 14

EXTRACTION FAN

Two extraction fans extract air from the avionic bay and cockpit panels, either through the inboard valve, or through the overboard valve.
The extraction fan operate, when the aircraft is electrically-powered. The extraction fan is monitored and controlled by the active CPIOM.

L2 The CPIOM of the ventilation control system also:

- Controls the display of an ECAM alert and/or a dispatch message when a failure is detected, and
- Displays the indications related to the avionics ventilation system on the COND SD page.

Ident.: DSC-21-VENT-10-60-10-10-00001627.0001001 / 15 APR 14

OVERBOARD VALVE

L3 Air is discharged overboard through the overboard valve by the extraction fan, or by differential pressure.

L1 The overboard valve opens:
- Automatically, on ground, with the engines not running.
- Manually, in flight, in the case of failure in the avionics ventilation, when the AVNCS EXTRACT pb-sw on the VENT panel is set to OVRD (For more information on this configuration, *Refer to Override Configuration* In such cases, the valve partially opens.

L3 The overboard valve partially opens, when its small flap opens.

Ident.: DSC-21-VENT-10-60-10-10-00016099.0001001 / 15 APR 14

INBOARD VALVE

When the overboard valve is closed, the inboard valve opens.

L3 Air is discharged overboard by the extraction fan through the inboard valve, then through the outflow valve.

L1 *Note:* *When the DITCHING pb-sw is set to ON, the overboard valve will close, regardless of the AVNCS EXTRACT pb-sw selection (Refer to Ditching).*

Abnormal Operations

OVERRIDE CONFIGURATION

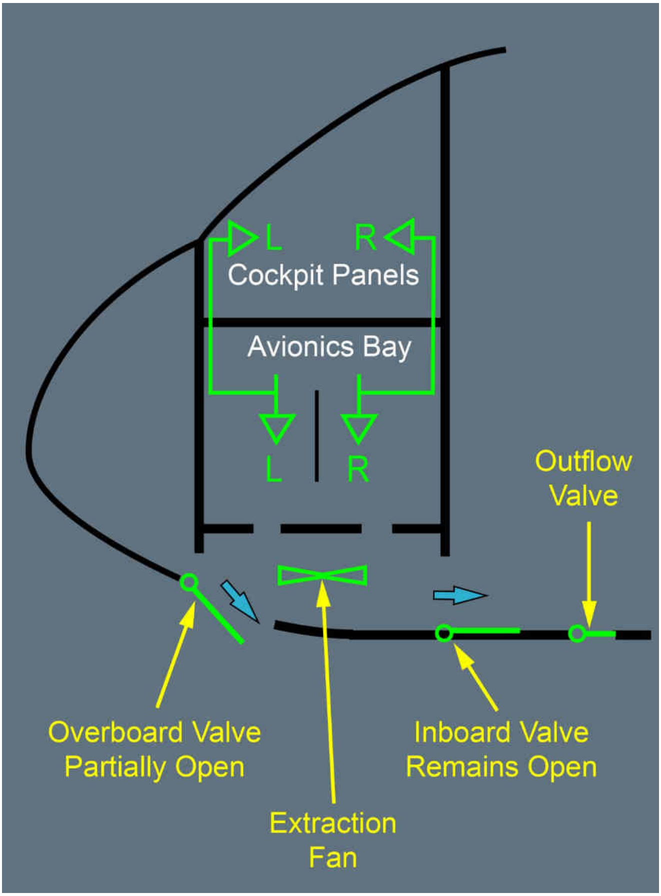
Ident.: DSC-21-VENT-10-60-20-00001628.0001001 / 15 APR 14
Applicable to: ALL

In flight, when the AVNCS EXTRACT pb-sw on the VENT panel is set to OVRD:
- The overboard valve partially opens, and
- Air is extracted and discharged through the overboard valve and inboard valve.

The inboard valve remains open only if the extract fans are running.

L2 The ECAM requests the flight crew to set the AVNCS EXTRACT pb-sw to OVRD, when:
- The VENT AVNCS EXTRACT FAULT alert triggers on the ECAM (*Refer to procedure*)
- The VENT AVNCS OVBD VLV FAULT alert triggers on the ECAM (*Refer to procedure*)
- The SMOKE L(R) AVNCS SMOKE alert triggers on the ECAM (*Refer to procedure*).

Override (OVRD) Configuration


L
R
Cockpit Panels
Avionics Bay
L
R
Outflow Valve
Overboard Valve Partially Open
Extraction Fan
Inboard Valve Remains Open

COMMERCIAL EQUIPMENT VENTILATION

Ident.: DSC-21-VENT-10-65-00020896.0001001 / 09 MAR 16
Applicable to: ALL

The commercial equipment ventilation system provides cooling air to commercial equipment such as In-Flight Entertainment (IFE) center rack and Connectivity rack.

L2 It also maintains the air extraction from the Cabin Crew Rest Compartment ◁ (CCRC).

L1 Ambient air next to the rack is extracted and drawn through the rack inlet and a filter unit. Then, two extraction fans blow the air into the bilge area, in front of the aft outflow valve: This ensures that smoke contaminated air is not recirculated inside the fuselage.

L2 The two extraction fans are mounted in parallel branches. Only one fan is operating while the second fan is in stand-by.

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PACK BAY VENTILATION

Ident.: DSC-21-VENT-10-70-00001632.0001001 / 30 APR 14
Applicable to: ALL

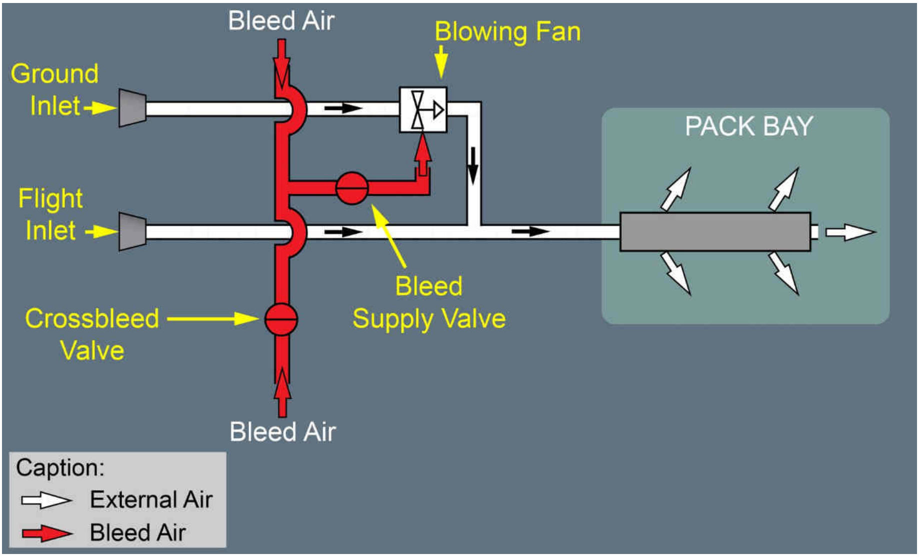
A ventilation system cools the two pack bays, and is fully automatic.

L3 The pack bay areas are ventilated by external air.

- In flight, external air flows into each pack bay area, through an air inlet. Both air inlets are in the forward belly fairing.
- On ground, two blowing fans ventilate both pack bay areas. These blowing fans are pneumatically-operated.
  Bleed air, from any available bleed supply, flows through two supply valves and drives both fans.
  The ASCU controls the blowing fans.

Air is discharged overboard, through a grid on each side of the pack bay.

Pack Bay Ventilation


Bleed Air
Blowing Fan
Ground Inlet
PACK BAY
Flight Inlet
Bleed Supply Valve
Crossbleed Valve
Bleed Air
Caption:
External Air
Bleed Air

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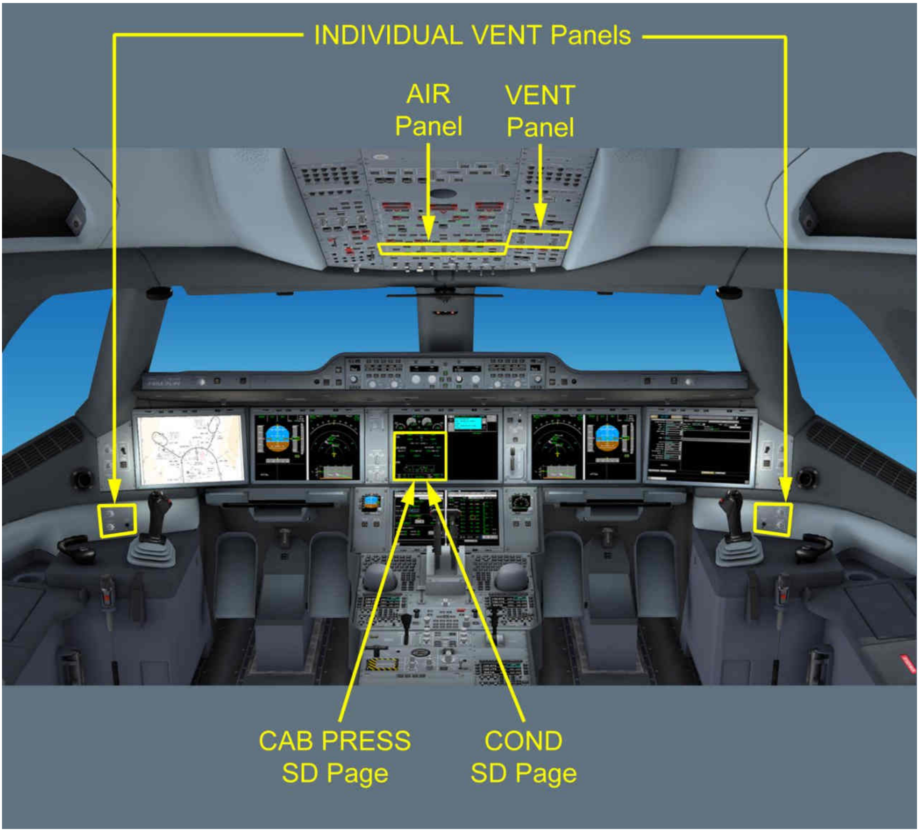
COCKPIT VIEW

Ident.: DSC-21-VENT-20-00001637.0001001 / 17 APR 14
Applicable to: ALL

Cockpit View

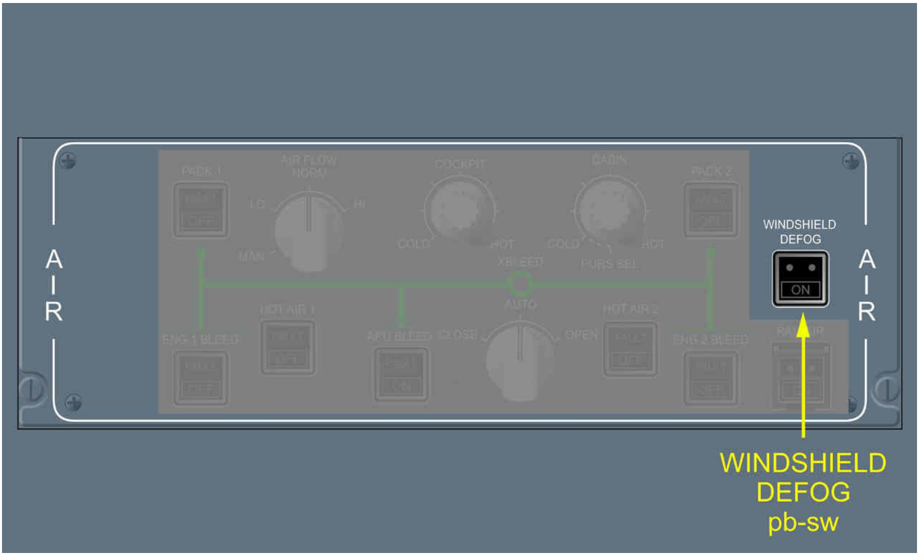

INDIVIDUAL VENT Panels
AIR Panel
VENT Panel
CAB PRESS SD Page
COND SD Page

AIR PANEL

Ident.: DSC-21-VENT-20-40-00001641.0002001 / 29 AUG 16

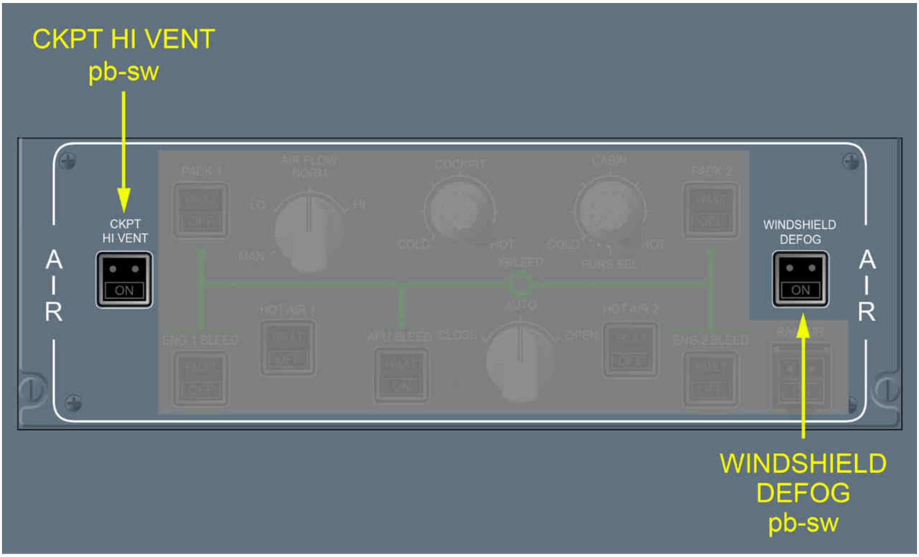
Applicable to: ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB

AIR Panel


A I R
WINDSHIELD DEFOG
ON
A I R
WINDSHIELD DEFOG pb-sw

Ident.: DSC-21-VENT-20-40-00001641.0001001 / 15 APR 14
Applicable to: ET-ATQ, ET-ATR

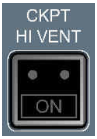
AIR Panel


CKPT HI VENT
pb-sw
CKPT
HI VENT
ON
A
I
R
WINDSHIELD
DEFOG
ON
A
I
R
WINDSHIELD
DEFOG
pb-sw

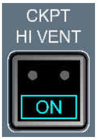
Ident.: DSC-21-VENT-20-40-00001652.0001001 / 06 SEP 16
Applicable to: ET-ATQ, ET-ATR

CKPT HI VENT PB-SW

L13


CKPT
HI VENT
ON

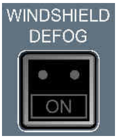
The valve which controls the air flow of the cockpit ventilation is not fully opened.
Cockpit air ventilation uses a dedicated pipe directly connected to the mixer unit.


CKPT
HI VENT
ON

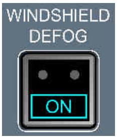
The valve which controls the air flow of the cockpit ventilation is in the fully open position.

Ident.: DSC-21-VENT-20-40-00016335.0001001 / 13 OCT 16
Applicable to: ALL

WINDSHIELD DEFOG PB-SW


WINDSHIELD
DEFOG
ON

The defogging of the two windshields is not selected.


WINDSHIELD
DEFOG
ON

The defogging of the two windshields is selected.

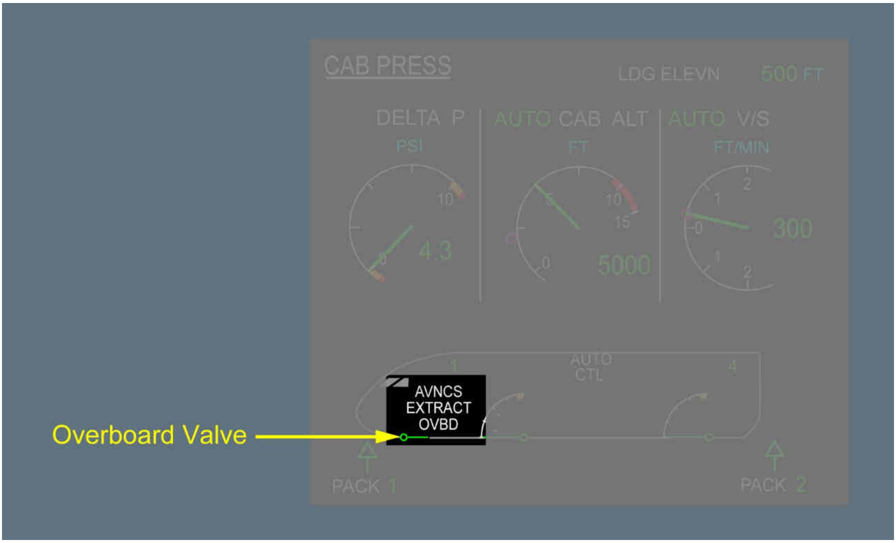
CAB PRESS SD PAGE

Applicable to: ALL

Ident.: DSC-21-VENT-20-30-00001640.0001001 / 15 APR 14

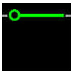
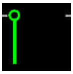
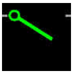
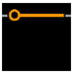
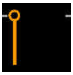
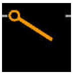
CAB PRESS SD PAGE

CAB PRESS SD Page


CAB PRESS
LDG ELEVN
500 FT
DELTA P
PSI
10
0
4.3
AUTO CAB ALT
FT
5
10
15
0
5000
AUTO V/S
FT/MIN
2
1
0
1
2
300
1
AUTO
CTL
4
AVNCS
EXTRACT
OVBD
Overboard Valve
PACK 1
PACK 2

Ident.: DSC-21-VENT-20-30-00001651.0001001 / 15 APR 14

OVERBOARD VALVE INDICATIONS

	The overboard valve is closed.
	The overboard valve is open.
	The overboard valve is partially open.
	The overboard valve is abnormally closed.
	The overboard valve is abnormally open.
	The overboard valve is abnormally partially open.

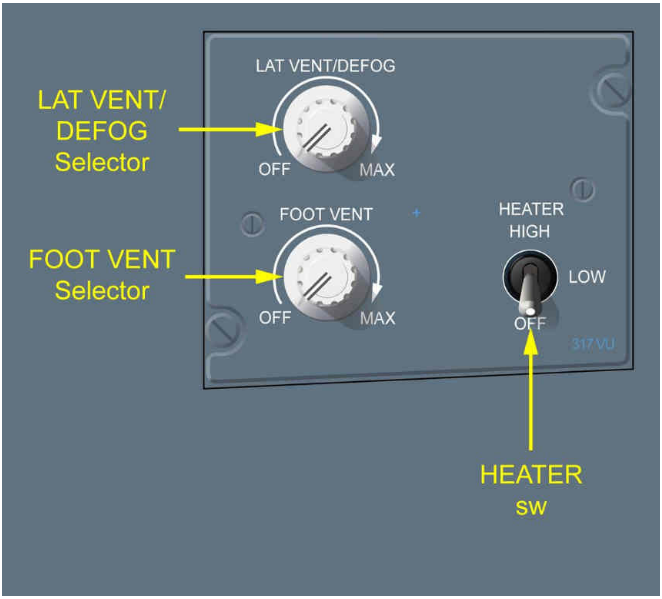
CAPT(F/O) INDIVIDUAL VENT PANEL

Applicable to: ALL

Ident.: DSC-21-VENT-20-15-00019989.0001001 / 15 APR 14

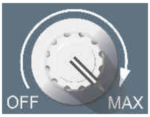
CAPT(F/O) INDIVIDUAL VENT PANEL

CAPT(F/O) INDIVIDUAL VENT Panel

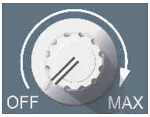

LAT VENT/DEFOG
LAT VENT/ DEFOG Selector
OFF
MAX
FOOT VENT
FOOT VENT Selector
OFF
MAX
HEATER
HIGH
LOW
OFF
317 VU
HEATER SW

Ident.: DSC-21-VENT-20-15-00019990.0001001 / 19 SEP 14

LAT VENT/DEFOG SEL



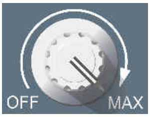
Adjusts the airflow which goes to the lateral window and the lateral individual air outlet.
The bypass valve is fully open.



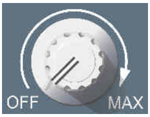
The bypass valve is closed.

Ident.: DSC-21-VENT-20-15-00019991.0001001 / 19 SEP 14

FOOT VENT SEL



Adjusts the airflow which goes to the foot air outlets.
The bypass valve is fully open.

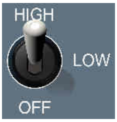


The bypass valve is closed.

Ident.: DSC-21-VENT-20-15-00019992.0001001 / 15 APR 14

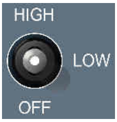
HEATER SW

L12

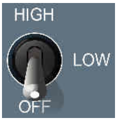


The electrical heater is at HIGH power.

The electrical heater increases the temperature of the airflow which goes to:
- The lateral window
- The lateral individual air outlet, and
- The foot air outlets.



The electrical heater is at LOW power (50 % of the HIGH power value).



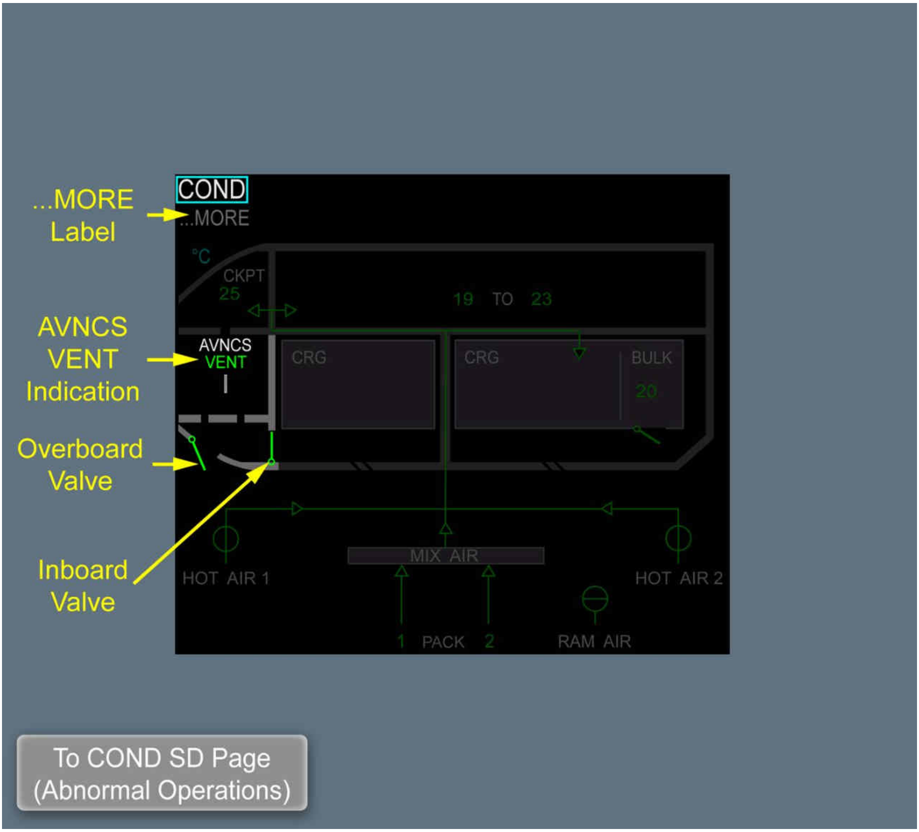
The electrical heater is off.

COND SD PAGE

Applicable to: ALL

Ident.: DSC-21-VENT-20-20-00001639.0001001 / 15 APR 14

COND SD Page


...MORE Label
AVNCS VENT Indication
Overboard Valve
Inboard Valve
COND
...MORE
°C
CKPT
25
19 TO 23
AVNCS
VENT
CRG
CRG
BULK
20
MIX AIR
HOT AIR 1
HOT AIR 2
1 PACK 2
RAM AIR
To COND SD Page (Abnormal Operations)

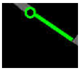
Ident.: DSC-21-VENT-20-20-00018338.0001001 / 15 APR 14

...MORE LABEL

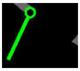
Indicates that more information is available on the COND SD MORE page. In order to display the COND SD MORE page, the flight crew presses the MORE pb on the ECP.

Ident.: DSC-21-VENT-20-20-00001644.0001001 / 15 APR 14

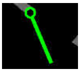
OVERBOARD VALVE INDICATIONS



The overboard valve is closed.

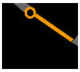


The overboard valve is fully open.



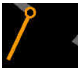
The overboard valve is partially open.

L12



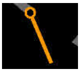
The overboard valve is abnormally closed.
Associated with the following ECAM alert: VENT AVNCS OVBD VLV FAULT (*Refer to procedure*).

L12



The overboard valve is abnormally fully open.
Associated with the following ECAM alert: VENT AVNCS OVBD VLV FAULT (*Refer to procedure*).

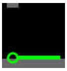
L12



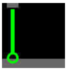
The overboard valve is abnormally partially open.
Associated with the following ECAM alert: VENT AVNCS OVBD VLV FAULT (*Refer to procedure*).

Ident.: DSC-21-VENT-20-20-00001645.0001001 / 15 APR 14

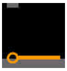
INBOARD VALVE INDICATIONS



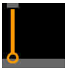
The inboard valve is open.



The inboard valve is closed.



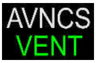
The inboard valve is abnormally open.



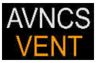
The inboard valve is abnormally closed.

Ident.: DSC-21-VENT-20-20-00001646.0001001 / 15 APR 14

AVNCS VENT INDICATIONS



The avionics ventilation operates normally.



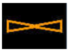
Comes on:
- When at least one avionics blowing system is failed, or
- When at least one avionics extraction fan is failed.

Ident.: DSC-21-VENT-20-20-00001647.0001001 / 15 APR 14

EXTRACTION FAN INDICATIONS

At least one extraction fan operates normally.

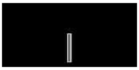
L12



Both extraction fans are failed.
Associated with the following ECAM alert: VENT AVNCS EXTRACT FAULT (*Refer to procedure*).

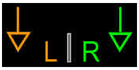
Ident.: DSC-21-VENT-20-20-00001648.0001001 / 15 APR 14

AVIONICS VENTILATION CIRCUIT INDICATIONS



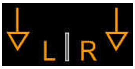
Both avionics circuits are normally ventilated.

L12



The amber avionics circuit is no longer ventilated.
Associated with the following ECAM alert: VENT AVNCS L(R) BLOWING FAULT (*Refer to procedure*).

L12

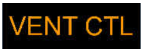


Both avionics circuits are no longer ventilated.
Associated with the following ECAM alert: VENT AVNCS L+R BLOWING FAULT (*Refer to procedure*).

Ident.: DSC-21-VENT-20-20-00001649.0001001 / 15 APR 14

VENT CTL INDICATION

L123



The ventilation system is failed.
CPIOMs H41 and H42 are faulty.
Associated with the following ECAM alert: COND VENT CTL DEGRADED (*Refer to procedure*).

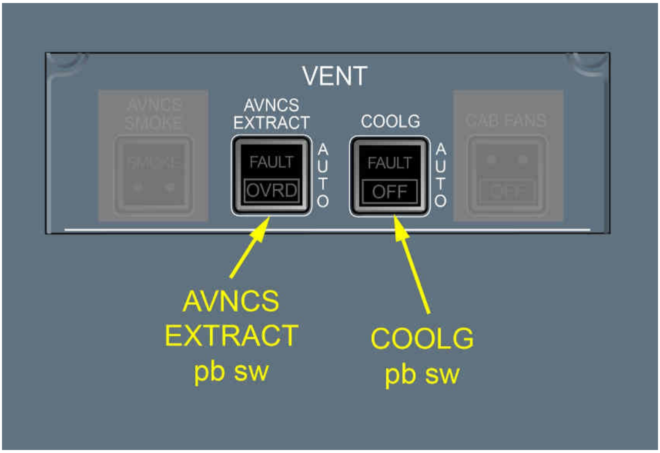
VENT PANEL

Applicable to: ALL

Ident.: DSC-21-VENT-20-10-00001638.0001001 / 15 APR 14

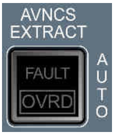
VENT PANEL

VENT Panel

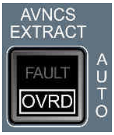

VENT
AVNCS SMOKE
SMOKE
AVNCS EXTRACT
FAULT
OVRD
AUTO
COOLG
FAULT
OFF
AUTO
CAB FANS
OFF
AVNCS EXTRACT pb sw
COOLG pb sw

Ident.: DSC-21-VENT-20-10-00001642.0001001 / 15 APR 14

AVNCS EXTRACT PB-SW


AVNCS EXTRACT
FAULT
OVRD
AUTO

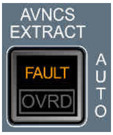
The overboard and inboard valves operate automatically, to ensure ventilation of the avionics bay and the cockpit panels.


AVNCS EXTRACT
FAULT
OVRD
AUTO

The overboard and inboard valves are in override configuration.

Note: *In case the DITCHING pb-sw is set to ON, the overboard valve will close, regardless of the AVNCS EXTRACT pb-sw selection (Refer to Ditching).*

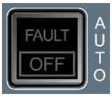
L12


AVNCS
EXTRACT
FAULT
OVRD
AUTO

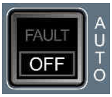
A low extraction flow is detected in any avionics compartment.
Associated with the following ECAM alert: VENT AVNCS EXTRACT FAULT (*Refer to procedure*).
The FAULT light goes off, when the flight crew sets the EXTRACT pb-sw to OVRD.

Ident.: DSC-21-VENT-20-10-00001643.0001001 / 15 APR 14

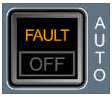
COOLG PB-SW


FAULT
OFF
AUTO

Normal operation of the supplemental cooling system.


FAULT
OFF
AUTO

The supplemental cooling system is off.


FAULT
OFF
AUTO

The supplemental cooling system is failed.

AIRCRAFT SYSTEMS

21 - PRESSURIZATION

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DSC-21-PRESS-10 System Description

Overview.. A
Architecture.. B

DSC-21-PRESS-20 Controls and Indicators

Cockpit View.. A
CAB PRESS SD page.. B
CABIN PRESS Panel.. C
CRUISE Page.. D
DOOR/OXYGEN SD Page.. E
MEMO.. F

DSC-21-PRESS-30 Normal Operations

Automatic Operation.. A

DSC-21-PRESS-40 Abnormal Operations

Manual Operation.. A
Ditching.. B

DSC-21-PRESS-45 Temporary Abnormal Behaviors

Abnormal Cabin Altitude Increase in Climb due to OFV Erroneously Open.. A

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Localization Title	Toc Index	ID	Reason
DSC-21-PRESS-10 Automatic and Manual Control Mode	B	1	Update of the procedure name to ECAM alert, for harmonization reason.
DSC-21-PRESS-20 CAB ALT Indications	B	1	Revision of the description of the CAB ALT INDICATIONS to clarify the conditions when the cabin altitude needle and digital indication will pulse in green.
DSC-21-PRESS-40 Ditching	B	1	Removal of the "In addition, all the cabin fans stop." sentence because setting the DITCHING pb to ON does not stop the cabin fans.
			Documentation update: Deletion of text.

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OVERVIEW

Ident.: DSC-21-PRESS-10-00001677.0001001 / 09 APR 14
Applicable to: ALL

In normal operation, the pressurization system is fully automatic. Cabin air pressure is regulated to provide maximum passenger comfort.
The cabin pressure regulation is performed via the automatic control of the outflow valves during all flight phases, from takeoff to landing.

L2 During cruise the cabin altitude is regulated to remain below 6 000 ft.

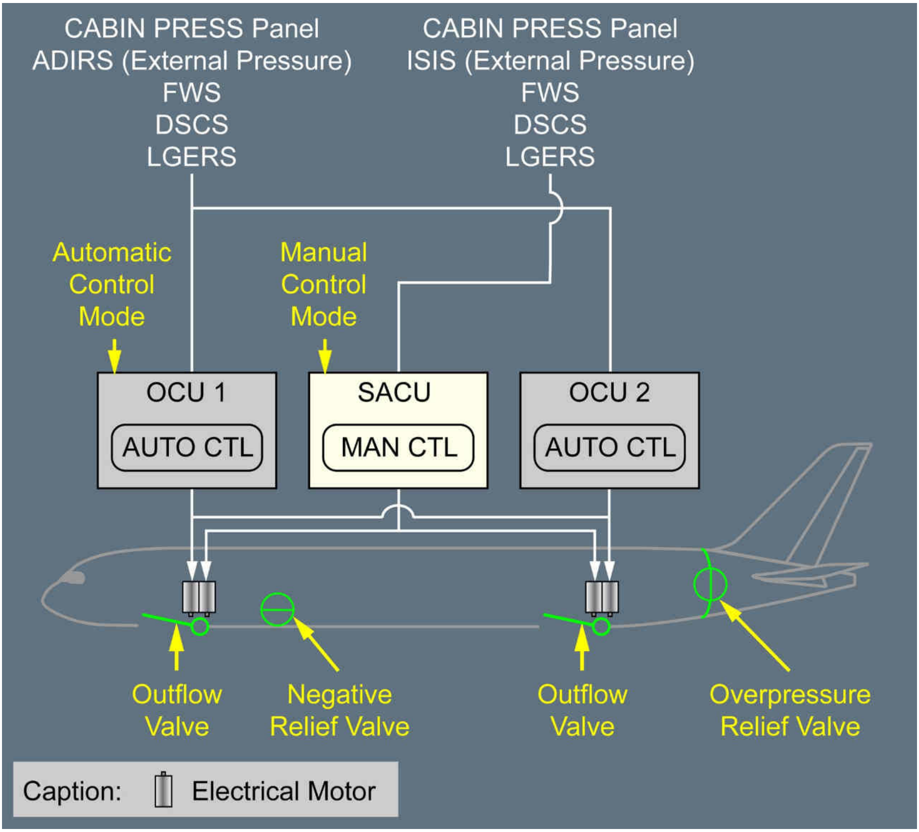
L1 If necessary, the flight crew can manually operate the pressurization system, by selecting a cabin altitude target, and/or a cabin vertical speed.

ARCHITECTURE

Applicable to: ALL

Ident.: DSC-21-PRESS-10-10-00001678.0001001 / 11 DEC 14

System Description


CABIN PRESS Panel
ADIRS (External Pressure)
FWS
DSCS
LGERS
CABIN PRESS Panel
ISIS (External Pressure)
FWS
DSCS
LGERS
Automatic Control Mode
Manual Control Mode
OCU 1
AUTO CTL
SACU
MAN CTL
OCU 2
AUTO CTL
Outflow Valve
Negative Relief Valve
Outflow Valve
Overpressure Relief Valve
Caption:
Electrical Motor

Ident.: DSC-21-PRESS-10-10-00015885.0001001 / 03 JUL 20

1 To regulate the cabin pressure the pressurization system has:
- Two identical, independent and automatic controllers
- One manual controller
- Two outflow valves.

L3 In automatic and manual mode the pressurization system :

- Prevent the positive and negative differential pressure from going too high.
- Prevent the cabin altitude from going too high.
  The two outflow valves close when the cabin altitude exceeds 14 000 ft in automatic mode and 15 000 ft in manual mode.

Note: However, if the cabin altitude exceeds 9 550 ft, the ECAM will trigger the CAB PRESS EXCESS CAB ALT ECAM alert on the WD.

Ident.: DSC-21-PRESS-10-10-00001679.0001001 / 24 APR 14

AUTOMATIC CONTROL MODE

In automatic mode (when the CABIN ALT MODE pb-sw and CABIN V/S MODE pb-sw are set to AUTO), one Outflow valve Control Unit (OCU) automatically controls the cabin altitude target, and the cabin vertical speed.
There are two OCUs. OCU1 computes the cabin pressure targets and provides corresponding commands to OCU2. Both OCUs drive their corresponding outflow valve, more open or closed, in order to reach the demanded pressure target. If one OCU fails the other one takes over the control of the two outflow valves.

L2 If the differential pressure exceeds the maximum limit of the electronic differential pressure protection, the master OCU is shut off and the remaining OCU takes over control to recover, and opens the two outflow valves. This limit is equal to 9.65 PSI.

L1 For more information on the normal operation of the pressurization system, *Refer to DSC-21-PRESS-30 Automatic Operation*.
In order to automatically control the cabin pressure, each OCU uses the FMS flight plan (including the landing elevation), together with current outside air pressure, and air conditioning system status.

Note: The landing elevation is necessary to be in automatic mode.

L2 The OCUs use an internal pressure sensor to determine the cabin altitude and cabin vertical speed.

Each OCU receives data from the following systems:

- The Flight Management System (FMS)

L3 The OCUs use the following data:

  - QNH at destination
  - Landing elevation
  - Remaining time to top of descent
  - Remaining time to destination.

L2 - The (ADIRS)

L3 The OCUs use the following data:

  - Corrected average static pressure
  - Barometric correction
  - Aircraft altitude
  - Calibrated Air Speed (CAS).

L2 - The landing gear

L3 The OCUs use the status of the landing gears (on ground position).

L2 - The engines

L3 The OCUs use the following data:

  - Engines running
  - Engines at takeoff power.

L2 - Air conditioning system

L3 The OCUs use the following data:

  - Status of each pack
  - Actual flow from each pack
  - Position of the Emergency Ram Air Inlet (ERAI).

L2 - The doors

L3 The OCUs use the door status (all doors closed, and latched).

L2 - The Ventilation Control System

L3 The OCUs use the following data:

  - Flow ratio
  - Position of the air extraction valve(s) in the cabin
  - Position of the avionics overboard valve.

Note: *For all system, data is received via the avionics network, and the CPIOMs H41 and H42.*

Ident.: DSC-21-PRESS-10-10-00015884.0001001 / 09 APR 14

MANUAL CONTROL MODE

If the automatic control system of the two OCUs fails, or in case of loss of the landing elevation, the flight crew can manually control the cabin pressure.

L2 In manual mode (when the CABIN ALT MODE pb-sw, or the CABIN V/S MODE pb-sw are set to MAN), the Semi-Automatic Control Unit (SACU) uses internal cabin pressure and differential pressure sensors, and the external pressure coming from the ISIS.

L1 Cabin vertical speed and/or cabin altitude target can be selected by the flight crew on the CABIN PRESS panel.

Refer to DSC-21-PRESS-40 Manual Operation

Ident.: DSC-21-PRESS-10-10-00001680.0001001 / 23 APR 14

OUTFLOW VALVES

There are two outflow valves:
- One is in the forward part of the aircraft
- One is in the aft part of the aircraft.

L2 The outflow valves are below the flotation line.

L1 The outflow valves control the cabin pressure, by regulating air outflow.

L2 Note: *When the RAM AIR pb is set to ON, both packs are off, and the differential pressure is less than 2 PSI, the system automatically opens the outflow valves to approximately 50 %, to ensure the ventilation of the cockpit and cabin.*

Ident.: DSC-21-PRESS-10-10-00001681.0001001 / 27 OCT 14

NEGATIVE RELIEF VALVE

The aircraft is equipped with one negative relief valve, that operates mechanically with differential pressure. The negative relief valve prevents the negative differential pressure from going too high. The negative relief valve is installed on the right side of the forward part of the aircraft, above the flotation line.

L3 The negative relief valve mechanically-opens, in order to not exceed the maximum negative differential pressure, which is equal to -0.725 PSI.

Ident.: DSC-21-PRESS-10-10-00001682.0001001 / 09 APR 14

OVERPRESSURE RELIEF VALVE

In the event that the pressurization system fails, one independent overpressure relief valve automatically prevents positive and negative cabin pressure from going too high.
This valve is located in the rear pressure bulkhead.

L3 The overpressure relief valve automatically opens when the differential pressure is below –0.725 PSI or above 10.29 PSI.

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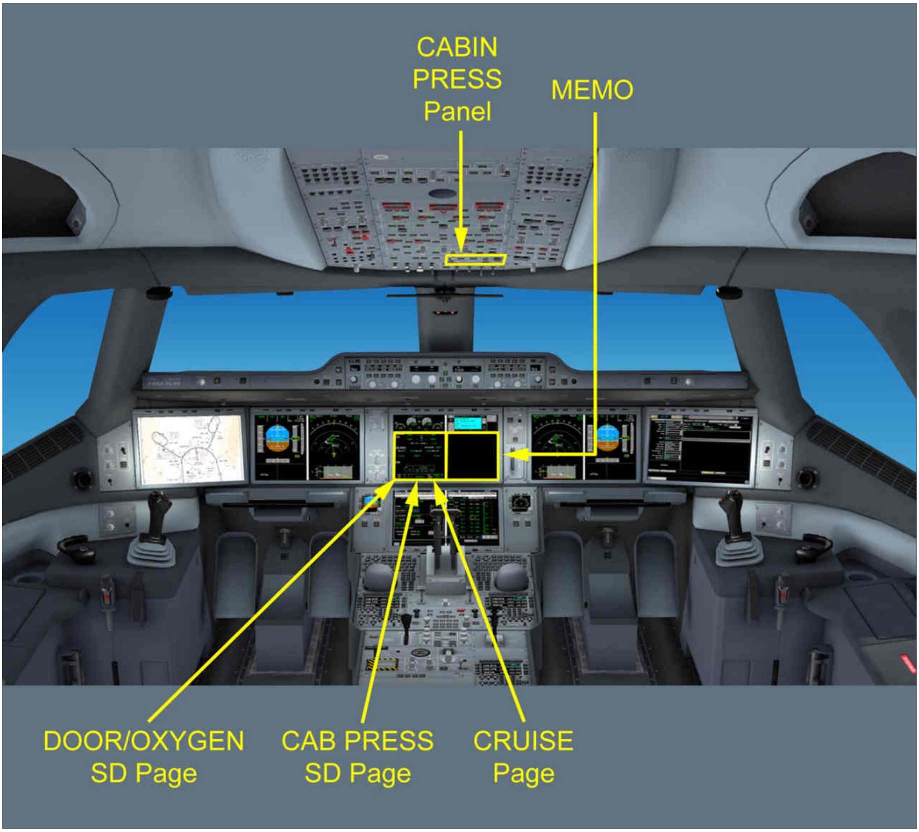
COCKPIT VIEW

Ident.: DSC-21-PRESS-20-00001683.0001001 / 17 APR 14
Applicable to: ALL

Cockpit View


CABIN
PRESS
Panel
MEMO
DOOR/OXYGEN
SD Page
CAB PRESS
SD Page
CRUISE
Page

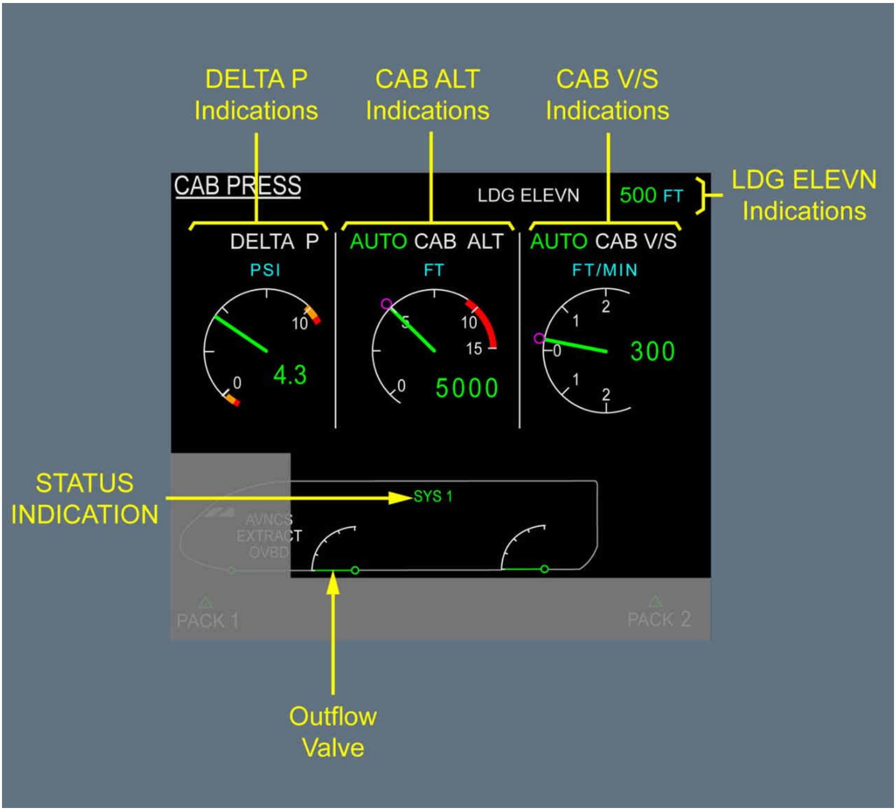
CAB PRESS SD PAGE

Applicable to: ALL

Ident.: DSC-21-PRESS-20-30-00001686.0001001 / 09 APR 14

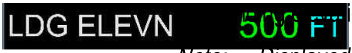
CAB PRESS SD PAGE

CAB PRESS SD page


DELTA P
Indications
CAB ALT
Indications
CAB V/S
Indications
LDG ELEVN
Indications
CAB PRESS
LDG ELEVN
500 FT
DELTA P
PSI
10
0
4.3
AUTO CAB ALT
FT
5
10
15
0
5000
AUTO CAB V/S
FT/MIN
2
1
0
1
2
300
STATUS
INDICATION
SYS 1
AVNCS
EXTRACT
OVBD
PACK 1
PACK 2
Outflow
Valve

Ident.: DSC-21-PRESS-20-30-00001696.0001001 / 09 APR 14

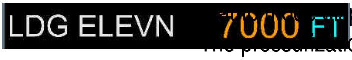
LDG ELEVN INDICATIONS



ion is 500 ft.

Note: *Displayed provided that CABIN ALT MODE pb-sw and CABIN V/S MODE pb-sw are in the auto position.*

L12



plays 7 000 ft as default value when:

on system is in auto mode

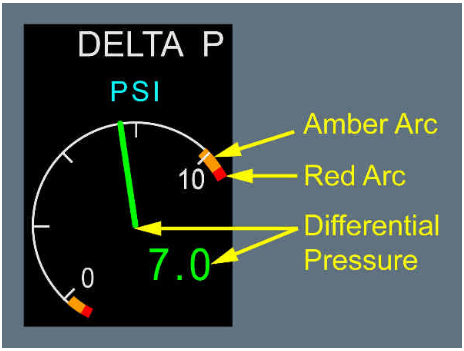
- The pressurization system does not receive valid LDG ELEVN data from the FMS.

Associated with the following ECAM alert: CAB PRESS LDG ELEVN FAULT (*Refer to procedure*).

Ident.: DSC-21-PRESS-20-30-00001697.0001001 / 23 APR 14

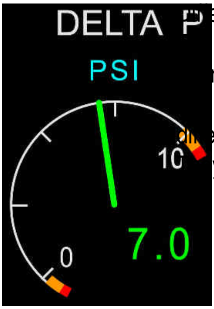
DELTA P INDICATIONS

DELTA P Indication



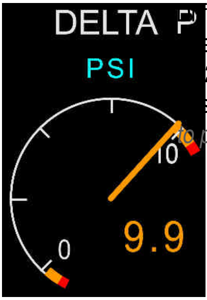
L2 Differential pressure display ranges from –1 PSI to 11 PSI.
The needle is not displayed, when the aircraft is on ground and the residual pressure exceeds 0.07 PSI.

L12



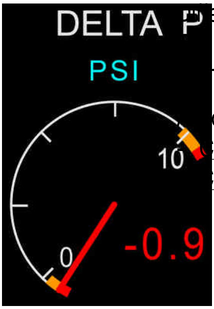
erential pressure is normal.
pressure is normal from –0.2 PSI to a variable limit that depends on the
raft altitude.
needle and digital indication pulse in green during final approach, if the
erential pressure is more than 1.5 PSI.
y stop pulsing, if the differential pressure goes below 1 PSI.

L12



erential pressure is abnormal.
e amber arc indicates abnormal differential pressure from –0.7 PSI to
2 PSI, or from the variable limit to 10.6 PSI.
sociated with the following ECAM alert: CAB PRESS DIFF PRESS LO (*Refer to procedure*).

L12



erential pressure is abnormal.
red arc indicates abnormal differential pressure from –1 PSI to –0.7 PSI, or
n 10.6 PSI to 11 PSI.

ociated with one of the following ECAM cautions:
AB PRESS EXCESS DIFF PRESS (*Refer to procedure*), or
AB PRESS EXCESS NEGATIVE DIFF PRESS (*Refer to procedure*).

Ident.: DSC-21-PRESS-20-30-00001698.0001001 / 03 JUL 20

1 CAB ALT INDICATIONS

L2 The cabin altitude display ranges from -625 ft to approximately +15 000 ft.
The cabin altitude needle and digital indication pulse in green in climb from 8 300 ft to 9 550 ft if:

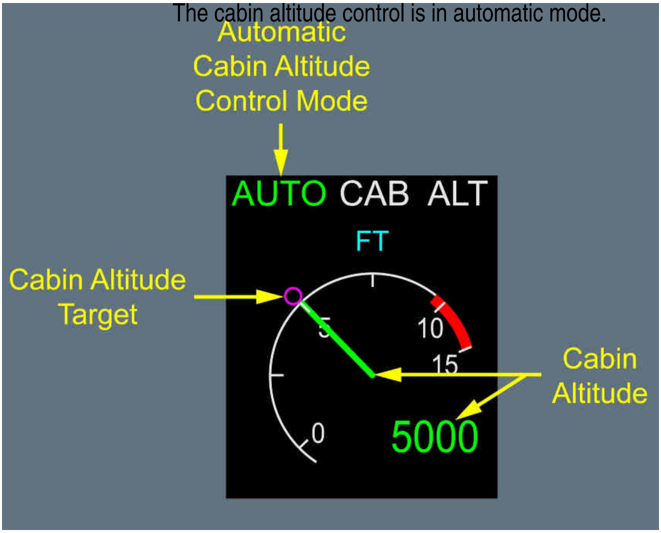
- The Landing Field Elevation (LFE) is lower than 8 000 ft, or
- The A/C altitude is above FL 250 whatever the LFE is, or
- The LFE value is not valid.

These indications stop pulsing in green in descent if the cabin altitude goes below 8 100 ft.
The red arc indicates the cabin altitude from 9 950 ft to approximately 15 000 ft. For high airfield operation the beginning of the red limit becomes landing elevation +1 000 ft.

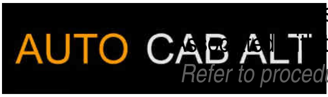
L1

AUTOMATIC CONTROL MODE

The cabin altitude control is in automatic mode.

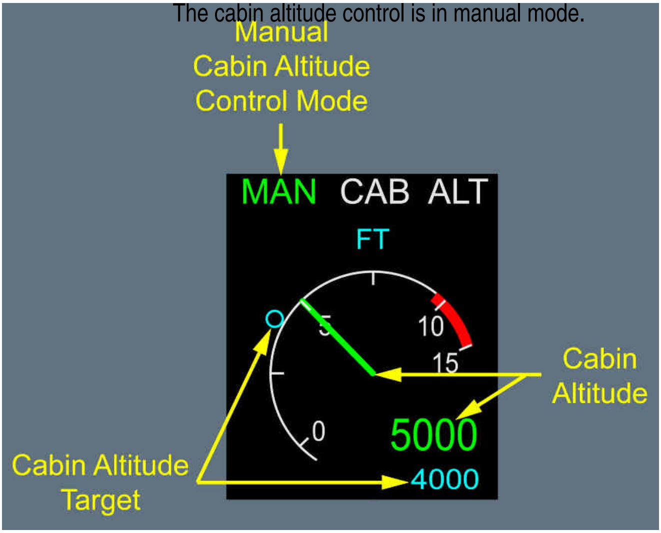

Automatic
Cabin Altitude
Control Mode
AUTO CAB ALT
FT
Cabin Altitude
Target
5
10
15
0
Cabin
Altitude
5000

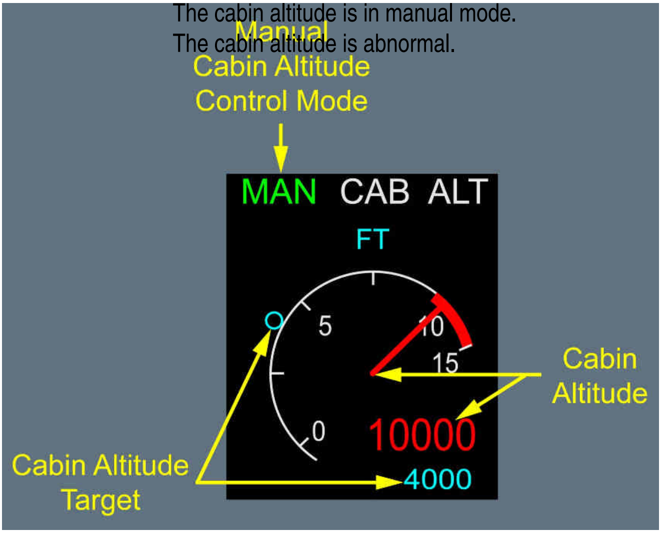
L12


AUTO CAB ALT

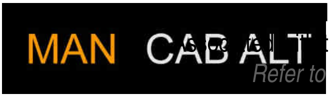
s failed.
the following ECAM alert: CAB PRESS AUTO CTL FAULT
Refer to procedure).

MANUAL CONTROL MODE


The cabin altitude control is in manual mode.
Manual
Cabin Altitude
Control Mode
MAN CAB ALT
FT
5
10
15
0
5000
4000
Cabin
Altitude
Cabin Altitude
Target


The cabin altitude is in manual mode.
The cabin altitude is abnormal.
Manual
Cabin Altitude
Control Mode
MAN CAB ALT
FT
5
10
15
0
10000
4000
Cabin
Altitude
Cabin Altitude
Target

L12



e for cabin altitude control is failed.
the following ECAM alert: CAB PRESS CAB ALT MAN CTL
Refer to procedure).

Ident.: DSC-21-PRESS-20-30-00001699.0001001 / 08 JUL 19

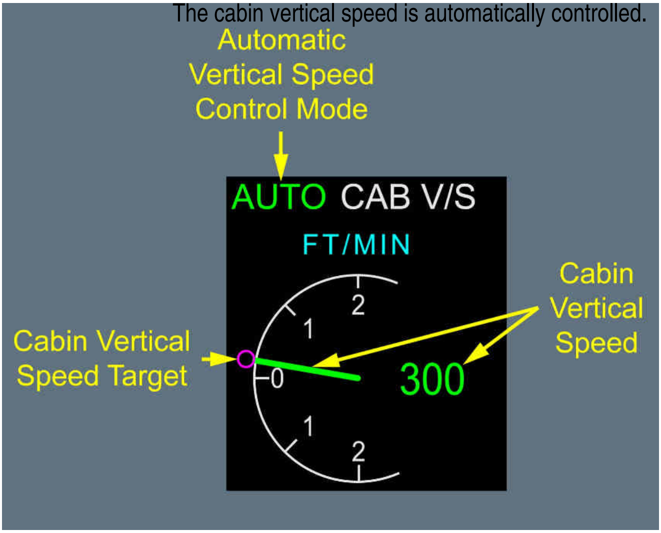
CAB V/S INDICATIONS

L2 The cabin vertical speed needle display ranges from -2 500 ft/min to +2 500 ft/min.

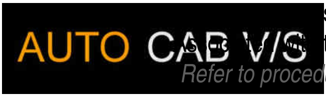
The cabin vertical speed needle and digital indication pulse in green, if:
- The cabin vertical speed is more than +1 800 ft/min (and stop pulsing when going below +1 600 ft/min), or
- The cabin vertical speed is less than -1 800 ft/min (and stop pulsing when going above -1 600 ft/min).

L1 AUTOMATIC MODE

The cabin vertical speed is automatically controlled.


Automatic Vertical Speed Control Mode
AUTO CAB V/S
FT/MIN
2
1
0
1
2
300
Cabin Vertical Speed Target
Cabin Vertical Speed

L12



s failed.
the following ECAM alert: CAB PRESS AUTO CTL FAULT
Refer to procedure).

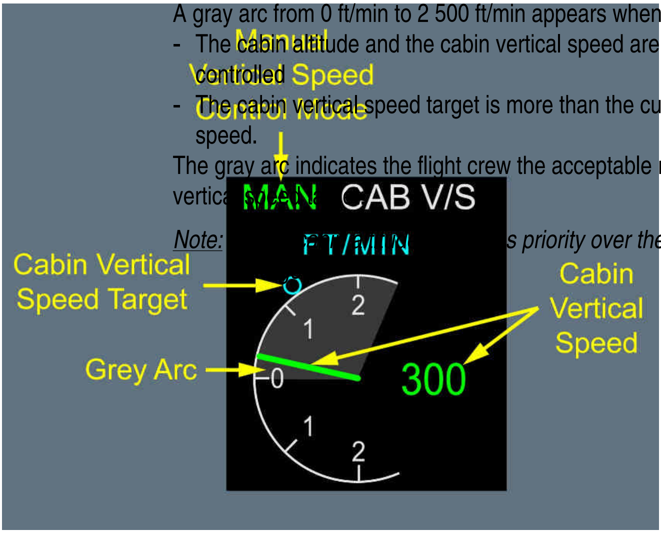
MANUAL MODE

A gray arc from 0 ft/min to 2 500 ft/min appears when:

- The cabin altitude and the cabin vertical speed are both manually controlled
- The cabin vertical speed target is more than the current cabin vertical speed.

The gray arc indicates the flight crew the acceptable range to set the cabin vertica

Note: *s priority over the cabin vertical speed*

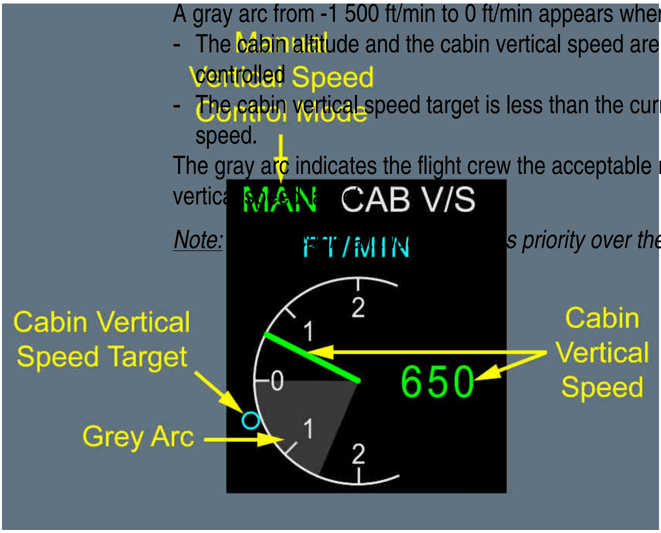

Manual
Vertical Speed
Control Mode
MAN CAB V/S
FT/MIN
Cabin Vertical
Speed Target
Grey Arc
2
1
0
1
2
300
Cabin
Vertical
Speed

A gray arc from -1 500 ft/min to 0 ft/min appears when:

- The cabin altitude and the cabin vertical speed are both manually controlled
- The cabin vertical speed target is less than the current cabin vertical speed.

The gray arc indicates the flight crew the acceptable range to set the cabin vertica

Note: *s priority over the cabin vertical speed*

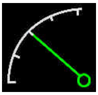
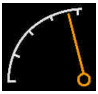

Manual
Vertical Speed
Control Mode
MAN CAB V/S
FT/MIN
Cabin Vertical
Speed Target
Grey Arc
2
1
0
1
2
650
Cabin
Vertical
Speed

L12

MAN CAB V/S	le for cabin vertical speed control is failed. the following ECAM alert: CAB PRESS CAB V/S MAN CTL Refer to procedure).

Ident.: DSC-21-PRESS-20-30-00001701.0001001 / 09 APR 14

OUTFLOW VALVE INDICATIONS

	The outflow valve is open to regulate the cabin pressurization.
	The outflow valve is failed.

Ident.: DSC-21-PRESS-20-30-00001702.0001001 / 09 APR 14

STATUS INDICATIONS

SYS 1	SYS 1 controls the pressurization.
SYS 1 SYS 2 MAN	The auto mode is failed. The pressurization is controlled via manual mode. Associated with the following ECAM alert: CAB PRESS AUTO CTL FAULT (*Refer to procedure*).
SYS 2 MAN	SYS 2 controls the pressurization. The manual mode is failed. Associated with the following ECAM alert: CAB PRESS MAN CTL FAULT (*Refer to procedure*).

L12

L12

CABIN PRESS PANEL

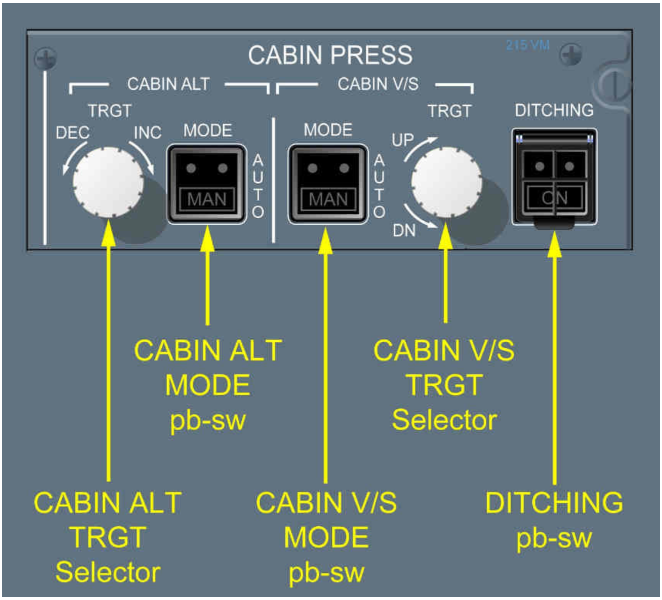
Applicable to: ALL

Ident.: DSC-21-PRESS-20-10-00001684.0001001 / 09 APR 14

CABIN PRESS PANEL

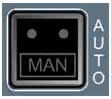
The CABIN PRESS panel is used to manually control the cabin altitude and cabin vertical speed, in the case of failure of the automatic control.

CABIN PRESS Panel

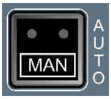

CABIN PRESS
CABIN ALT
CABIN V/S
TRGT
DEC
INC
MODE
MAN
AUTO
MODE
MAN
AUTO
TRGT
UP
DN
DITCHING
ON
CABIN ALT MODE pb-sw
CABIN V/S TRGT Selector
CABIN ALT TRGT Selector
CABIN V/S MODE pb-sw
DITCHING pb-sw

Ident.: DSC-21-PRESS-20-10-00001690.0001001 / 09 APR 14

CABIN ALT MODE PB-SW



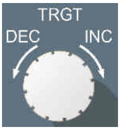
Cabin altitude is automatically regulated in accordance with the flight profile.



Cabin altitude is manually controlled: The cabin altitude target must be manually selected via the CABIN ALT TRGT selector.
The cabin altitude target remains at the current value until the flight crew manually selects a new cabin altitude target.

Ident.: DSC-21-PRESS-20-10-00001691.0001001 / 09 APR 14

CABIN ALT TRGT SEL

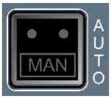

TRGT
DEC
INC

When the CABIN ALT MODE pb-sw is set to MAN, the flight crew uses the selector to manually select the cabin altitude target.
Selected cabin altitude target is displayed on the CAB PRESS SD page and on the CRUISE page.

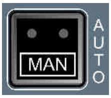
L2 The cabin altitude selection has a range of -2 000 ft to 13 500 ft.

Ident.: DSC-21-PRESS-20-10-00001692.0001001 / 09 APR 14

CABIN V/S MODE PB-SW



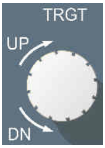
Cabin vertical speed is automatically regulated according to the flight profile and the cabin altitude target.



Cabin pressure vertical speed is manually controlled. The vertical speed must be manually selected via the CABIN V/S TRGT selector. The vertical speed remains at 0 ft/min until the flight crew selects a vertical speed target.

Ident.: DSC-21-PRESS-20-10-00001693.0001001 / 09 APR 14

CABIN V/S TRGT SEL

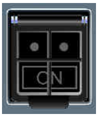


When the CABIN V/S MODE pb-sw is set to MAN, the flight crew uses the selector to manually select the cabin pressure vertical speed.
Selected cabin pressure vertical speed is displayed on the CAB PRESS SD page and on the CRUISE page.

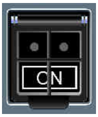
L2 The cabin vertical speed selection has a range of -1 500 ft/min to +2 500 ft/min.

Ident.: DSC-21-PRESS-20-10-00001694.0001001 / 09 APR 14

DITCHING PB-SW



Normal position.



All valves below the flotation line are forced closed: The pressurization system is ready for ditching (*Refer to Ditching*).

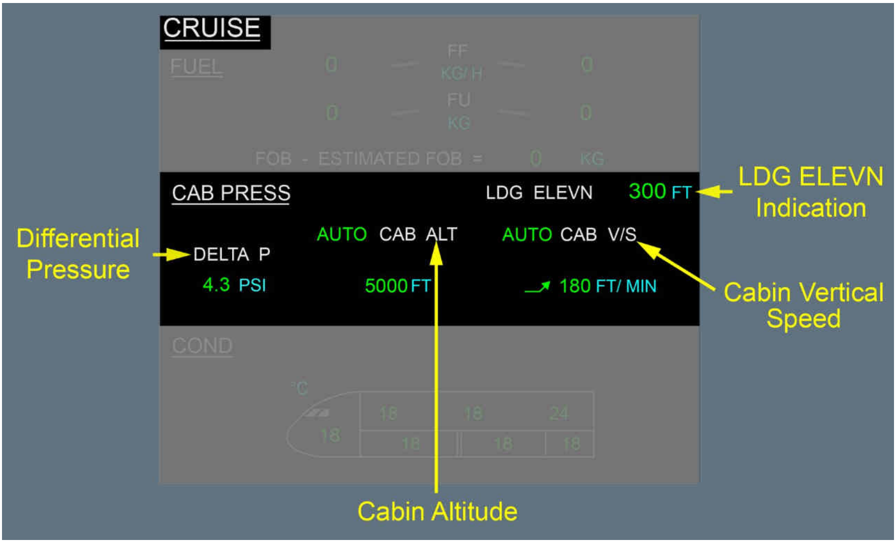
CRUISE PAGE

Applicable to: ALL

Ident.: DSC-21-PRESS-20-40-00001687.0001001 / 09 APR 14

CRUISE PAGE

CRUISE page



CRUISE

FUEL 0 — FF KG/H — 0

0 — FU KG — 0

FOB - ESTIMATED FOB = 0 KG

CAB PRESS

LDG ELEVN 300 FT

AUTO CAB ALT 5000 FT

AUTO CAB V/S 180 FT/MIN

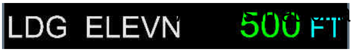
DELTA P 4.3 PSI

COND

°C
18
18
18
24
18
18
18
LDG ELEVN Indication
Differential Pressure
Cabin Vertical Speed
Cabin Altitude

Ident.: DSC-21-PRESS-20-40-00001704.0001001 / 09 APR 14

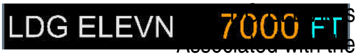
LDG ELEVN INDICATIONS



LDG ELEVN 500 FT

tic operation.

L12



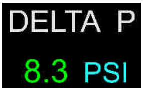
LDG ELEVN 7000 FT

s not valid. The auto mode uses 7 000 ft as default value. Associated with the following ECAM alert: CAB PRESS LDG ELEVN FAULT (*Refer to procedure*).

Ident.: DSC-21-PRESS-20-40-00001703.0001001 / 08 JUL 19

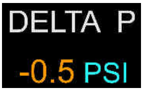
DELTA P INDICATIONS

L12



Differential pressure is normal.
Differential pressure is normal from –0.2 PSI to a variable limit which is function of the altitude.

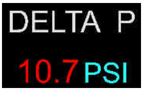
L12



The differential pressure is abnormal.

The value of the differential pressure appears amber, if:
- The differential pressure is from –0.7 PSI to –0.2 PSI
- The differential pressure is from a variable limit (function of the altitude) to 10.6 PSI.

L12



The differential pressure is abnormal.

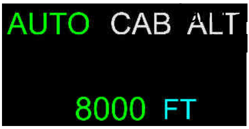
The value of the differential pressure appears red, if:
- The differential pressure is less than –0.7 PSI, or
- The differential pressure is more than 10.6 PSI.
  Associated with the following ECAM alert: CAB PRESS EXCESS DIFF PRESS (*Refer to procedure*).

Ident.: DSC-21-PRESS-20-40-00001706.0001001 / 08 JUL 19

CAB ALT INDICATIONS

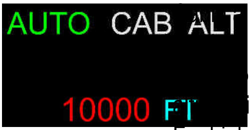
AUTOMATIC OPERATION

L12



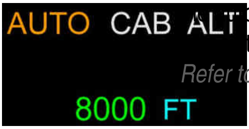
titude is normal.
titude is below 9 550 ft.

L12



titude is abnormal.
titude is abnormal when it is above 9 550 ft, except for high altitude perations or flights under MMEL (one OCU COM is lost, and aircraft s below 25 000 ft).
For high altitude airport operations the beginning of the red limit becomes LDG ELEVN +1 000 ft.

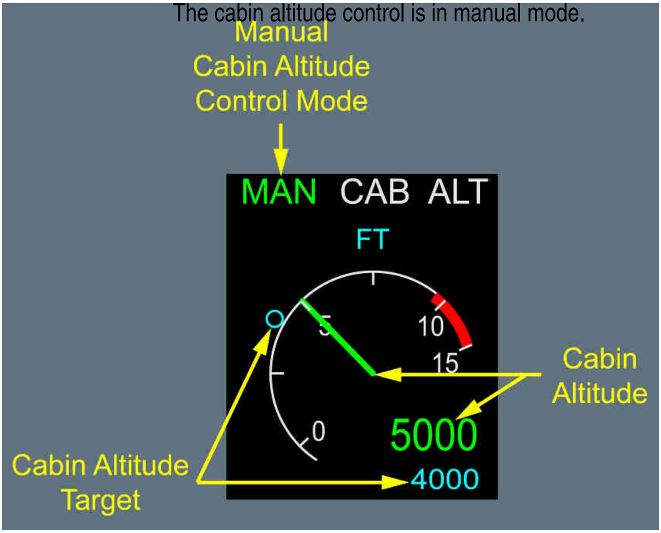
L12


AUTO CAB ALT
8000 FT

o mode is failed.
ted with the following ECAM alert: CAB PRESS AUTO CTL FAULT (*Refer to procedure*).

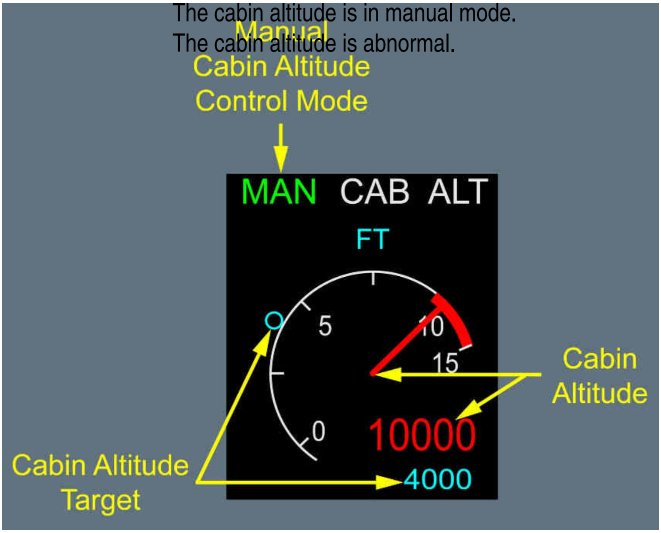
MANUAL OPERATION

The cabin altitude control is in manual mode.

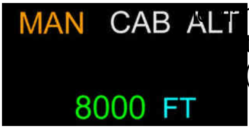

Manual
Cabin Altitude
Control Mode
MAN CAB ALT
FT
0
5
10
15
5000
4000
Cabin
Altitude
Cabin Altitude
Target

The cabin altitude is in manual mode.

The cabin altitude is abnormal.


Manual
Cabin Altitude
Control Mode
MAN CAB ALT
FT
5
10
15
0
10000
4000
Cabin
Altitude
Cabin Altitude
Target

L12

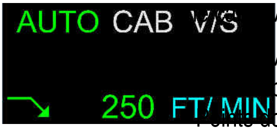

MAN CAB ALT
8000 FT

nual mode for cabin altitude control is failed.
ted with the following ECAM alert: CAB PRESS CAB ALT MAN CTL
(*Refer to procedure*).

CAB V/S INDICATIONS

AUTOMATIC OPERATION

L12

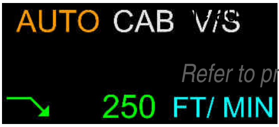

AUTO CAB V/S
250 FT/MIN

ertical speed is automatically controlled.

ertical speed arrow:
p, when the cabin vertical speed is more than +25 ft/min
Points down, when the cabin vertical speed is less than -25 ft/min
- Does not appear, when the cabin vertical speed is from -25 ft/min to +25 ft/min.

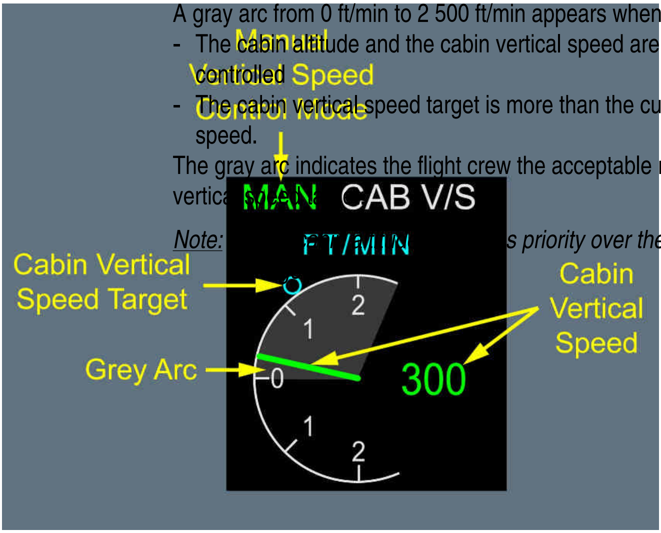
The cabin vertical speed value ranges from -20 000 ft/min to +20 000 ft/min.

L12


AUTO CAB V/S
250 FT/ MIN

ode is failed.
with the following ECAM alert: CAB PRESS AUTO CTL FAULT
Refer to procedure).

MANUAL OPERATION


Manual
Vertical Speed
Control Mode
MAN CAB V/S
FT/MIN
Cabin Vertical
Speed Target
Grey Arc
Cabin
Vertical
Speed
2
1
0
1
2
300

A gray arc from 0 ft/min to 2 500 ft/min appears when:

- The cabin altitude and the cabin vertical speed are both manually controlled
- The cabin vertical speed target is more than the current cabin vertical speed.

The gray arc indicates the flight crew the acceptable range to set the cabin vertica

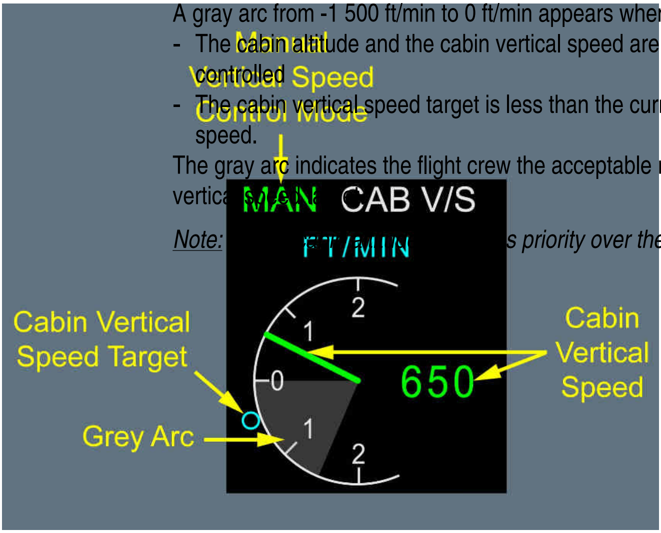
Note: *s priority over the cabin vertical speed*

A gray arc from -1 500 ft/min to 0 ft/min appears when:

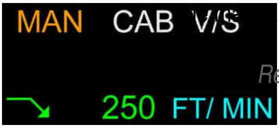
- The cabin altitude and the cabin vertical speed are both manually controlled
- The cabin vertical speed target is less than the current cabin vertical speed.

The gray arc indicates the flight crew the acceptable range to set the cabin vertica

Note: *s priority over the cabin vertical speed*


Manual
Vertical Speed
Control Mode
MAN CAB V/S
FT/MIN
2
1
0
1
2
650
Cabin Vertical
Speed Target
Grey Arc
Cabin
Vertical
Speed

L12


MAN CAB V/S
250 FT/ MIN

l mode for cabin vertical speed control is failed.
with the following ECAM alert: CAB PRESS CAB V/S MAN CTL
Refer to procedure).

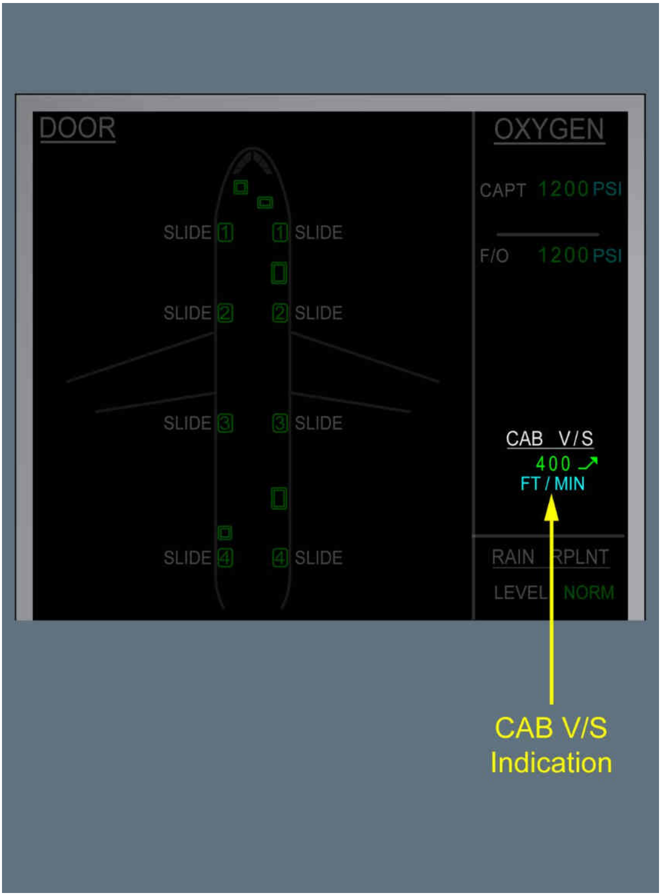
DOOR/OXYGEN SD PAGE

Applicable to: ALL

Ident.: DSC-21-PRESS-20-50-00020413.0001001 / 09 APR 14

DOOR/OXYGEN SD PAGE

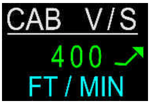
DOOR/OXYGEN SD Page


DOOR
SLIDE 1
1 SLIDE
SLIDE 2
2 SLIDE
SLIDE 3
3 SLIDE
SLIDE 4
4 SLIDE
OXYGEN
CAPT 1200 PSI
F/O 1200 PSI
CAB V/S
400
FT / MIN
RAIN RPLNT
LEVEL NORM
CAB V/S
Indication

Ident.: DSC-21-PRESS-20-50-00020414.0001001 / 23 APR 14

CAB V/S INDICATION

L12


CAB V/S
400 ↗
FT / MIN

The cabin vertical speed is displayed, when the A/C is in flight.

The cabin vertical speed arrow and digital indication pulse in green, if:

- The cabin vertical speed is more than +1 800 ft/min (and stop pulsing when going below +1 600 ft/min), or
- The cabin vertical speed is less than -1 800 ft/min(and stop pulsing when going above -1 600 ft/min).

MEMO

Applicable to: ALL

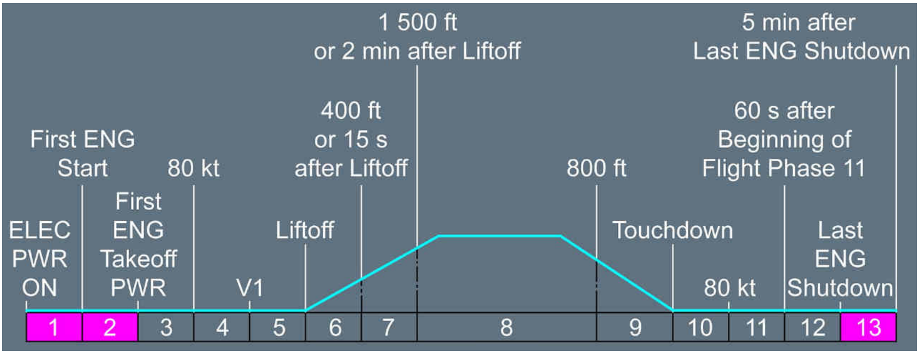
Ident.: DSC-21-PRESS-20-60-00023691.0001001 / 27 JUL 17

L12

CAB PRESS MAN MODE	The pressurization system is in manual mode. Appears on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

Ident.: DSC-21-PRESS-20-60-00023692.0002001 / 26 JUL 17

L12

CAB PRESS MAN MODE	MEMO is displayed if pressurization system is in manual mode and one of the following conditions is true: - The aircraft is before takeoff or after last engine shutdown The aircraft is in flight phase 1, 2 or 13. - The CAB PRESS MAN CTL FAULT is active. For more information about the manual operation of the pressurization system, *Refer to DSC-21-PRESS-40 Manual Operation*. Appears on the WD.

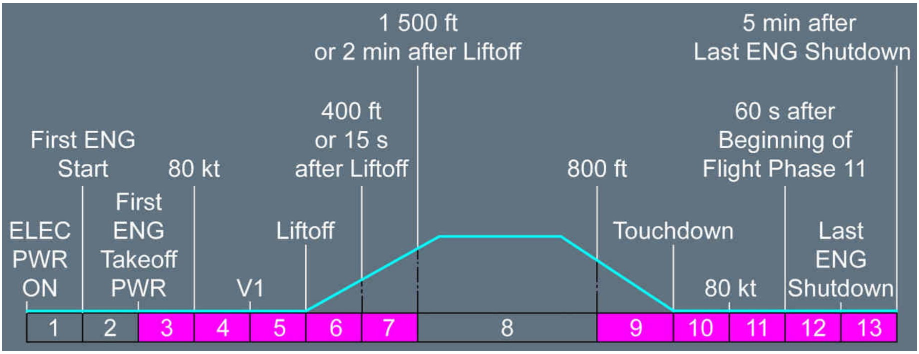
Ident.: DSC-21-PRESS-20-60-00001689.0001001 / 06 NOV 18

L12

HI ALT ARPT	The elevation of the departure or destination airport is above 8 550 ft. For more information about the associated supplementary procedure, *Refer to PRO-NOR-SUP-SUP-MISC High Altitude Airport Operations - Departure Airport*. Appears on the WD, based on the landing field elevation stored in the FMS, or manually set by the Flight Crew.

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
V1
Touchdown
80 kt
Last
ENG
Shutdown
1
2
3
4
5
6
7
8
9
10
11
12
13

AUTOMATIC OPERATION

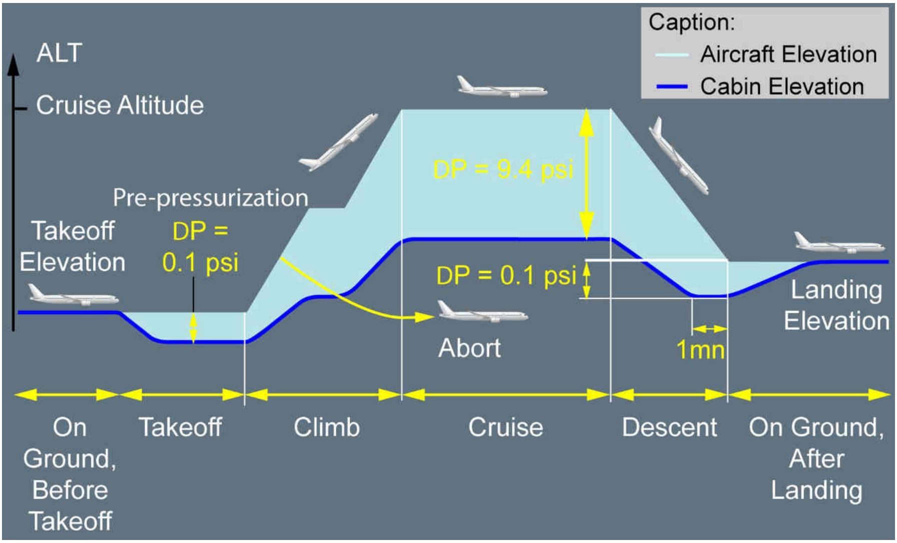
Applicable to: ALL

Ident.: DSC-21-PRESS-30-10-00001708.0001001 / 09 APR 14

When the cabin pressurization system is automatically controlled (CABIN ALT MODE pb-sw and CABIN V/S MODE pb-sw are both set to AUTO), the two Outflow valve Control Units (OCUs) operate to automatically control cabin air pressurization, as follows:

PRESSURIZATION FLIGHT PROFILE

Pressurization Flight Profile


ALT
Cruise Altitude
Caption:
Aircraft Elevation
Cabin Elevation
Pre-pressurization
Takeoff Elevation
DP = 0.1 psi
DP = 9.4 psi
DP = 0.1 psi
Abort
1mn
Landing Elevation
On Ground, Before Takeoff
Takeoff
Climb
Cruise
Descent
On Ground, After Landing

Ident.: DSC-21-PRESS-30-10-00001709.0001001 / 09 APR 14

ON GROUND, BEFORE TAKEOFF

Before takeoff, all outflow valves open, to ensure there is no differential pressure between the air inside the aircraft and the external air.

Ident.: DSC-21-PRESS-30-10-00001710.0001001 / 09 APR 14

TAKEOFF

During takeoff, the Cabin Pressure Control System (CPCS) pressurizes the aircraft to provide a smooth variation of the cabin vertical speed at liftoff.

The aircraft is pressurized at a rate of –300 ft/min: This ensures a differential pressure of 0.1 PSI at liftoff.

L12

Note: *On ground, if at least one door is not closed and locked at takeoff power application, the two OCUs will prevent the cabin from pressurization by maintaining the two outflow valves open.*
Associated with the following ECAM alert: CAB PRESS INHIBITED BY DOORS (Refer to procedure).

L3 PRESSURIZATION TAKEOFF PHASE

The pressurization takeoff phase occurs, when:
- All doors are closed and latched
- The main landing gear is compressed
- Engines are at takeoff power.

Ident.: DSC-21-PRESS-30-10-00001711.0001001 / 09 APR 14

CLIMB

During climb, the cabin vertical speed is determined to reach the scheduled cabin altitude at the top of climb defined by the FMS cruise level.
L2 The cabin vertical speed is limited to +400 ft/min.

L3 PRESSURIZATION CLIMB PHASE

The pressurization climb phase stars from the liftoff when the main landing gear is no longer compressed.

Ident.: DSC-21-PRESS-30-10-00001712.0001001 / 09 APR 14

CRUISE

During cruise, the cabin altitude is regulated not to exceed 6 000 ft.
L2 This corresponds to a differential pressure of approximately 9.4 PSI between the cabin altitude and the aircraft altitude.

Ident.: DSC-21-PRESS-30-10-00001713.0001001 / 02 MAY 14

DESCENT

During descent, the cabin vertical speed is controlled, to ensure that the cabin altitude reaches an altitude slightly below the landing elevation prior to landing.
L2 The cabin pressure reaches the landing field pressure +0.1 PSI.
This ensures that the aircraft is still pressurized at landing, and provides a smooth variation in cabin altitude if a go-around is performed.
When the aircraft is above 25 000 ft, the cabin vertical speed is limited to -250 ft/min. When the aircraft is below 25 000 ft, the cabin vertical speed is limited to -300 ft/min.

L3

PRESSURIZATION DESCENT PHASE

The pressurization descent phase occurs:
- Less than 1 min before top of descent if AP and NAV mode are engaged
- 1 000 ft below the cruise altitude if AP or NAV mode is not engaged.

Ident.: DSC-21-PRESS-30-10-00001714.0001001 / 09 APR 14

ON GROUND, AFTER LANDING

At touchdown, all outflow valves open, to remove the residual differential pressure.

L3 Residual differential pressure removal takes less than 90 s.

PRESSURIZATION GROUND PHASE

The pressurization ground phase occurs, when the aircraft touches down (main landing gear compressed).

Ident.: DSC-21-PRESS-30-10-00001715.0001001 / 23 APR 14

L2

ABORT

If the aircraft does not climb after takeoff, the cabin altitude will automatically stop climbing.
The cabin pressure is set back to the takeoff altitude pressure as soon as the aircraft lifts off.

L3

PRESSURIZATION ABORT PHASE

The pressurization abort phase occurs, when:
- The aircraft is at takeoff phase or climb phase
- The aircraft altitude is less than 5 000 ft above the aircraft altitude at takeoff
- The aircraft vertical speed is less than +250 ft/minfor 30 s.

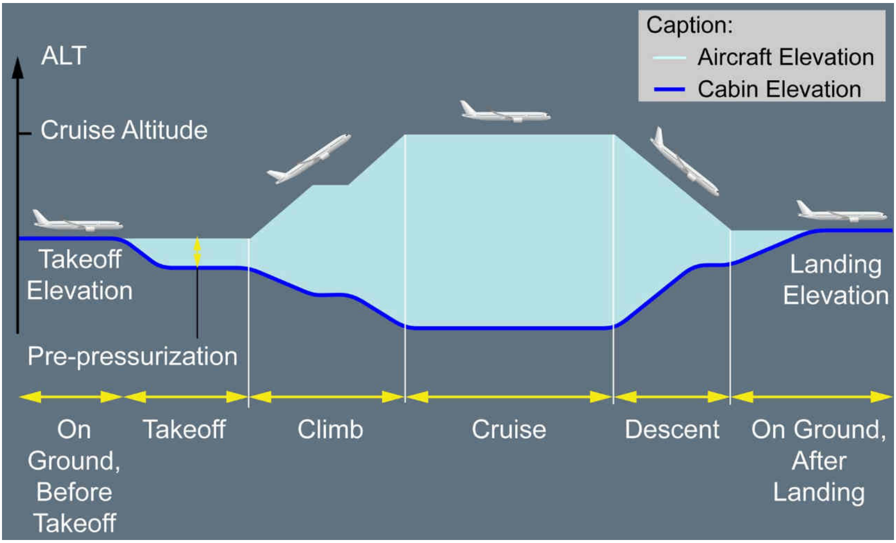
Ident.: DSC-21-PRESS-30-10-00020941.0001001 / 06 MAY 14

L2

HIGH ALTITUDE AIRPORT

During the climb phase, after a takeoff from a high altitude airport, the cabin altitude decreases in order to reach the scheduled cabin altitude.
During the descent phase, before a landing at a high altitude airport, the cabin altitude increases in order to reach an altitude slightly below the landing elevation. At touchdown, all outflow valves open, to remove the residual differential pressure.

Pressurization Flight Profile


Caption:
Aircraft Elevation
Cabin Elevation
ALT
Cruise Altitude
Takeoff Elevation
Pre-pressurization
Landing Elevation
On Ground, Before Takeoff
Takeoff
Climb
Cruise
Descent
On Ground, After Landing

MANUAL OPERATION

Ident.: DSC-21-PRESS-40-00001717.0001001 / 09 APR 14
Applicable to: ALL

If the automatic pressurization system fails, the flight crew can control the cabin pressure, by using the manual pressurization system.
The manual pressurization system operates independently of the automatic pressurization system.
L2 To obtain the desired cabin altitude and vertical speed, the manual pressurization system uses external pressure from the ISIS, as well as cabin pressure.

L1 There are two manual pressurization modes that can be combined:
- The cabin altitude manual pressurization mode, when activating the CABIN ALT MODE pb-sw to MAN
- The vertical speed manual pressurization mode, when activating the CABIN V/S MODE pb-sw to MAN.

When manual pressurization mode is activated, if no altitude or cabin vertical speed is selected on the CAB ALT TRGT selector or the V/S TRGT selector:
- The cabin altitude remains steady, and
- The cabin vertical speed is set at 0 ft/min.

CABIN ALTITUDE TARGET MANUAL PRESSURIZATION MODE

The flight crew selects the cabin altitude target on the CAB ALT TRGT selector.

If the vertical speed manual pressurization mode is not activated, the default vertical speed is:
- In descent: -300 ft/min
- In climb: +500 ft/min.

CABIN VERTICAL SPEED MANUAL PRESSURIZATION MODE

If the cabin vertical speed is selected on the CAB V/S TRGT selector (between -1 500 ft/min and +2 500 ft/min), the cabin altitude will change in accordance with the selected vertical speed, until the cabin altitude target is reached.

Note: The cabin altitude selection has priority over the vertical speed selection.

DITCHING

Ident.: DSC-21-PRESS-40-00001718.0001001 / 03 JUL 20
Applicable to: ALL

1 To prepare for ditching, the flight crew sets the guarded DITCHING pb-sw, on the CABIN PRESS panel, to ON. This closes all the valves, inlets and outlets located below the flotation line.

L2 These valves, inlets and outlets are:

- The two outflow valves
- The avionics overboard valve
- All the cargo isolation valves
- The two pack valves
- The pack ram air inlet and outlet
- The emergency ram air inlet.

ABNORMAL CABIN ALTITUDE INCREASE IN CLIMB DUE TO OFV ERRONEOUSLY OPEN

Ident.: DSC-21-PRESS-45-00024946.0001001 / 03 JAN 19
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYB

DESCRIPTION

In climb, an outflow valve may be abnormally in the fully open position without detection by the Cabin Pressure Control System (CPCS). The affected OFV is indicated as fully open in green on the CAB PRESS SD page. This is due to a specific failure mode of the automatic CPCS.

As a result, the effects in the cockpit are all of the following:
- The cabin altitude increases quickly, as indicated on the CAB PRESS SD page or CRUISE page (with a CAB V/S at almost the same V/S as the aircraft)
- After liftoff, when the CAB V/S reaches +1 800 ft/min, the cabin V/S needle and digital indication pulse in green on the CAB PRESS SD page
- When the CAB ALT reaches 8 300 ft, both the cabin altitude needle and digital indication pulse in green on the CAB PRESS SD page. For high altitude airports (with airport altitude above 8 000 ft), this ECAM advisory is triggered if aircraft altitude is above 25 000 ft
- When the CAB ALT reaches 9 550 ft, the CAB PRESS EXCESS CAB ALT alert is triggered on the WD. For high altitude airports, this alert is triggered on the WD when the cabin altitude reaches runway elevation +1 000 ft.

The flight crew should consider the below procedure to prevent the triggering of the CAB PRESS EXCESS CAB ALT alert and a possible abortion of the mission.

PROCEDURE

In climb, if the CAB ALT or CAB V/S ECAM advisory pulses, the flight crew should consider a CAB PRESS CTL MODE RESET (*Refer to [RESET] CAB PRESS Reset Table*).

L2 The flight crew can also access the reset procedure via the FCOM [ADV] ECAM ADVISORY (*Refer to PRO-ABN-ABN-ADV CAB PRESS Advisories*).

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AIRCRAFT SYSTEMS

22-27 - FLIGHT ENVELOPE

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DSC-22-27-10 Speed Definition

DSC-22-27-10-10 Reference Speeds

General....A
VS1G....B
VMCG....C
VMCA....D
VMCL....E
VMU....F
VD/MD....G
VRA/MRA....H
VREF....I

1 DSC-22-27-10-20 Operating Speeds

General....A
VLS....B
GREEN DOT....C
F....D
S....E
VFE....F
VFE NEXT....G
V1....H
VR....I
V2....J
VAPP....K
VMO/MMO....L
VMAX....M
V alpha prot....N
V alpha max....O
V alpha sw....P
VLE/MLE....Q
VLO/MLO....R

DSC-22-27-20 Protections

GENERAL....A
Load Factor PROTECTION....B
Bank Angle Protection....C
Pitch Attitude Protection....D
High Speed Protection....E
Angle of Attack Protection....F
Low Energy PROTECTION....G
Alpha Floor....H
Reactive Windshear Detection....I

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Localization Title	Toc Index	ID	Reason
DSC-22-27-PLP-TOC Operating Speeds		1	Documentation update: Deletion of the "00001743.0001001 VMAX" documentary unit.
DSC-22-27-10-20 VMAX	M	1	Documentation update: Addition of "VMAX" documentary unit
DSC-22-27-20 Alpha Floor	H	1	Update of the altitude values for the inhibitions conditions. Addition of the activation condition in cruise with autopilot ON and a speed below VLS -5kt.

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GENERAL

Ident.: DSC-22-27-10-10-00014840.0001001 / 24 APR 14
Applicable to: ALL

The following reference speeds are used to compute the operating speeds:
- VS1G
- VMCG
- VMCA
- VMCL
- VMU
- VD/MD
- VRA/MRA
- VREF.

VS1G

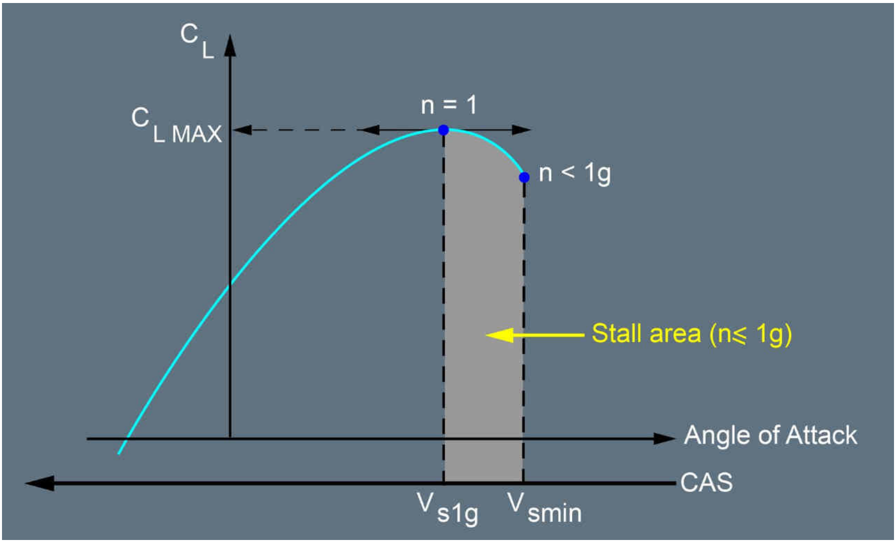
Ident.: DSC-22-27-10-10-00001735.0001001 / 04 DEC 14
Applicable to: ALL

DEFINITION

VS1G is the stall speed of the aircraft with a load factor of 1 g, at idle thrust.
VS1G is the reference speed used for the computation of the operating speeds (VLS, S, F, VREF).

L3 On a conventional aircraft, the reference stall speed, VSMIN, corresponds to a conventional stall (i.e. when lift suddenly collapses). At the moment of a conventional stall, the load factor is always below 1 g. As a consequence, VSMIN is below VS1G.

VS1G



Thanks to the high angle of attack protection (that the flight crew cannot override), the Airworthiness Authorities have reconsidered the definition of stall speed. As a consequence, VSMIN = 0.94 * VS1G.

L1 DISPLAY

VS1G is not displayed in the cockpit.

L2 COMPUTATION

The PRIMs compute VS1G.

VS1G depends on:
- The position of the slats and flaps
- The aircraft weight and CG
- The aircraft altitude
- The position of the landing gear.

The FMS also computes the VS1G, for performance predictions, and characteristic speeds computation.

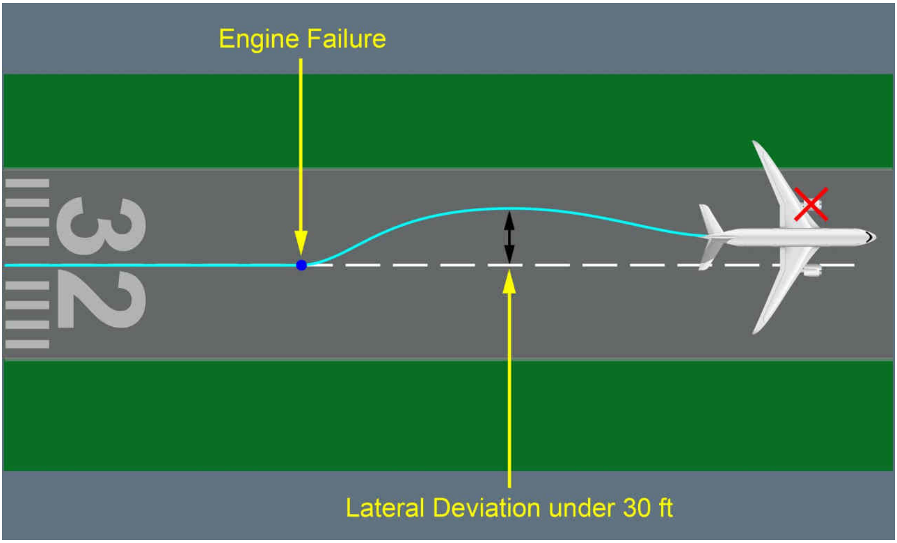
VMCG

Ident.: DSC-22-27-10-10-00001744.0001001 / 06 MAY 15
Applicable to: ALL

DEFINITION

VMCG is the minimum speed on ground during takeoff at which the use of only the primary flight controls permits to control the aircraft, after a sudden failure of one engine with the other engine at takeoff thrust.
During the recovery maneuver, the path of the aircraft must not deviate from the runway centerline by more than 30 ft.

VMCG



DISPLAY

VMCG is not displayed in the cockpit.

L2 COMPUTATION

VMCG is not computed.
VMCG is determined during flight tests.
VMCG is used for takeoff speed computation.
Refer to LIM-AG-SPD Minimum Control Speeds

VMCA

Ident.: DSC-22-27-10-10-00001745.0001001 / 06 MAY 15
Applicable to: ALL

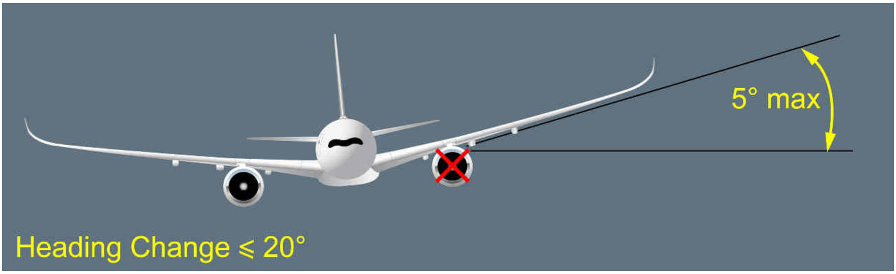
DEFINITION

VMCA is the minimum speed in flight at which the aircraft can be controlled with a maximum bank angle of 5 °, after a sudden failure of one engine with:

- The other engine at takeoff power
- The landing gear up
- The slats and flaps in the takeoff configuration.

During the recovery maneuver, the heading change must not exceed 20 °.

VMCA



DISPLAY

VMCA is not displayed in the cockpit.

L2 COMPUTATION

VMCA is not computed.
VMCA is determined during flight tests.
VMCA is used for takeoff speed computation.
Refer to LIM-AG-SPD Minimum Control Speeds

VMCL

Ident.: DSC-22-27-10-10-00001746.0001001 / 24 APR 14
Applicable to: ALL

DEFINITION

VMCL is the minimum speed in flight, at which the aircraft can be controlled with a maximum bank angle of 5 °, after a sudden failure of one engine with:
- The other engine at go-around power
- The landing gear up
- The slats and flaps in the approach configuration.

DISPLAY

VMCL is not displayed in the cockpit.
However, VMCL limits VLS.

L2 COMPUTATION

VMCL is not computed.
VMCL is determined during flight tests.
Refer to LIM-AG-SPD Minimum Control Speeds

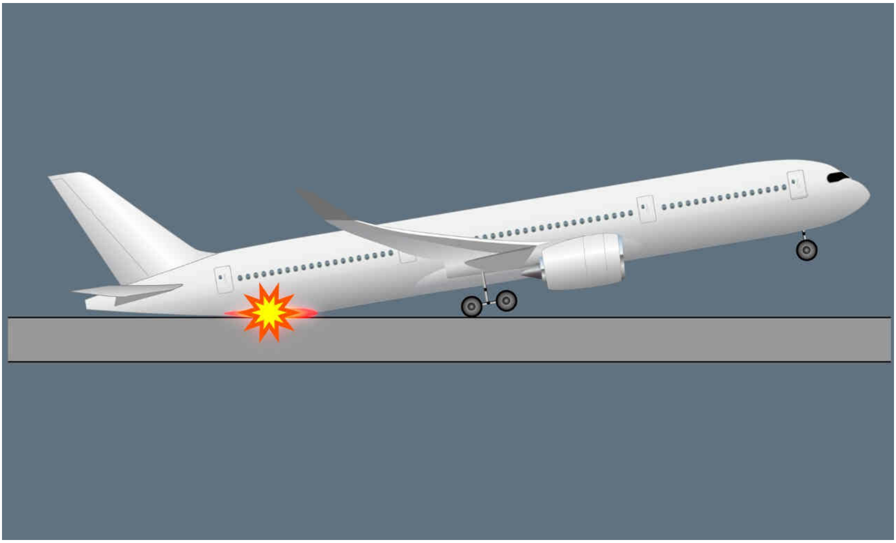
VMU

Ident.: DSC-22-27-10-10-00001748.0001001 / 08 JUL 19
Applicable to: ALL

DEFINITION

VMU is the minimum speed at which the aircraft can safely lift off and continue the takeoff.
A takeoff at a speed below VMU may result in a tail strike.

VMU



L3 To demonstrate VMU during flight tests, at low speed, the pilot maintains full back stick until the tail touches the ground. This pitch attitude is maintained until the aircraft lifts off.

L1 DISPLAY

VMU is not displayed in the cockpit.

L2 COMPUTATION

VMU is not computed. It is determined during flight tests.
VMU is used for takeoff speed computation.

VD/MD

Ident.: DSC-22-27-10-10-00014842.0001001 / 24 APR 14
Applicable to: ALL

DEFINITION

VD/MD is the maximum structural speed of the aircraft.

DISPLAY

VD/MD is not displayed.

L2 COMPUTATION

VD/MD is not computed. It is determined during flight tests.

VRA/MRA

Ident.: DSC-22-27-10-10-00014843.0001001 / 24 APR 14
Applicable to: ALL

DEFINITION

VRA/MRA is the recommended turbulence penetration airspeed.

DISPLAY

VRA/MRA is not displayed in the cockpit.
The FMS displays the maximum turbulence penetration speed in the MAX TURB field on the CRZ panel of the FMS PERF page.(*Refer to DSC-22-FMS-20-20-20 PERF Page*). The maximum turbulence speed is above VRA/MRA.

L2 COMPUTATION

VRA/MRA is not computed.

VREF

Ident.: DSC-22-27-10-10-00001755.0001001 / 02 OCT 14
Applicable to: ALL

DEFINITION

VREF is used to compute the landing performance with failure(s).

DISPLAY

VREF is not displayed on the PFD.
VREF is displayed on the APPR panel of the FMS PERF page. (*Refer to DSC-22-FMS-20-20-20 PERF Page*)

L2 COMPUTATION

VREF is equal to the VLS of CONF FULL.

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GENERAL

Ident.: DSC-22-27-10-20-00014841.0001001 / 24 APR 14
Applicable to: ALL

The following operating speeds are displayed in the cockpit on the airspeed scale of the PFD or on the MFD:
- VLS
- GREEN DOT
- F
- S
- VFE
- VFE NEXT
- V1
- VR
- V2
- VAPP
- VMO/ MMO
- VMAX
- $V\alpha_{prot}$
- $V\alpha_{max}$
- $V\alpha_{sw}$
- VLE/MLE
- VLO/MLO.

In addition, the following speeds are displayed on the speeds placard in the cockpit:
- VFE
- VLE/MLE
- VLO/MLO.

VLS

Ident.: DSC-22-27-10-20-00001736.0001001 / 06 MAY 15
Applicable to: ALL

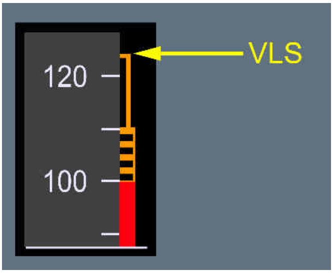
DEFINITION

VLS is the lowest selectable speed.
If the flight crew inadvertently set a speed below VLS, the auto-thrust limits the speed to VLS.
VLS provides a margin against stall at low speeds, and toward buffet at high Mach number.

DISPLAY

VLS is displayed on the airspeed scale on the PFD.

VLS



VLS is displayed in flight only.

L3 VLS appears three seconds after liftoff and disappears at touchdown.

L1 *Note:* *The FMS also computes the VLS. It is displayed on the APPR panel of the FMS PERF page (Refer to DSC-22-FMS-20-20-20 PERF Page).*

L2 COMPUTATION

The PRIMs compute the VLS displayed on the PFD.

VLS depends on:
- Vs1g
- The flight phase (takeoff, after slats/flaps retraction, cruise, landing or go-around)
- The position of the speed brakes.

DURING TAKEOFF

VLS is the highest of:
- 1.13 * Vs1g, or
- The minimum of V2/1.05 and 1.05 * VMCA

DURING ALL OTHER FLIGHT PHASES

As soon as the flaps configuration changes (crew action on lever or activation of the ARS), the computation of the VLS becomes the following:

- In CONF 1, after flaps auto retraction, VLS is the highest of:
  - 1.18 * Vs1g
  - VMCL
- In all other configurations, VLS is the highest of:
  - 1.23 * Vs1g

    Note: *Between 1.19 * Vs1g and 1.26 * Vs1g with slats or flaps jammed or failed depending on the slats/flaps configuration.*
  - VMCL

SPEED BRAKE EFFECT

When the speed brakes are extended, VLS increases.
This increase is a function of the slats/flaps configuration and the speed brakes extension.
For full speed brakes extension, the following is added to VLS:

CONF	VLS increase
0	Between 0 kt and 34 kt depending on weight and altitude
1	27 kt
1+F	Between 26 kt and 32 kt depending on altitude
2	Between 26 kt and 32 kt depending on altitude
3	Between 17 kt and 21 kt depending on altitude
3+S	Between 16 kt and 20 kt depending on altitude
FULL	16 kt

For speed brakes extension between 0 and FULL, the VLS increase is determined by linear interpolation.
In the case of failure of one or more pairs of spoilers, the VLS increase is limited in accordance with the number of spoilers that remains operative.

GREEN DOT

Ident.: DSC-22-27-10-20-00001737.0001001 / 24 APR 14
Applicable to: ALL

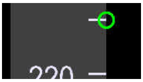
DEFINITION

Green dot is an optimized speed. It is an approximation of the best lift to drag ratio.
Flying at green dot speed provides the best climb gradient.

Green dot is:
- The final takeoff speed
- The managed speed target speed, in CONF 0, when the approach phase of the FMS is active
- The drift down speed, in the case of an engine failure.

DISPLAY

Green dot speed is displayed on the airspeed scale of the PFD.



Green dot speed is displayed in flight, when the FLAPS lever is at 0.

Note: The FMS also computes the green dot speed. It is displayed on the T.O, APPR, and GA panels of the FMS PERF page (Refer to DSC-22-FMS-20-20-20 PERF Page).

L2 COMPUTATION

The PRIMs compute Green dot speed:

Green dot depends on:
- The aircraft altitude
- The aircraft gross weight.

F

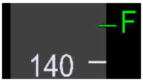
Ident.: DSC-22-27-10-20-00001739.0001001 / 24 APR 14
Applicable to: ALL

DEFINITION

F is:
- At takeoff or go-around: The minimum recommended speed at which the flaps can be retracted from CONF 2, CONF 3 to CONF 1+F
- During approach: The managed speed target, when in CONF 2 or CONF 3.

DISPLAY

F is displayed on the airspeed scale of the PFD.



F is displayed in flight, when the FLAPS lever is at 2 or 3.

L3 If the takeoff is performed in CONF 2 or CONF 3, F appears three seconds after liftoff.

L1 *Note:* *The FMS also computes F. It is displayed on the T.O, APPR, and GA panels of the FMS PERF page (Refer to DSC-22-FMS-20-20-20 PERF Page).*

L2 COMPUTATION

The PRIMs compute F:.

AT TAKEOFF

$F = \max(1.18 * Vs1g_{CONF\ 1+F}; VMCL + 5\ kt)$

IN APPROACH IN CONF 2

$F = 1.38 * Vs1g_{CONF\ 2}$ with the following limits:

- $F_{min} = VMCL + 15\ kt$
- $F_{max} = VFE_{CONF3} - 5\ kt$

IN APPROACH IN CONF 3

$F = 1.32 * Vs1g_{CONF\ 3}$ with the following limits:

- Fmin = VMCL +10 kt
- $Fmax = VFE_{CONF\ FULL} - 5\ kt$

S

Ident.: DSC-22-27-10-20-00001738.0001001 / 24 APR 14
Applicable to: ALL

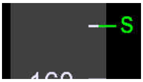
DEFINITION

S is:

- At takeoff or go-around: The minimum recommended speed at which the slats and flaps can be retracted from CONF 1+F or CONF 1 to CONF 0
- During approach: The managed speed target, when in CONF 1 or CONF 1+F.

DISPLAY

S is displayed on the airspeed scale of the PFD.



S is displayed in flight, when the FLAPS lever is at 1.

L3 If the takeoff is performed in CONF 1+F, S appears three seconds after liftoff.

L1 *Note:* *The FMS also computes S. It is displayed on the T.O, APPR, and GA panels of the FMS PERF page (Refer to DSC-22-FMS-20-20-20 PERF Page).*

L2 **COMPUTATION**

The PRIMs compute S.

AT TAKEOFF

$S = 1.21 * Vs1g_{\text{CONF } 0}$

IN APPROACH

$S = 1.21*Vs1g_{\text{CONF } 0}$ with the following limits:

- $S_{\text{min}} = \text{VMCL} + 20$ kt
- $S_{\text{max}} = \text{VFE}_{\text{CONF } 2} - 5$ kt

VFE

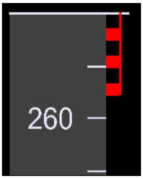
Ident.: DSC-22-27-10-20-00001749.0001001 / 24 APR 14
Applicable to: ALL

DEFINITION

VFE is the maximum speed with the slats or flaps extended.
There is one VFE per configuration.
Refer to LIM-AG-SPD Maximum Flaps/Slats Speeds

DISPLAY

The VFE is displayed on the airspeed scale of the PFD.



The VFE for each slats/flaps configuration is also displayed on the speeds placard in the cockpit.

L2 The display of the VFE is based on:
- The actual position of the slats and flaps during retraction
- The position of the FLAPS lever during extension

When the slats or flaps are jammed, the display of the VFE is based on the actual position of the slats and flaps. The VFE that corresponds to the abnormal configuration is also displayed on the ECAM.

COMPUTATION

The VFEs are not computed. They are included in the PRIMs.

Note: *The overspeed warning is independent of the display of the VFE.*
When all PRIMs are failed, the VFE is not displayed, but the overspeed warning remains available.

VFE NEXT

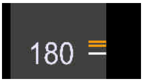
Ident.: DSC-22-27-10-20-00001750.0001001 / 24 APR 14
Applicable to: ALL

DEFINITION

VFE NEXT is the VFE of the next more extended configuration.
The aim of VFE NEXT is to remind the flight crew the maximum speed at which they can extend the next configuration during approach.

DISPLAY

VFE NEXT is displayed on the airspeed scale of the PFD.



VFE NEXT is displayed in flight, below 20 000 ft.
L2 When the slats or flaps are jammed, the display of the VFE NEXT is based on the actual position of the slats and flaps.

COMPUTATION

VFE NEXT is not computed. It is included in the PRIMs.

V1

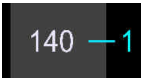
Ident.: DSC-22-27-10-20-00001752.0001001 / 24 APR 14
Applicable to: ALL

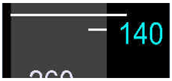
DEFINITION

V1 is the maximum speed at which the crew can decide to reject the takeoff, and is ensured to stop the aircraft within the limits of the runway.

DISPLAY

V1 is displayed on the airspeed scale of the PFD .





If V1 is outside of the visible airspeed scale, its value is displayed at the top of the airspeed scale.

An auto call-out announces when the speed reaches V1.

V1 (Synthetic Voice)

L2 COMPUTATION

V1 is not computed by the aircraft systems.
The crew inserts V1 on the T.O panel of the FMS PERF page.(*Refer to DSC-22-FMS-20-20-20 PERF Page*)

VR

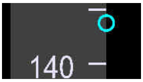
Ident.: DSC-22-27-10-20-00001753.0001001 / 24 APR 14
Applicable to: ALL

DEFINITION

VR is the speed at which the pilot rotates in order to reach V2 before a height of 35 ft.

DISPLAY

VR is displayed on the airspeed scale of the PFD. It is represented by a blue dot.



L2 COMPUTATION

VR is not computed by the aircraft systems.
The crew inserts VR on the T.O panel of the FMS PERF page (*Refer to DSC-22-FMS-20-20-20 PERF Page*).

V2

Ident.: DSC-22-27-10-20-00001754.0001001 / 24 APR 14
Applicable to: ALL

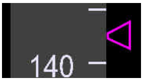
DEFINITION

V2 is the takeoff safety speed.

L2 V2 is determined in order to:
- Be reached before 35 ft, after rotation at VR, in the case of an engine failure
- Ensure a minimum climb gradient during the second segment
- Ensure a sufficient margin toward stall and VMCA. V2 must be above
  - 1.13 * Vs1g
  - 1.10 * VMCA

L1 DISPLAY

V2 is displayed on the airspeed scale of the PFD.



L2 COMPUTATION

V2 is not computed by the aircraft systems.
The flight crew inserts V2 on the T.O panel of the FMS PERF page (*Refer to DSC-22-FMS-20-20-20 PERF Page*).

VAPP

Ident.: DSC-22-27-10-20-00001756.0001001 / 03 DEC 15
Applicable to: ALL

DEFINITION

VAPP is the final approach speed.

DISPLAY

VAPP is not displayed on the PFD.
The VAPP is displayed on the APPR panel of the FMS PERF page. (*Refer to DSC-22-FMS-20-20-20 PERF Page*)

L2 The flight crew can update the VAPP on the APPR panel of the FMS PERF page.
The PRIMs use VAPP for the determination of the managed speed target during the approach. For more information, *Refer to DSC-22-FG-60-20 Introduction*.

COMPUTATION

The FMS computes VAPP.
$VAPP = VLS_{\text{Landing Conf}} + (5 \leq \text{Wind Correction} \leq 15)$

Note: *The Wind Correction is usually 1/3 of the Tower Headwind.*
However, at low landing weight (below 160 t (353 klb)), when VMCL limits VLS, the wind correction may be less than 1/3 of the Tower Headwind.

Note: The VAPP minimum value is VMCL + 5 kt

L3 In the FMS, the VAPP is calculated as the maximum of:
- VMCL + 5 kt
- 1.23*VS1G + (5 ≤ headwind/3 ≤ 15)

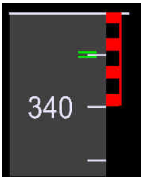
VMO/MMO

Ident.: DSC-22-27-10-20-00001751.0001001 / 24 APR 14
Applicable to: ALL

DEFINITION

VMO/MMO is the maximum speed in clean configuration.

DISPLAY



L2 COMPUTATION

The ADIRUs compute VMO/MMO.
VMO/MMO is sent to the PRIMs for display.
L3 There is a backup link between the ADIRUs and the CDS, to enable VMO/MMO display when all PRIMs fail.

L2 VMO/MMO is the minimum of:
- VMO
- MMO converted into CAS.

Refer to LIM-AG-SPD Maximum Operating Speed VMO/MMO

VMAX

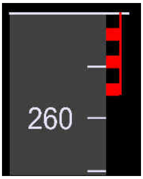
1 Ident.: DSC-22-27-10-20-00001743.0002001 / 03 JUL 20
Applicable to: ALL

DEFINITION

VMAX is the maximum permitted speed.

DISPLAY

VMAX is displayed on the airspeed scale of the PFD.



VMAX is displayed in flight.

L3 VMAX appears one second after liftoff and disappears at touchdown.

L2 COMPUTATION

The PRIM compute VMAX.

VMAX is equal to:

- In clean configuration, with landing gear up :	VMO/MMO *Refer to LIM-AG-SPD Maximum Operating Speed VMO/MMO* *Note:* *The display of the VMAX does not take into account the maximum speed displayed on the ECAM, if any (for example in direct law).*
- In clean configuration, with landing gear down :	VLE/MLE *Refer to LIM-AG-SPD Maximum Speeds with the Landing Gear Extended*
- In high lift configuration, with landing gear up :	VFE *Refer to LIM-AG-SPD Maximum Flaps/Slats Speeds*
- In high lift configuration, with landing gear down :	min (VFE , VLE/MLE)

When all PRIMs are failed, VMAX is equal to VMO/MMO, whatever the aircraft configuration (landing gear or slats/flaps).

V ALPHA PROT

Ident.: DSC-22-27-10-20-00001740.0001001 / 24 APR 14
Applicable to: ALL

DEFINITION

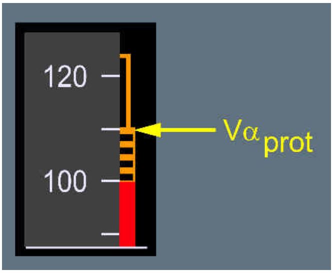
$V\alpha_{prot}$ is the speed at which the angle of attack is α_{prot}.
α_{prot} is the angle of attack at which the angle of attack protection becomes active.
For more information: *Refer to DSC-22-27-20 High Angle of Attack Protection*.

Note: *In the case of dynamic maneuvers, the angle of attack protection may be active at a speed above $V\alpha_{prot}$.*

DISPLAY

$V\alpha_{prot}$ is displayed on the airspeed scale of the PFD.

VαProt



$V\alpha_{prot}$ is displayed in flight, in normal law.

L3 $V\alpha_{prot}$ appears three seconds after liftoff and disappears at touchdown.

L2 COMPUTATION

The PRIMs compute $V\alpha_{prot}$.

$V\alpha_{prot}$varies with:
- The aircraft weight
- The altitude
- The Mach
- The slats/flaps configuration
- The position of the speedbrakes.

V ALPHA MAX

Ident.: DSC-22-27-10-20-00001741.0001001 / 24 APR 14
Applicable to: ALL

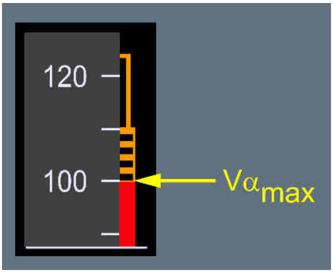
DEFINITION

$V\alpha_{max}$ is the speed at which the angle of attack is α_{max}.
α_{max} is the maximum angle of attack that the aircraft can reach in normal law.

DISPLAY

$V\alpha_{max}$ is displayed on the airspeed scale of the PFD.

Vαmax



$V\alpha_{max}$ is displayed in flight, in normal law.

L3 $V\alpha_{max}$ appears three seconds after liftoff and disappears at touchdown.

L2 COMPUTATION

The PRIMs compute $V\alpha_{max}$.

$V\alpha_{max}$ varies with:
- The aircraft weight
- The altitude
- The Mach
- The slats/flaps configuration
- The position of the speedbrakes.

V ALPHA SW

Ident.: DSC-22-27-10-20-00001742.0001001 / 24 APR 14
Applicable to: ALL

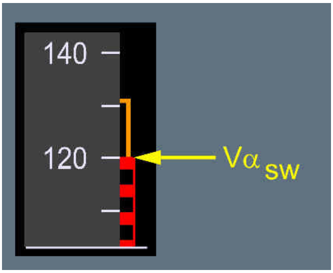
DEFINITION

$V\alpha_{sw}$ is the speed at which the angle of attack is α_{sw}.
α_{sw} is the angle of attack at which the stall warning is triggered.

DISPLAY

$V\alpha_{sw}$ is displayed on the airspeed scale of the PFD.

Vαsw



$V\alpha_{sw}$ is displayed in flight, in alternate or direct law.

L3 $V\alpha_{sw}$ appears three seconds after liftoff and disappears at touchdown.

L1 An audio warning announces the stall.

Stall (Sound and Synthetic Voice)

L2 COMPUTATION

The PRIMs compute $V\alpha_{sw}$.

$V\alpha_{sw}$ varies with:
- The aircraft weight
- The altitude
- The Mach
- The slats/flaps configuration
- The position of the speedbrakes.

Note: *The FWS computes the stall warning, independently of the computation of $V\alpha_{sw}$. If all PRIMs fail, $V\alpha_{sw}$ is lost, but the stall warning remains available.*

VLE/MLE

Ident.: DSC-22-27-10-20-00014844.0001001 / 24 APR 14
Applicable to: ALL

DEFINITION

VLE/MLE is the maximum speed at which the aircraft can fly with the landing gear extended.

DISPLAY

VLE/MLE is not displayed on the PFD.
VLE/MLE is available on the speeds placard in the cockpit.

L2 COMPUTATION

VLE/MLE is not computed.
Refer to LIM-AG-SPD Maximum Speeds with the Landing Gear Extended

VLO/MLO

Ident.: DSC-22-27-10-20-00014845.0001001 / 24 APR 14
Applicable to: ALL

DEFINITION

VLO/MLO is the maximum speed to operate the landing gear.

DISPLAY

VLO/MLO is not displayed on the PFD.
VLO/MLO is available on the speeds placard in the cockpit.

L2 COMPUTATION

VLO/MLO is not computed.
Refer to LIM-AG-SPD Maximum Speeds with the Landing Gear Extended

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GENERAL

Ident.: DSC-22-27-20-00001757.0001001 / 24 APR 14
Applicable to: ALL

The protected flight envelope defines the maximum attitude parameters that the aircraft can achieve in normal law.
The AP/FD is available up to the limits of the protected flight envelope. However, when a protection activates (i.e. when the aircraft is out of the normal flight envelope) while the AP is engaged, the protection takes over to control the aircraft and the AP IN PROT message appears on the FMA.

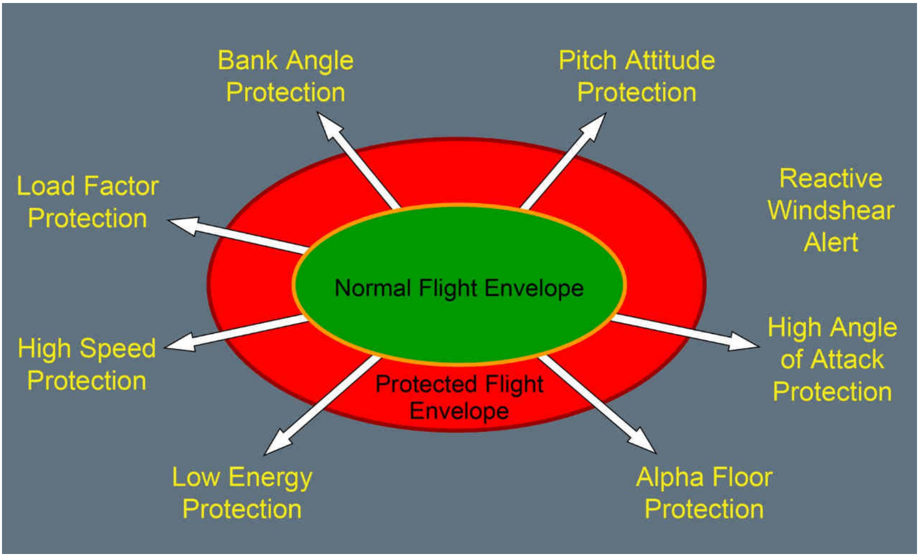
In order to prevent aircraft operation close to the limits of the protected flight envelope and maintain the aircraft in a normal flight envelope, the flight control laws provide protections in order to:
- Give full authority to the flight crew in order to achieve the best possible aircraft performance in manual flight,
- Reduce the risk of over-controlling/over-stressing the aircraft,
- Remain within safe limits.

In the normal flight envelope, the flight control laws enable the same flying techniques than on a conventional aircraft. Maneuvering is possible and may require permanent forces on the controls.

In exceptional circumstances, if one parameter is out of the protected flight envelope:
- The AP/FD, if engaged, disengages,
- The abnormal attitude law activates in order to provide full authority to the crew.

L2 For more information on the abnormal attitude law, *Refer to DSC-27-10-40 Abnormal Attitude Law*.

FE Overview


Bank Angle Protection
Pitch Attitude Protection
Load Factor Protection
Reactive Windshear Alert
Normal Flight Envelope
High Speed Protection
High Angle of Attack Protection
Protected Flight Envelope
Low Energy Protection
Alpha Floor Protection

LOAD FACTOR PROTECTION

Ident.: DSC-22-27-20-00001758.0001001 / 24 APR 14
Applicable to: ALL

The load factor is automatically limited to:
- 2.5 g to -1 g, when the slats are retracted
- 2 g to 0 g, when the slats are extended.

BANK ANGLE PROTECTION

Ident.: DSC-22-27-20-00001759.0001001 / 09 MAR 16
Applicable to: ALL

The maximum achievable bank angle is 67 °(60 ° in high lift configurations).

BANK ANGLE AUDIO INDICATOR

When the bank angle is excessive (risk of engine or wing tip strike) close to the ground, an aural "BANK BANK" is triggered.

Bank, bank (Synthetic voice)
The bank angle alert is available during manual landings, below 100 ft RA.

The bank angle threshold to trigger the aural alert depends on the RA heights.

PITCH ATTITUDE PROTECTION

Ident.: DSC-22-27-20-00001760.0002001 / 08 JUL 19
Applicable to: ALL

NOSE UP

The pitch attitude is limited to 30 ° nose up, progressively reduced to 25 ° at low speed.

NOSE DOWN

The pitch attitude is limited to 15 ° nose down.

PITCH ATTITUDE ALERT

During landing, if the pitch attitude is excessive, when close to the ground, an aural alert "PITCH PITCH" is triggered.

Pitch (Synthetic voice)
The pitch attitude aural alert is available during manual landing, below 50 ft RA.
It is triggered when the pitch attitude is above 10.5 °.
L2 This value corresponds to the maximum achievable geometrical angle on ground, with the landing gear compressed and additional margin.
L1 A tail strike pitch limit also appears on the PFD at landing.
L2 For more information, *Refer to DSC-31-CDS-40-20-30 Tail Strike Pitch Limit*
L1 If a tail strike is detected, the TAIL STRIKE alert is triggered.
L2 For more information, *Refer to PRO-ABN-TAIL_STRK TAIL STRIKE*.

HIGH SPEED PROTECTION

Ident.: DSC-22-27-20-00001761.0001001 / 04 MAY 16
Applicable to: ALL

In normal law, the aircraft is protected against overspeed.

Note: *Whatever the active flight control law, the OVERSPEED warning is triggered 4 kt above VMO, or M 0.006 above MMO (Refer to PRO-ABN-OVERSPEED OVERSPEED).*

The high speed protection activates at a threshold that depends on the acceleration of the aircraft.
The higher the acceleration, the earlier the threshold.
For a normal acceleration, the high speed protection activates when the speed is between VMO/MMO (340 kt/M 0.89) and VMO + 10 kt / MMO + 0.02.
In the case of very high acceleration, the high speed protection activates below VMO/MMO.

L12

Note: *If the AP is engaged in ALT mode, the high speed protection activates halfway between VMO/MMO and VD/MD.*

VD/MD is the design dive speed, which is the maximum structural speed:
- *VD = 375 kt*
- *MD = M 0.96*

For the activation of the high speed protection, the PRIMs compute a load factor threshold. If a load factor lower than this threshold is commanded, the high speed protection activates.

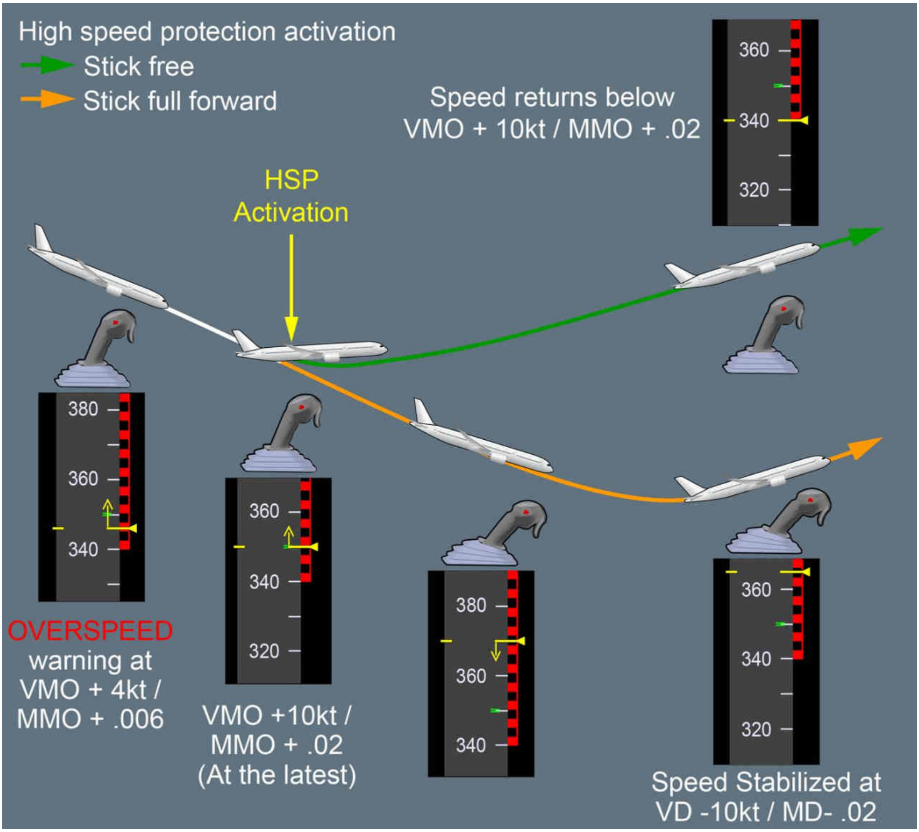
In any case, the load factor demand is limited to:
- The pitch attitude protection (nose up)
- The angle of attack protection.

In addition, when the speed reaches VMO + 5 kt with a positive acceleration, or when the speed reaches VMO + 10 kt:
- The A/THR automatically engages and targets the airspeed bug indicated on the PFD or VMO/MMO, whichever is lower
- The speedbrakes fully extend automatically.

Note: *The speedbrakes automatic extension is inhibited if the flight crew sets the sidestick half forward or beyond.*

When the speed goes below VMO + 2 kt, the speedbrakes retract automatically.
When the speed is at or below VMO, the thrust reverts to manual thrust if the A/THR was not active before the activation of the high speed protection. The level of thrust is set in accordance with the position of the thrust levers.

High Speed Protection


High speed protection activation
Stick free
Stick full forward
Speed returns below VMO + 10kt / MMO + .02
HSP Activation
360
340
320
380
360
340
OVERSPEED warning at VMO + 4kt / MMO + .006
360
340
320
VMO +10kt / MMO + .02 (At the latest)
380
360
340
360
340
320
Speed Stabilized at VD -10kt / MD- .02

In manual flight, the speed target of the high speed protection depends on the sidestick deflection:
- Below VMO/MMO if the sidestick is released
- If the sidestick is full forward:
  - VD - 18 kt / MD - 0.04 with speedbrakes extended
  - VD - 10 kt / MD - 0.02 with speedbrakes not extended.

When the AP is engaged, the speed target of the high speed protection depends on the mode that is engaged:
- Halfway between VMO/MMO and VD/MD in ALT mode
- VMO + 10 kt / MMO + 0.02 in all other modes.

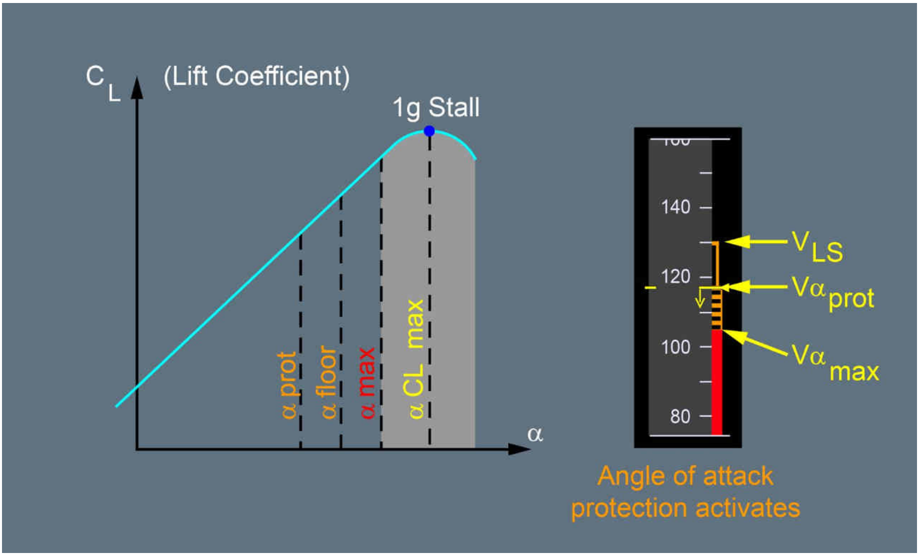
When the high speed protection is active:
- The bank angle is limited to 45°
- The pitch trim position is frozen
- Positive static stability is restored (the pitch attitude increases when the speed increases)
- Positive spiral stability is restored (the bank angle returns to 0° when the sidestick is released).

ANGLE OF ATTACK PROTECTION

Ident.: DSC-22-27-20-00001762.0001001 / 04 DEC 14
Applicable to: ALL

In normal law, the aircraft is protected against stall, in dynamic maneuvers or gusts.
The angle of attack protection activates when the angle of attack exceeds α_{prot}. In any case, the angle of attack cannot exceed α_{max}.

AoA Protection


C L (Lift Coefficient)
1g Stall
α prot
α floor
α max
α CL max
α
140
120
100
80
VLS
Vα prot
Vα max
Angle of attack protection activates

When the angle of attack protection is active:
- The pitch control law controls the angle of attack (the angle of attack is proportional to the sidestick deflection) between:
  - α_{max} (Full back stick)
  - α_{prot} (Sidestick at neutral)
- Static stability is restored

- The bank angle is limited by the maximum achievable load factor (The maximum achievable bank angle is above 45 °).
- The pitch trim is frozen in the pitch-up direction.

LOW ENERGY PROTECTION

Ident.: DSC-22-27-20-00001763.0001001 / 04 MAY 16
Applicable to: ALL

The objective of the low energy alert and of the alpha floor function is to protect the flight path angle by providing means to achieve a proper level of energy:

- The low energy alert is the first level of protection. It requires crew action, for manual thrust increase.
- The alpha floor function is the second level of protection. It automatically sets maximum thrust. For more information, *Refer to DSC-22-27-20 Alpha Floor Protection*.

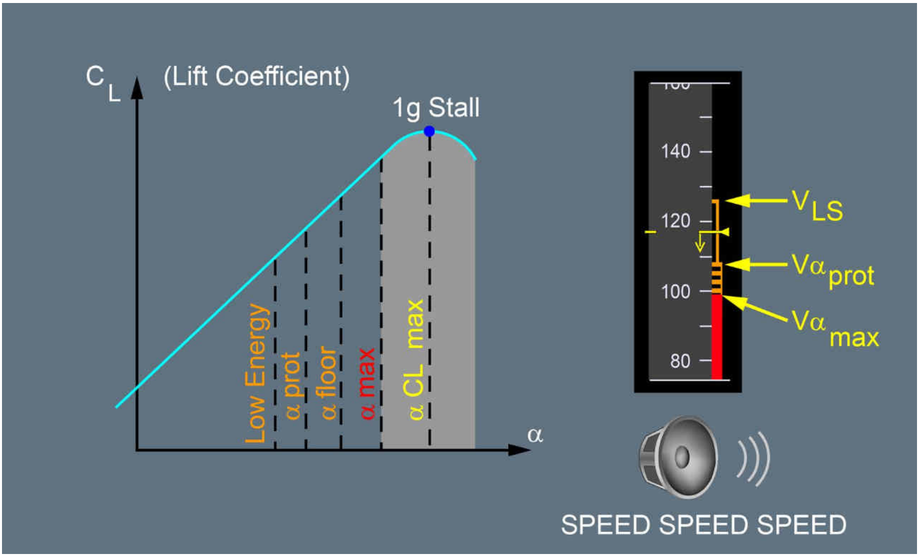
When it is not possible to recover a positive flight path angle using the pitch control, an aural alert “SPEED SPEED SPEED” is repeated every 5 seconds, as long as the energy has not been sufficiently increased.
For more information, *Refer to FCTM/PR-AEP-MISC Low Energy*.

Speed (Synthetic Voice)
The low energy alert is triggered when the speed is between VLS and $V\alpha_{prot}$.

L2 The low energy alert is triggered when the speed is close to $V\alpha_{prot}$, but it can be triggered closer to VLS, in the case of:

- A negative flight path angle, or
- A negative speed trend.

Low Energy Protection


C_L
(Lift Coefficient)
1g Stall
Low Energy
α prot
α floor
α max
α CL max
α
140
120
100
80
V_{LS}
$V\alpha_{prot}$
$V\alpha_{max}$
SPEED SPEED SPEED

L1 The low energy alert will be triggered during deceleration before the activation of α-floor. The delay between the low energy alert and the activation of α-floor depends on the deceleration rate.

In manual flight, the low energy alert is available:
- Below 2 500 ft RA
- Above 100 ft RA for landing, above 200 ft RA for takeoff
- In CONF 2, 3 and FULL

L2 If the slats or flaps are jammed, the low energy alert is available when the aircraft is not in clean configuration.

L1
- In all flight control laws (Normal, Alternate, and Direct)

When the AP is engaged, the low energy alert is available whatever the aircraft altitude and the position of the slats/flaps.

In manual flight or with the AP engaged, the low energy alert is inhibited when:
- At least one engine thrust lever is at TOGA, or
- α-floor is active, or
- The angle of attack has reduced below the warning threshold.

L2 The low energy alert requires the following equipment
- 1 PRIM
- 1 ADIRS

- 1 RA
- 1 FWS

ALPHA FLOOR

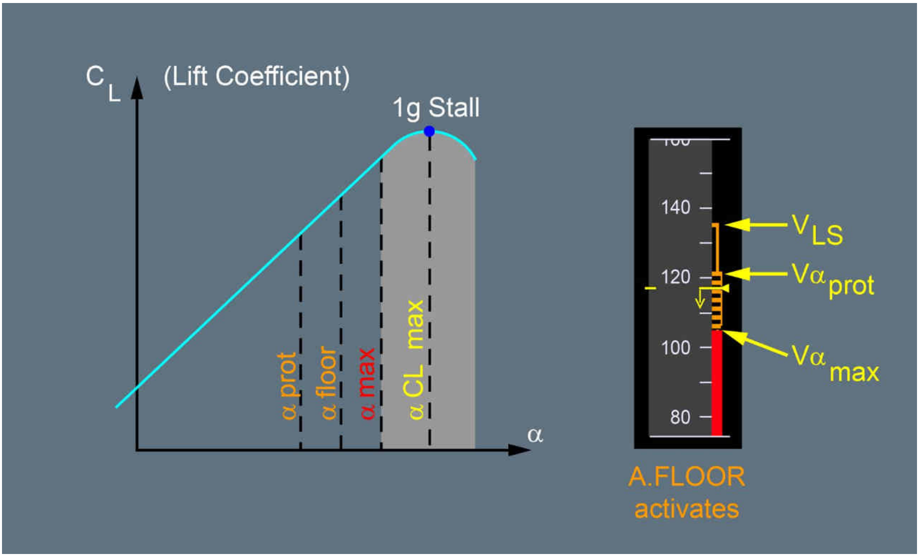
Ident.: DSC-22-27-20-00001764.0002001 / 03 JUL 20
Applicable to: ALL

1 To avoid flying at low speed with a low thrust, the α-floor function automatically applies TOGA thrust, when the angle of attack exceeds the α-floor threshold (between α-prot and α-max). TOGA thrust is applied, regardless of the thrust lever position and the A/THR engagement status.
If the A/THR is not active, it automatically activates. The thrust remains at TOGA, as long as the speed is at or below VLS.
The A/THR engages in A.FLOOR mode. For more information on A.FLOOR A/THR mode, *Refer to DSC-22-FG-50-50 ALPHA FLOOR*.

When the speed is above VLS:
- If the A/THR was not active before A.FLOOR mode engagement, the thrust reverts to manual thrust. The level of thrust is set in accordance with the position of the thrust levers.
- If the A/THR was active before A.FLOOR mode engagement, the thrust reverts to the mode where it was before A.FLOOR more engagement.

L2 The α-floor function activates when one of the following conditions is true:
- The angle of attack is above α-floor (α-floor depends on the aircraft's configuration)
- The angle of attack protection is active, and the sidestick deflection is close to full back stick
- The pitch up attitude protection is active, and the sidestick deflection is close to full back stick
- The speed is below VLS -5 kt, and the autopilot is engaged in cruise at an altitude above 25 000 ft.

Alpha Floor Protection


C L
(Lift Coefficient)
1g Stall
α prot
α floor
α max
α CL max
α
140
120
100
80
VLS
Vα prot
Vα max
A.FLOOR
activates

L1 α-floor is available:

- From liftoff down to 100 ft RA
- In normal law.

α-floor is inhibited if one of the following condition occurs:

- Failure of one engine below 15 000 ft
- The thrust levers are already at TOGA detent
- In clean configuration below 25 000 ft when the speed is above VLS -20 kt with the autopilot engaged
- The AP/FD TCAS mode engaged following a Resolution Advisory, and the thrust levers are at or below the CL detent

L3 If at least one thrust lever is below the CL detent when the TCAS mode engages, the α-floor is inhibited during 5 s to enable the flight crew to set the thrust levers to the CL detent.

L2 The α-floor remains inhibited as long as the TCAS mode is engaged.

L1 - EMER DES mode is engaged.

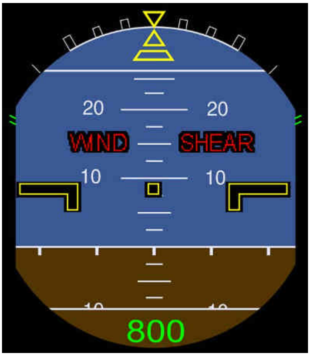
REACTIVE WINDSHEAR DETECTION

Ident.: DSC-22-27-20-00001765.0002001 / 30 JAN 17
Applicable to: ALL

A windshear alert triggers, when the aircraft encounters wind gradients during takeoff and landing, which could reduce the margin toward stall.

The windshear alert consists of:
- A red windshear message displayed on both PFDs.

Windshear



It flashes during 9 s, then remains steady, as long as the windshear is detected.
- An aural WINDSHEAR alert

Windshear (Synthetic Voice)

L2 The PRIMs ensure the reactive windshear detection.

The reactive windshear detection is available:
- During takeoff: From 50 ft or 3 s after liftoff, and until reaching 1 300 ft
- During landing: From 1 300 ft to 50 ft.

It is inhibited if the aircraft is in CONF 0.

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AIRCRAFT SYSTEMS

22 - AFS - INTRODUCTION

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AIRCRAFT SYSTEMS

22 - AFS - INTRODUCTION

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Applicable to: ALL

Ident.: DSC-22-INT-10-00001767.0001001 / 28 APR 14

OVERVIEW

The Auto Flight System (AFS) includes:

- The Flight Guidance (FG)
  The FG provides guidance in accordance with flight targets selected by the flight crew, or managed by the Flight Management System.
- The Flight Management System (FMS)
  The FMS manages the flight plan, defined by the flight crew, and provides flight parameters to the FG accordingly.

The AFS also includes:

- The Flight Envelope (FE)
- The Flight Control Data Concentrator (FCDC).

Ident.: DSC-22-INT-10-00001769.0001001 / 09 JUL 14

FLIGHT GUIDANCE (FG)

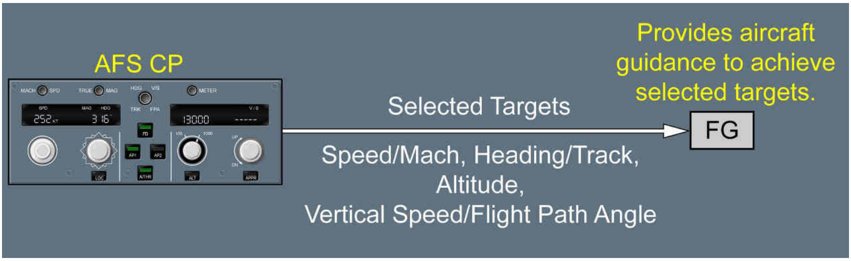
FG OBJECTIVES

The objectives of the FG are to provide lateral and vertical guidance, including speed or Mach control, based on defined targets. These targets can be either selected or managed.

Selected Targets

The flight crew selects the targets via the short-term interface: The AFS Control Panel (CP). Then the FG uses these targets to perform selected guidance.

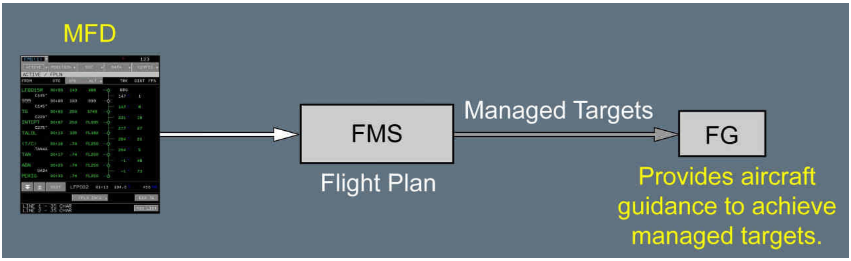
Selected Guidance


AFS CP
Provides aircraft guidance to achieve selected targets.
Selected Targets
FG
Speed/Mach, Heading/Track,
Altitude,
Vertical Speed/Flight Path Angle

Managed Targets

The flight crew uses the long-term interface, the Multi Function Display (MFD), to prepare the flight plan. The FMS calculates managed targets accordingly. Then the FG uses these targets to perform managed guidance.

Managed Guidance



Selected and Managed Guidance - Combinations

Lateral guidance and vertical guidance can be selected or managed, independently of each other. However, managed vertical guidance is not possible, when selected lateral guidance is used.

L2 The following table outlines the possible combinations:

L12

		Lateral	
		Selected	Managed
Vertical	Selected	Yes	Yes
	Managed	No	Yes

L1 Speed or Mach can be either selected or managed, regardless of lateral and vertical guidance.

AFS CP Philosophy

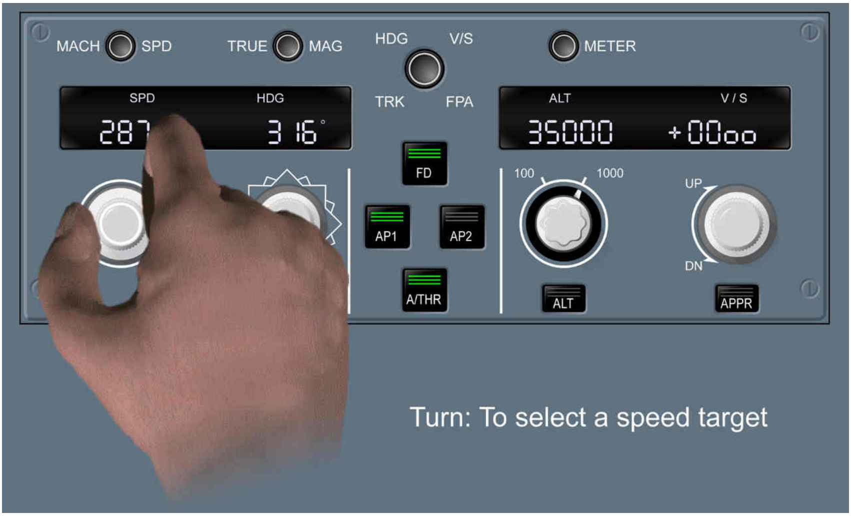
On the AFS CP, the SPD/MACH, HDG/TRK, V/S / FPA knobs can be turned, pulled, and pushed. This enables the flight crew to:

- Preselect a target: Turn
- Engage a mode that will guide the aircraft to a selected target: Pull
- Arm or engage a mode that will guide the aircraft to a managed target: Push.

L2 The managed mode is not applicable to the V/S / FPA knob.

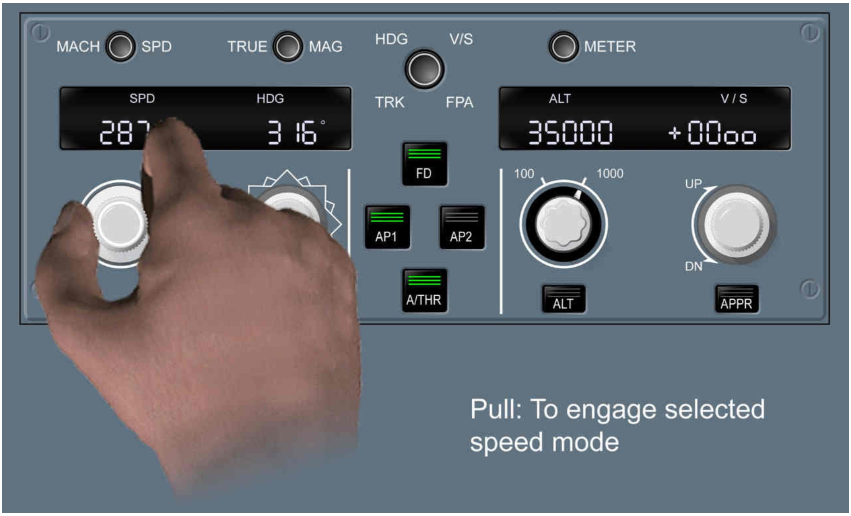
L1 Here is an example with the SPD/MACH knob.

AFS CP Philosophy: Turn to Select a Speed Target


MACH
SPD
TRUE
MAG
HDG
V/S
TRK
FPA
METER
SPD
HDG
287
316°
ALT
V / S
35000
+00oo
FD
AP1
AP2
A/THR
100
1000
UP
DN
ALT
APPR

Turn: To select a speed target

AFS CP Philosophy: Pull to engage selected speed mode


MACH
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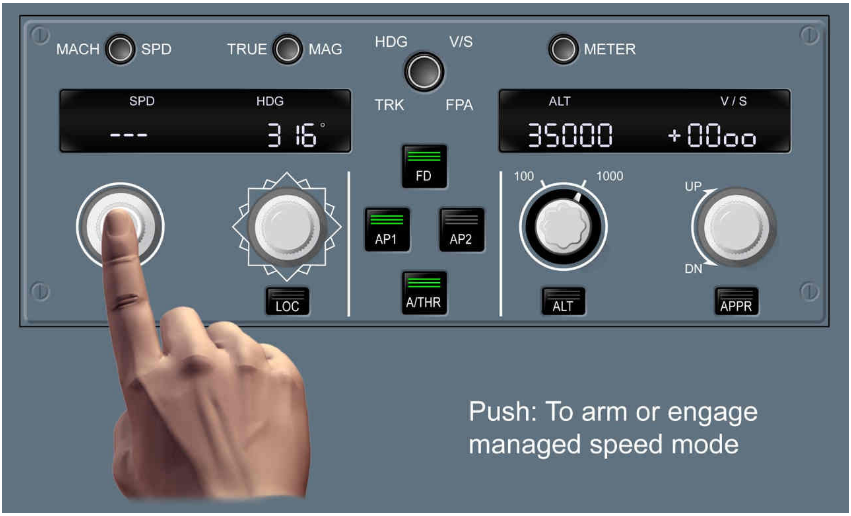
HDG
287
316°
ALT
V / S
35000
+00oo
FD
AP1
AP2
A/THR
100
1000
UP
DN
ALT
APPR

Pull: To engage selected speed mode

AFS CP Philosophy: Push to arm or engaged managed speed mode


MACH
SPD
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HDG
V/S
METER
SPD
HDG

316°
TRK
FPA
ALT
V / S
35000
+00oo
FD
100
1000
UP
AP1
AP2
DN
LOC
A/THR
ALT
APPR
Push: To arm or engage
managed speed mode

When in managed guidance, the flight crew can take over control at any time, and change to selected guidance.

FG FUNCTIONS: AP, FD AND A/THR

In order to achieve its objectives (lateral guidance, vertical guidance, including speed or Mach control), the FG uses:

- The Autopilot 1 and/or 2 (AP1 and/or AP2)
  The AP provides flight guidance by calculating pitch, roll, yaw and nosewheel steering orders.
- The Flight Directors 1 and 2 (FD1 and FD2)
  The FDs display guidance orders on the PFDs to assist the flight crew to fly the aircraft manually. When the AP is engaged, the flight crew can use the FD orders to monitor the guidance.
- The Autothrust (A/THR)
  A/THR controls the thrust by sending commands to the engines.

Refer to DSC-22-FG-10 Introduction.

Ident.: DSC-22-INT-10-00001770.0001001 / 28 APR 14

FLIGHT MANAGEMENT SYSTEM (FMS)

LONG-TERM GUIDANCE

The Flight Management System (FMS) provides long-term guidance along the inserted flight plan.
To achieve these long-term objectives, the FMS computes managed targets, that are then sent to the FG.

FMS FUNCTIONS

In addition to long-term guidance, the FMS:
- Provides flight planning and navigation information
- Calculates and optimizes performance data
- Displays information on the MFD, ND and PFD.

Refer to DSC-22-FMS-10-10 Overview.

Ident.: DSC-22-INT-10-00001771.0001001 / 28 APR 14

FLIGHT ENVELOPE (FE)

The FE computes the aircraft normal flight envelope. The FE is used by the FG and by the flight controls to prevent the aircraft from exiting the envelope.
Refer to DSC-22-27-20 General.

Ident.: DSC-22-INT-10-00001772.0001001 / 02 MAY 14

L3 FLIGHT CONTROL DATA CONCENTRATOR (FCDC)

The FCDC:
- Controls the approach capability computed by the PRIMs
  For more information, *Refer to DSC-22-FG-80 General*.
- Interfaces the AP, FD and A/THR with the FWS to enable the associated alerts to be triggered
- Generates maintenance messages for the AFS (FG and FE).
- Computes the aircraft weight and CG independently from the FQMS, via the Weight and Balance Backup Computation (WBBC) function.
  The flight controls and flight guidance functions use the WBBC to consolidate the weight and balance computation in the case of FQMS failure.

The FCDC also performs functions for the flight controls (e.g. monitoring and display of the flight control surfaces position, transmission of flight control parameters to the recorders): *Refer to DSC-27-10-10 FCDC*.
The CPIOM-J hosts two independent FCDC functions.

GENERAL ARCHITECTURE

Applicable to: ALL

Ident.: DSC-22-INT-20-00001768.0001001 / 28 APR 14

GENERAL

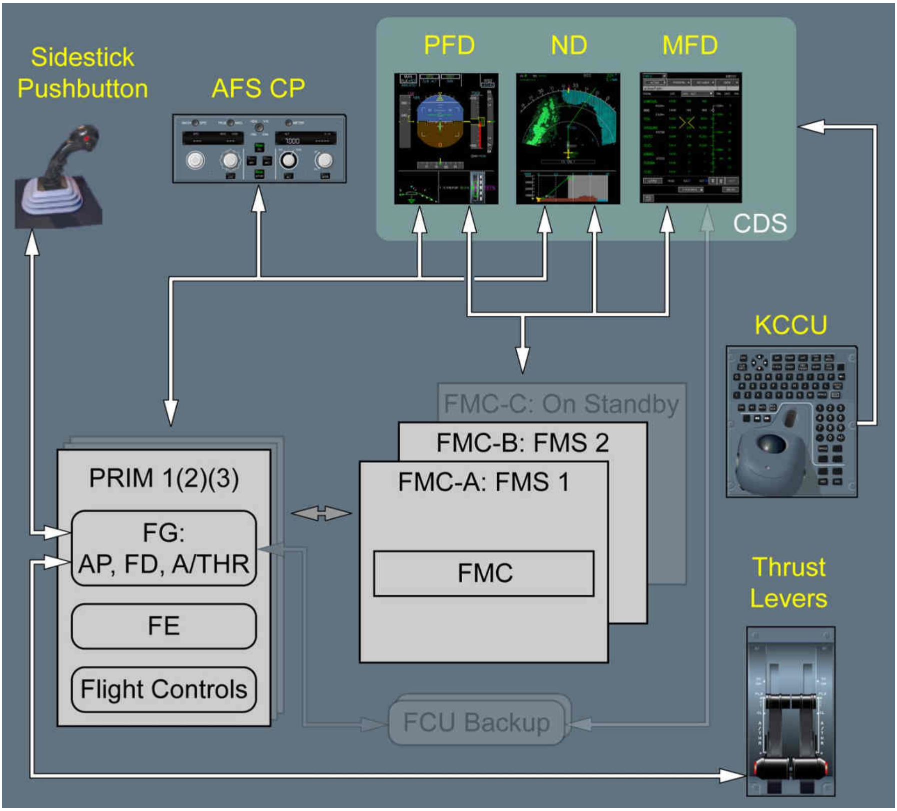
The AFS has:

- Three Primary flight control and guidance computers (PRIMs)
- Three Flight Management Computers (FMCs).

The flight crew interfaces with the AFS via:

- One AFS Control Panel
  The AFS CP has a backup, displayed on the MFDs. This backup is referred to as the FCU backup / AUTO FLT page.
- Two Multi Function Displays (MFDs)
- Two Primary Flight Displays (PFDs)
- Two Navigation Displays (NDs)
- One sidestick pushbutton on each sidestick
- Two thrust levers, and two A/THR instinctive disconnect pushbuttons.

General Architecture


Sidestick Pushbutton
AFS CP
PFD
ND
MFD
CDS
KCCU
FMC-C: On Standby
FMC-B: FMS 2
FMC-A: FMS 1
FMC
PRIM 1(2)(3)
FG:
AP, FD, A/THR
FE
Flight Controls
FCU Backup
Thrust Levers

Ident.: DSC-22-INT-20-00001773.0001001 / 28 APR 14

PRIMARY FLIGHT CONTROL AND GUIDANCE COMPUTER (PRIM)

There are three PRIMs, that operate the FG. Each PRIM can operate one or both APs, and/or both FDs, and/or the A/THR.
The PRIMs also operate the FE and flight control functions.
For the PRIM architecture for the FG, *Refer to DSC-22-FG-10 Architecture*.

Ident.: DSC-22-INT-20-00001774.0001001 / 28 APR 14

FLIGHT MANAGEMENT COMPUTER (FMC)

There are two FMSs (FMS1 and FMS2), that are using three FMCs: FMC-A, FMC-B and FMC-C.

In normal operation:
- FMC-A operates FMS1
- FMC-B operates FMS2
- FMC-C is on standby, ready to operate FMS1 or FMS2.

Each FMC can operate all the flight management functions.
Refer to DSC-22-FMS-10-20 Other Aircraft Systems.

Ident.: DSC-22-INT-20-00001775.0001001 / 28 APR 14

AFS CONTROL PANEL

The AFS Control Panel is the main interface with the FG. The flight crew can:

- Engage managed or selected guidance
- Select targets for short-term guidance (speed/Mach, heading/track, altitude, vertical speed/flight path angle)
- Engage the AP, FD and A/THR
- Select altitude display in meters
- Select magnetic or true North reference.

In case the AFS CP fails, the MFD FCU BKUP / AFS CP page provides all the AFS CP controls and indicators (For more information, *Refer to DSC-31-CDS-40-70 EFIS CP Backup Function*).

Ident.: DSC-22-INT-20-00001776.0001001 / 28 APR 14

MULTI FUNCTION DISPLAY (MFD)

The MFD is the main interface with the FMS. It is also the interface of the FCU BKUP.
The flight crew can navigate through the MFD pages, and enter or modify data, with the Keyboard and Cursor Control Unit (KCCU).
For more information, *Refer to DSC-31-CDS-70-10 MFD*, and *Refer to DSC-22-FG-90-50 MFD - FCU BKUP Pages*.

Note: *The MFD also displays:*
- *The Air Traffic Control (ATC) Communication pages*
- *The Surveillance (SURV) pages*
- *The checklist menu (C/L) pages*
- *The FCU backup pages.*

Ident.: DSC-22-INT-20-00001777.0001001 / 28 APR 14

PRIMARY FLIGHT DISPLAY (PFD)

The PFD mainly displays:

- Primary flight parameters (bank angle, pitch angle, speed, Mach, heading, track, altitude, vertical speed, flight path vector, velocity vector)
- Selected and managed guidance targets (e.g. speed and altitude targets)
- Armed and engaged modes, landing capability, AP, FD and A/THR engagement status on the Flight Mode Annunciator (FMA)
- Flight Director guidance orders
- Instrument approach information.

Ident.: DSC-22-INT-20-00001778.0001001 / 28 APR 14

NAVIGATION DISPLAY (ND)

The ND mainly displays lateral and vertical parts of flight plans, and their associated navigation information. The flight crew can use the ND to modify the lateral part of the flight plan by using the KCCU.

The flight crew controls the ND display via an EFIS Control Panel, located on the glareshield.

Ident.: DSC-22-INT-20-00001779.0001001 / 28 APR 14

SIDESTICKS PUSHBUTTON

A sidestick pb, located on each sidestick, allows the AP to be disengaged.

When the AP is not engaged, the flight crew uses one of the sidesticks to fly the aircraft.

Ident.: DSC-22-INT-20-00001780.0001001 / 28 APR 14

THRUST LEVERS

The flight crew interfaces with the A/THR via the thrust levers. The detent positions are sent to the PRIMs. Then the A/THR sends thrust commands to the Full Authority Digital Engine Control (FADEC) system. The FADEC system regulates the engine thrusts.

When armed or active, the Autothrust can be disconnected by one of the two instinctive disconnect pushbuttons located on the thrust levers.

Ident.: DSC-22-INT-20-00011567.0001001 / 28 APR 14

FCU BKUP

The FCU backup function is an FCU alternative in case of EFIS CP, or AFS CP failure.

The flight crew can access the FCU backup function via the FCU BKUP pages of the MFD.

L3 The CPIOM J71 and J72 host the FCU backup function.

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AIRCRAFT SYSTEMS

22 - AFS - FLIGHT GUIDANCE

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DSC-22-FG-100-20 Failure Indications During Approach

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Continued on the following page

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DSC-22-FG-110 How to

How to Define a HDG/TRK Preset....................A

Localization Title	Toc Index	ID	Reason
DSC-22-FG-50-30 FMA Display	B	1	Revision of the abbreviation to be in accordance with the abbreviation list.
DSC-22-FG-50-40 A/THR Disconnection	A	1	Removal of the maintenance action requirement in the caution. Addition of a paragraph to detail the condition of the A/THR recovery: Since PRIM P8 and further standards the A/THR is recovered after an aircraft power-up.
DSC-22-FG-70-10 AP/FD Lateral Modes	A	1	Documentation update: Deletion of information. Update of the content to include the description of bank angle limitation (with autopilot engaged) when one engine is inoperative. Update of the format of the illustration for standardization purposes. No technical change. Use of the abbreviation associated to the True Air Speed term . Documentation update: Information "P.00005696.0001001.033" moved from "P.00005696.0001001.028" to "P.00005696.0001001.081"
DSC-22-FG-70-70 General	A	1	Documentation update: Deletion of text. Revision of the description to clarify the type of V/S / FPA engaged following a reversion to V/S or FPA mode.
DSC-22-FG-70-80-00 Approach Sequence	B	1	ROLL OUT mode engagement correction. Removal of the LAND1(2)(3) approach and landing capability condition which is not a prerequisite.
DSC-22-FG-70-100-40 Consequence on AP/FD Vertical Mode	B	1	Correction of the aircraft high speed limit reference for the AP/FD TCAS mode. High speed limit value reference is VMAX instead of V alpha Max.
DSC-22-FG-70-110-20 Takeoff with HDG/TRK Preset	C	1	Update of the illustration to replace the ALT knob button by the HDG/TRK knob button which is more appropriate with the scenario content.
DSC-22-FG-90-20 HDG/TRK Knob	C	1	Revision of the description to clarify the behavior of the preselect function of the HDG/TRK knob. Documentation update: Information "P.00003727.0001001.006" moved from "P.00003727.0001001.004" to "P.00003727.0001001.004" Documentation update: Deletion of information.
DSC-22-FG-90-20 V/S / FPA Knob	E	2	Revision of the description to clarify the behavior of the preselect function of the V/S / FPA knob.

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INTRODUCTION

Ident.: DSC-22-FG-10-00004556.0001001 / 07 NOV 16
Applicable to: ALL

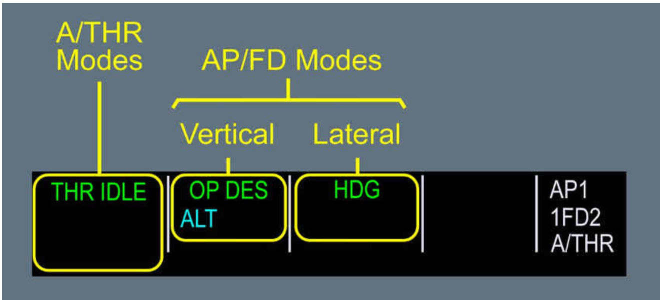
Flight Guidance (FG) operates by using the following modes:
- AP/FD lateral modes
  These modes control the lateral trajectory.
- AP/FD vertical modes

  These modes can control either:
  - The vertical trajectory, or
  - The Speed or Mach.
- A/THR modes

  These modes can control either:
  - The thrust, or
  - The speed or Mach.

Speed or Mach cannot be simultaneously controlled by the AP/FD and the A/THR.
The FG modes appear on the Flight Mode Annunciator (FMA) of the Primary Flight Displays (PFDs).

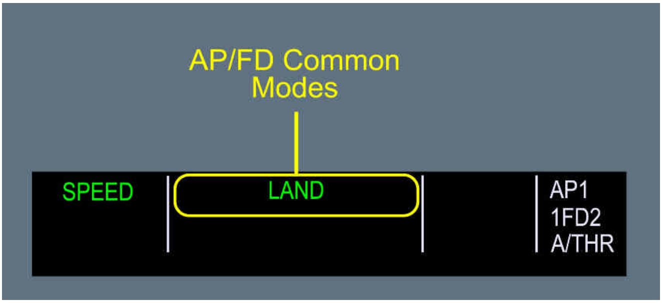
A/THR Modes and AP/FD Modes



Some AP/FD lateral and vertical modes are specifically linked to each other to form common modes. A common mode fulfills the objectives of both a lateral and a vertical mode.

LAND is an example of a common mode:
- The lateral objective is to guide the aircraft along the LOC beam
- The vertical objective is to guide the aircraft along the G/S beam.

AP/FD Common Modes



SELECTED AND MANAGED MODES

Ident.: DSC-22-FG-10-00004557.0002001 / 01 JUN 17
Applicable to: ALL

Guidance is either selected or managed. Therefore, the corresponding modes are also referred to as either selected or managed:

Guidance	Managed Modes	Selected Modes
Lateral	NAV LOC*, LOC LOC B/C*, LOC B/C F-LOC*, F-LOC RWY, RWY TRK GA TRK	HDG, TRACK
Vertical	SRS CLB ALT*, ALT ALT CRZ*, ALT CRZ ALT CST*, ALT CST DES EMER DES G/S*, G/S F-G/S*, F-G/S APP DES TCAS	OP CLB ALT*, ALT ALT CRZ*, ALT CRZ OP DES V/S, FPA

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Guidance	Managed Modes	Selected Modes
Lateral and Vertical	LAND FLARE ROLL OUT (1)	
Speed or Mach	SPEED, MACH with FMS reference.	SPEED, MACH with AFS CP reference.

(1) *These modes are common modes.*

A selected guidance has always priority over the managed guidance.

INTERACTION BETWEEN AP/FD AND A/THR

Ident.: DSC-22-FG-10-00004558.0002001 / 01 JUN 17
Applicable to: ALL

The AP/FD vertical mode determines the associated A/THR mode:

- When an AP/FD vertical mode controls a speed or Mach target, the A/THR mode controls the thrust.
  L2 The vertical trajectory is a result of speed or Mach, and of thrust.
- L1 When an AP/FD vertical mode controls the vertical trajectory, the A/THR mode controls a speed or Mach target.

  Note: *During ROLL OUT, and during FLARE with the AP on, the A/THR mode controls the thrust at idle.*

- If no AP/FD mode is engaged, when the A/THR engages, the A/THR engages in SPEED or MACH mode, in order to control a speed or Mach target.

AP/FD		A/THR	
Vertical Modes	**Objectives**	**Modes**	**Objectives**
SRS OP CLB CLB OP DES EMER DES DES in idle path	Control of speed or Mach target	THRUST modes	Control of thrust

Continued on the following page

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AP/FD		A/THR	
V/S / FPA ALT*, ALT ALT CST*, ALT CST ALT CRZ*, ALT CRZ DES in geometric path G/S*, G/S F-G/S*, F-G/S APP DES TCAS LAND common mode FLARE common mode with FDs engaged only	Control of vertical trajectory	SPEED/MACH	Control of speed or Mach target
FLARE common mode during autoland	Control of vertical trajectory	THRUST mode	Control of thrust at idle
None		SPEED/MACH	Control of speed or Mach

For information on AP/FD modes, *Refer to DSC-22-FG-70-10 Introduction*.

ARCHITECTURE

Ident.: DSC-22-FG-10-00004559.0001001 / 04 MAY 16
Applicable to: ALL

There are three PRIMs. Each PRIM can operate one or both APs, and/or FDs, and/or A/THR.

To determine which PRIM will operate the engaged AP(s), FDs, and A/THR, each PRIM computes its operational capability, taking into account:
- Manual flight guidance capability,
- Automatic flight guidance capability (e.g. FE, AP, FD, A/THR capabilities).

The Master PRIM is the PRIM that has the best operational capability. The Slave 1 PRIM has the second best operational capability, and the Slave 2 PRIM has the third best.

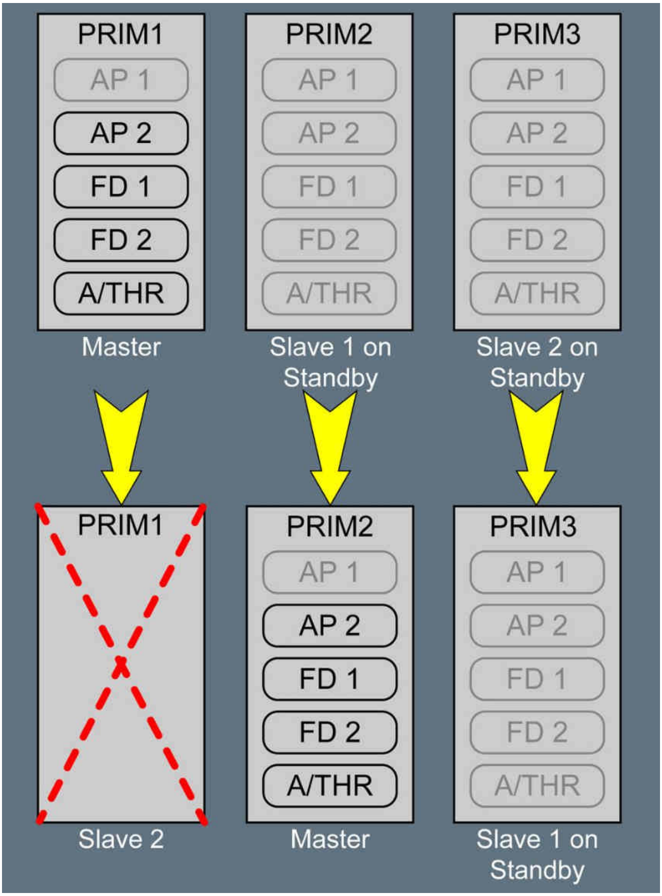
L2 When all the PRIMs have the same capability, the first PRIM that is electrically supplied is the Master PRIM.

L1 The Master PRIM has the priority to operate AP(s), FDs and A/THR.

If the Master PRIM loses the best operational capability, the engaged AP, FDs and A/THR do not disconnect. They are transferred to the Slave 1 PRIM, and:
- The Slave 1 PRIM becomes the Master PRIM
- The two other PRIMs become Slave 1 PRIM and Slave 2 PRIM.

In the following example, all the PRIMs initially have the same capability, AP2 is engaged, FDs are engaged, A/THR is armed or active, and PRIM1 fails:

PRIM Architecture


PRIM1
AP 1
AP 2
FD 1
FD 2
A/THR
Master
PRIM2
AP 1
AP 2
FD 1
FD 2
A/THR
Slave 1 on Standby
PRIM3
AP 1
AP 2
FD 1
FD 2
A/THR
Slave 2 on Standby
PRIM1
Slave 2
PRIM2
AP 1
AP 2
FD 1
FD 2
A/THR
Master
PRIM3
AP 1
AP 2
FD 1
FD 2
A/THR
Slave 1 on Standby

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GENERAL

Ident.: DSC-22-FG-30-10-00004561.0001001 / 03 DEC 15
Applicable to: ALL

The Flight Director (FD) displays guidance orders on the Primary Flight Displays (PFDs):

- If no AP is engaged, the flight crew can manually fly the aircraft by following FD orders
- If at least one AP is engaged, the flight crew can use the FD to monitor the flight guidance.

There are two FDs, referred to as FD 1 and FD 2.

In normal operation, FD guidance orders appear as the following:

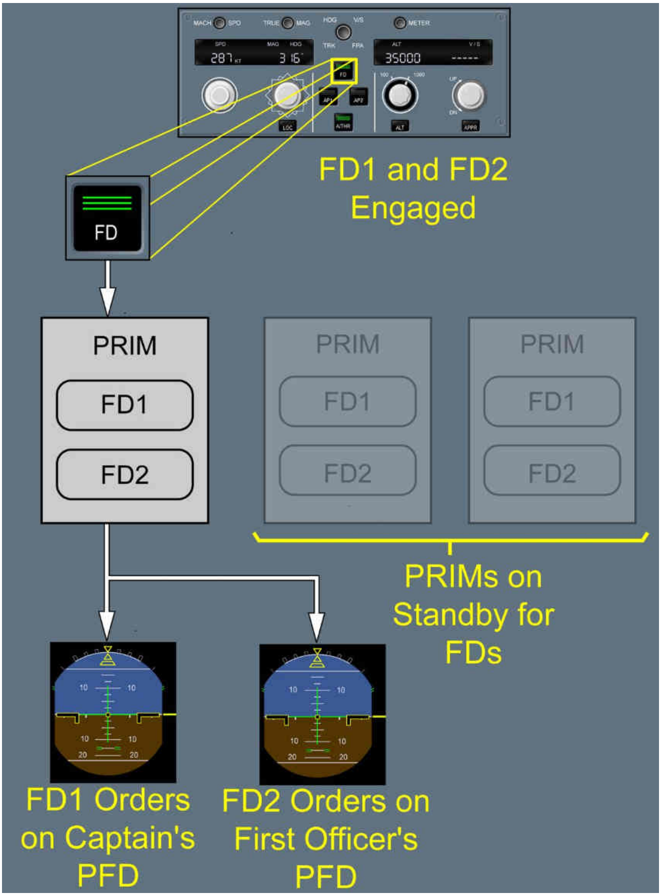
- FD 1 guidance orders appear on the Captain's PFD

L2 To compute guidance orders, the FD 1 uses data displayed on the Captain's side (e.g. FMS 1, MMR 1 in normal operation).

L1
- FD 2 guidance orders appear on the First Officer's side

L2 To compute guidance orders, the FD 2 uses data displayed on the First Officer's side (e.g. FMS 2, MMR 2 in normal operation).

Flight Director


FD
FD1 and FD2 Engaged
PRIM
FD1
FD2
PRIM
FD1
FD2
PRIM
FD1
FD2
PRIMs on Standby for FDs
FD1 Orders on Captain's PFD
FD2 Orders on First Officer's PFD

FD DISPLAY

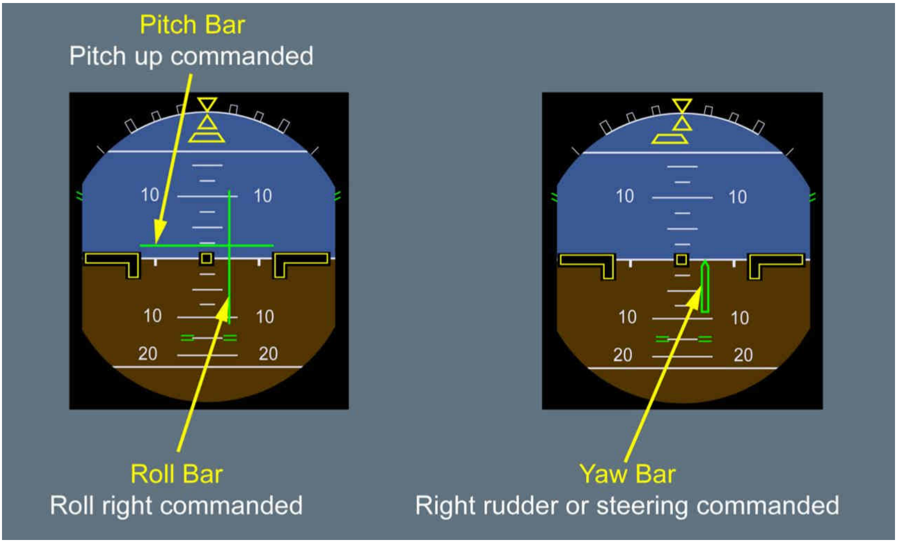
Ident.: DSC-22-FG-30-20-00004562.0002001 / 05 NOV 15
Applicable to: ALL

The pitch, roll, and yaw bars respectively indicate the pitch, roll, and yaw FD guidance orders.

Note: *Independently from FD display, the Flight Path Vector(Velocity Vector) can be displayed on the PFDs. The Flight Path Vector(Velocity Vector) does not indicate guidance orders. The flight crew must not use the Flight Path Vector(Velocity Vector) as guidance orders. However, the Flight Path Vector(Velocity Vector) provides an indication of the aircraft trajectory with respect to the ground reference.*
For definition and display conditions of the Flight Path Vector(Velocity Vector), Refer to DSC-31-CDS-40-20-30 Flight Path Vector or Velocity Vector.

FDS ARE ENGAGED

When the FDs are engaged, the PFDs can display the roll, pitch and yaw bars.


Pitch Bar
Pitch up commanded
10
10
10
10
20
20
Roll Bar
Roll right commanded
10
10
10
10
20
20
Yaw Bar
Right rudder or steering commanded

When the FDs are engaged, the display conditions of the guidance orders are:

- For lateral guidance orders:
  The yaw bar is displayed during takeoff or landing roll. Otherwise, the roll bar is displayed when a lateral mode is engaged.
  L2 The yaw bar only appears in RWY and ROLL OUT.
- L1 For vertical guidance orders:
  The pitch bar is displayed after liftoff when the tail strike pitch limit disappears, and when a vertical mode is engaged.
  L2 With the AP on, the pitch bar disappears in ROLL OUT.
  With the AP off, the pitch bar disappears below 50 ft RA.

L1 FD s ARE NOT ENGAGED

If the FDs are not engaged, the FD bars do not appear on the PFDs.

INTRODUCTION

Ident.: DSC-22-FG-30-30-00004563.0001001 / 06 AUG 14
Applicable to: ALL

FD1 and FD2 engage at the same time.

L3 The FDs are available in normal and alternate laws, only.

ENGAGEMENT CONDITIONS

Applicable to: ALL

Ident.: DSC-22-FG-30-30-B-00004566.0001001 / 06 AUG 14

MANUAL ENGAGEMENT

Both FD1 and FD2 manually engage, when the flight crew presses the FD pb on the AFS CP. If no AP was previously engaged, then HDG or TRACK, and V/S or FPA engage. The FD bars flash for 10 s.

Ident.: DSC-22-FG-30-30-B-00004564.0001001 / 09 JUL 19

AUTOMATIC ENGAGEMENT ON GROUND

On ground, the FDs automatically engage at aircraft power-up, when the IRs and ADRs are aligned.

Ident.: DSC-22-FG-30-30-B-00004567.0002001 / 01 JUN 17

AUTOMATIC ENGAGEMENT IN FLIGHT

If not already engaged, FD1 and FD2 automatically engage, if:
- The flight crew engages a go-around, or
- L2 The thrust levers are set to TOGA or FLX during takeoff, or
- L1 The AP/FD TCAS mode engages upon a Resolution Advisory, or
- The EMER DES mode engages.

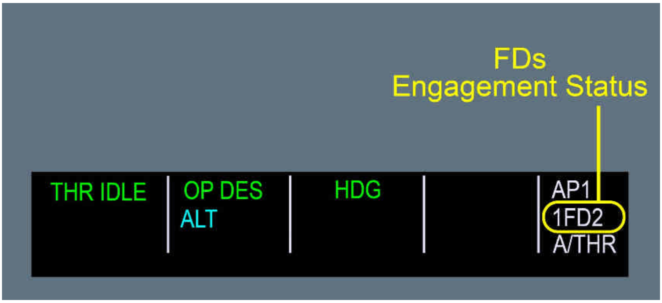
ENGAGEMENT ANNUNCIATION

Ident.: DSC-22-FG-30-30-00004568.0001001 / 03 DEC 15
Applicable to: ALL

When the FDs engage:
- The FD pb on the AFS CP comes on
- 1FD2 appears on both FMAs
- When a mode is active, the PFDs display the FD orders.
  For FD display conditions on PFDs, *Refer to DSC-22-FG-30-20 FD Display*.

The engagement status of the FD appears in the AP, FD, A/THR engagement status column of both FMAs.

FD Engagement



The possible FD messages are:

L12

FMA Message	Meaning
1FD2	FD1 and FD2 are engaged.
1FD-	FD1 and FD2 are engaged but the FD bars are not displayed on FD2. The AIR DATA selector is set on the F/O ON BKUP position. The air data displayed on the PFD of the F/O are not the same compared to the air data used by the FD2 guidance. Associated with the NAV F/O PFD ON BKUP alert (*Refer to procedure*).
-FD2	FD1 and FD2 are engaged but the FD bars are not displayed on FD1. The AIR DATA selector is set on the CAPT ON BKUP position. The air data displayed on the PFD of the CAPT are not the same compared to the air data used by the FD1 guidance. Associated with the NAV CAPT PFD ON BKUP alert (*Refer to procedure*).
No FD message	No FD is engaged.

GENERAL

Ident.: DSC-22-FG-30-40-00015901.0001001 / 06 AUG 14
Applicable to: ALL

FD1 and FD2 disengage at the same time.

When the FDs disengage with no AP engaged:
- Lateral and vertical modes disengage (if they are engaged)
- A/THR automatically reverts to SPEED or MACH mode, if the A/THR is engaged in THRUST mode.

When the FDs disengage with one or two AP engaged:
- The AP lateral and vertical modes remain engaged
- The A/THR mode remains engaged.

MANUAL DISENGAGEMENT

Ident.: DSC-22-FG-30-40-00015900.0001001 / 06 AUG 14
Applicable to: ALL

The flight crew can manually press the FD pb to disengage the FDs.

DISENGAGEMENT OF BOTH FDs

Ident.: DSC-22-FG-30-40-00004569.0001001 / 05 NOV 18
Applicable to: ALL

L2 AP/FD COMMON DISENGAGEMENT

The AP/FDs automatically disengages, if one of the following occurs:

L3
- In ROLL OUT, the difference between the aircraft track and the runway track is more than 20 °
- Both the AFS CP and the AFS CONTROL PANEL page of MFD FCU BKUP are not available. Nevertheless, if the failure occurs when LAND, FLARE, ROLL OUT or go-around is engaged, the AP/FDs remain operative and engaged.

L2
- In the case of an all engine flame out, the AP/FD disconnects when the RAT extends, if the vertical mode is not OP DES. Nevertheless, the AP 1 remains available and the flight crew can engage the AP/FD again.
- In approach, the LOC signal is disturbed (for example LOC beam masking). Nevertheless, as the disturbance may be temporary, the flight crew can engage the AP/FD again.
- The FD and AP become inoperative

Note: *If the FDs are inoperative, the AP is also inoperative.*

L1 **SPECIFIC FDs DISENGAGEMENT**

Both FDs can disengage, when no AP is engaged, if the aircraft speed is either:

- The aircraft speed is 2 kt below VLS in DES, OP DES
  If A/THR is engaged, the A/THR mode reverts to SPEED or MACH, and increases the thrust to recover the speed target. A triple click audio indicator sounds.
- The aircraft speed is 4 kt above VMAX in CLB or OP CLB.
  Associated with the OVERSPEED alert.
  If A/THR is engaged, the A/THR mode reverts to SPEED or MACH, and reduces the thrust to recover the speed target. A triple click audio indicator sounds.
- The thrust levers are set to TOGA and red terrain(obstacle) alerts are triggered.

L2 *Refer to DSC-34-SURV-20-10 Terrain Function*.

DISENGAGEMENT ANNUNCIATION

Ident.: DSC-22-FG-30-40-00004570.0001001 / 03 DEC 15
Applicable to: ALL

When both FDs disengage:

- The FD pb goes off
- 1FD2 , 1FD- or -FD2 message is cleared from the FMA.

PITCH AND ROLL BAR FLASHING

Ident.: DSC-22-FG-30-50-00004571.0001001 / 03 DEC 15
Applicable to: ALL

The pitch and/or roll bars flash for 10 s on both PFDs:

- If an automatic mode reversion to HDG-V/S (TRK-FPA) occurs
  The roll (pitch) bar will flash.
  A triple click audio indicator sounds.
- If all AP and FDs were previously off, and the flight crew engages the FDs.
  HDG-V/S, or TRK-FPA engage. Both pitch and roll bars will flash.

The pitch or roll bar flashes on PFD1(2), if a failure occurs in approach:

- The roll bar flashes, if LOC*, LOC B/C*, F-LOC*, LOC, LOC B/C, F-LOC, LAND or FLARE is engaged, and the MMR1(2) is not able to compute the associated lateral deviation.
  L3 This is applicable above 15 ft RA.
- L1 The pitch bar flashes, if G/S*, F-G/S*, G/S, F-G/S, LAND or FLARE is engaged, and the MMR1(2) is not able to compute the associated vertical deviation.
  L3 This is applicable above 100 ft RA.

L1 The pitch or roll bar(s) stop flashing, when one of the engaged above mode disengages.

L2 The pitch bar flashes, if the flight crew modifies the AFS CP selected altitude during the altitude capture.

L1 Note: *In some cases, AP and FDs disengage at once, or 7 s after the failure. Then, the FDs automatically reengage in HDG-V/S or TRK-FPA. A triple click audio indicator sounds. The FD bars flash for 10 s on both PFDs.*

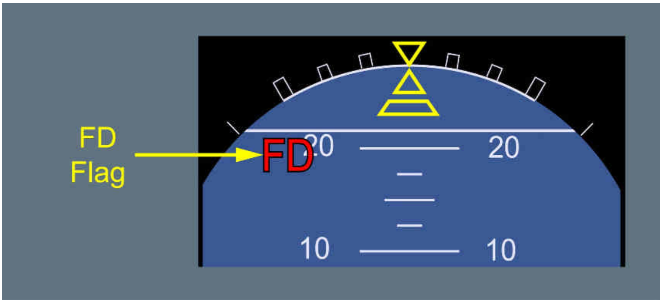
For more information about FD indication in case of LS transmitter failure during approach, *Refer to DSC-22-FG-100-20 Failure of the LS Transmitter*.

FD FLAG

Ident.: DSC-22-FG-30-50-00006060.0001001 / 06 AUG 14
Applicable to: ALL

If pitch, roll, and yaw orders are not available when the FDs are engaged, a red FD flag flashes on the PFDs, and then remains steady.
When the flag appears, the PFDs bars are not displayed.

FD Flag


FD
Flag
FD
20
20
10
10

GENERAL

Ident.: DSC-22-FG-40-10-00005092.0001001 / 03 DEC 15
Applicable to: ALL

The Autopilot (AP):
- Stabilizes the aircraft around its center of gravity
- Controls the lateral trajectory
- Controls the vertical trajectory, or speed/Mach
- Coordinates with the A/THR
- Performs the automatic landing, or the go-around.

The AP generates:
- Pitch, roll, and yaw orders
- The nosewheel angle.

There are two APs: AP 1 and AP 2.
AP 1 uses system data displayed on Captain's side, and AP 2 uses system data displayed on First Officer's side.

L2 In normal operation, AP 1 uses FMS 1, MMR 1 and AP 2 uses FMS 2, MMR 2. In the case of failure, the AP function can use any system.

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INTRODUCTION

Ident.: DSC-22-FG-40-20-00005093.0001001 / 03 DEC 15
Applicable to: ALL

AP1 and AP2 usually engage separately. In some conditions, the flight crew can engage both at the same time.
When the AP engages, the sidesticks are locked in the neutral position, and the force to move the rudder pedals increases. However, the flight crew can always disengage the AP and the locking devices.
The AP engages with the same guidance mode previously used by the FD.
If the FDs were not previously engaged, the AP engages in HDG or TRACK, and V/S or FPA.
L3 The APs are available in normal and alternate law, only.

ENGAGEMENT CONDITIONS

Applicable to: ALL

Ident.: DSC-22-FG-40-20-G10-00005095.0001001 / 01 JUN 17

MANUAL ENGAGEMENT OF ONE AP

One AP engages when the flight crew presses the AP1 pb or the AP2 pb on the AFS CP, and the aircraft is in flight for more than 5 s.

L3 The AP engages only if the aircraft pitch, bank angle, and speed are not excessive.

- The pitch is between -30 ° and 50 °
- The bank angle is less than 120 °
- The CAS is between 70 kt and 420 kt.

L2 *Note:* *1. In flight, the flight crew can engage the AP, even if the sidestick or the rudder pedals are deflected.*
However, the AP becomes active only if the flight crew reverts the sidestick and the rudder pedal to the neutral position within 6 s. If not, the AP disengages.
2. AP engagement increases the breakout force on the sidesticks and on the rudder pedals.

Ident.: DSC-22-FG-40-20-G10-00005096.0001001 / 01 JUN 17

MANUAL ENGAGEMENT OF BOTH APs

When one AP is engaged, the flight crew can press the second AP pb to engage the second AP.

However, the second AP can engage, only when one of the following conditions is applicable:
- The following approach modes are armed or engaged:
  - LOC is armed, or LOC* or LOC is engaged, and
  - G/S is armed, or G/S* or G/S is engaged
- L3 LAND can engage
- Go-around is engaged.

L1 When both APs are engaged, AP1 is active, and AP2 is on standby, regardless of the order of AP engagement.

Ident.: DSC-22-FG-40-20-G10-00023933.0001001 / 01 JUN 17

AUTOMATIC ENGAGEMENT OF ONE AP

One AP automatically engages when EMER DES mode automatically engages.
L3 For more information on the AUTO EMER DESCENT function, *Refer to DSC-22-FG-70-60-40 Engagement Conditions*.

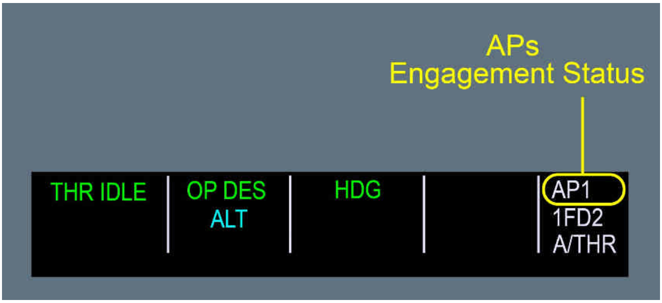
ENGAGEMENT ANNUNCIATION

Ident.: DSC-22-FG-40-20-00005097.0001001 / 06 AUG 14
Applicable to: ALL

When AP1(2) engages:
- The AP1(2) pb comes on
- Both FMAs display:
  - AP1 (AP2)
  - AP1+2, if both APs are engaged.

The engagement status of the AP appears in the AP, FD, A/THR engagement status column of FMAs.

AP Engagement Status



The possible AP messages are:

FMA Message	Meaning
AP1	AP1 is engaged.
AP2	AP2 is engaged.
AP1+2	Both APs are engaged.

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MANUAL DISENGAGEMENT

Ident.: DSC-22-FG-40-30-00005098.0001001 / 06 AUG 14
Applicable to: ALL

The AP(s) disengages, when:
- The flight crew presses the sidestick pb on any sidestick
- The flight crew presses the AP 1(2) pb, when AP 1(2) is already engaged
- The flight crew moves a sidestick above a specific threshold

L3 The sidestick deflection goes beyond 5 ° on pitch axis, or 6 ° on roll axis.

L1 - The flight crew moves the rudder pedals above a specific threshold.

L3 The rudder pedal deflection goes beyond 12 °.

L1 Airbus recommends to press the sidestick pb two times to disengage all AP(s) engaged.
L2 One time to disengage the APs, the second time to clear the associated AP OFF alert.
L1 The other ways of disengagement are to be avoided. In particular, the disengagement of the AP(s) with the sidestick, or the rudder pedal deflection is very uncomfortable for passengers.

Note: At the end of the flight, the AP does not automatically disengage.

AUTOMATIC DISENGAGEMENT

Ident.: DSC-22-FG-40-30-00005099.0001001 / 05 NOV 18
Applicable to: ALL

L2 AP/FD COMMON DISENGAGEMENT

The AP/FDs automatically disengages, if one of the following occurs:
- L3 In ROLL OUT, the difference between the aircraft track and the runway track is more than 20 °
- Both the AFS CP and the AFS CONTROL PANEL page of MFD FCU BKUP are not available. Nevertheless, if the failure occurs when LAND, FLARE, ROLL OUT or go-around is engaged, the AP/FDs remain operative and engaged.
- L2 In the case of an all engine flame out, the AP/FD disconnects when the RAT extends, if the vertical mode is not OP DES. Nevertheless, the AP 1 remains available and the flight crew can engage the AP/FD again.
- In approach, the LOC signal is disturbed (for example LOC beam masking). Nevertheless, as the disturbance may be temporary, the flight crew can engage the AP/FD again.
- The FD and AP become inoperative

  Note: If the FDs are inoperative, the AP is also inoperative.

L1 AP SPECIFIC DISENGAGEMENT

The AP automatically disengages, if one of the following occurs:

L2
- The aircraft is on ground, and the first engine starts

L1
- The SRS GA disengages after a go around with both APs engaged
  In this case, AP2 disengages, and AP1 remains engaged.
- After landing, the flight crew performs a touch and go with both thrust levers at or above the FLX/MCT detent

L2 *Note: If the FDs were not previously engaged, they engage.*

- The flight crew engages the AP while the sidestick or the rudder pedals are deflected, and the sidestick or the rudder pedals are still deflected 6 s after AP engagement

L1
- A failure occurs in approach:
  - The lateral deviation is no longer available on both MMRs, when LOC, F-LOC,or LOC B/C is engaged
    L3 This is applicable above 200 ft RA.
    The failure must be confirmed for 7 s.
  - L1 The vertical deviation is no longer available on both MMRs, when G/S, or F-G/S is engaged
    L3 This is applicable above 200 ft RA.
    The failure must be confirmed for 7 s.
  - L1 The lateral or vertical deviation from the MMR is erroneous, or the approach parameters are different in both MMRs when:
    - ■ LOC, LOC B/C, or F-LOC is armed, or
    - ■ LOC, LOC B/C, or F-LOC, is engaged.
    - ■ LAND, FLARE, or ROLL OUT is engaged
  - L2 The difference between the aircraft track and the runway track is more than 7 ° when in LOC, or LAND, and the AP is engaged.
    L3 This is applicable above 100 ft for an erroneous vertical deviation.
    The difference must be confirmed 5 s.
    This is applicable between 700 ft and 200 ft RA

L1 *Note: In all these cases of failure in approach, the FDs remain engaged. However, a reversion to HDG/TRACK and V/S / FPA occurs.*

DISENGAGEMENT ANNUNCIATIONS AND WARNINGS

Ident.: DSC-22-FG-40-30-00005100.0001001 / 06 AUG 14
Applicable to: ALL

When AP1(2) disengages:
- AP1(2) pb goes off
- On both FMAs:
  - If one AP was previously engaged, the AP1 (AP2) message disappears
  - If both APs were previously engaged, the AP2 (AP1) message replaces the AP1+2 message.

Different warnings are triggered, depending on the way of disconnection.

Note: *When both APs are engaged, and only one AP disengages, the warnings is not triggered. However, a triple click occurs if the AP disengages during the approach, and the landing capability is LAND 3 DUAL.*

DISCONNECTION VIA THE sidestick pb

The normal way to disconnect the AP is to press the sidestick pb two times.

When the flight crew presses the sidestick pb for the first time, the following warnings are triggered, and will continue, until the flight crew presses the sidestick pb a second time:
- The AP OFF memo appears on the PFDs and on the WD
- A cavalry charge audio indicator sounds, at low volume
  L3 The maximum duration is 0.8 s.
- L1 The MASTER WARN light comes on.

When the flight crew presses the sidestick pb the second times or the MASTER WARN light, all the above warnings are cleared.

L2 The flight crew must press the sidestick pb a second time or the MASTER WARN light within 1.8 s .

L1 If the flight crew does not quickly press the sidestick pb a second time, the following additional warnings will trigger:
- The cavalry charge audio indicators sounds, at high volume
- The AUTO FLT AP OFF alert is displayed.

L2 The additional warnings is triggered 1.8 s after the sidestick pb is pressed the first time.

L1 When the flight crew presses the MASTER WARN light, or the sidestick pb a second time, the cavalry charge audio indicator stops and the memos disappear, but the AUTO FLT AP OFF remains displayed on the WD.

OTHER WAYS OF DISCONNECTION

If the AP disengages, without any flight crew action on the sidestick pb, the following warnings will trigger:

- The AP OFF memo appears on the PFDs
- A cavalry charge audio indicator sounds, at high volume
- The AUTO FLT AP OFF alert is displayed.

L2 For more information, *Refer to PRO-ABN-AUTO_FLT AUTO FLT AP OFF*.

L1 When the flight crew presses the MASTER WARN light, or the sidestick pb (one time), the cavalry charge stops and the memo disappears, but the alert remains displayed on the WD.

AP IN PROTECTION

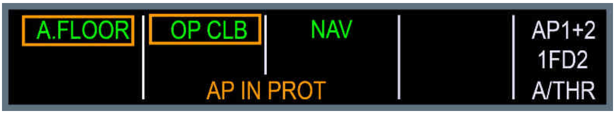
Ident.: DSC-22-FG-40-40-00018680.0001001 / 02 OCT 14
Applicable to: ALL

In abnormal operation, if the aircraft enters the protected flight envelope or if the flight crew engages the AP in the protected flight envelope, the AP/FD remains engaged. However, in the protected flight envelope, the flight control law of the flight envelope protection takes over the autopilot.
When the aircraft exits the protected flight envelope and comes back in the normal flight envelope, the autopilot recovers the current aircraft guidance.
For more information about the flight envelope protection, *Refer to DSC-22-27-20 General*.

ANNUNCIATION

When the AP is in protection mode:
- The AP IN PROT message appears on the FMA, below the lateral and vertical modes
- The FMA displays an amber flashing box around the vertical mode, if the AP is not able to maintain the vertical guidance
- A triple click sounds.

Example of FMA in AP Protection



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GENERAL

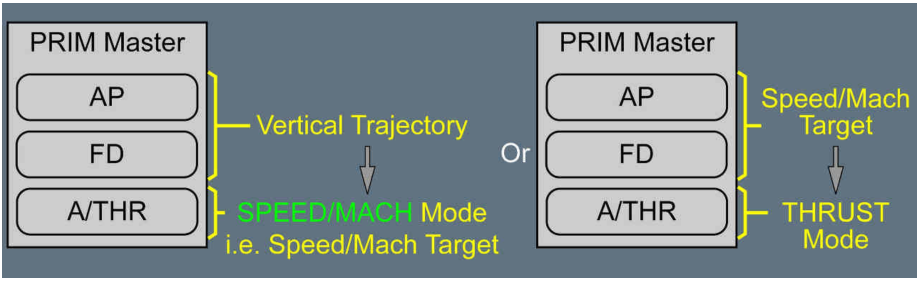
Ident.: DSC-22-FG-50-10-00005660.0001001 / 06 AUG 14
Applicable to: ALL

The autothrust (A/THR) manages the engine thrust.
The A/THR is either armed, active, or disconnected.

When active, two different types of A/THR modes are available:
- The SPEED/MACH mode:
  The A/THR continuously adjusts the thrust in order to maintain a speed/Mach target (e.g. during cruise, and approach).
- The THRUST modes:
  The A/THR controls a fixed thrust, in accordance with the engaged THRUST mode.

The A/THR modes are automatically linked to the AP/FD vertical modes:
- When an AP/FD vertical mode controls the trajectory (e.g. altitude acquire modes, altitude hold modes, V/S / FPA, G/S, F-G/S), the A/THR is in SPEED/MACH mode
- When an AP/FD vertical mode adjusts the aircraft pitch in order to keep a speed/Mach target (e.g. climb, descent), the A/THR is in THRUST mode.

AP/FD / A/THR Interaction



When the A/THR is active, the A/THR thrust target is sent to both FADECs. The FADECs computes thrust commands, in accordance with the aircraft environment and status. The thrust commands are then sent to the engines.
When the A/THR is armed, the FADECs compute the thrust commands in accordance with the thrust lever positions, and the selection of FMS PERF page - T.O panel.
When the A/THR is disconnected, the FADECs compute the thrust commands in accordance with the thrust lever positions.
For more information on thrust control performed by the FADECs: *Refer to DSC-70-10-30-30 Thrust Control*.

A/THR ARCHITECTURE

Ident.: DSC-22-FG-50-10-00005661.0001001 / 06 AUG 14
Applicable to: ALL

Each PRIM can perform the A/THR. Therefore, there are three A/THR channels. The Master PRIM performs the A/THR. For information on Master PRIM, *Refer to DSC-22-FG-10 Architecture*.
To compute A/THR targets, the A/THR uses system data associated to the engaged AP.

L3 In normal operation:
- When AP 1 is engaged, or with no AP, or with both APs engaged, the A/THR uses data from ADIRU 1, and FMS 1
- When AP 2 is engaged, the A/THR uses data from ADIRU 2, and FMS 2.

THRUST LEVERS

Ident.: DSC-22-FG-50-20-00005662.0001001 / 02 OCT 14
Applicable to: ALL

The flight crew uses the thrust levers to:
- Arm, activate, and disconnect the A/THR
- Engage the takeoff and go-around modes
  - L2 For more information about SRS engagement at take off, *Refer to DSC-22-FG-70-20-30 Engagement Conditions*
  - For more information about SRS engagement in go-around, and *Refer to DSC-22-FG-70-90-20 Engagement Conditions*
- L1 Manually control the thrust of each engine, when the A/THR is disconnected

  L2 For more information about the use of the thrust levers when the A/THR is disconnected, *Refer to DSC-70-10-30-30 Thrust Control in Manual Mode*.
- L1 Engage reverse thrust.

The thrust levers have:
- Four detents: 0 (idle), CL, FLX-MCT, TOGA.
- Two instinctive disconnect pushbuttons.

L2 For more information about the thrust levers, *Refer to DSC-22-FG-90-70 Thrust Levers*.

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PRELIMINARY CONDITIONS REQUIRED FOR A/THR ARMING OR ACTIVATION

Ident.: DSC-22-FG-50-30-00005663.0001001 / 03 DEC 15
Applicable to: ALL

L2 In order to be able to arm or activate the A/THR, all of the following conditions must be applicable:
- At least one PRIM is available
- The A/THR is not permanently disconnected for the remainder of the flight
- The AFS CP, or the AFS CP page of the FCU backup is available, except in A.FLOOR , go-around, LAND, FLARE or ROLL OUT

L3 - Both FADECs are operative

A/THR ARMING

Applicable to: ALL

Ident.: DSC-22-FG-50-30-GAARM-00005664.0001001 / 03 DEC 15

The flight crew arms the A/THR at takeoff, when the thrust levers are set at the TOGA or FLX-MCT detent, in accordance with the TOGA, FLEX, or DERATED selection on the T.O panel of the FMS PERF page. The A/THR controls the thrust to TOGA, FLEX or DERATED.
When the aircraft reaches the thrust reduction altitude, and the flight crew sets the thrust levers at the CL detent (or FLX-MCT detent, if at least one engine is out), the A/THR activates.
For scenario example, *Refer to DSC-22-FG-50-60 From Takeoff to Thrust Reduction Altitude*.
The A/THR also arms when the flight crew engages a go-around (MAN TOGA) or a soft go-around (MAN GA SOFT) : The flight crew sets the thrust levers at the TOGA detent. Then, in the case of soft go-around, the flight crew retards the thrust levers to the FLX-MCT detent.
In go-around, the A/THR controls the thrust in accordance with the thrust lever position:

- At the TOGA detent, the thrust target is the TOGA thrust
- At the FLX-MCT detent, when TOGA was previously set in the case of soft go-around, the thrust target is a thrust that targets a vertical speed of 2 000 ft/min.

For scenario example, *Refer to DSC-22-FG-50-60 From Soft Go-around to Thrust reduction Altitude*.
When the aircraft reaches the go-around thrust reduction altitude, the flight crew sets the thrust levers at the CL detent (or FLX-MCT detent, if at least one engine is out), and as a consequence the A/THR activates.

Ident.: DSC-22-FG-50-30-GAARM-00005666.0002001 / 01 JUN 17

ARMING CONDITIONS

The A/THR arms, if one of the following occurs:

- SRS TO engages
  For more information, *Refer to DSC-22-FG-70-20-30 Engagement Conditions*.
- SRS GA engages
  For more information, *Refer to DSC-22-FG-70-90-20 Engagement Conditions*.
- The A/THR is disconnected, and the flight crew presses the A/THR pb, when:
  - The thrust levers are:
    - ■ Above CL, when all engines are operative
    - L2 ■ Above FLX-MCT, if one engine is out.
  - L3 The aircraft is above 100 ft RA, or all RAs are failed.
  - LAND or FLARE is not engaged.
- L1 The A/THR is disconnected and the thrust levers are not in the A/THR active range, and:
  - The AP/FD TCAS mode engages due to a resolution advisory alert
  - The EMER DES mode engages.

In addition, when the A/THR is active, it can become armed by a flight crew action on the thrust levers: *Refer to DSC-22-FG-50-30 Effect of thrust lever movement when the A/THR is active*.

Ident.: DSC-22-FG-50-30-GAARM-00005667.0001001 / 08 JUL 20

1 FMA DISPLAY

When the A/THR is armed:

- The FMA displays:
  - The A/THR message on the third line of the fifth column
  - MAN TOGA, MAN FLX +XX, MAN DTO, MAN MCT, MAN THR, or MAN GA SOFT messages on the first and second lines of the first column
    This indication is in a white box.
- The A/THR pb light is on, on the AFS CP.

As long as the A/THR is not active, the A/THR messages on the FMA displays the manual thrust as follows:

Conditions		**Thrust lever position**	**FMA Message** (1)
From takeoff, and until the thrust reduction altitude.	TOGA is selected on the T.O panel of the FMS PERF page.	TOGA (2) (3)	MAN TOGA
	FLX is selected on the T.O panel of the FMS PERF page.	FLX-MCT (3)	MAN FLX +XX
	DERATED is selected on the T.O panel of the FMS PERF page.	FLX-MCT (3)	MAN DTO
In descent, or approach.	The flight crew performs a go-around.	TOGA (3) (4)	MAN TOGA
	The flight crew performs a soft go-around.	TOGA then FLX-MCT(3) (4)	MAN GA SOFT

(1) *The FMA message appears in a white box, on the first and second lines of the first column.*

(2) *If the flight crew sets the thrust levers to FLX-MCT, MAN MCT will appear on FMA.*

(3) *If the flight crew sets the thrust levers between CL and TOGA, but not at the CL, FLX-MCT, or TOGA detent, MAN THR will appear on FMA.*

(4) *If the flight crew sets the thrust levers directly to FLX-MCT and not TOGA then FLX-MCT, the MAN THR will appear on the FMA.*

L2 The following table presents the detailed display conditions of A/THR messages, when the A/THR is not active (manual thrust):

FMA Message	**Display Conditions**
MAN TOGA (1)	One thrust lever is set at the TOGA detent and the associated engine is running.
MAN GA SOFT (1)	All of the following conditions are applicable: - At least one engine is in go-around soft thrust(3) - The thrust levers are above the CL detent, and at or below the FLX-MCT detent. Note: *If an engine fails, or a thrust lever is set to idle, or an engine thrust is not in go-around soft thrust during the go-around, the soft go-around function remains operative on the operative engine, and MAN GA SOFT is still displayed. However, the LVR TOGA appears and requests the flight crew to set the thrust lever of the operative engine at the TOGA detent.*
MAN FLX +XX(1)	All of the following conditions are applicable: - FLX is set on the T.O panel of the FMS PERF page - One thrust lever is at the FLX-MCT detent, and the other thrust lever is at or below the FLX-MCT detent.

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FMA Message	Display Conditions
MAN DTO(1)	All of the following conditions are applicable: - DERATED is selected on the T.O panel of the FMS PERF page - One thrust lever is at the FLX-MCT detent, and the other thrust lever is at or below the FLX-MCT detent.
MAN MCT(1)	All of the following conditions are applicable: - One thrust lever is at the FLX-MCT detent, and the other thrust lever is at or below the FLX-MCT detent. - MAN FLX +XX, MAN DTO, MAN GA SOFT cannot engage.
MAN THR(2)	One of the following conditions is applicable: - One thrust lever is between the FLX-MCT and TOGA detents, or - Both thrust levers are between the CL and FLX-MCT detents.

(1) *The FMA message appears in a white box.*

(2) *The FMA message appears in an amber box.*

(3) *The GA SOFT mode engages if all the following conditions are applicable when the flight crew sets the thrust levers to TOGA, then to the FLX-MCT detent during the go-around :*
- *The Slats or flaps are extended*
- *Both engines are operative*
- *The aircraft is below the go-around thrust reduction altitude*
- *The aircraft is not performing a touch and go*
- *The aircraft is below 16 000 ft.*

A/THR ACTIVATION

Applicable to: ALL

Ident.: DSC-22-FG-50-30-GAACT-00005665.0001001 / 06 AUG 14

When active, the A/THR controls:
- The thrust, when an A/THR THRUST mode is engaged, or
- The speed/Mach, when the A/THR SPEED/MACH mode is engaged.

The thrust lever positions determine the maximum thrust that the A/THR can command (except in A.FLOOR).

The normal position of the thrust levers is:
- At the CL detent, when all engines are operative
- At the FLX-MCT detent for the operative engine, when the other engine is out.

ACTIVATION CONDITIONS

The A/THR activates, if one of the following occurs:

- The A/THR is armed, and the flight crew sets the thrust levers on the active range:

L13

Engine Condition	**Active Range**
Both engines are operative.	Both thrust levers are above idle, and at or below the CL detent. The A/THR also activates when: - One thrust lever is above the idle detent, and at or below the CL detent, and - The other thrust lever is • At the idle detent, or • Above the CL detent, and at or below the FLX-MCT detent. Note: *In the case of takeoff with FLEX or DERATED selection, the thrust lever must be below the FLX-MCT detent.*
One engine is out. (1)	One thrust levers is above the idle detent, and at or below FLX-MCT detent. If the engine-out occurs during a FLEX or DERATE takeoff, the flight crew activates the A/THR by: 1. Setting the thrust lever of the operative engine below FLX-MCT, 2. Then, settings the thrust lever of the operative engines back to FLX-MCT.

(1) *The thrust lever of the failed engine should be at the idle detent.*

- The A/THR is disconnected, and the flight crew presses the A/THR pb on the AFS CP when:
  - The thrust levers are on the active range,
  - L3 The aircraft is above 100 ft RA, or all RAs are failed
  - LAND or FLARE is not engaged.
- L1 A.FLOOR engages
  For A.FLOOR engagement conditions, Refer to DSC-22-27-20 Alpha Floor Protection.

  Note: *A.FLOOR engages regardless of the initial A/THR status, and the position of the thrust levers.*

- The A/THR is disconnected, the thrust levers are in the active range, and:
  - The AP/FD TCAS mode engages, upon a resolution advisory, or
  - The EMER DES mode engages.

  Note: *If the A/THR is disconnected with the thrust levers above the climb detent, the A/THR arms.*

- The CAS is above VMAX +5 kt in clean configuration, or VFE +9 kt when flaps or slats are extended.

Ident.: DSC-22-FG-50-30-GAACT-00005669.0001001 / 06 AUG 14

DISPLAY

When the A/THR is active:

- The FMA displays:
  - The A/THR message on the third line of the fifth column
  - The A/THR mode in green on the first line of the first column.
- The A/THR pb light is illuminated on the AFS CP.
- The Engine Display (ED) displays the thrust target.
  For more information, *Refer to DSC-70-20 Thrust Rating Mode and Thrust Limit Value*.

Ident.: DSC-22-FG-50-30-GAACT-00005670.0001001 / 28 APR 17

EFFECT OF THRUST LEVER MOVEMENT WHEN THE A/THR IS ACTIVE

A/THR TRANSITION FROM ACTIVE TO ARMED

When the A/THR is active, the A/THR becomes armed as described in the following table:

L13

Engine Condition	Thrust Lever Position
All engines are operative.	All the thrust levers are above the CL detent. Or at least one thrust lever is above the FLX-MCT detent.
One engine is out.	The thrust lever of the operative engine is above the FLX-MCT detent.

When the A/THR becomes armed, the thrust immediately increases, in accordance with the thrust lever position.

A/THR LIMITED

The A/THR limits the engine thrust at the thrust levers position when:

- Both thrust levers are set below the CL detent, and all engines are operative
- One engine is out, and the thrust lever of the operative engine is set below the FLX-MCT detent.

When the thrust is limited, the AUTO FLT A/THR LIMITED alert triggers.

L2 The AUTO FLT A/THR LIMITED alert is repeated every 5 s, until the flight crew moves the thrust levers to the CL detent or FLX-MCT detent (if one engine-out).

L1 The FMA displays THR LVR on the first line of the first column.
LVR CLB or LVR MCT flashes on the third line of the FMA.

L2 LVR CLB flashes on the FMA, when all the following conditions are applicable:
- The position of the thrust levers are not appropriate:
  - Both thrust levers are below the CL detent, or
  - One thrust lever is above CL detent
- Both engines run
- L3 The aircraft is above 100 ft
- No windshear is detected.

L2 LVR MCT flashes on the FMA, when all the following conditions are applicable:
- One engine is out
- The position of the thrust lever of the operative engine is not appropriate:
  - The thrust lever is below the MCT detent, or
  - The aircraft is above the thrust reduction altitude, and the thrust lever is above MCT
- L3 The aircraft is above 100 ft
- No windshear is detected.

L1 ASYMMETRIC THRUST LEVERS

The LVR ASYM message displays on the third line of the first column of the FMA if all the following conditions are met:
- The A/THR is armed or active
- One thrust lever is at the CL detent (if both engines are operative) or FLX-MCT detent (if only one engine is operative)
- The other thrust lever is not on the same position.

L2 This is applicable only above 100 ft.

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A/THR DISCONNECTION

Applicable to: ALL

Ident.: DSC-22-FG-50-40-A-00005671.0001001 / 03 JUL 20

1

The A/THR disconnects, if one of the following occurs:

- The flight crew presses one A/THR instinctive disconnect pushbutton

  Note: In normal operation, when the flight crew presses the A/THR instinctive disconnect pb, the engine thrust target is set to the thrust lever position.

- The flight crew sets all the thrust levers at the idle detent
- The flight crew presses the A/THR pb on the AFS CP

L2 This is applicable, if neither LAND nor FLARE is engaged.

L1 - The A/THR becomes inoperative.

L2 One of the preliminary conditions required for A/THR arming or activation is no longer applicable. For more information, *Refer to DSC-22-FG-50-30 Preliminary Conditions Required for A/THR Arming or Activation*.

L3 - Both engines are in N1 unrated mode

L1 - When the airspeed reaches VLS after an A.FLOOR activation, the A/THR disconnects, if not connected before the A.FLOOR activation.

Airbus does not recommend to use the A/THR pb to disconnect the A/THR, in normal operation.

L13

CAUTION	If the flight crew presses, and holds one A/THR instinctive disconnect pushbutton for more than 15 seconds, the A/THR will be disconnected for the remainder of the flight. All A/THR modes, including A.FLOOR will be lost. The A/THR will be recovered at the next aircraft power-up. The A/THR will be recovered, when one of the following occurs: - Five seconds after all engines shutdown - After power-up of all PRIMs and all FADECs.

Ident.: DSC-22-FG-50-40-A-00005673.0001001 / 06 AUG 14

THRUST LOCK FUNCTION

The thrust lock function activates when an A/THR involuntary disconnection occurs.
When the thrust lock function is active, the engines maintain the thrust at the value they had before the A/THR disconnected.
The engines maintain the thrust, until the flight crew moves the thrust levers.

When the thrust lock function is active, the FMA displays the flashing THR LK message on the third line of the first column. The message disappears, when the flight crew moves the thrust levers.

L2 Associated with the following alerts:
- The AUTO FLT A/THR OFF, *Refer to (procedure)*
- The ENG THRUST LOCKED, if the flight crew does not move the thrust levers within 5 s, *Refer to (procedure)*.
  The ENG THRUST LOCKED alert is inhibited during takeoff.

L1 For information on involuntary disconnection, *Refer to DSC-22-FG-50-40 Involuntary Disconnection*.

A/THR DISCONNECTION ANNUNCIATIONS AND WARNINGS

Applicable to: ALL

Ident.: DSC-22-FG-50-40-B-00005672.0001001 / 06 AUG 14

The annunciations and warnings depend on voluntary or involuntary A/THR disconnection.

Ident.: DSC-22-FG-50-40-B-00005674.0001001 / 06 AUG 14

VOLUNTARY DISCONNECTION

A voluntary disconnection occurs when:
- The flight crew presses one A/THR instinctive disconnect pushbutton, or
- The flight crew sets all the thrust levers to idle.

In the case of a voluntary disconnection:
- The A/THR OFF memo appears on the PFDs and on the WD
  L2 The maximum duration is 9 seconds.
- L1 The MASTER CAUT light comes on
  L2 The maximum duration is three seconds.
- L1 The single chime sounds.

The flight crew can press the A/THR instinctive disconnect pushbutton, or the MASTER CAUT light to clear all the associated indicators.

Note: When the aircraft is below 50 ft RA, and the flight crew sets both thrust levers to IDLE, no alert is triggered.

INVOLUNTARY DISCONNECTION

An involuntary disconnection occurs when:
- The flight crew presses the A/THR pb on the AFS CP, or
- The A/THR becomes inoperative.

L2 One of the preliminary conditions required for A/THR arming or activation is no longer applicable: *Refer to DSC-22-FG-50-30 Preliminary Conditions Required for A/THR Arming or Activation*.

L1 In the case of an involuntary disconnection:
- The A/THR OFF memo appears on the PFDs and on the WD
- The AUTO FLT A/THR OFF alert (*Refer to procedure*)
- The MASTER CAUT light comes on
- The single chime sounds
- The thrust lock function activates (*Refer to DSC-22-FG-50-40 THRUST LOCK Function*).

The flight crew can cancel the alert via:
- The A/THR instinctive disconnect pushbutton
- The MASTER CAUTION pb.

The alert also disappears, if the flight crew arms or activates the A/THR.

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GENERAL

Ident.: DSC-22-FG-50-50-00005676.0001001 / 06 AUG 14
Applicable to: ALL

When the A/THR is active, an A/THR mode is engaged.
The A/THR modes are: THRUST, SPEED/MACH and RETARD.

THRUST MODES

Applicable to: ALL

Ident.: DSC-22-FG-50-50-A-00005677.0001001 / 06 AUG 14

When the AP/FD vertical mode is SRS, OP CLB, CLB, OP DES, or DES in idle path, the A/THR is in THRUST mode.
When a THRUST mode is engaged, the A/THR commands the thrust. The thrust target depends on the THRUST mode. However, the thrust target can be limited by the thrust lever position, when the thrust levers are below the CL detent (or FLX MCT, when at least one engine is out).

Ident.: DSC-22-FG-50-50-A-00005681.0002001 / 07 MAY 18

THRUST MODE OPERATION

After takeoff, when the aircraft reaches the thrust reduction altitude, LVR CLB flashes on the FMA, asking the flight crew to set the thrust levers to the CL detent. The thrust reduction (THR RED) altitude is displayed on the T.O panel of the FMS PERF page.

L2 The thrust reduction altitude may be below, equal to, or above the ACCEL ALT. Therefore, the thrust reduction altitude can be reached when SRS TO, CLB or OP CLB is engaged.

L1 The following table presents the display conditions of the THRUST modes.

AP/FD Vertical Mode	Additional Conditions	Thrust Lever Position for	THRUST Mode (Displayed on FMA)(1)
SRS TO, CLB, or OP CLB is engaged, and the aircraft is above the thrust reduction altitude	- The aircraft is not in a Noise Abatement Departure Procedure (NADP). - Derated climb is not selected	CL, or FLX-MCT if one engine is out.	THR CLB, or THR MCT if one engine is out.
	- The aircraft is not in a Noise Abatement Departure Procedure (NADP). - A derated climb is selected - The engines apply derated climb thrust.	CL	THR DCLB
SRS TO, CLB, or OP CLB is engaged, and the aircraft is above the thrust reduction altitude	- A Noise Abatement Departure Procedure (NADP) is set. - The altitude is below the NOISE END altitude.	CL	NOISE N1 82% (2)
CLB or OP CLB is engaged, and the aircraft is above the thrust reduction altitude	- A Noise Abatement Departure Procedure (NADP) is selected. - The altitude is above the NOISE END altitude, and - The thrust goes toward the climb thrust, but the climb thrust target is not yet achieved.	CL	THR CLB*(2)
	- A Noise Abatement Departure Procedure (NADP) is selected. - The altitude is above the NOISE END altitude. - The thrust goes toward derated climb thrust, but the derated climb thrust is not yet achieved.	CL	THR DCLB* (2)

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AP/FD Vertical Mode	**Additional Conditions**	**Thrust Lever Position for**	**THRUST Mode (Displayed on FMA)**(1)
DES in idle path	The FMS requests a thrust slightly higher than the idle thrust.	CL, or FLX-MCT if one engine is out	THR DES
	The FMS requests the idle thrust.	CL, or FLX-MCT if one engine is out	THR IDLE
OP DES	N/A	CL, or FLX-MCT if one engine is out.	THR IDLE
EMER DES	N/A	CL, or FLX-MCT if one engine is out.	THR IDLE
SRS GA is engaged, and the aircraft is above the GA thrust reduction altitude	N/A	CL, or FLX-MCT if one engine is out	THR CLB, or THR MCT if one engine is out.

(1) *The FMA displays the THRUST mode on the first line of the first column.*

(2) *NOISE N1 xx% , THR CLB* , and THR DCLB* are not available, if one engine is out.*

Ident.: DSC-22-FG-50-50-A-00005682.0002001 / 01 JUN 17

L2 DETAILED ENGAGEMENT CONDITIONS

The following table presents the detailed engagement conditions of the THRUST modes, when the A/THR is active:

THRUST Mode (1)	**Engagement Conditions** (2)
THR CLB	All of the following conditions are applicable: - DERATED CLB is not selected on the CLB panel of the FMS PERF page - The aircraft is not in a Noise Abatement Departure Procedure (NADP), or the NADP is completed - SRS TO, CLB, OP CLB, or SRS GA is engaged - The engines apply climb thrust - The engagement conditions of THR LVR are not applicable.

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THR DCLB*	All of the following conditions are applicable: - A DERATED CLB thrust is set on the CLB panel of the FMS PERF page - A NOISE N1 thrust is set on the T.O panel of the FMS PERF page (or on the CLB panel) - The altitude is above the NOISE END altitude - One thrust lever is on the CL detent, and the other is on or below the CL detent - SRS TO, CLB, OP CLB, or SRS GA is engaged - Both engines are operative - The thrust goes toward the derated climb thrust - The engagement conditions of THR LVR are not applicable.
THR DCLB	All of the following conditions are applicable: - A DERATED CLB thrust is set on the CLB panel of the FMS PERF page - One thrust lever is on the CL detent, and the other is on or below the CL detent. - SRS TO, CLB, OP CLB, or SRS GA is engaged - The engines apply the derated climb thrust - The engagement conditions of THR LVR are not applicable.
NOISE N1 xx%	All of the following conditions are applicable: - A NOISE N1 thrust is set on the T.O panel of the FMS PERF page (or on the CLB panel) - The altitude is below the NOISE END altitude - SRS TO, OP CLB, or CLB is engaged - Both engines are operative - The engagement conditions of THR LVR are not applicable.
THR CLB*	All of the following conditions are applicable: - A NOISE N1 thrust is set on the T.O panel of the FMS PERF page (or on the CLB panel) - The altitude is above the NOISE END altitude - The thrust goes towards the climb thrust, but the climb thrust target is not yet achieved. - CLB, or OP CLB is engaged - Both engines are operative - The engagement conditions of THR LVR are not applicable.
THR DES	All of the following conditions are applicable: - DES is engaged in idle path - The FMS requests a thrust slightly higher than the idle thrust - The engagement conditions of THR LVR are not applicable.

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THR IDLE	One of the following conditions is applicable: - OP DES, EMER DES, DES in idle path, or the A/THR RETARD mode is engaged For information on the A/THR RETARD mode, *Refer to DSC-22-FG-50-50 RETARD Mode*. - The engagement conditions of THR LVR are not applicable.
THR MCT	All of the following conditions are applicable: - One engine is out - The thrust lever associated to the operative engine is on the MCT detent - SRS TO, CLB, OP CLB, or SRS GA is engaged - The engagement conditions of THR LVR are not applicable.
THR LVR	One of the following condition is applicable: - The most forward thrust lever is above MCT - Both thrust levers are below the CL detent, and SRS TO, OP CLB, CLB, or SRS GA is engaged - The most forward thrust levers is between the CL and MCT detents, and SRS TO, OP CLB, CLB, or SRS GA is engaged
A.FLOOR (with a flashing amber box)	A.FLOOR engages. For A.FLOOR engagement conditions, *Refer to DSC-22-27-20 Alpha Floor Protection*. *Note:* *A.FLOOR can engage, even if the A/THR was not previously armed, or active.*

(1) *The FMA displays the THRUST mode on the first line of the first column.*

(2) *The thrust lever position refers to the thrust lever of operative engine. The thrust lever of an inoperative engine should be at the idle detent.*

SPEED/MACH MODE

Applicable to: ALL

Ident.: DSC-22-FG-50-50-B-00005678.0001001 / 03 DEC 15

With the A/THR active, SPEED or MACH engages when one of the following AP/FD vertical mode is engaged:
- V/S/FPA
- Altitude mode: ALT*, ALT, ALT CST*, ALT CST, ALT CRZ*, ALT CRZ
- DES in geometric path
- Approach mode: G/S*, G/S, F-G/S*, F-G/S, LAND, FLARE (except when RETARD is engaged in autoland below 50 ft)
- TCAS mode engages.

If all APs and all FDs are disengaged and the A/THR is active, the A/THR is in SPEED/MACH.
When the A/THR is in SPEED/MACH, the A/THR adjusts the thrust in order to acquire and hold a speed/Mach target.
The FMA displays SPEED or MACH on the first line of the first column.

The speed/Mach target is:
- Managed, when the target comes from the FMS
  For engagement conditions of managed speed/Mach, *Refer to DSC-22-FG-60-20 Engagement Conditions*.
- Selected, when the target comes from:
  - The SPD/MACH knob of the AFS CP
  - The AFS CONTROL PANEL page of the MFD, if the flight crew activates the AFS backup function and set the SPD to SELECTED.

  For engagement conditions of selected speed/Mach, *Refer to DSC-22-FG-60-30 Engagement Conditions*

The speed/Mach target is always limited by VLS, and VMAX -5 kt. In addition, when the speed/Mach is managed, the speed/Mach does not go below the manoeuvring speed of the current slats/flaps configuration (Green Dot, F, S).
SPEED or MACH engages, in accordance with the speed/Mach switching selection: *Refer to DSC-22-FG-60-40 Speed/Mach Switching*.

Ident.: DSC-22-FG-50-50-B-00005683.0001001 / 07 MAY 18

L2 A/THR SOFT MODE

FUNCTION

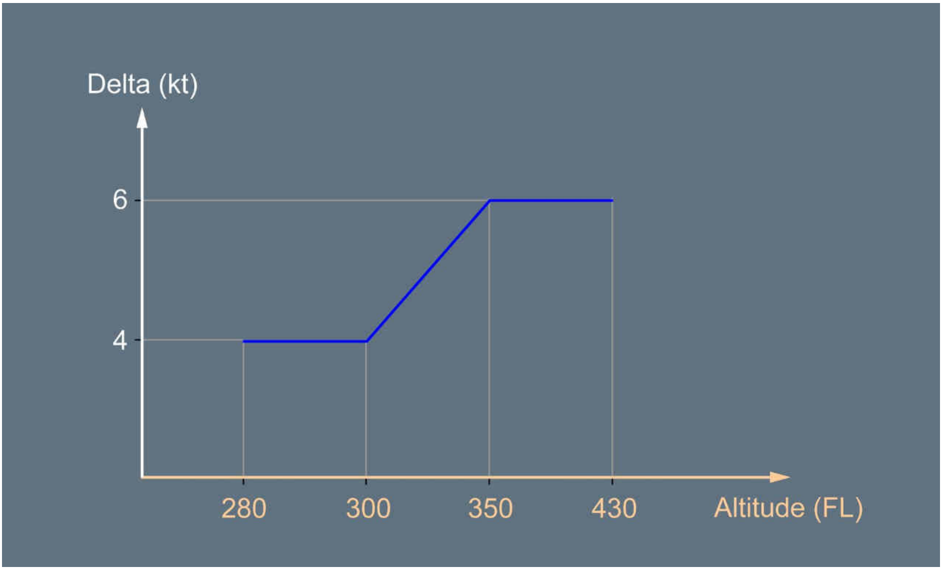
The A/THR soft mode is available when the A/THR is in SPEED/MACH. This mode reduces the thrust variation, specifically in light turbulence. The mode allows slight variation of the speed/Mach.

ACTIVATION

The A/THR soft mode activates, when all of the following conditions are applicable:
- The A/THR is in SPEED/MACH
- The AP is engaged
- ALT, ALT CST or ALT CRZ is engaged
- The aircraft is in clean configuration, the gear is up, and the speed brakes are retracted

- The aircraft is above FL280, and the Mach corresponding to the speed/Mach target is above 0.55
- The aircraft speed is not beyond the speed/Mach target + or - delta.
  However, if the speed/Mach go beyond speed/Mach target + or - delta, and returns inside speed/Mach target + or - delta in less than 30 s, then the soft mode remains engaged.
  Delta depends on the altitude, and is described as follows:

Delta



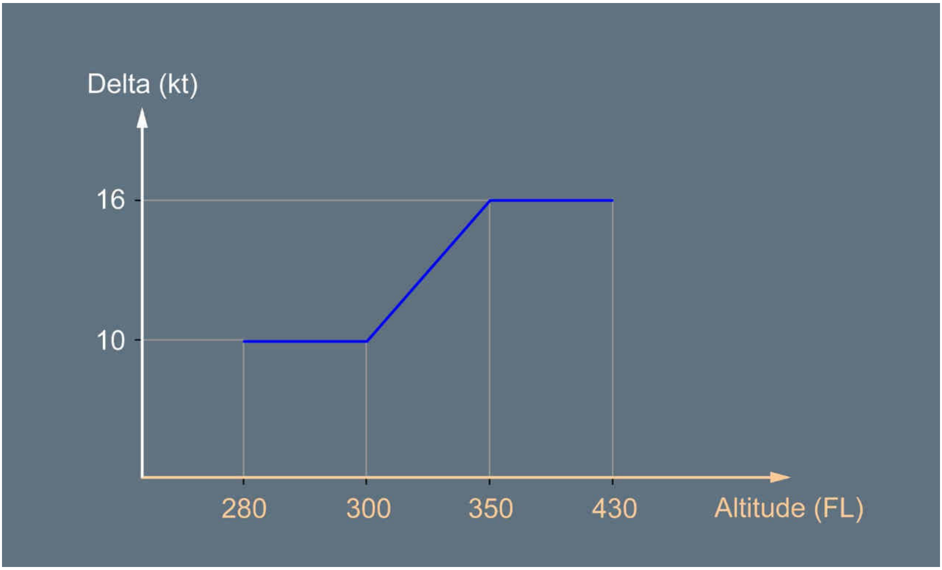
Note: There is no message to indicate that the A/THR soft mode is active.

DEACTIVATION

The A/THR soft mode deactivates, when one of the following occurs:

- One of the conditions required to activate the A/THR soft mode is no longer applicable
- The aircraft speed is greater than VMAX - 5 kt.
- The aircraft speed is beyond the speed/Mach target + or - delta for 4 s.
  Delta depends on the altitude, and is described as follows:

Delta



RETARD MODE

Ident.: DSC-22-FG-50-50-00005679.0001001 / 20 OCT 14
Applicable to: ALL

The A/THR RETARD mode is only available during automatic landing.

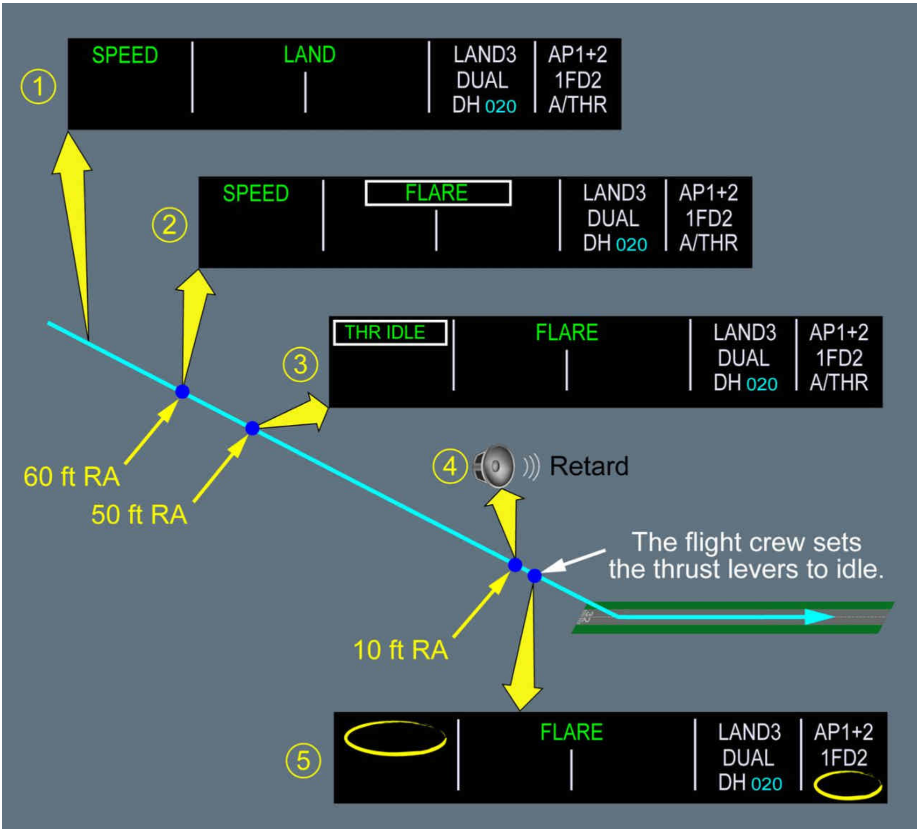
The RETARD mode engagement occurs as follows:

1. At least one AP is engaged. The LAND mode, and the A/THR SPEED mode are engaged.
2. FLARE engages.
3. When the aircraft reaches 50 ft RA, the A/THR RETARD mode automatically engages. The FMA displays THR IDLE. The A/THR controls thrust at idle.

4. A RETARD callout triggers at 10 ft RA, asking the flight crew to set the thrust levers to idle.
5. The flight crew sets the thrust levers to idle: The A/THR disconnects, and so RETARD disengages.

Here is an example:

RETARD Mode


①
SPEED
LAND
LAND3
DUAL
DH 020
AP1+2
1FD2
A/THR
②
SPEED
FLARE
LAND3
DUAL
DH 020
AP1+2
1FD2
A/THR
③
THR IDLE
FLARE
LAND3
DUAL
DH 020
AP1+2
1FD2
A/THR
60 ft RA
50 ft RA
④
Retard
The flight crew sets the thrust levers to idle.
10 ft RA
⑤
FLARE
LAND3
DUAL
DH 020
AP1+2
1FD2

L2 If the last AP disengages when RETARD is engaged, RETARD disengages, and SPEED engages.

L1 *Note:* *In manual landing, the RETARD callout triggers at 20 ft RA.*

L2 In manual or automatic landing, the RETARD callout triggers, independently of the thrust levers position.

L1 In manual or automatic landing, if the flight crew does not set the thrust levers to idle:
- The RETARD callout is repeated
- The spoilers will not extend after touchdown, and the autobrake will not activate.
  For more information ground spoiler extension, *Refer to DSC-27-10-10 Ground Spoiler Control*
  For more information on autobrake activation, *Refer to DSC-32-20-10-50 Activation of the Basic Autobrake Mode*.

A/THR MODE REVERSIONS

Applicable to: ALL

Ident.: DSC-22-FG-50-50-C-00005680.0001001 / 06 AUG 14

The following table presents the A/THR mode reversions:

L12

Initial A/THR Mode	**A/THRMode after Reversion**	**Conditions Leading to A/THR Mode Reversion**	**Warning**
THRUST	SPEED/MACH	The aircraft does not follow the speed target: - The aircraft speed is below $VLS - 2$ when DES or OP DES is engaged, or - The aircraft speed is above $VMAX + 4$ when CLB or OP CLB is engaged. *Note:* *If the FD is engaged, the FD also disengages*	A triple click audio indicator sounds. If the aircraft speed goes above $VMAX + 4$, the OVERSPEED alert triggers.
THR NOISE, or THR CLB*	THR CLB	The aircraft does not follow the speed target. The reversion occurs, when: - The aircraft speed is below VLS, or - The aircraft speed is 10 kt below the speed target, or - The flight path angle is below 0.5 °.	A triple click audio indicator sounds.
Whatever A/THR mode. The A/THR can be armed, active, or disconnected.	A.FLOOR	*Refer to DSC-22-27-20 Alpha Floor Protection*.	*Refer to DSC-22-FG-50-50 ALPHA FLOOR*.

Ident.: DSC-22-FG-50-50-C-00005684.0001001 / 08 JUL 19

ALPHA FLOOR

The α-floor protection triggers when the aircraft angle of attack is above a pre-determined threshold function of the configuration. For engagement conditions of A.FLOOR , *Refer to DSC-22-27-20 Alpha Floor Protection*.

When the α-floor protection is triggered:
- The A/THR automatically activates, independently of the previous A/THR engagement status
- The A.FLOOR A/THR mode engages, and the FMA displays A.FLOOR with a flashing amber box on the first line of the first column
- The A/THR commands TOGA thrust, regardless of the thrust lever positions
- When the airspeed reaches VLS, the A/THR mode returns to the previous A/THR active mode, if any.

CAUTION	The A.FLOOR mode will disconnect, if the flight crew manually disconnects the A/THR.

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INTRODUCTION

Ident.: DSC-22-FG-50-60-00005685.0001001 / 06 AUG 14
Applicable to: ALL

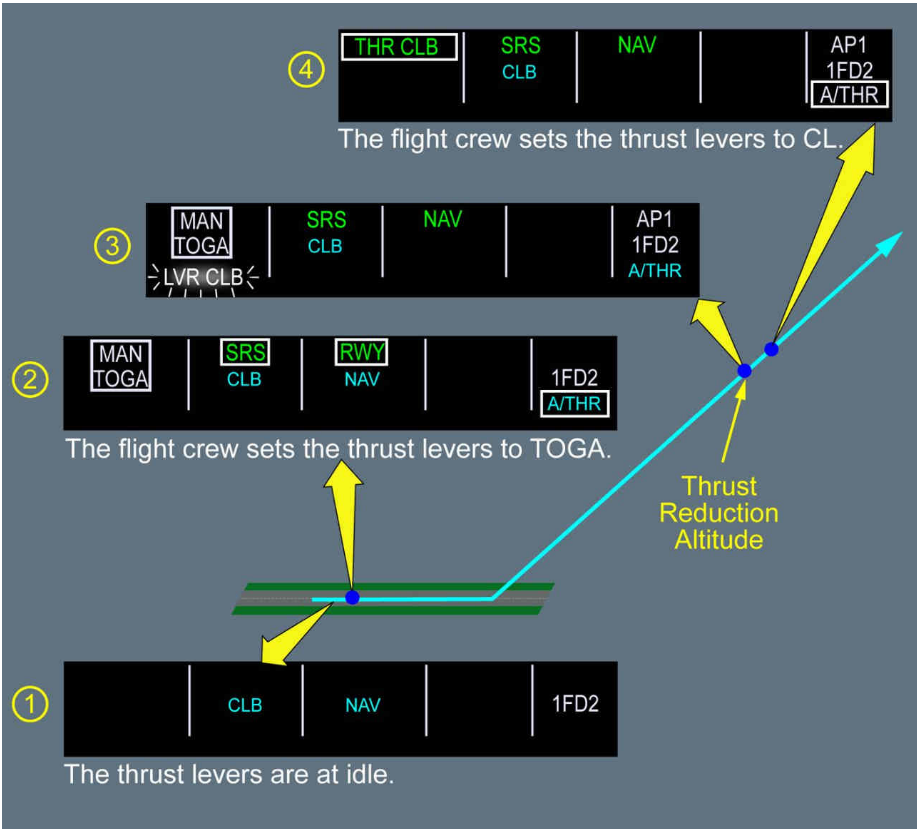
For scenario examples on A/THR:
- *Refer to DSC-22-FG-50-60 From Takeoff to Thrust Reduction Altitude*
- *Refer to DSC-22-FG-50-60 Noise Abatement Departure Procedure*
- *Refer to DSC-22-FG-50-60 From Soft Go-around to Thrust reduction Altitude*

FROM TAKEOFF TO THRUST REDUCTION ALTITUDE

Ident.: DSC-22-FG-50-60-00005686.0001001 / 13 JAN 15
Applicable to: ALL

The aircraft is on ground, and the flight crew has selected TOGA on the TO panel of the FMS PERF page.
The flight crew sets the thrust levers to TOGA: The A/THR arms, the engines apply TOGA thrust, MAN TOGA appears on the FMA, and SRS TO engages.
When the aircraft reaches the thrust reduction altitude, LVR CLB flashes, and the flight crew sets the thrust levers to CL: The A/THR activates, and THR CLB engages.

From Takeoff to Thrust Reduction Altitude


④
THR CLB
SRS
CLB
NAV
AP1
1FD2
A/THR
The flight crew sets the thrust levers to CL.
③
MAN
TOGA
LVR CLB
SRS
CLB
NAV
AP1
1FD2
A/THR
②
MAN
TOGA
SRS
CLB
RWY
NAV
1FD2
A/THR
The flight crew sets the thrust levers to TOGA.
Thrust
Reduction
Altitude
①
CLB
NAV
1FD2
The thrust levers are at idle.

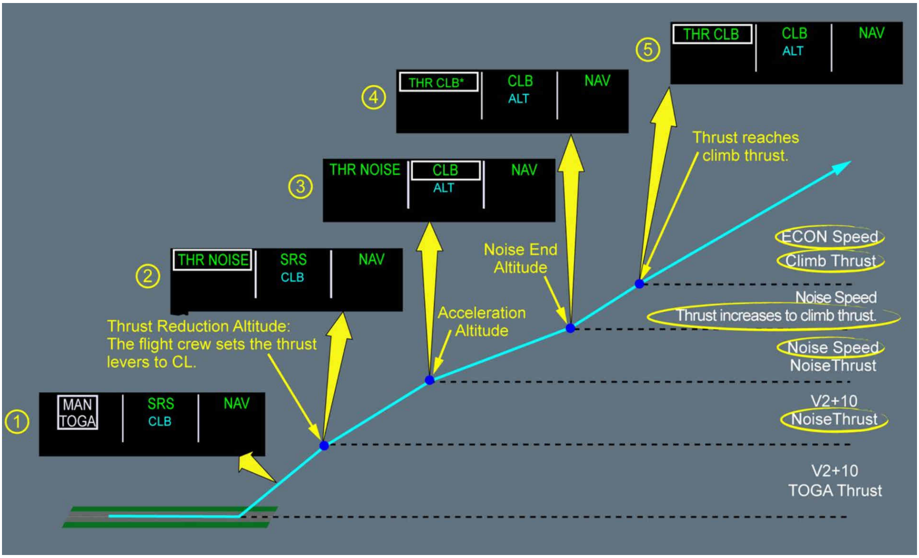
NOISE ABATEMENT DEPARTURE PROCEDURE

Ident.: DSC-22-FG-50-60-00005687.0001001 / 06 AUG 14
Applicable to: ALL

When on ground, the flight crew has performed the following selections on the TO panel of the FMS PERF page:
- TOGA
- A NOISE END altitude, a NOISE SPD, and an N1 target in the NOISE THR entry field.
  For more information on the Noise Abatement Departure Procedure, *Refer to DSC-22-FMS-10-50-60 Introduction*.

THR NOISE and THR CLB* are the A/THR modes of the Noise Abatement Departure Procedure. They engage as follows:

Noise Abatement Departure Procedure


⑤
THR CLB
CLB
ALT
NAV
④
THR CLB*
CLB
ALT
NAV
③
THR NOISE
CLB
ALT
NAV
②
THR NOISE
SRS
CLB
NAV
①
MAN
TOGA
SRS
CLB
NAV
Thrust reaches climb thrust.
Noise End Altitude
Acceleration Altitude
Thrust Reduction Altitude: The flight crew sets the thrust levers to CL.
ECON Speed
Climb Thrust
Noise Speed
Thrust increases to climb thrust.
Noise Speed
NoiseThrust
V2+10
NoiseThrust
V2+10
TOGA Thrust

FROM SOFT GO-AROUND TO THRUST REDUCTION ALTITUDE

Ident.: DSC-22-FG-50-60-00018973.0001001 / 03 DEC 15

Applicable to: ALL

The flight crew performs a soft go-around when the thrust levers are set to TOGA then to FLX-MCT detent:

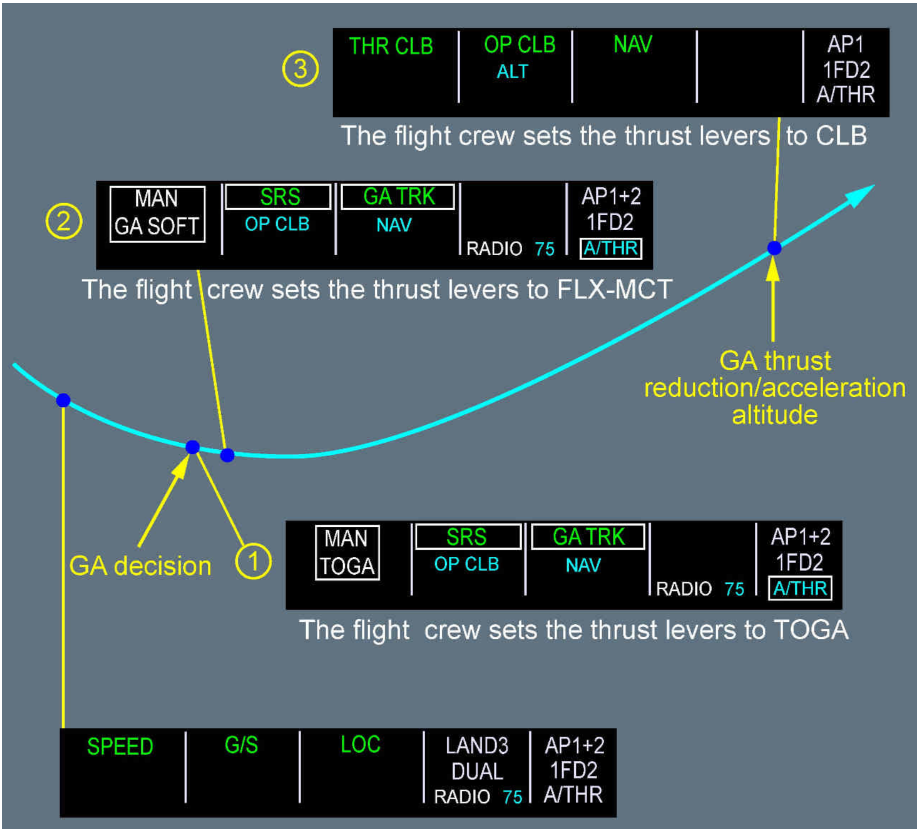
1. The flight crew sets the thrust levers to the TOGA detent:
   - The A/THR arms
   - The engines thrust increases to TOGA
   - MAN TOGA appears on the FMA
   - The SRS GA vertical mode engages on the FMA
2. Then, the flight crew sets the thrust levers to the FLX-MCT detent:
   - The A/THR remains armed
   - The engines apply a computed thrust to target a vertical speed of approximately 2 000 ft/min, or TOGA if 2 000 ft/min cannot be reached

- MAN GA SOFT appears on the FMA
- The SRS GA vertical mode remains engaged

3. When the aircraft reaches the thrust reduction altitude, LVR CLB flashes, and the flight crew sets the thrust levers to the CL detent:
   - The A/THR activates
   - THR CLB appears on the FMA.

Note:
- *The soft go-around function is only available with both engines operative. Therefore, if one engine is inoperative, the flight crew must apply and keep TOGA during go-around. Then, to activate the climb phase, the flight crew must set the thrust levers to the FLX-MCT detent.*
- *If an engine failure occurs when the soft go-around function is engaged, LVR TOGA flashes on the FMA.*

Soft Go-around Scenario


③
THR CLB
OP CLB
ALT
NAV
AP1
1FD2
A/THR
The flight crew sets the thrust levers to CLB
②
MAN
GA SOFT
SRS
OP CLB
GA TRK
NAV
RADIO 75
AP1+2
1FD2
A/THR
The flight crew sets the thrust levers to FLX-MCT
GA thrust reduction/acceleration altitude
GA decision
①
MAN
TOGA
SRS
OP CLB
GA TRK
NAV
RADIO 75
AP1+2
1FD2
A/THR
The flight crew sets the thrust levers to TOGA
SPEED
G/S
LOC
LAND3
DUAL
RADIO 75
AP1+2
1FD2
A/THR

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GENERAL

Ident.: DSC-22-FG-60-10-00003569.0001001 / 06 AUG 14
Applicable to: ALL

The speed/Mach control is:
- Managed, when the target comes from the FMS
- Selected, when the target comes from the SPD/MACH knob on the AFS CP.

In flight, either the AP/FD or the A/THR can acquire and hold a speed/Mach target (*Refer to DSC-22-FG-10 Selected and Managed Modes*). However, managed speed/Mach control and selected speed/Mach control require that the A/THR is armed or active.

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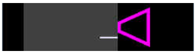
DISPLAY

Ident.: DSC-22-FG-60-20-00003570.0001001 / 06 AUG 14
Applicable to: ALL

When the speed/Mach target is managed, the SPD/MACH window on the AFS CP displays dashes. For more information on SPD/MACH control on the AFS CP, *Refer to DSC-22-FG-90-20 SPD/MACH Window*.



When the speed is managed, the PFD indicates the associated speed/Mach target with a magenta triangle.
For more information on the speed target display on PFD, *Refer to DSC-31-CDS-40-20-40 General Airspeed Indications*.

Note: *If the managed speed target is outside the airspeed envelope, the FG limits the speed target between VLS, and* $VMAX - 5$.

ENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-60-20-00003571.0001001 / 03 DEC 15
Applicable to: ALL

PRELIMINARY CONDITIONS

The Speed/Mach mode can be managed when one of the following conditions is applicable:
- One or two AP is engaged, or
- The FD is engaged, or
- The flight phase of the FMS is the approach phase, or
- F-G/S, G/S, LAND, FLARE, or ROLL OUT is engaged.

ENGAGEMENT OF THE MANAGED SPEED/MACH

In addition to preliminary conditions, the speed/Mach becomes managed, if one of the following occurs:
- On ground, when V2 is inserted on the T.O panel of the FMS PERF page
- SRS TO or SRS GA engages

  Note: *At takeoff, SRS will not engage, if V2 is not available.*

- In flight, the flight crew presses the SPD/MACH knob on the AFS CP, and a managed speed/Mach target is available.
  For more information on the SPD/MACH knob, *Refer to DSC-22-FG-90-20 SPD/MACH Knob*.

If all the APs and FD are off, the managed speed/Mach is only available when the flight phase of the FMS is the approach phase, The A/THR is then in SPEED mode.

L2 Note: *if the flight crew inserts a speed/Mach on the DES panel of the FMS PERF page to replace the ECON DES SPD or MACH, the speed target is still managed.*
For more information on the ECON DES SPD or MACH, Refer to DSC-22-FMS-10-50-30 DES.

MANAGED SPEED/MACH TARGET

Ident.: DSC-22-FG-60-20-00003572.0001001 / 03 DEC 15
Applicable to: ALL

When speed/Mach is managed, the target is defined as follows:

L2 For managed speed/Mach, the lowest target is VLS, and the highest target is VMAX -5 kt.

L123

AP/FD Engaged Mode or FMS Flight Phase	Managed Speed/Mach Target
SRS TO is engaged, and the aircraft is on ground.	V2 If V2 is lost, the managed speed target remains engaged, and equals V2, because the PRIMs memorize the target value at SRS TO engagement.
SRS TO is engaged, and the aircraft is airborne.	V2 + 10 kt Note: *However, the magenta triangle appears on the V2 value, on the PFDs.* If V2 is lost by the FMS, the managed speed target remains engaged, and equals V2 + 10 kt, because the PRIMs memorizes the target value at SRS TO engagement.
SRS TO is engaged, and one engine is out.	Memorized aircraft speed at engine-out detection. The target value is limited by V2 and V2 + 15 kt.
SRS GA is engaged.	Memorized aircraft speed at SRS GA engagement. The lower limit of the target is the VAPP that the PRIMs memorize at 700 ft RA. The higher limit of the target is the lowest value between: - VLS + 25 kt (or VLS + 15 kt in engine-out) - VMAX - 5 kt.

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- The FMS flight phase is the approach phase In this case, the AP(s) and/or FDs may be on or off Or - F-G/S, G/S, LAND, FLARE or ROLL OUT is engaged	VAPP, corrected from the Ground Speed Mini function *Refer to DSC-22-FG-60-20 Introduction*. Before reaching the landing configuration, the speed will not go below: - Green Dot, in clean configuration - S, in CONF 1 - F, in CONF 2 - F, in CONF 3, when CONF FULL is the landing configuration (as defined in the APPR panel of the FMS PERF page). Note: *When the managed speed target is limited by Green Dot, S, or F, the short-term managed speed appears. The FG uses the short-term managed speed as the current speed/Mach target.* *For more information on the short-term managed speed, Refer to DSC-22-FG-60-20 Short-Term Managed Speed.* The PRIMs memorize the VAPP at 700 ft RA, so if the FMS loses the VAPP below 700 ft RA, the managed speed target will still be computed. The lower limit of the managed speed target is the VAPP that is computed by the FMS, and displayed on the MFD. If the VAPP computed by the FMS is not available, the VAPP is VLS +5. The higher limit of the managed speed target is the VFE NEXT (or VFE - 5 kt in full configuration) of the landing configuration.
For All other cases	The managed speed/Mach target is provided by the FMS: - If NAV is engaged, the managed speed/Mach target will be defined by the speed/Mach profile of the FMS flight plan. All the speed/Mach constraints are taken into account. - If NAV is not engaged, the managed speed/Mach target will be defined by the speed/Mach profile of the FMS flight plan. But the speed/Mach constraints are not taken into account. For information on the speed/Mach profile, *Refer to DSC-22-FG-60-20 FMS Speed/Mach Target*. Note: *The managed speed/Mach target may exceed the flight envelope limits, or the maneuvering speed of the current slats/flaps configuration: The short-term managed speed then appears. The FG uses the short-term managed speed as the current speed/Mach target.* *For more information on the short-term managed speed, Refer to DSC-22-FG-60-20 Short-Term Managed Speed.*

GROUND SPEED MINI FUNCTION

Applicable to: ALL

Ident.: DSC-22-FG-60-20-A-00003573.0001001 / 06 AUG 14

When the aircraft flies an approach in managed speed, the managed speed target, displayed by the magenta triangle on the PFDs, is variable. This managed speed target is VAPP, displayed on the APPR panel of the FMS PERF page, and corrected by the Ground Speed Mini function.

Ident.: DSC-22-FG-60-20-A-00003578.0001001 / 08 JUL 19

GROUND SPEED MINI FUNCTION PRINCIPLE

The Ground Speed Mini function takes advantage of the aircraft inertia, when the wind varies during the approach in order to provide an adequate indicated speed target (i.e. the managed speed target represented by the magenta triangle). When the aircraft flies this indicated speed target, the energy of the aircraft is maintained above a minimum level ensuring standard aerodynamic margins versus stall.
The minimum energy level is the energy level the aircraft will have at touchdown with an indicated airspeed equal to VAPP, and with the wind equal to the tower reported wind as inserted on the APPR panel of the FMS PERF page. The ground speed then equals the Ground Speed Mini.

L2 Ground Speed Mini = VAPP - TOWER HEADWIND COMPONENT

For definition of the TOWER HEADWIND COMPONENT, *Refer to DSC-22-FG-60-20 Managed Speed Target Computation*.

L1 The Ground Speed Mini is not displayed to the flight crew.

During the approach, the FG continuously computes the managed speed target, in order to keep the ground speed at, or above the Ground Speed Mini.

Ident.: DSC-22-FG-60-20-A-00003579.0001001 / 03 DEC 15

L2 MANAGED SPEED TARGET COMPUTATION

The computation of the managed speed target uses the tower headwind component, the current headwind component, and the VAPP.

TOWER HEADWIND COMPONENT

Based on weather airport information, the flight crew enters the MAG WIND on the APPR panel of the FMS PERF page.
The FMS computes the tower headwind component (HD) that is a projection of the MAG WIND on the runway axis. The HD is displayed on the APPR panel of the FMS PERF page.
For more information about FMS WIND entry, *Refer to DSC-22-FMS-20-20-20 Wind Data*.

CURRENT HEADWIND COMPONENT

The projection of the current wind measured by the ADIRS on the aircraft longitudinal axis is the current headwind component (instantaneous headwind).

VAPP

The FMS computes the VAPP, and displays it on the APPR panel of the FMS PERF page.
The VAPP computation takes into account the tower headwind component.
For more information about VAPP computation, *Refer to DSC-22-27-10-20 VAPP*.
The flight crew can modify the VAPP.

MANAGED SPEED TARGET COMPUTATION

The FG continuously computes the managed speed target that is equal to VAPP plus an additional variable gust:
Managed speed target = VAPP + computed gust
The computed gust takes into account a part of the current headwind component and the tower headwind component. The computed gust has a limit of 0, as a minimum value.
L3 Managed speed target = VAPP + 0.3 * (CURRENT HEADWIND COMPONENT - TOWER HEADWIND COMPONENT)

L2 The managed speed target has the following limits:
- VAPP, as the minimum value
- VFE NEXT, in configuration 0, 1, 2, 3, VFE - 5 kt in configuration full, as the maximum value.

FMS SPEED/MACH TARGET

Ident.: DSC-22-FG-60-20-00003574.0001001 / 13 JAN 15
Applicable to: ALL

The FMS speed/Mach targets are used to define the speed/Mach profile.
For information on the speed/Mach profile, *Refer to DSC-22-FMS-10-50-30 Speed/Mach Profiles*.
In the following table, the first column indicates the FMS speed/Mach targets, and the second column indicates where the FMS speed/Mach targets are displayed:

FMS Speed/Mach Target	FMS PERF Page
V2 NOISE SPD	T.O Panel
NOISE SPD CLB SPD LIM SPD CSTR ECON LRC RTA HOLD SPD If one engine is out: - EO-GDOT - EO-ECON - EO-LRC.	CLB Panel
ECON RTA LRC CMS SPD LIM HOLD SPD If one engine is out: - EO-ECON - EO-LRC.	CRZ Panel

Continued on the following page

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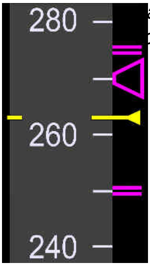
FMS Speed/Mach Target	**FMS PERF Page**
ECON RTA *Note:* *When the FMS flight phase is the descent phase, and the DES mode is engaged, the FG does not accurately maintain the ECON speed/Mach (or RTA speed/Mach). However, the managed speed/Mach should not go beyond the high and low speed margins.*  *ach margin is indicated by two dashes on the PFD airspeed* *cale.* *For more information on high and low speed margins, Refer to DSC-22-FMS-10-50-30 DES.* SPD CSTR HOLD SPD DES SPD LIM	DES Panel
VAPP	APPR Panel

SHORT-TERM MANAGED SPEED

Ident.: DSC-22-FG-60-20-00003575.0001001 / 03 DEC 15
Applicable to: ALL

The short-term managed speed may appear when the speed/Mach is either managed, or selected. This speed is indicated by a magenta dot on the PFD airspeed scale.

WHEN THE SPEED/MACH IS MANAGED

The short-term managed speed appears, when the managed speed/Mach target exceeds the flight envelope limits, or the maneuvering speed of the current slats/flaps configuration:

If the managed speed/Mach target is:	**Then, the short-term managed speed is equal to:**
Above VMAX-5 (e.g. VFE-5: VFE in high-lift configuration, with the gear up, when the aircraft is climbing)	VMAX-5

Continued on the following page

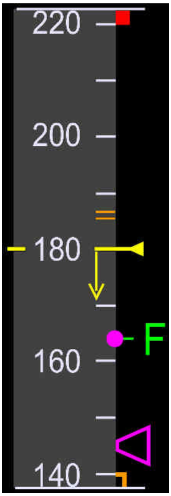
Continued from the previous page

Below VLS	VLS
Below the maneuvering speed of the current slats/flaps configuration: Green Dot, S, F This occurs, for example: - In approach, or - When the aircraft flies a holding pattern, and the HOLD speed is below green dot.	Green Dot, S, F

L2 The short-term managed speed is inhibited when:
- The FMS flight phase is cruise, or
- The DES or APP-DES mode is engaged and the short term managed speed is beyond the low or high speed targets.

L3 *Note:* *The short-term managed speed only appears, if the difference between the short-term managed speed, and the managed speed/Mach target (i.e. magenta triangle) is equal to, or higher than 2 kt.*

L1 The FG uses the short-term managed speed, as the current speed/Mach target.
Thus, when the speed/Mach is managed, the FG always uses a speed/Mach target that is limited by VLS, and VMAX-5.
The following illustration of the PFD airspeed scale provides an example of the short-term managed speed when speed/Mach is managed:



The aircraft is in approach, in CONF 2. The managed speed target is VAPP. The short-term managed speed is F.
F is the current speed target.

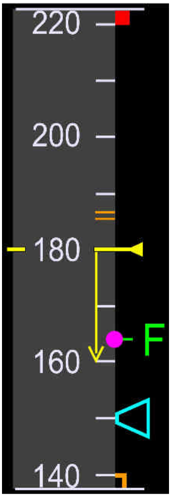
WHEN THE SPEED/MACH IS SELECTED

The short-term managed speed is the speed/Mach target, that would be used if the flight crew engages the managed speed/Mach control.

L3 *Note:* *When the aircraft is in the deceleration segment toward a hold speed, or speed limit, the short-term managed speed is the managed ECON speed, and not the hold speed, or the speed limit.*

L1 The following illustrations of the PFD airspeed scale provide examples of the short-term managed speed when speed/Mach is selected:

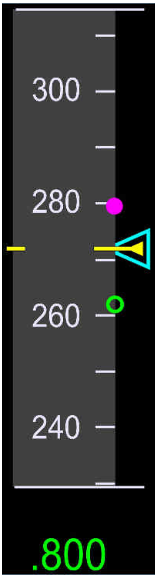
EXAMPLE 1



The aircraft is in approach, in CONF 2, and the selected speed target is 150 kt. The short-term managed speed is F.

At this moment, if the flight crew engages the managed speed control:
- The managed speed target would be VAPP
- The short-term managed speed would remain equal to F
- The current speed target would be F.

EXAMPLE 2



The aircraft is in cruise, the selected Mach target is M 0.8, and the ECON Mach is M 0.82. The short-term managed speed is the ECON Mach.
At this moment, if the flight crew engages the managed Mach control, the managed Mach target would be the ECON Mach (i.e.M 0.82).

DISENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-60-20-00003576.0001001 / 06 AUG 14
Applicable to: ALL

The speed/Mach is no longer managed, if one of the following occurs:
- The flight crew pulls the SPD/MACH knob on the AFS CP to select a speed/Mach target
- The flight crew preselected a speed/Mach on the CLB or CRZ panel of the FMS PERF page, and the associated FMS flight phase engages

- The managed speed/Mach target is lost

L2 This is not applicable, if one of the following conditions is applicable:

- SRS TO or SRS GA is engaged
- LAND or FLARE is engaged
- ROLL OUT is engaged
- L3 LAND is armed below 700 ft RA.

L1 If the managed speed/Mach target is lost, the speed/Mach target reverts to selected, and becomes equal to the current aircraft speed/Mach.

- All APs and FDs disengage, and the FMS flight phase is not the approach phase.
  The speed/Mach target becomes selected, and equal to the current aircraft speed/Mach.

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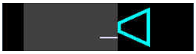
DISPLAY

Ident.: DSC-22-FG-60-30-00005688.0001001 / 06 AUG 14
Applicable to: ALL

When a speed/Mach target is selected, the SPD/MACH window on the AFS CP displays the target.



The PFD airspeed scale indicates the selected speed target with a blue triangle.
When the Mach is selected, the PFD displays the associated speed target on the airspeed scale.
For more information on the speed target display on PFD, *Refer to DSC-31-CDS-40-20-40 General Airspeed Indications*.

Note: *The selected speed target can be outside the airspeed envelope. However, the FG limits the speed target between VLS, and* $VMAX - 5$.

SELECTED SPEED/MACH PRIORITY

Ident.: DSC-22-FG-60-30-00005689.0001001 / 06 AUG 14
Applicable to: ALL

Selected speed has priority over managed speed. The only automatic change from selected to managed speed/Mach target occurs at go-around engagement.

When in selected speed/Mach, if the situation calls for managed speed/Mach, then both PFDs and both MFDs display a message, that proposes a manual change to managed speed or Mach:

- SET HOLD SPD, when the aircraft enters a holding pattern
- CHECK SPD MODE, when:
  - The FMS flight phase becomes cruise, and a speed/Mach presel is not defined for the cruise phase
  - The aircraft sequences the start waypoint of a Constant Mach Segment (CMS)
  - The FMS flight phase becomes descent.
- SET EO SPD SETTING when in engine-out, and the speed selected on the AFS CP is 10 kt away from EO green dot.
  This message asks the flight crew to change the selected speed, in order to select a speed near the EO green dot, or to engage managed speed/Mach control.

ENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-60-30-00005690.0002001 / 01 JUN 17
Applicable to: ALL

The speed/Mach target becomes selected, if one the following occurs:

- The flight crew pulls the SPD/MACH knob on the AFS CP in flight
  For more information on the SPD/MACH knob , *Refer to DSC-22-FG-90-20 SPD/MACH Knob*.
- The flight crew has preselected a speed/Mach on the CLB or CRZ panel of the FMS PERF page, and the associated FMS flight phase engages
  The SPD/MACH window on the AFS CP will display the selected speed/Mach target.
- TCAS engages due to a resolution Advisory (RA)
- ALT* engages following the EMER DES mode disengagement.
  The selected speed becomes Green Dot speed brakes deployed.
- The managed speed/Mach target is lost, and reverts to selected
  For more information, *Refer to DSC-22-FG-60-20 Disengagement Conditions*.
- All AP(s) and FDs disengage, and the FMS flight phase is not the approach phase, and no vertical approach mode is engaged
  The selected speed/Mach target becomes the current aircraft speed/Mach.
- 5 s after liftoff, if the speed target is not managed.
  The selected speed target becomes the current aircraft speed at liftoff.

L2 *Note:* *The SPD/MACH window, and the blue triangle on the PFD airspeed scale display this new speed target.*

L1 *Note:* *The selected speed/Mach target is always limited by VLS, and by VMAX -5 kt .*

DISENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-60-30-00005691.0001001 / 06 AUG 14
Applicable to: ALL

The selected speed/Mach target disengages, if one of the following occurs:

- The speed/Mach target becomes managed
- L3 On ground, the FDs engage
- On ground, the engines starts, while the FDs are engaged
- On ground, the engines starts and all the FMS are fault.

FMS FLIGHT PLAN PREDICTIONS WHEN IN SELECTED SPEED/MACH

Ident.: DSC-22-FG-60-30-00005692.0001001 / 02 OCT 14
Applicable to: ALL

In most cases, when the speed/Mach is selected, the FMS flight plan predictions consider that the speed/Mach remains selected, until the next SPD LIM, SPD CSTR, or the next phase, whichever comes first, and then the speed/Mach becomes managed.
For more information, *Refer to DSC-22-FMS-10-40-70 Selected Speed/Mach*.

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SPEED/MACH SWITCHING

Ident.: DSC-22-FG-60-40-00005693.0001001 / 06 AUG 14
Applicable to: ALL

Speed/Mach switching can be automatic, or manual.

AUTOMATIC SWITCHING

During climb, when the crossover altitude is reached, the speed target (selected or managed) changes automatically to the associated Mach target.
During descent, when the crossover altitude is reached, the Mach target (selected or managed) changes automatically to the associated speed target.
The crossover altitude is at approx. 30 000 ft. It is based on the ECON MACH value.

MANUAL SWITCHING

When the speed/Mach is selected, the flight crew can perform the switching, by pressing the SPD/MACH pb on the AFS CP (For more information on the SPD/MACH pb, *Refer to DSC-22-FG-90-20 SPD/MACH pb*).

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AP/FD MODES GENERAL

Applicable to: ALL

Ident.: DSC-22-FG-70-10-GAPF-00005694.0001001 / 06 AUG 14

The AP/FD modes are either lateral, vertical, or common.

Ident.: DSC-22-FG-70-10-GAPF-00005696.0001001 / 03 JUL 20

1 AP/FD LATERAL MODES

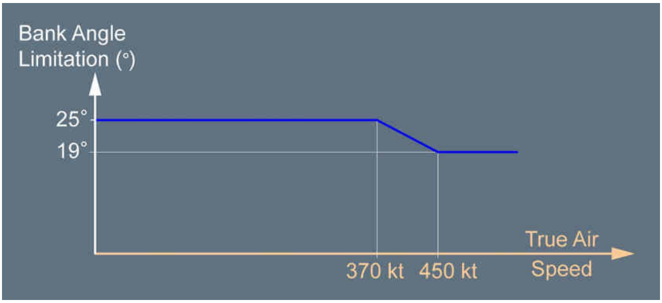
The AP/FD lateral modes are:

FMA	AP/FD Lateral Modes
RWY, RWY TRK	Runway mode, Runway track mode
NAV	Navigation mode
HDG, TRACK	Heading mode, Track mode HDG and TRACK are the lateral basic modes.
LOC*, LOC	Localizer capture mode, Localizer track mode
LOC B/C *, LOC B/C	Localizer back course capture mode, Loc back course track mode
F-LOC*, F-LOC	Flight Management System Landing System Localizer capture mode, Flight Management System Landing System Localize track mode
GA TRK	Go-around track mode

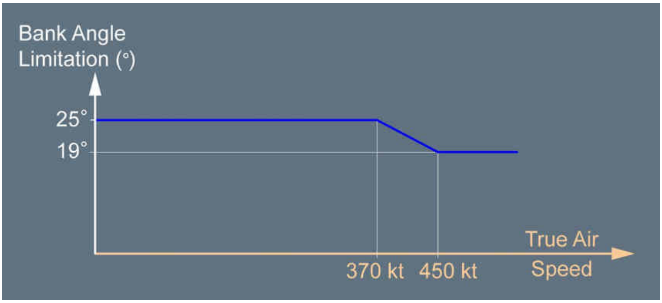
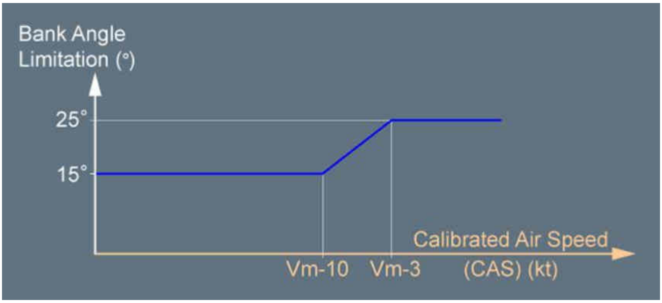
L2 BANK ANGLE LIMITATION

The following limitations apply when the AP is engaged. However, if the AP is not engaged, the FD orders respect the bank angle limitations.
In addition to the bank angle limitation, there is a bank angle protection. For more information, *Refer to DSC-22-27-20 Bank Angle Protection*.

WHEN ALL ENGINE OPERATIVE

AP/FD Lateral Mode	Bank Angle Limitation
HDG, TRACK	Bank Angle Limitation 
NAV	Function of the TAS, the maximum is 30°.
LOC*, LOC B/C*, F-LOC*	30 °
LOC, LOC B/C, F-LOC, LAND, FLARE, GA TRK	8 °

WHEN ONE ENGINE IS INOPERATIVE

AP/FD Lateral Mode	Bank Angle Limitation
HDG, TRACK	The bank angle limitation is the minimum of the following ones: 1. Between 19 ° and 25 ° depending on the TAS:  2. Between 15 ° and 25 ° depending on the CAS and the aircraft configuration:  Vm is the manoeuvring speed. Vm depends on the aircraft configuration, and is equal to: - Green Dot in CONF 0 - S in CONF 1, 1+F - F in CONF 2, 3 - VLS in CONF FULL.
NAV	Function of the TAS, the maximum is 30°.
LOC*, LOC B/C*, F-LOC*	30 °
LOC, LOC B/C, F-LOC, LAND, FLARE, GA TRK	8 °

Ident.: DSC-22-FG-70-10-GAPF-00005697.0002001 / 01 JUN 17

AP/FD VERTICAL MODES

The AP/FD vertical modes are:

FMA	**AP/FD Vertical Modes**
SRS	Speed Reference System mode, used during takeoff and go-around SRS TO refers to SRS mode during takeoff, and SRS GA refers to SRS mode during go-around.
CLB	Climb mode
DES	Descent mode
OP CLB	Open climb mode
OP DES	Open descent mode
EMER DES	Emergency Descent mode
V/S, FPA	Vertical Speed mode, Flight Path Angle mode V/S and FPA are the vertical basic modes.
ALT*, ALT *(1)*	Altitude capture mode, Altitude hold mode
ALT CST*, ALT CST *(1)*	Altitude constraint capture mode, altitude constraint hold mode
ALT CRZ* , ALT CRZ *(1)*	Altitude capture of the cruise flight level, altitude hold of the cruise flight level
G/S*, G/S	Glide slope capture mode, glide slope track mode
F-G/S*, F-G/S	FLS-G/S capture mode, FLS-G/S track mode
APP-DES	Vertical approach descent mode
TCAS	TCAS vertical mode of a Resolution Advisory (RA)

(1) *ALT*, ALT CST*, and ALT CRZ* are referred to as the altitude acquire modes.*
ALT, ALT CST, and ALT CRZ are referred to as the altitude hold modes.

Ident.: DSC-22-FG-70-10-GAPF-00005698.0001001 / 06 AUG 14

AP/FD COMMON MODES

The AP/FD common modes are:

FMA	**AP/FD Common Modes**
LAND	Land mode
FLARE	Flare mode
ROLL OUT	Rollout mode

AP/FD MODE STATUS AND DISPLAY

Ident.: DSC-22-FG-70-10-00005695.0001001 / 06 AUG 14
Applicable to: ALL

AP/FD MODE STATUS

An AP/FD lateral or vertical mode can be armed, engaged, or disengaged.
An AP/FD common mode can either be engaged or disengaged.
When all APs and FDs disengage, all AP/FD modes disengage.
L2 On ground, at engine start, all AP/FD modes disengage.

L1 AP/FD MODE DISPLAY

The FMA displays the AP/FD modes.
When an AP/FD lateral mode is armed, the FMA displays the lateral mode in blue, on the second line of the third column. When an AP/FD lateral mode is engaged, the FMA displays the lateral mode in green, on the first line of the third column.
When an AP/FD vertical mode is armed, the FMA displays the vertical mode in blue, on the second line of the second column. When an AP/FD vertical mode is engaged, the FMA displays the vertical mode in green, on the first line of the second column.
When an AP/FD common mode is engaged, the FMA displays the common mode in green, on the first line of the second and third columns. When an AP/FD common mode is disengaged, the FMA does not display the mode.
When an AP/FD lateral or vertical mode disengages, the FMA does not display the disengaged mode.

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General

GENERAL

Ident.: DSC-22-FG-70-20-10-00005699.0001001 / 06 AUG 14
Applicable to: ALL

At takeoff, the Speed Reference System (SRS) vertical mode, and the runway (RWY) lateral mode simultaneously engage. They disengage at different moment.
In some cases, when airborne, the RWY mode can change to another lateral takeoff mode: the runway track RWY TRK mode.

For scenario examples on takeoff:

- *Refer to DSC-22-FG-70-110-20 Takeoff with NAV*
- *Refer to DSC-22-FG-70-110-20 Takeoff with HDG/TRK Preset*.

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SRS TO Mode

GENERAL

Ident.: DSC-22-FG-70-20-30-00005700.0001001 / 03 DEC 15
Applicable to: ALL

The Speed Reference System (SRS) mode is a managed vertical mode. This mode is used during takeoff, and during go-around.
This chapter only describes the SRS mode during takeoff, also referred to as the SRS TO mode. The FMA announces the SRS TO mode with the SRS indication.
The SRS TO controls the speed via the elevators, in order to steer the aircraft along a vertical path.

L2 The guidance law also includes:
- A flight path angle protection, that ensures a positive climb
- A pitch angle protection to reduce the aircraft nose-up (15 ° of maximum pitch attitude)
- A speed protection, that ensures the aircraft does not exceed VFE.

L1 When the aircraft is on ground, V2 is the speed target. When the aircraft is airborne, V2+10 kt becomes the speed target. If one engine fails, the speed target is the current aircraft speed at the engine failure detection. However, the speed target is limited by V2 and V2+15 kt. For more information on the speed target, *Refer to DSC-22-FG-60-20 Managed Speed/Mach Target*.
In main cases, SRS TO disengages at the acceleration altitude: CLB or OP CLB engages.

ENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-70-20-30-00005701.0001001 / 06 AUG 14
Applicable to: ALL

SRS TO engages, when all of the following conditions are applicable:
- The aircraft is on ground
  L3 The aircraft must be on ground for at least 30 s.
- L1 V2 is inserted on the T.O panel of the PERF page of the FMS
  L2 Or, the three FMCs are fault. In this case, V2 will be equal to the speed target of the AFS CP.
- L1 The slats or the flaps are extended
- The flight crew sets at least one thrust lever:
  - To the TOGA detent, or
  - To the FLX-MCT detent, when FLX or DERATED is selected on the T.O panel of the PERF page of the FMS.

Note: *When V2 is inserted, or SRS TO is engaged, the speed automatically becomes managed. For more information about engagement conditions of managed speed, Refer to DSC-22-FG-60-20 Engagement Conditions.*

For scenario examples:
- *Refer to DSC-22-FG-70-110-20 Takeoff with NAV*, step 2
- *Refer to DSC-22-FG-70-110-20 Takeoff with HDG/TRK Preset*, step 2.

DISENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-70-20-30-00005702.0001001 / 03 DEC 15
Applicable to: ALL

SRS TO mode disengages, when one of the following occurs:

- CLB or OP CLB is armed, and the aircraft reaches the acceleration altitude
  CLB or OP CLB engages.
- The aircraft reaches the capture zone of the AFS CP selected altitude
  ALT* engages.
  L3 This scenario is applicable, if the aircraft is above 400 ft RA.
- L1 NAV is engaged, and the aircraft reaches the capture zone of the altitude constraint
  ALT CST* engages.
  L3 This scenario is applicable, if the aircraft is above 400 ft RA.
- L1 The flight crew presses the ALT pb
  ALT engages.
- The flight crew pulls the ALT knob
  OP CLB or OP DES engages.
- The flight crew presses the ALT knob, and all of the following conditions are applicable:
  - NAV is engaged
  - The AFS CP selected altitude is above the aircraft altitude
  - L3 The vertical flight plan is valid.

  L1 CLB engages.
- The flight crew pulls or push the V/S / FPA knob.
  V/S / FPA engages.

REVERSION

SRS TO reverts to OP CLB, when the AFS CP selected altitude is above the aircraft altitude, and the flight crew pulls the SPD/MACH knob. The triple click audio indicator sounds.

RWY Mode

GENERAL

Ident.: DSC-22-FG-70-20-40-00005703.0001001 / 03 DEC 15
Applicable to: ALL

The Runway (RWY) mode is a managed lateral mode.
When the LOC signal is available, the RWY mode gives lateral guidance orders during takeoff, and initial climb.

L2 The RWY guidance law aims to maintain the aircraft on the runway centerline during the takeoff run.
When the aircraft is airborne, the RWY guidance law aims to maintain the sideslip indicator centered.
To follow the guidance, the FD displays the yaw bar order.

ARMING CONDITIONS

Ident.: DSC-22-FG-70-20-40-00005704.0001001 / 09 MAR 16
Applicable to: ALL

RWY arms, when the aircraft approaches the runway threshold.

L3 RWY arms, when all of the following conditions are applicable:
- An ILS(GLS ◁)(SLS ◁) is set, associated to the takeoff runway, and the difference between the LS course and the runway heading, as inserted in the flight plan, is less than 2 °.
- The aircraft is on ground (for more than 120 s)
- The slats or the flaps are extended
- The LOC is valid
- The flight crew did not select a LOC B/C approach in the flight plan
- The aircraft heading reaches 115 ° of the ILS course
- The LOC deviation reaches one dot, and decreases.

DISARMING CONDITIONS

Ident.: DSC-22-FG-70-20-40-00005705.0001001 / 09 MAR 16
Applicable to: ALL

L3 RWY disarms, when one of the following occurs:
- The flaps lever is set to 0
- The LOCis invalid
- The RWY engages
- The flight crew selected a LOC B/C approach in the flight plan

- The ILS(GLS ◁)(SLS ◁) course is no longer equal to the runway heading, as defined is the flight plan
- The aircraft becomes airborne.

ENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-70-20-40-00005706.0001001 / 09 MAR 16
Applicable to: ALL

RWY engages, if all of the following conditions are applicable:

- L3 The aircraft is on ground (for more than 30 s)
- The slats are extended (flaps lever is not in the 0 detent)
- The LOC is valid
- L2 The LOC deviation below 0.5 dot
- L3 The aircraft heading is within 20 ° of the ILS(GLS ◁)(SLS ◁) course
- The difference between the ILS(GLS ◁)(SLS ◁) course and the runway heading, as defined in the FMS database, is less than 2 °.
- No lateral mode is already engaged
- L1 The flight crew sets a thrust lever to:
  - The TOGA detent, if TOGA is selected on the T.O panel of the PERF page of the FMS, or
  - The FLX-MCT detent, if FLEX or DERATED is selected on the T.O panel of the PERF page of the FMS.

DISENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-70-20-40-00005707.0001001 / 09 MAR 16
Applicable to: ALL

RWY disengages, if one of the following occurs:

- NAV is armed, and the aircraft reaches 30 ft RA
  NAV engages.
- L2 NAV is not armed, and the aircraft reaches 50 ft RA
  RWY TRK engages.
- L1 The flight crew pulls the HDG/TRK knob
  HDG/TRACK engages.
- L3 The aircraft heading deviates from more than 20 degrees from the ILS(GLS ◁)(SLS ◁) course.

RWY TRK Mode

GENERAL

Ident.: DSC-22-FG-70-20-50-00005708.0001001 / 03 DEC 15
Applicable to: ALL

The Runway Track (RWY TRK) mode is a managed lateral mode.
The RWY TRK mode guides the aircraft along a constant track target. The track target is the aircraft track at RWY TRK engagement.

ENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-70-20-50-00005709.0001001 / 06 AUG 14
Applicable to: ALL

The RWY TRK automatically engages at 50 ft RA, if:

L3 - The FMS flight phase is takeoff, and

L1 - NAV is not engaged.

DISENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-70-20-50-00005710.0001001 / 06 AUG 14
Applicable to: ALL

RWY TRK disengages, when one of the following occurs:
- The flight crew pulls the HDG/TRK knob
  HDG/TRACK engages.
- NAV is armed, and the aircraft reaches the capture zone of the active leg
  NAV engages.
- The flight crew inserts a DIRECT TO.
  NAV engages.

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General

GENERAL

Ident.: DSC-22-FG-70-30-10-00004501.0001001 / 06 AUG 14
Applicable to: ALL

The Heading (HDG), TRACK and Navigation (NAV) modes guides the aircraft laterally. They are mainly used during climb, cruise and descent.

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HDG/TRACK Mode

GENERAL

Ident.: DSC-22-FG-70-30-20-00004502.0001001 / 06 AUG 14
Applicable to: ALL

Heading (HDG) and TRACK are selected lateral modes. They are the basic modes of lateral guidance.
HDG/TRACK guides the aircraft laterally along the heading/track target, that appears in the HDG/TRK window on the AFS CP. For more information on the HDG/TRK window, *Refer to DSC-22-FG-90-20 HDG/TRK Window*.

ENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-70-30-20-00004503.0003001 / 01 JUN 17
Applicable to: ALL

HDG/TRACK engages, when one of the following occurs:

- The flight crew pulls the HDG/TRK knob on the AFS CP in flight

L3 This is applicable, if:
- The aircraft is in flight, for at least 5 s after liftoff
- Not in LAND, FLARE, or ROLL OUT
- Not in GA TRK below 100 ft RA.

L1 For more information on the HDG/TRK knob, *Refer to DSC-22-FG-90-20 HDG/TRK Window*.

- NAV is engaged and the flight crew engages a direct CRS IN, or CRS OUT in the flight plan

L3 This is not applicable if the aircraft is below 700 ft in LOC, or F-LOC mode.

L1
- EMER DES mode engages
- All AP and FDs were previously off, and the flight crew engages the AP or the FDs

Note: *1. The AP or FDs engage in basic modes: HDG/TRACK, and V/S /FPA.*
2. If the FD engages, the FD bars flash for 10 s.

L2
- The flight crew presses the APPR pb, or the LOC pb to off, when the approach mode is armed.

L3
- RWY is engaged and the aircraft deviates from the ILS course for more than 20 °.

L1
- LOC*, LOC, LOC B/C*, or LOC B/C is engaged in a LOC only approach mode, and the flight crew presses the LOC pb to off.

HDG or TRACK engages, in accordance with the HDG-V/S / TRK-FPA selection: *Refer to DSC-22-FG-70-30-20 HDG-V/S / TRK-FPA Selection*.

REVERSION TO HDG/TRACK

The HDG/TRACK also engages when one of the following reversion occurs:

- NAV disengages:
  L3
  - The flight plan becomes invalid

    Note: *This occurs for example, when:*
    - *The FMS aircraft position is lost, or*
    - *The ground speed is invalid.*

    For more information, *Refer to DSC-22-FG-70-30-30 Disengagement Conditions*.

  L1
  - The aircraft reaches a flight plan discontinuity
  - The NAV mode fails
  - The EMER DES mode engages

  L2
  For more information, *Refer to DSC-22-FG-70-60-40 Engagement Conditions*.

L3
- The approach is modified in the flight plan, when LOC*, LOC, F-LOC*, F-LOC, LOC B/C*, or LOC B/C is engaged
  HDG/TRACK, and V/S / FPA engage.

  Note: *1. If the approach is modified, when one of the above approach modes is armed, the approach mode will disarm. HDG/TRACK will not engage.*
  2. Below 700 ft RA, it is not possible to modify the approach, if:
  - *LOC is armed or engaged, with G/S armed or engaged*
  - *LOC is armed or engaged, with F-G/S armed or engaged*
  - *F-LOC is armed or engaged, with F-G/S armed or engaged.*

L1
- LOC*, LOC, F-LOC*, F-LOC, LOC B/C*, or LOC B/C is lost after a failure occurs in approach (*Refer to DSC-22-FG-40-30 Automatic Disengagement*)
  All AP(s) disengage. The FDs reverts in HDG/TRACK, and V/S / FPA.

When a reversion occurs:

- A triple click audio indicator sounds
- The new guidance mode appears with a white box during 10 s
- The FD bars flash for 10 s.

L12

Note: *If a managed vertical mode was previously engaged, a selected vertical mode engages:*
- *If CLB was engaged, OP CLB engages*
- *If ALT CST*, ALT CRZ*, or DES was engaged, V/S / FPA engages*
- *If ALT CST was engaged, ALT engages.*

HDG-V/S / TRK-FPA SELECTION

Ident.: DSC-22-FG-70-30-20-00004504.0001001 / 06 AUG 14
Applicable to: ALL

The flight crew can press the HDG-V/S / TRK-FPA pb on the AFS CP to change from one selection to another.
At the aircraft power-up, the HDG-V/S / TRK-FPA selection is set to HDG-V/S by default.

When HDG-V/S is selected:
- HDG appears on the HDG/TRK window of the AFS CP
  For more information on the HDG/TRK window, *Refer to DSC-22-FG-90-20 HDG/TRK Window*.
- V/S appears on the V/S / FPA window of the AFS CP
  For more information on the V/S / FPA window, *Refer to DSC-22-FG-90-20 V/S / FPA Window*.
- HDG and/or V/S mode(s) can be engaged
- TRACK and FPA modes cannot be engaged
- If the VV pb is pressed on the EFIS CP, the associated PFD displays the Velocity Vector (VV) in black.
  For more information on the VV, *Refer to DSC-31-CDS-40-20-30 Flight Path Vector or Velocity Vector*.

When TRK-FPA is selected:
- TRK appears on the HDG/TRK window of the AFS CP
- FPA appears on the V/S / FPA window of the AFS CP
- HDG and/or V/S mode(s) cannot be engaged
- TRACK and FPA modes can be engaged
- Both PFDs display the Flight Path Vector (FPV) in green.
  For more information on the FPV , *Refer to DSC-31-CDS-40-20-30 Flight Path Vector or Velocity Vector*.

HDG/TRK PRESET

Ident.: DSC-22-FG-70-30-20-00004505.0001001 / 03 DEC 15
Applicable to: ALL

The flight guidance has a HDG/TRK preset function for takeoff and go-around.
If the flight crew decides not to fly the flight plan after a takeoff or go-around, the flight crew can turn the HDG/TRK knob on the AFS CP to preset a heading or a track.

AT TAKEOFF

If the flight crew presets the HDG/TRK before takeoff and up to 30 ft RA, NAV disarms. The preset value remains displayed in the HDG/TRK window (even when RWY TRK engages at 50 ft RA).
When the flight crew pulls the HDG/TRK knob (at least 5 s after liftoff), HDG or TRACK engages. The aircraft follows the preset target.

AT GO-AROUND

If the flight crew presets the HDG/TRK when LOC*, LOC, F-LOC*, F-LOC, LAND, FLARE, ROLL OUT or GA TRK is engaged, the preset value remains displayed in the HDG/TRK window, as long as one of these modes is engaged.
After go-around engagement, HDG/TRACK will engage, when the flight crew pulls the HDG/TRK knob.

L3 This is applicable, if the flight crew pulls the HDG/TRK knob above 100 ft RA.

L1 When the HDG or TRACK engages, the heading/track target is the HDG/TRK preset.

CANCELLATION

The flight crew can cancel a HDG/TRK preset with one of the following action:
- The HDG/TRK knob is pushed
- A DIR TO is selected in the FMS
- The AP and FDs are disengaged.

HEADING/TRACK TARGET

Ident.: DSC-22-FG-70-30-20-00004506.0001001 / 06 AUG 14
Applicable to: ALL

When HDG/TRACK engages, the heading/track target is defined as followed:

Conditions of Engagement	Target
The flight crew pulls the HDG/TRK knob.	The heading/track selected with the HDG/TRACK knob, or the HDG/TRK preset.
For all other cases.	The current heading or track of the aircraft. *Note:* *The HDG/TRK window automatically displays this target at HDG/TRACK engagement.*

DISENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-70-30-20-00004507.0001001 / 06 AUG 14
Applicable to: ALL

HDG/TRACK disengages, when another lateral mode engages.

NAV Mode

GENERAL

Ident.: DSC-22-FG-70-30-30-00004508.0001001 / 06 AUG 14
Applicable to: ALL

The Navigation (NAV) mode is a managed lateral mode, that guides the aircraft laterally along the FMS flight plan. It is designed to have a zero crosstrack error.
NAV usually arms before engaging.

ARMING CONDITIONS

Ident.: DSC-22-FG-70-30-30-00004509.0001001 / 03 DEC 15
Applicable to: ALL

L2 For NAV arming, the lateral flight plan must be available.

L1 NAV arms, when one of the following occurs:
- The aircraft is on ground, and the flight crew does not preset a HDG/TRK for takeoff.
- The flight crew pushes the HDG/TRK knob on the AFS CP
- The flight crew activates a DIR TO - CRS IN or a DIR TO - CRS OUT with the FMS. For more information on DIR TO, *Refer to DSC-22-FMS-10-40-20 Purpose*.
- The flight crew initiates a go-around.
  L2 This is not applicable if HDG, or a TRK is preset.
  For more information about NAV arming in the case of go-around, *Refer to DSC-22-FG-70-90-10 General*.
- L1 The flight crew presses the APPR pb and the conditions to arm the APP-DES mode are applicable.

L3 However, NAV cannot arm, if one of the following modes is engaged: LOC*, LOC, F-LOC*, F-LOC, LOC B/C*, LOC B/C, LAND, FLARE, ROLL OUT.

DISARMING CONDITIONS

Ident.: DSC-22-FG-70-30-30-00004510.0001001 / 03 DEC 15
Applicable to: ALL

L2 NAV disarms, when one of the following occurs:
- The flight crew presets a HDG/TRK for takeoff
- L3 NAV engages
- The flight crew pulls the HDG/TRK knob

L2 - The flight crew arms or engages an approach mode, except if the APP-DES mode can be armed
L3 - The flight plan becomes invalid.
For more information, *Refer to DSC-22-FG-70-30-30 Disengagement Conditions*.

ENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-70-30-30-00004511.0001001 / 06 AUG 14
Applicable to: ALL

For NAV engagement, the lateral flight plan must be available.

NAV engages, if one of the following occurs:
- NAV is armed, and the aircraft reaches 30 ft RA after takeoff
- NAV is armed, and the aircraft reaches the capture zone of the flight plan active leg
- The flight crew activates a DIR TO (DIRECT, or DIRECT WITH ABEAM) on the MFD
L3 This is not applicable, if LOC*, LOC, F-LOC*, F-LOC, LOC B/C* or LOC B/C, LAND, FLARE, ROLL OUT is engaged below 700 ft RA.
L1 - The flight crew initiates a go-around above 100 ft RA, and the aircraft reaches the capture zone of the flight plan active leg.
L2 This is not applicable if a HDG/TRK was preset.
For more information about NAV engagement in go-around, *Refer to DSC-22-FG-70-90-10 General*.

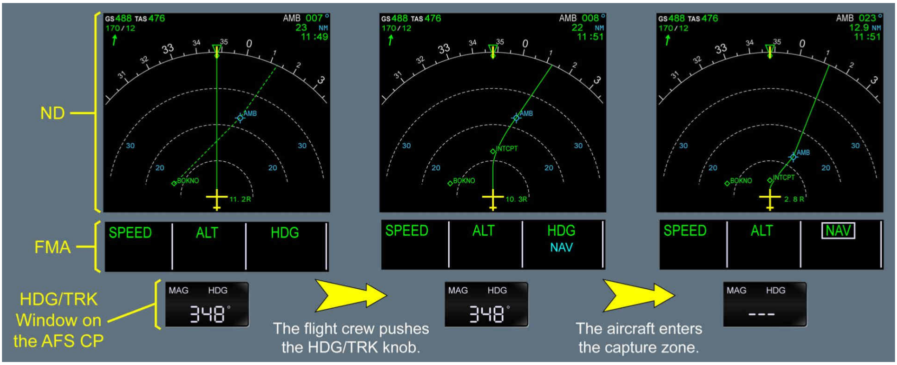
L1 When NAV is engaged, the HDG/TRK window on the AFS CP displays dashes.

CAPTURE ZONE OF THE FLIGHT PLAN ACTIVE LEG

When NAV is armed, it automatically engages, if:
- The aircraft track line intercepts the flight plan between the FROM and the TO waypoints
- The intercept waypoint (INTCPT) is displayed on the ND
- The aircraft reaches the capture zone of the flight plan active leg.

The following is an example:

Capture Zone


ND
FMA
HDG/TRK Window on the AFS CP
GS 488 TAS 476
170/12
AMB 007°
23 NM
11:49
AMB 008°
22 NM
11:51
AMB 023°
12.9 NM
11:51
AMB
INTCPT
BOKNO
11. 2R
10. 3R
2. 8 R
SPEED
ALT
HDG
NAV
MAG HDG
348°

The flight crew pushes the HDG/TRK knob.

The aircraft enters the capture zone.

DISENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-70-30-30-00004512.0001001 / 03 DEC 15
Applicable to: ALL

NAV disengages, when another lateral mode engages.
NAV disengages, when HDG, TRK, LOC*, F-LOC*, LOC B/C* , or GA TRK engages.

L2 REVERSION

NAV disengages, and reverts to the HDG/TRACK mode when:

- The aircraft reaches a flight plan discontinuity
- The flight plan becomes invalid.

L3 This occurs when for example:

- The FMS aircraft position is lost, or
- The ground speed is invalid.

L2 When a reversion occurs:

- A triple click audio indicator sounds
- The new guidance mode appears with a white box during 10 s
- The FD bars flash for 10 s.

Note: *When the lateral mode reverts to HDG/TRACK, the vertical mode also reverts to a vertical selected mode.*

For more information about the reversion to HDG/TRACK, *Refer to DSC-22-FG-70-30-20 Engagement Conditions*.

INTERACTIONS WITH VERTICAL MODES

Ident.: DSC-22-FG-70-30-30-00004513.0001001 / 06 AUG 14
Applicable to: ALL

When NAV is engaged with the managed vertical modes CLB or DES, the guidance takes into account the altitude and speed constraints, linked to waypoints on the lateral flight plan.
When NAV disengages, the managed vertical modes are not available and the altitude constraints are disregarded.

General

GENERAL

Ident.: DSC-22-FG-70-40-10-00005807.0001001 / 06 AUG 14
Applicable to: ALL

During climb, OP CLB or CLB guides the aircraft vertically to an altitude target.
V/S / FPA can also climb the aircraft: *Refer to DSC-22-FG-70-70 General*.

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OP CLB Mode

GENERAL

Ident.: DSC-22-FG-70-40-20-00005808.0001001 / 06 AUG 14
Applicable to: ALL

Open Climb (OP CLB) mode is a selected vertical mode.
OP CLB guides the aircraft vertically to the AFS CP selected altitude. All altitude constraints are disregarded.

When OP CLB is engaged:
- OP CLB controls the speed/Mach target (selected or managed)
- If the A/THR is active, the A/THR will control the thrust.

OP CLB usually arms before it engages.

For scenario examples on climb with OP CLB mode:
- *Refer to DSC-22-FG-70-110-30 At the Acceleration Altitude*
- *Refer to DSC-22-FG-70-110-30 The Flight Crew Pulls the ALT Knob*
- *Refer to DSC-22-FG-70-110-30 NAV Disengages*

OP CLB ASSOCIATION WITH ALTITUDE MODES

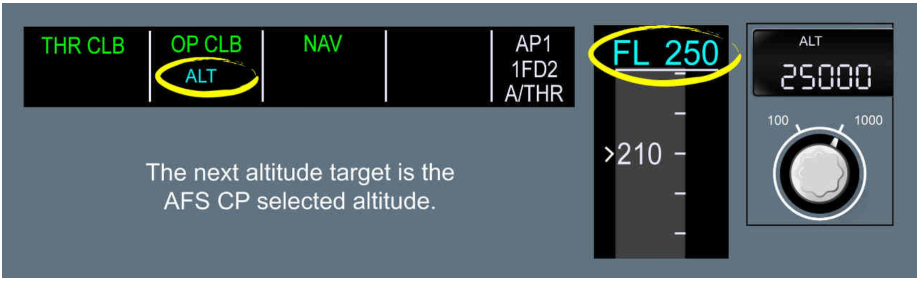
Ident.: DSC-22-FG-70-40-20-00005809.0001001 / 06 AUG 14
Applicable to: ALL

OP CLB is always associated to an altitude mode.
When OP CLB is engaged:

Conditions	**The FMA displays the following message on the second line of the second column:**
The next altitude target is the AFS CP selected altitude. In addition, the AFS CP selected altitude is not set to the cruise altitude.	ALT (ALT is armed)
The next altitude target is the cruise altitude. In this case, the AFS CP selected altitude is equal to the cruise altitude. *Note:* *The cruise altitude is defined on the CRZ panel of the FMS PERF page.*	ALT CRZ (ALT CRZ is armed)

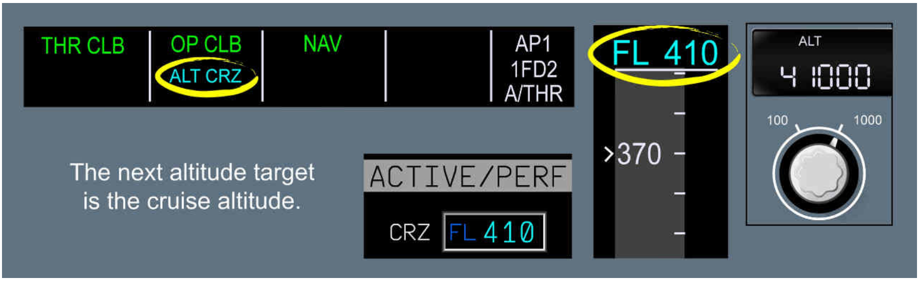
The following are examples:

OP CLB and ALT armed


THR CLB
OP CLB
ALT
NAV
AP1
1FD2
A/THR
FL 250
210
ALT
25000
100
1000

The next altitude target is the AFS CP selected altitude.

OP CLB and ALT CRZ armed


THR CLB
OP CLB
ALT CRZ
NAV
AP1
1FD2
A/THR
ACTIVE/PERF
CRZ
FL 410
FL 410
370
ALT
41000
100
1000

The next altitude target is the cruise altitude.

ARMING CONDITIONS

Ident.: DSC-22-FG-70-40-20-00005810.0001001 / 06 AUG 14
Applicable to: ALL

OP CLB arms, when all of the following conditions are applicable:
- The aircraft is on ground, or SRS is engaged (TO or GA)
- NAV is neither armed nor engaged, or the vertical flight plan is not available
- The Acceleration (ACC) altitude is available, and is below the AFS CP selected altitude.

Refer to DSC-22-FG-70-110-30 At the Acceleration Altitude, step 1.

DISARMING CONDITIONS

Ident.: DSC-22-FG-70-40-20-00005811.0001001 / 03 DEC 15
Applicable to: ALL

L2 OP CLB disarms, when one of the following occurs:
- V/S/FPA or OP CLB engages
- L3 The ACC altitude becomes equal to, or above the AFS CP selected altitude
- CLB arms.

ENGAGEMENT CONDITIONS

Applicable to: ALL

Ident.: DSC-22-FG-70-40-20-B-00005812.0001001 / 06 AUG 14

OP CLB engages, when one of the following occurs:
- The AFS CP selected altitude is above the aircraft altitude, and the flight crew pulls the ALT knob

L3 This scenario is applicable, if:
  - LAND or FLARE is not engaged
  - If SRS GA is engaged, the aircraft is above 100 ft RA
  - The aircraft is airborne for at least 5 s.

- L1 SRS is engaged (TO or GA) with OP CLB armed, and the aircraft reaches the ACC altitude

L3 This scenario is applicable, if the aircraft is airborne for at least 5 s.

- L2 SRS is engaged (TO or GA), and the flight crew pulls the SPD/MACH knob.

L3 This scenario is applicable, if:
  - The AFS CP selected altitude is above the aircraft altitude
  - If SRS GA is engaged, the aircraft is above 100 ft RA
  - The aircraft is in flight for at least 5 s.

L1 When OP CLB engages, ALT automatically arms.

Ident.: DSC-22-FG-70-40-20-B-00005814.0001001 / 06 AUG 14

REVERSIONS

OP CLB also engages, when one of the following reversions occurs:
- CLB and NAV are engaged, and NAV disengages
  Refer to DSC-22-FG-70-110-30 NAV Disengages.
- L3 CLB is engaged, and the vertical flight plan becomes invalid
- CLB is engaged, and the FMS flight phase changes to the descent or approach phase
- L1 SRS TO, or SRS GA is engaged, the AFS CP selected altitude is above the aircraft altitude, and the flight crew pulls the SPD/MACH knob.

The reversion is announced by a triple click audio indicator.

DISENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-70-40-20-00005813.0001001 / 03 DEC 15
Applicable to: ALL

OP CLB disengages, when another vertical mode engages.

L2 OP CLB disengages, when one of the following occurs:

- The aircraft reaches the capture zone of the AFS CP selected altitude
  ALT* engages.
- ALT CRZ is armed, and the aircraft reaches the capture zone of the cruise altitude
  ALT CRZ* engages.
- The flight crew pushes the ALT knob, when:
  - NAV is engaged
  - The vertical flight plan is available
  - L3 The FMS flight phase is neither the descent nor the approach phase.

  L2 CLB engages.
- The flight crew pulls or pushes the V/S / FPA knob to engage V/S/FPA
- The flight crew pushes the ALT pb to engage ALT.

L1 REVERSION

OP CLB reverts to V/S/FPA, when the flight crew sets the AFS CP selected altitude below the aircraft altitude.

When a reversion occurs:

- A triple click audio indicator sounds
- The new guidance mode appears with a white box during 10 s
- The FD bars flash for 10 s.

CLB Mode

GENERAL

Ident.: DSC-22-FG-70-40-30-00005815.0001001 / 06 AUG 14
Applicable to: ALL

Climb (CLB) mode is a managed vertical mode.
CLB guides the aircraft vertically along the FMS flight plan, to the AFS CP selected altitude, or to the next altitude constraint, whichever comes first. Therefore, altitude constraints, associated with applicable waypoints, are taken into account.
CLB can only be engaged, when NAV is engaged.

When CLB is engaged:
- The AP/FDs controls the speed/Mach target (selected or managed) through the elevators

  Note: *The Flight Guidance system does not adjust the speed/Mach target to match the altitude constraints.*

- If the A/THR is active, the A/THR will control the thrust.

CLB usually arms before it engages.

For scenario examples on climb with CLB mode:
- *Refer to DSC-22-FG-70-110-40 At the Acceleration Altitude*
- *Refer to DSC-22-FG-70-110-40 Climbing toward an Altitude Constraint*.

CLB ASSOCIATION WITH ALTITUDE MODES

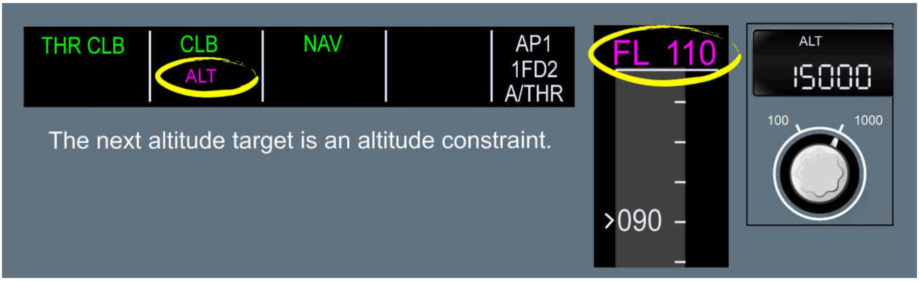
Ident.: DSC-22-FG-70-40-30-00005816.0001001 / 06 AUG 14
Applicable to: ALL

CLB is always associated to an altitude mode.
When CLB is engaged:

Conditions	The FMA displays the following message on the second line of the second column:
The next altitude target is the AFS CP selected altitude. In addition, the AFS CP selected altitude is not set to the cruise altitude. However, the AFS CP selected altitude can be equal to an altitude constraint.	ALT (ALT is armed)
The next altitude target is an altitude constraint, and the AFS CP selected altitude is above the altitude constraint.	ALT (ALT CST is armed)
The next altitude target is the cruise altitude. In this case, the AFS CP selected altitude is equal to the cruise altitude. *Note:* *The cruise altitude is defined on the CRZ panel of the FMS PERF page.*	ALT CRZ (ALT CRZ is armed)

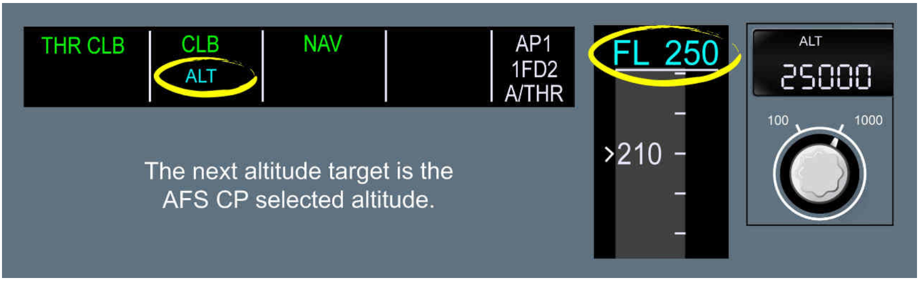
The following are examples:

ALT CST arms


THR CLB
CLB
ALT
NAV
AP1
1FD2
A/THR
FL 110
>090
ALT
15000
100
1000

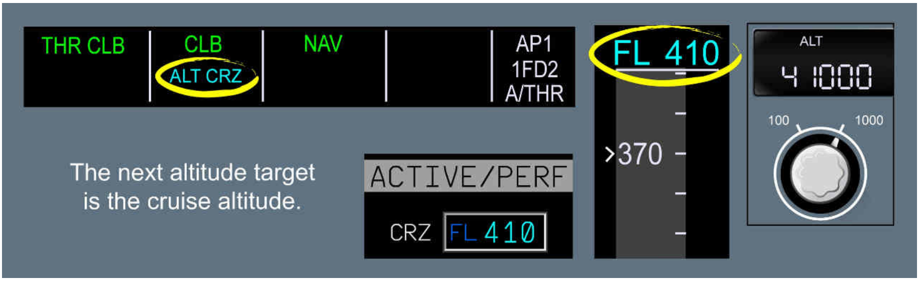
The next altitude target is an altitude constraint.

ALT arms


THR CLB
CLB
ALT
NAV
AP1
1FD2
A/THR
FL 250
>210
ALT
25000
100
1000

The next altitude target is the AFS CP selected altitude.

ALT CRZ arms



The next altitude target is the cruise altitude.

ARMING CONDITIONS

Ident.: DSC-22-FG-70-40-30-00005817.0001001 / 06 AUG 14
Applicable to: ALL

CLB arms, when the aircraft is on ground, or when SRS is engaged (TO or GA) and:
- NAV is armed, or engaged
- The Acceleration (ACC) altitude is available, and is below:
  - The AFS CP selected altitude
  - The next altitude constraint.
- L2 The altitude set on the AFS CP is above the current altitude
- The vertical flight plan is available.

L1 *Refer to DSC-22-FG-70-110-30 At the Acceleration Altitude*, step 1.

L2 CLB also arms, when CLB was previously engaged, and ALT CST* engages. This scenario is possible, when the AFS CP selected altitude is set to be above the altitude constraint. *Refer to DSC-22-FG-70-110-40 Climbing toward an Altitude Constraint*, steps 1 and 2.

L1 The ACC altitude is displayed on the T.O and GA panel of the FMS PERF page. The flight crew can modify the ACC altitude. For more information, *Refer to DSC-22-FMS-20-20-20 THR RED Entry Field [T.O/CLB]*, and *Refer to DSC-22-FMS-20-20-20 ACCEL Entry Field [T.O/CLB]*.

DISARMING CONDITIONS

Ident.: DSC-22-FG-70-40-30-00005818.0001001 / 06 AUG 14
Applicable to: ALL

CLB disarms, when one of the following occurs:
- NAV disarms, or NAV disengages
- L2 The flight crew sets the AFS CP target altitude at or below the altitude constraint, when ALT CST* or ALT CST is engaged
- OP CLB, or V/S /FPA engages

L3
- The ACC altitude becomes equal to, or above, the subsequent target altitude, when the aircraft is on ground, or when SRS is engaged (TO or GA)
- The AFS CP selected altitude is set to be below the aircraft altitude
- The vertical flight plan becomes invalid
- The FMS flight phase changes to the descent or approach phase.

ENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-70-40-30-00005819.0001001 / 03 DEC 15
Applicable to: ALL

CLB engages, when one of the following occurs:

L2
- For CLB engagement, all the following conditions are applicable:
  - NAV is engaged
  - The FMS flight phase is neither the descent nor the approach phase
  - The vertical flight plan is valid
  - The aircraft is in flight for at least 5 s.

L1
- SRS is engaged (TO or GA) with CLB armed, and the aircraft reaches the ACC altitude
  Refer to DSC-22-FG-70-110-40 At the Acceleration Altitude, step 3.
- ALT CST is engaged with CLB armed, and the aircraft sequences the altitude constraint
  Refer to DSC-22-FG-70-110-40 Climbing toward an Altitude Constraint, step 4.
- The AFS CP selected altitude is set to be above the aircraft altitude, and the flight crew pushes the ALT knob.
  This scenario is applicable if CLB is not yet armed.

L2
Note: *If the aircraft altitude is within the capture zone of the AFS CP selected altitude, CLB will immediately disengage, and ALT* will engage.*

DISENGAGEMENT CONDITIONS

Applicable to: ALL

Ident.: DSC-22-FG-70-40-30-B-00005820.0001001 / 06 AUG 14

CLB disengages, when another vertical mode engages.

L2
This signifies that CLB disengages, when one of the following occurs:
- The aircraft reaches the capture zone of the AFS CP selected altitude: ALT* engages
- The aircraft reaches the capture zone of the altitude constraint: ALT CST* engages
  Refer to DSC-22-FG-70-110-40 Climbing toward an Altitude Constraint, step 2.
- The aircraft reaches the capture zone of the cruise altitude: ALT CRZ* engages
- The flight crew pulls the V/S / FPA knob to engage V/S/FPA

- The flight crew pulls the ALT knob to engage ALT
- NAV disengages.
  OP CLB engages.
  However, in some cases, this scenario is a reversion: *Refer to DSC-22-FG-70-40-30 Reversions*.

Ident.: DSC-22-FG-70-40-30-B-00005821.0001001 / 06 AUG 14

REVERSIONS

CLB also disengages, when one of the following reversions occurs:

- NAV disengages when:
  - The aircraft reaches a flight plan discontinuity, or
  - The next altitude target is an altitude constraint, and the flight crew engaged the HDG/TRACK mode.

  OP CLB engages.
  Refer to DSC-22-FG-70-110-30 NAV Disengages.
- The flight crew sets the AFS CP selected altitude below the aircraft altitude
  V/S/FPA engages on the current vertical speed or current flight path angle.
- The vertical flight plan becomes invalid
  OP CLB engages.
- L3 The FMS flight phase changes to the descent or approach phase.
  OP CLB engages.

L1 When a reversion occurs:

- A triple click audio indicator sounds
- The new guidance mode appears with a white box during 10 s
- The FD bars flash for 10 s.

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General

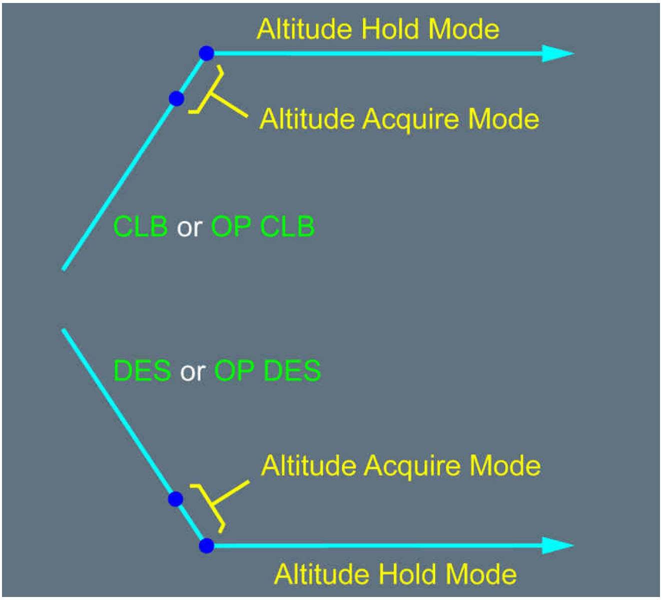
GENERAL

Applicable to: ALL

Ident.: DSC-22-FG-70-50-10-A-00005822.0001001 / 13 JAN 15

When climbing (descending) toward an altitude target, CLB or OP CLB (DES or OP DES) is engaged. When approaching the altitude target, an altitude acquire mode engages. When reaching the altitude target, an altitude hold mode engages.

ALT acquire mode, and ALT hold mode



The altitude target is one of the following: An altitude constraint (associated to a waypoint), the cruise altitude, the AFS CP selected altitude.
The altitude acquire mode is one of the following: ALT*, ALT CST*, ALT CRZ*.
The altitude hold mode is one of the following: ALT, ALT CST, ALT CRZ.

For scenario examples on altitude acquire and altitude hold:

- *Refer to DSC-22-FG-70-110-60 CLB and ALT - Example 1*
- *Refer to DSC-22-FG-70-110-60 CLB and ALT - Example 2*
- *Refer to DSC-22-FG-70-110-60 CLB and ALT CST*

- *Refer to DSC-22-FG-70-110-60 CLB and ALT CRZ*
- *Refer to DSC-22-FG-70-110-60 OP CLB and ALT*
- *Refer to DSC-22-FG-70-110-60 OP CLB and ALT CRZ*.

Ident.: DSC-22-FG-70-50-10-A-00005823.0001001 / 06 AUG 14

WHEN THE VERTICAL GUIDANCE IS MANAGED

When the vertical guidance is managed, CLB or DES guides the aircraft toward the next altitude target.

The next altitude target is the first altitude among the following that the aircraft will reach:
- The AFS CP selected altitude
- The altitude constraint (associated to a waypoint)
- The cruise altitude.

The altitude acquire mode, and the altitude hold mode are as follows:

Conditions	**Altitude Acquire Mode**	**Altitude Hold Mode**	**Scenario Example**
The next altitude target is the AFS CP selected altitude. In addition, the AFS CP selected altitude is not set to the cruise altitude. However, the AFS CP selected altitude can be equal to an altitude constraint.	ALT*	ALT	*Refer to DSC-22-FG-70-110-60 CLB and ALT - Example 1*, and *Refer to DSC-22-FG-70-110-60 CLB and ALT - Example 2*.
The next altitude target is an altitude constraint, and the AFS CP selected altitude is above (below) the altitude constraint in climb (descent).	ALT CST*	ALT CST	*Refer to DSC-22-FG-70-110-60 CLB and ALT CST*.
The next altitude target is the cruise altitude. In this case, the AFS CP selected altitude is equal to the cruise altitude. *Note:* 1. *The cruise altitude is defined on the CRZ panel of the FMS PERF page. For more information on the cruise altitude, Refer to DSC-22-FMS-20-20-20 CRZ Entry Field.* 2. *If the AFS CP selected altitude is set above the cruise altitude, the cruise altitude is automatically updated to the AFS CP selected altitude.*	ALT CRZ*	ALT CRZ	*Refer to DSC-22-FG-70-110-60 CLB and ALT CRZ*.

Ident.: DSC-22-FG-70-50-10-A-00005824.0001001 / 06 AUG 14

WHEN THE VERTICAL GUIDANCE IS SELECTED

When the vertical guidance is selected, OP CLB or OP DES guides the aircraft toward the AFS CP selected altitude.
All the altitude constraints are disregarded.
The altitude acquire mode, and the altitude hold mode are as follows:

Conditions	**Altitude Acquire Mode**	**Altitude Hold Mode**	**Scenario Example**
The AFS CP selected altitude is below the cruise altitude.	ALT*	ALT	*Refer to DSC-22-FG-70-110-60 OP CLB and ALT.*
The AFS CP selected altitude is equal to the cruise altitude. *Note:* 1. *The cruise altitude is defined on the CRZ panel of the FMS PERF page. For more information on the cruise altitude, Refer to DSC-22-FMS-20-20-20 CRZ Entry Field.* 2. *If the AFS CP selected altitude is set above the cruise altitude, the cruise altitude is automatically updated to the AFS CP selected altitude.*	ALT CRZ*	ALT CRZ	*Refer to DSC-22-FG-70-110-60 OP CLB and ALT CRZ.*

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Altitude Acquire Modes

GENERAL

Ident.: DSC-22-FG-70-50-20-00005825.0001001 / 06 AUG 14
Applicable to: ALL

The altitude acquire mode is one of the following: ALT*, ALT CST*, ALT CRZ*.
ALT* mode guides the aircraft to acquire the AFS CP selected altitude.
ALT CST* guides the aircraft to acquire an altitude constraint.
ALT CRZ* guides the aircraft to acquire the cruise altitude, as selected on the FMS PERF page, and on the AFS CP.
When the aircraft reaches the altitude target, the altitude hold mode (ALT, ALT CST, or ALT CRZ) engages.

ARMING AND DISARMING CONDITIONS

Ident.: DSC-22-FG-70-50-20-00005826.0001001 / 03 DEC 15
Applicable to: ALL

The ALT* altitude acquire mode (respectively ALT CST* and ALT CRZ*) and the altitude hold mode ALT (respectively ALT CST and ALT CRZ) mode arms and disarms simultaneously. As a result, ALT* (respectively ALT CST* and ALT CRZ*) arms with the ALT (respectively ALT CST and ALT CRZ) indication on the FMA.

ENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-70-50-20-00005827.0001001 / 05 DEC 17
Applicable to: ALL

The altitude acquire mode engages when all the following conditions are applicable:
- The altitude hold mode is engaged
- The aircraft reaches the capture zone of the altitude target.

L3 The altitude acquire mode can engage only when the aircraft is in flight for more than 5 s.

L2 ALT* and ALT CST* engagement is inhibited during 3 s after the selected altitude is changed on the AFS CP.

DISENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-70-50-20-00005828.0001001 / 03 DEC 15
Applicable to: ALL

The altitude acquire mode disengages, when one of the following occurs:
- The aircraft reaches the altitude target
  The altitude hold mode engages.
- The aircraft reaches the glideslope capture zone, when:
  - LOC or LOC* is engaged, and
  - G/S is armed.

  G/S* engages.
- The aircraft reaches the F-glideslope capture zone, when:
  - F-LOC, F-LOC*, LOC or LOC* is engaged, and
  - F-G/S is armed.

  F-G/S* engages.
- The aircraft reaches the APP-DES capture zone, when:
  - NAV is engaged
  - APP-DES is armed

  APP-DES engages.
- The flight crew pulls or pushes the V/S / FPA knob
  V/S / FPA engages.
- The flight crew engages go-around.
  SRS GA engages.

ADDITIONAL SCENARIO: ALT* DISENGAGEMENT (REVERSION)

ALT* disengages, if the flight crew sets the AFS CP selected altitude out of the capture zone. V/S / FPA engages.

When a reversion occurs:
- A triple click audio indicator sounds
- The new guidance mode appears with a white box during 10 s
- The FD bars flash for 10 s.

ADDITIONAL SCENARIOS: ALT CST* DISENGAGEMENT

ALT CST* disengages, when one of the following occurs:
- The flight crew pulls the ALT knob
  OP CLB or OP DES engages.
- The flight crew presses the ALT pb.
  ALT engages.

REVERSIONS

ALT CST* reverts to V/S / FPA, when one of the following occurs:
- NAV disengages
- The vertical flight plan is lost.

When a reversion occurs:
- A triple click audio indicator sounds
- The new guidance mode appears with a white box during 10 s
- The FD bars flash for 10 s.

ADDITIONAL SCENARIOS: ALT CRZ* DISENGAGEMENT

ALT CRZ* disengages, when one of the following occurs:
- The flight crew pulls the ALT knob
  OP CLB or OP DES engages.
- The flight crew presses the ALT pb.
  ALT engages.

REVERSION

ALT CRZ* reverts to V/S / FPA if NAV disengages.

When a reversion occurs:
- A triple click audio indicator sounds
- The new guidance mode appears with a white box during 10 s
- The FD bars flash for 10 s.

GUIDANCE

Ident.: DSC-22-FG-70-50-20-00005829.0001001 / 06 AUG 14
Applicable to: ALL

The altitude acquire mode has a V/S control law that is function of the difference between aircraft altitude and the altitude target.
In the case of a traffic advisory, the V/S is automatically adjusted to reach the target altitude, in order to avoid spurious resolution advisories.

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Altitude Hold Modes

GENERAL

Ident.: DSC-22-FG-70-50-30-00005830.0001001 / 06 AUG 14
Applicable to: ALL

The altitude hold mode is one of the following: ALT, ALT CST, ALT CRZ.
The altitude hold mode maintains a target altitude. This target altitude is either the AFS CP selected altitude, or an altitude constraint.

ARMING CONDITIONS

Ident.: DSC-22-FG-70-50-30-00005831.0001001 / 06 AUG 14
Applicable to: ALL

The altitude hold mode arms, when the aircraft climbs or descends toward an altitude target.
However, the altitude hold mode do not arm, when one of the following mode is engaged: G/S*, G/S, F-G/S*, F-G/S, APP-DES, LAND, FLARE, ROLL OUT.

L3 The altitude hold can arm, if one of the following condition occurs:
- The flight crew changes the altitude target on the AFS CP
- The FD or the AP engages, and none of them was previously engaged
- The difference between the aircraft altitude and the altitude set on the AFS CP is more than 250 ft.

L1 ALT ARMING

ALT arms, when one of the following occurs:
- OP CLB engages, and the AFS CP selected altitude is not set to the cruise altitude
- OP DES engages
- CLB engages, when the next altitude target is:
  - Equal to the AFS CP selected altitude
  - Not equal to the cruise altitude.
- DES engages, and the next altitude target is the AFS CP selected altitude
- V/S / FPA engages, and the next altitude target is the AFS CP selected altitude
- SRS TO or SRS GA engages, and the altitude target set on the AFS CP is above the current aircraft altitude.

ALT CST ARMING

ALT CST arms, when CLB (DES) engages, and:
- The next target altitude is an altitude constraint
- The AFS CP selected altitude is above (below) the altitude constraint.

ALT CRZ ARMING

ALT CRZ arms, when one of the following occurs:
- CLB is engaged and the AFS CP selected altitude is set to the cruise altitude, when the cruise altitude becomes the next altitude target
- ALT is armed, and the AFS CP selected altitude is set to the cruise altitude.

FMA MESSAGE

The following table presents the FMA message, when an altitude hold mode is armed:

Conditions on Altitude *(1)*	**The armed altitude hold mode is:**	**The FMA displays the following message on the second line of the second column:**
The next altitude target is the AFS CP selected altitude. In addition, the AFS CP selected altitude is not set to the cruise altitude. However, the AFS CP selected altitude can be equal to an altitude constraint.	ALT	ALT
All of the following conditions are applicable: - The next altitude target is an altitude constraint - CLB (DES) is engaged, and the AFS CP selected altitude is above (below) the altitude constraint.	ALT CST	ALT
The next altitude target is the cruise altitude. In this case, the AFS CP selected altitude is equal to the cruise altitude. *Note: The cruise altitude is defined on the CRZ panel of the FMS PERF page.*	ALT CRZ	ALT CRZ

(1) *The overall conditions of altitude hold mode arming are presented above.*

DISARMING CONDITIONS

Ident.: DSC-22-FG-70-50-30-00005832.0001001 / 03 DEC 15
Applicable to: ALL

The altitude hold mode disarms when the associated altitude acquire mode engages, or when G/S* engages, or F-G/S*, or APP-DES engages.

L2 The altitude hold mode disarms in the other following cases.

ALT DISARMING

ALT disarms, when one of the following occurs:

- ALT CST arms
  This occurs when: OP CLB (OP DES) is engaged, with the AFS CP selected altitude set above (below) the altitude constraint, and CLB (DES) engages.
- L3 SRS GA engages and the AFS CP selected altitude is below the current aircraft altitude.

L2 ALT CST DISARMING

ALT CST disarms, when one of the following occurs:

- CLB or DES is engaged, and the AFS CP selected altitude becomes the next altitude target
- CLB is engaged, and OP CLB or V/S / FPA engages
- DES is engaged, and OP DES or V/S / FPA engages
- L3 DES is engaged, and SRS GA engages.

L2 ALT CRZ DISARMING

ALT CRZ disarms, when the AFS CP selected altitude is set below the cruise altitude: ALT arms.

ENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-70-50-30-00005833.0001001 / 03 DEC 15
Applicable to: ALL

The altitude hold mode engages, when the altitude acquire mode is engaged, and the aircraft reaches the altitude target.

L2 The aircraft is at the altitude target when the difference between the aircraft altitude and the altitude target is less than 40 ft for more than two seconds.

L3 The altitude hold modes can only engage, if the aircraft is in flight for more than 5 s.

L1 ADDITIONAL SCENARIOS: ALT ENGAGEMENT

ALT engages, when one of the following occurs:

- The flight crew presses the ALT pb.
  L3 This scenario is not possible, if one of the following modes is engaged: LAND, FLARE, SRS GA below 100 ft RA.
- L1 ALT CST is engaged, and the flight crew sets the AFS CP selected altitude to the altitude constraint
- L2 ALT CST is engaged, and NAV disengages
- L3 ALT CST engaged, and the vertical flight plan is lost.

L2 ADDITIONAL SCENARIOS: ALT CST ENGAGEMENT

ALT CST engages, when one of the following occurs:

- The flight crew pushes the ALT knob, and all of the following conditions are applicable:
  - ALT is engaged
  - The aircraft altitude is equal to the altitude constraint
  - The AFS CP selected altitude is set above the aircraft altitude
    L3 The AFS CP selected altitude is at least 250 ft above the aircraft altitude.
  - L2 NAV is engaged
  - The FMS flight phase is neither descent, nor approach
  - L3 The vertical flight plan is valid.

  L2 CLB arms.
- The flight crew pushes the ALT knob, and all of the following conditions are applicable:
  - ALT is engaged
  - The aircraft altitude is equal to the altitude constraint
  - The AFS CP selected altitude is set below the aircraft altitude
    L3 The AFS CP selected altitude is at least 250 ft below the aircraft altitude.
  - L2 One of the following modes is engaged: NAV, LOC*, LOC, LOC B/C*, LOC B/C
  - The FMS flight phase is not one of the following: Takeoff, climb, go-around.

  DES arms.

L3 ADDITIONAL SCENARIOS: ALT CRZ ENGAGEMENT

ALT CRZ engages, when:

- ALT is engaged, and
- The aircraft altitude is equal to the AFS CP selected altitude, and
- The flight crew sets the cruise altitude to the aircraft altitude.

The aircraft is at the cruise altitude if all the following are applicable:

- The difference between the aircraft altitude and the target altitude on the AFS CP is less than 100 ft
- The difference between the target altitude on the AFS CP and the CRZ altitude that is set in the PERF page of the FMS is less than 20 ft.

DISENGAGEMENT CONDITIONS

Applicable to: ALL

Ident.: DSC-22-FG-70-50-30-GDISE-00005834.0001001 / 03 DEC 15

COMMON SCENARIOS

The altitude hold mode disengages, when any other vertical modes engages.

The altitude hold mode disengages, when one of the following occurs:

- The flight crew pulls the ALT knob
  OP CLB or OP DES engages.
- The flight crew pulls or pushes the V/S / FPA knob
  V/S / FPA engages.
- The aircraft reaches the glideslope capture zone, when:
  - LOC* or LOC is engaged, and
  - G/S is armed.

  G/S* engages.
- The aircraft reaches the F-glideslope capture zone, when:
  - LOC*, LOC, F-LOC*, F-LOC is engaged, and
  - F-G/S is armed.

  F-G/S* engages.
- The flight crew engages go-around.
  SRS GA engages.
- The aircraft reaches the APP-DES capture zone, when:
  - NAV is engaged, and
  - APP-DES is armed.

  APP-DES engages.

Ident.: DSC-22-FG-70-50-30-GDISE-00005835.0001001 / 03 DEC 15

ADDITIONAL SCENARIOS: ALT DISENGAGEMENT

ALT disengages, when one of the following occurs:

- The flight crew pushes the ALT knob, and all of the following conditions are applicable:
  - The AFS CP selected altitude is above the aircraft altitude
  - NAV is engaged
  - L3 The vertical flight plan is valid
  - L1 The FMS flight phase is neither descent, nor approach.

  CLB engages.
- The flight crew pushes the ALT knob, and all of the following conditions are applicable:
  - The AFS CP selected altitude is below the aircraft altitude
  - One of the following modes is engaged: NAV, LOC*, LOC, LOC B/C*, LOC B/C
  - L3 The vertical flight plan is valid
  - L1 The FMS flight phase is not one of the following: Takeoff, climb, go-around.

  DES engages.

L2 - The flight crew pushes the ALT knob, and all of the following conditions are applicable:
  - The aircraft altitude is equal to the altitude constraint
  - The AFS CP selected altitude is set above the aircraft altitude

L3 The AFS CP selected altitude is at least 250 ft above the aircraft altitude.

L2
  - NAV is engaged
  - The FMS flight phase is neither descent, nor approach

L3
  - The vertical flight plan is valid.

L2 ALT CST engages.

- The flight crew pushes the ALT knob, and all of the following conditions are applicable:
  - The aircraft altitude is equal to the altitude constraint
  - The AFS CP selected altitude is set below the aircraft altitude

L3 The AFS CP selected altitude is at least 250 ft below the aircraft altitude.

L2
  - One of the following modes is engaged: NAV, LOC*, LOC, LOC B/C*, LOC B/C
  - The FMS flight phase is not one of the following: Takeoff, climb, go-around.

ALT CST engages.

L3 - The aircraft altitude is equal to the AFS CP selected altitude, and the flight crew sets the cruise altitude to the aircraft altitude
ALT CRZ engages.

Ident.: DSC-22-FG-70-50-30-GDISE-00005836.0001001 / 04 MAY 16

ADDITIONAL SCENARIOS: ALT CST DISENGAGEMENT

ALT CST disengages, when one of the following occurs:

- The aircraft sequences the waypoint, for which the altitude constraint is associated
- NAV disengages
  ALT engages.

L3 - The vertical flight plan is lost

L1 - The flight crew sets the AFS CP selected altitude to the altitude constraint
ALT engages.

- The flight crew deletes the altitude constraint.
  CLB or DES engages.

Ident.: DSC-22-FG-70-50-30-GDISE-00005837.0001001 / 03 DEC 15

ADDITIONAL SCENARIOS: ALT CRZ DISENGAGEMENT

ALT CRZ disengages, when the AFS CP selected altitude is below the aircraft altitude, and the flight crew pushes the ALT knob.
DES engages.

General

GENERAL

Ident.: DSC-22-FG-70-60-10-00005838.0002001 / 17 NOV 17
Applicable to: ALL

During descent, OP DES or DES guides the aircraft vertically to an altitude target, or to a glideslope or F-glideslope capture zone.

During automatic emergency descent, EMER DES guides the aircraft vertically to an altitude target.

L2 For more information, *Refer to DSC-22-FG-70-60-40 General*.

L1 V/S / FPA can also descent the aircraft: *Refer to DSC-22-FG-70-70 General*.

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OP DES

GENERAL

Ident.: DSC-22-FG-70-60-20-00005839.0001001 / 06 AUG 14
Applicable to: ALL

Open Descent (OP DES) is a vertical selected mode.
When OP DES is engaged, the AP/FD adjusts the pitch in order to maintain a speed/Mach target (selected or managed). The A/THR then maintains idle thrust.
All the altitude constraints are disregarded.

ENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-70-60-20-00005840.0001001 / 03 DEC 15
Applicable to: ALL

OP DES engages, if the AFS CP selected altitude is below the aircraft altitude, and the flight crew pulls the ALT knob.

DISENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-70-60-20-00005841.0001001 / 03 DEC 15
Applicable to: ALL

OP DES disengages, if one of the following conditions is applicable:

- The aircraft reaches the capture zone of the AFS CP selected altitude
  ALT* engages.
- ALT CRZ is armed, and the aircraft reaches the capture zone of the cruise altitude.
  ALT CRZ* engages.
- The flight crew presses the ALT pb
  ALT engages.
- The flight crew pushes the ALT knob, and all of the following conditions are applicable:
  - One of the following lateral modes is engaged: NAV, LOC*, LOC, LOC BC*, LOC BC
  - L3 The FMS flight phase is cruise or descent
  - The vertical flight plan is valid.

  L1 DES engages.
- The flight crew pulls or pushes the V/S / FPA knob
  V/S / FPA engages.
- The aircraft reaches the glideslope capture zone, when:
  - LOC* or LOC is engaged, and
  - F-G/S is armed.

  G/S* engages.

- The aircraft reaches the glideslope capture zone, when:
  - One of the following modes is engaged: LOC*, LOC, F-LOC*, F-LOC, and
  - G/S is armed.

  F-G/S* engages.
- The flight crew engages go-around.
  SRS GA engages.
- The aircraft reaches the APP-DES capture zone, when:
  - NAV is engaged, and
  - APP-DES is armed

  APP-DES engages.

REVERSION

OP DES reverts to V/S / FPA, if the flight crew sets the AFS CP selected altitude above the aircraft altitude.

When a reversion occurs:
- A triple click audio indicator sounds
- The new guidance mode appears with a white box during 10 s
- The FD bars flash for 10 s.

DES

GENERAL

Ident.: DSC-22-FG-70-60-30-00005842.0001001 / 06 AUG 14
Applicable to: ALL

DES is a managed vertical mode.
DES guides the aircraft vertically along the vertical flight plan. All the altitude constraints, associated to waypoints, are taken into account.
When DES is engaged in idle path, the AP/FD adjusts the pitch in order to maintain a speed/Mach target (selected or managed). The A/THR then maintains idle thrust.
When DES is engaged in geometric path, the AP/FD controls the vertical trajectory. The A/THR is then in SPEED/MACH.

ARMING CONDITIONS

Ident.: DSC-22-FG-70-60-30-00005843.0001001 / 03 DEC 15
Applicable to: ALL

DES can arm only when:
- The altitude set on the AFS CP is below the aircraft altitude
- NAV is armed, or engaged
- APP-DES, LAND, FLARE, or ROLL OUT are not engaged.
- L2 The FMS flight phase is cruise, descent, or approach and the vertical flight path is valid

L1 DES arms, when one of the following occurs:
- DES is previously engaged, and ALT CST* engages
- ALT*, ALT CST*, ALT CRZ*, ALT, ALT CST, or ALT CRZ is engaged, the flight crew pushes the ALT knob and the FMS authorizes DES to arm in accordance with the flight plan.

DISARMING CONDITIONS

Ident.: DSC-22-FG-70-60-30-00005844.0001001 / 04 MAY 16
Applicable to: ALL

DES disarms, when one of the following occurs:
- NAV, LOC*, LOC, F-LOC, or F-LOC* disengages
- One of the following modes engages: TCAS, OP DES, V/S / FPA, ALT, G/S*, F-G/S*, G/S, F-G/S, LAND, FLARE, or SRS GA.
- L2 ALT CSTR* engages, and the altitude set on the AFS CP is the altitude constraint
- L3 The flight crew sets an altitude on the AFS CP above the aircraft altitude
- The vertical flight plan is lost

ENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-70-60-30-00005845.0001001 / 06 AUG 14
Applicable to: ALL

DES engages, when one of the following occurs:

- ALT CSTR is engaged with DES armed, and the aircraft sequences ALT CSTR waypoint
- The flight crew pushes the ALT knob, and all of the following conditions are applicable:
  - The AFS CP selected altitude is below the aircraft altitude
  - One of the following lateral modes is engaged: NAV, LOC*, LOC, LOC BC*, LOC BC, F-LOC*, F-LOC
  - One of the following vertical modes is engaged: OP DES, V/S / FPA, ALT, ALT*, ALT CST, ALT CST*, ALT CRZ, ALT CRZ*, APP-DES, TCAS
  - L3 The FMS flight phase is cruise, descent, or approach
  - The vertical flight plan is valid.

  However, DES will not engage, if one of the following modes is engaged: G/S*, G/S, F-G/S*, F-G/S, LAND.

DISENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-70-60-30-00005846.0001001 / 03 DEC 15
Applicable to: ALL

DES disengages, when one of the following occurs:

- The aircraft reaches the capture zone of the AFS CP selected altitude
  ALT* engages.
- The aircraft reaches the capture zone of the altitude constraint
  ALT CST* engages.
- The flight crew presses the ALT pb
  ALT engages.
- The flight crew pulls the ALT knob
  OP DES engages.
- The flight crew pulls the V/S / FPA knob
  V/S / FPA engages.
- The aircraft reaches the glideslope capture zone when:
  - LOC* or LOC is engaged, and
  - G/S is armed.

  G/S* engages.
- The aircraft reaches the F-glideslope capture zone when:
  - One of the following modes is engaged: LOC*, LOC, F-LOC*, F-LOC, and
  - F-G/S is armed.

  F-G/S* engages.

- The flight crew engages a go-around.
  SRS GA engages.
- The aircraft reaches the APP-DES capture zone, when:
  - NAV is engaged, and
  - APP-DES is armed.

  APP-DES engages.

REVERSIONS

DES reverts to V/S / FPA, when one of the following occurs:
- The flight crew sets the AFS CP selected altitude above the aircraft altitude
- One of the following modes was engaged, and disengages: NAV, LOC*, LOC, LOC BC*
- L3 The vertical flight plan is lost.

L1 A triple click audio indicator sounds. The FD pitch bar flashes for 10 seconds.

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EMER DES

GENERAL

Ident.: DSC-22-FG-70-60-40-00023928.0001001 / 26 FEB 19
Applicable to: ALL

The Emergency Descent function uses combined lateral and vertical modes to perform an assisted Automatic Emergency Descent (AUTO EMER DESCENT) down to the highest altitude between FL 100 and current MORA plus an envelope margin.
The EMER DES mode has the same vertical guidance as the OP DES mode coupled with usual HDG and THR IDLE modes, with an automatic setting of the AFS CP altitude, heading and speed targets.

In addition, when EMER DES mode engages:
- The FDs engage, if not already engaged
- The A/THR automatically activates, if not already activated
- The AP engages, if not already engaged, if EMER DES was automatically armed
- The speed brakes automatically fully extend if EMER DES was automatically armed
- The XPDR automatically squawks the emergency 7700 transponder code
- The TCAS display mode is automatically set to BLW.

Two types of AUTO EMER DESCENT function arming exist:
- The manual arming of the AUTO EMER DESCENT function via dedicated controls (i.e. the EMER DESCENT pb and the speed brakes lever).
  It aims at assisting the flight crew to perform an emergency descent. *Refer to DSC-22-FG-70-110-130 AUTO EMER DESCENT with manual arming*.
- The automatic arming of the AUTO EMER DESCENT function.
  It aims at performing an automatic emergency descent with engagement of the AP/FDs following a severe cabin decompression. The purpose is to cover a possible flight crew incapacitation situation. *Refer to DSC-22-FG-70-110-130 AUTO EMER DESCENT with automatic arming*.

During the AUTO EMER DESCENT, the AP/FD TCAS has priority over the EMER DES mode. When clear of conflict, the AUTO EMER DESCENT function automatically arms again, if automatic arming conditions are still applicable (i.e.: The cabin altitude is still predicted to increase above 14 000 ft in the next 15 s). *Refer to DSC-22-FG-70-110-130 TCAS during AUTO EMER DESCENT*.
When the AUTO EMER DESCENT is completed, the AP/FD guidance reverts to ALT mode to maintain the targeted altitude, and keeps HDG mode. Speed brakes retract to the speed brake lever position if automatically extended, and the speed target is automatically set to Green Dot.

MORA with envelope margin

To ensure sufficient margin versus the terrain at the end of the emergency descent procedure, the altitude target sent to the AFS CP is the FMS Grid MORA corrected by an envelope margin.

This envelope margin takes into account potential large deviation of temperature below standard and low atmospheric barometric pressure.
The value of the envelope margin (between 3 000 ft and 6 000 ft) depends on the FMS grid MORA.
This FMS Grid MORA with envelope margin is referred to as the MORA $_{d\ ISA\ /dP}$ in the FCOM.

Note: The FMS MORA which is displayed on the ND and the VD has no added margin.

ARMING CONDITIONS

Ident.: DSC-22-FG-70-60-40-00023929.0001001 / 01 JUN 17
Applicable to: ALL

The AUTO EMER DESCENT function arms:

- Manually, when the flight crew presses the EMER DESCENT pb, and the aircraft flies above the highest altitude between FL 100 and current MORA$_{dISA/dP}$.
  The ARM indication appears steady on the EMER DESCENT pb.
  EMER DESCENT ARMED message appears on the PFD and on the HUD ◁ .
  L2 If neither CAB PRESS EXCESS CAB ALT nor MISC EMER DESCENT ECAM alert is already displayed, the AUTO FLT EMER DESCENT ECAM alert triggers.

  L1 *Note: The EMER DESCENT ARMED message on the PFD indicates that the flight crew has initiated the manual arming of the AUTO EMER DESCENT function. The AUTO EMER DESCENT function activates only if the flight crew extends the speed brakes.*

- Automatically, when the cabin altitude is predicted to increase above 14 000 ft in the next 15 s.
  L3 For airports with an elevation above 12 000 ft, the cabin altitude threshold for automatic arming of the AUTO EMER DESCENT function is equal to the cabin altitude at the airport plus 2 000 ft. However, the threshold will not exceed a cabin altitude of 18 000 ft.
  L1 The ARM indication flashes on the EMER DESCENT pb.
  AUTO EMER DES IN XX S countdown message appears on the PFD and on the HUD ◁ , to indicate that EMER DES automatically engages at the end of the 15 s countdown.
  The FMA displays EMER DES mode.
  L2 When TCAS disengages upon “CLEAR OF CONFLICT” aural alert, the AUTO EMER DESCENT function arms again automatically, if conditions are still applicable.

DISARMING CONDITIONS

Ident.: DSC-22-FG-70-60-40-00023930.0001001 / 08 JUL 19
Applicable to: ALL

If the AUTO EMER DESCENT function was manually armed (i.e. EMER DESCENT ARMED message on the PFD and HUD ◁), the function disarms when one of the following conditions occurs:

- EMER DES engages
- The flight crew presses one time the EMER DESCENT pb.

If the AUTO EMER DESCENT function was automatically armed (i.e. EMER DES on FMA and AUTO EMER DES IN XX S message on the PFD and HUD ◁), the function disarms when one of the following conditions occurs:

- EMER DES engages
- The flight crew presses two times the EMER DESCENT pb

L2 The first action on the EMER DESCENT pb arms the function. Second action disarms the function.

L1 - TCAS engages.

L2 The AUTO EMER DESCENT function automatically disarms when the aircraft altitude is below the highest altitude between FL 100 and current $\text{MORA}_{\text{dISA/dP}}$.

ENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-70-60-40-00023931.0001001 / 08 JUL 19
Applicable to: ALL

EMER DES engages when one of the following conditions is applicable:

- If the AUTO EMER DESCENT function was manually armed (i.e. EMER DESCENT ARMED message on the PFD and HUD ◁), the flight crew sets the speed brake lever to at least 1/3 position.
- If the AUTO EMER DESCENT function was automatically armed (i.e. EMER DES on FMA and AUTO EMER DES IN XX S message on the PFD and HUD ◁):
  - During the 15 s countdown, the flight crew presses the EMER DESCENT pb, and sets the speed brake lever to at least 1/3 position, or
  - At the end of the 15 s countdown.

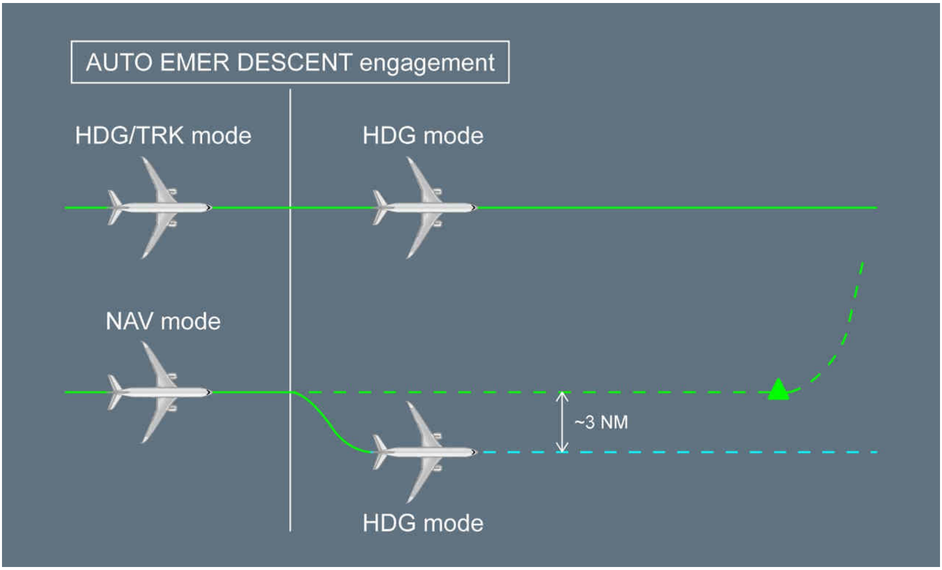
When EMER DES engages, all of the following automatically occurs:

- FDs engage, if not already engaged
- A/THR activates, if not already active, and maintains idle thrust
- The AFS CP managed speed target is set to VMAX – 5 kts

- Lateral guidance reverts to HDG, if not already engaged:
  - The triple click audio indicator sounds
  - If previously in NAV, a right offset of approximately 3 NM is automatically performed along current FMS F-PLN leg.

L2 The HDG/TRK window indicates the HDG target, which changes according to the lateral guidance to reach the offset of approximately 3 NM.

L1
  - If previously in TRK.



- AFS CP selected altitude is set to the highest altitude between FL 100 and current MORA$_{dISA/dP}$
- All altitude constraints are disregarded
- The ARM indication on the EMER DESCENT pb disappears
- XPDR squawks the emergency 7700 transponder code
- TCAS display mode is set to BLW.

In addition, when EMER DES engages after an automatic arming, the following automatically occurs:

- AP engages, if not already engaged
- Speed brakes fully extend
- AUTO EMER DES ENGAGED message appears on PFD, and on HUD ◁ .

L2 The AUTO EMER DES ENGAGED message informs the flight crew under recovery of a previous incapacitation that an AUTO EMER DESCENT is in progress.

DISENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-70-60-40-00023932.0001001 / 08 JUL 19
Applicable to: ALL

EMER DES disengages when one of the following conditions is applicable:
- TCAS engages
- The flight crew engages another vertical mode.

  When EMER DES disengages after an automatic arming, the following occurs:
  - The speed brakes automatically return to the current SPEED BRAKE lever position
  - AUTO EMER DES ENGAGED message on the PFD and on the HUD ◁ disappears.
- At the end of the AUTO EMER DESCENT.

  When EMER DES disengages, the following occurs:
  - ALT* engages
  - The speed brakes automatically return to the current SPEED BRAKE lever position
  - Aircraft decelerates to Green Dot speed computed with speed brakes extended.

    L2 Green Dot speed with speed brakes extended is 13 kt above Green Dot speed for clean configuration.
  - L1 The AUTO EMER DES COMPLETED message replaces the AUTO EMER DES ENGAGED message if displayed on the PFD and on the HUD ◁ .

    L2 The AUTO EMER DES COMPLETED message remains displayed until the flight crew either:
    - ■ Changes any AFS CP target, or
    - ■ Selects another AFS mode, or
    - ■ Voluntarily disconnects the AP.

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GENERAL

Ident.: DSC-22-FG-70-70-00005847.0001001 / 03 JUL 20
Applicable to: ALL

1 V/S and FPA are selected vertical modes. They are the basic modes of vertical guidance.
V/S / FPA acquires and holds the vertical speed or the flight path angle, that is displayed in the V/S / FPA window of the AFS CP. For more information, *Refer to DSC-22-FG-90-20 V/S / FPA Window*.
When V/S or FPA mode engages following a reversion, the V/S / FPA target is the current V/S / FPA of the aircraft, or the preselected V/S / FPA.

ENGAGEMENT CONDITIONS

Applicable to: ALL

Ident.: DSC-22-FG-70-70-GENG-00005848.0001001 / 04 MAY 16

V/S / FPA engages, when one of the following occurs:
- The flight crew pushes or pulls the V/S / FPA knob

L3 V/S / FPA will not engage, if LAND is engaged, or SRS GA is engaged below 100 ft RA.

L1
- The APs and FDs are disengaged, and the flight crew engages the FDs or the AP HDG/TRACK also engages.
  If the flight crew engages the FD, the FD pitch and roll bars flash for 10 s.

L2
- V/S / FPA can only engage if the aircraft is airborne for 5 seconds
- 5 s after take off with no vertical modes

L3
- No vertical mode is engaged, and the flight crew engages the FDs

L1
- A reversion to V/S / FPA occurs.

V/S or FPA engages, in accordance with the HDG-V/S / TRK-FPA selection. For more information about the HDG-V/S / TRK-FPA selection: *Refer to DSC-22-FG-70-30-20 HDG-V/S / TRK-FPA Selection*.

Ident.: DSC-22-FG-70-70-GENG-00005849.0001001 / 03 DEC 15

REVERSIONS TO V/S / FPA

A vertical mode reverts to V/S / FPA, when one of the following occurs:
- OP DES, or DES is engaged, and the AFS CP selected altitude is set above the aircraft altitude
- OP CLB, or CLB is engaged, and the AFS CP selected altitude is set below the aircraft altitude
- DES is engaged and one of the following mode disengages: NAV, LOC, LOC*, F-LOC, F-LOC*
- APP-DES is engaged and NAV disengages.

L3
- The vertical flight plan is lost, when one of the following modes is engaged: DES, APP-DES

L1
- G/S* or G/S is engaged, and LOC* or LOC disengages
- F-GS* or F-G/S is engaged, and F-LOC* or F-LOC disengages

- The flight crew presses the LOC pb, or the APPR pb, when F-G/S*, F-G/S, G/S* or G/S is engaged.
- ALT* is engaged, and the flight crew modifies the AFS CP selected altitude
- L3 The flight crew changes the approach, when one of the following vertical approach mode is engaged:
  - APP-DES is engaged
  - G/S* or G/S is engaged, and the aircraft is below 700 ft RA
  - F-G/S* or F-G/S is engaged.

L1 The TCAS mode can also disengage to revert the V/S mode. For more information about TCAS reversion, *Refer to DSC-22-FG-70-100-40 Consequence on AP/FD Vertical Mode*.

DISENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-70-70-00005850.0001001 / 03 DEC 15
Applicable to: ALL

V/S / FPA disengages, when one of the following occurs:

- The aircraft reaches the capture zone of the AFS CP selected altitude
  ALT* engages.
- ALT CRZ is armed, and the aircraft reaches the capture zone of the cruise altitude
  ALT CRZ* engages.
- The flight crew pulls the ALT knob
  OP CLB or OP DES engages.
- The flight crew pushes the ALT knob
  - NAV engages
  - The AFS CP selected altitude is above the aircraft altitude
  - L3 The FMS flight phase is neither descent, nor approach
  - The vertical flight plan is valid.

  L1 CLB engages.
- The flight crew pushes the ALT knob
  - One of the following modes is engaged: NAV, LOC*, LOC, LOC BC*, LOC BC, F-LOC*, F-LOC
  - The AFS CP selected altitude is below the aircraft altitude
  - L3 The FMS flight phase is cruise, or descent
  - The vertical flight plan is valid.

  L1 DES engages.
- The flight crew presses the ALT pb
  ALT engages.
- The aircraft reaches the glideslope capture zone when:
  - LOC* or LOC is engaged
  - G/S is armed.

  G/S* engages.

- The aircraft reaches the F-glideslope capture zone when:
  - LOC*, LOC, F-LOC*, F-LOC is engaged
  - F-G/S is armed.

  F-G/S* engages.
- The flight crew engages go-around.

  SRS GA engages.
- The aircraft reaches the APP-DES capture zone, when:
  - NAV is engaged, and
  - APP-DES is armed

  APP-DES engages.

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General

APPROACH OVERVIEW

Applicable to: ALL

Ident.: DSC-22-FG-70-80-00-G00-00005851.0001001 / 09 MAR 16

Flight guidance can guide the aircraft on different types of approaches with:
- LOC and G/S type of guidance for :
  - ILS approach
  - GLS ◁ approach
  - RNAV(GNSS) approach with LPV minima (with SLS ◁ option)
- LOC and FPA type of guidance for RNAV(GNSS) with LP minima (with SLS ◁ function)
- F/LOC or LOC and F/GS type of guidance, for :
  - RNAV(GNSS) with LNAV/VNAV or LNAV only minima
  - Navaids approaches (e.g. VOR, VOR/DME...)
  - ILS approach with glideslope failed
  - LOC only approach with no ILS glideslope
  - LOC B/C approach

Note: *The FLS guidance is only available if FLS parameters associated to the selected approach are available in the FMS database.*

- NAV and APP-DES type of guidance, for RNAV (RNP) approach.

Ident.: DSC-22-FG-70-80-00-G00-00012939.0001001 / 09 MAR 16

APPROACH SELECTION

STANDARD SELECTION

The flight crew selects the approach via the FMS ARRIVAL page.
L2 For more information about approach selection, *Refer to DSC-22-FMS-20-20-20 APPR Button*.

L1 MANUAL TUNING ON THE FMS

If the flight crew manually-tunes a Landing System (LS) approach on the FMS POSITION / NAVAIDS page, the flight guidance system will guide the aircraft on the manually-tuned approach.

If the approach selected on the FMS ARRIVAL page and the LS approach set on the FMS POSITION / NAVAIDS page are different:

- The approach selected on the FMS ARRIVAL page is disregarded, and the CHECK APPR SEL message is displayed on the FMA, and on the FMS message area
  - For more information on FMS message area, *Refer to DSC-22-FMS-20-20-20 LS IDENT Entry Field*
  - For more information on FMA messages, *Refer to DSC-22-FMS-20-40 FMS Messages*.
- The aircraft will fly the manually-tuned LS approach on the FMS POSITION / NAVAIDS page.

Note: *The manual selection is not available for RNAV(GNSS) with LPV minima (with SLS option).*

For more information about manual selection of approach on FMS, *Refer to DSC-22-FMS-20-20-20 LS IDENT Entry Field*.

MANUAL TUNING ON THE RMP (BACKUP)

If all the FMCs are fault, the flight crew selects the RAD NAV pb to STBY on the RMP 1 or 2, in order to manually-tune the frequency and the course of a NAVAIDS approach, a GLS approach, or an ILS approach.

SELECTION IN THE MMRS RECEIVERS

When an approach is selected on the FMS ARRIVAL page, or manually-tuned on FMS POSITION / NAVAIDS page, or via the RMP, the approach frequency and course are sent to both MMRs receivers.
In case of discrepancy between both MMRs the NAV LS TUNING DISAGREE (*Refer to procedure*) triggers.

Note: *Below 700 ft RA, when an approach mode is engaged, the flight guidance system freezes the LS selection in the MMR. As a result, the MMR does not take into account any change of the LS selection.*

ILS/GLS (IF INSTALLED)/SLS (IF INSTALLED) GUIDANCE MODE

Applicable to: ALL

Ident.: DSC-22-FG-70-80-00-G10-00005852.0001001 / 09 MAR 16

ILS GUIDANCE MODE

An ILS guidance mode uses the Localizer and Glideslope signals from localizer antennas and a glideslope antenna on ground.
The MMR computes the ILS lateral and vertical angular deviations.

L1 The ILS lateral deviation is referred to as the LOC deviation, and the ILS vertical deviation is referred to as the G/S deviation.
The Flight Guidance uses the LOC and G/S deviations in order to fly the aircraft along the LOC and G/S beams.

APPROACH MODES

The ILS guidance modes are:

	Lateral Guidance	**Vertical Guidance**
Above 400 ft RA	LOC*: Capture of the LOC beam LOC: Track of the LOC beam.	G/S*: Capture of the G/S beam G/S: Track of the G/S beam.
Below 400 ft RA, and until end of roll out	LAND: Track of LOC and G/S beams for autoland. FLARE: Alignment of the yaw axis on the runway centerline, and flare on the pitch axis ROLL OUT: Track of the runway centerline, and nose down.	

APPROACH AND LANDING CAPABILITY

In accordance with the approach minima and the landing technique, minimum approach and landing capabilities is required.
L2 For more information about approach capability, *Refer to DSC-22-FG-80 General*.

Ident.: DSC-22-FG-70-80-00-G10-00005855.0003001 / 09 MAR 16

GLS ◁ GUIDANCE MODE

The Ground Based Augmentation System (GBAS) Landing System (GLS ◁) guidance mode uses the Global Navigation Satellite System (GNSS) position with a correction and integrity signal from a ground station also known as Ground Based Augmentation System (GBAS).
L2 The MMR computes the GLS ◁ deviations.
L1 The GLS ◁ lateral deviation is referred to as the LOC deviation, and the GLS ◁ vertical deviation is referred to as the G/S deviation.

Note: *The computed lateral and vertical deviations are available up to 20 NM from the runway threshold.*

The Flight Guidance uses the LOC and G/S deviations in order to fly the aircraft along the LOC and G/S approach path, like ILS.

APPROACH MODES

The GLS ◁ guidance modes are:

Height	Lateral Guidance	Vertical Guidance
Above 400 ft RA	LOC*: Capture of the LOC beam LOC: Track of the LOC beam.	G/S*: Capture of the G/S beam G/S: Track of the G/S beam.
Below 400 ft RA, and until end of roll out	LAND: Track of LOC and G/S beams for autoland. FLARE: Alignment of the yaw axis on the runway centerline, and flare on the pitch axis ROLL OUT: Track of the runway centerline, and nose down.	

APPROACH AND LANDING CAPABILITY

In accordance with the approach minima and the landing technique, minimum approach and landing capabilities is required.

L2 For more information about approach capability, *Refer to DSC-22-FG-80 General*.

Ident.: DSC-22-FG-70-80-00-G10-00012751.0002001 / 09 MAR 16

SLS ◁ GUIDANCE MODE

The Satellite Landing System (SLS ◁) guidance mode uses the Global Navigation Satellite System (GNSS) position with correction and integrity monitoring signal from satellite constellations, also known as Satellite Based Augmentation System (SBAS).
The SLS ◁ guidance mode enables the flight crew to fly an RNAV(GNSS) straight-in approach with LPV minima, or LP minima with the LOC guidance mode only.

L2 The MMR computes the SLS ◁ deviations.

L1 The SLS ◁ lateral deviation is referred to as the LOC deviation. The SLS ◁ vertical deviation is referred to as the G/S deviation.
The Flight Guidance uses the LOC and G/S deviations in order to fly the aircraft along the LOC and G/S approach path, like ILS.

APPROACH MODES

The SLS ◁ guidance modes are:

Height	Lateral Guidance	Vertical Guidance
Above 400 ft RA	LOC*: Capture of the LOC beam LOC: Track of the LOC beam.	G/S*: Capture of the G/S beam G/S: Track of the G/S beam.
Below 400 ft RA	FLARE: Alignment of the yaw axis on the runway centerline, and flare on the pitch axis ROLL OUT: Track of the runway centerline, and nose down	

APPROACH AND LANDING CAPABILITY

In accordance with the approach minima and the landing technique, minimum approach and landing capabilities is required.

L2 For more information about approach capability, *Refer to DSC-22-FG-80 General*.

Ident.: DSC-22-FG-70-80-00-G10-00012946.0001001 / 03 JUL 20

1 APPROACH SEQUENCE

The sequence to fly an approach is the following:

1. The flight crew selects the approach on the FMS ARRIVAL page.
2. The flight crew presses the LS pb to display the deviation scale on the PFD and the approach and landing capability on the FMA.

   Note: *The final capability appears when the AP(s) are engaged and the APPR pb is pressed.*

3. The FMS approach phase activates:
   - Manually, when the flight crew clicks on the ACTIVATE APPR on the FMS PERF page, or
   - Automatically, when NAV is engaged, and the aircraft flies the DECEL pseudo waypoint.

   For more information on the activation of the FMS approach phase, *Refer to DSC-22-FMS-10-50-30 Overview*.

   Then, the managed speed target becomes Green Dot, S, F, and VAPP corrected from the Ground Speed Mini function, in accordance with the slats/flaps configuration. For more information, *Refer to DSC-22-FG-60-20 Managed Speed/Mach Target*.
4. The flight crew presses the APPR pb on the AFS CP:
   - LOC and G/S arm
   - The flight crew can engage the second AP, if applicable.

   Note: *The final approach and landing capability is then available. Nevertheless, the approach capability can change during the approach.*

5. The aircraft reaches the capture zone of the LOC beam: LOC* engage.
6. The aircraft becomes established on the LOC beam: LOC engage.
7. The aircraft reaches the capture zone of the G/S beam: G/S* engages.

   L2 Note: *G/S* can also engage before LOC engagement, when LOC* is engaged.*

8. L1 The aircraft becomes established on the G/S beam: G/S engages.

   L2 Note: *G/S can only engage, when LOC is engaged.*

9. L1 At 400 ft RA, LAND engages.

   Note: *LAND is not displayed on the FMA if the approach and landing capability is APPR1*

10. At 150 ft the DISCONNECT AP FOR LANDING message appears if the landing capability is APPR1
11. Depending on the approach category, the flight crew can disengage all AP at Decision Height (DH) to land manually.
12. At approximately 60 ft RA, FLARE engages.

13. At touchdown, ROLL OUT engages.
14. At the end of the roll out, if an autoland is performed, the flight crew disengages the AP.

Note: *At the step 3, the flight crew can press the LOC pb instead of the APPR pb to intercept the LOC guidance first: LOC arms, LOC* engages, and LOC engages.*
When ready to intercept the G/S guidance, the flight crew presses the APPR pb: G/S arms, G/S engages, and G/S engages.*

APPROACH WITH FLS GUIDANCE

Applicable to: ALL

Ident.: DSC-22-FG-70-80-00-G20-00005858.0001001 / 02 OCT 14

FLS FUNCTION AVAILABILITY

The FLS function is available, if the flight crew selects:
- A VOR, RNV, GNSS, LOC or BAC approach on the FMS ARRIVAL page

L3 The FLS function is not available for SDF, IGS without glide, and LDA approaches.

L1
- An ILS approach on the FMS ARRIVAL page, and deselects the G/S via the DESELECT GLIDE button on the FMS POSITION / NAVAIDS page.

However, the FLS function is not available, if:
- The Missed Approach Point (MAP) is before the runway threshold, and
- The difference between the final approach course and the runway course is more than 50°.

If the FLS function is not available for an approach, the NO FLS FOR THIS APPR message appears on the FMS message area.

Ident.: DSC-22-FG-70-80-00-G20-00005856.0001001 / 09 MAR 16

APPROACHES FLOWN WITH LATERAL AND VERTICAL FLS GUIDANCE

The flight crew can use the FLS function to fly the following approaches with a lateral and vertical FLS guidance :
- NAVAIDS approaches (e.g. VOR, VOR/DME...)
- RNAV approach,
- RNAV(GNSS) approach with LNAV/VNAV or LNAV minima only.

L2 The MMR computes the FLS deviations.

L1 The FLS function provides the flight crew with flight guidances like ILS, with:
- A pseudo LOC deviation, referred to as F-LOC deviation
- A pseudo G/S deviation, referred to as F-G/S deviation.

L2 For more information on the definition of the FLS beam, FLS Beam Computation. *Refer to DSC-22-FMS-10-30-40 FLS Beam Computation*

L1 **APPROACH MODES**

The approach modes are:

Lateral Guidance	Vertical Guidance
F-LOC*: Capture of F-LOC beam	F-G/S*: Capture of F-G/S beam
F-LOC: Track of F-LOC beam.	F-G/S: Track of F-G/S beam.

L2 These approach modes use the same guidance laws as LOC*, LOC, G/S*, and G/S modes.

Ident.: DSC-22-FG-70-80-00-G20-00005857.0001001 / 02 OCT 14

APPROACHES FLOWN WITH VERTICAL FLS GUIDANCE

The flight crew can use the FLS function to fly the following approaches with a vertical FLS guidance:
- ILS approach with glideslope out,
- LOC only approach,
- LOC B/C approach

L2 The MMR computes the FLS deviations.

L1 The FLS function provides the flight crew with flight guidances like ILS, with:
- A LOC ILS deviation
- A pseudo G/S deviation, referred to as F-G/S deviation.

APPROACH MODES

The approach modes are:

Type of Approach	Lateral Guidance	Vertical Guidance
ILS with glideslope out	LOC*: Capture of the LOC beam LOC: Track of the LOC beam.	F-G/S*: Capture of the F-G/S beam F-G/S: Track of the F-G/S beam.
LOC only		
LOC B/C	LOC B/C*: Capture of the LOC beam LOC B/C: Track of the LOC beam.	

Ident.: DSC-22-FG-70-80-00-G20-00005859.0001001 / 03 DEC 15

APPROACH SEQUENCE FOR NPA FLOWN WITH FLS FUNCTION

The sequence to fly an approach with the FLS function, is the following:
1. The flight crew selects the approach on the FMS ARRIVAL page.
2. The flight crew presses the LS pb on the EFIS CP: The LS deviations appear on the PFD, and the FLS approach and landing capability appears on the FMA.

3. The FMS approach phase activates:
   - Manually, when the flight crew clicks on the ACTIVATE APPR on the FMS PERF page, or
   - Automatically, when NAV is engaged, and the aircraft flies the DECEL pseudo waypoint.

   Note: *The approach phase also activates when the aircraft flies the DECEL pseudo waypoint, if the flight crew pressed the LOC pb and F-LOC*, LOC*, LOC B/C*, F-LOC, LOC, or LOC B/C is engaged.*

   For more information on the activation of the FMS approach phase, *Refer to DSC-22-FMS-10-50-30 Overview*.
   Then, the managed speed target becomes Green Dot, S, F, and VAPP corrected from the Ground Speed Mini function, in accordance with the slats/flaps configuration. For more information, *Refer to DSC-22-FG-60-20 Managed Speed/Mach Target*.
4. The flight crew presses the APPR pb on the AFS CP: F-LOC, LOC, or LOC B/C arms, and F-G/S arms.
5. The aircraft reaches the capture zone of F-LOC, LOC or LOC B/C beam: F-LOC*, LOC*, or LOC B/C* engages.
6. The aircraft becomes established on the F-LOC, LOC or LOC B/C beam: F-LOC, LOC, or LOC B/C engages.
7. The aircraft reaches the capture zone of F-G/S beam: F-G/S* engages.

   Note: *F-G/S* can also engage, when F-LOC*, LOC*, or LOC B/C* is engaged.*
8. The aircraft becomes established on the F-G/S beam: F-G/S engages.
9. At the Minimum Descent Altitude (MDA), the flight crew disengages the AP and the FDs
10. At 150 ft, if one AP is still engaged, the DISCONNECT AP FOR LDG message appears on the FMA.
11. The flight crew manually lands the aircraft.

Note: *At the step 4, the flight crew can press the LOC pb instead of the APPR pb in order to intercept the F-LOC, LOC or LOC B/C beam first: F-LOC, LOC, or LOC B/C arms, F-LOC*, LOC*, or LOC B/C* engages, and F-LOC, LOC, or LOC B/C engages.*
When ready to intercept the F-G/S beam, the flight crew presses the APPR pb: F-G/S arms, F-G/S engages, and F-G/S engages.*

APPROACH WITHOUT FLS GUIDANCE

Applicable to: ALL

Ident.: DSC-22-FG-70-80-00-G30-00005860.0001001 / 02 OCT 14

NAVAIDS, OR RNAV APPROACH FLOWN WITHOUT FLS FUNCTION

APPROACH MODES

The flight crew can also fly an approach based on NAVAIDS or RNAV(GNSS):
- In NAV, with selected vertical modes
- In selected vertical and lateral modes.

APPROACH SEQUENCE

The approach sequence is the following:
1. The flight crew selects the approach on the FMS ARRIVAL page (VOR, RNV, GNSS...).
2. The FMS approach phase activates:
    - Manually, when the flight crew clicks on the ACTIVATE APPR on the FMS PERF page, or
    - Automatically, when NAV is engaged, and the aircraft flies the DECEL pseudo waypoint.
    Then, the managed speed target becomes Green Dot, S, F, and VAPP corrected from the Ground Speed Mini function, in accordance with the slats/flaps configuration.

Note: In this case, the flight crew does not press the LOC pb or APPR pb.

Ident.: DSC-22-FG-70-80-00-G30-00005861.0001001 / 02 OCT 14

ILS WITH GLIDE SLOPE OUT, LOC ONLY, OR LOC B/C APPROACH FLOWN WITHOUT FLS FUNCTION

The aircraft can fly an ILS with the glide slope out, a LOC only, or a LOC B/C approach without the FLS function.

APPROACH MODES

The approach modes are:

Type of Approach	Lateral Guidance	Vertical Guidance
ILS with glide slope out	LOC*: Capture of the LOC beam LOC: Track of the LOC beam.	ALT*, ALT FPA (or V/S)
LOC only		
LOC B/C	LOC B/C*: Capture of the LOC beam LOC B/C: Track of the LOC beam.	

APPROACH SEQUENCE

The sequence to fly the approach without the FLS function is:

1. The flight crew selects the approach on the FMS ARRIVAL page.
2. The FMS approach phase activates:
   - Manually, when the flight crew clicks on the ACTIVATE APPR on the FMS PERF page, or
   - Automatically, when NAV is engaged, and the aircraft flies the DECEL pseudo waypoint.

   Note: *The approach phase also activates when the aircraft flies the DECEL pseudo waypoint, if the flight crew pressed the LOC pb and , LOC*, LOC B/C*, LOC, or LOC B/C is engaged.*

   Then, the managed speed target becomes Green Dot, S, F, and VAPP corrected from the Ground Speed Mini function, in accordance with the slats/flaps configuration.
3. The flight crew presses the LOC pb on the AFS CP: LOC, or LOC B/C arms. The flight crew manages the vertical guidance by using selected vertical modes: ALT*, ALT.
4. The aircraft reaches the capture zone of the LOC or LOC B/C beam: LOC*, or LOC B/C* engages.
5. The aircraft becomes established on the LOC or LOC B/C beam: LOC, or LOC B/C engages.
6. The flight crew manually manages the vertical path with the V/S or FPA mode.
7. At the Minimum Descent Altitude (MDA), if one AP is engaged, the flight crew disengages the AP.
8. At 150 ft, if one AP is still engaged, the DISCONNECT AP FOR LDG message appears on the FMA.
9. The flight crew manually lands the aircraft.

LOC* Mode

GENERAL

Ident.: DSC-22-FG-70-80-10-00005862.0001001 / 09 MAR 16
Applicable to: ALL

The Localizer capture (LOC*) mode captures the localizer beam of the ILS(GLS ⊲)(SLS ⊲).

ARMING AND DISARMING CONDITIONS

Ident.: DSC-22-FG-70-80-10-00005863.0001001 / 02 OCT 14
Applicable to: ALL

LOC* and LOC modes arm (disarm) together and simultaneously.
As a consequence, LOC* arms with the LOC indication on the FMA.
L2 For LOC arming conditions, *Refer to DSC-22-FG-70-80-20 Arming Conditions*.
For LOC disarming conditions, *Refer to DSC-22-FG-70-80-20 Disarming Conditions*.

ENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-70-80-10-00005864.0001001 / 29 SEP 16
Applicable to: ALL

LOC* engages, when LOC is armed, and the aircraft reaches the capture zone, or the pre-capture zone of the LOC beam.

PRE-CAPTURE OF THE LOC BEAM

The aircraft uses the aircraft position and the FMS trajectory to provide guidance in order to pre-capture the LOC beam.

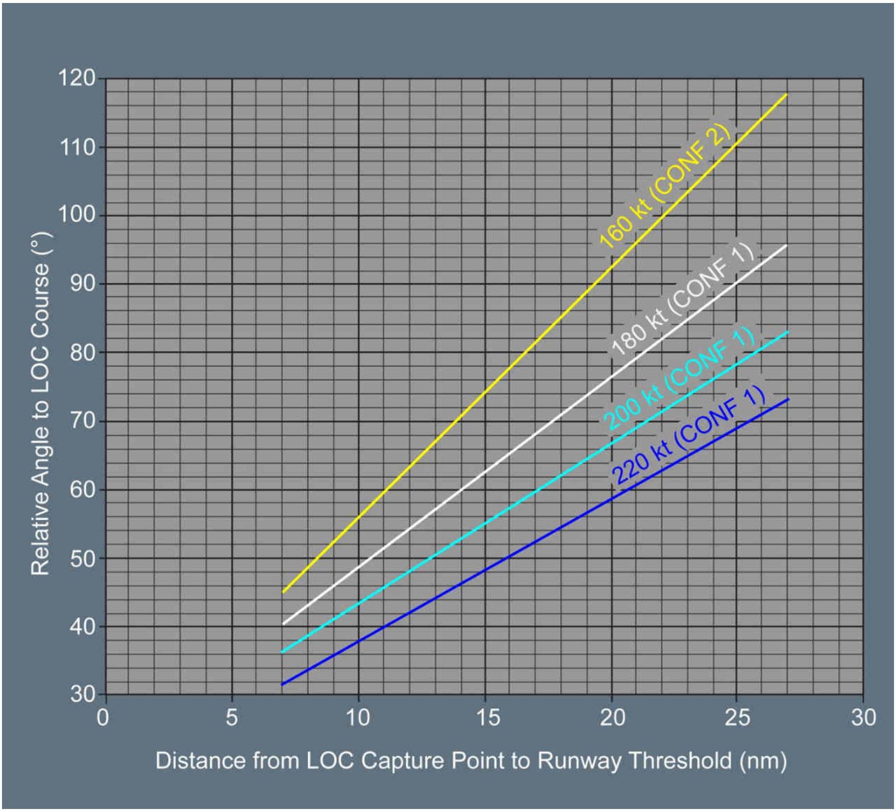
The pre-capture of the LOC beam allows to:
- Enhance the performance of the LOC capture
- Avoid a false capture
- Capture the LOC beam without overshoot.

The pre-capture zone is available, when all of the following conditions are applicable:
- The LOC deviation is more than 2.3 dots
- The FMS is in NAV PRIMARY.
- L2 The difference between the track and the LOC course is less than 115 °
- The roll order is such that LOC* will capture the LOC beam with a single turn.

L1 *Note:* *During the pre-capture, the lateral deviation does not move on the LS scale.*

L2 If the pre-capture of the LOC beam is not available, the following graph illustrates the angle of interception, depending on the distance to the runway threshold that ensures an interception with a single overshoot. In this case, the overshoot does not exceeds 1.3 dot.

LOC Beam Capture



L1 CAPTURE ZONE OF THE LOC BEAM

The aircraft reaches the capture zone of the LOC beam, when one of the following occurs:

- The LOC deviation is less than 2.3 dots, and:
  - L2 The difference between the track and the LOC course is less than 115 °, and
  - The roll order is such that LOC* will capture the LOC beam with a single turn.
- L1 The LOC deviation is less than 1.3 dot, and the difference between the track and the LOC course is less than 15 °.

L2 If the approach is an ILS, the LOC* mode uses the ILS LOC deviation to perform the capture.

L1 *Note:* *During the LOC capture, the LOC deviation starts to move toward the center of the LS scale, on the PFD and ND, when the LOC deviation is less than 2 dots.*

L2 LOC CONVERGENCE FUNCTION

The purpose of the LOC convergence function is to help to intercept and capture the LOC axis.

The flight guidance intercepts the LOC axis with a 20 ° track convergence, when all the following conditions are applicable:
- The LOC mode is armed
- The NAV mode is engaged
- The aircraft is within 20 NM of the destination runway
- The difference between the aircraft track and the runway course is less than 20 °.

DISENGAGEMENT CONDITIONS

Applicable to: ALL

Ident.: DSC-22-FG-70-80-10-GDISE-00005865.0001001 / 03 DEC 15

LOC* disengages, when another lateral mode engages.

L2 LOC* disengages, when one of the following occurs:
- The aircraft becomes established on the LOC beam

L3 LOC* is engaged with a LOC deviation less than 0.2 dot, during 10 s.

L2 LOC engages.
- The flight crew presses the LOC pb, and there is no vertical managed mode of approach armed or engaged
  HDG/TRACK engages.
- The flight crew pulls the HDG/TRK knob
  HDG/TRACK engages.

L3
- The aircraft is above 700 ft RA, and the flight crew inserts a DIRECT TO
  NAV engages.

L2
- The flight crew performs a go-around
  SRS GA and GA TRK engage.

Ident.: DSC-22-FG-70-80-10-GDISE-00005866.0001001 / 03 DEC 15

L2 REVERSIONS

LOC* reverts to HDG/TRACK, when one of the following occurs:

- The flight crew presses the APPR pb, and one of the following conditions is applicable:
  - G/S is armed
  - G/S* is engaged
  - G/S is engaged
  - F-G/S is armed
  - F-G/S* is engaged
  - F-G/S is engaged.
- The flight crew inserts a DIRECT TO CRS IN or DIRECT TO CRS OUT in the active flight plan.
- L3 The flight crew changes the approach on the FMS ARRIVAL page, the frequency, the identification, or the course of the LS station on the POS/NAVAIDS page.
- L2 The FG detects a difference between both MMRs.

When LOC* reverts to HDG/TRACK, the vertical mode also reverts to V/S / FPA.

When the reversion occurs:

- The triple click sounds
- The new guidance mode is boxed for 10 s
- The pitch and roll bars of the FDs flash for 10 s.

LOC Mode

GENERAL

Ident.: DSC-22-FG-70-80-20-00005867.0001001 / 09 MAR 16
Applicable to: ALL

The Localizer track (LOC) mode tracks the localizer beam of the ILS(GLS ◁)(SLS ◁).

ARMING CONDITIONS

Ident.: DSC-22-FG-70-80-20-00005868.0001001 / 04 MAY 16
Applicable to: ALL

L2 LOC can only arm when all of the following are applicable:
- HDG/TRACK or NAV is engaged
- The vertical mode is not SRS either for take off, or go-around
- L3 The aircraft is above 400 ft RA.

L1 LOC arms, when the flight crew presses the APPR pb, or the LOC pb, and one of the following conditions is applicable:
- An ILS, GLS ◁ , or RNAV(GNSS) with LPV(LP) minima (with SLS ◁ option) approach is set on the FMS ARRIVAL page
- An ILS, GLS ◁ is manually-tuned on the FMS POSITION NAVAIDS page (*Refer to DSC-22-FMS-20-20-20 LS IDENT Entry Field*)

  Note: *If the flight crew sets a different ILS approach on the FMS ARRIVAL page:*
  - *The aircraft will fly the manually-tuned LS*
  - *The MFD displays the RUNWAY / LS DISAGREE message.*

- L3 At least one LS receiver must be operative. If both receivers are operative, the LS parameters must be the same in both LS receivers.
- L1 A LOC only approach is set on the FMS ARRIVAL page.

L2 *Note:* *The flight crew can also deselect the G/S of an ILS approach on the FMS POSITION NAVAIDS page (Refer to DSC-22-FMS-20-20-20 DESELECT GLIDE Button)*

- L1 The flight crew manually-tuned the frequency and course of an ILS/GLS ◁ on the RMP (*Refer to DSC-34-NAV-70-30 How to Tune the Navaids in STBY RAD NAV*)

L2 For information on approach selection on the FMS ARRIVAL page, *Refer to DSC-22-FMS-20-20-20 APPR Button*.

DISARMING CONDITIONS

Ident.: DSC-22-FG-70-80-20-00005869.0001001 / 03 DEC 15
Applicable to: ALL

LOC disarms, when LOC* engages.

L2 LOC also disarms, when one of the following occurs:
- G/S or F-G/S is armed, and the flight crew presses the APPR pb
- Neither G/S, nor F-G/S is armed, and the flight crew presses the LOC pb
- L3 NAV arms
- The flight crew engages go-around
- The flight crew modifies the approach selection

  Note: *The flight crew can change the approach selection, only when the aircraft is above 700 ft RA.*
- The LS parameters are different in both LS receivers.

ENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-70-80-20-00005870.0001001 / 03 DEC 15
Applicable to: ALL

LOC engages, when LOC* is engaged, and the aircraft becomes established on the LOC beam.
L3 The aircraft becomes established on the LOC beam, when LOC* is engaged with a LOC deviation less than 0.2 dot, during 10 s.

DISENGAGEMENT CONDITIONS

Applicable to: ALL

Ident.: DSC-22-FG-70-80-20-GDISE-00005871.0001001 / 03 DEC 15

LOC disengages, when another lateral mode engages.

L2 LOC disengages, when one of the following occurs:
- G/S is engaged, and LAND engages
- The flight crew presses the LOC pb, and there is no vertical managed mode of approach armed or engaged
  HDG/TRACK engages.
- The flight crew pulls the HDG/TRK knob
  HDG/TRACK engages.
- L3 The aircraft is above 700 ft RA, and the flight crew inserts a DIRECT TO
  NAV engages.
- L2 The flight crew performs a go-around
  SRS GA and GA TRK engage.

Ident.: DSC-22-FG-70-80-20-GDISE-00005872.0001001 / 03 DEC 15

L2 REVERSIONS

LOC reverts to HDG/TRACK, when one of the following occurs:

- The flight crew presses the APPR pb, and one of the following conditions is applicable:
  - G/S is armed
  - G/S* is engaged
  - G/S is engaged
  - F-G/S is armed
  - F-G/S* is engaged
  - F-G/S is engaged.
- L3 The flight crew changes the approach on the FMS ARRIVAL page, the frequency, the identification, or the course of the LS station on the POS/NAVAIDS page.
- L2 The flight crew inserts a DIRECT TO CRS IN or DIRECT TO CRS OUT in the active flight plan.
- The FG detects a difference between both MMRs.

When LOC reverts to HDG/TRACK, the vertical mode also reverts to V/S / FPA .

When the reversion occurs:

- The triple click sounds
- The new guidance mode is boxed for 10 s
- The pitch and roll bars of the FDs flash for 10 s.

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G/S* Mode

GENERAL

Ident.: DSC-22-FG-70-80-30-00005873.0001001 / 09 MAR 16
Applicable to: ALL

The Glide Slope capture (G/S*) mode captures the glide slope beam of the ILS(GLS ◁)(SLS ◁).

ARMING AND DISARMING CONDITIONS

Ident.: DSC-22-FG-70-80-30-00005874.0001001 / 02 OCT 14
Applicable to: ALL

G/S* and G/S modes arm (disarm) together and simultaneously.
As a consequence, G/S* arms with the G/S indication on the FMA.
L2 For G/S*, or G/S arming conditions, *Refer to DSC-22-FG-70-80-40 Arming Conditions*.
For G/S*, or G/S disarming conditions, *Refer to DSC-22-FG-70-80-40 Disarming Conditions*.

ENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-70-80-30-00005875.0001001 / 03 DEC 15
Applicable to: ALL

G/S* engages when the aircraft reaches the capture zone of the G/S beam, and all of the following conditions are applicable:

- G/S is armed
- LOC* or LOC is engaged.

L2 The aircraft reaches the capture zone of the G/S beam, when one of the following occurs:

- Passage far from the G/S beam:
  - The G/S deviation is less than 2 dots
  - The pitch order is such that G/S* will capture the G/S beam with a single resource.
- Passage near the G/S beam: The G/S deviation is less than a threshold depending on the radio altitude.
  This threshold is between 0.1 and 1/3 dot.

DISENGAGEMENT CONDITIONS

Applicable to: ALL

Ident.: DSC-22-FG-70-80-30-GDISE-00005876.0001001 / 03 DEC 15

G/S* disengages when another vertical mode engages.

L2 G/S* disengages, when one of the following occurs:

- The aircraft becomes established on the G/S beam
L3 G/S is engaged for more than 15 s, and the G/S deviation becomes less than 0.3 dot.
L2 G/S engages.
- The flight crew pushes or pulls the V/S / FPA knob
V/S / FPA engages.
- The flight crew pulls the ALT knob
OP CLB or OP DES engages.
- The flight crew presses the ALT pb
ALT engages.
- The flight crew performs a go-around
SRS GA and GA TRK engage.

Ident.: DSC-22-FG-70-80-30-GDISE-00005877.0001001 / 03 DEC 15

L2 REVERSIONS

G/S* reverts to V/S / FPA, when one of the following occurs:

- LOC disengages
The lateral mode also reverts to HDG/TRACK.
- The flight crew presses the APPR pb
The lateral mode also reverts to HDG/TRACK.
- The flight crew pulls the HDG/TRK knob
The lateral mode also reverts to HDG/TRACK.
- The flight crew presses the LOC pb
- L3 The aircraft is above 700 ft RA, and the flight crew changes the approach on the FMS ARRIVAL page, the frequency, the identification, or the course of the LS station on the POS/NAVAIDS page.
The lateral mode also reverts to HDG/TRACK.
- L2 The FG detects a difference between both MMRs

When the reversion occurs:

- The triple click sounds
- The new guidance mode is boxed for 10 s
- The pitch and roll bars of the FDs flash for 10 s.

G/S Mode

GENERAL

Ident.: DSC-22-FG-70-80-40-00005878.0001001 / 09 MAR 16
Applicable to: ALL

The Glide Slope track (G/S) mode tracks the glide slope beam of the ILS(GLS)(SLS).

ARMING CONDITIONS

Ident.: DSC-22-FG-70-80-40-00005879.0001001 / 08 JUL 19
Applicable to: ALL

L3 G/S arms when at least one LS receiver is operative. If both receivers are operative, the LS parameters must be the same in both LS receivers.

L1 G/S arms, when the flight crew presses the APPR pb, and one of the following conditions is applicable:
- The flight crew has selected an ILS, GLS , or RNAV(GNSS) with LPV minima (with SLS option) approach on the FMS ARRIVAL page
- The flight crew has manually-tuned an ILS, or GLS approach on the FMS POSITION NAVAIDS page (*Refer to DSC-22-FMS-20-20-20 LS IDENT Entry Field*)

  Note: *If the flight crew has selected a different LS approach on the FMS ARRIVAL page:*
  - *The aircraft will fly the manually-tuned LS*
  - *The MFD displays RUNWAY / LS DISAGREE message.*
- The flight crew has manually-tuned the frequency and course of an ILS/ GLS on the RMP (*Refer to DSC-23-20 NAV Page*).

G/S cannot arm if one the following condition is applicable:
- One of the following mode is engaged: SRS TO, RWY, RWY TRK, SRS GA, GA TRK
- The aircraft is below 400 ft RA.

For information on approach selection on the FMS ARRIVAL page, *Refer to DSC-22-FMS-20-20-20 APPR Button*.

DISARMING CONDITIONS

Ident.: DSC-22-FG-70-80-40-00005880.0001001 / 02 OCT 14
Applicable to: ALL

G/S disarms, when G/S engages.

L2 G/S also disarms, when one of the following occurs:
- The flight crew presses the APPR pb, or the LOC pb
- LOC disarms
- LOC*, or LOC is lost.
- The flight crew performs a go around
  SRS and GA TRK engage.

ENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-70-80-40-00005881.0001001 / 03 DEC 15
Applicable to: ALL

G/S engages, when G/S* is engaged, and the aircraft becomes established on the G/S beam.

L3 The aircraft becomes established on the G/S beam, when:
- G/S* is engaged for more than 15 s, and
- The G/S deviation becomes less than 1/3 dot.

DISENGAGEMENT CONDITIONS

Applicable to: ALL

Ident.: DSC-22-FG-70-80-40-GDISE-00005882.0001001 / 03 DEC 15

G/S disengages when another vertical mode engages.

L2 G/S disengages, when one of the following occurs:
- LAND engages at 400 ft, if the approach and landing capability is LAND1(2)(3).
- The flight crew pushes, or pulls the V/S / FPA knob
  V/S / FPA engages.
- The flight crew pulls the ALT knob
  OP CLB or OP DES engages.
- The flight crew presses the ALT pb
  ALT engages.
- The flight crew performs a go-around
  SRS GA and GA TRK engage.

Ident.: DSC-22-FG-70-80-40-GDISE-00005883.0001001 / 03 DEC 15

L2 REVERSIONS

G/S reverts to V/S / FPA, when one of the following occurs:
- LOC disengages
  The lateral mode also reverts to HDG/TRACK.
- The flight crew presses the APPR pb
  The lateral mode also reverts to HDG/TRACK.

- The flight crew presses the LOC pb
- The flight crew pulls the HDG/TRK knob
  The lateral mode also reverts to HDG/TRACK.

L3
- The aircraft is above 700 ft RA, and the flight crew changes the approach on the FMS ARRIVAL page, the frequency, the identification, or the course of the LS station on the FMS POS/NAVAIDS page.
  The lateral mode also reverts to HDG/TRACK.

L2
- The FG detects a difference between both MMRs.

When the reversion occurs:
- The triple click sounds
- The new guidance mode is boxed for 10 s
- The pitch and roll bars of the FDs flash for 10 s.

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LAND Mode

GENERAL

Ident.: DSC-22-FG-70-80-50-00005884.0001001 / 02 OCT 14
Applicable to: ALL

The LAND mode is a common vertical and lateral mode.
The LAND mode tracks the LOC and G/S beams from 400 ft RA to approximately 60 ft RA.

ENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-70-80-50-00005885.0001001 / 02 OCT 14
Applicable to: ALL

LAND automatically engages, when all the following conditions occur:
- The approach and landing capability is LAND1(2)(3)
- G/S and LOC are engaged
- The landing gear, the slats or the flaps are extended.
- The aircraft reaches 400 ft RA

L3 The aircraft is below400 ft for more than 1 s.

DISENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-70-80-50-00005886.0001001 / 02 OCT 14
Applicable to: ALL

LAND automatically disengages, when the aircraft approximately reaches 60 ft RA: FLARE engages.
When LAND is engaged, no action on the AFS CP can disengage LAND.
The flight crew can only disengage LAND by performing a go-around. SRS GA and GA TRK will engage.

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FLARE Mode

GENERAL

Ident.: DSC-22-FG-70-80-60-00005887.0001001 / 02 OCT 14
Applicable to: ALL

The FLARE mode is a common lateral and vertical mode:
- Lateral guidance: The FLARE mode reduces the slideslip angle, such that the aircraft will be aligned with the runway centerline at the aircraft touchdown
- Vertical guidance: The FLARE mode decreases the descent rate, in order to ensure a comfortable transition between the glide tracking, and the aircraft touchdown.

ENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-70-80-60-00005888.0001001 / 03 DEC 15
Applicable to: ALL

FLARE engages, if all the following conditions are applicable:
- The aircraft approximately reaches 60 ft
- The approach that the flight crew selects is either an ILS approach, a GLS approach, or a RNAV(GNSS) approach with LPV minima.

L3 FLARE engages only if the following conditions are applicable:
- The slats/flaps are extended, or the landing gears are extended
- One valid RA.

DISENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-70-80-60-00005889.0001001 / 02 OCT 14
Applicable to: ALL

FLARE automatically disengages, when the aircraft touches down, and ROLL OUT engages.
The flight crew can only disengage FLARE by performing a go-around.

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ROLL OUT Mode

GENERAL

Ident.: DSC-22-FG-70-80-70-00005890.0001001 / 02 OCT 14
Applicable to: ALL

ROLL OUT is a common lateral and vertical mode:
- Lateral guidance: The ROLL OUT mode guides the aircraft along the runway centerline
- Vertical guidance: The ROLL OUT mode lands the nose landing gear.

L3 The vertical speed is close to 2.5 ft/s.

ENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-70-80-70-00005891.0001001 / 03 DEC 15
Applicable to: ALL

The FLARE mode changes to the ROLL OUT mode when the aircraft touches down.

L3 The ROLL OUT engages, if:
- FLARE is engaged
- The aircraft is on ground.

DISENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-70-80-70-00005892.0001001 / 03 DEC 15
Applicable to: ALL

ROLL OUT disengages, when one of the following occurs:
- When the aircraft exists the runway.

L2 *Note:*
- *When the difference between the aircraft track and the runway track is more than 20°, the ROLL OUT disengages due to the AP(s) and FDs disengagement*
- *In automatic roll-out, the flight crew should disengage the AP(s) at low speed, as per procedure.*

L1 - The flight crew engages a go-around

L3 - The APs are disengaged, and the flight crew presses the APPR pb.
This is applicable, if ROLL OUT is engaged for more than 10 s.

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F-LOC* Mode

GENERAL

Ident.: DSC-22-FG-70-80-80-00005893.0001001 / 02 OCT 14
Applicable to: ALL

The FLS Localizer capture (F-LOC*) mode captures the F-LOC beam.

ARMING AND DISARMING CONDITIONS

Ident.: DSC-22-FG-70-80-80-00005894.0001001 / 03 DEC 15
Applicable to: ALL

F-LOC* and F-LOC modes arm (disarm) together and simultaneously.
As a consequence, F-LOC* arms with the F-LOC indication on the FMA.
L2 For F-LOC arming conditions, *Refer to DSC-22-FG-70-80-90 Arming Conditions*.
For F-LOC disarming conditions, *Refer to DSC-22-FG-70-80-90 Disarming Conditions*.

ENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-70-80-80-00005895.0001001 / 03 DEC 15
Applicable to: ALL

F-LOC* engages, when F-LOC is armed, and the aircraft reaches the capture zone, or the pre-capture zone of the F-LOC beam.
The capture zone is a zone available, when the F-LOC deviation is less than 2.3 dots.
The pre-capture zone is a zone available, when the F-LOC deviation is more than 2.3 dots.

L2 CAPTURE ZONE OF THE F-LOC BEAM

The aircraft reaches the capture zone of the F-LOC beam, when one of the following occurs:

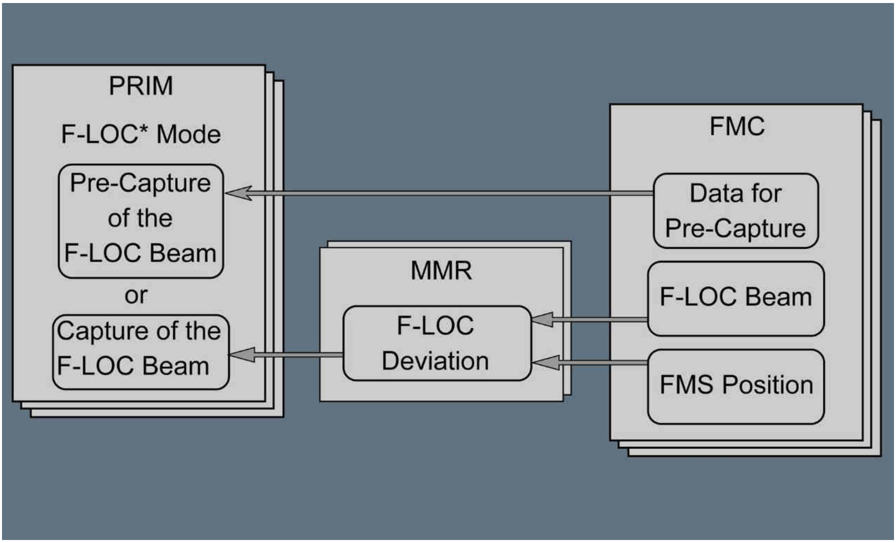
- The F-LOC deviation is less than 2.3 dots, and:
  - The difference between the track and the F-LOC course is less than 115 °, and
  - The roll order is such that F-LOC* will capture the F-LOC beam with a single turn.
- The F-LOC deviation is less than 1.3 dot, and the difference between the track and the F-LOC course is less than 15 °.

PRE-CAPTURE OF THE F-LOC BEAM

The aircraft reaches the pre-capture zone of the F-LOC beam, when all of the following conditions are applicable:

- The F-LOC deviation is more than 2.3 dots
- The difference between the track and the F-LOC course is less than 115 °
- The roll order is such that F-LOC* will capture the F-LOC beam with a single turn.
- The FMS is in NAV PRIMARY.

Pre-Capture and Capture of the F-LOC Beam


PRIM
F-LOC* Mode
Pre-Capture of the F-LOC Beam
or
Capture of the F-LOC Beam
MMR
F-LOC Deviation
FMC
Data for Pre-Capture
F-LOC Beam
FMS Position

DISENGAGEMENT CONDITIONS

Applicable to: ALL

Ident.: DSC-22-FG-70-80-80-GDISE-00005896.0001001 / 03 DEC 15

F-LOC* disengages, when another lateral mode engages.

L2 F-LOC* disengages, when one of the following occurs:

- The aircraft becomes established on the F-LOC beam

L3 F-LOC* is engaged with a F-LOC deviation less than 0.2 dot, during 10 s.

L2 F-LOC engages.

- The flight crew presses the LOC pb, and there is no vertical managed mode of approach armed or engaged
  HDG/TRACK engages.
- The flight crew pulls the HDG/TRK knob
  HDG/TRACK engages.

L3 - The aircraft is above 700 ft RA, and the flight crew inserts a DIRECT TO
  NAV engages.

L2 - The flight crew performs a go-around
  SRS GA and GA TRK engage.

Ident.: DSC-22-FG-70-80-80-GDISE-00005897.0001001 / 03 DEC 15

L2 REVERSIONS

F-LOC* reverts to HDG/TRACK, when one of the following occurs:
- The flight crew presses the APPR pb, and one of the following conditions is applicable:
  - F-G/S is armed
  - F-G/S* is engaged
  - F-G/S is engaged.
- L3 The flight crew changes the approach on the FMS ARRIVAL page, the frequency, the identification, or the course of the LS station on the POS/NAVAIDS page.
- L2 The flight crew inserts a DIRECT TO CRS IN or DIRECT TO CRS OUT in the active flight plan.
- The FG detects a difference between both MMRs.

When F-LOC* reverts to HDG/TRACK, the vertical mode also reverts to V/S / FPA.

When the reversion occurs:
- The triple click sounds
- The new guidance mode is boxed for 10 s
- The pitch and roll bars of the FDs flash for 10 s.

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F-LOC Mode

GENERAL

Ident.: DSC-22-FG-70-80-90-00005898.0001001 / 02 OCT 14
Applicable to: ALL

The FLS Localizer track (F-LOC) mode tracks the F-LOC beam.

ARMING CONDITIONS

Ident.: DSC-22-FG-70-80-90-00005899.0001001 / 03 DEC 15
Applicable to: ALL

L3 F-LOC can arm if all of the following conditions are applicable:
- At least one FMS is operative
- At least one MMR is able to compute the F-LOC and F-G/S deviations

  Note: If the NO FLS FOR THIS APPR message appears on the MFD, the MMR(s) will not be able to compute the F-LOC and F-G/S deviations.

- When both MMRs are operative, the runway headings of the approach that the flight crew selects must be the same in both MMRs.
- The aircraft is above 400 ft RA.
- The vertical mode is not SRS either for takeoff, or go-around.

L1 F-LOC arms, when all of the following conditions are applicable:
- The flight crew selected an approach in the ARRIVAL page of the FMS that is compatible with the FLS function (e.g. NDB, NDB/DME, VOR, VOR/DME, RNV(GNSS),...).

  Note: If the NO FLS FOR THIS APPR message appears on the MFD, the FLS function is not applicable.

L2 - HDG/TRACK or NAV is engaged

L1 - The flight crew presses the APPR pb, or the LOC pb.

L2 For information on approach selection on the ARRIVAL page of the FMS, *Refer to DSC-22-FMS-20-20-20 APPR Button*.

DISARMING CONDITIONS

Ident.: DSC-22-FG-70-80-90-00005900.0001001 / 03 DEC 15
Applicable to: ALL

F-LOC disarms when F-LOC* engages.

L2 F-LOC also disarms, when one of the following occurs:
- F-G/S is armed, and the flight crew presses the APPR pb
- F-G/S is not armed, and the flight crew presses the LOC pb
- L3 NAV arms
- The flight crew engages go-around
- The flight crew modifies the approach selection

  Note: The flight crew can change the approach selection, only when the aircraft is above 700 ft RA.
- The LS parameters are different in both receivers.

ENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-70-80-90-00005901.0001001 / 03 DEC 15
Applicable to: ALL

F-LOC can engage, when F-LOC* is engaged and the aircraft becomes established on the F-LOC beam.

L3 The aircraft becomes established on the F-LOC beam, when F-LOC* is engaged with a F-LOC deviation less than 0.2 dot, during 10 s.

DISENGAGEMENT CONDITIONS

Applicable to: ALL

Ident.: DSC-22-FG-70-80-90-GDISE-00005902.0001001 / 03 DEC 15

F-LOC disengages, when another lateral mode engages.

L2 F-LOC disengages, when one of the following occurs:
- The flight crew presses the LOC pb, there is no vertical managed mode of approach armed or engaged
  HDG/TRACK engages.
- The flight crew pulls the HDG/TRK knob
  HDG/TRACK engages.
- L3 The aircraft is above 700 ft RA, and the flight crew inserts a DIRECT TO
  NAV engages.
- L2 The flight crew performs a go-around
  SRS GA and GA TRK engage.

Ident.: DSC-22-FG-70-80-90-GDISE-00005903.0001001 / 03 DEC 15

L2 REVERSIONS

F-LOC reverts to HDG/TRACK, when one of the following occurs:

- The flight crew presses the APPR pb, and one of the following conditions is applicable:
  - F-G/S is armed
  - F-G/S* is engaged
  - F-G/S is engaged.
- L3 The flight crew changes the approach on the FMS ARRIVAL page, the frequency, the identification, or the course of the LS station on the POS/NAVAIDS page.
- L2 The flight crew inserts a DIRECT TO CRS IN or DIRECT TO CRS OUT in the active flight plan
- The FG detects a difference between both MMRs.

When F-LOC reverts to HDG/TRACK, the vertical mode also reverts to V/S / FPA.

When the reversion occurs:

- The triple click sounds
- The new guidance mode is boxed for 10 s
- The pitch and roll bars of the FDs flash for 10 s.

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F-G/S* Mode

GENERAL

Ident.: DSC-22-FG-70-80-100-00005904.0001001 / 02 OCT 14
Applicable to: ALL

The FLS Glide Slope capture (F-G/S*) mode captures the F-G/S beam.

ARMING AND DISARMING CONDITIONS

Ident.: DSC-22-FG-70-80-100-00005905.0001001 / 02 OCT 14
Applicable to: ALL

F-G/S* and F-G/S modes arm (disarm) together and simultaneously.
As a consequence, F-G/S* arms with the F-G/S indication on the FMA.
L2 For F-G/S arming conditions, *Refer to DSC-22-FG-70-80-110 Arming Conditions*.
For F-G/S disarming conditions, *Refer to DSC-22-FG-70-80-110 Disarming Conditions*.

ENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-70-80-100-00005906.0001001 / 02 OCT 14
Applicable to: ALL

F-G/S* engages, when the aircraft reaches the capture zone of the F-G/S beam, and all the following conditions are applicable:

- F-G/S is armed
- LOC*, LOC, F-LOC*, or F-LOC is engaged.

L2 The aircraft reaches the capture zone of the F-G/S beam, when one of the following occurs:

- Passage far from the F-G/S beam:
  - The F-G/S deviation is less than 2 dots
  - The pitch order is such that F-G/S* will capture the F-G/S beam with a single resource.
- Passage near the F-G/S beam: The F-G/S deviation is less than a threshold depending on the radio altitude.
  This threshold is between 0.1 and 0.3 dot.

DISENGAGEMENT CONDITIONS

Applicable to: ALL

Ident.: DSC-22-FG-70-80-100-GDISE-00005907.0001001 / 03 DEC 15

F-G/S* disengages, when another vertical mode engages.

L2 F-G/S* also disengages, when one of the following occurs:
- The aircraft becomes established on the F-G/S beam

L3 F-G/S is engaged for more than 15 s, and the F-G/S deviation becomes less than 0.3 dot.

L2 F-G/S engages.
- The flight crew pushes or pulls the V/S / FPA knob
  V/S / FPA engages.
- The flight crew pulls the ALT knob
  OP CLB or OP DES engages.
- The flight crew presses the ALT pb
  ALT engages.
- The flight crew performs a go-around
  SRS GA and GA TRK engage.

Ident.: DSC-22-FG-70-80-100-GDISE-00005908.0001001 / 03 DEC 15

L2 REVERSIONS

F-G/S* reverts to V/S / FPA, when one of the following occurs:
- The flight crew presses the APPR pb
  The lateral mode also reverts to HDG/TRACK.
- F-LOC disengages
  The lateral mode also reverts to HDG/TRACK.
- The flight crew presses the LOC pb
- L3 The flight crew changes the approach on the FMS ARRIVAL page, the frequency, the identification, or the course of the LS station on the POS/NAVAIDS page.
  The lateral mode also reverts to HDG/TRACK.
- L2 The FG detects a difference between both MMRs

When the reversion occurs:
- The triple click sounds
- The new guidance mode is boxed for 10 s
- The pitch and roll bars of the FDs flash for 10 s.

F-G/S Mode

GENERAL

Ident.: DSC-22-FG-70-80-110-00005909.0001001 / 02 OCT 14
Applicable to: ALL

The FLS Glide Slope track (F-G/S) mode tracks the F-G/S beam.

ARMING CONDITIONS

Ident.: DSC-22-FG-70-80-110-00005910.0001001 / 03 DEC 15
Applicable to: ALL

L3 F-G/S can arm only if all of the following conditions are applicable:
- At least one FMS is operative
- At least one MMR is able to compute the F-LOC and F-G/S deviations
- When both MMRs are operative, the runway headings of the approach that the flight crew selects must be equal in both MMRs.
- The aircraft is above 400 ft RA.
- One of the following mode is not engaged: SRS TO, RWY, RWY TRK, SRS GA, GA TRK.

L1 F-G/S arms, if:
- The flight crew selects an approach in the ARRIVAL page of the FMS, that is compatible with the FLS function (e.g. NDB, NDB/DME, VOR, VOR/DME, RNV(GNSS), LOC only,...)

  Note: *If the NO FLS FOR THIS APPR message appears on the MFD, the FLS function is not applicable..*

- The flight crew presses the APPR pb.

L2 For information on approach selection on the FMS ARRIVAL page, *Refer to DSC-22-FMS-20-20-20 APPR Button*.

DISARMING CONDITIONS

Ident.: DSC-22-FG-70-80-110-00005911.0001001 / 03 DEC 15
Applicable to: ALL

L2 F-G/S disarms, when F-G/S* engages.

F-G/S also disarms, when one of the following occurs:
- The flight crew presses the APPR pb, or the LOC pb
- LOC or F-LOC disarms

- LOC*, LOC, F-LOC*, or F-LOC is lost
- The flight crew engages a go-around.
  SRS and GA TRK engage.

ENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-70-80-110-00005912.0001001 / 02 OCT 14
Applicable to: ALL

F-G/S engages, when F-G/S* is engaged, and the aircraft becomes established on the F-G/S beam.

L3 The aircraft becomes established on the F-G/S beam, when:
- F-G/S* is engaged for more than 15 s, and
- The F-G/S deviation becomes less than 0.3 dot.

DISENGAGEMENT CONDITIONS

Applicable to: ALL

Ident.: DSC-22-FG-70-80-110-GDISE-00005913.0001001 / 03 DEC 15

F-G/S disengages when another vertical mode engages.

L2 F-G/S also disengages, when one of the following occurs:
- The flight crew pushes, or pulls the V/S / FPA knob
  V/S / FPA engages.
- The flight crew pulls the ALT knob
  OP CLB or OP DES engages.
- The flight crew presses the ALT pb
  ALT engages.
- The flight crew performs a go-around
  SRS GA and GA TRK engage.

Ident.: DSC-22-FG-70-80-110-GDISE-00005914.0001001 / 03 DEC 15

L2 REVERSIONS

F-G/S reverts to V/S / FPA, when one of the following occurs:
- The flight crew presses the APPR pb
  The lateral mode also reverts to HDG/TRACK.
- F-LOC disengages
  The lateral mode also reverts to HDG/TRACK.
- The flight crew presses the LOC pb

L3
- The flight crew changes the approach on the FMS ARRIVAL page, the frequency, the identification, or the course of the LS station on the POS/NAVAIDS page.
  The lateral mode also reverts to HDG/TRACK.

L2
- The FG detects a difference between both MMRs

When the reversion occurs:
- The triple click sounds
- The new guidance mode is boxed for 10 s
- The pitch and roll bars of the FDs flash for 10 s.

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LOC B/C* Mode

GENERAL

Ident.: DSC-22-FG-70-80-120-00005915.0001001 / 03 DEC 15
Applicable to: ALL

The Localizer Back Course capture (LOC B/C*) mode captures the localizer back beam of the ILS.

ARMING AND DISARMING CONDITIONS

Ident.: DSC-22-FG-70-80-120-00005916.0001001 / 02 OCT 14
Applicable to: ALL

LOC B/C* and LOC B/C modes arm (disarm) together and simultaneously.
As a consequence, LOC B/C* arms with the LOC B/C indication on the FMA.
L2 For LOC B/C arming conditions, *Refer to DSC-22-FG-70-80-130 Arming Conditions*.
For LOC B/C disarming conditions, *Refer to DSC-22-FG-70-80-130 Disarming Conditions* .

ENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-70-80-120-00005917.0001001 / 02 OCT 14
Applicable to: ALL

LOC B/C* engages, when LOC B/C is armed, and the aircraft reaches the capture zone of the LOC B/C beam.

L2 CAPTURE ZONE OF THE LOC B/C BEAM

The aircraft reaches the capture zone of the LOC B/C beam, when one of the following occurs:
- The difference between the track and the course of the LOC B/C is less than 115 °, and:
  - The LOC B/C deviation is less than 2.3 dots, and
  - The roll order is such that LOC B/C* will capture the LOC B/C beam with a single turn.
- The difference between the track and the course of the LOC B/C is less than 15 °, and the LOC B/C deviation is less than 1.3 dot.

DISENGAGEMENT CONDITIONS

Applicable to: ALL

Ident.: DSC-22-FG-70-80-120-GDISE-00005918.0001001 / 03 DEC 15

LOC B/C* disengages, when another lateral mode engages.

L2 LOC B/C* disengages, when one of the following occurs:

- The aircraft becomes established on the LOC B/C beam

L3 When LOC B/C* is engaged with a LOC B/C deviation less than 0.2 dot, during10 s.

L2 LOC B/C engages.

- The flight crew presses the LOC pb, and there is no vertical managed mode of approach armed or engaged
  HDG/TRACK engages.

  Note: *If a vertical managed mode of approach was previously engaged, LOC B/C* remains engaged, and a vertical mode reversion occurs.*

- The flight crew pulls the HDG/TRK knob
  HDG/TRACK engages.

L3 - The aircraft is above 700 ft RA, and the flight crew inserts a DIRECT TO
  NAV engages.

L2 - The flight crew performs a go-around
  SRS GA and GA TRK engage.

Ident.: DSC-22-FG-70-80-120-GDISE-00005919.0001001 / 03 DEC 15

L2 REVERSIONS

LOC B/C* reverts to HDG/TRACK, when one of the following occurs:

- The flight crew presses the APPR pb, and one of the following conditions is applicable:
  - F-G/S is armed
  - F-G/S* is engaged
  - F-G/S is engaged.
- The flight crew inserts a DIRECT TO CRS IN or DIRECT TO CRS OUT in the active flight plan.

L3 - The flight crew changes the approach on the FMS ARRIVAL page, the frequency, the identification, or the course of the LS station on the POS/NAVAIDS page.

L2 - The FG detects a difference between both MMRs.

When LOC B/C* reverts to HDG/TRACK, the vertical mode also reverts to V/S / FPA.

When the reversion occurs:

- The triple click sounds
- The new guidance mode is boxed for 10 s
- The pitch and roll bars of the FDs flash for 10 s.

LOC B/C Mode

GENERAL

Ident.: DSC-22-FG-70-80-130-00005920.0001001 / 02 OCT 14
Applicable to: ALL

The Localizer Back Course track (LOC B/C) mode tracks the localizer back course beam of the ILS.

ARMING CONDITIONS

Ident.: DSC-22-FG-70-80-130-00005921.0001001 / 03 DEC 15
Applicable to: ALL

L2 LOC B/C can only arm when all of the following are applicable:
- HDG/TRACK or NAV is engaged
- L3 The aircraft is above 400 ft RA.

L1 LOC B/C arms, when:
- The flight crew selected a BAC approach on the FMS ARRIVAL page, and
- The flight crew presses the APPR pb, or the LOC pb.
- L3 At least one LS receiver must be operative. If both receivers are operative, the LS parameters must be the same in both LS receivers.

L2 For information on approach selection on the FMS ARRIVAL page, *Refer to DSC-22-FMS-20-20-20 APPR Button*.

DISARMING CONDITIONS

Ident.: DSC-22-FG-70-80-130-00005922.0001001 / 02 OCT 14
Applicable to: ALL

L2 LOC B/C disarms, when one of the following occurs:
- F-G/S is armed, and the flight crew presses the APPR pb
- F-G/S is not armed, and the flight crew presses the LOC pb
- L3 NAV arms
- The flight crew engages go-around
- The flight crew modifies the approach selection.
- The ILS frequency and course are not equal in both ILS receivers.

ENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-70-80-130-00005923.0001001 / 03 DEC 15
Applicable to: ALL

LOC B/C engages, when LOC B/C* is engaged, and the aircraft becomes established on the LOC B/C beam.

L3 The aircraft becomes established on the LOC B/C beam, when LOC B/C* is engaged with a LOC B/C deviation less than 0.2 dot, during 10 s.

DISENGAGEMENT CONDITIONS

Applicable to: ALL

Ident.: DSC-22-FG-70-80-130-GDISE-00005924.0001001 / 03 DEC 15

LOC B/C disengages, when another lateral mode engages.

L2 LOC B/C disengages, when one of the following occurs:

- The flight crew presses the LOC pb, and there is no vertical managed mode of approach armed or engaged.
  HDG/TRACK engages.
- The flight crew pulls the HDG/TRK knob
  HDG/TRACK engages.
- L3 The aircraft is above 700 ft RA, and the flight crew inserts a DIRECT TO
  NAV engages.
- L2 The flight crew performs a go-around
  SRS GA and GA TRK engage.

Ident.: DSC-22-FG-70-80-130-GDISE-00005925.0001001 / 03 DEC 15

L2 REVERSIONS

LOC B/C reverts to HDG/TRACK, when one of the following occurs:

- The flight crew presses the APPR pb, and one of the following conditions is applicable:
  - F-G/S is armed
  - F-G/S* is engaged
  - F-G/S is engaged.
- The flight crew inserts a DIRECT TO CRS IN or DIRECT TO CRS OUT in the active flight plan.
- L3 The flight crew changes the approach on the FMS ARRIVAL page, the frequency, the identification, or the course of the LS station on the POS/NAVAIDS page.
- L2 The FG detects a difference between both MMRs.

When LOC B/C reverts to HDG/TRACK, the vertical mode also reverts to V/S / FPA.

When the reversion occurs:
- The triple click sounds
- The new guidance mode is boxed for 10 s
- The pitch and roll bars of the FDs flash for 10 s.

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APP-DES

GENERAL

Ident.: DSC-22-FG-70-80-140-00012873.0001001 / 03 OCT 16
Applicable to: ALL

The approach and descent mode (APP DES) tracks the vertical FMS profile for an RNAV(RNP) approach, or an RNAV visual approach.
When engaged, the approach and descent mode disregards the altitude that is set on the FCU to follow the vertical FMS profile with all the vertical constraints of the flight plan.

ARMING CONDITIONS

Ident.: DSC-22-FG-70-80-140-00019005.0001001 / 04 OCT 16
Applicable to: ALL

APP-DES arms, when all the following conditions are applicable:
- The flight crew presses the APPR pb
- NAV is armed, or can be armed, or NAV is engaged
- The approach selected in the ARRIVAL page of the FMS is compatible with the APP-DES mode (RNAV(RNP), or RNAV visual)

L12

Note: *Only if an RNAV visual approach is selected, the flight crew must also deselect the FLS via the POSITION NAVAIDS FMS page to enable APP-DES arming.*
For more information, Refer to DSC-22-FMS-20-20-20 DESELECT FLS Button

L2
- The FMS flight phase is either cruise (CRZ), descent (DES) or approach (APPR)

Note: *if the NAV mode is not armed or engaged when the flight crew presses the APPR pb, NAVarms at the same time.*

L3 The aircraft must be above 400 ft RA.

L2 For information on approach selection on the FMS ARRIVAL page, *Refer to DSC-22-FMS-20-20-20 APPR Button*.

DISARMING CONDITIONS

Ident.: DSC-22-FG-70-80-140-00019007.0001001 / 02 OCT 14
Applicable to: ALL

L2 APP DES disarms, when one of the following occurs:
- The flight crew presses the APPR pb
  The lateral mode (NAV) remains armed or engaged
- NAV disarms, or NAV disengages

- The flight crew performs a go around, and SRS engages
- The FMS vertical profile is lost
- The TCAS mode engages.

ENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-70-80-140-00012874.0001001 / 02 OCT 14
Applicable to: ALL

APP DES engages when all the following conditions are applicable:

- NAV is engaged
- APP-DES is armed or can be armed
- The aircraft is in the capture zone of the vertical FMS profile

L2 The vertical capture zone above and below the vertical FMS profile is defined as follows:

- 250 ft above, and 50 ft below a steady FMS altitude
- 250 ft above and below an FMS descent path.

- The FMS flight phase is either cruise (CRZ), descent (DES) or approach (APPR).

DISENGAGEMENT CONDITIONS

Applicable to: ALL

Ident.: DSC-22-FG-70-80-140-G10-00019016.0001001 / 02 OCT 14

APP DES disengages when another vertical mode engages.

L2 APP DES disengages, when one of the following occurs:

- The flight crew pushes, or pulls the V/S / FPA knob
  V/S / FPA engages.
- The flight crew pulls the ALT knob
  OP CLB or OP DES engages.
- The flight crew presses the ALT pb
  ALT engages.
- The flight crew performs a go-around and SRS GA engages.

Ident.: DSC-22-FG-70-80-140-G10-00019017.0001001 / 02 OCT 14

L2 REVERSION

APP DES reverts to V/S / FPA, when one of the following occurs:

- NAV disengages
  The lateral mode also reverts to HDG/TRACK.
- The flight crew presses the APPR pb
  The lateral mode remains engaged in NAV .

- The FMC-A and the FMC-B are failed, or the vertical flight plan is lost
- The FMS flight phase is no longer cruise (CRZ), descent (DES), or approach (APPR)

When the reversion occurs:
- The triple click sounds
- The new guidance mode is boxed for 10 s
- The pitch and roll bars of the FDs flash for 10 s.

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General

GENERAL

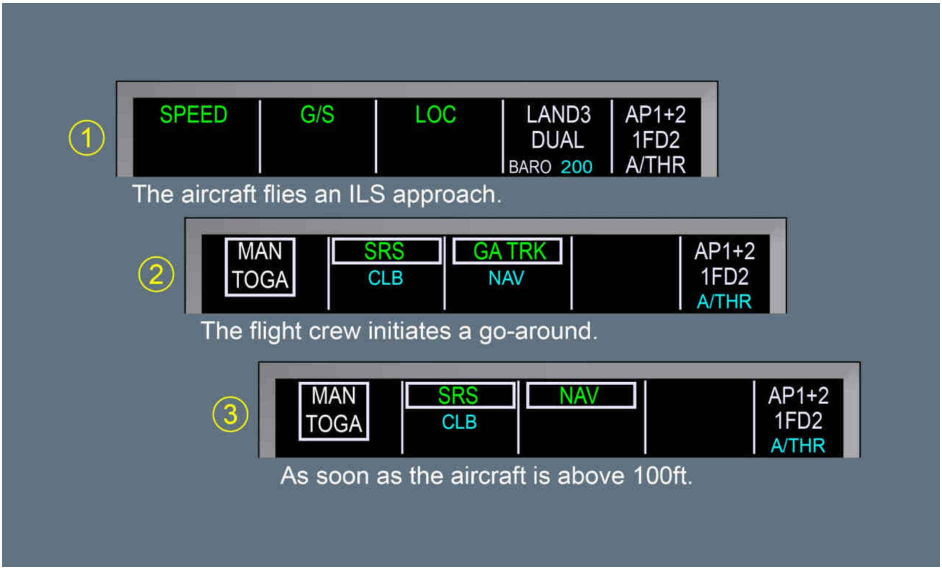
Ident.: DSC-22-FG-70-90-10-00005926.0001001 / 02 OCT 14
Applicable to: ALL

When the flight crew initiates a go-around, the SRS GA vertical mode engages. In addition, one of the following occurs:

- If a lateral managed mode is engaged (except NAV mode), GA TRK engages, and NAV mode arms
  NAV automatically engages as soon as the aircraft reaches the capture zone of the flight plan active leg.

L2 *Note: If a HDG(TRK) was preset, NAV mode does not arm. GA TRK engages, until the flight crew pulls the HDG/TRK knob to follow the preset target.*

Example: Go-around during a Precision Approach


①
SPEED
G/S
LOC
LAND3
DUAL
BARO 200
AP1+2
1FD2
A/THR
②
MAN
TOGA
SRS
CLB
GA TRK
NAV
AP1+2
1FD2
A/THR
③
MAN
TOGA
SRS
CLB
NAV
AP1+2
1FD2
A/THR

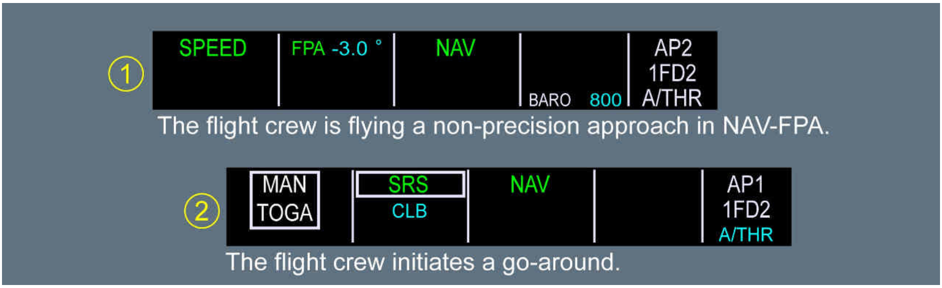
The aircraft flies an ILS approach.

The flight crew initiates a go-around.

As soon as the aircraft is above 100ft.

L1 - If NAV mode is engaged, it remains engaged
  This occurs if the flight crew performs a go-around during an approach with the NAV and V/S(FPA) or APP-DES guidance.

Example: Go-around during a Non-Precision Approach in NAV-FPA

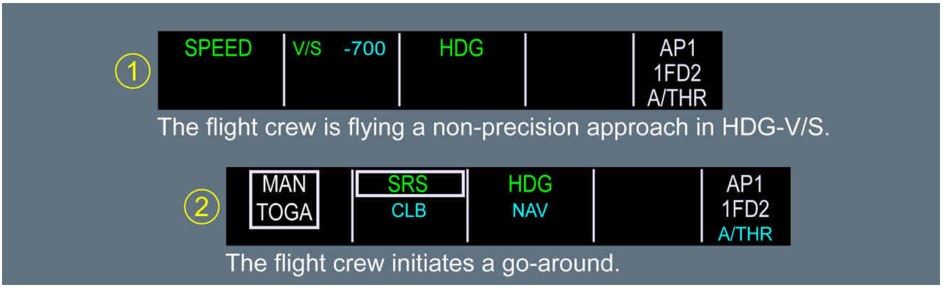

①
SPEED
FPA -3.0 °
NAV
BARO 800
AP2
1FD2
A/THR
②
MAN
TOGA
SRS
CLB
NAV
AP1
1FD2
A/THR

The flight crew is flying a non-precision approach in NAV-FPA.

The flight crew initiates a go-around.

- If HDG(TRK) mode is engaged, it remains engaged, and NAV mode arms
  This occurs if the flight crew performs a go-around during an approach with the HDG(TRK) and V/S(FPA) guidance.
  NAV automatically engages as soon as the aircraft reaches the capture zone of the flight plan active leg.

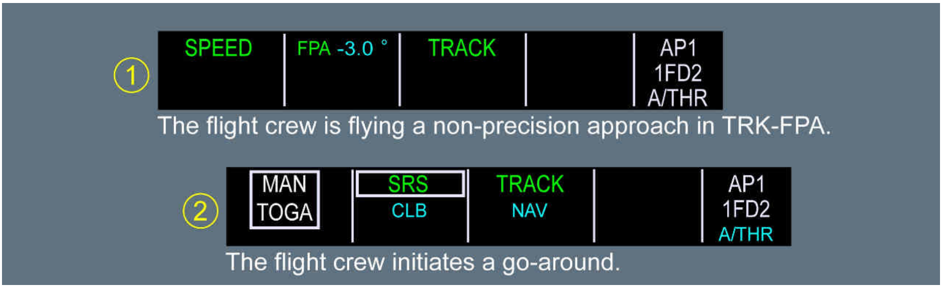
Example: Go-around during a Non-Precision Approach in HDG-V/S


①
SPEED
V/S -700
HDG
AP1
1FD2
A/THR
②
MAN
TOGA
SRS
CLB
HDG
NAV
AP1
1FD2
A/THR

The flight crew is flying a non-precision approach in HDG-V/S.

The flight crew initiates a go-around.

Example: Go-around during a Non-Precision Approach in TRK-FPA


①
SPEED
FPA -3.0 °
TRACK
AP1
1FD2
A/THR
②
MAN
TOGA
SRS
CLB
TRACK
NAV
AP1
1FD2
A/THR

The flight crew is flying a non-precision approach in TRK-FPA.

The flight crew initiates a go-around.

L2 Note: *If the flight crew initiates the go-around below 100 ft RA, GA TRK engages, and NAV mode arms, until 100 ft.*
Then, NAV automatically engages, if the aircraft is in the capture zone of the flight plan active leg.

L1 In addition, at go-around engagement :
- The FMS flight phase becomes go-around
- If not previously engaged, the FDs automatically engage
- HDG-V/S is automatically selected, except if the TRK mode was engaged before go-around
  For more information, *Refer to DSC-22-FG-70-30-20 HDG-V/S / TRK-FPA Selection*.
- If previously displayed, the FPV (VV) disappears, except if the TRK mode was engaged before the go-around

The FMS flight phase changes from go-around to climb, when one of the following modes engages: Altitude acquire mode, altitude hold mode, OP CLB, V/S / FPA.
However, the FMS flight phase will change from climb to cruise, if ALT CRZ* or ALT CRZ engages. This occurs, when the aircraft approaches the AFS CP selected altitude, and the cruise altitude is the AFS CP selected altitude.
For more information on FMS flight phase transitions, *Refer to DSC-22-FMS-10-50-30 Overview*.
The vertical flight plan is not available when the FMS flight phase is go-around. It becomes available when the FMS flight phase becomes climb or cruise.
When SRS GA engages, the speed target becomes managed. The managed speed target is the aircraft speed at SRS GA engagement.
L2 For more information on the managed speed target limits, *Refer to DSC-22-FG-60-20 Managed Speed/Mach Target*.
L1 When SRS GA disengages, the managed speed target will be the speed target provided by the FMS, in accordance with the FMS flight phase.

Note: *If the FMS flight phase is cruise, the SPD LIM, and SPD CSTR are still respected (when applicable).*

SRS GA Mode

GENERAL

Ident.: DSC-22-FG-70-90-20-00005927.0001001 / 03 DEC 15
Applicable to: ALL

The Speed Reference System (SRS) mode is a managed vertical mode. This mode is applicable during takeoff and go-around. This chapter is only about the SRS mode during go-around, also referred to as SRS GA mode.
The FMA displays SRS, when the SRS GA mode engages.
The SRS GA controls the speed target via the elevators.

L2 The guidance law also includes:
- A flight path angle protection, that ensures a positive climb
- A pitch angle protection to reduce the aircraft nose-up (15 ° of maximum pitch attitude).
- A speed protection, that ensures the aircraft does not exceed VFE.

L1 The speed target is the memorized aircraft speed at SRS GA engagement.
L2 The lower limit of the target is the VAPP that the PRIMs memorize at 700 ft RA.

The higher limit of the target is the lowest value between:
- 25 kt above VLS (or 15 kt above VLS when one engine is inoperative)
- 5 kt below VMAX.

L1 *Note:* *At SRS GA engagement, the speed becomes managed.*

ENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-70-90-20-00005928.0002001 / 03 APR 20
Applicable to: ET-AYA

SRS GA engages when all of the following conditions are applicable:
- The aircraft is airborne, or on ground for less than 30 s
- The flight crew sets a thrust lever at the TOGA detent
- The slat or the flaps are extended, or in clean configuration with the aircraft below the AFS CP altitude and below 2 500 ft RA.

SRS GA mode can be engaged regardless of the vertical mode (except SRS TO).

ENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-70-90-20-00005928.0001001 / 03 SEP 14
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYB

SRS GA engages when all of the following conditions are applicable:
- The flight crew sets a thrust lever at the TOGA detent
- The slat or the flaps are extended, or the flap lever is not at the 0 position
- L2 The aircraft is airborne, or on ground for less than 30 s.

L1 SRS GA mode can be engaged regardless of the vertical mode (except SRS TO).

DISENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-70-90-20-00005929.0001001 / 03 SEP 14
Applicable to: ALL

L3 SRS GA can disengage only when the aircraft is above 100 ft RA.

L1 SRS GA disengages when one of the following occurs:
- OP CLB, or CLB is armed, and the aircraft reaches the GA acceleration altitude
  OP CLB , or CLB engages.
  The GA acceleration altitude is displayed on the G.A panel of the PERF page of the FMS.

L3 *Note:* *ALT CST* and ALT CST will not engage at or below the GA acceleration altitude, even if all of the following conditions are applicable:*
- *An altitude constraint associated to a waypoint has the same altitude than the GA acceleration altitude*
- *The AFS CP selected altitude is set above the GA acceleration altitude*
- *NAV armed or engaged.*

- L1 The aircraft reaches the capture zone of the AFS CP selected altitude
  ALT* engages.
  L3 This scenario is possible, if the aircraft is above 400 ft RA.
- L1 The flight crew presses the ALT pb
  ALT engages.
- The flight crew pulls the ALT knob
  OP CLB or OP DES engages.
- The flight crew pulls or pushes the V/S / FPA knob
  V/S / FPA engages.
- L2 The AFS CP selected altitude is above the aircraft altitude, and the flight crew pulls the SPD/MACH knob.
  OP CLB engages.

GA TRK Mode

GENERAL

Ident.: DSC-22-FG-70-90-30-00005930.0001001 / 03 SEP 14
Applicable to: ALL

The GA TRK mode is a managed lateral mode that is applicable during go-around.
The GA TRK mode maintains the track of the aircraft, when the mode engages.

ENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-70-90-30-00005931.0002001 / 03 APR 20
Applicable to: ET-AYA

GA TRK engages, when all of the following conditions are applicable:
- The aircraft is airborne, or on ground for less than 30 s
- The flight crew sets a thrust lever to TOGA
- The slats or the flaps are extended, or in clean configuration with the aircraft below the AFS CP altitude and below 2 500 ft RA
- NAV, HDG, or TRK is not engaged

L3 GA TRK can engage if one of these modes is engaged, provided that the aircraft is below 100 ft
- SRS TO is not engaged.

L1 GA TRK simultaneously engages with SRS GA.

ENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-70-90-30-00005931.0001001 / 03 SEP 14
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYB

GA TRK engages, when all of the following conditions are applicable:
- L2 The aircraft is airborne, or on ground for less than 30 s
- L1 The slats, or the flaps are extended, or the flap lever is not at the 0 position
- The flight crew sets a thrust lever to TOGA
- NAV, HDG, or TRK is not engaged

L3 GA TRK can engage if one of these modes is engaged, provided that the aircraft is below 100 ft
- SRS TO is not engaged.

L1 GA TRK simultaneously engages with SRS GA.

DISENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-70-90-30-00005932.0001001 / 03 SEP 14
Applicable to: ALL

GA TRK disengages, when one of the following occurs:

- The flight crew pulls the HDG/TRK knob
  HDG/TRACK engages.
- NAV is armed, and the aircraft reaches the capture zone of the active leg
  NAV engages.
- L2 The flight crew performs a DIRECT TO.
  NAV engages.

L3 GA TRK cannot be disengaged below 100 ft RA.

General

GENERAL

Ident.: DSC-22-FG-70-100-10-00005933.0001001 / 03 SEP 14
Applicable to: ALL

The AP/FD TCAS mode is an AP/FD vertical mode, that provides vertical guidance in the case of a Resolution Advisory alert, generated by the Traffic Collision Avoidance System (TCAS).

L2 For more information on the TCAS, *Refer to DSC-34-SURV-40-10 Overview*.

L1 When a Traffic Advisory is triggered, the AP/FD TCAS mode arms.

When a Resolution Advisory is triggered, the AP/FD TCAS mode engages to provide guidance in accordance with the Resolution Advisory order:
- The AP status does not change: Remains engaged or disengaged
- If the FDs are disengaged, they automatically engage.

When the "CLEAR OF CONFLICT" aural alert sounds, the AP/FD TCAS mode disengages. The AP/FD provides guidance toward the AFS CP selected altitude.

AP/FD TCAS MODE AVAILABILITY

Ident.: DSC-22-FG-70-100-10-00005934.0001001 / 03 SEP 14
Applicable to: ALL

The AP/FD TCAS mode is available, when all of the following conditions are met:
- TCAS 1 or TCAS 2 is available
- TCAS is in TA/RA mode
- At least one AP, or one FD, is available
- The AP/FD TCAS mode is not failed (i.e. the ECAM did not trigger the AUTO FLT TCAS MODE FAULT alert).

When the AP/FD TCAS mode is available, the AP/FD TCAS mode can arm or engage.

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Arming and Disarming Conditions

ARMING CONDITIONS

Ident.: DSC-22-FG-70-100-20-00005935.0001001 / 03 SEP 14
Applicable to: ALL

L2 To arm, the AP/FD TCAS mode must be available. For more information, *Refer to DSC-22-FG-70-100-10 AP/FD TCAS Mode Availability*.

L1 The AP/FD TCAS mode arms, when

- A Traffic Advisory (TA) alert is triggered, or
- An intruder enters within the TA range.

L2 This usually occurs at the end of a Resolution Advisory, when the "CLEAR OF CONFLICT" aural alert sounds.

L1 The AP/FD TCAS mode arms, even if both APs, and both FDs are disengaged. In this case, the APs and FDs remain disengaged. For more information, *Refer to DSC-22-FG-70-100-40 Introduction*.

DISARMING CONDITIONS

Ident.: DSC-22-FG-70-100-20-00005936.0001001 / 03 SEP 14
Applicable to: ALL

The AP/FD TCAS mode disarms, when one of the following occurs:

- The intruder becomes white on the ND
- The AP/FD TCAS mode engages upon a Resolution Advisory alert
- L2 The TA ONLY mode of the TCAS is selected
- The STANDBY mode of the TCAS is selected
- The AP/FD TCAS mode fails (i.e the ECAM triggers the AUTO FLT TCAS MODE FAULT alert).

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Engagement and Disengagement Conditions

ENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-70-100-30-00005937.0001001 / 03 SEP 14
Applicable to: ALL

L2 To engage, the AP/FD TCAS mode must be available. For more information, *Refer to DSC-22-FG-70-100-10 AP/FD TCAS Mode Availability*.

L1 The AP/FD TCAS mode engages, when a Resolution Advisory is triggered.
The AP/FD TCAS mode engages, even if both APs, and both FDs are disengaged. In this case, the FDs automatically engage. For more information, *Refer to DSC-22-FG-70-100-40 Introduction*.

L2 *Note:* *When the AP/FD TCAS mode engages, the triple click audio indicator does not sound, and the FD pitch bar does not flash.*

DISENGAGEMENT CONDITIONS

Ident.: DSC-22-FG-70-100-30-00005938.0001001 / 03 SEP 14
Applicable to: ALL

The AP/FD TCAS mode automatically disengages, when the "CLEAR OF CONFLICT" aural alert sounds.
Then the AP/FD engages in a vertical mode that leads the aircraft toward the target altitude set on the AFS CP. For more information, *Refer to DSC-22-FG-70-100-40 Introduction*.

L2 The AP/FD TCAS mode also automatically disengages, if one of the following occurs:
- The TA ONLY mode of the TCAS is selected, or
- The STANDBY mode of the TCAS is selected, or
- The ECAM triggers the AP/FD AUTO FLT TCAS MODE FAULT alert, or
- The flight crew engages another AP/FD vertical mode (e.g. in the case of go-around).

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Normal Operations

WHEN A TRAFFIC ADVISORY IS TRIGGERED

Applicable to: ALL

Ident.: DSC-22-FG-70-100-40-GNTA-00005939.0001001 / 03 SEP 14

When a Traffic Advisory (TA) alert is triggered, the TCAS mode arms.

Ident.: DSC-22-FG-70-100-40-GNTA-00005942.0001001 / 03 SEP 14

CONSEQUENCE ON AP AND FD

When the AP/FD TCAS mode arms, the AP and FDs engagement status does not change.

Ident.: DSC-22-FG-70-100-40-GNTA-00005943.0001001 / 03 SEP 14

CONSEQUENCE ON AP/FD LATERAL MODE

When the AP/FD TCAS mode arms, any engaged(armed) AP/FD lateral mode remains engaged(armed).

Ident.: DSC-22-FG-70-100-40-GNTA-00005944.0001001 / 03 SEP 14

CONSEQUENCE ON AP/FD VERTICAL MODE

When the AP/FD TCAS mode arms, any armed(engaged) AP/FD vertical mode remains armed(engaged).
The FMA displays TCAS on the third line of the second column. Therefore, if another AP/FD vertical mode is armed, the FMA displays both modes.

WHEN A RESOLUTION ADVISORY IS TRIGGERED

Applicable to: ALL

Ident.: DSC-22-FG-70-100-40-GNRA-00005940.0001001 / 03 SEP 14

At occurrence of any preventive or corrective Resolution Advisory (RA), the AP/FD TCAS mode engages. It provides vertical guidance in accordance with the TCAS vertical speed orders.

Ident.: DSC-22-FG-70-100-40-GNRA-00005945.0001001 / 03 SEP 14

CONSEQUENCE ON AP AND FD

When the AP/FD TCAS mode engages:
- The AP engagement status does not change
- If both FDs are disengaged, the FDs automatically engage.

Ident.: DSC-22-FG-70-100-40-GNRA-00005946.0001001 / 03 SEP 14

CONSEQUENCE ON AP/FD LATERAL MODE

When the AP/FD TCAS mode engages, any engaged(armed) AP/FD lateral mode remains engaged(armed).
If both APs and both FDs are disengaged, when the AP/FD TCAS mode engages, HDG automatically engages. The heading target is the aircraft heading at HDG engagement.

Ident.: DSC-22-FG-70-100-40-GNRA-00005947.0001001 / 03 JUL 20

1 CONSEQUENCE ON AP/FD VERTICAL MODE

GUIDANCE

Depending on the Resolution Advisory (RA) and the AFS CP selected altitude, the AP/FD TCAS mode uses the guidance law of one of the following modes: V/S, altitude acquire, or altitude hold.

V/S guidance

The AP/FD TCAS mode uses the guidance law of the V/S mode if:
- ALT (ALT CRZ) is not armed, or
- The capture(hold) of the AFS CP selected altitude is not compatible with the RA order.

The vertical speed target is one of the following values:
- The aircraft vertical speed at the engagement of the AP/FD TCAS mode, if a preventive RA is triggered, or
- The limit between the green and red area of the vertical speed scale, plus(minus) 200 ft/min if the aircraft should climb(descend).

L2 In AP/FD TCAS mode, the load factor authority of the guidance law is increased, and can reach ± 0.3 g. The AP/FD TCAS mode ensures that the aircraft speed remains between 5 kt below VLS and VMAX.

L1 *Note: In order to ensure a rapid response to the RA, the initial vertical speed may temporarily exceed the vertical speed target of the TCAS. The peak of the vertical speed is reached in less than 5 s after the vertical speed enters the TCAS green area.*

If the Resolution Advisory order changes, the AP/FD TCAS mode follows the new target.

Altitude acquire(hold) guidance

The AP/FD TCAS mode uses the guidance law of the ALT(ALT CRZ)(ALT*)(ALT CRZ*) mode if:
- ALT(ALT CRZ) is armed
- The capture(hold) of the AFS CP selected altitude is compatible with the RA order.

L2 For more information, See Capture of the selected altitude in TCAS mode.

L1 AP/FD VERTICAL MODE ENGAGED AT OCCURRENCE OF THE RA

When the AP/FD TCAS mode engages, any engaged AP/FD vertical mode disengages.

L2 *Note:* *If G/S(F-G/S) is engaged, when the AP/FD TCAS mode engages:*
- *G/S(F-G/S) disengages*
- *The APPR pb comes off, and the LOC pb comes on.*

L1 AP/FD VERTICAL MODE ARMED AT OCCURRENCE OF THE RA

When the AP/FD TCAS mode engages, any armed AP/FD vertical mode disarms, except ALT(ALT CRZ) if the altitude capture is compatible with the RA order.

L2 *Note:* *If G/S(F-G/S) is armed, when the AP/FD TCAS mode engages:*
- *G/S(F-G/S) disarms*
- *The APPR pb comes off, and the LOC pb comes on.*

Capture of the Selected Altitude in TCAS mode

If ALT(ALT CRZ) is armed, when the AP/FD TCAS mode engages:
- ALT(ALT CRZ) remains armed if the capture of the AFS CP selected altitude is compatible with the Resolution Advisory order, and if the selected level is reached before the clear of conflict.
  L3 If ALT(ALT CRZ) is armed, and ALT capture conditions occur during the Resolution Advisory, the AP/FD TCAS mode captures the AFS CP selected altitude (without ALT* indicated on the FMA).
  L2 This can occur when the TCAS triggers a preventive RA "MONITOR VERTICAL SPEED", or a corrective RA "ADJUST VERTICAL SPEED, ADJUST".
  L3 However, if the vertical speed order of the Resolution Advisory is zero, ALT(ALT CRZ) disarms.
- L2 ALT(ALT CRZ) disarms, if the capture of the AFS CP selected altitude is not compatible with the Resolution Advisory order.

White Box on FMA

When a vertical mode disarms at TCAS mode engagement, the FMA displays a white box for 10 s.

Ident.: DSC-22-FG-70-100-40-GNRA-00005948.0001001 / 03 SEP 14

CONSEQUENCE ON THE FLYING REFERENCE

When the AP/FD TCAS mode engages, the flying reference automatically becomes HDG-V/S.

When the AP/FD TCAS mode disengages (e.g. at the CLEAR OF CONFLICT), the FMA displays the TRK FPA DESELECTED message for 10 s on the third line, if the previous flying reference was TRK-FPA.

Ident.: DSC-22-FG-70-100-40-GNRA-00005949.0001001 / 03 SEP 14

CONSEQUENCE ON A/THR AND SPEED/MACH CONTROL

When the AP/FD TCAS mode engages:

- If the A/THR is disconnected, it becomes armed or active, depending on the thrust lever position
- If the A/THR is armed, it remains armed
- If the A/THR is active, it remains active.

A/THR ACTIVE

When the AP/FD TCAS mode engages, if the A/THR becomes(remains) active, the SPEED/MACH mode engages.
The speed/Mach control becomes selected, and the speed/Mach target becomes the aircraft speed/Mach at the occurrence of the Resolution Advisory (RA).

L2 If a new RA order occurs, the speed/Mach target changes, and becomes the aircraft speed/Mach at the occurrence of the new RA.

L1 A/THR ARMED

When the AP/FD TCAS mode engages, if the A/THR becomes(remains) armed, the thrust target does not change.
The FMA displays the A/THR message, in accordance with the thrust lever position (e.g. MAN THR, MAN TOGA).

L2 *Note:* *If the flight crew sets the thrust levers to the CL detent, the A/THR activates. The SPEED/MACH mode engages. The speed/Mach control becomes selected, and the speed/Mach target becomes the aircraft speed/Mach at the A/THR activation.*

L1 LVR CLB Message on the FMA

In the case of AP/FD TCAS mode engagement when the A/THR is armed (e.g. Resolution Advisory order before the thrust reduction altitude), the LVR CLB message may flash on the FMA:

- If the vertical speed order of the resolution advisory is above 500 ft/min, the LVR CLB message is inhibited
  However, if the speed becomes greater than $VFE - 20$, the LVR CLB message flashes on the FMA.
- If the vertical speed order of the Resolution Advisory is equal to, or below 500 ft/min, the LVR CLB message flashes on the FMA.

WHEN CLEAR OF CONFLICT

Applicable to: ALL

Ident.: DSC-22-FG-70-100-40-GNCOC-00005941.0001001 / 03 SEP 14

When the "CLEAR OF CONFLICT" aural alert sounds, the AP/FD TCAS mode automatically disengages. The AP/FD provides guidance toward the previous AFS CP selected altitude.

Ident.: DSC-22-FG-70-100-40-GNCOC-00005950.0001001 / 03 SEP 14

CONSEQUENCE ON AP/FD LATERAL MODE

When the AP/FD TCAS mode disengages, any engaged(armed) AP/FD lateral mode remains engaged(armed).

Ident.: DSC-22-FG-70-100-40-GNCOC-00005951.0001001 / 03 SEP 14

CONSEQUENCE ON AP/FD VERTICAL MODE

When the AP/FD TCAS mode disengages, one of the following modes engages: V/S, ALT*, ALT, ALT CRZ*, or ALT CRZ:

- In the case of an altitude capture or hold during TCAS mode engagement (*Refer to DSC-22-FG-70-100-40 Consequence on AP and FD*), the TCAS mode may revert to ALT*(ALT CRZ*), or ALT(ALT CRZ) when clear of conflict.
- In all other cases, the TCAS mode reverts to V/S mode when clear of conflict.

TCAS MODE REVERSION TO V/S

When the AP/FD TCAS mode reverts to V/S when clear of conflict, all of the following occurs:

- ALT or ALT CRZ arms

L3 However, ALT does not arm in the following cases:

  - A preventive Resolution Advisory occurred, when one of the following modes was engaged: G/S*, G/S, F-G/S*, or F-G/S
  - The AFS CP selected altitude is above the aircraft altitude.

L1
- A triple click audio indicator sounds, and the pitch bar flashes for 10 s
- The vertical speed target depends on whether a preventive Resolution Advisory occurred, or a corrective Resolution Advisory occurred.

Vertical Speed Target - A Preventive Resolution Advisory Occurred

The vertical speed target remains the vertical speed target at the triggering of the Resolution Advisory.

Vertical Speed Target - A Corrective Resolution Advisory Occurred

The vertical speed target becomes:
- 500 ft/min, if the aircraft is at, or above 30 000 ft, and the AFS CP selected altitude is above the aircraft
- ±1 000 ft/min, in all other cases.
  V/S leads the aircraft toward the AFS CP selected altitude.

TCAS MODE REVERSION TO ALT(ALT CRZ)(ALT*)(ALT CRZ*)

If ALT(ALT CRZ) is armed, when the AP/FD TCAS mode disengages:
- ALT*(ALT CRZ*) engages, if the aircraft is within the capture zone of the AFS CP selected altitude
- ALT(ALT CRZ) engages, if the aircraft altitude is equal to the AFS CP selected altitude.
- In all other cases, V/S engages.

Inhibition Conditions

INHIBITION CONDITIONS

Ident.: DSC-22-FG-70-100-50-00005952.0001001 / 03 NOV 16
Applicable to: ALL

The AP/FD TCAS mode arming and engagement are inhibited when the TCAS is in Traffic Advisory only (TA ONLY) mode or in Standby (STBY) mode.

L2 For more information on the manual or automatic selection of the TA ONLY mode, *Refer to DSC-34-SURV-40-10 TA ONLY Mode*.
For more information on the selection of the STBY mode, *Refer to DSC-34-SURV-40-10 Standby Mode*.

L1 If the TA ONLY (STBY) mode of the TCAS is automatically or manually selected during a Traffic Advisory, the AP/FD TCAS mode automatically disarms.
If the TA ONLY (STBY) mode of the TCAS is automatically or manually selected during a Resolution Advisory, the AP/FD TCAS mode automatically disengages.

When the AP/FD TCAS mode disengages, all of the following simultaneously occurs:

1. The AP/FD TCAS mode reverts to V/S
   A triple click audio indicator sounds and the FD pitch bar flashes for 10 s
   L2 If the Resolution Advisory order was to descend, the vertical speed target becomes 0 ft/min.
   If not, the vertical speed target remains equal to the vertical speed target at the TCAS mode engagement.
2. L1 The AP/FD lateral mode remains engaged
3. The FMA displays the TCAS RA INHIBITED message on the second and third columns of the third line.

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Takeoff

INTRODUCTION

Ident.: DSC-22-FG-70-110-20-00005953.0001001 / 04 SEP 14
Applicable to: ALL

For scenario examples on takeoff:
- *Refer to DSC-22-FG-70-110-20 Takeoff with NAV*
- *Refer to DSC-22-FG-70-110-20 Takeoff with HDG/TRK Preset*.

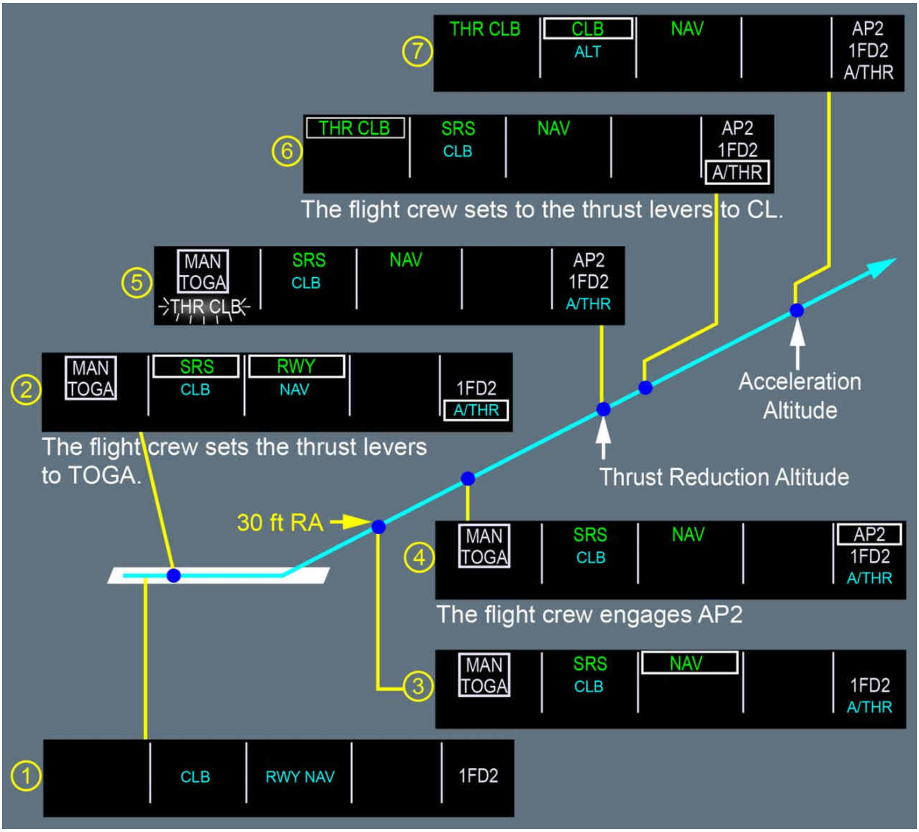
TAKEOFF WITH NAV

Ident.: DSC-22-FG-70-110-20-00005954.0001001 / 04 SEP 14
Applicable to: ALL

NAV and CLB arm when the aircraft is on ground, and:
- The FDs are engaged
- A runway and a SID are selected in the flight plan
- V2 is inserted in the T.O panel of the FMS PERF page
- TOGA is selected in the T.O panel of the FMS PERF page
- The AFS CP selected altitude is set above the acceleration altitude
- The slats are extended.

When the aircraft approaches the runway threshold, and the LOC signal is available, RWY arms.
When the aircraft is at the runway threshold, and the flight crew sets the thrust levers to TOGA, SRS TO and RWY engage, and MAN TOGA appears on the FMA.
At least five seconds after liftoff, the flight crew can engage one AP.
At 30 ft RA, RWY disengages, and NAV engages.
When the aircraft reaches the thrust reduction altitude, LVR CLB flashes. The flight crew sets the thrust levers to CL, MAN TOGA disappears, and THR CLB engages.
At the acceleration altitude, SRS TO disengages, and CLB engages.
From liftoff to the acceleration altitude, the managed speed target is V2+10 kt. At the acceleration altitude, the managed speed target becomes the applicable FMS speed target (e.g. CLB SPD LIM, ECON speed).

Takeoff with NAV


7
THR CLB
CLB
ALT
NAV
AP2
1FD2
A/THR
6
THR CLB
SRS
CLB
NAV
AP2
1FD2
A/THR
The flight crew sets to the thrust levers to CL.
5
MAN
TOGA
THR CLB
SRS
CLB
NAV
AP2
1FD2
A/THR
2
MAN
TOGA
SRS
CLB
RWY
NAV
1FD2
A/THR
The flight crew sets the thrust levers to TOGA.
Acceleration Altitude
Thrust Reduction Altitude
30 ft RA
4
MAN
TOGA
SRS
CLB
NAV
AP2
1FD2
A/THR
The flight crew engages AP2
3
MAN
TOGA
SRS
CLB
NAV
1FD2
A/THR
1
CLB
RWY NAV
1FD2

TAKEOFF WITH HDG/TRK PRESET

Ident.: DSC-22-FG-70-110-20-00005955.0001001 / 03 JUL 20
Applicable to: ALL

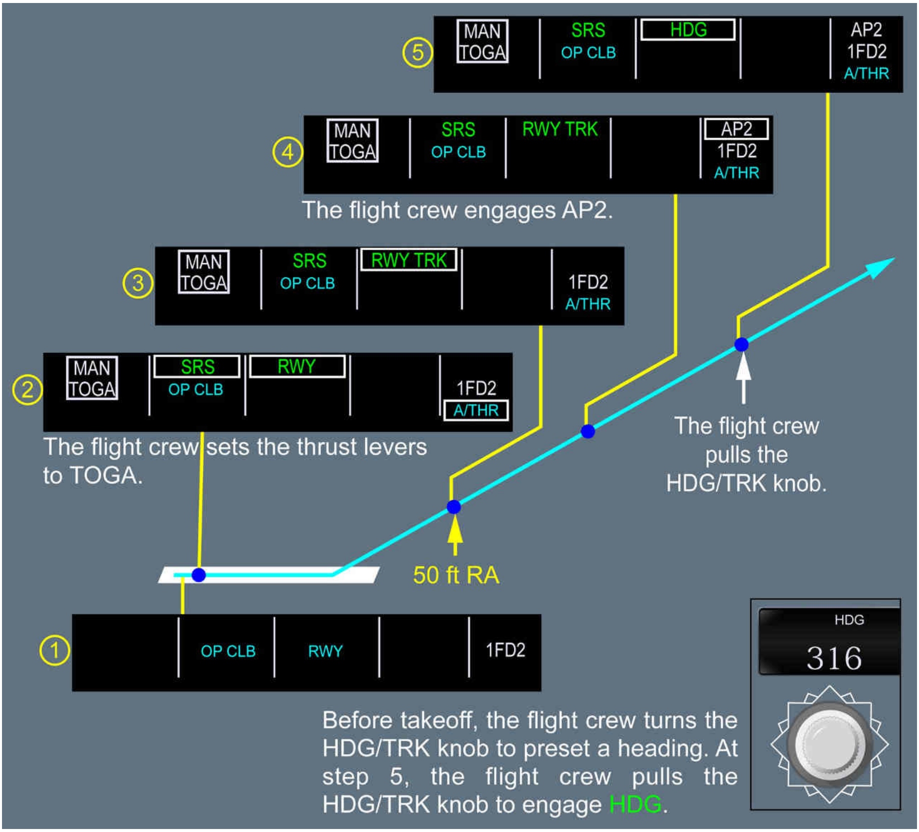
1

OP CLB arms when the aircraft is on ground, and:
- The FDs are engaged
- A runway is selected in the flight plan
- V2 is inserted in the T.O panel of the FMS PERF page
- TOGA is selected in the T.O panel of the FMS PERF page
- The AFS CP selected altitude is set above the acceleration altitude

- The flight crew turned the HDG/TRK knob on the AFS CP to select a heading (or track) preset The HDG/TRK window displays the heading (or track). The display remains, as long as RWY, RWY TRK, and HDG (or TRACK) are engaged.
- The slats are extended.

When the aircraft approaches the runway threshold, and the LOC signal is available, RWY arms.
When the aircraft is at the runway threshold, and the flight crew sets the thrust levers to TOGA, SRS and RWY engage, and MAN TOGA appears on the FMA.
At least five seconds after liftoff, the flight crew can engage one AP.
At 50 ft RA, RWY disengages, and RWY TRK engages.
When the flight crew pulls the HDG/TRK knob, HDG engages (HDG-V/S is selected).
At the thrust reduction altitude, THR CLB engages.
At the acceleration altitude, OP CLB engages.
From liftoff to the acceleration altitude, the managed speed target is V2 + 10 kt. At the acceleration altitude, the managed speed target becomes the applicable FMS speed target (e.g. CLB SPD LIM, ECON speed).

Takeoff with HDG/TRK Preset


⑤
MAN
TOGA
SRS
OP CLB
HDG
AP2
1FD2
A/THR
④
MAN
TOGA
SRS
OP CLB
RWY TRK
AP2
1FD2
A/THR
The flight crew engages AP2.
③
MAN
TOGA
SRS
OP CLB
RWY TRK
1FD2
A/THR
②
MAN
TOGA
SRS
OP CLB
RWY
1FD2
A/THR
The flight crew sets the thrust levers to TOGA.
The flight crew pulls the HDG/TRK knob.
50 ft RA
①
OP CLB
RWY
1FD2
HDG
316

Before takeoff, the flight crew turns the HDG/TRK knob to preset a heading. At step 5, the flight crew pulls the HDG/TRK knob to engage HDG.

Climb with OP CLB Mode

INTRODUCTION

Ident.: DSC-22-FG-70-110-30-00005956.0001001 / 04 SEP 14
Applicable to: ALL

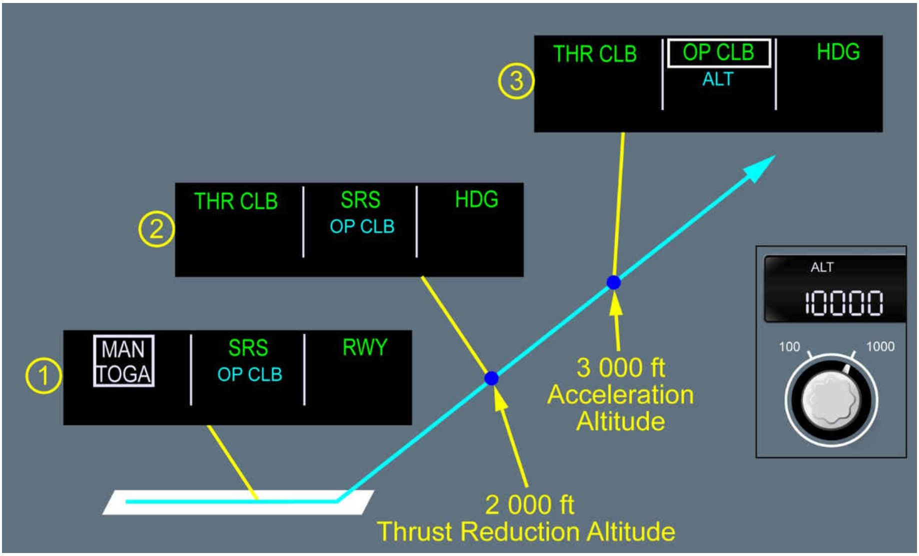
For scenario examples on climb with OP CLB mode:
- *Refer to DSC-22-FG-70-110-30 At the Acceleration Altitude*
- *Refer to DSC-22-FG-70-110-30 The Flight Crew Pulls the ALT Knob*
- *Refer to DSC-22-FG-70-110-30 NAV Disengages*.

AT THE ACCELERATION ALTITUDE

Ident.: DSC-22-FG-70-110-30-00005957.0001001 / 04 SEP 14
Applicable to: ALL

On ground, OP CLB arms, if NAV is not armed.
OP CLB automatically engages at the acceleration altitude.

At the Acceleration Altitude

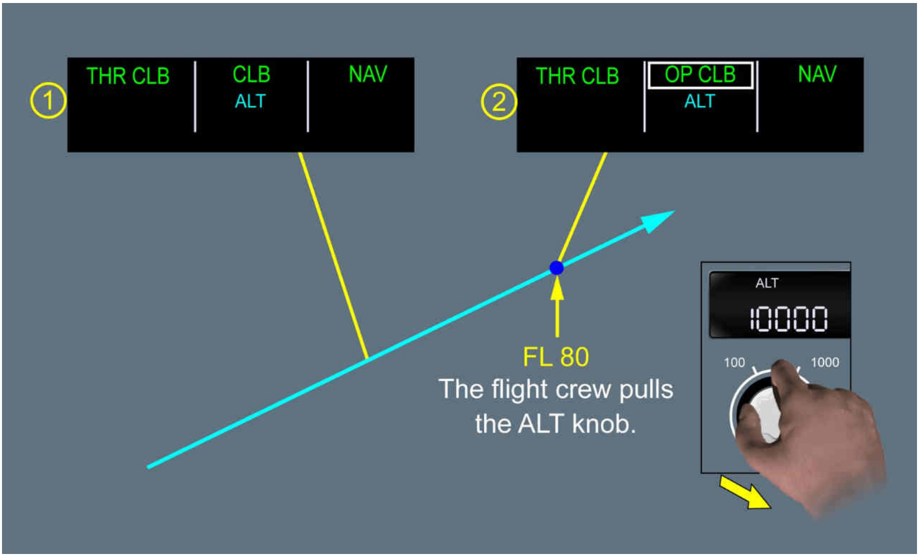

③
THR CLB
OP CLB
ALT
HDG
②
THR CLB
SRS
OP CLB
HDG
①
MAN
TOGA
SRS
OP CLB
RWY
ALT
10000
100
1000
3 000 ft
Acceleration
Altitude
2 000 ft
Thrust Reduction Altitude

THE FLIGHT CREW PULLS THE ALT KNOB

Ident.: DSC-22-FG-70-110-30-00005958.0001001 / 04 SEP 14
Applicable to: ALL

If CLB is engaged, and the flight crew pulls the ALT knob, OP CLB engages.

The Flight Crew Pulls the ALT Knob


①
THR CLB
CLB
ALT
NAV
②
THR CLB
OP CLB
ALT
NAV
FL 80
The flight crew pulls the ALT knob.
ALT
10000
100
1000

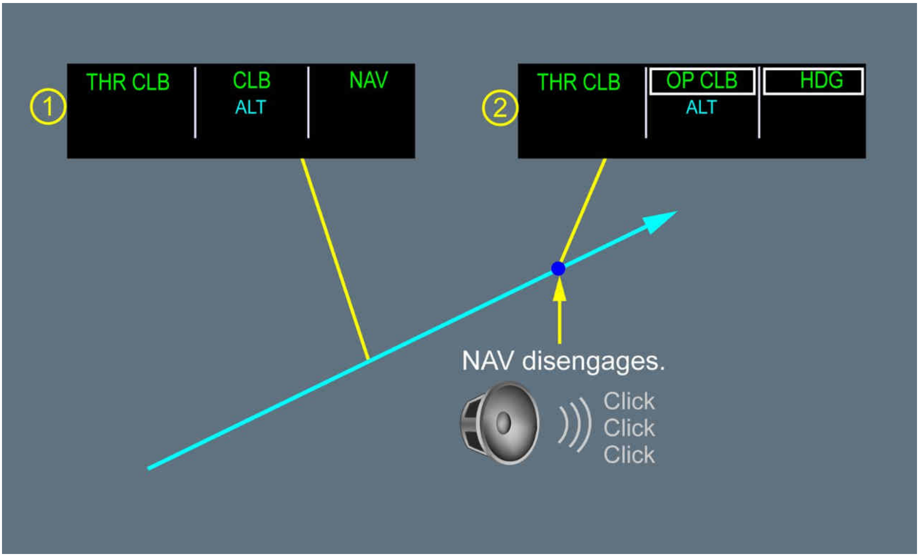
NAV DISENGAGES

Ident.: DSC-22-FG-70-110-30-00005959.0001001 / 04 SEP 14
Applicable to: ALL

If CLB and NAV are engaged and NAV disengages, CLB disengages, and OP CLB engages.

The transition from CLB to OP CLB is a reversion with a triple click, if NAV disengages due to one of the following conditions:
- The aircraft reaches a flight plan discontinuity
- The next altitude target is an altitude constraint, and the flight crew engages HDG/TRACK mode.

NAV disengages


①
THR CLB
CLB
ALT
NAV
②
THR CLB
OP CLB
ALT
HDG
NAV disengages.
Click
Click
Click

Intentionally left blank

Climb with CLB Mode

INTRODUCTION

Ident.: DSC-22-FG-70-110-40-00005960.0001001 / 04 SEP 14
Applicable to: ALL

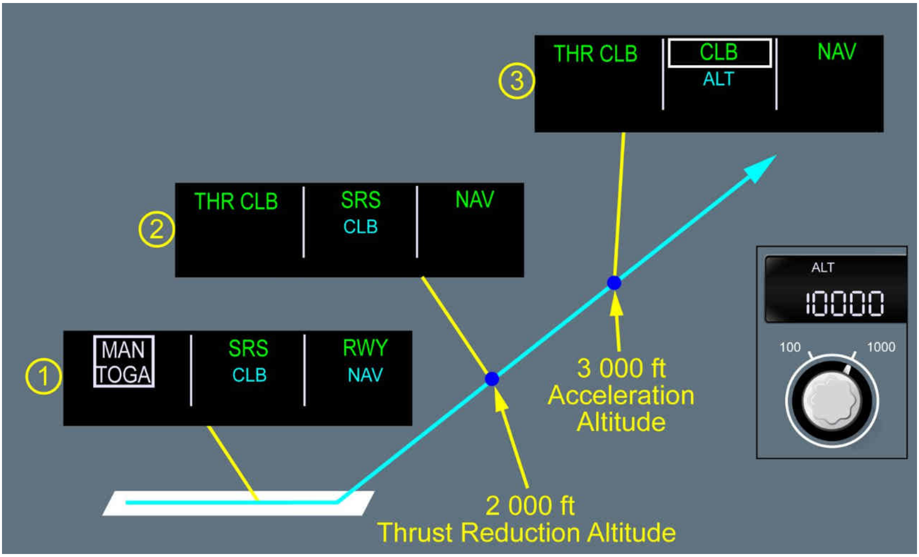
For scenario examples on climb with CLB mode:
- *Refer to DSC-22-FG-70-110-40 At the Acceleration Altitude*
- *Refer to DSC-22-FG-70-110-40 Climbing toward an Altitude Constraint*.

AT THE ACCELERATION ALTITUDE

Ident.: DSC-22-FG-70-110-40-00005961.0001001 / 04 SEP 14
Applicable to: ALL

On ground, with NAV armed, CLB arms. CLB automatically engages at the acceleration altitude.

At the Acceleration Altitude

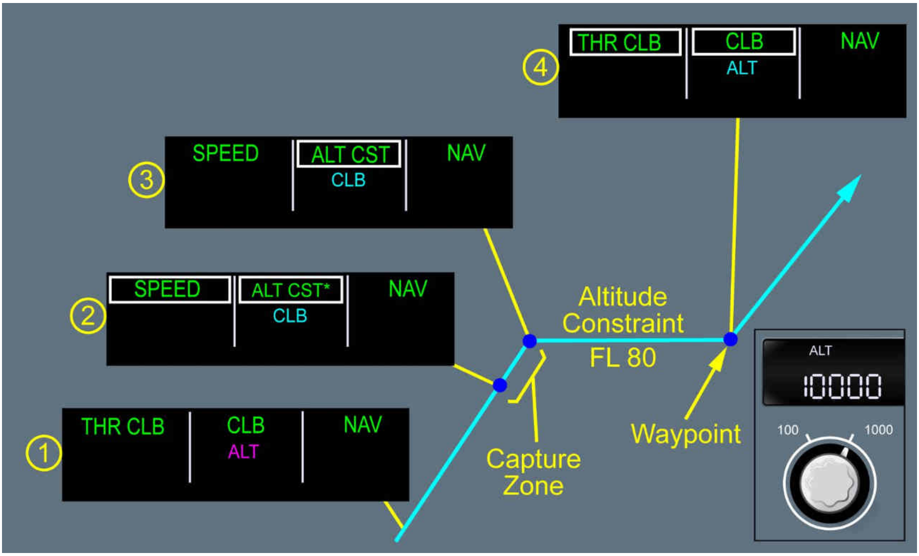

③
THR CLB
CLB
ALT
NAV
②
THR CLB
SRS
CLB
NAV
①
MAN
TOGA
SRS
CLB
RWY
NAV
ALT
10000
100
1000
3 000 ft
Acceleration
Altitude
2 000 ft
Thrust Reduction Altitude

CLIMBING TOWARD AN ALTITUDE CONSTRAINT

Ident.: DSC-22-FG-70-110-40-00005962.0001001 / 04 SEP 14
Applicable to: ALL

If the aircraft reaches an altitude constraint when CLB is engaged, the ALT CST mode engages and CLB becomes arms.
When the aircraft sequences the waypoint that defines the end of the altitude constraint of the FMS flight plan, CLB recovers.

Climbing toward an Altitude Constraint


④
THR CLB
CLB
ALT
NAV
③
SPEED
ALT CST
CLB
NAV
②
SPEED
ALT CST*
CLB
NAV
①
THR CLB
CLB
ALT
NAV
Altitude Constraint FL 80
Capture Zone
Waypoint
ALT
10000
100
1000

Altitude Acquire and Altitude Hold

INTRODUCTION

Ident.: DSC-22-FG-70-110-60-00005963.0001001 / 06 NOV 14
Applicable to: ALL

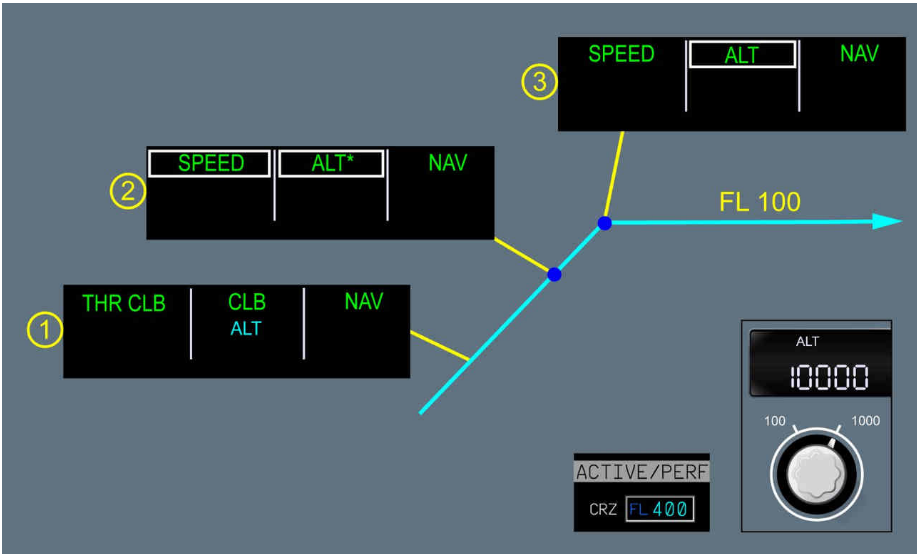
For scenario examples on altitude acquire and altitude hold:
- *Refer to DSC-22-FG-70-110-60 CLB and ALT - Example 1*
- *Refer to DSC-22-FG-70-110-60 CLB and ALT - Example 2*
- *Refer to DSC-22-FG-70-110-60 CLB and ALT CST*
- *Refer to DSC-22-FG-70-110-60 CLB and ALT CRZ*
- *Refer to DSC-22-FG-70-110-60 OP CLB and ALT*
- *Refer to DSC-22-FG-70-110-60 OP CLB and ALT CRZ*.
- *Refer to DSC-22-FG-70-110-60 ALT CRZ with TCAS TA - Example 1*
- *Refer to DSC-22-FG-70-110-60 ALT with TCAS TA - Example 2*

CLB AND ALT - EXAMPLE 1

Ident.: DSC-22-FG-70-110-60-00005964.0001001 / 02 OCT 14
Applicable to: ALL

The vertical guidance is managed, and the aircraft climbs toward the AFS CP selected altitude (e.g. FL 100), with no altitude constraint.

CLB and ALT - Example 1

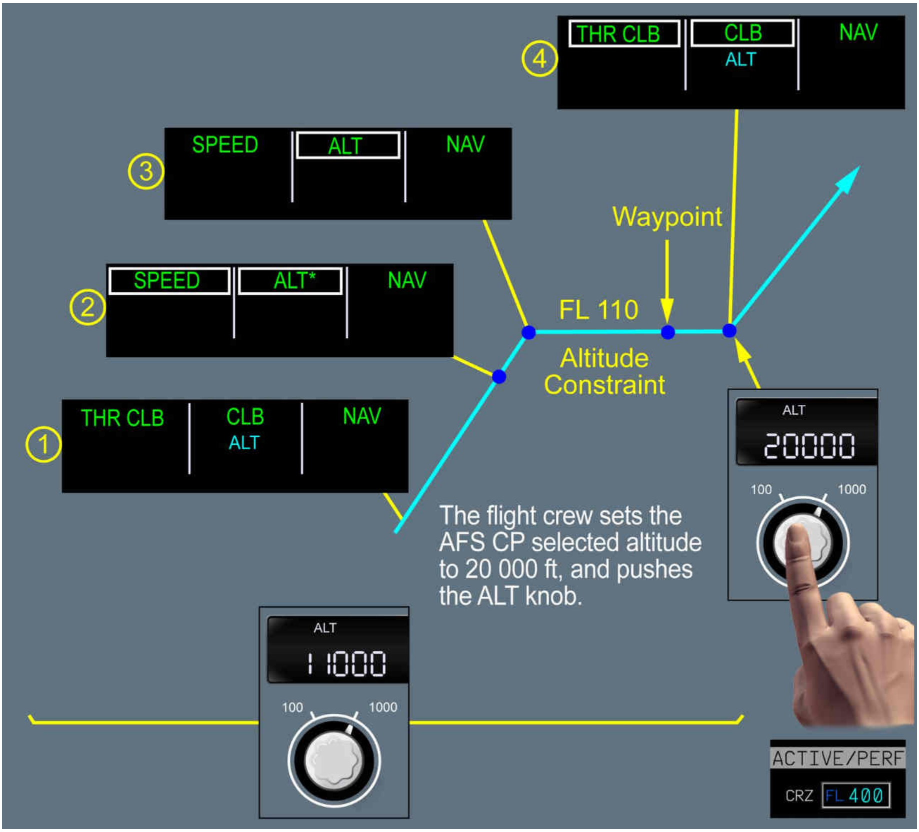

③
SPEED
ALT
NAV
②
SPEED
ALT*
NAV
FL 100
①
THR CLB
CLB
ALT
NAV
ALT
10000
100
1000
ACTIVE/PERF
CRZ
FL 400

CLB AND ALT - EXAMPLE 2

Ident.: DSC-22-FG-70-110-60-00005965.0001001 / 02 OCT 14
Applicable to: ALL

The vertical guidance is managed, and:
- The AFS CP selected altitude (e.g. FL 110) is equal to the altitude constraint (e.g. FL 110)
- The aircraft climbs toward the altitude constraint.

CLB and ALT - Example 2


④
THR CLB
CLB
ALT
NAV
③
SPEED
ALT
NAV
②
SPEED
ALT*
NAV
①
THR CLB
CLB
ALT
NAV
Waypoint
FL 110
Altitude
Constraint
ALT
20000
100
1000
ALT
11000
100
1000
ACTIVE/PERF
CRZ
FL 400

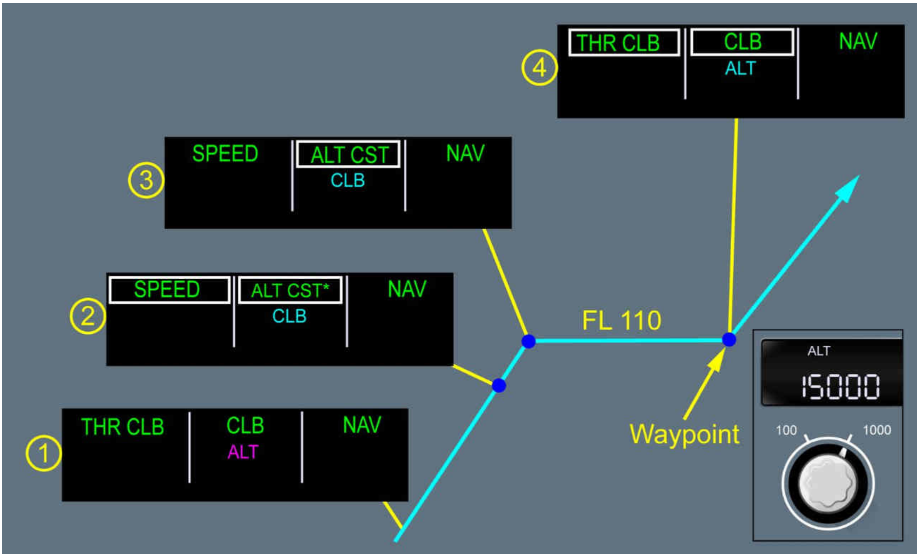
The flight crew sets the AFS CP selected altitude to 20 000 ft, and pushes the ALT knob.

CLB AND ALT CST

Ident.: DSC-22-FG-70-110-60-00005966.0001001 / 02 OCT 14
Applicable to: ALL

The vertical guidance is managed, and:
- The AFS CP selected altitude (e.g. FL 150) is above an altitude constraint (e.g. FL 100)
- The aircraft climbs toward the altitude constraint.

CLB and ALT CST


④
THR CLB
CLB
ALT
NAV
③
SPEED
ALT CST
CLB
NAV
②
SPEED
ALT CST*
CLB
NAV
①
THR CLB
CLB
ALT
NAV
FL 110
Waypoint
ALT
15000
100
1000

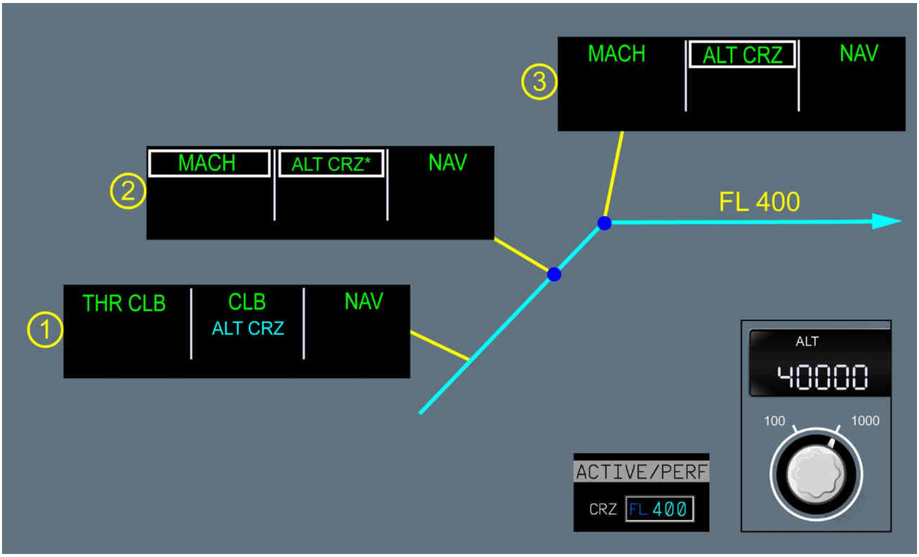
CLB AND ALT CRZ

Ident.: DSC-22-FG-70-110-60-00005967.0001001 / 02 OCT 14
Applicable to: ALL

The vertical guidance is managed, and:

- The AFS CP selected altitude is equal to the cruise altitude (e.g FL 400)
- The aircraft climbs toward the cruise altitude.

CLB and ALT CRZ

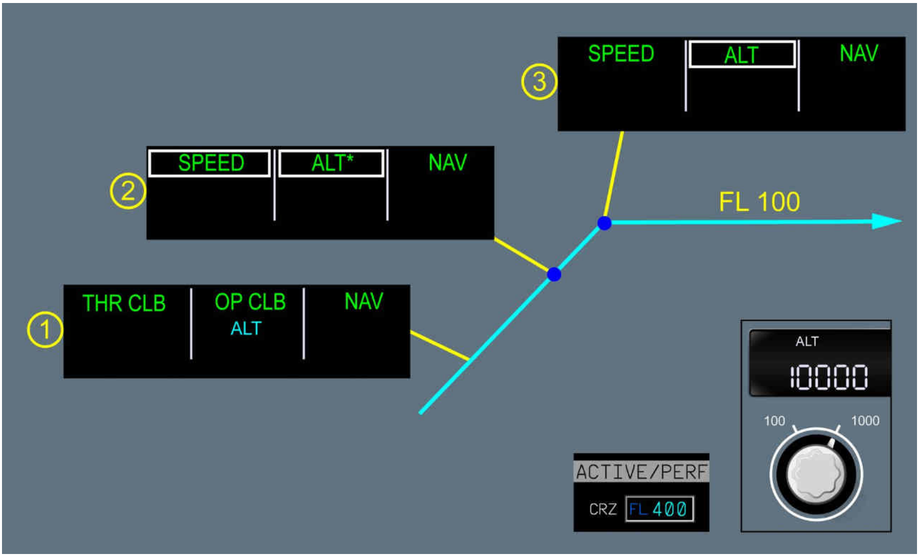

③
MACH
ALT CRZ
NAV
②
MACH
ALT CRZ*
NAV
FL 400
①
THR CLB
CLB
ALT CRZ
NAV
ALT
40000
100
1000
ACTIVE/PERF
CRZ
FL 400

OP CLB AND ALT

Ident.: DSC-22-FG-70-110-60-00005968.0001001 / 02 OCT 14
Applicable to: ALL

OP CLB is engaged, and the aircraft climbs toward the AFS CP selected altitude (e.g. FL 100).

OP CLB and ALT


③
SPEED
ALT
NAV
②
SPEED
ALT*
NAV
①
THR CLB
OP CLB
ALT
NAV
FL 100
ALT
10000
100
1000
ACTIVE/PERF
CRZ
FL 400

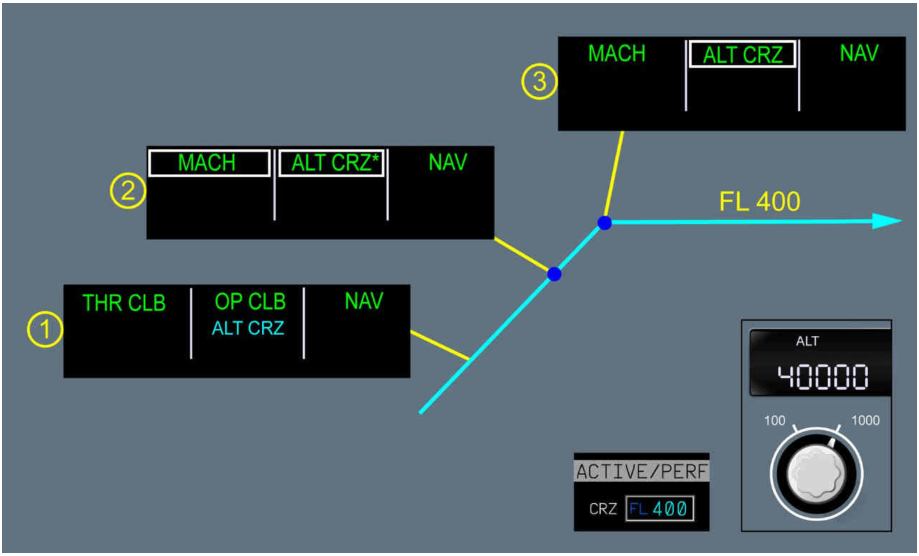
OP CLB AND ALT CRZ

Ident.: DSC-22-FG-70-110-60-00005969.0001001 / 02 OCT 14
Applicable to: ALL

OP CLB is engaged, and:

- The AFS CP selected altitude is equal to the cruise altitude (e.g. FL 400)
- The aircraft climbs toward the cruise altitude (e.g. FL 400).

OP CLB and ALT CRZ

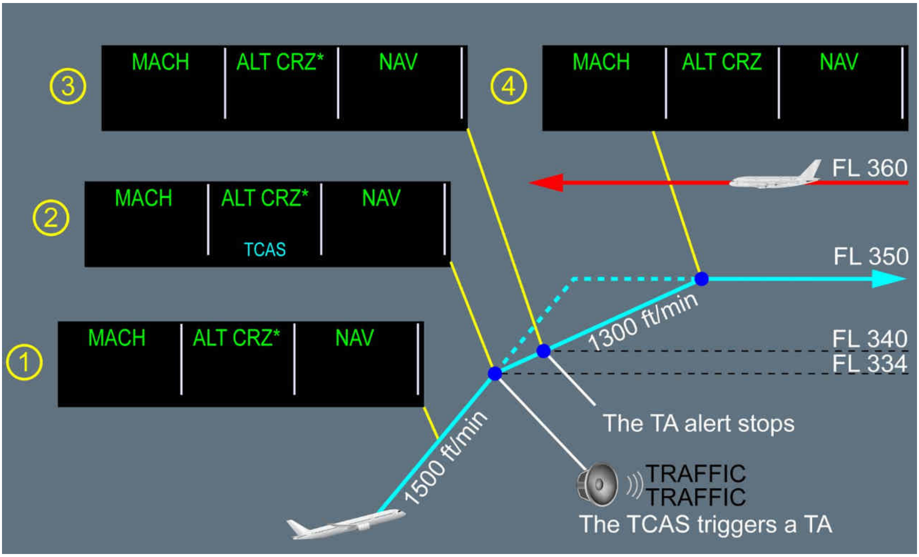

③
MACH
ALT CRZ
NAV
②
MACH
ALT CRZ*
NAV
FL 400
①
THR CLB
OP CLB
ALT CRZ
NAV
ALT
40000
100
1000
ACTIVE/PERF
CRZ
FL 400

ALT CRZ WITH TCAS TA - EXAMPLE 1

Ident.: DSC-22-FG-70-110-60-00021957.0001001 / 06 NOV 14
Applicable to: ALL

The aircraft levels off at the cruise altitude, with a TCAS Traffic Advisory (TA).

ALT CRZ with TCAS TA


③
MACH
ALT CRZ*
NAV
④
MACH
ALT CRZ
NAV
②
MACH
ALT CRZ*
TCAS
NAV
①
MACH
ALT CRZ*
NAV
FL 360
FL 350
1300 ft/min
FL 340
FL 334
1500 ft/min
The TA alert stops
TRAFFIC
TRAFFIC
The TCAS triggers a TA

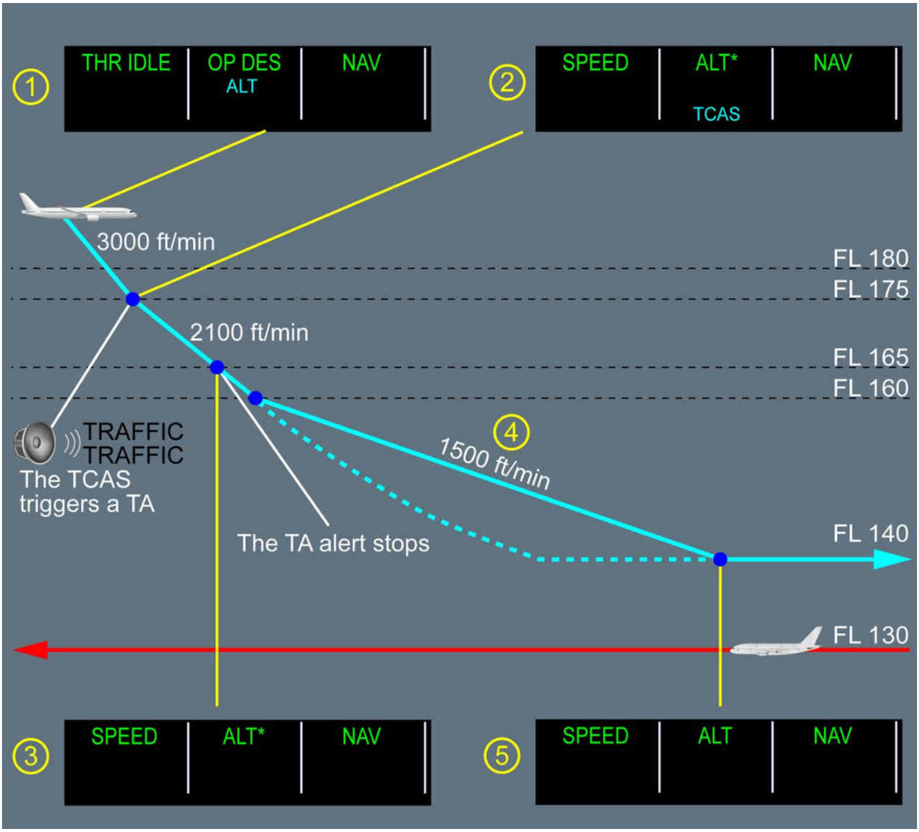
Note: *The same principle applies, if the aircraft levels off at the cruise altitude with the ALT mode.*

ALT WITH TCAS TA - EXAMPLE 2

Ident.: DSC-22-FG-70-110-60-00021958.0001001 / 06 NOV 14
Applicable to: ALL

The aircraft levels off in descent with a TCAS Traffic Advisory (TA).

ALT in Descent with TCAS TA


①
THR IDLE
OP DES
ALT
NAV
②
SPEED
ALT*
TCAS
NAV
3000 ft/min
FL 180
FL 175
2100 ft/min
FL 165
FL 160
TRAFFIC
TRAFFIC
The TCAS
triggers a TA
④
1500 ft/min
The TA alert stops
FL 140
FL 130
③
SPEED
ALT*
NAV
⑤
SPEED
ALT
NAV

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Approach and Landing

INTRODUCTION

Ident.: DSC-22-FG-70-110-90-00005970.0001001 / 02 OCT 14
Applicable to: ALL

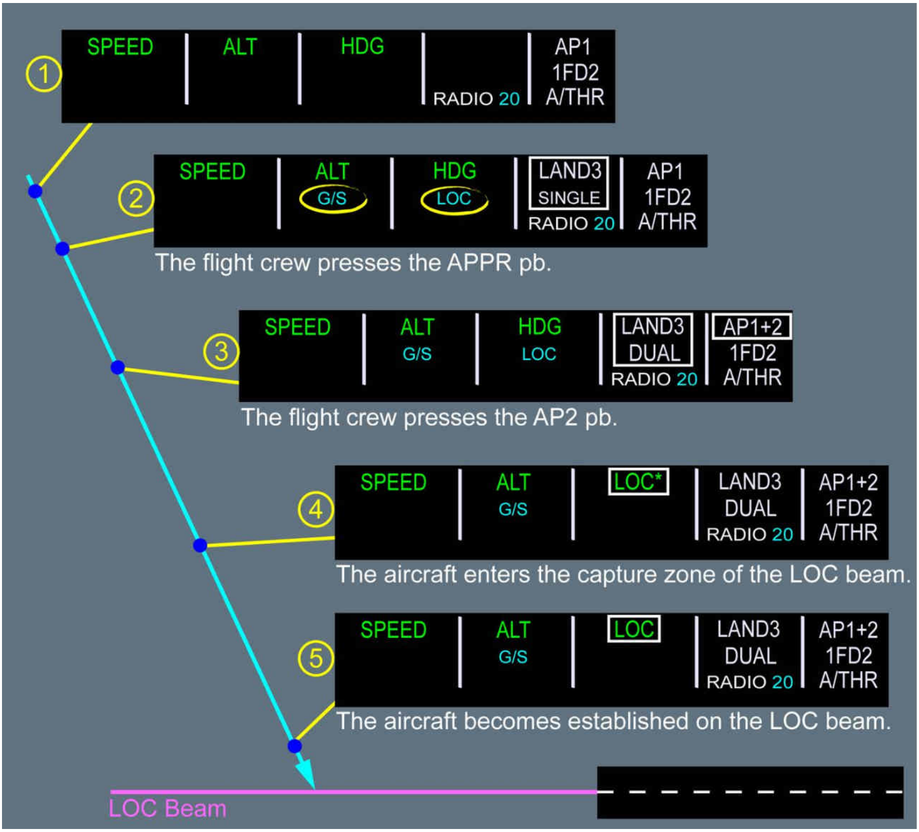
For scenario examples on approaches:
- *Refer to DSC-22-FG-70-110-90 ILS Approach and Autoland*
- *Refer to DSC-22-FG-70-110-90 VOR Approach Flown with FLS Function*
- *Refer to DSC-22-FG-70-110-90 LOC only Approach Flown with FLS Function*

ILS APPROACH AND AUTOLAND

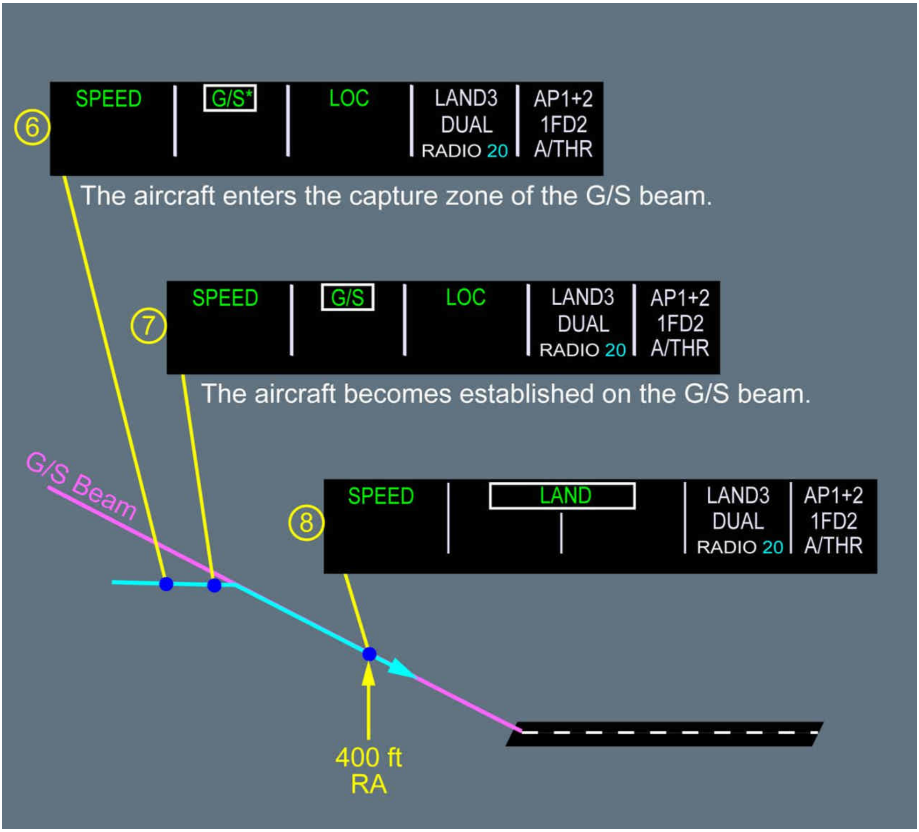
Ident.: DSC-22-FG-70-110-90-00005971.0001001 / 02 OCT 14
Applicable to: ALL

The flight crew selected an ILS approach on the ARRIVAL page of the FMS.
AP1 is engaged, and a heading is selected to fly toward the LOC beam.

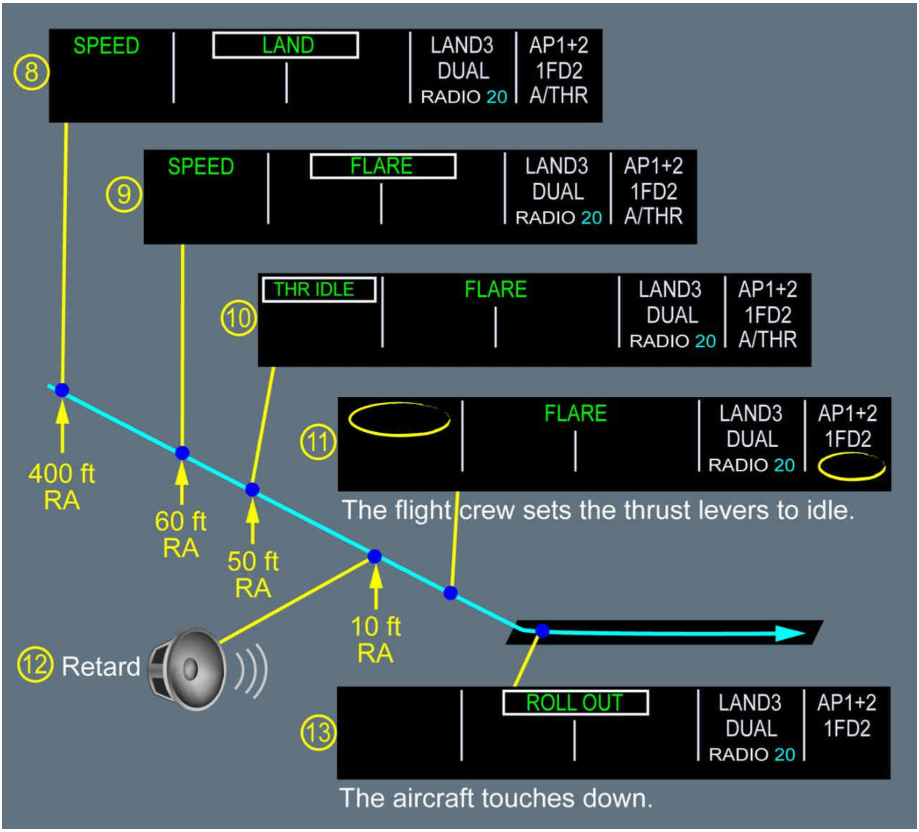
ILS Approach and Autoland - Step 1 to 5


①
SPEED
ALT
HDG
RADIO 20
AP1
1FD2
A/THR
②
SPEED
ALT
G/S
HDG
LOC
LAND3
SINGLE
RADIO 20
AP1
1FD2
A/THR
The flight crew presses the APPR pb.
③
SPEED
ALT
G/S
HDG
LOC
LAND3
DUAL
RADIO 20
AP1+2
1FD2
A/THR
The flight crew presses the AP2 pb.
④
SPEED
ALT
G/S
LOC*
LAND3
DUAL
RADIO 20
AP1+2
1FD2
A/THR
The aircraft enters the capture zone of the LOC beam.
⑤
SPEED
ALT
G/S
LOC
LAND3
DUAL
RADIO 20
AP1+2
1FD2
A/THR
The aircraft becomes established on the LOC beam.
LOC Beam

ILS Approach and Autoland - Step 6 to 8


⑥
SPEED
G/S*
LOC
LAND3
DUAL
RADIO 20
AP1+2
1FD2
A/THR
The aircraft enters the capture zone of the G/S beam.
⑦
SPEED
G/S
LOC
LAND3
DUAL
RADIO 20
AP1+2
1FD2
A/THR
The aircraft becomes established on the G/S beam.
G/S Beam
⑧
SPEED
LAND
LAND3
DUAL
RADIO 20
AP1+2
1FD2
A/THR
400 ft
RA

ILS Approach and Autoland - Step 8 to 12


⑧
SPEED
LAND
LAND3
DUAL
RADIO 20
AP1+2
1FD2
A/THR
⑨
SPEED
FLARE
LAND3
DUAL
RADIO 20
AP1+2
1FD2
A/THR
⑩
THR IDLE
FLARE
LAND3
DUAL
RADIO 20
AP1+2
1FD2
A/THR
⑪
FLARE
LAND3
DUAL
RADIO 20
AP1+2
1FD2
400 ft
RA
60 ft
RA
50 ft
RA
10 ft
RA
⑫ Retard
⑬
ROLL OUT
LAND3
DUAL
RADIO 20
AP1+2
1FD2

The flight crew sets the thrust levers to idle.

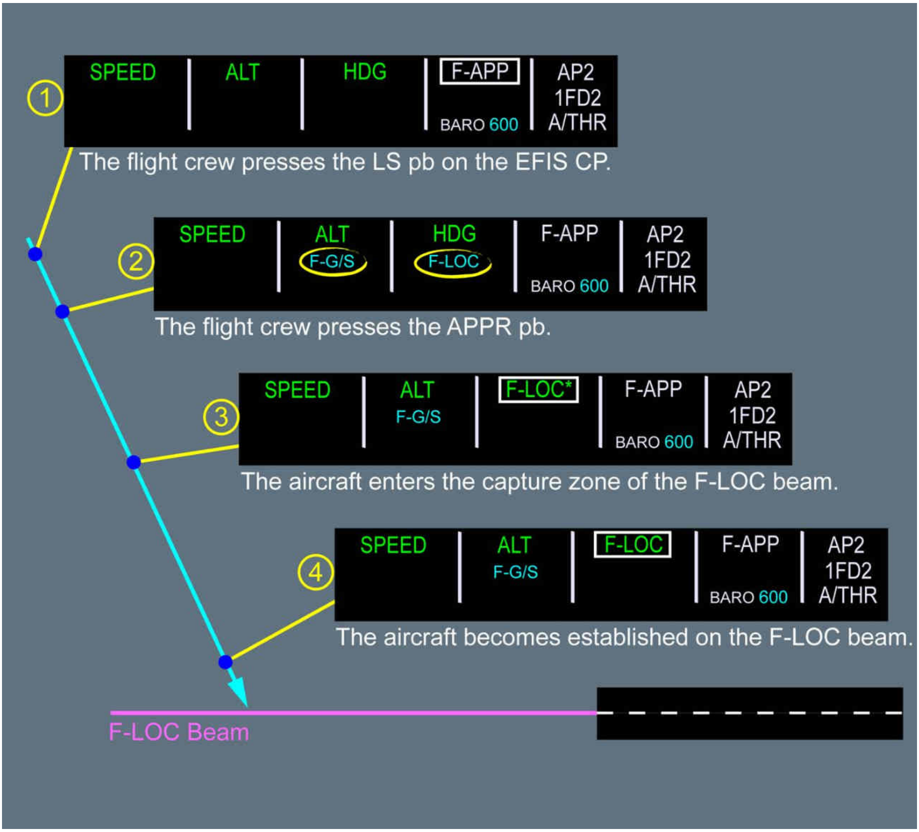
The aircraft touches down.

VOR APPROACH FLOWN WITH FLS FUNCTION

Ident.: DSC-22-FG-70-110-90-00005972.0001001 / 02 OCT 14
Applicable to: ALL

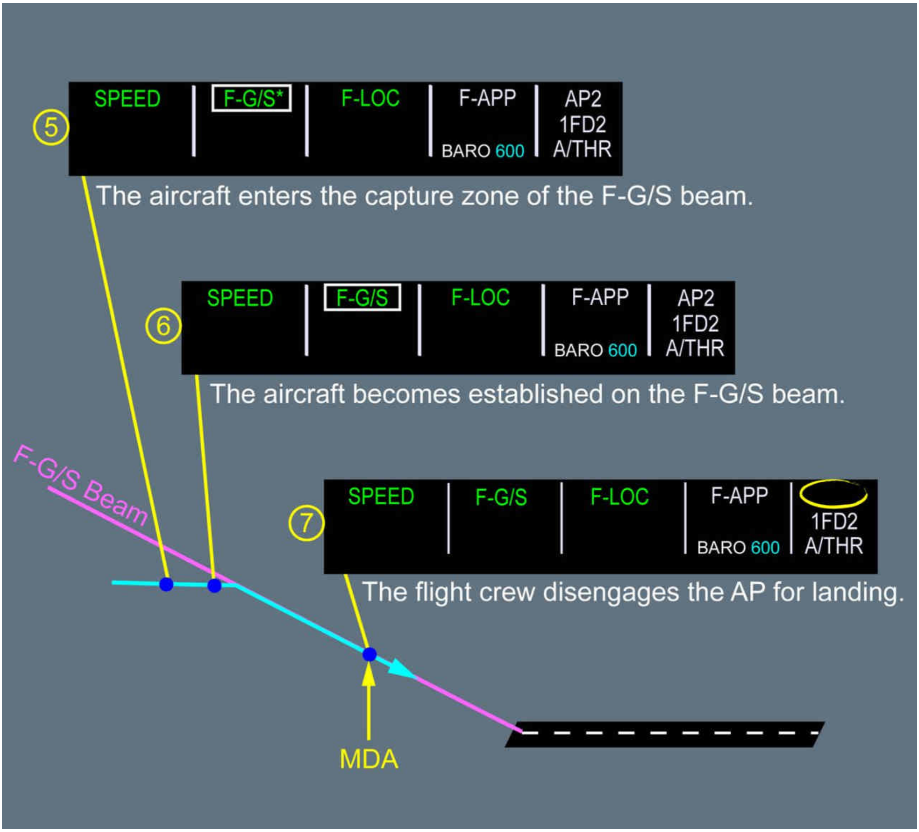
The flight crew selected a VOR approach on the ARRIVAL page of the FMS. The FMS approach phase is activated.
AP2 is engaged, and a heading is selected to fly toward the F-LOC beam.

VOR Approach Flown with FLS Function - Step 1 to 4


①
SPEED
ALT
HDG
F-APP
BARO 600
AP2
1FD2
A/THR
②
SPEED
ALT
F-G/S
HDG
F-LOC
F-APP
BARO 600
AP2
1FD2
A/THR
③
SPEED
ALT
F-G/S
F-LOC*
F-APP
BARO 600
AP2
1FD2
A/THR
④
SPEED
ALT
F-G/S
F-LOC
F-APP
BARO 600
AP2
1FD2
A/THR
F-LOC Beam

1. The flight crew presses the LS pb on the EFIS CP.
2. The flight crew presses the APPR pb.
3. The aircraft enters the capture zone of the F-LOC beam.
4. The aircraft becomes established on the F-LOC beam.

VOR Approach Flown with FLS Function - Step 5 to 7

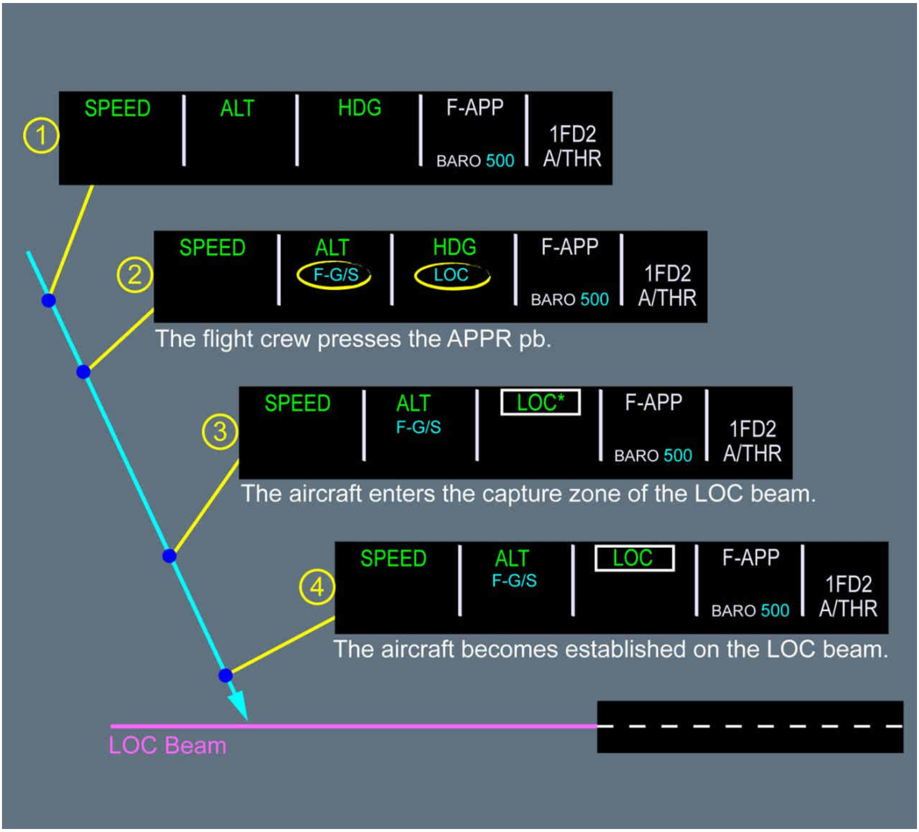

⑤
SPEED
F-G/S*
F-LOC
F-APP
BARO 600
AP2
1FD2
A/THR
The aircraft enters the capture zone of the F-G/S beam.
⑥
SPEED
F-G/S
F-LOC
F-APP
BARO 600
AP2
1FD2
A/THR
The aircraft becomes established on the F-G/S beam.
F-G/S Beam
⑦
SPEED
F-G/S
F-LOC
F-APP
BARO 600
1FD2
A/THR
The flight crew disengages the AP for landing.
MDA

LOC ONLY APPROACH FLOWN WITH FLS FUNCTION

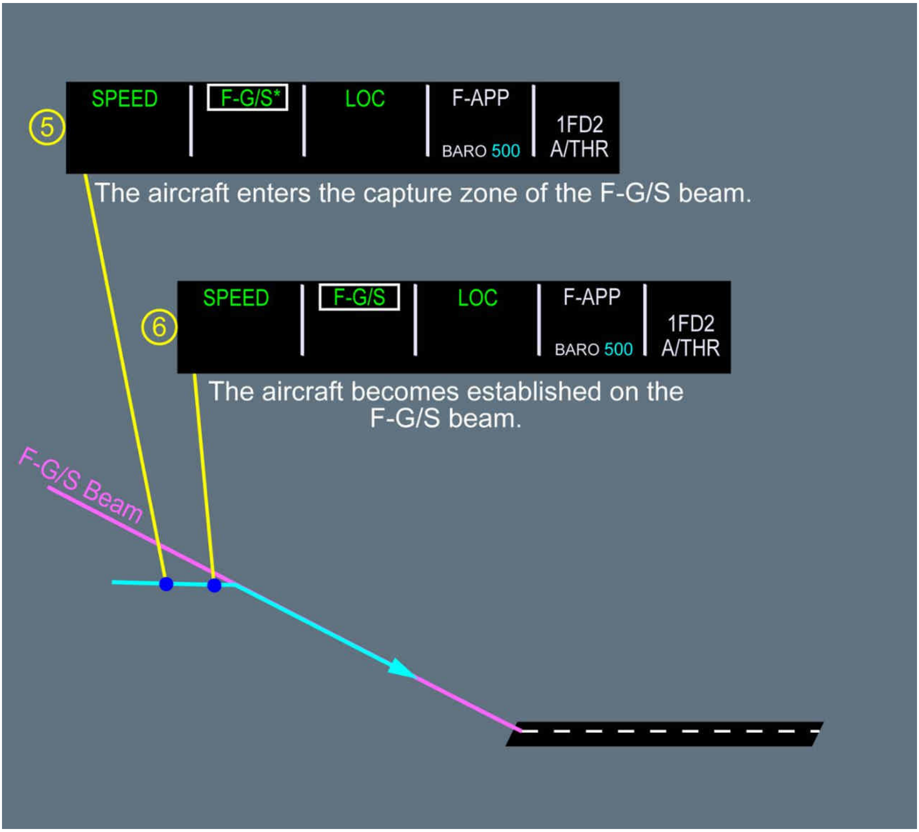
Ident.: DSC-22-FG-70-110-90-00005973.0001001 / 02 OCT 14
Applicable to: ALL

The flight crew selected a LOC approach on the ARRIVAL page of the FMS.
The FMS approach phase is activated, the FD is engaged and the AP is not engaged.
A heading, is selected to fly toward the LOC beam, and the flight crew already pressed the LS pb to display the approach and landing capability..

LOC only Approach Flown with FLS Function - Step 1 to 4


①
SPEED
ALT
HDG
F-APP
BARO 500
1FD2
A/THR
②
SPEED
ALT
F-G/S
HDG
LOC
F-APP
BARO 500
1FD2
A/THR
The flight crew presses the APPR pb.
③
SPEED
ALT
F-G/S
LOC*
F-APP
BARO 500
1FD2
A/THR
The aircraft enters the capture zone of the LOC beam.
④
SPEED
ALT
F-G/S
LOC
F-APP
BARO 500
1FD2
A/THR
The aircraft becomes established on the LOC beam.
LOC Beam

LOC only Approach Flown with FLS Function - Step 5 to 7


SPEED
F-G/S*
LOC
F-APP
BARO 500
1FD2
A/THR
⑤
SPEED
F-G/S
LOC
F-APP
BARO 500
1FD2
A/THR
⑥
F-G/S Beam

The aircraft enters the capture zone of the F-G/S beam.

The aircraft becomes established on the F-G/S beam.

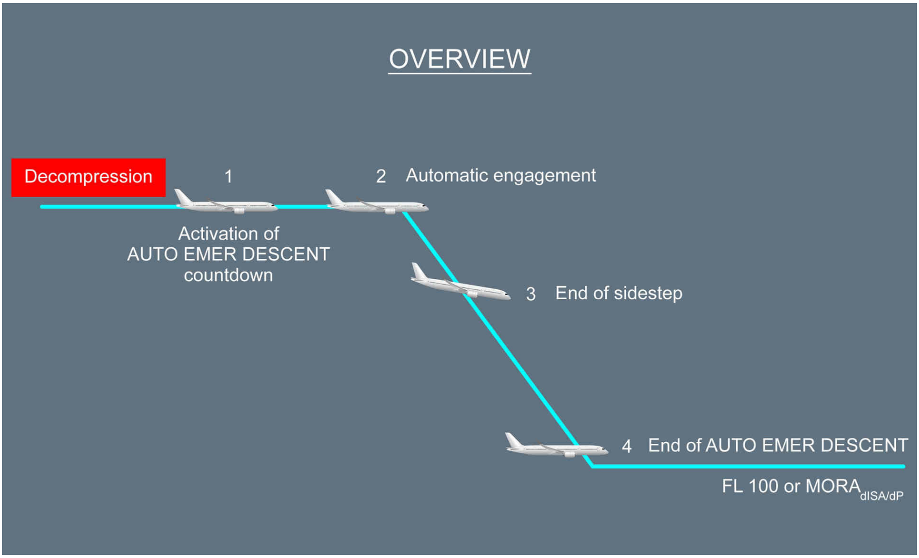
AUTO EMER DESCENT

AUTO EMER DESCENT WITH AUTOMATIC ARMING

Ident.: DSC-22-FG-70-110-130-00024050.0001001 / 01 JUN 17

Applicable to: ALL

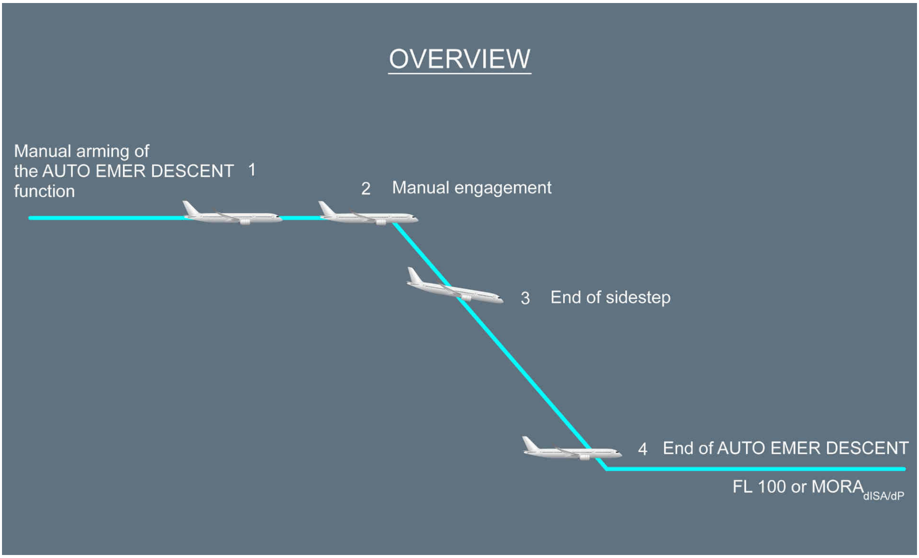
AUTO EMER DESCENT with automatic arming


OVERVIEW
Decompression
1
2 Automatic engagement
Activation of
AUTO EMER DESCENT
countdown
3 End of sidestep
4 End of AUTO EMER DESCENT
FL 100 or MORAdISA/dP

AUTO EMER DESCENT WITH MANUAL ARMING

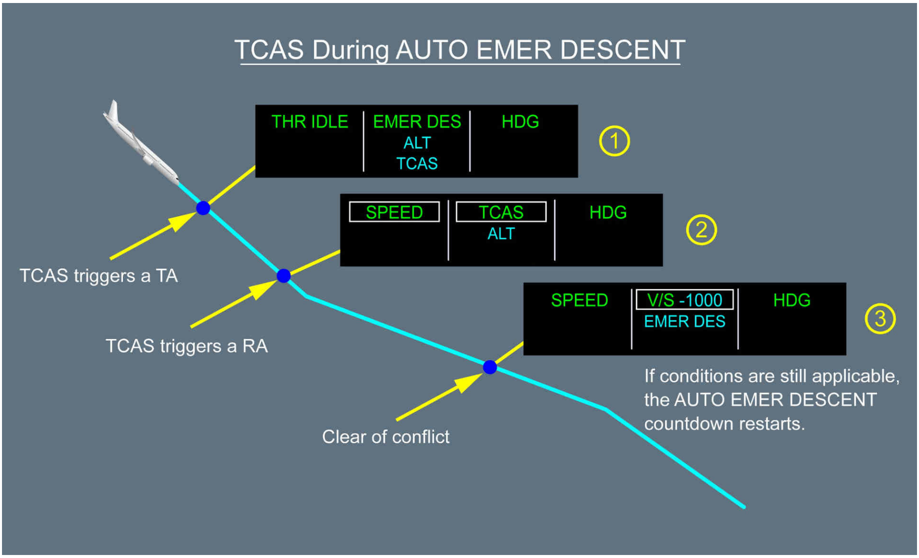
Ident.: DSC-22-FG-70-110-130-00024051.0001001 / 01 JUN 17
Applicable to: ALL

AUTO EMER DESCENT with manual arming


OVERVIEW
Manual arming of the AUTO EMER DESCENT function 1
2 Manual engagement
3 End of sidestep
4 End of AUTO EMER DESCENT
FL 100 or MORA dISA/dP

TCAS DURING AUTO EMER DESCENT

Ident.: DSC-22-FG-70-110-130-00024052.0001001 / 01 JUN 17
Applicable to: ALL


TCAS During AUTO EMER DESCENT
THR IDLE
EMER DES
ALT
TCAS
HDG
①
SPEED
TCAS
ALT
HDG
②
SPEED
V/S -1000
EMER DES
HDG
③
TCAS triggers a TA
TCAS triggers a RA
Clear of conflict
If conditions are still applicable, the AUTO EMER DESCENT countdown restarts.

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GENERAL

Applicable to: ALL

Ident.: DSC-22-FG-80-G10-00012950.0001001 / 06 AUG 14

The approach and landing capability provides the flight crew with the aircraft capability to perform an approach, and land the aircraft.
The flight guidance system computes the aircraft approach and landing capability, and displays this capability on the FMA.

L2 The PRIM and the FCDC computes the aircraft approach and landing capability.

L1 The approach and landing capability depends on:
- The availability of aircraft systems, and functions
- The type of approach the flight crew selected as LS on the FMS POSITION/NAVAIDS page.

L2 For more information about the minimum required equipment to compute approach and landing capabilities, *Refer to LIM-AFS-20 Required Equipment for ILS CAT II/III Approach with Autoland*.

L1 The approach and landing capability enables the flight crew to determine:
- The available minima of the approach
- The available landing technique.

L2 *Note:* *If the autoland capability is not available, the DISCONNECT AP FOR LDG message appears on the FMA when the aircraft is below 150 ft.*
For more information, Refer to DSC-22-FG-90-80 AFS Messages (Line 3)

Ident.: DSC-22-FG-80-G10-00013039.0001001 / 08 JUL 19

The flight guidance system computes the following approach and landing capabilities of the aircraft:

Approach and Landing Capability	Type of Approach Selected	Available FMA Guidance	Lowest Available Minima	Aircraft Landing Capability
LAND3 DUAL	ILS CAT I, II, III	LOC - G/S	Down to CAT III B or C	Autoland
LAND3 SINGLE	ILS CAT I, II, III	LOC - G/S	Down to CAT III A	Autoland
LAND2	ILS CAT I, II	LOC - G/S	Down to CAT II	Autoland
LAND1	GLS	LOC - G/S	Down to CAT I	Autoland

Continued on the following page

Continued from the previous page

Approach and Landing Capability	Type of Approach Selected	Available FMA Guidance	Lowest Available Minima	Aircraft Landing Capability
APPR1	ILS CAT I, or GLS ◁	LOC - G/S	Down to CAT I	Manual landing
	RNAV(GNSS) with LPV minima (with SLS ◁ option).	LOC - G/S	Down to LPV	Manual landing
	RNAV(GNSS) with LP minima (with SLS ◁ option).	LOC - FPA	Down to LP	Manual landing
F-APP or F-APP+RAW	Approaches that are available in FMS database with the FLS function, as: - ILS with glideslope out - LOC only with no glideslope - LOC B/C - NAVAIDS approach	LOC - F-G/S or LOC B/C - F-G/S or F-LOC - F-G/S	Down to MDA/H	Manual landing
F-APP	RNAV(GNSS) approach with LNAV/VNAV or LNAV only minima.	F-LOC - F-G/S	Down to LNAV-VNAV or LNAV	Manual landing
RAW ONLY	All approaches that are not compatible with FLS function or not available in FMS database.	NAV - FPA or TRK - FPA	Down to MDA/H	Manual landing

FAIL CONCEPT

Ident.: DSC-22-FG-80-00013040.0001001 / 06 AUG 14
Applicable to: ALL

FAIL-OPERATIONAL AUTOMATIC LANDING SYSTEM

An automatic landing system is fail-operational if, in the event of a failure below alert height, the remaining part of the automatic system allows the aircraft to complete the approach, flare, and landing.
The LAND3 DUAL approach and landing capability is fail-operational automatic landing system.

Note: In the event of a failure, the automatic landing system operates as a fail-passive system.

FAIL-PASSIVE AUTOMATIC LANDING SYSTEM

An automatic landing system is fail-passive if, in the event of a failure, there is no significant out-of-trim condition, or deviation of flight path or attitude, but the landing is not completed automatically.

The following approach and landing capabilities are fail-passive automatic landing system.

- LAND3 SINGLE

- LAND2
- LAND1

Note: With a fail-passive automatic landing system, the flight crew controls the aircraft after a failure.

DISPLAY

Ident.: DSC-22-FG-80-00013037.0002001 / 05 NOV 15
Applicable to: ALL

DISPLAY

The approach and landing capability is displayed on the fifth column of the FMA and HUD, when:

- An LS approach is manually or automatically selected on the FMS POSITION/NAVAIDS page.
- The flight crew presses one of the following pushbutton on the AFS CP:
  - The LS pb
  - The LOC pb
  - The APPR pb.

The FMAs displays the approach and landing capability in accordance with the state of the aircraft systems, and the flight guidance systems that are engaged.

Note: No approach and landing capability is displayed when an RNAV RNP AR approach is selected in the FMS.

L3 If the PRIM and the FCDC are not able to compute the approach and landing capability, the Control and Display System (CDS) displays the APPR1 capability on the FMA, regardless of the FMS flight phase.

L1 APPROACH WITHOUT FLS FUNCTION

Depending on the approach selected, the APPR1 approach and landing capability appears as soon as the flight crew presses one of the LS pb.
The computation of the LAND1(2)(3) approach and landing capability depends on the AP engagement. Therefore, when the flight crew presses the APPR pb to arm or engage the final approach mode, and one or both AP(s) is engaged then LAND1(2)(3) approach and landing capability can be displayed (both APs are necessary for LAND3 DUAL).
However, if the North reference is TRUE, the APPR1 is the only available capability.

L3 *Note:*

1. *LAND1(2)(3) approach and landing capability is computed only if the aircraft is above 400 ft when the flight crew arms the approach modes.*
2. *Below 200 ft RA, LAND3 SINGLE, or LAND3 DUAL is memorized and remains displayed as long as:*
   - *At least one AP is engaged, and*
   - *LAND, FLARE, or ROLL OUT is engaged.*

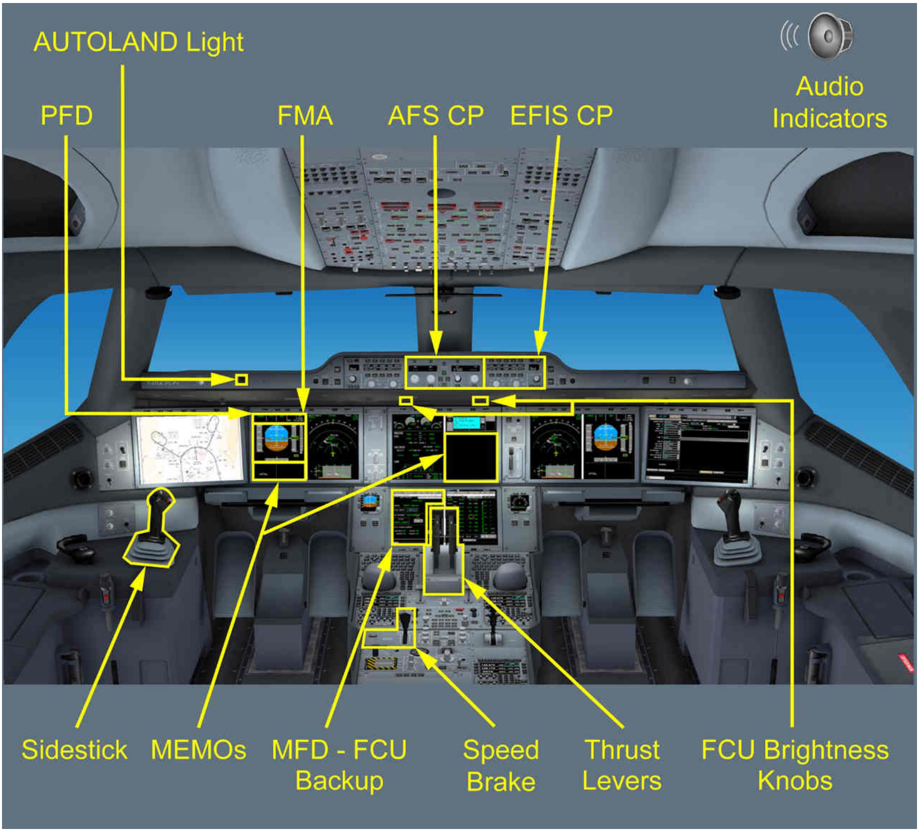
L1 APPROACH WITH FLS FUNCTION

If the flight crew selects an approach with the FLS function, and the active FMS flight phase is CRZ, DES or APPR, the approach and landing capability appears as soon as the flight crew presses the LS pb.

COCKPIT VIEW

Ident.: DSC-22-FG-90-10-00003716.0003001 / 30 JUN 17
Applicable to: ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB

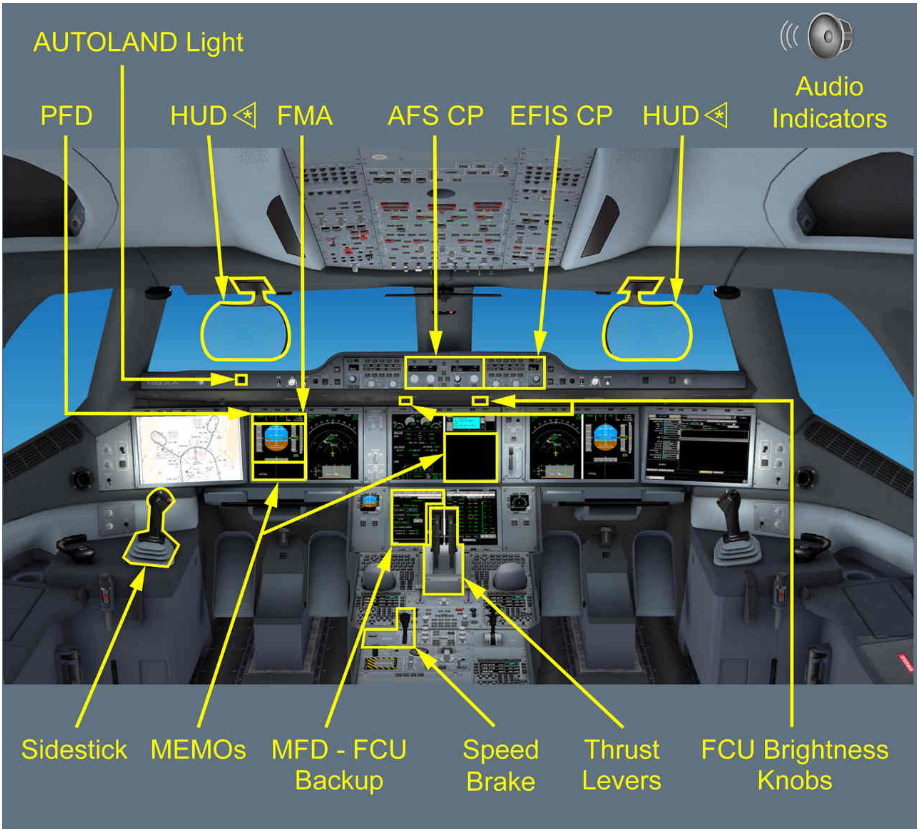
Cockpit View


AUTOLAND Light
PFD
FMA
AFS CP
EFIS CP
Audio Indicators
Sidestick
MEMOs
MFD - FCU Backup
Speed Brake
Thrust Levers
FCU Brightness Knobs

COCKPIT VIEW

Ident.: DSC-22-FG-90-10-00003716.0002001 / 26 JUN 17
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB

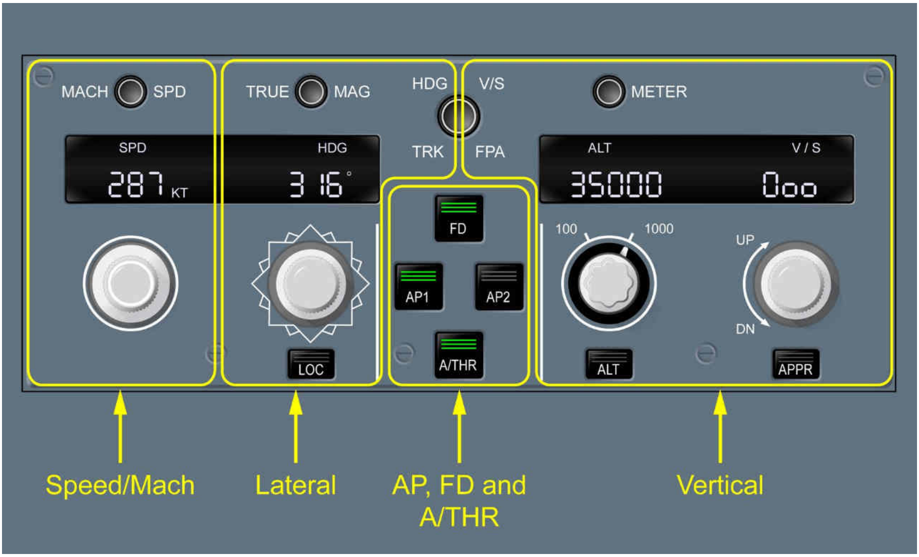
Cockpit View


AUTOLAND Light
PFD
HUD
FMA
AFS CP
EFIS CP
HUD
Audio Indicators
Sidestick
MEMOs
MFD - FCU Backup
Speed Brake
Thrust Levers
FCU Brightness Knobs

OVERVIEW

Ident.: DSC-22-FG-90-20-00003717.0001001 / 06 AUG 14
Applicable to: ALL

AFS CP

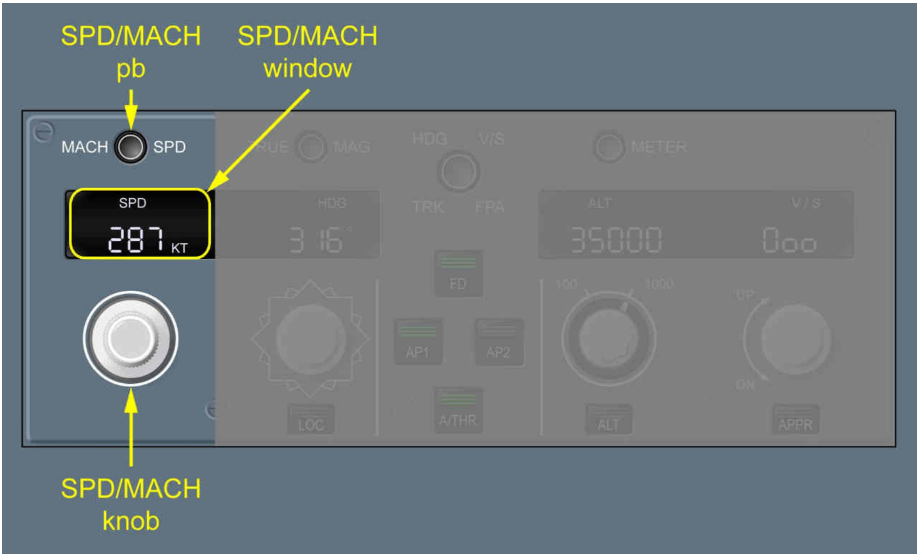

MACH
SPD
TRUE
MAG
HDG
V/S
TRK
FPA
METER
SPD
287 KT
HDG
316°
ALT
35000
V / S
0oo
FD
AP1
AP2
A/THR
LOC
100
1000
UP
DN
ALT
APPR
Speed/Mach
Lateral
AP, FD and A/THR
Vertical

SPD/MACH CONTROL

Applicable to: ALL

Ident.: DSC-22-FG-90-20-A-00003718.0001001 / 19 NOV 14

SPD/MACH Control


SPD/MACH
pb
SPD/MACH
window
MACH
SPD
SPD
287 KT
SPD/MACH
knob

Ident.: DSC-22-FG-90-20-A-00003722.0001001 / 06 AUG 14

SPD/MACH PB

L13

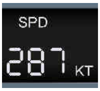
If the speed (Mach) target is selected:
Pressing the SPD/MACH pb changes the speed target to the corresponding Mach target, and vice versa.

Note: *If the speed or Mach is managed:*
Pressing the SPD/MACH pbwill take effect when the speed (Mach) becomes selected.

Ident.: DSC-22-FG-90-20-A-00003723.0001001 / 19 NOV 14

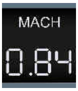
SPD/MACH WINDOW

L13

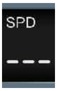


A speed target is selected.

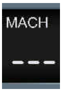
Note: *1. At the aircraft power-up, the SPD/MACH window displays 100 kt.*
2. If APs, FDs, and A/THR are off, the SPD/MACH will display the current aircraft speed target.



A Mach target is selected.



The speed target is managed.



The Mach target is managed.

Note: *At the speed/Mach crossover altitude, the speed target (managed or selected) automatically changes to a managed Mach target. The display on the SPD/MACH window changes from SPD to MACH (and vice versa in descent). For more information on the crossover altitude, Refer to DSC-22-FMS-10-50-30 DES.*

Ident.: DSC-22-FG-90-20-A-00003724.0001001 / 02 OCT 14

SPD/MACH KNOB

- When turned, preselects a speed or Mach target

  Note: *When the SPD/MACH window is dashed, and if the flight crew begins to turn the knob without pulling it, the window displays:*
  - *The current aircraft speed, if SRS TO, or SRS GA is engaged, or*
  - *The managed speed/Mach target, in all other cases.*

  Then, turning the knob would change the value. If there is no action on the knob for 45 s, the dashes reappear.
- When pulled, activates the selected speed or Mach target
- When pushed, the speed or Mach becomes managed.

L3 One entire rotation of the knob equals 32 kt (1 kt per click), or M 0.32 (M 0.01 per click).

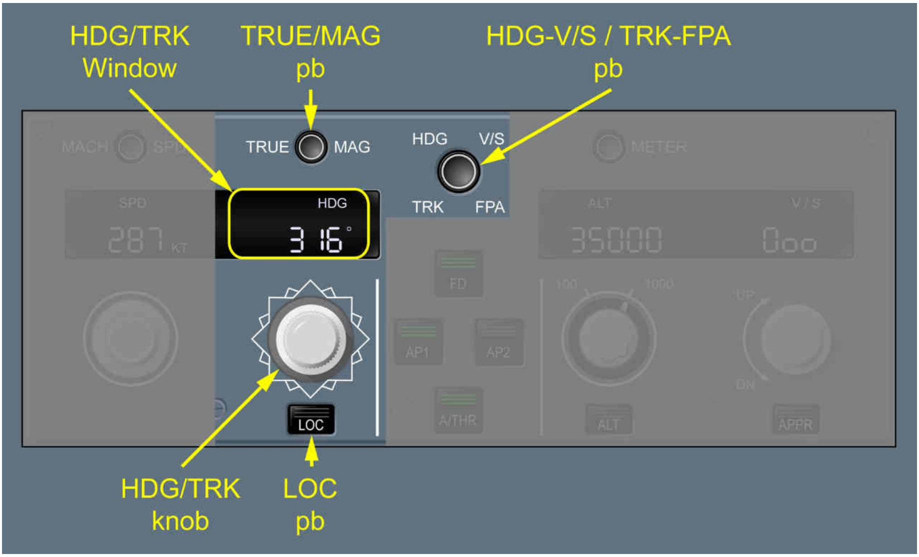
The selection has a range of:
- 100 kt to 399 kt for the speed
- M 0.01 to M 0.99 for the Mach.

LATERAL CONTROL

Applicable to: ALL

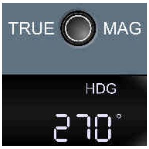
Ident.: DSC-22-FG-90-20-B-00003719.0001001 / 06 AUG 14

Lateral Control

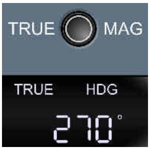

HDG/TRK Window
TRUE/MAG pb
HDG-V/S / TRK-FPA pb
TRUE
MAG
HDG
V/S
TRK
FPA
HDG
316°
LOC
HDG/TRK knob
LOC pb

Ident.: DSC-22-FG-90-20-B-00003725.0001001 / 06 AUG 14

TRUE/MAG PB


TRUE
MAG
HDG
270°

The window displays the HDG/TRK based on the magnetic north reference. When pressed, the North reference changes to the TRUE north reference.



The window displayed the HDG/TRK based on the TRUE north reference.
When pressed, the north reference changes to the magnetic north reference.

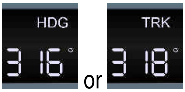
The north reference is magnetic, unless the aircraft is in the polar zone.

When the aircraft reaches the polar zone:
- The following messages ask the flight crew to change from the magnetic reference to the TRUE north reference:
  - The SELECT TRUE NORTH REF memo appears on the ND
  - The NAV EXTREME LATITUDE triggers.
- The north reference automatically changes to TRUE in the ADIRS.

Ident.: DSC-22-FG-90-20-B-00003726.0001001 / 06 AUG 14

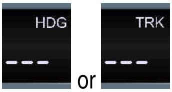
HDG/TRK WINDOW

L13



- A heading/track target is selected, or
- A HDG/TRK preset is defined, or (For more information, *Refer to DSC-22-FG-70-30-20 HDG/TRK Preset*.)
- No AP, and no FD is engaged.

Note: At the aircraft power-up, the HDG/TRK window displays the current aircraft heading.



The lateral guidance is managed.

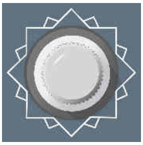
Note: The HDG/TRK window displays TRUE, at the top left corner of the HDG/TRK window, if TRUE is selected with the TRUE/MAG pb.

Ident.: DSC-22-FG-90-20-B-00003727.0001001 / 03 JUL 20

1

HDG/TRK KNOB

L12



- When turned, if in HDG or TRK mode, selects a heading or track target. If not in HDG or TRK mode (HDG / TRK window is dashed), preselects a heading or track target. When the HDG or TRK mode engages (flight crew action, or mode engagement), this preselected value becomes the target

  Note: *The HDG / TRK preset remains if:*

  - *The aircraft is on ground*
  - *The aircraft is in flight and an approach / landing / GO–Around mode is engaged.*

  If not in these conditions, and the HDG or TRK mode is not engaged within 45 s after preselection, the preselected value is cancelled and the dashes reappear.

- When pulled, activates the selected heading or track target
- When pushed, a managed lateral mode arms or engages.

When the target is activated, a change of the value has an immediate effect on the flight guidance.

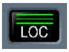
L3 One entire rotation of the knob equals 32 ° (1 ° per click).

L2 When the flight crew turns the knob clockwise, the aircraft turns in the right direction. When the flight crew turns the knob counterclockwise, the aircraft turns in the left direction.

L3 The selection has a range of 0 ° to 359 °.

Ident.: DSC-22-FG-90-20-B-00003728.0001001 / 06 AUG 14

LOC PB

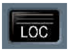


The lateral approach mode is armed or engaged to perform the approach that is set as a Landing System (LS) on the FMS POSITION/NAVAIDS page.

Depending on the approach set, one of the following AP/FD modes arms or engages:
- LOC
- F/LOC
- LOC B/C.

When pressed, disarms or disengages the approach modes.

L12



There is no approach lateral mode armed.
When pressed, arms or engages the lateral approach modes.
When pressed, displays the LS deviations, if the LS pb of the EFIS CP is off.

Note: *When the approach set in the FMS is an RNP AR type of approach the LOC pb is not available.*

For more information about the approach modes, *Refer to DSC-22-FG-70-80-00 Approach Overview*.

Ident.: DSC-22-FG-90-20-B-00003729.0001001 / 06 AUG 14

HDG-V/S / TRK-FPA PB

HDG
V/S
TRK
FPA

When pressed, selects either:
- HDG-V/S: Heading (HDG) is associated with Vertical Speed (V/S)
  If the VV pb is pressed on the EFIS CP, the associated PFD displays the Velocity Vector (VV) in black.
  For more information on the VV, *Refer to DSC-31-CDS-40-20-30 Flight Path Vector or Velocity Vector*.
- TRK-FPA: Track (TRK) is associated with Flight Path Angle (FPA)
  The PFDs display the Flight Path Vector (FPV) in green.
  For more information on the FPV, *Refer to DSC-31-CDS-40-20-30 Flight Path Vector or Velocity Vector*.

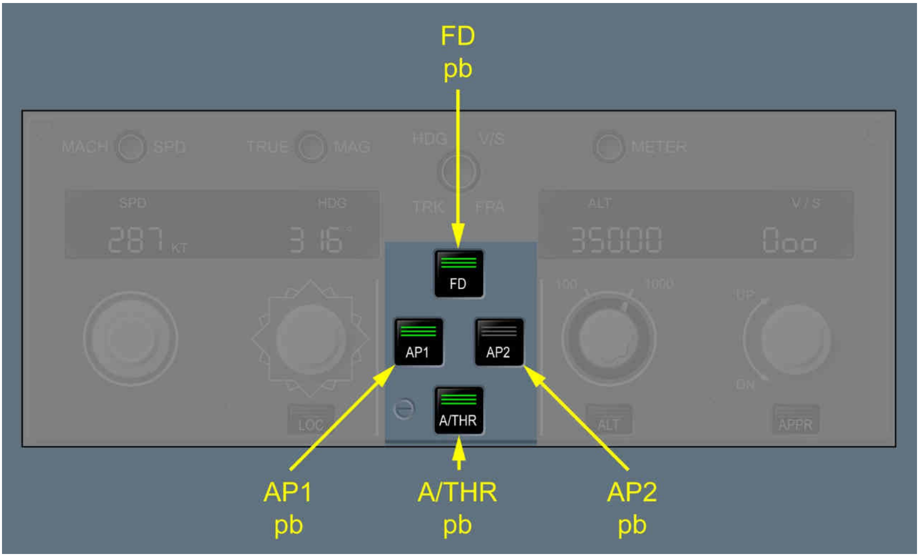
For more information on HDG-V/S / TRK-FPA selection, *Refer to DSC-22-FG-70-30-20 HDG-V/S / TRK-FPA Selection*.

AP, FD AND A/THR CONTROL

Applicable to: ALL

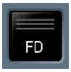
Ident.: DSC-22-FG-90-20-C-00003720.0001001 / 06 AUG 14

AP, FD and A/THR Control


FD
pb
MACH
SPD
TRUE
MAG
HDG
V/S
TRK
FPA
METER
SPD
HDG
287 KT
316
ALT
V/S
35000
Ooo
FD
AP1
AP2
A/THR
LOC
ALT
APPR
UP
DN
100
1000
AP1
pb
A/THR
pb
AP2
pb

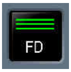
Ident.: DSC-22-FG-90-20-C-00003730.0001001 / 06 AUG 14

FD PB



The FDs are not engaged.

L12

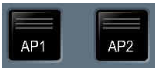


When pressed, engages FD1 and FD2.

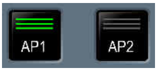
Note: *The FD pb comes on, even if only one FD can engage.*

Ident.: DSC-22-FG-90-20-C-00003731.0001001 / 06 AUG 14

AP1(2) PB



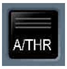
The AP1(2) is not engaged.



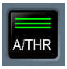
When pressed, engages AP1(2).

Ident.: DSC-22-FG-90-20-C-00003732.0001001 / 06 AUG 14

A/THR PB



The A/THR is disconnected.



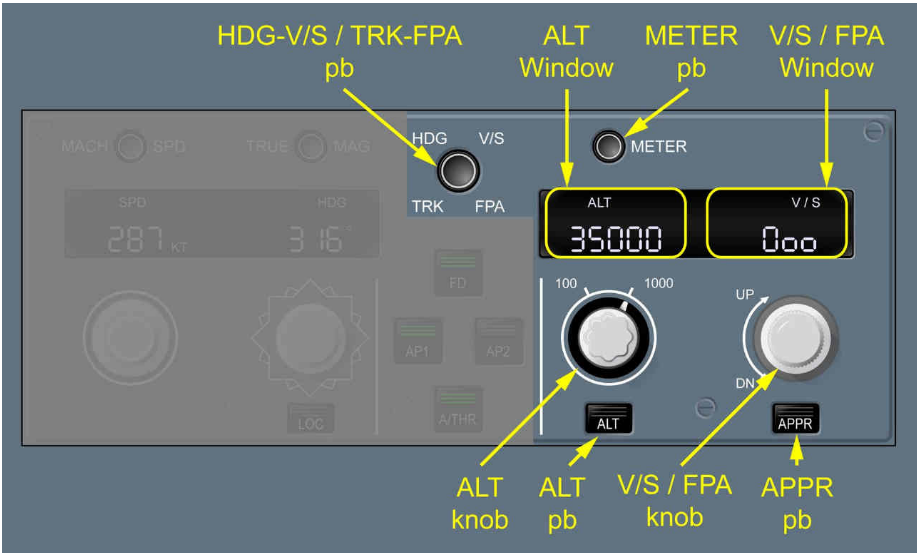
When pressed, arms or activates the A/THR.

VERTICAL CONTROL

Applicable to: ALL

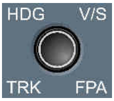
Ident.: DSC-22-FG-90-20-D-00003721.0001001 / 06 AUG 14

Vertical Control


HDG-V/S / TRK-FPA pb
ALT Window
METER pb
V/S / FPA Window
MACH
SPD
TRUE
MAG
HDG
V/S
TRK
FPA
METER
SPD
HDG
287 KT
316
ALT
35000
V / S
0oo
FD
100
1000
UP
DN
AP1
AP2
A/THR
LOC
ALT
APPR
ALT knob
ALT pb
V/S / FPA knob
APPR pb

Ident.: DSC-22-FG-90-20-D-00003733.0001001 / 06 AUG 14

HDG-V/S / TRK-FPA PB



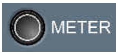
When pressed, selects either:

- HDG-V/S: Heading (HDG) is associated with Vertical Speed (V/S)
  If the VV pb is pressed on the EFIS CP, the associated PFD displays the Velocity Vector (VV) in black.
  For more information on the VV, *Refer to DSC-31-CDS-40-20-30 Flight Path Vector or Velocity Vector*.
- TRK-FPA: Track (TRK) is associated with Flight Path Angle (FPA)
  The PFDs display the Flight Path Vector (FPV) in green.
  For more information on the FPV, *Refer to DSC-31-CDS-40-20-30 Flight Path Vector or Velocity Vector*.

For more information on HDG-V/S / TRK-FPA selection, *Refer to DSC-22-FG-70-30-20 HDG-V/S / TRK-FPA Selection*.

Ident.: DSC-22-FG-90-20-D-00003734.0001001 / 06 AUG 14

METER PB

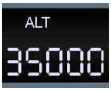


When pressed, displays the current and target altitudes in meters (in addition to feet) on the PFDs.
When pressed again, clears the meter display from the PFDs.

Ident.: DSC-22-FG-90-20-D-00003735.0001001 / 06 AUG 14

ALT WINDOW

L13

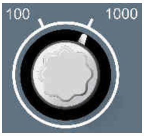


Displays the altitude set by the flight crew with the ALT knob.

Note: *1. The window never displays dashes.*
2. At the aircraft power-up, the ALT window displays the current aircraft altitude, rounded to the nearest hundred.

Ident.: DSC-22-FG-90-20-D-00003736.0001001 / 06 AUG 14

ALT KNOB



- When turned, sets the target altitude on the AFS CP.
  The outer knob has two positions: 100 and 1000, to set the target altitude in increments of 100 ft or 1 000 ft.
- When pulled, activates the selected target altitude on the AFS CP.
  The FMS vertical profile is disregarded.
- When pushed, the altitude target becomes managed, provided that the lateral guidance is also managed.
  The FMS vertical profile is respected, or the AFS CP target altitude is respected, if applicable (*Refer to DSC-22-FG-70-50-10 Introduction*).

Ident.: DSC-22-FG-90-20-D-00003737.0001001 / 06 AUG 14

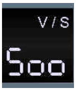
ALT PB

When pressed, the aircraft immediately starts to level-off.

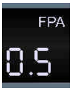
Note: *The ALT pb also comes on, when the aircraft maintains a selected or managed altitude.*

Ident.: DSC-22-FG-90-20-D-00003738.0001001 / 06 AUG 14

V/S / FPA WINDOW

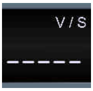


or

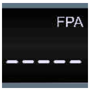


- A V/S / FPA target is selected, or
- No AP, and no FD is engaged.

L13



or

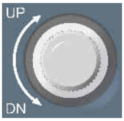


- The vertical profile is managed, or
- The vertical mode is not managed, and the vertical mode is different than V/S or FPA.

Note: *At the aircraft power-up, the V/S / FPA window displays dashes.*

Ident.: DSC-22-FG-90-20-D-00003739.0001001 / 03 JUL 20

2 V/S / FPA KNOB



- When turned, if in V/S or FPA mode, selects a vertical speed or flight path angle target. If not in V/S or FPA mode (V/S / FPA window is dashed), preselects a vertical speed or flight path angle target. When the V/S or FPA mode engages (flight crew action, or mode reversion), this preselected value becomes the target

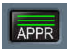
  Note: *If the V/S or FPA mode is not engaged within 45 s after preselection, the preselected value is cancelled and the dashes reappear.*
- When pulled, activates the selected vertical speed or flight path angle target
- When pushed, activates the selected vertical speed or flight path angle to maintain V/S=0 ft/min or FPA=0 °.

L3 One entire rotation equals 1 600 ft/min in vertical speed (100 ft/min per 2 clicks), or 3.2 ° in flight path angle (0.1 ° per click).

The selection has a range of:
- -6 000 ft/min to +6 000 ft/min for the vertical speed
- -9.9 ° to + 9.9 ° for the flight path angle.

Ident.: DSC-22-FG-90-20-D-00003740.0001001 / 06 AUG 14

APPR PB

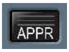


Both lateral and vertical approach modes are armed or engaged to perform the approach that is set as a Landing System (LS) on the FMS POSITION/NAVAIDS page.

Depending on the approach set, the following AP/FD modes arm or engage:
- LOC and G/S or
- LOC and F/GS, or
- F/LOC and F/GS, or
- LOC B/C and F/GS, or
- NAV and APP DES.

When pressed, disarms or disengages the approach modes.

L12



There is no combination of lateral and vertical approach modes armed.
When pressed, arms or engages both lateral and vertical approach modes.
When pressed, displays the LS deviations, if the LS pb of the EFIS CP is off.

L2 For more information about the approach modes, *Refer to DSC-22-FG-70-80-00 Approach Overview*.

AUDIO INDICATORS

Ident.: DSC-22-FG-90-120-00014649.0001001 / 06 AUG 14
Applicable to: ALL

L12

Audio Indicator	**Condition or Cause**	**Duration**
C Chord (Sound)	Altitude Alert. The aircraft reaches an altitude target. For more information about altitude alert, *Refer to DSC-31-CDS-40-20-60 Altitude Alerts*.	Sounds during 1.5 s.
	Altitude Alert. The aircraft deviates from an altitude target. For more information about altitude alert, *Refer to DSC-31-CDS-40-20-60 Altitude Alerts*.	Sounds as long as the aircraft deviates from the target altitude, unless the flight crew presses the MASTER WARN.
Cavalry Charge (Low Volume Sound)	Voluntary AP disconnection. The flight crew pressed the sidestick pb one time. For more information about AP disconnection, *Refer to DSC-22-FG-40-30 Disengagement Annunciations and Warnings*. May be associated with the AUTO FLT AP OFF ECAM alert (*Refer to procedure*).	Sounds as long as the AP is disconnected, untill the flight crew presses: - The MASTER WARN. - The sidestick pb a second time. Stops automatically after 0.8 s, then sounds again at high volume after 1.8 s.

Continued on the following page

Continued from the previous page

Audio Indicator	**Condition or Cause**	**Duration**
Cavalry Charge (High Volume Sound)	Not-voluntary AP disconnection. AP disconnection due to: - A failure, or - Pedal movements, or - Sidestick deflection. Associated with the AUTO FLT AP OFF ECAM alert (*Refer to procedure*).	Sounds as long as the AP is disconnected, until the flight crew presses: - The MASTER WARN. - The sidestick pb a second time.
Triple Click (Sound)	Flight guidance reversion. The flight guidance detects a reversion if: - The approach and landing capability downgrades, or - There is an automatic reversion of the AP/FD mode, or - There is an automatic reversion of the A/THR mode, or - The flight guidance cannot maintain the VS/FPA target.	Sounds one time.

AUTOLAND LIGHT

Ident.: DSC-22-FG-90-100-00003713.0001001 / 07 NOV 16
Applicable to: ALL

L12

The AUTOLAND light flashes, when the aircraft is in autoland below 200 ft RA, and the required conditions to perform an autoland are no longer applicable.
For more information on the flashing of the AUTOLAND light, *Refer to DSC-22-FG-100-20 Autoland Warning*.

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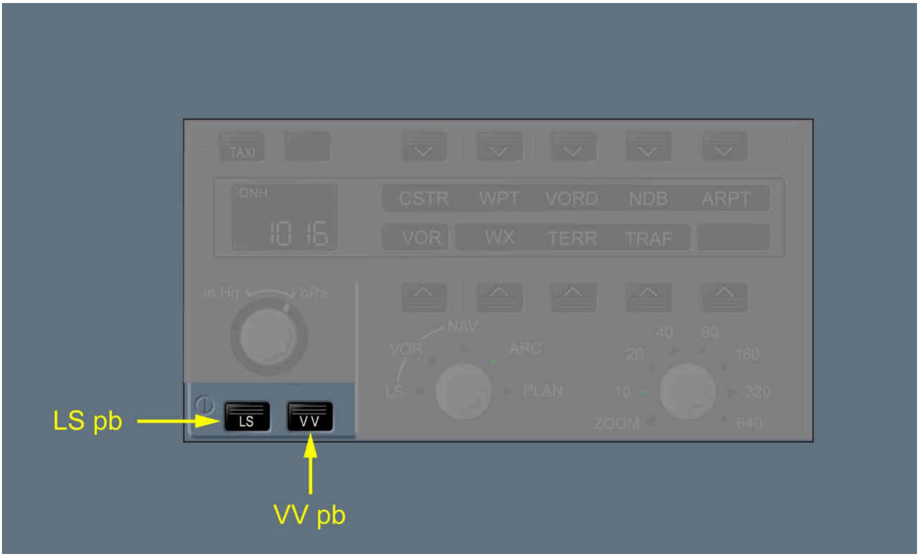
EFIS CP

Applicable to: ALL

Ident.: DSC-22-FG-90-30-G10-00011566.0002001 / 06 AUG 14

EFIS CP Overview


TAXI
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CSTR
WPT
VORD
NDB
ARPT
VOR
WX
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TRAF
in Hg
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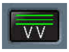
NAV
VOR
ARC
LS
PLAN
40
80
20
160
10
320
ZOOM
640
LS
V V
LS pb
VV pb

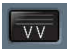
Ident.: DSC-22-FG-90-30-G10-00003741.0001001 / 06 AUG 14

L123



The Captain's (First Officer's) PFD displays the Velocity Vector (VV).
When pressed, removes the Velocity Vector on the PFD.
For more information about FPV or VV display on PFD, *Refer to DSC-31-CDS-40-20-30 Flight Path Vector or Velocity Vector*.

Note: *When TRK-FPA is selected, the Velocity Vector (VV) is not displayed. Both PFDs continue to display the FPV, but the VV light remains on.*



The Captain's (First Officer's) PFD does not display the Velecity Vector (VV).
When pressed, display the VV on the PFD except if TRK-FPA is selected.
When TRK-FPA is selected, both PFDs automatically display the Flight Path Vector (FPV).

The PFDs no longer display the FPV(VV), when:

- The flight crew changes from TRK-FPA to HDG-V/S
  For more information on HDG-V/S / TRK-FPA selection, *Refer to DSC-22-FG-70-30-20 HDG-V/S / TRK-FPA Selection*.
- The flight crew performs a go-around.

Ident.: DSC-22-FG-90-30-G10-00003742.0001001 / 06 AUG 14

L12

The Captain's (First Officer's) PFD displays the following landing system data in accordance with the approach selected on the FMS ARRIVAL page: Deviation scales, deviation signals, course pointer, information.
For information on the landing system data, *Refer to DSC-31-CDS-40-20-110 Departure and Approach Guidance*.
If the flight crew selected an approach on the FMS ARRIVAL page, and the FMS flight phase is descent or approach, the FMA displays the landing capability.
For more information about landing capability display, *Refer to DSC-22-FG-80 Display*.

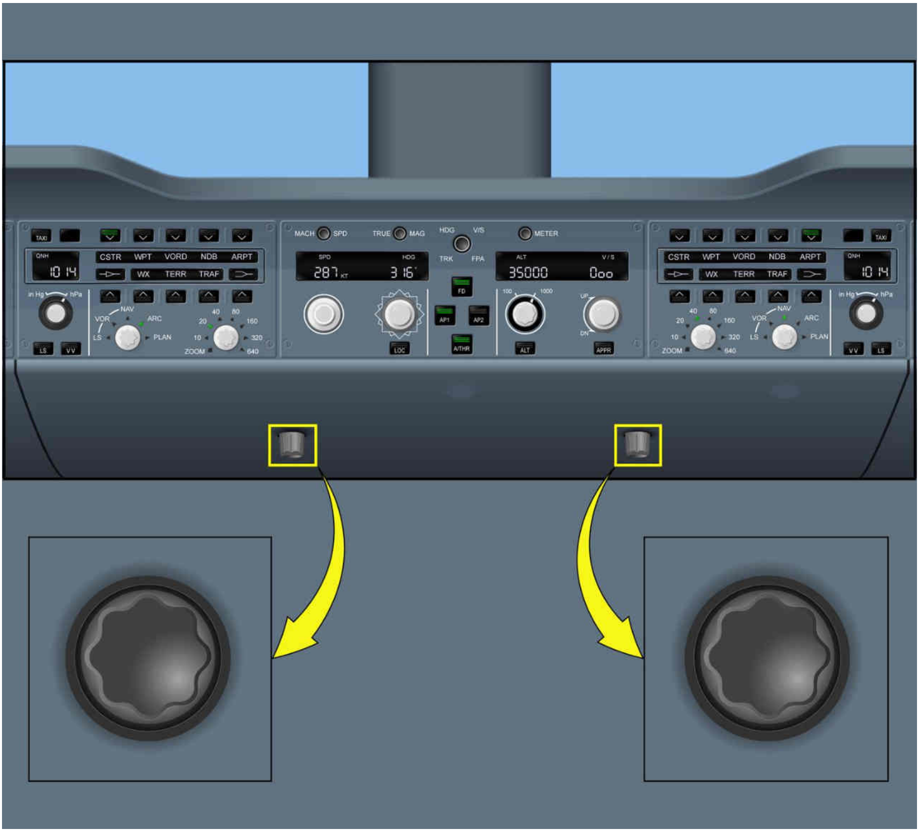
Note: *1. If the direct distance to the destination airport is more than 300 NM, only the deviation scales appear.*
2. The LS light automatically comes on when LOC, LOC B/C or F-LOC arms.

The Captain's (First Officer's) PFD does not display the landing system data.

FCU BRIGHTNESS KNOBS

Ident.: DSC-22-FG-90-40-00003743.0001001 / 07 NOV 16
Applicable to: ALL

FCU Brightness Knobs


TAXI
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160
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ZOOM
640
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VV
MACH
SPD
TRUE
MAG
HDG
V/S
TRK
FPA
METER
287 KT
316
ALT
35000
Ooo
FD
AP1
AP2
A/THR
LOC
100
1000
UP
DN
APPR

THE LEFT KNOB

Controls the brightness of the windows of the EFIS CP and AFS CP.

THE RIGHT KNOB

Controls the brightness of the labels of the EFIS CP and AFS CP.

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FMA

Applicable to: ALL

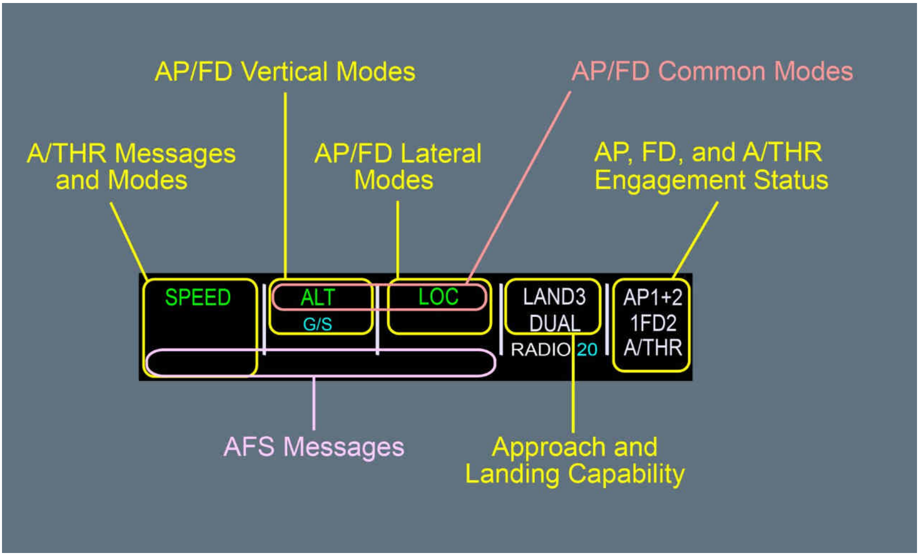
Ident.: DSC-22-FG-90-80-F-00003700.0001001 / 06 AUG 14

The Flight Mode Annunciator (FMA) is located on the upper part of the PFD. The FMA displays the following information that are associated to flight guidance:
- The A/THR messages and modes
- The AP/FD modes
- The approach and landing capability
- The AP, FD, and A/THR engagement status
- The flight guidance messages.

For more information about all FMA indications, *Refer to DSC-31-CDS-40-20-120 Flight Mode Annunciator (FMA)*.

A white box appears for 10 s around the annunciation of:
- An A/THR mode engagement
- An AP/FD mode engagement
- The approach and landing capability (or the change of the approach and landing capability)
- An AP, FD, or A/THR engagement status change.

FMA


AP/FD Vertical Modes
AP/FD Common Modes
A/THR Messages and Modes
AP/FD Lateral Modes
AP, FD, and A/THR Engagement Status
SPEED
ALT
G/S
LOC
LAND3
DUAL
RADIO 20
AP1+2
1FD2
A/THR
AFS Messages
Approach and Landing Capability

A/THR MESSAGES AND MODES (COLUMN 1)

FIRST AND SECOND LINES

Display	Meaning	For display conditions:
MAN TOGA	The A/THR is armed, and the engines apply maximum thrust.	*Refer to DSC-22-FG-50-30 FMA Display*.
MAN FLX +45	The A/THR is armed, and the engines apply flexible thrust, with FLEX temperature set to 45 °.	
MAN GA SOFT	The A/THR is armed and the engines apply: - The thrust to target the vertical speed of approximately 2 000 ft/min, or - The maximum thrust (TOGA) if the 2 000 ft/min target cannot be reached.	
MAN DTO	The A/THR is armed, and the engines apply derated thrust.	
MAN MCT	The A/THR is armed, and the engines apply maximum continuous thrust.	
MAN THR	The A/THR is armed, and the engines apply a thrust defined by the thrust lever positions.	

These messages appear with a permanent white box, except MAN THR that appears in an amber box.

FIRST AND SECOND LINES

Display	Meaning	For display conditions:
THR CLB	The A/THR is active, and both engines apply climb thrust.	*Refer to DSC-22-FG-50-50 THRUST Mode Operation*.
THR DCLB*	The A/THR is active, and the thrust goes toward derated climb thrust.	
THR DCLB	The A/THR is active, and the engines apply the derated climb thrust.	
NOISE N1 82%	The A/THR is active, and the engines apply noise thrust, with 82% N1 target.	
THR CLB*	The A/THR is active, and the engines apply a thrust that converges toward climb thrust.	
THR DES	The A/THR is active, and the engines apply a thrust slightly highest than idle thrust.	
THR IDLE	The A/THR is active, and the engines apply a minimum and limited mode thrust.	
THR MCT	The A/THR is active, and the operative engines apply maximum continuous thrust.	
THR LVR	The A/THR is active, and the engines apply a thrust defined by the thrust level positions.	

Continued on the following page

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Display	Meaning	For display conditions:
SPEED or MACH	The A/THR is active, and controls a speed target, or a Mach target.	*Refer to DSC-22-FG-50-50 SPEED/MACH Mode*.
A.FLOOR with a flashing amber box	The A/THR is active, and the engines apply maximum thrust. *Note:* *The α-floor conditions are applicable.*	*Refer to DSC-22-FG-50-50 ALPHA FLOOR*.

THIRD LINE

L13

Display	Meaning	For display conditions:
LVR ASYM	The A/THR is armed or active, and one thrust lever is at the CL or FLX-MCT detent, and the other one is not on the same position. *Note:* *All the engines are operative.*	*Refer to DSC-22-FG-50-30 Effect of thrust lever movement when the A/THR is active*.
THR LK flashing	The thrust is frozen after an A/THR involuntary disconnection.	*Refer to DSC-22-FG-50-40 THRUST LOCK Function*.
LVR CLB flashing	Requests to set the thrust levers to the CL detent when both engines are running.	The A/THR is armed, and the aircraft reaches the thrust reduction altitude. *Refer to DSC-22-FG-50-30 Effect of thrust lever movement when the A/THR is active*.

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Display	**Meaning**	**For display conditions:**
LVR MCT flashing	If one engine is out, requests to set the thrust lever of the operative engine to the FLX-MCT detent.	The A/THR is armed, with one engine inoperative and one of the following conditions occurs: - The thrust lever of the operative engine is set at the TOGA detent, and the aircraft reaches the thrust reduction altitude, *Refer to DSC-22-FG-50-30 Effect of thrust lever movement when the A/THR is active*. - The thrust lever of the operative engine is below the FLX-MCT detent. The message is inhibited as long as the CAS is above VMAX.
LVR TOGA flashing	If one engine is out during a soft go-around, requests to set the thrust lever of the operative engine to the TOGA detent.	- During takeoff, the flight crew sets at least one thrust lever to the FLX-MCT detent and neither FLX nor DERATED is selected in the T.O PERF page of FMS. - During a soft go-around one engine fails and the aircraft is below the thrust reduction altitude. The message is inhibited as long as the CAS is above VMAX.

Ident.: DSC-22-FG-90-80-F-00003702.0001001 / 08 JUL 19

AFS MESSAGES (LINE 3)

FIRST AND SECOND COLUMNS

Display	Meaning	For more information:
SPD SEL 220	The flight crew preselected 220 kt on the CLB or CRZ panel of the FMS PERF page. *Note: The selected speed target is taken into account, when the next FMS flight phase engages (climb, or cruise).*	*Refer to DSC-22-FMS-20-20-20 PERF Page*.
MACH SEL 0.82	The flight crew preselected M 0.82 on the CRZ panel of the FMS PERF page. *Note: The selected Mach target is taken into account, when the cruise flight phase engages.*	

SECOND AND THIRD COLUMNS

Display	Meaning	Display Conditions
TCAS RA INHIBITED	The AP/FD TCAS mode is disengaged because the TA ONLY or the STDBY mode of the TCAS is selected.	*Refer to DSC-22-FG-70-100-50 Inhibition conditions*.
TRK FPA DESELECTED	The flight reference TRK-FPA changed to HDG-V/S following AP/FD TCAS mode engagement.	Appears when the aircraft is clear of conflict, *Refer to DSC-22-FG-70-100-40 Consequence on AP/FD Vertical Mode*.
FCU ALT ABOVE A/C (Remains 10 s then disappears.)	The aircraft descends below the altitude set on the AFS CP.	The vertical mode of guidance is VS, or FPA with a descent profile, and the altitude set on the AFS CP is above the current aircraft altitude.
FCU ALT BELOW A/C	The aircraft climbs above the altitude set on the AFS CP.	The vertical mode of guidance is VS, or FPA with a climb profile, and the altitude set on the AFS CP is below the current aircraft altitude.
DISCONNECT AP FOR LDG (pulses 9 s, and then remains steady)	The flight crew must disconnect the AP for landing.	The aircraft reaches 150 ft Radio Altimeter when: - One AP is engaged - The approach and landing capability on the FMA is: • APPR1, F-APP, F-APP + RAW, RAW ONLY. • Not displayed and the vertical guidance mode is APP DES, OP DES, DES, FPA, or V/S. The message disappears, when the flight crew disengages the AP.

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Display	Meaning	Display Conditions
AP IN PROT	The flight guidance is not able to maintain the current AP guidance.	This message appears only when the AP is engaged and the protection occurs.
FOR GA : SET TOGA (pulses 9 s, and then remains steady)	The flight crew must set the thrust levers to the TOGA detent to perform a go-around	The flight crew sets the thrust levers to the MCT/FLX detent during approach, and: - The aircraft is below 1 000 ft RA - The slats/flaps configuration based on the real position or on the FLAPS lever position) is different from the clean configuration - The AP and/or the FD are engaged.

L2 *Note: All FMA messages are displayed in green on the HUD, but the location of some messages may be slightly different between HUD and PFD.*

Ident.: DSC-22-FG-90-80-F-00003703.0002001 / 01 JUN 17

AP/FD VERTICAL MODES (COLUMN 2)

FIRST LINE

L12

Display	Meaning	For display conditions:
SRS	The speed reference system mode is engaged during takeoff or go-around.	*Refer to DSC-22-FG-70-20-30 Engagement Conditions*, and *Refer to DSC-22-FG-70-90-20 Engagement Conditions*.
OP CLB	The Open Climb mode is engaged.	*Refer to DSC-22-FG-70-40-20 Engagement Conditions*.
CLB	The Climb mode is engaged.	*Refer to DSC-22-FG-70-40-30 Engagement Conditions*.
ALT*	The altitude capture mode is engaged, and acquires the AFS CP selected altitude.	*Refer to DSC-22-FG-70-50-20 Engagement Conditions*.
ALT CST*	The altitude capture mode is engaged, and acquires an altitude constraint.	
ALT CRZ*	The altitude capture mode is engaged, and acquires the cruise altitude.	
ALT	The altitude hold mode is engaged, and holds the AFS CP selected altitude.	*Refer to DSC-22-FG-70-50-30 Engagement Conditions*.
ALT CST	The altitude hold mode is engaged, and holds an altitude constraint.	
ALT CRZ	The altitude hold mode is engaged, and holds the cruise altitude.	
OP DES	The Open Descent mode is engaged.	*Refer to DSC-22-FG-70-60-20 Engagement Conditions*.

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Display	Meaning	For display conditions:
EMER DES	The Emergency Descent mode is engaged.	*Refer to DSC-22-FG-70-60-40 Engagement Conditions.*
DES	The Descent mode is engaged.	*Refer to DSC-22-FG-70-60-30 Engagement Conditions.*
V/S ±XXXX	The Vertical Speed mode is engaged to acquire and hold the V/S selected on the AFS CP. Note: *If the V/S target is not held when the AP is engaged:* - *A triple click audio indicator sounds* - *An amber box around the message flashes* - *The V/S target pulses.* *This occurs, when the V/S is 500 ft/min below (above) the V/S target in climb (descent).*	*Refer to DSC-22-FG-70-70 Engagement Conditions.*
FPA ±X.X°	The Flight Path Angle mode is engaged to acquire and hold the FPA selected on the AFS CP. Note: *If the FPA target is not held when the AP is engaged:* - *A triple click audio indicator sounds* - *An amber box around the message flashes* - *The FPA target pulses.* *This occurs, when the V/S is 500 ft/min below (above) the V/S/FPA target in climb (descent).*	
G/S*	The Glide Slope capture mode engages.	*Refer to DSC-22-FG-70-80-30 Engagement Conditions.*
G/S	The Glide Slope track mode is engaged.	*Refer to DSC-22-FG-70-80-40 Engagement Conditions.*
F-G/S*	The FLS Glide Slope capture mode engages.	*Refer to DSC-22-FG-70-80-100 Engagement Conditions.*
F-G/S	The FLS Glide Slope track mode is engaged.	*Refer to DSC-22-FG-70-80-110 Engagement Conditions.*
APP-DES	The continuous descent mode is engaged.	*Refer to DSC-22-FG-70-80-140 General.*
TCAS	The AP/FD TCAS mode is engaged.	*Refer to DSC-22-FG-70-100-30 Engagement Conditions.*

SECOND LINE

Display	Meaning	For display conditions:
CLB	The Climb mode is armed.	*Refer to DSC-22-FG-70-40-30 Arming Conditions.*
OP CLB	The Open Climb mode is armed.	*Refer to DSC-22-FG-70-40-20 Arming Conditions.*

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Display	Meaning	For display conditions:
ALT	The ALT Mode is armed.	*Refer to DSC-22-FG-70-50-30 Arming Conditions.*
ALT	The ALT CST Mode is armed.	
ALT CRZ	Altitude mode is armed. Target altitude is the CRZ FL.	
EMER DES	The Emergency Descent mode is armed.	*Refer to DSC-22-FG-70-60-40 Arming Conditions.*
DES	The Descent mode is armed.	*Refer to DSC-22-FG-70-60-30 Arming Conditions.*
G/S	The Glide Slope mode is armed.	*Refer to DSC-22-FG-70-80-40 Arming Conditions.*
F-G/S	The FLS Glide Slope mode is armed.	*Refer to DSC-22-FG-70-80-110 Arming Conditions.*
APP-DES	The vertical guidance of an RNV RNP approach is armed.	*Refer to DSC-22-FG-70-80-140 Arming Conditions.*

Note: *G/S , F-G/S, or APP DES can be simultaneously displayed with ALT, ALT, or DES.*

THIRD LINE

Display	Meaning	For display conditions:
TCAS	The AP/FD TCAS mode is armed.	*Refer to DSC-22-FG-70-100-20 Arming Conditions.*

Ident.: DSC-22-FG-90-80-F-00003704.0001001 / 28 APR 17

AP/FD LATERAL MODES (COLUMN 3)

FIRST LINE

Display	Meaning	For display conditions:
RWY	The Runway mode is engaged.	*Refer to DSC-22-FG-70-20-40 Engagement Conditions.*
RWY TRK	The Runway Track mode is engaged.	*Refer to DSC-22-FG-70-20-50 Engagement Conditions.*
HDG	The Heading mode is engaged.	*Refer to DSC-22-FG-70-30-20 Engagement Conditions.*
TRACK	The Track mode is engaged.	
NAV	The Navigation mode is engaged.	*Refer to DSC-22-FG-70-30-30 Engagement Conditions.*
LOC *	The Localizer capture mode is engaged.	*Refer to DSC-22-FG-70-80-10 Engagement Conditions.*
LOC	The Localizer track mode is engaged.	*Refer to DSC-22-FG-70-80-20 Engagement Conditions.*
F-LOC*	The FLS Localizer capture mode is engaged.	*Refer to DSC-22-FG-70-80-80 Engagement Conditions.*

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Display	**Meaning**	**For display conditions:**
F-LOC	The FLS Localizer track mode is engaged.	*Refer to DSC-22-FG-70-80-90 Engagement Conditions.*
LOC B/C*	The Localizer Back Course capture mode is engaged.	*Refer to DSC-22-FG-70-80-120 Engagement Conditions.*
LOC B/C	The Localizer Back Course track mode is engaged.	*Refer to DSC-22-FG-70-80-130 Engagement Conditions.*
GA TRK	The Go-Around Track mode is engaged.	*Refer to DSC-22-FG-70-90-30 Engagement Conditions.*

SECOND LINE

Display	**Meaning**	**For display conditions:**
RWY	The RWY mode is armed.	*Refer to DSC-22-FG-70-20-40 Arming Conditions.*
NAV	The NAV mode is armed.	*Refer to DSC-22-FG-70-30-30 Arming Conditions.*
LOC	The LOC mode is armed.	*Refer to DSC-22-FG-70-80-20 Arming Conditions.*
F-LOC	The F-LOC mode is armed.	*Refer to DSC-22-FG-70-80-90 Arming Conditions.*
LOC B/C	The LOC B/C mode is armed.	*Refer to DSC-22-FG-70-80-130 Arming Conditions.*

Note: *RWY and NAV can be simultaneously displayed.*

Ident.: DSC-22-FG-90-80-F-00003705.0001001 / 06 AUG 14

AP/FD COMMON MODES (COLUMN 2 AND 3)

FIRST LINE

Display	**Meaning**	**For display conditions:**
LAND	The Land mode is engaged.	*Refer to DSC-22-FG-70-80-50 Engagement Conditions.*
FLARE	The Flare mode is engaged.	*Refer to DSC-22-FG-70-80-60 Engagement Conditions.*
ROLL OUT	The Roll Out mode is engaged.	*Refer to DSC-22-FG-70-80-70 Engagement Conditions.*

Ident.: DSC-22-FG-90-80-F-00003706.0001001 / 12 NOV 14

APPROACH CAPABILITY (COLUMN 4)

FIRST AND SECOND LINES

Display	Meaning	Display Conditions:
RAW ONLY	The type of the guidance for the selected approach is FLS, and the approach and landing capability is degraded.	For more information about the computation of the approach and landing capability and display conditions, *Refer to DSC-22-FG-80 General*. For more information about required equipment, *Refer to LIM-AFS-10 FLS capability*.
F-APP +RAW	The type of guidance for the selected approach is FLS, and the approach and landing capability is degraded.	
F-APP	The type of guidance for the selected approach is FLS, and the approach and landing capability is optimum.	
APPR1	The type of the guidance for the selected approach is LOC and G/S.	For more information about the computation of the approach and landing capability and display conditions, *Refer to DSC-22-FG-80 General*.
LAND1	The type of the guidance for the selected approach is LOC and G/S, with autoland capability.	For more information about the computation of the approach and landing capability and display conditions, *Refer to DSC-22-FG-80 General*.
LAND2	The type of the guidance for the selected approach is LOC and G/S, with autoland capability.	For more information about the computation of the approach and landing capability and display conditions, *Refer to DSC-22-FG-80 General*. For more information about required equipment,*Refer to LIM-AFS-20 Required Equipment for ILS CAT II/III Approach with Autoland*.
LAND3 SINGLE	The type of the guidance for the selected approach is LOC and G/S, with autoland capability.	
LAND3 DUAL	The type of the guidance for the selected approach is LOC and G/S with autoland capability.	

Ident.: DSC-22-FG-90-80-F-00003707.0001001 / 03 DEC 15

MINIMUM DESCENT HEIGHT/ALTITUDE, OR DECISION HEIGHT (COLUMN 4)

THIRD LINE

Display	Meaning	For more information:
BARO XXXXX	Minimum descent height/altitude, as entered on the FMS PERF page - APPR panel.	*Refer to DSC-22-FMS-20-20-20 PERF Page*.
RADIO XXX	Decision height, as entered on the FMS PERF page - APPR panel.	
NO DH	The flight crew enters NONE, NO, NO DH or NODH on RADIO entry field of the FMS PERF page.	

L2 The minimum descent height/altitude or decision height appears, when the aircraft is in:
- FMS CRZ phase, and at less 250 NM from the destination
- FMS DES phase
- FMS APPR phase
- FMS GA phase.

Ident.: DSC-22-FG-90-80-F-00003708.0001001 / 03 DEC 15

AP, FD, AND A/THR ENGAGEMENT STATUS (COLUMN 5)

FIRST LINE

DISPLAY	MEANING	For display conditions:
AP1+2	The AP1 and AP2 are engaged.	*Refer to DSC-22-FG-40-20 Manual Engagement of both APs.*
AP1	The AP1 is engaged.	*Refer to DSC-22-FG-40-20 Manual Engagement of one AP.*
AP2	The AP2 is engaged.	

SECOND LINE

DISPLAY	MEANING	For display conditions:
1FD2	FD1 and FD2 are engaged.	*Refer to DSC-22-FG-30-30 Engagement Annunciation.*
1FD-	F/O ON BKUP is selected on the AIR DATA selector.	
-FD2	CAPT ON BKUP is selected on the AIR DATA selector.	

THIRD LINE

DISPLAY	MEANING	For display conditions:
A/THR	The A/THR is active.	*Refer to DSC-22-FG-50-30 Arming Conditions.*
A/THR	The A/THR is armed.	*Refer to DSC-22-FG-50-30 Activation Conditions.*

Intentionally left blank

MEMO

Applicable to: ALL

Ident.: DSC-22-FG-90-110-GMEMO-00003714.0001001 / 06 AUG 14

AP OFF	Both APs disengage, after the flight crew presses the sidestick pb. Appears on the PFDs, and on the WD. For information on AP disengagement annunciations and warnings, *Refer to DSC-22-FG-40-30 Disengagement Annunciations and Warnings*.

Ident.: DSC-22-FG-90-110-GMEMO-00003715.0001001 / 04 MAY 16

A/THR OFF	The A/THR is voluntary disconnected: - The flight crew pressed one A/THR instinctive disconnect pushbutton, or - The flight crew sets the thrust levers at the idle or reverse detent when the altitude is above 50 ft RA. Appears on the PFDs, and on the WD. For more information, *Refer to DSC-22-FG-50-40 Introduction*.

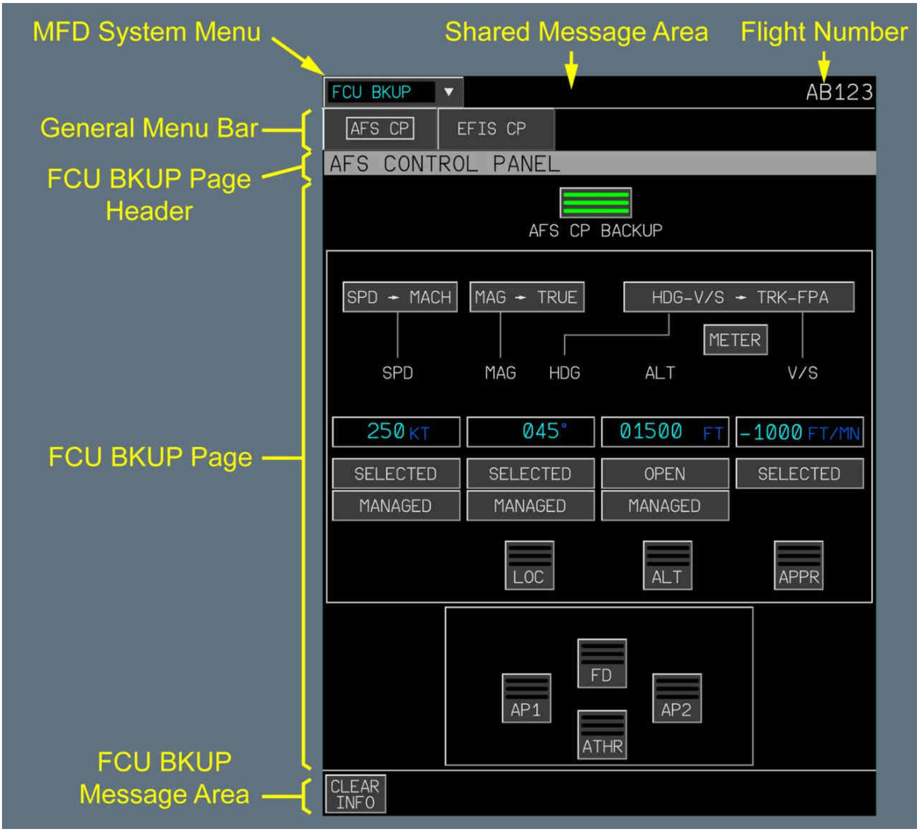
Intentionally left blank

MFD OVERVIEW

Applicable to: ALL

Ident.: DSC-22-FG-90-50-G10-00011326.0001001 / 06 AUG 14

MFD Overview


MFD System Menu
Shared Message Area
Flight Number
General Menu Bar
FCU BKUP Page Header
FCU BKUP Page
FCU BKUP Message Area
FCU BKUP
AB123
AFS CP
EFIS CP
AFS CONTROL PANEL
AFS CP BACKUP
SPD → MACH
MAG → TRUE
HDG-V/S → TRK-FPA
METER
SPD
MAG
HDG
ALT
V/S
250 KT
045°
01500 FT
-1000 FT/MN
SELECTED
SELECTED
OPEN
SELECTED
MANAGED
MANAGED
MANAGED
LOC
ALT
APPR
FD
AP1
AP2
ATHR
CLEAR INFO

The MFD displays the FCU BKUP page, where the flight crew can control either the AFS cp or the EFIS cp in the case of failure.
For more information about the MFD, *Refer to DSC-31-CDS-70-10 MFD*.

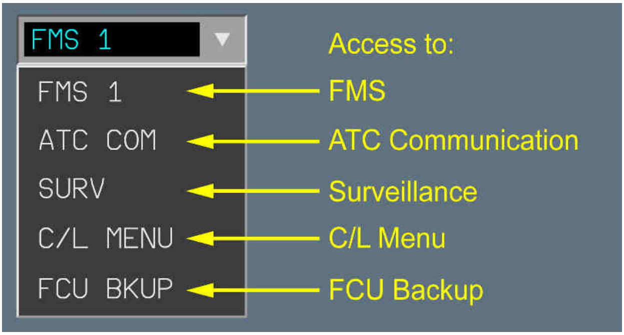
Ident.: DSC-22-FG-90-50-G10-00011327.0001001 / 06 AUG 14

MFD SYSTEM MENU

Indicates the system identifier that displays data on the MFD.

The menu list displays all systems that can display data on the MFD.

MFD System Menu



Ident.: DSC-22-FG-90-50-G10-00011328.0001001 / 06 AUG 14

SHARED MESSAGE AREA

The shared message area displays messages in order to inform the flight crew about an event that is related to the FMS or ATC communication.
The shared message area displays the following messages:

D-ATIS RECEIVED	Indicates that a new ATIS report is received. Only appears if the MFD displays a page that is not an ATC COM page. Disappears when the flight crew accesses an ATC COM page.
D-ATIS GROUND MSG	Indicates that an ATIS FSM message is received. Only appears if the MFD displays a page that is not an ATC COM page. Disappears when the flight crew accesses an ATC COM page.
D-ATIS NO REPLY	Appears when the time-out (7.5 min) is reached and that no ATIS was received. Only appears if the MFD displays a page that is not an ATC COM page. Disappears when the flight crew accesses an ATC COM page.

D-ATIS SEND FAIL	Appears when an ATIS request failed for one of the following reasons: - The sending of the ATIS request failed, or - The time-out (6 min) for acknowledgement is reached, or - A negative answer for the ATIS request is received. Only appears if the MFD displays a page that is not an ATC COM page. Disappears when the flight crew accesses an ATC COM page.
CHECK FMS MESSAGE	Indicates that the FMS triggered an amber FMS message. Only appears if the MFD displays a page that is not an FMS page. Disappears when the flight crew accesses an FMS page.
L12 IND	Indicates that both FMS operate in INDEPENDENT mode. For information about the INDEPENDENT mode, *Refer to DSC-22-FMS-40 INDEPENDENT Mode*.

L2 *Note:* *The shared message area displays only one message at a time. However, the IND message can appear in addition to another message.*

Ident.: DSC-22-FG-90-50-G10-00011331.0001001 / 04 DEC 14

FLIGHT NUMBER

Indicates the flight number that the flight crew has entered on the ACTIVE/INIT page of the FMS (*Refer to DSC-22-FMS-20-20-20 INIT Page*).

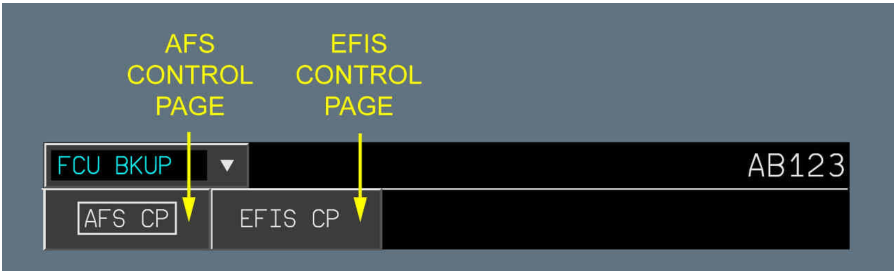
Ident.: DSC-22-FG-90-50-G10-00011329.0001001 / 06 AUG 14

GENERAL MENU BAR

The general menu bar provides the flight crew with access to the FCU BKUP pages.
The FCU BKUP pages are divided into 2 groups, indicated by 2 menus on the general menu bar: AFS CP, EFIS CP.

Note: *A box around the menu name indicates that the displayed page belongs to this menu.*

FCU BKUP Pages


AFS
CONTROL
PAGE
EFIS
CONTROL
PAGE
FCU BKUP ▼
AB123
AFS CP
EFIS CP

Ident.: DSC-22-FG-90-50-G10-00011330.0001001 / 06 AUG 14

FCU BKUP PAGE HEADER

The FCU BKUP page header indicates the title of the FCU BKUP page currently displayed:

- AFS CONTROL PAGE, or
- EFIS CONTROL PAGE.

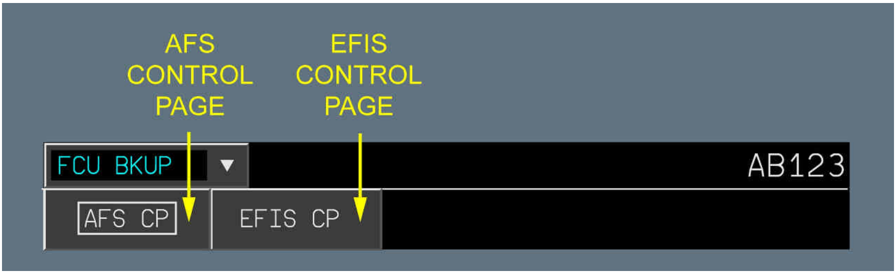
MFD - FCU BKUP PAGES

Ident.: DSC-22-FG-90-50-00011333.0001001 / 06 AUG 14
Applicable to: ALL

FCU BKUP PAGES

The AFS CP page and the EFIS CP page work as the AFS CP and the EFIS CP. The AFS CP page and the EFIS CP page recover most of the EFIS CP and AFS CP controls and indicators. However, on the EFIS CP page, the display of the airport navigation function, and the video of the external and taxiing aid camera system are not available.
The flight crew performs the selections on the FCU backup via the KCCU.

FCU BKUP Pages


AFS
CONTROL
PAGE
EFIS
CONTROL
PAGE
FCU BKUP ▼
AB123
AFS CP
EFIS CP

MFD - AFS CONTROL PAGE

Applicable to: ALL

Ident.: DSC-22-FG-90-50-G20-00002696.0001001 / 06 AUG 14

The AFS CONTROL PANEL page is operative, only when the AFS CP is not operative.

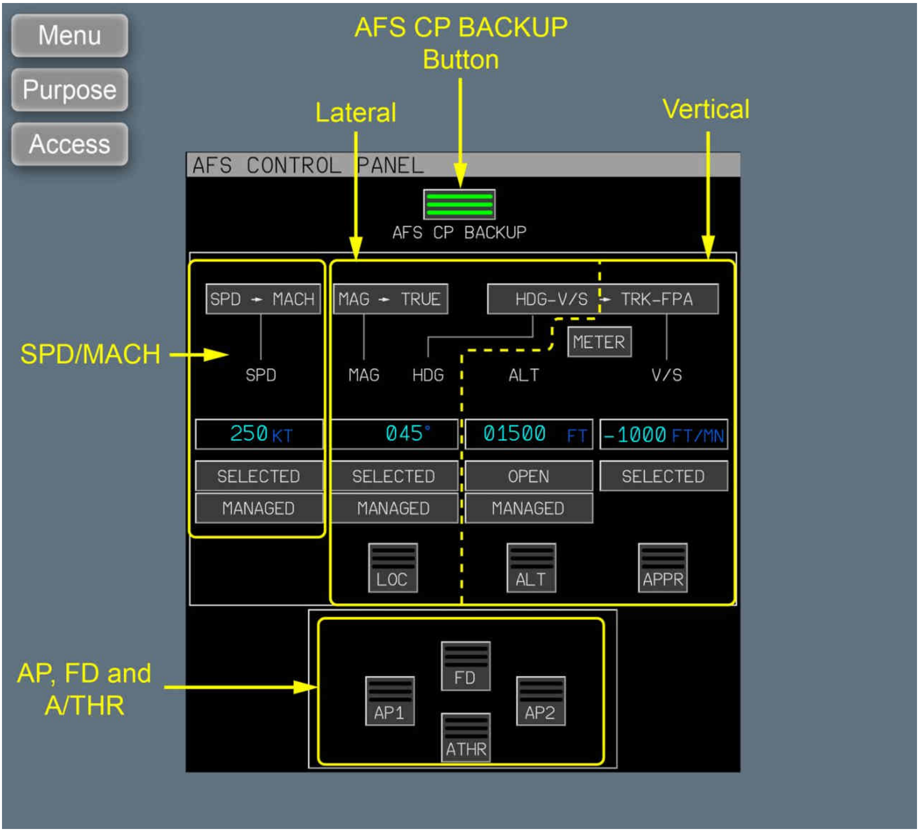
L2 Nevertheless, the flight crew can access to the AFS CONTROL PANEL page of the FCU BKUP even if the AFS CP is operative. The speed/Mach, heading/track, altitude, and vertical speed/flight path angle targets are continuously updated in accordance with changes on the AFS CP.

L1 On the AFS CONTROL PANEL page, the flight crew uses the KCCU wheel to set the targets: Speed/Mach, heading/track, altitude, and vertical speed/flight path angle. For these selections, the numeric keys of the keyboard are not available.

A selection on the Captain (First Officer) AFS CP page is automatically updated on the First Officer (Captain) AFS CP page.

L3 When LAND is engaged, the flight crew can no longer use the AFS CONTROL PANEL page, and all controls are not available (except the FD button).

Overview


Menu
Purpose
Access
AFS CP BACKUP Button
Lateral
Vertical
AFS CONTROL PANEL
AFS CP BACKUP
SPD/MACH
SPD → MACH
MAG → TRUE
HDG-V/S → TRK-FPA
METER
SPD
MAG
HDG
ALT
V/S
250 KT
045°
01500 FT
-1000 FT/MN
SELECTED
SELECTED
OPEN
SELECTED
MANAGED
MANAGED
MANAGED
LOC
ALT
APPR
AP, FD and A/THR
FD
AP1
AP2
ATHR

Ident.: DSC-22-FG-90-50-G20-00013263.0001001 / 06 AUG 14

PURPOSE

The AFS CONTROL PANEL page can be used as a backup of the AFS CP, when the AFS CP is failed.

Ident.: DSC-22-FG-90-50-G20-00013264.0001001 / 06 AUG 14

ACCESS

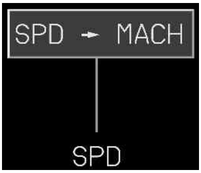
The flight crew can access the AFS CONTROL PANEL page by selecting the AFS CP panel via the FCU BKUP menu of the MFD.

Ident.: DSC-22-FG-90-50-G20-00011569.0001001 / 06 AUG 14

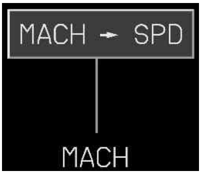
SPEED/MACH

SPD/MACH BUTTON

This button has the same functionality than the MACH/SPD pb on the AFS CP.
For more information, *Refer to DSC-22-FG-90-20 SPD/MACH pb*.

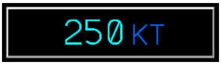


The selected speed target is in Knots.
When clicked, the speed reference changes to Mach.

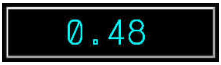


The selected speed target is in Mach.
When clicked, the speed reference changes to Knots.

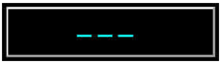
SPD/MACH WINDOW



Displays the speed target, when the speed in Knots is in selected mode.



Displays the speed target, when the speed in Mach is in selected mode.



The speed is in managed mode.

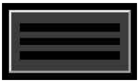
SELECTED/MANAGED BUTTONS

When clicked, activates the selected speed or Mach target.

When clicked, the speed or Mach becomes managed.

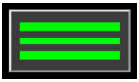
Ident.: DSC-22-FG-90-50-G20-00011348.0001001 / 06 AUG 14

AFS CP BACKUP BUTTON



The AFS backup function is not active.
This is the default status.

L12



The AFS backup function is active.

- A pilot manually clicked the AFS CP BACKUP button to on, or
- A pilot manually pressed the FCU sw (D6) on the left CKPT EQPT POWER SUPPLY, or
- The AFS CP is failed.
  Associated with the AUTO FLT AFS CTL PNL FAULT alert.

When the AFS backup function is active:

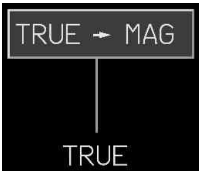
- The last valid selections and values of the AFS CP are recovered
- The AFS CP is not available, and the display on the AFS CP is blank.

Ident.: DSC-22-FG-90-50-G20-00011347.0001001 / 06 AUG 14

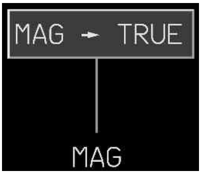
LATERAL

TRUE/MAG BUTTON

This button has the same functionality than the TRUE/MAG pb on the AFS CP.
For more information, *Refer to DSC-22-FG-90-20 TRUE/MAG pb*.



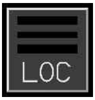
When clicked, changes the true (TRUE) north reference to magnetic (MAG) north reference .



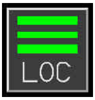
When clicked, changes the magnetic (MAG) north reference to true (TRUE) north reference .

LOC BUTTON

This button has the same functionality than the LOC pb on the AFS CP.
For more information, *Refer to DSC-22-FG-90-20 LOC pb*.



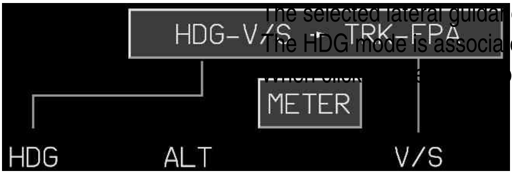
No approach mode is armed.
When clicked, arms an approach mode.



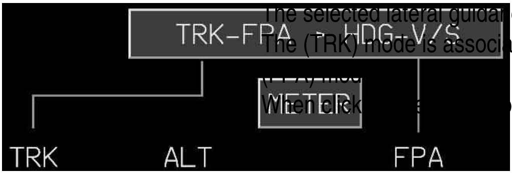
Arms a lateral mode for approach (LOC, F-LOC, LOC B/C)
When clicked, disarms or disengages the LOC, LOC B/C, or F-LOC mode.

HDG-V/S / TRK-FPA BUTTON

This button has the same functionality than the HDG-V/S / TRK-FPA pb on the AFS CP.
For more information, *Refer to DSC-22-FG-90-20 HDG/TRK Knob*.

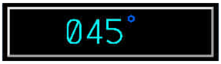


The selected lateral guidance is in heading (HDG) mode.
The HDG mode is associated with the Vertical Speed (V/S) mode.
de changes to the TRK mode.

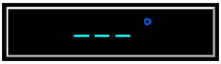


The selected lateral guidance is in track (TRK) mode.
The (TRK) mode is associated with the vertical Flight Path Angle
When click de changes to the TRK mode.

HDG / TRK WINDOW



A HDG, or TRK target is selected.



The lateral guidance is managed.

SELECTED / MANAGED BUTTONS

When clicked, activates the selected heading or track target.

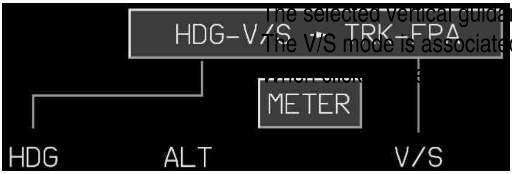
When clicked, a managed lateral mode arms or engages.

Ident.: DSC-22-FG-90-50-G20-00011568.0001001 / 06 AUG 14

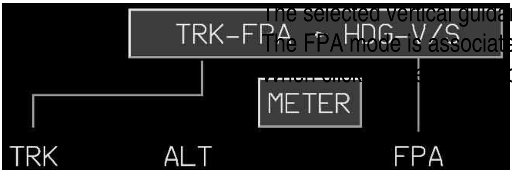
VERTICAL

HDG-V/S / TRK-FPA BUTTON

This button has the same functionality than the HDG-V/S / TRK-FPA pb on the AFS CP.
For more information, *Refer to DSC-22-FG-90-20 HDG-V/S / TRK-FPA pb*.



The selected vertical guidance is in Vertical Speed (V/S) mode.
The V/S mode is associated with the HDG lateral mode.
When click [illegible] e [illegible] e changes to the FPA mode.



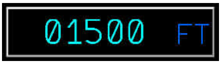
The selected vertical guidance is in Flight Path Angle (FPA) mode.
The FPA mode is associated with the TRK lateral mode.
When click [illegible] e [illegible] de changes to the V/S mode.

METER BUTTON

This button has the same functionality than the METER pb on the AFS CP.
For more information, *Refer to DSC-22-FG-90-20 METER pb*.

When clicked, displays the current and target altitudes in meters (in addition to feet) on the PFDs.
When clicked, clears the meter display from the PFDs.

ALT WINDOW



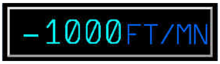
Displays the altitude target set by the flight crew.

ALT OPEN/MANAGED BUTTONS

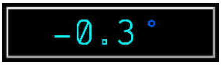
When clicked, the vertical guidance is engaged in an ALT selected mode (OP CLB, or OP DES).
The FMS vertical profile is disregarded.

When clicked, the vertical mode is managed.
The FMS vertical profile is respected, or the altitude target set in the ALT window is respected, if applicable

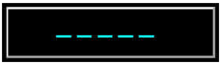
V/S / FPA WINDOW



Displays the V/S target, when applicable.



Displays the FPA target, when applicable.



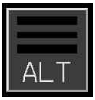
The vertical guidance is in managed mode.

V/S SELECTED BUTTON

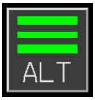
When clicked, the vertical guidance is in V/S or FPA mode.

ALT BUTTON

This button has the same functionality than the ALT pb on the AFS CP.
For more information, *Refer to DSC-22-FG-90-20 ALT pb*.



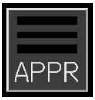
There is no guidance to maintain an altitude.
When clicked, the aircraft immediately starts to level-off.



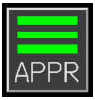
The aircraft maintains a target altitude either in managed or selected mode.
When clicked, has no effect.

APPR BUTTON

This button has the same functionality than the APPR pb on the AFS CP.
For more information, *Refer to DSC-22-FG-90-20 APPR pb*.



No approach mode is armed.
When clicked, arms an approach mode.



The approach mode is armed, or engaged.

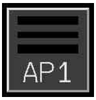
When clicked:
- Disarms or disengages the vertical mode, if the vertical mode is armed or engaged.
- Disengages the approach mode, if only the lateral approach mode is armed or engaged.

Ident.: DSC-22-FG-90-50-G20-00011570.0001001 / 06 AUG 14

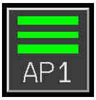
AP, FD, AND A/THR

AP 1(2) BUTTON

These buttons have the same functionality than the AP 1(2) pb on the AFS CP. For more information, *Refer to DSC-22-FG-90-20 AP1(2) pb*.



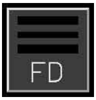
The AP1(2) is not engaged.
When clicked, engages the associated AP.



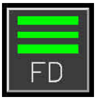
The AP1(2) is engaged.
When clicked, disengages the associated AP.

FD BUTTON

This button has the same functionality than the FD pb on the AFS CP. For more information, *Refer to DSC-22-FG-90-20 FD pb*.



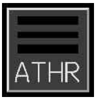
The FDs are not engaged
When clicked, engages the FDs.



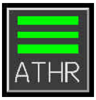
The FDs are engaged.
When clicked, disengages the FDs.

A/THR

This button has the same functionality than the A/THR pb on the AFS CP. For more information, *Refer to DSC-22-FG-90-20 A/THR pb*.



The A/THR is disconnected.
When clicked, arms or activates the A/THR.



The A/THR is armed or active.
When clicked, disconnects the A/THR.

MFD - FCU BKUP MESSAGE AREA

Ident.: DSC-22-FG-90-50-00011344.0001001 / 04 DEC 14
Applicable to: ALL

The FCU BKUP message area displays FCU BKUP messages.
The flight crew can clear the displayed message by clicking on the CLEAR INFO button, or by pressing the CLR INFO key on the KCCU.

ENTRY OUT OF RANGE MESSAGE

If the flight crew enters a value that is not in the correct range, the message area displays:

- The ENTRY OUT OF RANGE message on the first line
- The applicable range on the second line (as indicated in the table below).

Data Type	Out Of Range Messages
Barometric Reference	■ **If the selected barometric reference unit is Hectopascal:** RANGE: 745 TO 1100 HPA ■ **If the selected barometric reference is Inches of mercury:** RANGE: 22.00 TO 32.48 INHG

FORMAT ERROR MESSAGE

If the flight crew enters a barometric reference value that is not in valid, the message area displays:

- The FORMAT ERROR message on the first line
- The applicable format on the second line (as indicated in the table below).

Data Type	Data Format Help Messages
Barometric Reference	■ **If the selected barometric reference unit is Hectopascal:** FORMAT: _XXX ■ **If the selected barometric reference is Inches of mercury:** FORMAT: XX___

MFD - EFIS CONTROL PAGE

Ident.: DSC-22-FG-90-50-00011334.0001001 / 06 AUG 14
Applicable to: ALL

For more information, *Refer to DSC-31-CDS-40-60 MFD - EFIS CONTROL PANEL Page*.

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PFD

Ident.: DSC-22-FG-90-90-00003712.0002001 / 01 JUN 17
Applicable to: ALL

For guidance indications on PFD, *Refer to DSC-31-CDS-40-20-100 FD Guidance*.
For AUTO EMER DESCENT messages on PFD, *Refer to DSC-31-CDS-40-20-130 AUTO EMER DESCENT Messages*.

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HUD

Ident.: DSC-22-FG-90-140-00024277.0001001 / 03 JUL 17
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB

For AUTO EMER DESCENT messages on HUD, *Refer to DSC-31-CDS-50-30-140 AUTO EMER DESCENT Messages*.

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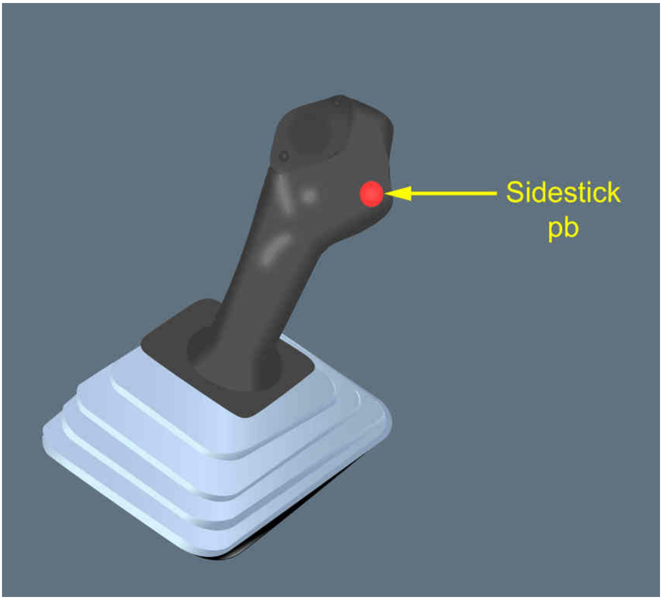
SIDESTICK

Ident.: DSC-22-FG-90-60-00003744.0001001 / 06 AUG 14
Applicable to: ALL



Sidestick

When at least one AP is engaged, the sidesticks are locked in the neutral position.
The flight crew presses the sidestick pb to disengage all AP(s) engaged.
All AP(s) engaged will also disengage, if the flight crew applies a force above a given threshold on the sidestick.
For more information on AP manual disengagement, *Refer to DSC-22-FG-40-30 Manual Disengagement*.
For information on AP disconnection annunciations and warnings, *Refer to DSC-22-FG-40-30 Disengagement Annunciations and Warnings*.
When no AP is engaged, the sidesticks are not locked.

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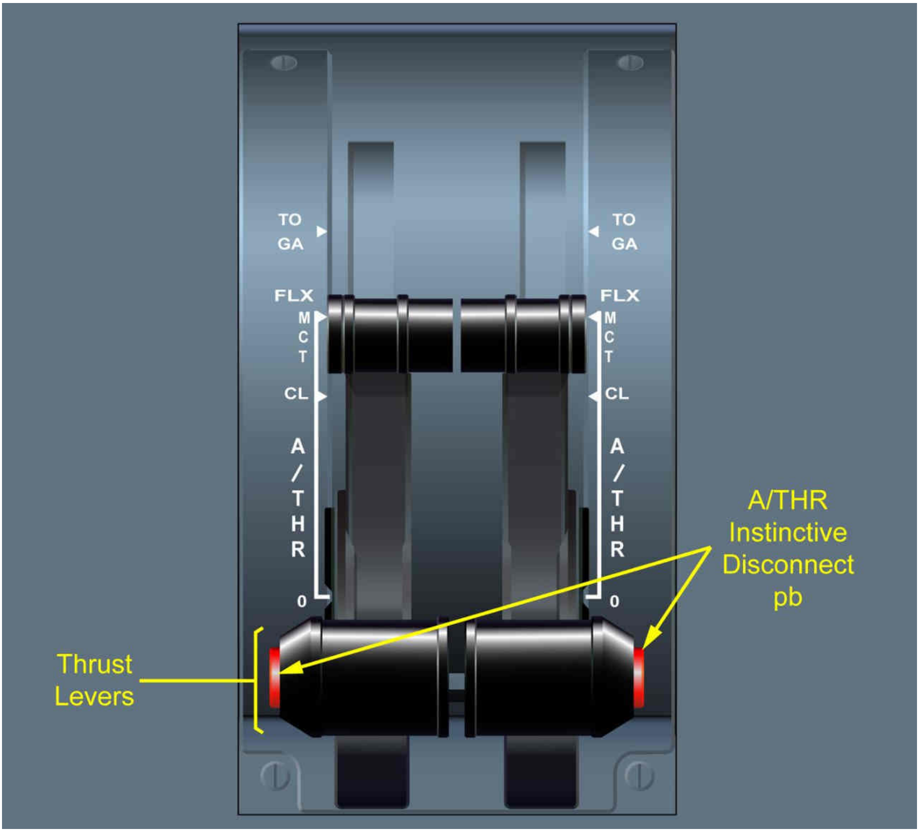
THRUST LEVERS

Ident.: DSC-22-FG-90-70-00003745.0001001 / 02 OCT 14
Applicable to: ALL


TO
GA
FLX
M
C
T
CL
A
/
T
H
R
0
TO
GA
FLX
M
C
T
CL
A
/
T
H
R
0
A/THR Instinctive Disconnect pb
Thrust Levers

Thrust Levers

A/THR INSTINCTIVE DISCONNECT PUSHBUTTON

Pressing on one A/THR instinctive disconnect pushbutton disconnects the A/THR.

L13

CAUTION	If the flight crew presses, and holds one A/THR instinctive disconnect pushbutton for more than 15 seconds, the A/THR will be disconnected for the remainder of the flight. All A/THR modes, including A.FLOOR will be lost. The A/THR will be recovered at the next aircraft power-up. The A/THR will be recovered, when one of the following occurs: - Five seconds after all engines shutdown - After power-up of all PRIMs and all FADECs.

L2 On ground, if the flight crew presses on one A/THR instinctive disconnect pushbutton when the AUTO BRK or BTV mode is armed (active), the AUTO BRK or BTV mode disarms (deactivates).

L1 THRUST LEVERS

The flight crew uses the thrust levers to:

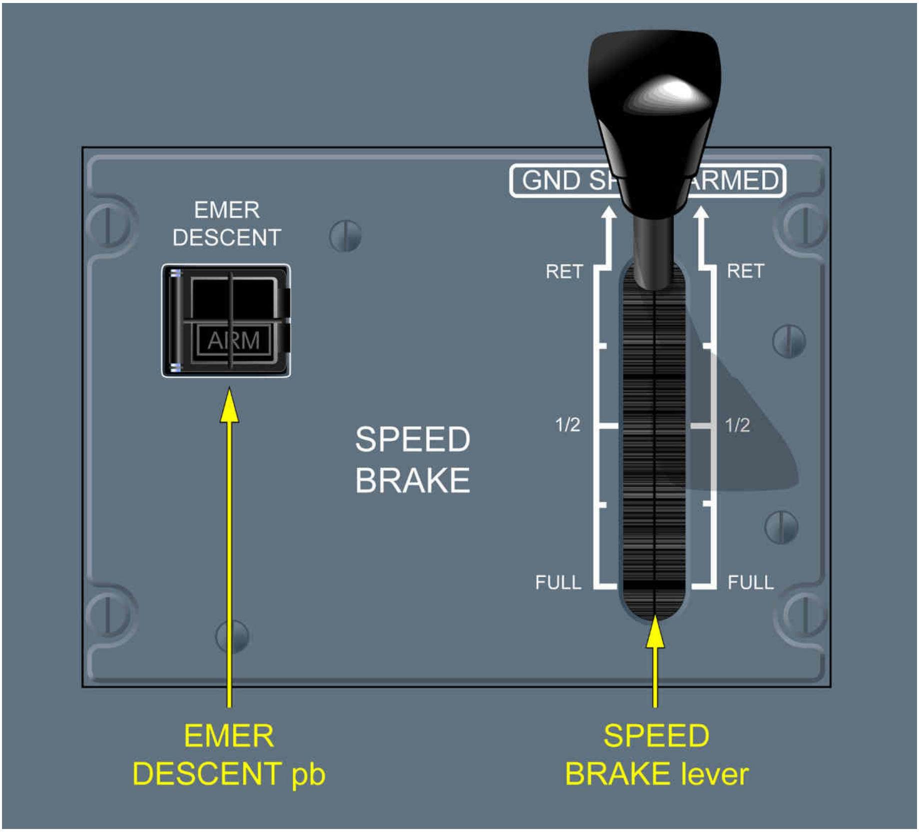
- Arm, activate or disconnect the A/THR
  For information on A/THR arming, *Refer to DSC-22-FG-50-30 Introduction*.
  For information on A/THR activation, *Refer to DSC-22-FG-50-30 Introduction*.
- Control the thrust, when the A/THR is disconnected.
  For information on manual thrust control, *Refer to DSC-70-10-30-30 Thrust Control in Manual Mode*.

For information on standard and non-standard A/THR disconnection, *Refer to DSC-22-FG-50-40 A/THR Disconnection*.

SPEED BRAKE PANEL

Applicable to: ALL

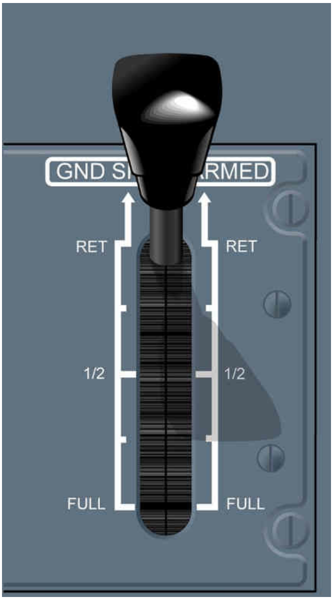
Ident.: DSC-22-FG-90-130-A-00024278.0002001 / 30 JUN 17


EMER
DESCENT
ARM
SPEED
BRAKE
GND SP ARMED
RET
RET
1/2
1/2
FULL
FULL
EMER
DESCENT pb
SPEED
BRAKE lever

Ident.: DSC-22-FG-90-130-A-00023925.0001001 / 01 JUN 17

SPEED BRAKE LEVER

Speed Brake Lever



The speed brake lever is used to manually engage the EMER DES mode.

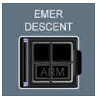
L2 For more information on the EMER DES engagement, *Refer to DSC-22-FG-70-60-40 Engagement Conditions*.

For more information, *Refer to DSC-27-10-20 SPEED BRAKE lever*.

Ident.: DSC-22-FG-90-130-A-00023926.0002001 / 30 JUN 17

EMER DESCENT PB

The Emer Descent pb is a guarded pushbutton.



The AUTO EMER DESCENT function is not armed.

EMER
DESCENT
ARM

The ARM light:

- Comes on steady when the AUTO EMER DESCENT function is manually armed. When pressed one time the AUTO EMER DESCENT function is disarmed.
- Flashes when the AUTO EMER DESCENT function is automatically armed. When pressed two times, the AUTO EMER DESCENT function is disarmed.

For more information, *Refer to DSC-22-FG-70-60-40 Arming Conditions*.

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AFS CP BACKUP FUNCTION

Ident.: DSC-22-FG-100-10-00011556.0001001 / 06 AUG 14
Applicable to: ALL

In abnormal conditions, the flight crew can set the FD and the autopilot via the AFS CONTROL PANEL page of the FCU BKUP on the MFD.
When the AFS CONTROL PANEL page becomes active, the page displays the last crew selections and the AFS CP is blank.

L2 If the flight crew recovers the AFS CP following the activation of the AFS CONTROL PANEL page, the AFS CP recovers most of the settings of the AFS CONTROL PANEL page.

L1 For more information about the AFS CONTROL PANEL page, *Refer to DSC-22-FG-90-50 MFD Overview*.

AUTOMATIC ACTIVATION OF THE AFS CONTROL PANEL PAGE

If the AFS CP fails:
- The AUTO FLT AFS CTL PNL FAULT alert triggers
- The AFS CP backup function automatically activates.

MANUAL ACTIVATION OF THE AFS CONTROL PANEL PAGE

If the flight crew detects a failure on the AFS CP, the flight crew can activate the AFS CP backup function via:
- The AFS CP BACKUP button on the AFS CONTROL PANEL page
- The FCU power supply button (D6) on the left CKPT EQPT POWER SUPPLY.
  For more information about FCU system reset, *Refer to PRO-ABN-ABN-RESET AUTO FLT FCU Reset*.

L3 AFS CP DEGRADED MODE

In normal operation, the PRIM displays on the PFD the targets that pilots set via the AFS CP or the AFS CONTROL PANEL page.

In the case of all PRIMs failure, the FCU BKUP function has an additional function that enables the display on the PFD of the following parameters that the pilots targets:
- The speed
- The heading/track
- The Altitude.

In addition, the following selections remain operative
- The MACH / SPD selection
- The HDG-V/S / TRK-FPA selection
- The MAG / TRUE selection.

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FAILURE INDICATIONS DURING APPROACH

Applicable to: ALL

Ident.: DSC-22-FG-100-20-GWAR-00006063.0001001 / 07 NOV 16

AUTOLAND WARNING

L123

The AUTOLAND light flashes, when the aircraft is in autoland below 200 ft RA, and the required conditions to perform an autoland are no longer applicable.

The autoland light flashes when the LAND mode is engaged below 200 ft RA, and one of the following occurs:

- The last AP disengages,

  The AUTO LAND light stops flashing, when:
  - The flight crew engages the go-around, or
  - The altitude goes above 200 ft RA, or
  - The flight crew cancels the AUTO FLT AP OFF alert (if the alert was triggered).

  Note: *If the flight crew quickly presses on the sidestick pushbutton two times, the AUTOLAND light appears furtively.*

- Between 200 ft and 100 ft RA, if the approach and landing capability is LAND2(3) during an ILS approach, or LAND1 during a GLS ◁ approach:
  - The glide signal of the ILS transmitter fails, or the glide deviation is not available, or
  - The glide deviation is excessive.
    The glide deviation becomes excessive, when the glide deviation is one gradation away from the center of the scale.

  The AUTO LAND light stops flashing, when:
  - LAND disengages, or
  - The flight crew presses the sidestick pushbutton two times to disengage the AP(s).
- Between 200 ft and 15 ft RA, if the approach and landing capability is LAND2(3) during an ILS approach, or LAND1 during a GLS ◁ approach:
  - The LOC signal of the ILS transmitter fails, or the LOC deviation is not available, or
  - The LOC deviation is excessive.

The LOC deviation becomes excessive, when the LOC deviation is one quarter gradation away from the center of the scale.

The AUTO LAND light stops flashing, when:

- LAND or FLARE disengages, or
- The flight crew presses the sidestick pushbutton two times to disengage the AP(s).

- One radio altimeter is failed, and the values provided by the two remaining radio altimeters differ by more than 15 ft

  The AUTO LAND light stops flashing, when:

  - LAND, FLARE or ROLL OUT disengages, or
  - The flight crew presses the sidestick pushbutton two times to disengage the AP(s).

- A long flare is detected
  A long flare is detected, when FLARE is engaged while the aircraft flies more than 1 000 m.

  The AUTO LAND light stops flashing, when:

  - The flight crew engages the go-around, or
  - The flight crew presses the sidestick pushbutton two times to disengage the AP(s).

- A failure of the thrust control
- The alpha floor condition occurs.

Ident.: DSC-22-FG-100-20-GWAR-00006064.0001001 / 06 AUG 14

EXCESSIVE DEVIATION INDICATION

The PFD, and the ND (if the ND is in ROSE-LS mode) provides crew awareness in case of excessive deviation during an LS approach.

L2 The excessive deviation indication appears only when all the following conditions are applicable:

- The aircraft is below 1 000 ft
- The guidance mode is engaged in LOC, LAND, or FLARE
- The approach and landing capability is LAND 1, LAND 2 or LAND 3

L1 In the case of excessive deviation, the following indications appear:

- The LOC scale flashes, if the LOC deviation is more than one quarter dot for more than two seconds.
  L2 This is applicable, if the aircraft is above 15 ft RA.
- L1 The G/S scale flashes, if the G/S deviation is more than one dot for more than two seconds.
  L2 This is applicable, if the aircraft is above 100 ft RA.

Ident.: DSC-22-FG-100-20-GWAR-00006065.0001001 / 06 AUG 14

APPROACH AND LANDING CAPABILITY DOWNGRADE

The FG announces any downgrade of the approach and landing capability with:
- A triple click audio indicator
- The display of the new computed capability in a flashing white box for 10 s
- The display of the inoperative capability on the SD STATUS page.

L2 The downgrade of the approach and landing capability detected by the FG, is associated with:
- An assigned system alert (e.g. F/CTL FCDC 1 FAULT), or
- The AUTO FLT APPROACH CAPABILITY DOWNGRADED alert (*Refer to procedure*)

L1 Note: *Below 200 ft RA, the FG freezes the LAND3 DUAL capability. Therefore, a failure that occurs below 200 ft RA does not change the capability of the system, if one AP at least is engaged.*

Ident.: DSC-22-FG-100-20-GWAR-00006066.0001001 / 06 AUG 14

FAILURE OF ONE LS RECEIVER

In the case of a failure of one LS receiver, the AP/FD uses the remaining LS system.

EFFECT ON APPROACH AND LANDING CAPABILITY

The approach and landing capability downgrades to APPR1.

EFFECTS ON PFD AND ND (IN ROSE-LS MODE)

When the flight crew displays the LS deviation on PFD, and depending on the selected approach:
- The LOC or F-LOC flag appears instead of the lateral deviation scale on the CAPT(F/O) PFD, if the receiver of the lateral deviation of the LS1(2) is failed
- The G/S or F-G/S flag appears instead of the vertical deviation scale on the affected CAPT(F/O) PFD, if the receiver of the vertical deviation of the LS1(2) is failed.

Ident.: DSC-22-FG-100-20-GWAR-00006068.0001001 / 02 OCT 14

FAILURE OF THE LS TRANSMITTER

EFFECTS ON BOTH PFD AND ND (IN ROSE-LS MODE)

If the LOC transmitter fails:
- The LOC indexes disappear on both PFDs
- The LOC scales temporarily flash on both PFDs.

L2 The detection of the LOC transmitter failure is available between 1 000 ft and 15 ft, when the LOC mode is engaged.

L1 If the G/S transmitter fails:
- The G/S indexes disappear on both PFDs
- The G/S scales temporarily flash on both PFDs.

L2 The detection of the G/S transmitter failure is available between 1 000 ft and 100 ft, when the G/S, LAND or FLARE mode is engaged.

L1 EFFECTS ON AP AND FD s

If an approach mode is engaged (LOC*, LOC, LOC B/C*, LOC B/C, LAND, FLARE), when the LS transmitter failure occurs, the FD bars flash for 7 s on both FDs.
During 7 s the LS deviation (LOC and G/S) is set to zero.
If the failure remains after 7 s, the AP(s) disengages and the FD reverts the HDG/TRACK and V/S / FPA modes.
The FD bars stop flashing, after the reversion.

Note: If the failure occurs below 200 ft RA, the AP/FD remain engaged with the current modes.

EFFECT ON THE AUTOLAND LIGHTS

In the case of a LS transmitter failure below 200 ft, the AUTOLAND lights comes on.
For more information about the AUTOLAND lights, *Refer to DSC-22-FG-100-20 Autoland Warning*.

Ident.: DSC-22-FG-100-20-GWAR-00006069.0001001 / 02 OCT 14

FMS FAILURE

FAILURE OF ONE FMS

In the case of one FMS1(2) failure during the approach the AP uses the available FMS until the backup FMC-C takes over.
For more information about one FMS failure, *Refer to DSC-22-FMS-40 Failure of One FMC*.

FAILURE OF TWO FMS

If three FMCs are failed, or both FMS1 and 2 fail at the same time the FMS guidance is no longer available. However, the AP/FD remains engaged but the guidance mode reverts to HDG/TRACK and V/S / FPA.

Note: In case of both FMS failure during a RNP approach with APP DES engaged, the AP/FD does not disengage as long as the backup trajectory is available.

For more information about FMC failure, *Refer to DSC-22-FMS-40 Failure of Two FMCs (SINGLE Mode)*.

For more information about three FMC failure, *Refer to DSC-22-FMS-40 Failure of All FMCs (Backup Navigation)*.

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HOW TO DEFINE A HDG/TRK PRESET

Applicable to: ALL

Ident.: DSC-22-FG-110-GHOW-00006097.0001001 / 06 AUG 14

HOW TO DEFINE A HDG/TRK PRESET BEFORE TAKEOFF

- **Before takeoff, and up to 30 ft RA:**

  Turn the HDG/TRK knob.

  This action defines a HDG/TRK preset. NAV disarms. The preset value remains displayed on the HDG/TRK window (even when RWY TRK engages at 50 ft RA).
  When the flight crew pulls the HDG/TRK knob (at least 5 s after liftoff), HDG or TRACK engages. The aircraft follows the preset target.

Ident.: DSC-22-FG-110-GHOW-00006165.0001001 / 06 AUG 14

HOW TO DEFINE A HDG/TRK PRESET DURING APPROACH, OR GO-AROUND

- **If LOC*, LOC, F-LOC*, F-LOC, LAND, FLARE, ROLL OUT or GA TRK is engaged:**

  Turn the HDG/TRK knob.

  This action defines a HDG/TRK preset. The preset value remains displayed on the HDG/TRK window, as long as one of the above modes is engaged.
  After go-around engagement, HDG/TRACK will engage, when the flight crew pulls the HDG/TRK knob.
  L3 *This is applicable, if the flight crew pulls the HDG/TRK knob above 100 ft RA.*
  L1 *When the HDG or TRACK engages, the heading/track target is the HDG/TRK preset.*

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AIRCRAFT SYSTEMS

22 - AFS - FLIGHT MANAGEMENT SYSTEM

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BRG .... K
CATEGORY (CAT) L
CHANNEL (GLS ◁) .... M
COST INDEX (CI) .... N
CPNY RTE .... O
CRS IN(OUT) .... P
CRZ FL .... Q
CRZ TEMP .... R
DATE .... S
DERATED T.O .... T
DES CABIN RATE .... U
DIST V
EFF WIND .... W
EO ACCEL (ALTITUDE) X
ETT .... Y
FINAL (FUEL) .... Z
FINAL (TIME) .... AA
FLAPS .... AB
FLEX .... AC
FLT NBR .... AD
FREE TEXT .... AE
FREQUENCY (ILS) .... AF
FREQUENCY (VOR/DME) .... AG
FROM .... AH
FUEL PENALTY (FACTOR) .... AI
HEADING (SET HDG) .... AJ
HOLD DIST .... AK
HOLD TIME .... AL
IDLE (FACTOR) .... AM
INBOUND CRS .... AN
INCREMENT .... AO
INTERCEPT ANGLE .... AP
JTSN GW ◁ .... AQ
LAT .... AR
LAT (LL XING) .... AS

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LAT/LONG....AT
LEVEL OFF FL....AU
LONG....AV
LONG (LL XING)....AW
LS CRS....AX
LS FREQ....AY
LS IDENT....AZ
MACH....BA
MIN FUEL AT DEST....BB
N1 (NOISE)....BC
NAVAID CRS....BD
NAVAID ELEVATION....BE
NAVAID IDENT....BF
NOISE END (ALTITUDE)....BG
NUMBER....BH
OAT....BI
OFFSET DIST....BJ
PAX NBR....BK
PERF (FACTOR)....BL
PLACE....BM
PLACE/BEARING/DISTANCE (PBD)....BN
PLACE/DISTANCE (PD)....BO
PLACE-BEARING/PLACE-BEARING (PB/PB)....BP
PRED TO (ALTITUDE)....BQ
QNH(QFE ◁)....BR
RADIAL....BS
RADIO (ALTITUDE)....BT
RADIUS....BU
REMAINING TIME....BV
RNP....BW
RTA....BX
RTE RSV (%)....BY
RTE RSV (FUEL)....BZ
RWY....CA
RWY CRS....CB
RWY ELEVATION....CC
RWY IDENT....CD
RWY LENGTH....CE
SAT....CF
SAT ALTITUDE....CG

Continued on the following page

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SPD....CH
START TIME....CI
STATION DECLINATION (STATION DEC)....CJ
STOP TIME....CK
T.O LIMIT....CL
T.O SHIFT....CM
TAXI (FUEL)....CN
TEXT....CO
THR RED (ALTITUDE)....CP
THS....CQ
TIME MARKER UTC....CR
TO....CS
TRANS (ALTITUDE)....CT
TRANS (FLIGHT LEVEL)....CU
TRIP WIND....CV
TROPO....CW
UTC....CX
UTC DIFF (HOURS)....CY
UTC DIFF (MINUTES)....CZ
V1....DA
V2....DB
VAPP....DC
VIA....DD
VOR CRS....DE
VOR FREQ....DF
VR....DG
WAYPOINT....DH
WIND ALTITUDE....DI
WIND DIRECTION....DJ
WIND SPEED....DK
ZFW....DL
ZFWCG....DM

DSC-22-FMS-20-60 EFIS CP

EFIS CP....A

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DSC-22-FMS-20-90 FMS Messages

General......A
10 RWYs MAX : ALL IN USE......B
20 NAVAIDS MAX : ALL IN USE......C
99 WPTs MAX : ALL IN USE......D
ACFT POSITION NOT VALID......E
ADJUST DESIRED TRK OR HDG......F
ADJUSTING SPD DUE TO RTA......G
AIRWAY / WPT DISAGREE......H
AIRWAYS INSERTION IN PROGRESS F-PLN REVISION NOT ALLOWED......I
ALIGN IRS ......J
AREA RNP IS XX.XX......K
ARPT REF / GPS POSITION DISAGREE L
ARPT REF / LAST IRS POSITION DISAGREE ......M
ATC F-PLN INSERTED IN SEC 3......N
ATC F-PLN INSERTED IN SEC 3 REJECTED INFO SEE SEC/INDEX ......O
CABIN RATE EXCEEDED ......P
CHECK ALTN WIND......Q
CHECK APPR SEL......R
CHECK CPNY RTE......S
CHECK DATABASE CYCLE......T
CHECK DEST DATA......U
CHECK EO SPD SETTING......V
CHECK FLT NUMBER......W
CHECK IRS / ARPT POSITION......X
CHECK MIN FUEL AT DEST ......Y
CHECK NORTH REF ......Z
CHECK ONSIDE FMS P/N ......AA
CHECK QFE ......AB
CHECK SPD MODE......AC
CHECK T.O DATA......AD
CHECK TIME REF ......AE
CHECK ZFW......AF
COMPANY F-PLN & LOAD DATA RECEIVED WAITING FOR INSERTION ......AG
COMPANY F-PLN RECEIVED WAITING FOR INSERTION ......AH
COMPANY LOAD DATA RECEIVED WAITING FOR INSERTION ......AI
COMPANY MSG INSERTION IN PROGRESS......AJ
COMPANY T.O DATA RECEIVED WAITING FOR INSERTION ......AK
COMPANY WIND DATA RECEIVED WAITING FOR INSERTION IN ACTIVE ......AL
COMPANY WIND DATA RECEIVED WAITING FOR INSERTION IN SEC 1(2)(3) ......AM

Continued on the following page

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COMPANY WIND UPLINK PENDING....AN
CONSTRAINTS ABOVE CRZ FL : DELETED....AO
CONSTRAINTS BEFORE XXXXXXX : DELETED....AP
CRZ FL ABOVE MAX FL ....AQ
DEST / ALTN CPNY RTE DISAGREE....AR
DEST EFOB BELOW MIN....AS
DRAFT WIND INSERTED....AT
ENTER DEST DATA....AU
ENTRY ABOVE EO MAX FL....AV
ENTRY NOT IN LIST....AW
ENTRY OUT OF RANGE....AX
EXPECT TURN AREA EXCEEDANCE....AY
EXTEND SPD BRK....AZ
F-G/S BASED ON ISA ....BA
FLT NUMBER RECEIVED....BB
FMCs ACFT STATUS DISAGREE....BC
FMCs ACFT STATUS DISAGREE INDEPENDENT OPERATION....BD
FMCs PIN PROG TYPE DISAGREE....BE
FMCs PIN PROG TYPE DISAGREE INDEPENDENT OPERATION....BF
FMS DATALINK NOT AVAIL....BG
FMS1 / FMS2 GW DISAGREE....BH
FMS1 / FMS2 SPD TARGET DISAGREE....BI
FORMAT ERROR....BJ
FORMAT ERROR ENTER ALT BEFORE PLACE/DIST....BK
F-PLN ELEMENT RETAINED....BL
F-PLN FULL....BM
GLIDE DESELECTED ....BN
GPS DESELECTED....BO
INDEPENDENT OPERATION....BP
INITIALIZE ZFW / ZFWCG....BQ
INSERT OR ERASE tmpy f-pln FIRST....BR
LATERAL DISCONTINUITY AHEAD....BS
LRC MODE IN USE....BT
MACH SEGMENT DELETED....BU
NAV ACCUR DOWNGRADED ....BV
NAV ACCUR UPGRADED ....BW
NAV PRIMARY ....BX
NAV PRIMARY LOST ....BY
NEW ACCEL ALT : HHHHH....BZ
NEW CRZ ALT : HHHHH ....CA

Continued on the following page

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NEW THR RED ALT : HHHHH.......CB
NO COMPANY REPLY.......CC
NO FLS FOR THIS APPR.......CD
NO INTERSECTION FOUND.......CE
NO NAV INTERCEPTION.......CF
NO SLS FOR THIS APPR FOR FLS: DESELECT SLS ON NAVAIDS ....CG
NO VERT PATH INTERCEPT.......CH
NOT ALLOWED.......CI
NOT ALLOWED DATABASE ARPT s ONLY ....CJ
NOT ALLOWED IN TURN.......CK
NOT IN DATABASE.......CL
NOT TRANSMITTED TO ACR.......CM
PILOT RTEs LIST FULL.......CN
PLACE / DIST IN TRANS.......CO
PLACE / WPT DISAGREE.......CP
PLEASE WAIT.......CQ
PLEASE WAIT FOR COMPANY F-PLN UPLINK.......CR
PLEASE WAIT FOR FMS RESYNCH.......CS
PRINTER NOT AVAIL.......CT
PROC RNP IS XX.XX.......CU
RECEIVED ATC MSG NOT VALID CV
RECEIVED COMPANY F-PLN NOT VALID.......CW
RECEIVED COMPANY LOAD DATA NOT VALID.......CX
RECEIVED COMPANY T.O DATA NOT VALID.......CY
RECEIVED COMPANY WIND DATA NOT VALID.......CZ
RECEIVED FLT NUMBER NOT VALID.......DA
REENTER ZFW / ZFWCG ....DB
RETRACT SPD BRK.......DC
RNP PROC ERROR: FPLN/NDB MISMATCH RE-ENTER RNP PROC(S).......DD
RTA ALREADY EXISTING.......DE
RTA DELETED.......DF
RTA NOT CONSIDERED FOR FUEL PLANNING ....DG
RTE IDENT ALREADY USED.......DH
RUNWAY / LS DISAGREE ....DI
SELECT HDG OR TRK FIRST.......DJ
SELECT TRUE NORTH REF.......DK
SET HOLD SPD.......DL
SLS MANUAL TUNING NOT ALLOWED ....DM
SLS NOT AVAIL: SBAS DESELECTED FOR FLS: DESELECT SLS ON NAVAIDS ....DN
SOME REVISIONS NOT STORED.......DO

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SPD ERROR AT XXXXXXX....DP
SPD LIMIT EXCEEDED....DQ
SPECIF NDB NOT AVAIL....DR
SPECIF VOR-D NOT AVAIL....DS
STEP ABOVE MAX FL....DT
STEP AHEAD....DU
STEP DELETED....DV
T.O RWY TOO SHORT CHECK TOW & T.O DATA....DW
T.O SPEED TOO LOW CHECK TOW & T.O DATA....DX
T.O TIME REACHED....DY
T/D REACHED....DZ
TIME ERROR AT XXXXXXX....EA
TIME MARKER REACHED....EB
TIME TO EXIT....EC
TOO STEEP PATH AHEAD....ED
TRUE NORTH REFERENCED ENTRY EXPECTED....EE
TUNE BBB FFF.FF....EF
V1/VR/V2 DISAGREE....EG
XXXX IS DESELECTED....EH

DSC-22-FMS-20-70 FMS Selector

FMS Selector....A

DSC-22-FMS-20-30 KCCU

KCCU Controls for the FMS....A

DSC-22-FMS-20-100 MEMO

MEMO....A

DSC-22-FMS-20-20 MFD

DSC-22-FMS-20-20-10 Overview

Overview....A

DSC-22-FMS-20-20-20 FMS Pages

FMS Pages Index....A
AIRWAYS Page....B
ALTERNATE Page....C
ARRIVAL Page....D
CLOSEST AIRPORTS Page....E
COMPANY F-PLN REPORT Page....F
COMPANY F-PLN REQUEST Page....G

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COMPANY T.O DATA REQUEST Page........ H
COMPANY WIND DATA REQUEST Page........ I
DATA/AIRPORT Page........ J
DATA/NAVAID Page........ K
DATA/PRINTER Page........ L
DATA/ROUTE Page........ M
DATA/STATUS Page........ N
DATA/WAYPOINT Page........ O
DEPARTURE Page........ P
DIRECT TO Page........ Q
DUPLICATE NAMES Page........ R
EQUI-TIME POINT Page........ S
FIX INFO Page........ T
F-PLN Page........ U
FUEL&LOAD Page........ V
HOLD Page........ W
INIT Page........ X
LL XING Page........ Y
MESSAGES LIST Page........ Z
OFFSET Page........ AA
PERF Page........ AB
POSITION/GNSS Page........ AC
POSITION/IRS Page........ AD
POSITION/MONITOR Page........ AE
POSITION/NAVAIDS Page........ AF
POSITION/REPORT Page........ AG
POSITION/TIME Page........ AH
RECEIVED COMPANY T.O DATA Page........ AI
REJECTED ATC INFO Page........ AJ
ROUTE SELECTION Page........ AK
SEC INDEX Page........ AL
TRANSFER TO MAILBOX Page........ AM
VERT REV Page........ AN
WHAT IF Page........ AO
WIND Page........ AP

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ND........ A

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DSC-22-FMS-20-40 PFD

FMS Data on the PFD.......... A

DSC-22-FMS-20-75 Printer

Printer.......... A

DSC-22-FMS-30 How To

How To manage FMS Erroneous Predictions.......... A
How To Change Departure T.O Data after Rejected Takeoff.......... B

DSC-22-FMS-40 Abnormal Operations

Overview.......... A
INDEPENDENT Mode.......... B
Failure of One FMC.......... C
Failure of Two FMCs (SINGLE Mode).......... D
Failure of All FMCs (Backup Navigation).......... E
FMC Reset and Resynchronization.......... F
FMC data Not Valid during a RNP AR Procedure.......... G
Display of ERRONEOUS Fix Info on the ND.......... H

DSC-22-FMS-45 Temporary Abnormal Behaviors

Erroneous Trajectory while in HDG(TRK) Mode during Procedures with a Turn Direction on a Leg with an Altitude Termination.......... A
Erroneous Altitude Constraint after SID or STAR Selection Change.......... B
Erroneous Fuel & Load Values Following Received CPNY F-PLN.......... C
Erroneous Vertical Guidance in Approach Subsequent to a DIR TO Performed when near the Top of Descent..... D
FMC reset due to F-PLN content with two successive waypoints distant from less than 2 NM.......... E

Localization Title	Toc Index	ID	Reason
DSC-22-FMS-10-40-90 Received ATC F-PLN Clearance	C	1	Addition of information to explain how to use the ATC F-PLN clearance, when received in the mailbox. Rewording of the information about the loading of the ATC F-PLN clearance for clarification.
DSC-22-FMS-10-60 Engine-out SID	B	1	Update of the illustration to correctly orientate the flight plan.
DSC-22-FMS-10-60 Engine-out SID	B	2	Update of the illustration to correctly orientate the flight plan.
DSC-22-FMS-20-90 General	A	1	Update of the "MESSAGE COLOR" description to correct a typo error.
DSC-22-FMS-20-20-20 OPT	AB	1	Revision of the abbreviation to be in accordance with the abbreviation list.
DSC-22-FMS-20-20-20 Access [CMS]	AN	2	Update of the "Waypoint Revisions Menu" illustration to correctly place the selection box over CMS.
DSC-22-FMS-30 How To manage FMS Erroneous Predictions	A	1	Revision of the abbreviation to be in accordance with the abbreviation list.
DSC-22-FMS-40 Display of ERRONEOUS Fix Info on the ND	H	1	Revision of the abbreviation to be in accordance with the abbreviation list.
DSC-22-FMS-45 FMC reset due to F-PLN content with two successive waypoints distant from less than 2 NM	E	1	Revision of the abbreviation to be in accordance with the abbreviation list.

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OVERVIEW

Applicable to: ALL

Ident.: DSC-22-FMS-10-10-10-00003172.0001001 / 14 APR 14

The Flight Management System (FMS) provides:
- Flight planning and navigation information
- Performance calculation and optimization
- Long-term guidance targets.

The FMS also has:
- An Engine-Out (EO) mode
- A takeoff surveillance function
- A time function
- A print function.

The FMS information appears on different displays.

Ident.: DSC-22-FMS-10-10-10-00003173.0001001 / 14 APR 14

FLIGHT PLANNING

The flight crew can create an entire flight plan (lateral flight plan and vertical flight plan) in the FMS.
The flight crew first selects or creates a basic flight plan, and then inserts the fuel, load, and wind information. When all of the necessary data is inserted, the FMS computes and displays the track, speed, altitude, time, wind, and fuel predictions that are associated with the flight plan.
The flight crew can modify the flight plan at any time. These modifications are referred to as revisions.
For more information about flight planning, *Refer to DSC-22-FMS-10-40-10 Introduction*.

Ident.: DSC-22-FMS-10-10-10-00003174.0001001 / 14 APR 14

NAVIGATION

The FMS tunes the radio navigation aids, provides information about the aircraft position, and defines the navigation accuracy.
For more information about the navigation functions of the FMS, *Refer to DSC-22-FMS-10-30-10 Aircraft Position*.

Ident.: DSC-22-FMS-10-10-10-00003175.0001001 / 14 APR 14

PERFORMANCE CALCULATION AND OPTIMIZATION

The FMS computes optimized performance data that is associated with each flight phase.
For more information about the performance function of the FMS, *Refer to DSC-22-FMS-10-50-10 Overview*.

Ident.: DSC-22-FMS-10-10-10-00003176.0001001 / 14 APR 14

LONG-TERM GUIDANCE TARGETS

The FMS sends targets to the Flight Guidance (FG) in order to guide the aircraft along the FMS flight plan.

L2 For more information about the FG, *Refer to DSC-22-FG-10 Introduction*.

Ident.: DSC-22-FMS-10-10-10-00016754.0001001 / 14 APR 14

ENGINE-OUT (EO) MODE

In the case of an engine failure, the Engine-Out (EO) mode of the FMS becomes active. When the EO mode is active, the FMS takes the engine failure into account for the computation of the performance data, the flight plan predictions, and the long-term guidance targets.
For more information about the EO mode of the FMS, *Refer to DSC-22-FMS-10-60 General*.

Ident.: DSC-22-FMS-10-10-10-00024962.0001001 / 03 JAN 19

TAKEOFF MONITORING FUNCTION ⋞

The Takeoff Monitoring (TOM) function monitors the acceleration of the aircraft during takeoff roll and alerts the flight crew if a significant degradation is detected.
For more information about the takeoff monitoring function of the FMS, *Refer to DSC-22-FMS-10-70-10 Takeoff Monitoring (TOM) Function (If Installed)*.

Ident.: DSC-22-FMS-10-10-10-00016756.0001001 / 05 JUL 16

TAKEOFF SURVEILLANCE FUNCTION

The Takeoff Surveillance (TOS) function checks the takeoff data that the flight crew enters and selects on the FMS pages.
For more information about the takeoff surveillance function of the FMS, *Refer to DSC-22-FMS-10-70-20 Takeoff Surveillance Function*.

Ident.: DSC-22-FMS-10-10-10-00016757.0001001 / 14 APR 14

TIME FUNCTION

The time function of the FMS:
- Computes the block time and the flight time
- Enables the flight crew to define time markers
- Computes airport local times.

For more information about the time function of the FMS, *Refer to DSC-22-FMS-10-80 Time Function*.

Ident.: DSC-22-FMS-10-10-10-00016759.0001001 / 14 APR 14

PRINT FUNCTION

The print function of the FMS enables the flight crew to print data and reports.

For more information about the print function of the FMS, *Refer to DSC-22-FMS-10-90 Print Function*.

Ident.: DSC-22-FMS-10-10-10-00003177.0001001 / 14 APR 14

INFORMATION DISPLAY

The FMS information appears on:
- The Multifunction Displays (MFDs)
- The Navigation Displays (NDs)
- The Primary Flight Displays (PFDs).

The MFDs and the NDs are interactive displays that the flight crew uses to enter or modify data via the Keyboard and Cursor Control Units (KCCUs).

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ARCHITECTURE

Applicable to: ALL

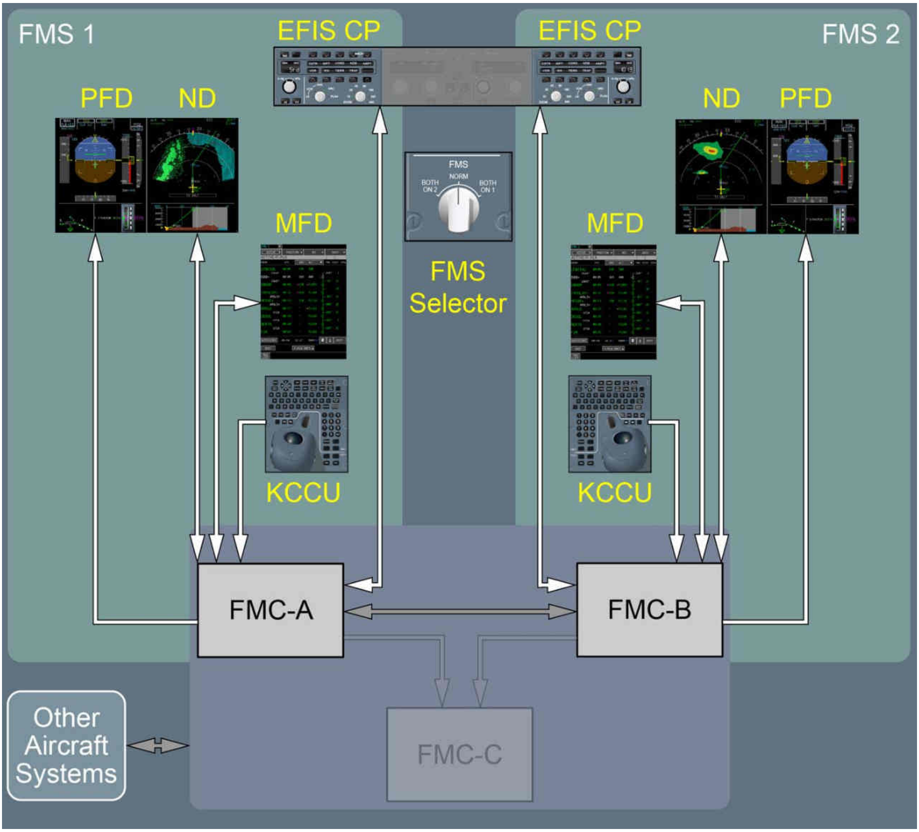
Ident.: DSC-22-FMS-10-20-10-00009741.0001001 / 14 APR 14

There are two flight management systems:
- FMS 1, on the side of the Captain
- FMS 2, on the side of the First Officer.

Each FMS uses a computer, referred to as the Flight Management Computer (FMC).

The flight crew uses the following controls and displays to interface with each FMS:
- 1 Multifunction Display (MFD)
- 1 Navigation Display (ND)
- 1 Primary Flight Display (PFD)
- 1 EFIS Control Panel (EFIS CP)
- 1 Keyboard and Cursor Control Unit (KCCU).

FMS Architecture


FMS 1
EFIS CP
EFIS CP
FMS 2
PFD
ND
ND
PFD
FMS
NORM
BOTH ON 2
BOTH ON 1
FMS Selector
MFD
MFD
KCCU
KCCU
FMC-A
FMC-B
Other Aircraft Systems
FMC-C

Ident.: DSC-22-FMS-10-20-10-00003651.0001001 / 01 SEP 16

FMC

There are three FMCs:
- FMC-A
- FMC-B
- FMC-C.

In normal operation:
- FMC-A provides data to FMS 1
- FMC-B provides data to FMS 2
- FMC-C is the backup FMC.

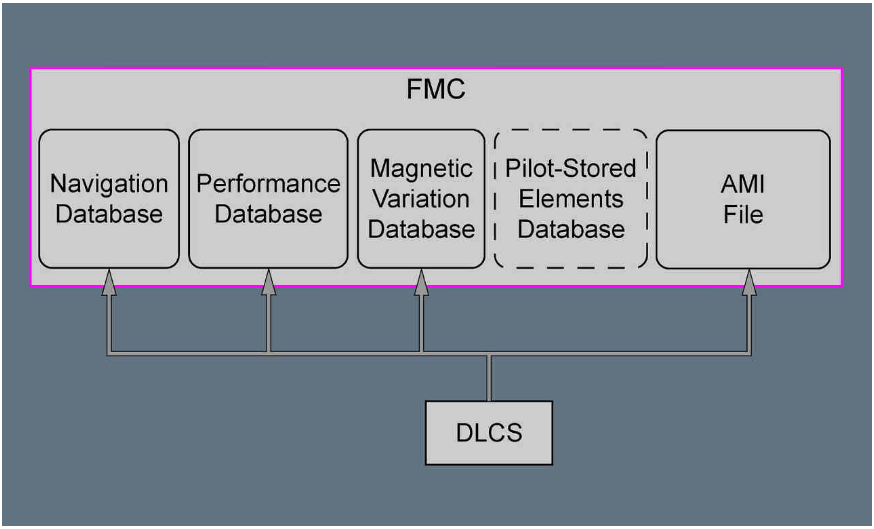
Of the two active FMCs, one FMC is referred to as the "master", the other as the "slave". The selection of the master FMC is based on which Autopilot (AP) is engaged, and on the position of the FMS selector.
The two active FMCs independently calculate data, and then share, compare, and synchronize this data.
The backup FMC also independently performs some simple calculations. For more information, *Refer to DSC-22-FMS-40 Normal Operation*.

FMC DATABASES

Each FMC has four databases:
- Navigation database
- Performance database
- Magnetic variation database
- Pilot-stored elements database.

L3 Some FMS data can be customized, by using the Airline Modifiable Information (AMI) file.

FMC Databases


FMC
Navigation Database
Performance Database
Magnetic Variation Database
Pilot-Stored Elements Database
AMI File
DLCS

Ident.: DSC-22-FMS-10-20-10-00003652.0001001 / 14 APR 14

L2 NAVIGATION DATABASE

The navigation database provides standard navigation data: Navaids, waypoints, airports, runways, airways, holding patterns, company routes, terminal area procedures (SID, STAR, approach), MSA, and MORA.
This data is stored for two successive 28-day cycles.

L3 The Operator defines, obtains, updates, loads, and uses this data.

L2 The ACFT STATUS panel of the DATA/STATUS page provides the database validity period, with both start date and end date information.

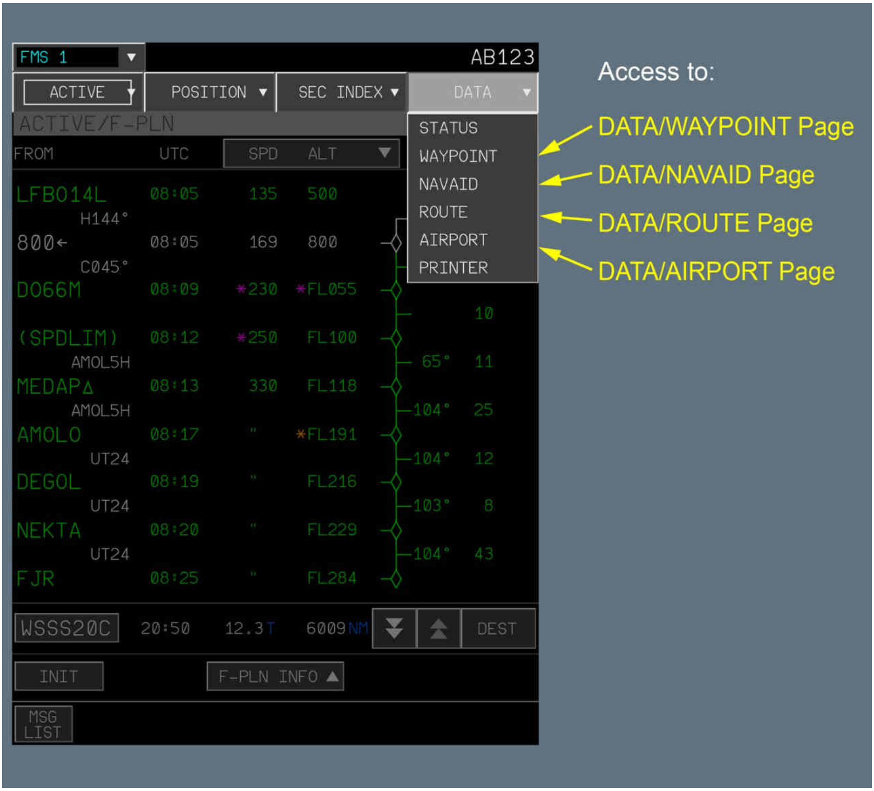
L3 The part number of the navigation database is also displayed on the ACFT STATUS panel of the DATA/STATUS page.

L2 For more information, *Refer to DSC-22-FMS-20-20-20 DATA/STATUS Page*.
If the current date disagrees with the database cycle, the CHECK DATABASE CYCLE message is displayed in the FMS message area on the MFD.

DATA PAGES

The flight crew can display the waypoints, navaids, routes, and airports (with runways), that are stored in the navigation database, on the DATA pages. The DATA pages are accessed via the DATA menu on the general menu bar.

DATA Pages


FMS 1 ▼
AB123
ACTIVE ▼
POSITION ▼
SEC INDEX ▼
DATA ▼
ACTIVE/F-PLN
STATUS
WAYPOINT
NAVAID
ROUTE
AIRPORT
PRINTER
WSSS20C
20:50
12.3T
6009NM
DEST
INIT
F-PLN INFO ▲
MSG LIST

FROM	UTC	SPD	ALT		
LFBO14L	08:05	135	500		
H144°					
800←	08:05	169	800		
C045°					
D066M	08:09	*230	*FL055		
					10
(SPDLIM)	08:12	*250	FL100		
AMOL5H				65°	11
MEDAPΔ	08:13	330	FL118		
AMOL5H				104°	25
AMOLO	08:17	"	*FL191		
UT24				104°	12
DEGOL	08:19	"	FL216		
UT24				103°	8
NEKTA	08:20	"	FL229		
UT24				104°	43
FJR	08:25	"	FL284		

Access to:

DATA/WAYPOINT Page

DATA/NAVAID Page

DATA/ROUTE Page

DATA/AIRPORT Page

Ident.: DSC-22-FMS-10-20-10-00003653.0001001 / 14 APR 14

L2 PERFORMANCE DATABASE

The performance database is used for the computation of FMS performance parameters, flight plan predictions and optimization, and takeoff performance checks.

L3 The performance database includes the engine model, aerodynamic model, and performance model.

The Operator cannot modify this database.

The FMS P/N panel of the DATA/STATUS page displays the part number of the performance database.

For more information, *Refer to DSC-22-FMS-20-20-20 DATA/STATUS Page*.

Ident.: DSC-22-FMS-10-20-10-00003654.0001001 / 14 APR 14

L2 MAGNETIC VARIATION DATABASE

The magnetic variation database provides magnetic variation data that the FMS uses to compute local magnetic variation.

L3 The aircraft manufacturer updates this database.
The FMS P/N panel of the DATA/STATUS page displays the part number of the magnetic variation database.
For more information, *Refer to DSC-22-FMS-20-20-20 DATA/STATUS Page*.

Ident.: DSC-22-FMS-10-20-10-00003655.0001001 / 14 APR 14

L2 PILOT-STORED ELEMENTS DATABASE

The pilot-stored elements database stores the waypoints, navaids, runways, and routes that the flight crew created. The contents of this database are limited to:

- 99 waypoints
- 20 navaids
- 10 runways
- 5 routes (with a maximum size of 30 flight plan elements per route).

The pilot-stored elements can be deleted:

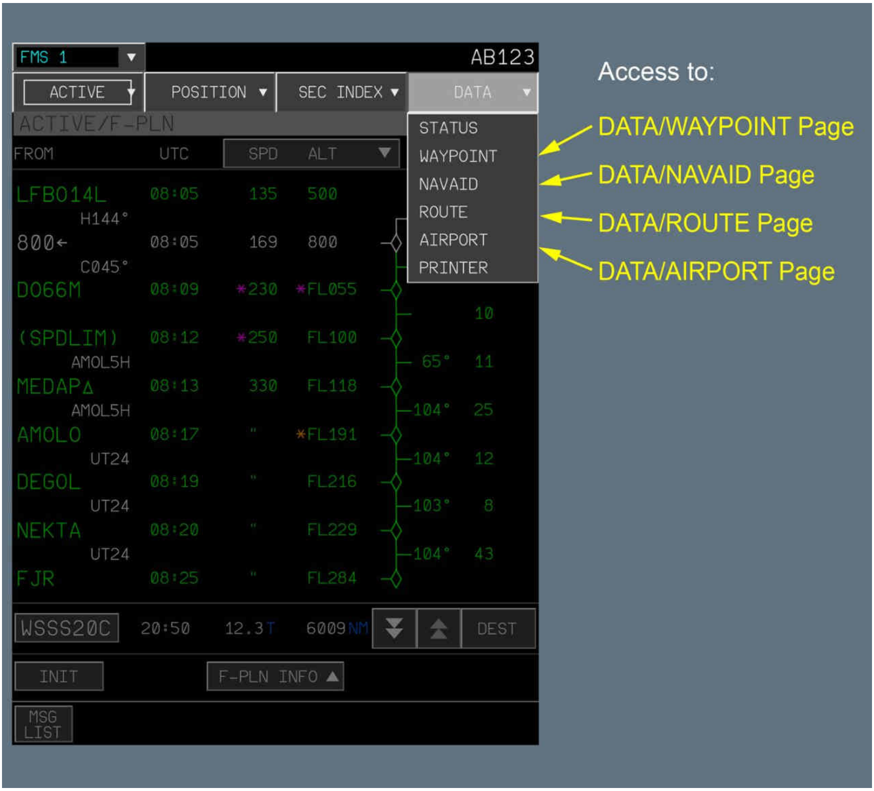
- Manually: At any time, with the DELETE ALL function on the ACFT STATUS panel of the DATA/STATUS page
- Automatically: After each flight (This is an optional feature that Operators can activate via the AMI file).

All pilot-stored elements are deleted, when all FMCs are shut down.
The ACFT STATUS panel of the DATA/STATUS page displays the number and types of pilot-stored elements.
For more information, *Refer to DSC-22-FMS-20-20-20 DATA/STATUS Page*.

DATA PAGES

The flight crew can create waypoints, navaids, routes, and airports/runways, that will be stored in the pilot-stored elements database, on the DATA pages. The DATA pages are accessed via the DATA menu on the general menu bar.

DATA Pages


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
STATUS
WAYPOINT
NAVAID
ROUTE
AIRPORT
PRINTER
ACTIVE/F-PLN
WSSS20C
20:50
12.3T
6009NM
DEST
INIT
F-PLN INFO
MSG LIST

FROM	UTC	SPD	ALT	
LFBO14L	08:05	135	500	
H144°				
800←	08:05	169	800	
C045°				
D066M	08:09	*230	*FL055	
				10
(SPDLIM)	08:12	*250	FL100	
AMOL5H				65° 11
MEDAPΔ	08:13	330	FL118	
AMOL5H				104° 25
AMOLO	08:17	"	*FL191	
UT24				104° 12
DEGOL	08:19	"	FL216	
UT24				103° 8
NEKTA	08:20	"	FL229	
UT24				104° 43
FJR	08:25	"	FL284	

Access to:

DATA/WAYPOINT Page

DATA/NAVAID Page

DATA/ROUTE Page

DATA/AIRPORT Page

Ident.: DSC-22-FMS-10-20-10-00003657.0001001 / 14 APR 14

L3 AIRLINE MODIFIABLE INFORMATION (AMI) FILE

The Airline Modifiable Information (AMI) file is also referred to as the FMS Airline Configuration file.

The AMI file provides the following set of FMS data, that Operators can customize:
- Software options (e.g. DIR TO default option (with abeam/without abeam))
- Airline policy values (e.g. THR RED altitude, ACC altitude)
- Fuel policy values (e.g. taxi fuel, route reserve %,)

- Policy values for the COMPANY COM application (e.g. flight-plan request (Yes/No), performance data request (Yes/No))
- Policy values for the ATC datalink system (e.g. ATC free text (Yes/No)).

An Operator can define one or more AMIs for its entire fleet, as needed.
The FMS P/N panel of the DATA/STATUS page displays the part number of the AMI file.
For more information, *Refer to DSC-22-FMS-20-20-20 DATA/STATUS Page*.

Ident.: DSC-22-FMS-10-20-10-00003658.0001001 / 14 APR 14

L3 DATA LOADING AND CONFIGURATION SYSTEM (DLCS)

The DLCS is used to load all databases (except the pilot-stored elements database) and the configuration files in the FMC.

Ident.: DSC-22-FMS-10-20-10-00003659.0001001 / 14 APR 14

MFD

The MFD displays FMS textual data. There are more than 50 FMS pages that provide information about the flight plan, aircraft position, and flight performance.
The MFD is interactive. Therefore, the flight crew can move from one FMS page to another, and can display, enter, or modify data via the KCCU.
For more information, *Refer to DSC-22-FMS-20-20-10 Overview*.

Ident.: DSC-22-FMS-10-20-10-00003660.0001001 / 14 APR 14

KCCU

The flight crew uses the KCCU to:
- Display the FMS pages on the MFD
- Enter and modify data on the MFD FMS pages
- Perform some flight plan revisions on the ND.

For more information, *Refer to DSC-22-FMS-20-30 KCCU Controls for the FMS*.

Ident.: DSC-22-FMS-10-20-10-00003661.0001001 / 14 APR 14

PFD AND ND (EFIS)

The PFD and the ND display graphical and textual information that is related to flight management.
The upper part of the ND displays the lateral part of the flight plan, and the lower part of the ND (referred to as the VD) displays the vertical part of the flight plan.
On the upper part of the ND, the flight crew can make some changes to the lateral part of the flight plan via the KCCU.

For more information about:
- The ND, *Refer to DSC-22-FMS-20-50 ND*
- The PFD, *Refer to DSC-22-FMS-20-40 FMS Data on the PFD*.

Ident.: DSC-22-FMS-10-20-10-00003662.0001001 / 14 APR 14

EFIS CP

With the EFIS CP, the flight crew controls the graphical and textual FMS data that appear on the ND.
For more information, *Refer to DSC-22-FMS-20-60 EFIS CP*.

Ident.: DSC-22-FMS-10-20-10-00003663.0001001 / 14 APR 14

FMS SELECTOR

In the case of an FMS failure, the flight crew uses the FMS selector in order to display:
- FMS 1 data on both sides of the cockpit, or
- FMS 2 data on both sides of the cockpit.

For more information, *Refer to DSC-22-FMS-20-70 FMS Selector*.

Ident.: DSC-22-FMS-10-20-10-00003650.0001001 / 17 APR 14

L2 OTHER AIRCRAFT SYSTEMS

The FMS interfaces with the following aircraft systems, via the avionics network:

AIR CONDITIONING SYSTEM

The FMS transmits: The number of passengers for temperature control and fresh air supply.

AIR DATA/INERTIAL REFERENCE SYSTEM (ADIRS)

The FMS receives:
- Position data to define the navigation accuracy, and to compute the FMS position
- Air data parameters for flight plan predictions
- The aircraft time reference (date and UTC time).

The FMS transmits:
- Reference position for IR alignment
- The FMS position to compute the aircraft position
- QNH, runway elevation, and temperature at destination for the FLS function
- Manual settings for the aircraft time reference (date and UTC time).

AIR TRAFFIC CONTROL (ATC) DATALINK SYSTEM

The FMS receives: Uplink messages from the ATC center to be loaded in the FMS.
The FMS transmits: Downlink report messages and aircraft parameters to the ATC center.

AIRPORT NAVIGATION FUNCTION

The FMS receives: Data related to the airport and runway where the aircraft is currently, for takeoff check computation.
The FMS transmits: Airport (departure, destination, and alternate) and runway data.

AUXILIARY POWER UNIT (APU)

The FMS receives: The APU fuel used for the Fuel On Board (FOB) computation (The APU serves as a backup to the FQMS).

AVIONICS COMMUNICATION ROUTER (ACR)

The FMS receives: Uplink messages from the company ground station.
The FMS transmits: Downlink messages and aircraft parameters to the company ground station.

CABIN INTERCOMMUNICATION DATA SYSTEM (CIDS)

The FMS transmits: The number of passengers and the destination Estimated Time of Arrival (ETA) for water heating and galley management.

CENTRAL MAINTENANCE SYSTEM (CMS)

The FMS transmits: All FMS maintenance messages.

DATA LOADING AND CONFIGURATION SYSTEM (DLCS)

The FMS receives: Software and databases to be loaded in the FMS.

DIGITAL FLIGHT DATA RECORDER (DFDR)

The FMS transmits: All data that must be recorded to analyze any event.

ENGINES

The FMS receives:

- Engine parameters for the computation of flight plan predictions, FMS flight phases, and takeoff checks
- The engine fuel used for the FOB computation (The engines serves as a backup to the FQMS).

FCU BACKUP

The FMS receives: Display mode, range, and options parameters.

FLIGHT WARNING SYSTEM (FWS)

FMS transmits: Data for the triggering of alerts and dispatch messages.

FUEL QUANTITY AND MANAGEMENT SYSTEM (FQMS)

The FMS receives: Weight, CG, and fuel data for FMS prediction update.
The FMS transmits: Weight, CG, and fuel data for FQMS initialization.

FUEL TANK INERTING SYSTEM

The FMS transmits: The remaining time that is necessary to reach the top of descent.

LANDING GEAR EXTENSION AND RETRACTION SYSTEM (LGERS)

The FMS receives: Flight/ground information.

MULTI-MODE RECEIVER (MMR)

The FMS transmits: Approach data (e.g. FLS beam, type of the approach that the flight crew selected).

NAVAIDS

The FMS receives: Radio position data for FMS position computation.

ONBOARD INFORMATION SYSTEM (OIS)

The FMS transmits: The flight number and the origin/destination city-pair for the OIS applications.

COMPANY COM Application

The FMS receives: Out-Off-On-In (OOOI) events for the time function (computation of block time and flight time).
The FMS transmits: Flight plan data.

OXYGEN SYSTEM

The FMS transmits: The destination airport elevation for oxygen control.

PERMANENT DATA

The FMS transmits: Time data that the flight crew defines or selects via the POSITION/TIME page.

PRESSURIZATION SYSTEM

The FMS transmits: Vertical flight plan data for cabin pressurization.

PRIMARY FLIGHT CONTROL AND GUIDANCE COMPUTER (PRIM)

The FMS receives: Data from the Flight Guidance (FG), the Flight Envelope (FE), and other specific systems (e.g. anti-ice system).
The FMS transmits: Data for the FG and the FE.

PRINTER

The FMS transmits: FMS data to be printed.

RADIO MANAGEMENT PANEL (RMP)

The FMS transmits: Data for VOR, DME, and MMR tuning.

L3 SECURE COMMUNICATION INTERFACE (SCI)

The FMS receives: Aircraft time reference for the time function (The SCI serves as a backup to the ADIRS).

L2 SLATS/FLAPS SYSTEM

The FMS receives: Flap setting for the computation of flight plan predictions and takeoff checks.

SURVEILLANCE (SURV)

The FMS transmits: Navigation and flight plan data.

Aircraft Position

AIRCRAFT POSITION

Ident.: DSC-22-FMS-10-30-10-00009744.0001001 / 14 APR 14
Applicable to: ALL

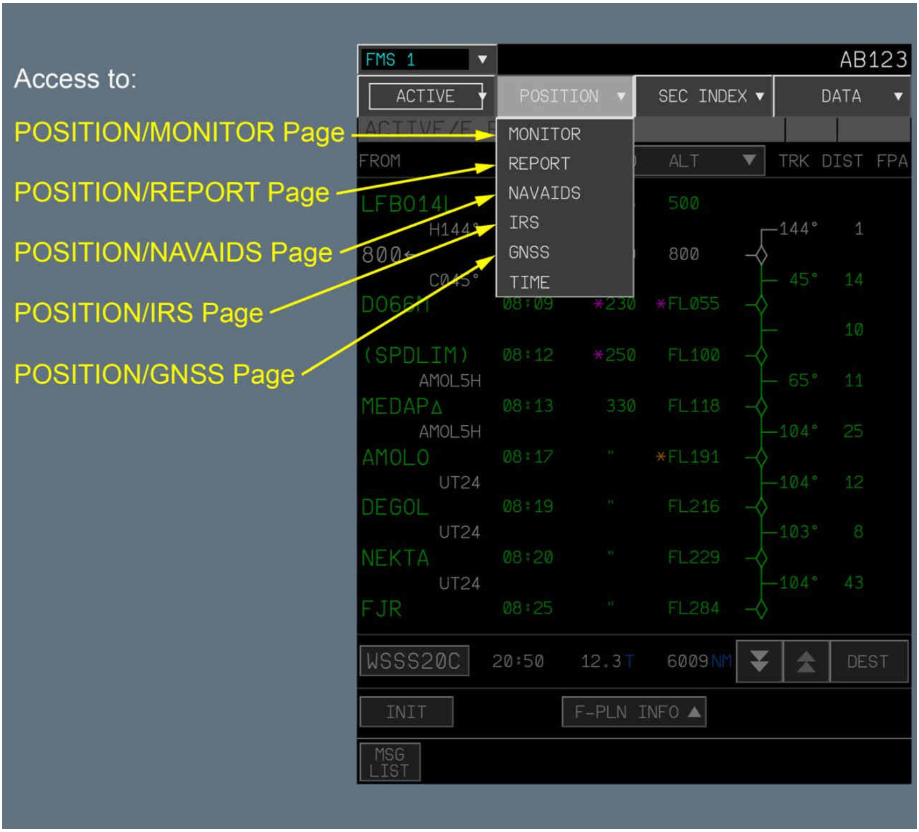
The ADIRS computes the aircraft position and the position accuracy. The ADIRS also determines the navigation mode.
Based on ADIRS data, the FMS defines the navigation accuracy.
For more information about aircraft position, position accuracy, navigation accuracy, and navigation modes, *Refer to DSC-34-NAV-20-10-60 Position Computation*.

CONTROLS AND INDICATORS

Ident.: DSC-22-FMS-10-30-10-00003667.0001001 / 14 APR 14
Applicable to: ALL

All of the information about the aircraft position, navigation modes, position accuracy, and navigation accuracy is available on 5 specific POSITION pages on the MFD.
The flight crew can access these pages via the POSITION menu on the general menu bar.

POSITION Pages


Access to:
POSITION/MONITOR Page
POSITION/REPORT Page
POSITION/NAVAIDS Page
POSITION/IRS Page
POSITION/GNSS Page
FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
MONITOR
REPORT
NAVAIDS
IRS
GNSS
TIME
FROM
ALT
TRK DIST FPA
LFBO14L
800
D066H
(SPDLIM)
MEDAP
AMOLO
DEGOL
NEKTA
FJR
WSSS20C
20:50
12.3T
6009NM
DEST
INIT
F-PLN INFO
MSG LIST

ASSOCIATED MESSAGES

Ident.: DSC-22-FMS-10-30-10-00003688.0001001 / 14 APR 14
Applicable to: ALL

On the MFD, the FMS message area displays the following messages:
- ALIGN IRS (*Refer to message*)
- AREA RNP IS XX.XX (*Refer to message*)
- ARPT REF / GPS POSITION DISAGREE (*Refer to message*)
- ARPT REF / LAST IRS POSITION DISAGREE (*Refer to message*)
- CHECK IRS / ARPT POSITION (*Refer to message*)
- GPS DESELECTED (*Refer to message*)

- NAV ACCUR DOWNGRADED (*Refer to message*)
- NAV ACCUR UPGRADED (*Refer to message*)
- NAV PRIMARY (*Refer to message*)
- NAV PRIMARY LOST (*Refer to message*)
- PROC RNP IS XX.XX (*Refer to message*).

Intentionally left blank

Radio Navigation Tuning

DESCRIPTION

Applicable to: ALL

Ident.: DSC-22-FMS-10-30-20-10-00000520.0004001 / 14 APR 16

The FMS automatically tunes:

- The navaids that are used for the aircraft position computation
  For information about aircraft position computation, *Refer to DSC-22-FMS-10-30-10 Aircraft Position*.
- The navaids for display on the ND
- The landing system.

The navaids that are displayed on the ND and the landing system can also be manually tuned on the POSITION/NAVAIDS page (*Refer to page*).
Manual tuning has always priority over automatic tuning.

L2 *Note:* *In the case of a triple FMC failure, the flight crew can manually tune the navaids that are displayed on the ND and the landing system, via the Radio Management Panel (RMP).*
For more information, Refer to DSC-34-NAV-70-10 STBY RAD NAV.

L1 In FMS DUAL and INDEPENDENT modes, each FMS tunes its onside navaids. On each side;

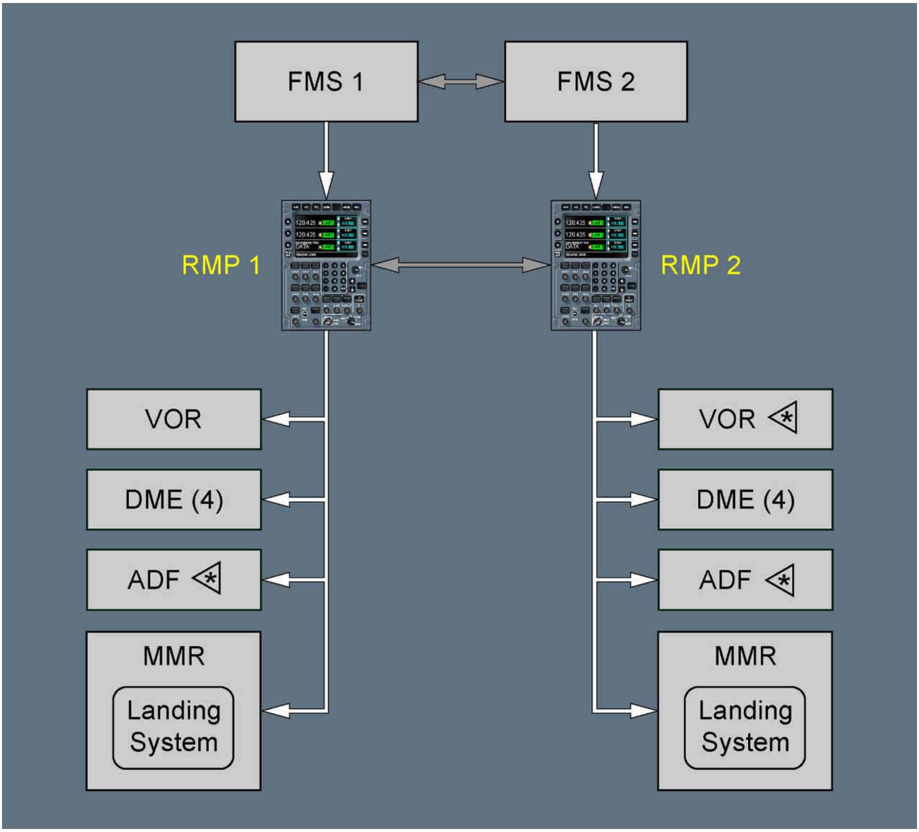
FMS 1 can tune:

- 1 VOR
- 4 DMEs
- 1 ADF ◁
- 1 landing system.

FMS 2 can tune:

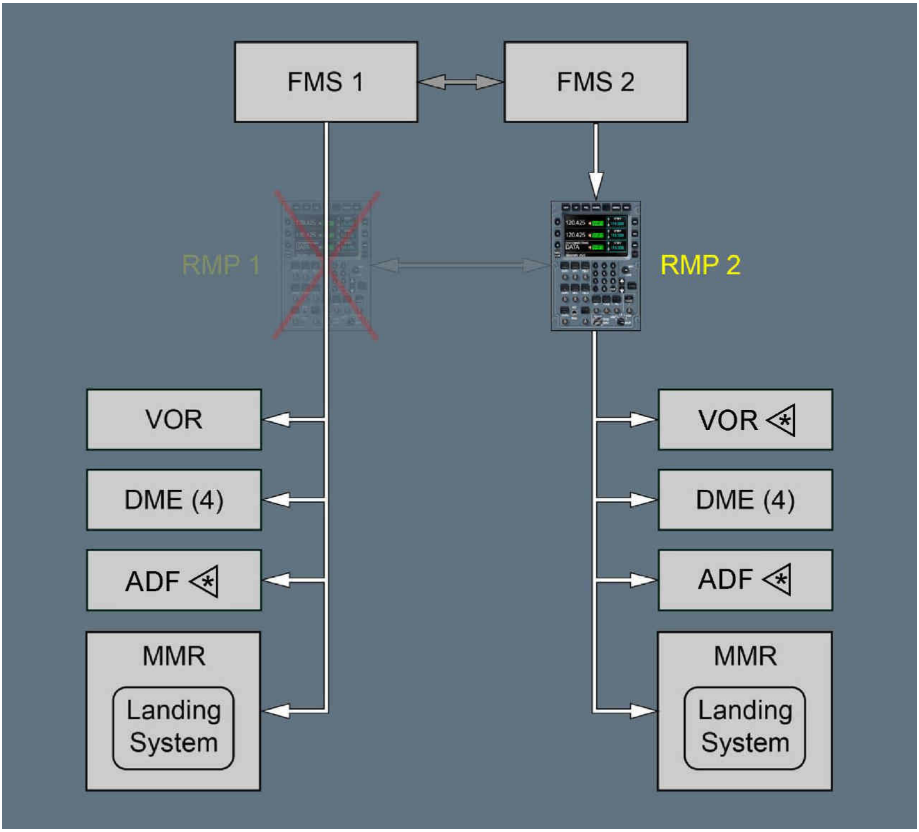
- 1 VOR ◁
- 4 DMEs
- 1 ADF ◁
- 1 landing system.

Radio Navigation Tuning


FMS 1
FMS 2
RMP 1
RMP 2
VOR
DME (4)
ADF
MMR
Landing System
VOR
DME (4)
ADF
MMR
Landing System

L2 If an RMP fails, the tuning information is still sent from the FMS to its onside navaids.

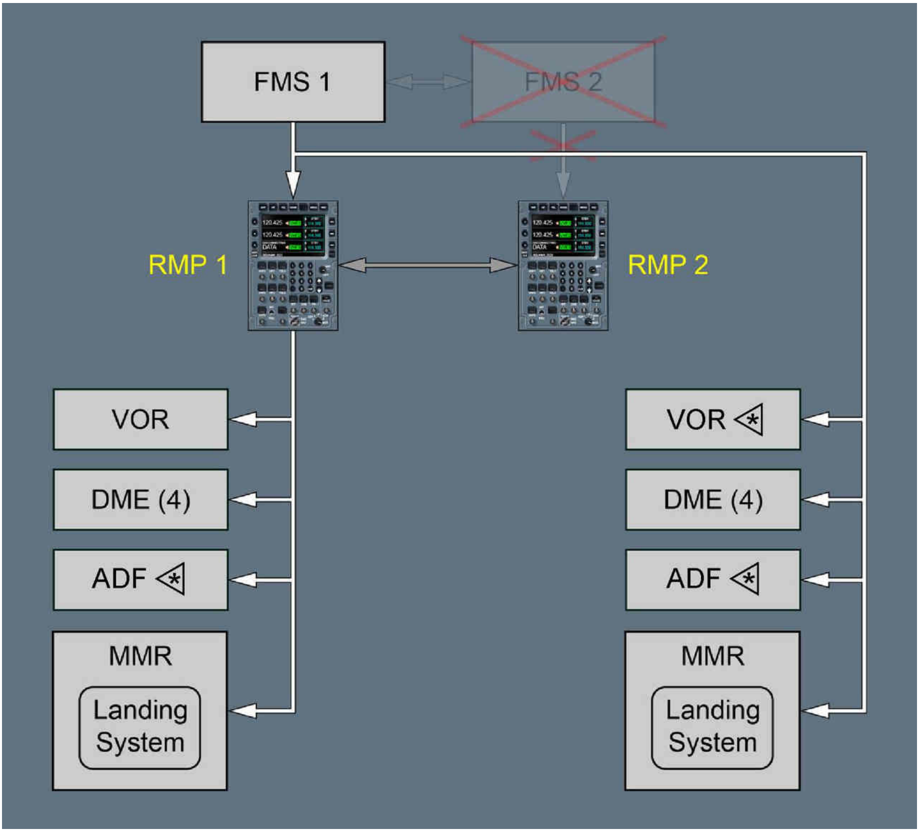
RMP Failure


FMS 1
FMS 2
RMP 1
RMP 2
VOR
DME (4)
ADF
MMR
Landing System
VOR
DME (4)
ADF
MMR
Landing System

In FMS SINGLE mode, or in the case of communication failure between an FMS and its onside RMP, the available FMS will tune the navaids on both sides.

Note: *The onside navaids are tuned via the onside RMP, and the offside navaids are tuned via a direct FMS-navaid connection.*

FMS SINGLE Mode


FMS 1
FMS 2
RMP 1
RMP 2
VOR
DME (4)
ADF
MMR
Landing System
VOR
DME (4)
ADF
MMR
Landing System

L3 NAVAIDS TUNING AND FMS SELECTOR

The position of the FMS selector determines the FMS (FMS 1 or FMS 2) that tunes the navaids on both sides:

- NORM: The navaids are tuned, depending on the FMS operational mode:
  - DUAL and INDEPENDENT modes: Each FMS tunes its onside navaids
  - Single mode: The valid FMS tunes the navaids on both sides
- BOTH ON CAPT: FMS 1 tunes the navaids on both sides
- BOTH ON F/O: FMS 2 tunes the navaids on both sides.

Ident.: DSC-22-FMS-10-30-20-10-00000536.0001001 / 14 APR 16

VOR TUNING

In normal operation, FMS 1 can tune VOR 1 and FMS 2 can tune VOR 2 . The FMS uses the same VOR for display on the ND as the one that is used to compute the aircraft position.

L3 The VOR that will be tuned is selected in accordance with the following order of priority (the first-listed has the highest priority):

- The VOR that the flight crew manually selected
- The VOR that is specified for the approach, if a RNAV, VOR, or VOR/DME approach is selected and the TO waypoint of the flight plan is one of the approach waypoints
- The VOR that is specified for the active flight leg
- The VOR that is required to compute the aircraft position
- The TO waypoint, if it is a VOR
- The nearest down-path waypoint, if it is a VOR
- The FROM waypoint, if it is a VOR
- The VOR that is the nearest to the aircraft present position.

Ident.: DSC-22-FMS-10-30-20-10-00000537.0001001 / 14 APR 14

DME TUNING

In normal operation, each FMS can tune four DMEs at the same time.

L3 Each FMS can tune the DMEs as follows:

- One DME for display on the ND
  This DME can be manually or automatically tuned.
  The DME that will be tuned is selected in accordance with the same order of priority as the one that applies to the VOR tuning.
  If a VOR/DME is tuned to compute the aircraft position, the same VOR/DME will also be used for display on the ND.
- Two DMEs to compute the aircraft position
  These navaids are automatically tuned.
- One DME that is associated with ILS/DME, for display on the PFD.

Ident.: DSC-22-FMS-10-30-20-10-00000539.0001001 / 14 APR 16

ADF TUNING

In normal operation, FMS 1 can tune the ADF 1 and FMS 2 can tune the ADF 2 .

L3 The ADF that will be tuned is selected in accordance with the following order of priority (the first-listed has the highest priority):

- The ADF that the flight crew manually selected
- The ADF that corresponds to the NDB that is specified for the approach, if an NDB approach is selected and the TO waypoint of the flight plan is one of the approach waypoints
- The TO waypoint, if it is an NDB
- The FROM waypoint, if it is an NDB.

Ident.: DSC-22-FMS-10-30-20-10-00000538.0002001 / 14 APR 16

LANDING SYSTEM TUNING

In normal operation, each FMS can tune one landing system (ILS, GLS ◁ , or SLS ◁).

L3 The landing system that will be tuned is selected in accordance with the following order of priority (the first-listed has the highest priority):

- The landing system that the flight crew manually selected

  Note: The flight crew cannot manually tune the SLS ◁ .

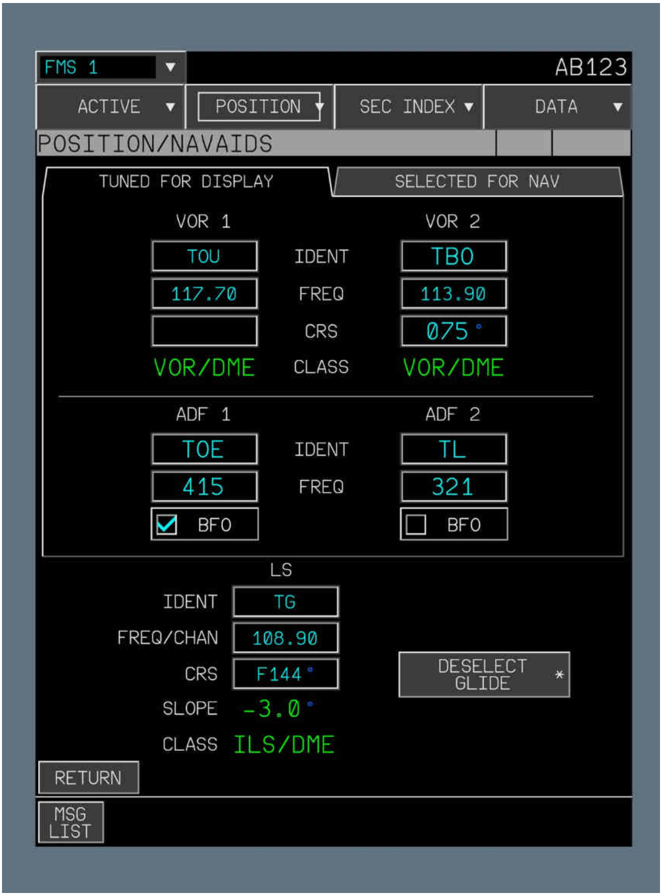
- The landing system that is associated with the takeoff runway, selected on the ACTIVE/F-PLN/DEPARTURE page, if the active flight phase is PREFLIGHT or T.O
- The landing system that is associated with the approach, selected on the ACTIVE/F-PLN/ARRIVAL page, if the active flight phase is CLB, CRZ, DES, APPR, or GA, and the direct distance to the destination airport is less than 300 NM.

CONTROLS AND INDICATORS

Ident.: DSC-22-FMS-10-30-20-00000534.0004001 / 14 APR 16
Applicable to: ALL

On the MFD, the POSITION/NAVAIDS page displays information about the automatically-tuned navaids.
The POSITION/NAVAIDS page also enables the flight crew to manually tune the navaids.
The lower part of the POSITION/NAVAIDS page displays the parameters of the selected landing system. The flight crew can manually tune the landing system, by entering its parameters in the appropriate entry fields.
For more information, *Refer to DSC-22-FMS-20-20-20 POSITION/NAVAIDS Page*.

POSITION/NAVAIDS Page


FMS 1 ▼
AB123
ACTIVE ▼
POSITION ▼
SEC INDEX ▼
DATA ▼
POSITION/NAVAIDS
TUNED FOR DISPLAY
SELECTED FOR NAV
VOR 1
VOR 2
TOU
IDENT
TBO
117.70
FREQ
113.90
CRS
075°
VOR/DME
CLASS
VOR/DME
ADF 1
ADF 2
TOE
IDENT
TL
415
FREQ
321
☑ BFO
☐ BFO
LS
IDENT
TG
FREQ/CHAN
108.90
CRS
F144°
SLOPE
-3.0°
CLASS
ILS/DME
DESELECT GLIDE *
RETURN
MSG LIST

Note: The illustration above includes the VOR2 ⊲ , ADF1 ⊲ and ADF2 ⊲ options.

ASSOCIATED MESSAGES

Ident.: DSC-22-FMS-10-30-20-00000535.0003001 / 14 APR 16
Applicable to: ALL

On the MFD, the FMS message area displays the following messages:
- CHECK APPR SEL (*Refer to message*)
- RUNWAY / LS DISAGREE (*Refer to message*)

- SLS MANUAL TUNING NOT ALLOWED ◁ (*Refer to message*)
- SPECIF NDB NOT AVAIL ◁ (*Refer to message*)
- SPECIF VOR-D NOT AVAIL (*Refer to message*)
- TUNE BBB FFF.FF (*Refer to message*)
- XXXX IS DESELECTED (*Refer to message*).

Polar Navigation

INTRODUCTION

Ident.: DSC-22-FMS-10-30-30-00003689.0001001 / 17 APR 14
Applicable to: ALL

When a flight is scheduled to cross high latitude areas (beyond 60 ° of latitude), the flight crew must take various precautions, about the ADIRS, FG, FMS, and EFIS.

These precautions are based on:
- The change from MAG to TRUE heading(track) reference, due to the airway reference changes in high latitude, or due to the IRs, unable to provide magnetic heading
- Some particularities due to the pole overfly.

ADIRS

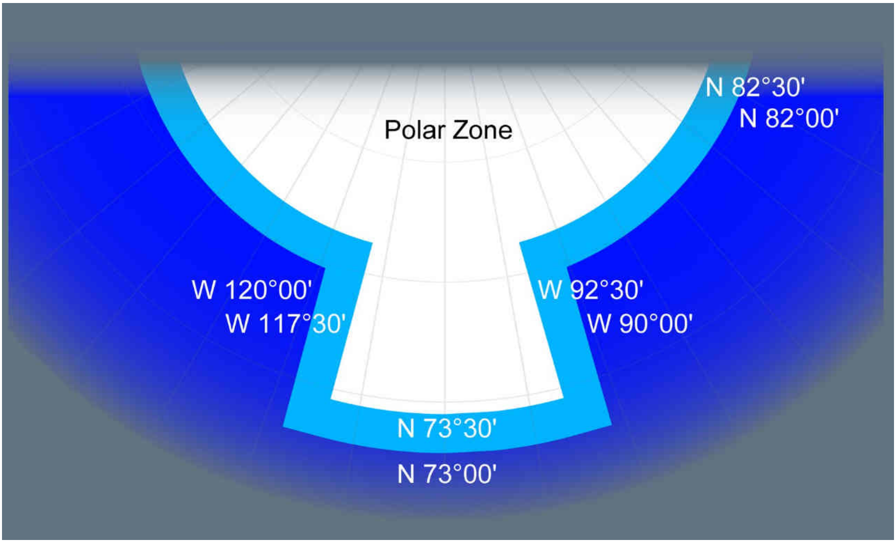
Ident.: DSC-22-FMS-10-30-30-00003690.0001001 / 02 OCT 14
Applicable to: ALL

IR ALIGNMENT

Up to latitude 73 ° N(S), the flight crew can align the IRs without any particular procedures.
Between 73 ° N(S) and 82 ° N(S), the required alignment time is longer than the alignment time below 73 ° N(S).
Beyond 82 ° N(S), no IR alignment is possible.

TRUE/MAG REFERENCE

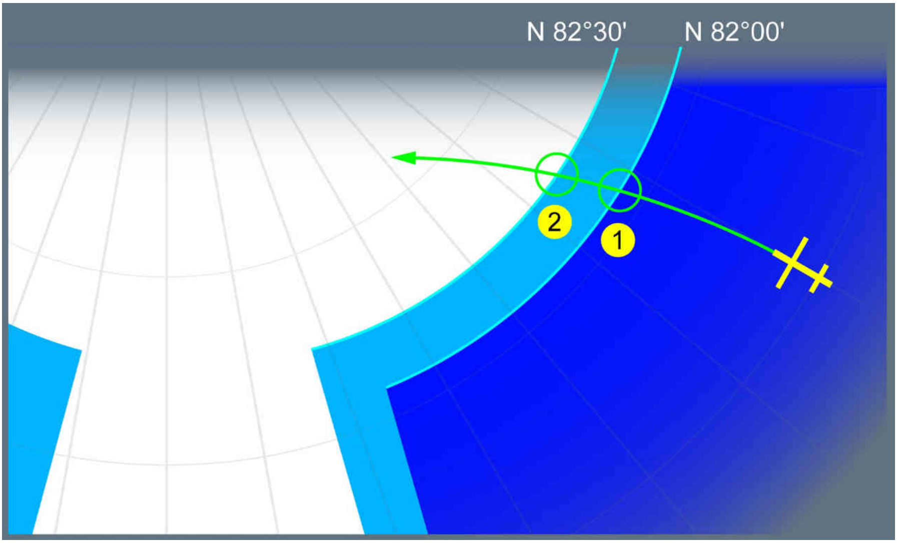
The ADIRS is able to provide TRUE heading(track), regardless of the aircraft latitude.
The ADIRS is able to provide MAG heading(track) between latitudes 82 °30' N and 60 °30' S, except in the vicinity of the magnetic pole:



Note: 1. *The latitude and longitude values, given in this diagram, are average values. In reality, the polar area involves different hysteresis, combined with the track angle penetration of the aircraft in the zone.*

2. *Although located outside the above polar zone, Thule airport is TRUE oriented.*

The flight crew selects the TRUE reference by pressing the TRUE/MAG pb, or the change is done automatically when the aircraft enters the polar zone with MAG still selected. In this case, the following messages and alerts are displayed:



- When in 1, the MFD and ND display the SELECT TRUE NORTH REF message
- When in 2 and MAG reference is still selected, the following events will occur:
  - The IRs automatically revert from MAG to TRUE
  - The TRUE label appears on the ND and PFD heading scales, and the grid track information appears on the ND
  - The NAV EXTREME LATITUDE alert is triggered
  - The autopilot may disconnect, and the NAV CAPT & F/O HDG DISAGREE alert (associated with the CHECK HDG message on the PFD and ND) may be triggered. (This happens, when the IRs do not reach the polar zone simultaneously.)

Note: *The messages and alerts are triggered, as soon as the first IR reaches the polar zone. After the flight crew clears the messages and alerts, the messages and alerts will not be displayed again when the other two IRs enter the polar zone.*

FLIGHT GUIDANCE

Ident.: DSC-22-FMS-10-30-30-00003691.0001001 / 14 APR 14
Applicable to: ALL

When the flight crew manually changes the heading reference from MAG to TRUE or vice versa, there is no discontinuity in the lateral guidance, whether the mode is NAV or HDG/TRACK.

When an automatic TRUE/MAG switching occurs when entering the polar zone, the autopilot may disengage, due to the fact that the automatic switching does not occur simultaneously for the three IRs.
If TRUE is selected, CAT II and CAT III ILS approaches cannot be flown.

FLIGHT MANAGEMENT

Ident.: DSC-22-FMS-10-30-30-00003692.0001001 / 14 APR 14
Applicable to: ALL

AIRPORT NORTH REFERENCE

A takeoff with TRUE reference is very rare. During the preflight phase, if the cockpit north reference is TRUE, the following indications remind the flight crew of this selection:
- The ND and MFD display the CHECK NORTH REF message, if the departure airport north reference is MAG
- The TRUE label above the PFD/ND heading scales flashes for 10 s at slat extension
- The TRUE NORTH REF memo pulses for 10 s at engine start, or at slat extension.

Before approach, if the cockpit north reference is TRUE, the following indications remind the flight crew of this selection:
- The ND and MFD display the CHECK NORTH REF message, when the aircraft reaches the arrival area (approximately 25 NM from destination) and the destination airport north reference is MAG
- The TRUE label above the PFD/ND heading scales flashes for 10 s at slat extension
- The TRUE NORTH REF memo pulses for 10 s at slat extension.

FMS TRACK AND BEARING

The FMS computes the tracks, bearings, and radials based on the TRUE/MAG cockpit selection. If the selection is TRUE, the unit of the track, bearing, and radial values and entry fields becomes °T.

When the flight crew wants to create a PBD, PB/PB waypoint or define a radial (DIR TO - CRS IN or DIR TO - CRS OUT), the entry rule is as follows:
- If the flight crew inserts the value with its reference (M for magnetic, or T for true), the FMS takes into account the entered reference
- If the flight crew inserts the value without its reference, the FMS takes into account the cockpit TRUE/MAG selection.

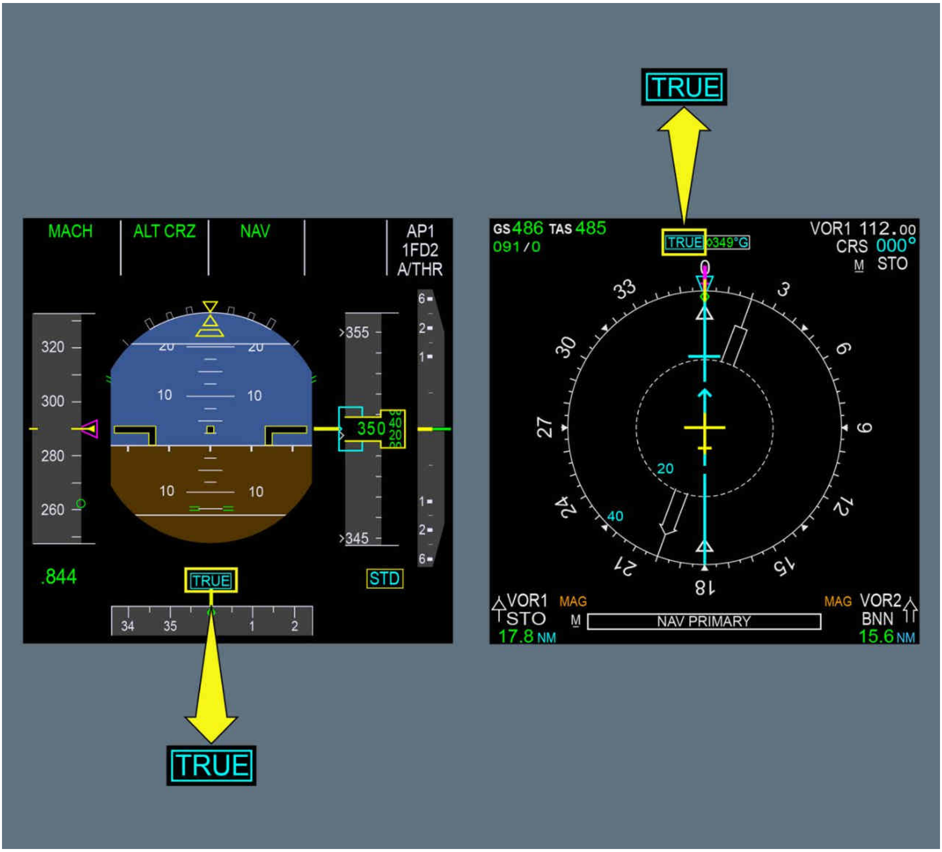
CONTROLS AND INDICATORS

Ident.: DSC-22-FMS-10-30-30-00003693.0003001 / 14 APR 16
Applicable to: ALL

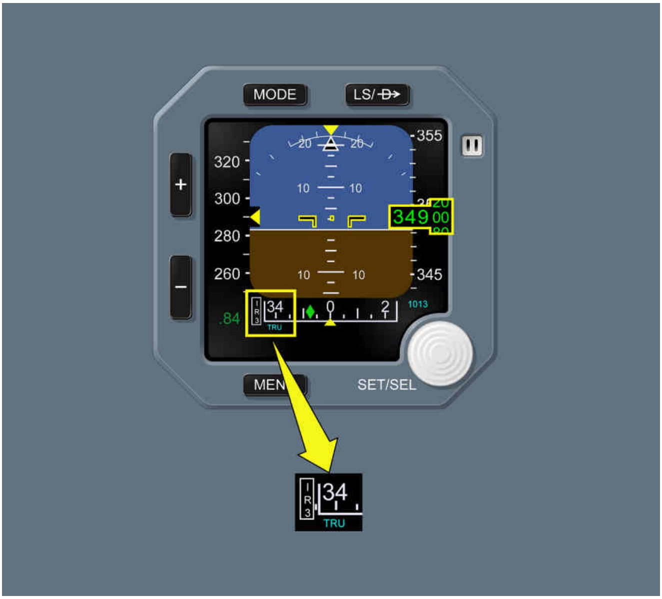
ON THE PFD/ND

TRUE REFERENCE INDICATION AND GRID TRACK

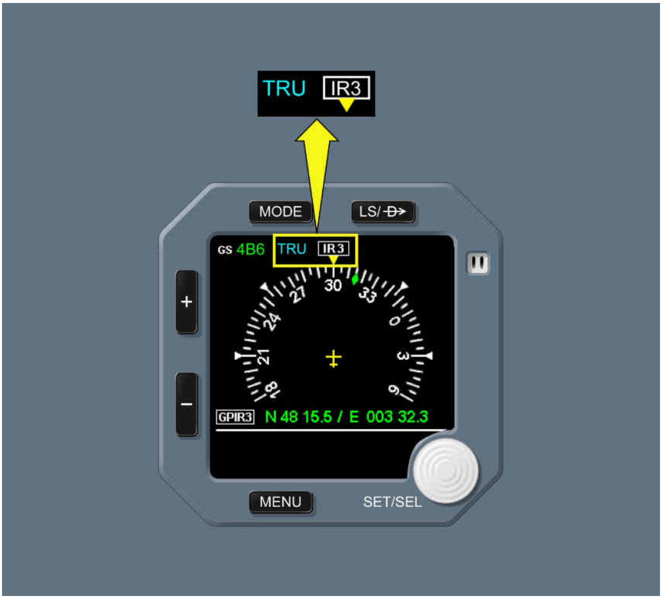
- The PFD and ND display the TRUE label above the heading scales


TRUE
MACH
ALT CRZ
NAV
AP1
1FD2
A/THR
320
300
280
260
.844
TRUE
STD
350
GS486 TAS485
091/0
TRUE 349°G
VOR1 112.00
CRS 000°
M STO
VOR1 MAG
STO M
17.8 NM
NAV PRIMARY
MAG VOR2
BNN
15.6 NM
TRUE

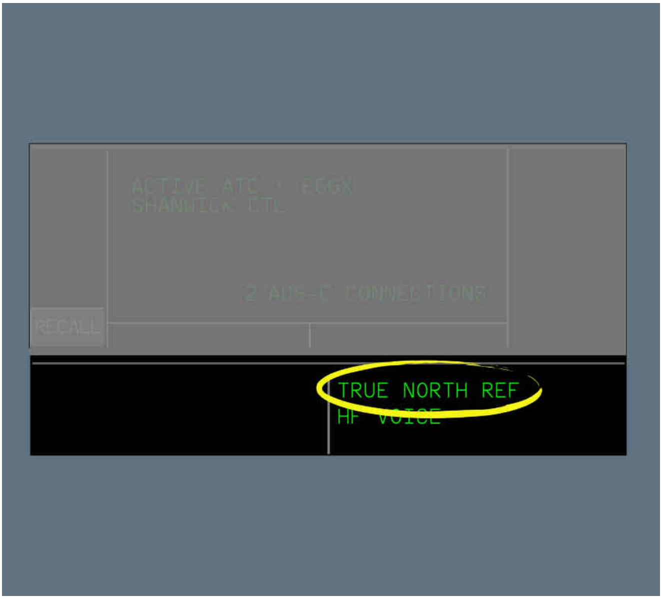
- The ISIS displays the TRU label:
  - On the SFD


MODE
LS/
+
−
320
300
280
260
.84
20
10
355
349 00
345
1013
I R 3
34
TRU
0
2
MENU
SET/SEL
I R 3
34
TRU

- On the SND ◁


TRU
IR3
MODE
LS/
GS 4B6
TRU
IR3
30
27
33
24
0
21
3
18
6
+
−
GPIR3
N 48 15.5 / E 003 32.3
MENU
SET/SEL

- The WD displays the TRUE NORTH REF memo.



ACTIVE ATC : EGGX
SHANWICK CTL

2 ADS-C CONNECTIONS

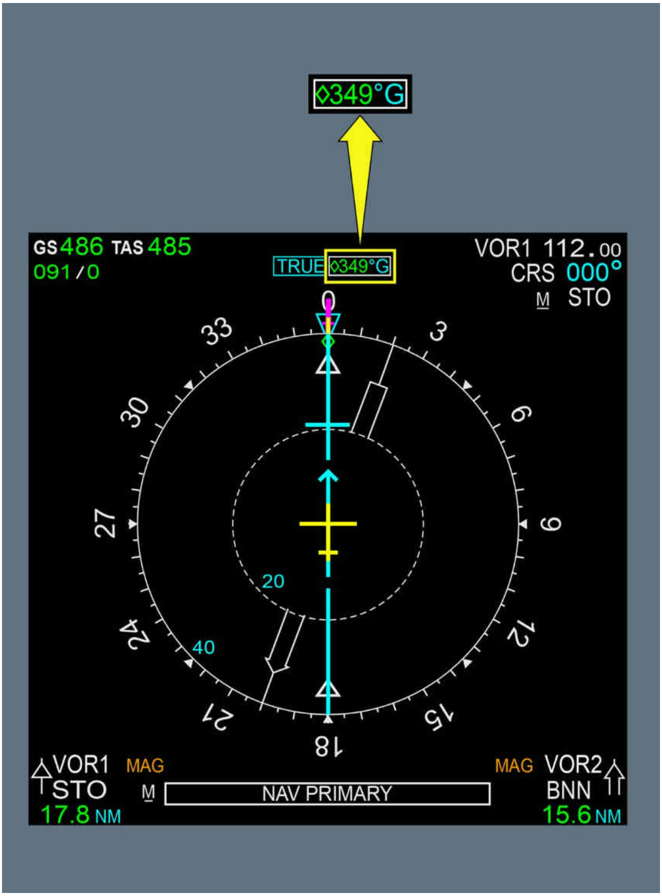
TRUE NORTH REF
HF VOICE

There is no specific indication, when the MAG reference is selected.

GRID TRACK INDICATION

The ND can display the grid track in all ND display modes, except in PLAN mode.

The ND displays the grid track, when all of the following occur:
- The north reference is TRUE
- The aircraft is at a latitude above 65 °.


◊349°G
GS486 TAS485
091/0
TRUE ◊349°G
VOR1 112.00
CRS 000°
M STO
0
3
6
9
12
15
18
21
24
27
30
33
20
40
VOR1
STO
17.8 NM
MAG
M
NAV PRIMARY
MAG
VOR2
BNN
15.6 NM

ADF ◁ BEARING DISPLAY

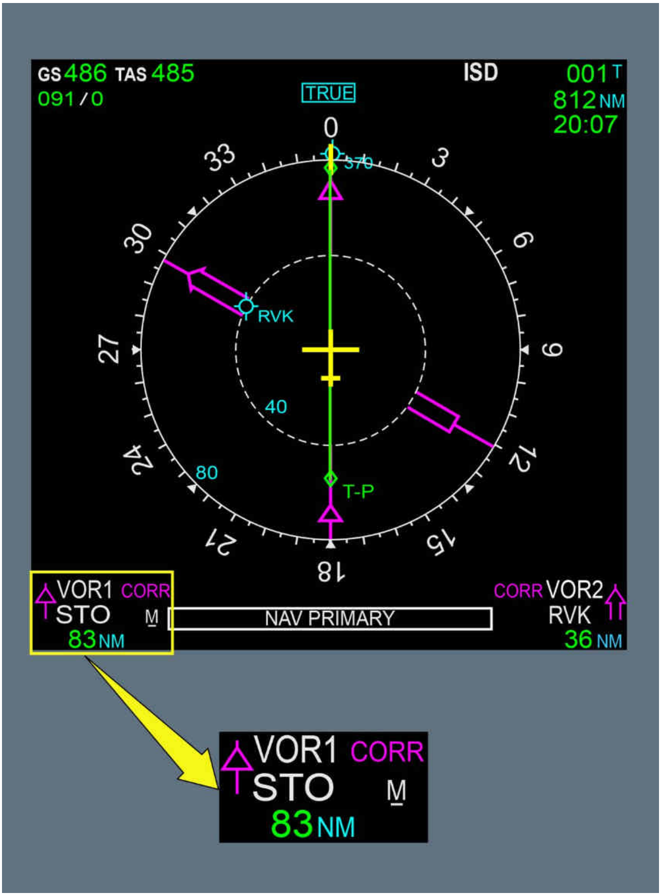
The ADF needle indicates the relative bearing between the aircraft and the NDB.
Therefore, the ADF relative-bearing information is independent of the TRUE/MAG selection, and the ADF needle always points in the same direction, regardless of the TRUE/MAG selection.

VOR BEARING DISPLAY

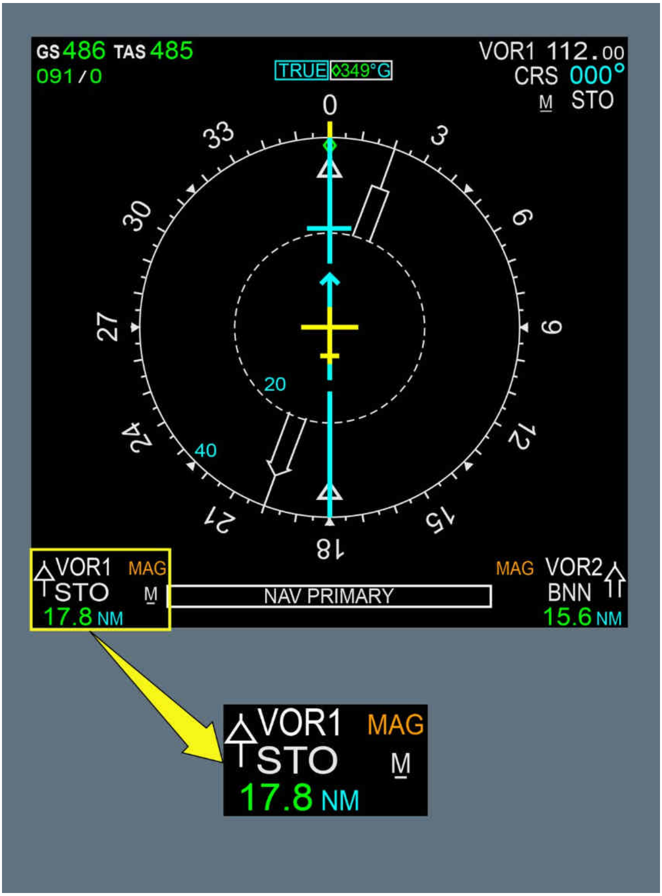
The VOR bearing is measured by the VOR, at the VOR location:

- It is a TRUE bearing, if the VOR station is TRUE referenced
- It is a MAG bearing, if the VOR station is MAG referenced.

When the ND display mode is ARC or ROSE-NAV, the flight crew can simultaneously display the VOR data and the FMS flight plan data. It is important that the FMS and the VOR raw data have the same north reference.
Therefore, if the aircraft north reference and the VOR station north reference are not the same, the VOR raw bearing is corrected with the magnetic variation at the aircraft present position. In this case, the VOR needles appear in magenta, and the ND displays CORR next to the VOR label.


GS 486 TAS 485
091 / 0
TRUE
ISD
001 T
812 NM
20:07
0
33
3
370
30
6
RVK
27
9
40
80
24
12
T-P
21
15
18
VOR1 CORR
STO M
83 NM
NAV PRIMARY
CORR VOR2
RVK
36 NM
VOR1 CORR
STO M
83 NM

For all other ND display modes (ROSE-VOR, ROSE-LS), the VOR raw data is not corrected. If the VOR station reference and the aircraft north reference are not the same, the ND displays the VOR station north reference (MAG or TRUE) next to the VOR label.


GS 486 TAS 485
091 / 0
TRUE
349°G
VOR1 112.00
CRS 000°
M STO
0
3
6
9
12
15
18
21
24
27
30
33
20
40
VOR1 MAG
STO M
17.8 NM
NAV PRIMARY
MAG VOR2
BNN
15.6 NM
VOR1 MAG
STO M
17.8 NM

Intentionally left blank

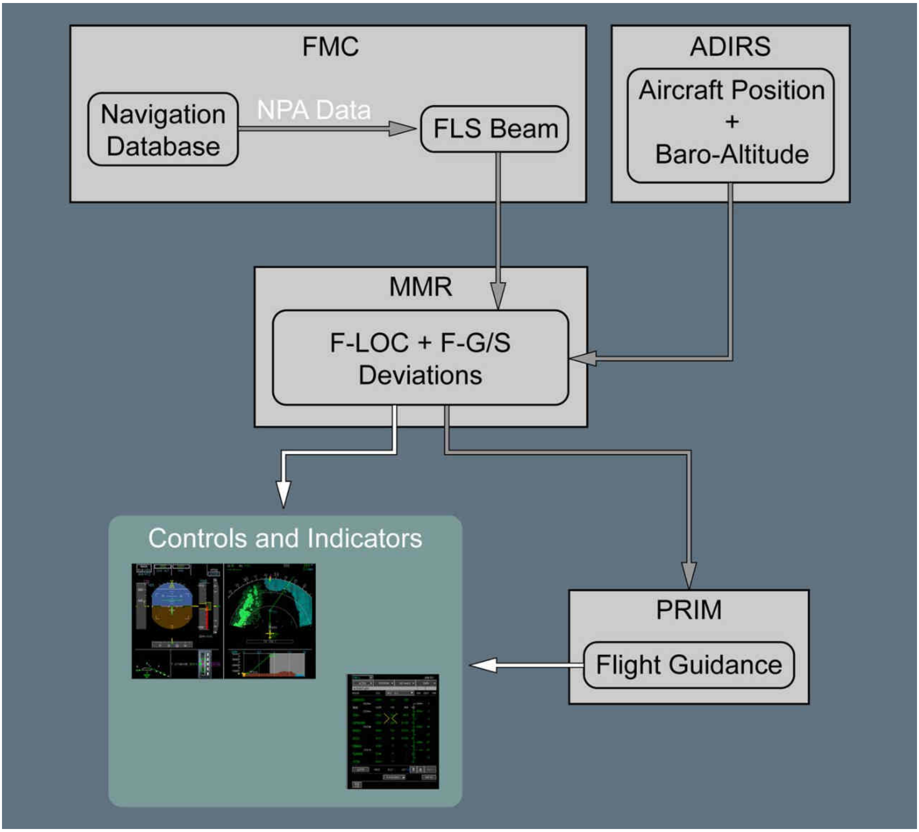
FLS Function within FMS

OVERVIEW

Ident.: DSC-22-FMS-10-30-40-00003695.0001001 / 28 APR 17
Applicable to: ALL

The FMS Landing System (FLS) function provides the flight crew with cockpit indications and guidance to fly a non-precision approach (VOR, VOR/DME, NDB, LCTR, or RNAV) in an ILS look alike way.
The FMS computes a final approach path, referred to as the FLS beam, and sends it to the MMR.
The ADIRS sends the aircraft position and baro-altitude to the MMR.
The MMR computes the deviations between the aircraft position and the FLS beam.
The MMR sends these pseudo LOC and pseudo G/S deviations (referred to as F-LOC and F-G/S deviations) to the PRIM for flight guidance, and to the PFD and ND for display.

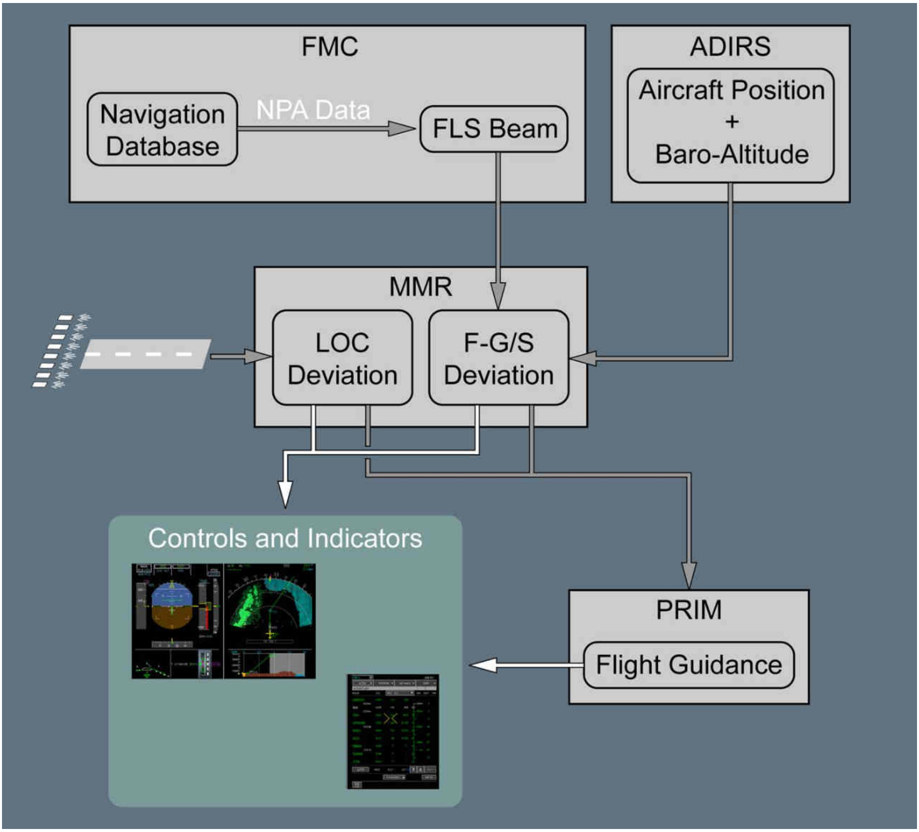
FLS


FMC
Navigation Database
NPA Data
FLS Beam
ADIRS
Aircraft Position + Baro-Altitude
MMR
F-LOC + F-G/S Deviations
Controls and Indicators
PRIM
Flight Guidance

The flight crew can also use the FLS function to fly an ILS approach with glide slope out, or a LOC only (or LOC B/C) approach.

In this case, the flight guidance uses:
- The ILS LOC beam (LOC) for lateral guidance
- The FLS G/S beam (F-G/S) for vertical guidance.

LOC/FLS


FMC
Navigation Database
NPA Data
FLS Beam
ADIRS
Aircraft Position + Baro-Altitude
MMR
LOC Deviation
F-G/S Deviation
Controls and Indicators
PRIM
Flight Guidance

Note: *The FLS function is available only for approaches that are stored in the navigation database.*

FLS BEAM COMPUTATION

Applicable to: ALL

Ident.: DSC-22-FMS-10-30-40-10-00003696.0001001 / 14 APR 14

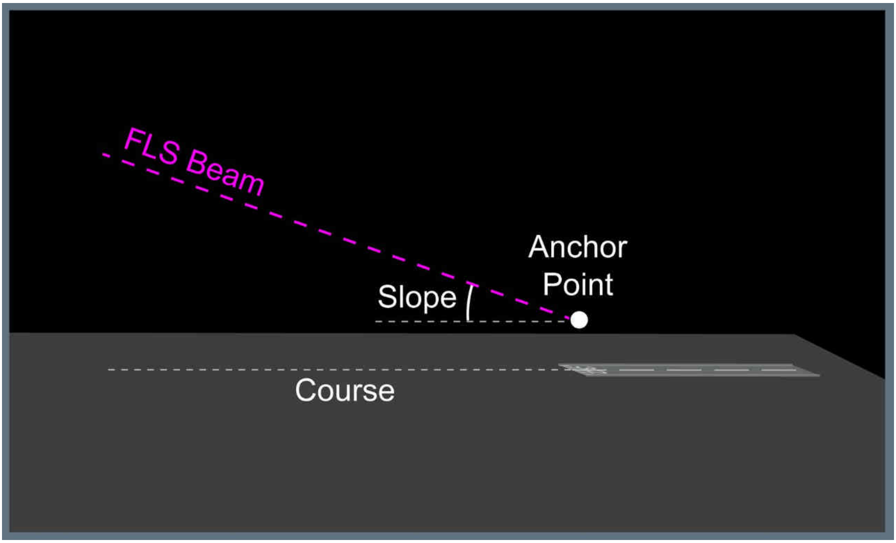
FLS BEAM COMPUTATION

The FMS computes an FLS beam, when the flight crew:
- Inserts a VOR, NDB, RNV, GPS, LOC, or BAC approach (on the ARRIVAL page)
- Inserts an ILS approach (on the ARRIVAL page), and deselects the glide slope (on the POSITION/NAVAIDS page).

The FLS beam corresponds to the final-approach flight leg of the Non Precision Approach (NPA).

The FLS beam is defined by:
- An anchor point
- A course
- A slope.

FLS Beam



CAUTION	The FLS beam is a virtual beam that can be captured up to 100 NM from the destination. As the FLS beam is a virtual beam, the FLS beam can go through terrain obstacles.

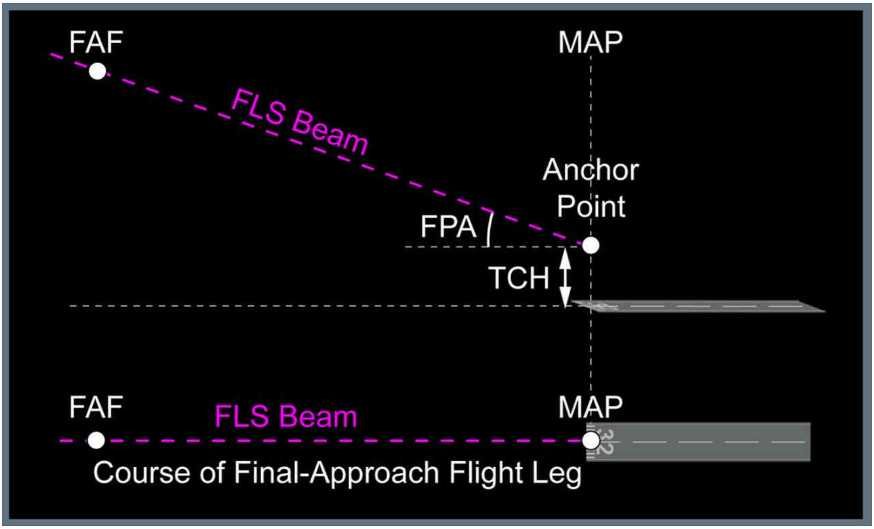
L2 The layout of the FLS beam is based on the relative position of the Missed Approach Point (MAP) to the runway threshold.

MAP IS ON THE RUNWAY THRESHOLD

When the MAP of the approach is defined on the runway threshold (+/- 0.14 NM):

- The anchor point is on the runway threshold, at the Threshold Crossing Height (TCH) (or threshold height + 50 ft, if no TCH is stored in the database)
  The ident of the anchor point is the ICAO code of the airport, followed by the threshold runway identifier (e.g. LFBO32L).
- The course of the FLS beam is the course of the final-approach flight leg
- The slope of the FLS beam is the Flight Path Angle (FPA) that is stored with the runway threshold in the navigation database.

MAP on Runway Threshold



MAP IS BEFORE THE RUNWAY THRESHOLD

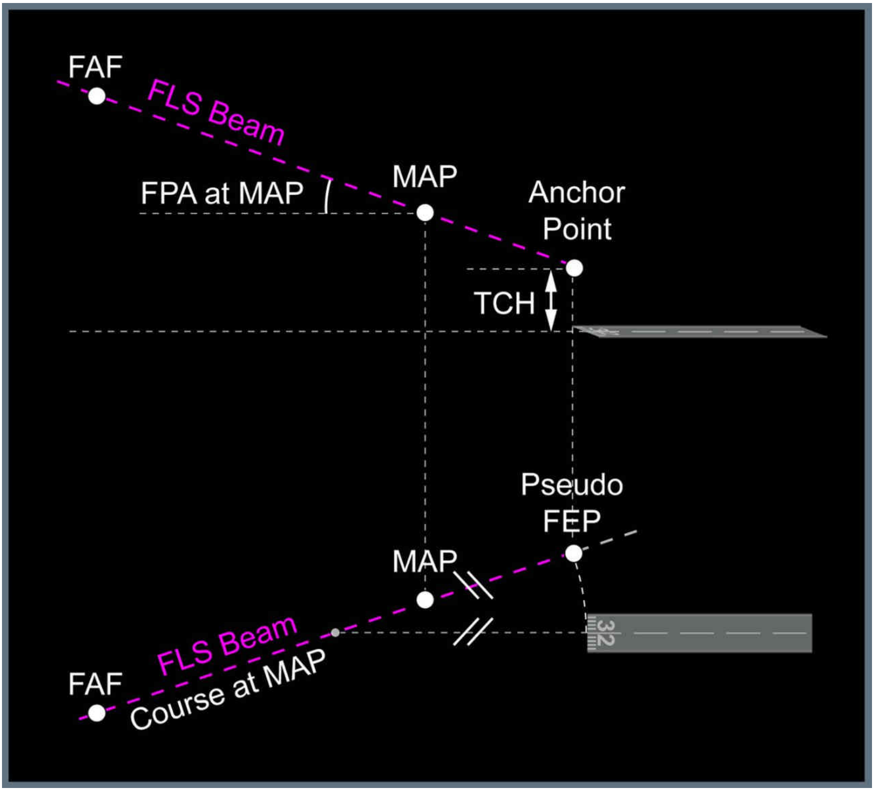
When the MAP of the approach is before the runway threshold:

- The anchor point is on a pseudo Final End Point (FEP) (that is computed by the FMS) at the TCH (or threshold height + 50 ft, if no TCH is stored in the database).
  The ident of the anchor point is EPxxx. The "xxx" corresponds to the ident of the runway (e.g. EP32L).

L3 *Note: When the anchor point is at less than 0.1 NM from the runway threshold, the ident of the anchor point is the ICAO code of the airport, followed by the threshold runway identifier (e.g. LFBO32L).*

L2
- The course of the FLS beam is the course that is stored with the MAP in the navigation database
- The slope of the FLS beam is the FPA that is stored with the MAP in the navigation database.

MAP before Runway Threshold


FAF
FLS Beam
FPA at MAP
MAP
Anchor Point
TCH
Pseudo FEP
MAP
FLS Beam
FAF
Course at MAP
32

MAP IS BEYOND THE RUNWAY THRESHOLD

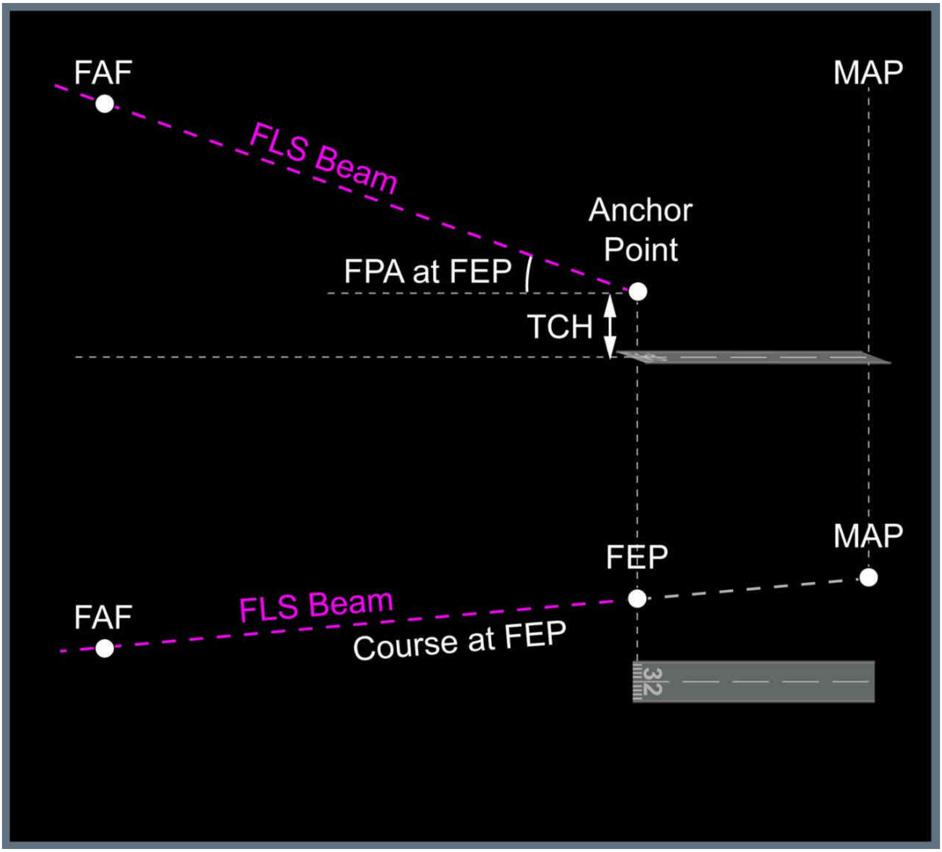
When the MAP of the approach is beyond the runway threshold:

- The anchor point is on the FEP (that is stored in the navigation database) at the TCH (or threshold height + 50 ft, if no TCH is stored in the database)
  The ident of the anchor point is the ident of the FEP (e.g. EP32L).

L3 *Note: When the anchor point is at less than 0.1 NM from the runway threshold, the ident of the anchor point is the ICAO code of the airport, followed by the threshold runway identifier (e.g. LFBO32L).*

L2
- The course of the FLS beam is the course that is stored with the FEP in the navigation database
- The slope of the FLS beam is the FPA that is stored with the FEP in the navigation database.

MAP beyond Runway Threshold


FAF
MAP
FLS Beam
Anchor Point
FPA at FEP
TCH
MAP
FEP
FAF
FLS Beam
Course at FEP
32

NO FLS BEAM COMPUTED

The FMS does not compute the FLS beam:
- For IGS without G/S, SDF, and LDA approaches, or
- If all of the following occur:
  - The MAP is before the runway threshold
  - The angle between the course of the final-approach flight leg and the runway course is more than 50 °.

If the FMS does not compute the FLS beam, the FLS function is not available: The FMS message area displays the NO FLS FOR THIS APPR message.

Ident.: DSC-22-FMS-10-30-40-10-00005113.0001001 / 14 APR 14

BARO-CORRECTION OF THE FLS BEAM

When the barometric reference is STD, the computation of the FLS beam and the F-G/S deviation is based on the QNH that is entered on the APPR panel of the PERF page (*Refer to page*).
If no QNH is entered, a QNH of 1 013 hPa is considered for the computation of the FLS beam. However, in that case, no F-G/S deviation is computed.
When the barometric reference is QNH, the computation of the FLS beam and the F-G/S deviation is based on the current QNH.

Ident.: DSC-22-FMS-10-30-40-10-00005114.0001001 / 20 OCT 14

COLD WEATHER CORRECTION OF THE FLS BEAM

When the temperature at destination (that is entered on the APPR panel of the PERF page (*Refer to page*)) is below the ISA temperature, the computation of the FLS beam and the F-G/S deviation is corrected with the entered temperature.
If no temperature is entered, the ISA temperature is considered at destination.

Note: *The temperature correction is only done for the computation of the FLS beam and the F-G/S deviation, and does not change the barometric aircraft altitude on the PFD.*

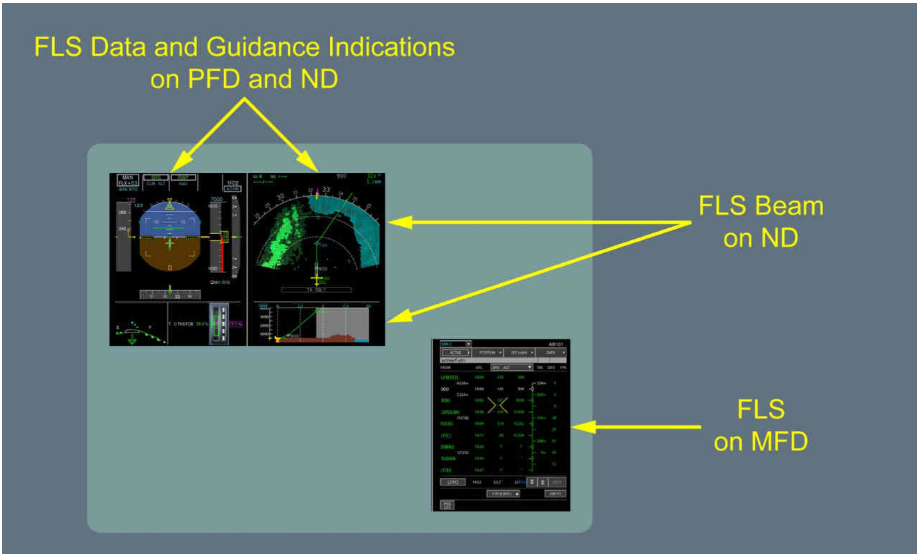
L2 For more information about the display on the VD in the case of cold weather, *Refer to DSC-31-CDS-40-50 Vertical Trajectory*.

CONTROLS AND INDICATORS

Applicable to: ALL

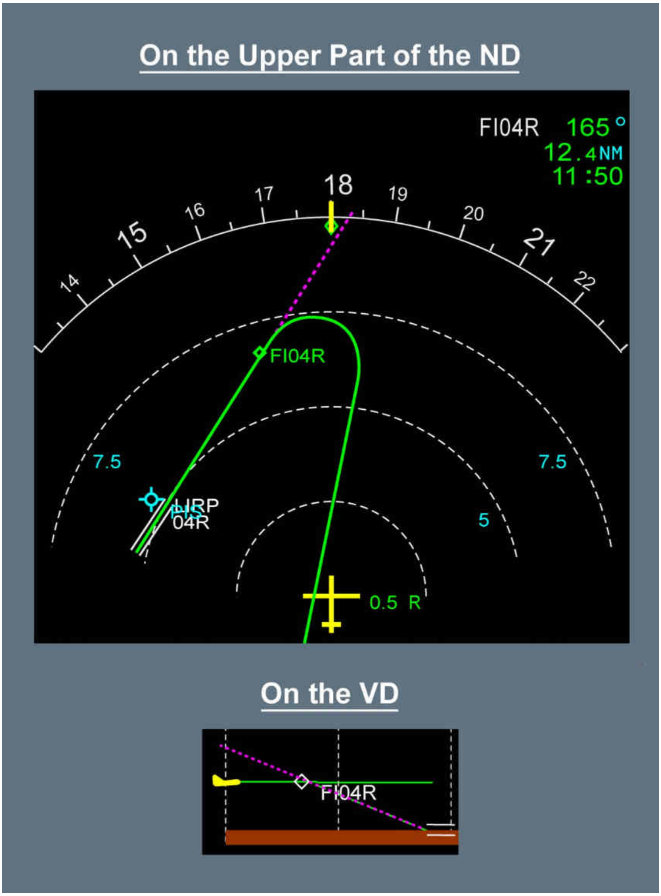
Ident.: DSC-22-FMS-10-30-40-20-00003697.0001001 / 14 APR 14

FLS Controls and Indicators


FLS Data and Guidance Indications on PFD and ND
FLS Beam on ND
FLS on MFD

Ident.: DSC-22-FMS-10-30-40-20-00005115.0001001 / 14 APR 14

FLS BEAM ON ND


On the Upper Part of the ND
FI04R 165°
12.4NM
11:50
14
15
16
17
18
19
20
21
22
FI04R
7.5
7.5
5
LIRP
04R
FLS
0.5 R
On the VD
FI04R

L2 The FMS sends the FLS beam to the ND.

L1 The FLS beam appears as a magenta dashed line (with a length of 80 NM) on the upper part of the ND and on the VD.

L2 When the anchor point is a point that is stored in the navigation database, the anchor point is displayed in green. The green color indicates that the anchor point is a flight plan waypoint. When the anchor point is a pseudo end point that is computed by the FMS, the anchor point is displayed in magenta. The magenta color indicates that the anchor point is a virtual point.

For information about the FLS beam computation, *Refer to DSC-22-FMS-10-30-40 FLS Beam Computation*.

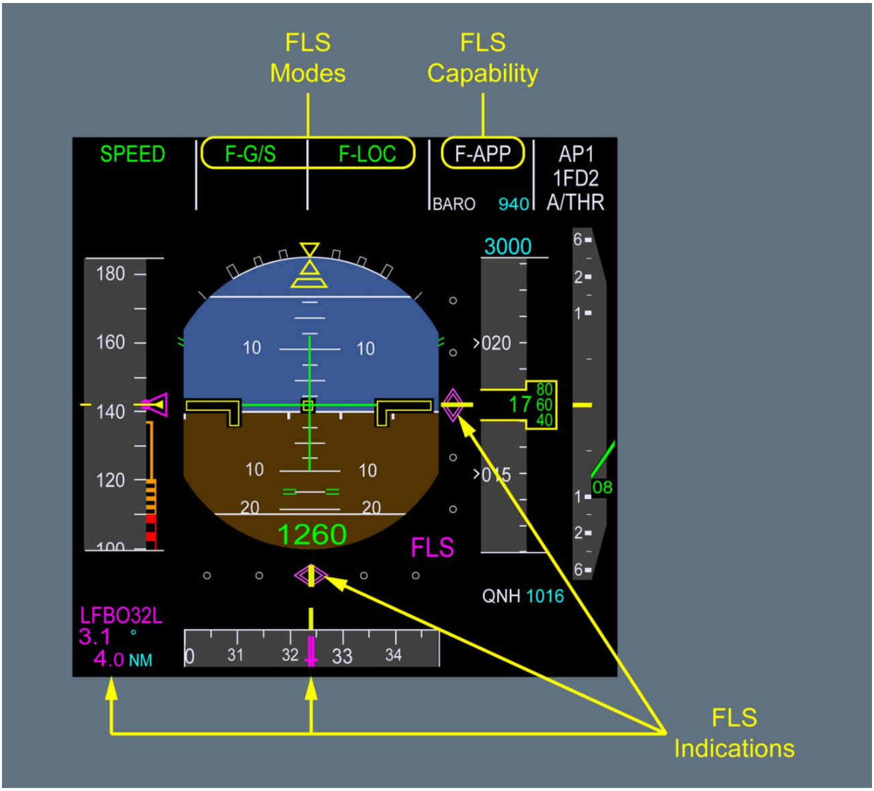
L1 The FLS beam appears, when all of the following occur:
- The flight crew selected an NPA for the active flight plan
- The flight crew pressed the LS pb on the EFIS CP
- The flight crew selected an ND range that is less than or equal to:
  - 80 NM in ARC or PLAN mode, or
  - 160 NM in ROSE-NAV mode.

Note: *The FLS beam is displayed on the VD, only when the vertical cut is defined along the flight plan (or along the LS axis).*

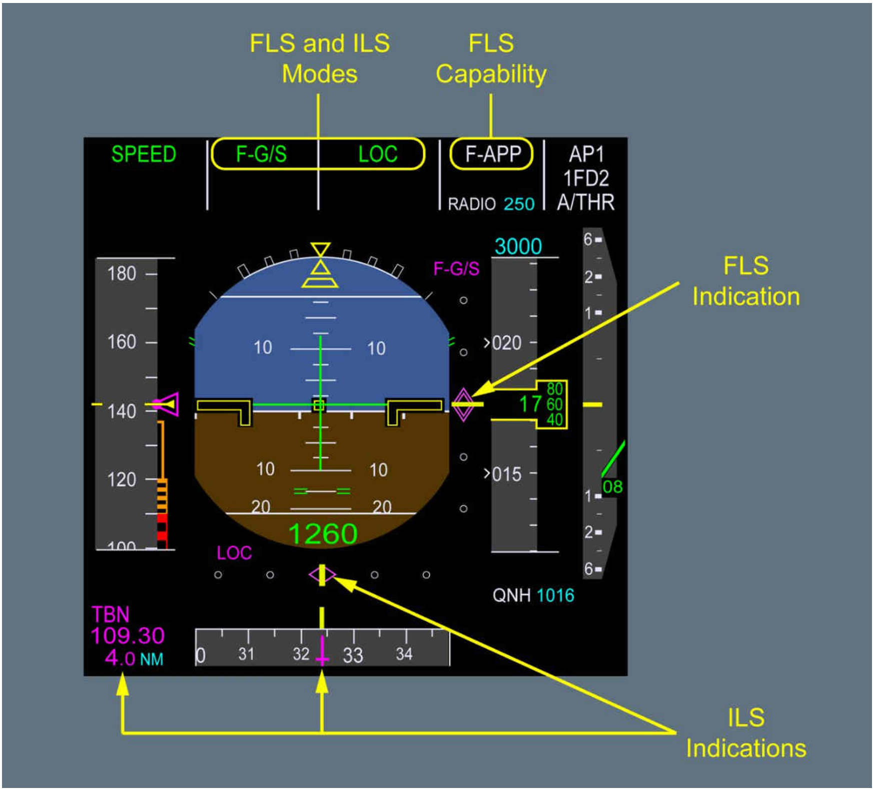
FLS DATA AND GUIDANCE INDICATIONS ON PFD AND ND

ON THE PFD

FLS on the PFD


FLS
Modes
FLS
Capability
SPEED
F-G/S
F-LOC
F-APP
AP1
1FD2
BARO 940
A/THR
3000
180
160
140
120
100
10 10
10 10
20 20
>020
17 80 60 40
>015
6
2
1
1
2
6
08
1260
FLS
QNH 1016
LFBO32L
3.1 °
4.0 NM
0 31 32 33 34
FLS
Indications

LOC/FLS on the PFD


FLS and ILS Modes
FLS Capability
SPEED
F-G/S
LOC
F-APP
RADIO 250
AP1
1FD2
A/THR
3000
F-G/S
FLS Indication
180
160
140
120
100
10
10
10
10
20
20
1260
LOC
>020
>015
17
80
60
40
08
QNH 1016
TBN
109.30
4.0 NM
31
32
33
34
ILS Indications

The PFD displays:

FLS and ILS Modes and FLS Capability on the FMA

The FMA displays:

- The AP/FD modes:
  - In FLS: F-LOC, F-LOC*, F-LOC, F-G/S, F-G/S*, and F-G/S
  - In LOC/FLS: LOC, LOC*, LOC, F-G/S, F-G/S*, and F-G/S
- The FLS capability: F-APP, F-APP+RAW, or RAW ONLY.

L2 The PRIM sends the AP/FD modes and the FLS capability to the PFD.

L1 For more information about the FMA, *Refer to DSC-22-FG-90-80 Overview*.

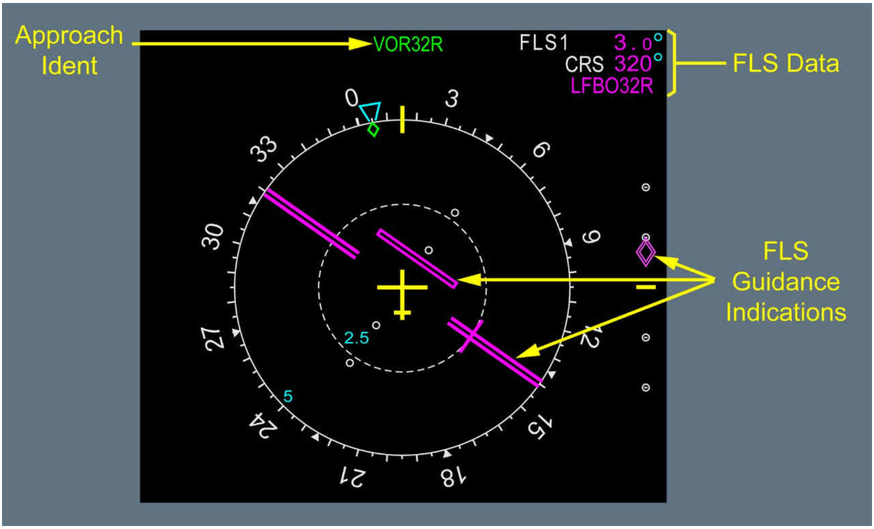
FLS and ILS Indications

L2 The MMR sends the FLS and ILS indications to the PFD.

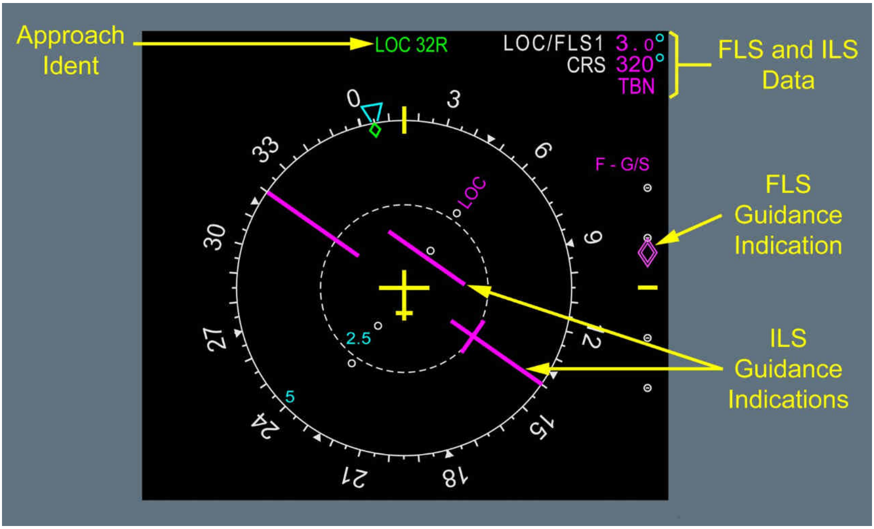
L1 For information about the display of xLS indications on the PFD, *Refer to DSC-31-CDS-40-20-110 xLS Approaches*

ON THE ND

FLS in ROSE-LS Mode


Approach Ident
VOR32R
FLS1
3.0°
CRS 320°
LFBO32R
FLS Data
FLS Guidance Indications
0
3
6
9
12
15
18
21
24
27
30
33
2.5
5

LOC/FLS in ROSE-LS Mode


Approach Ident
LOC 32R
LOC/FLS1 3.0°
CRS 320°
TBN
FLS and ILS Data
0
3
6
33
30
27
24
21
18
15
12
9
F - G/S
LOC
2.5
5
FLS Guidance Indication
ILS Guidance Indications

In ROSE-LS mode, the ND displays:

Approach Ident

Indicates the ident of the selected non-precision approach.

FLS and ILS Data

Indicates:

- The active landing system: FLS1, FLS2, LOC/FLS1, or LOC/FLS2
  In the label of the active landing system, the number corresponds to the MMR that computes the FLS data (e.g. FLS1 means that MMR 1 computes the data).
  L2 MMR 1 sends the FLS data to the ND of the First Officer, and MMR 2 sends data to the ND of the Captain.
- L1 The FLS beam slope
- The FLS beam course
- One of the following:
  - In FLS: The anchor point ident
  - In LOC/FLS: The ILS ident.

FLS and ILS Guidance Indications

Indicate:
- The course and the lateral deviation:
  - In FLS: The course of the FLS beam and the F-LOC deviation
  - In LOC/FLS: The course of the LOC beam and the LOC deviation
    When the approach is flown in LOC/FLS, the label LOC (or B/C) is displayed next to the deviation bar.
- The F-G/S deviation.
  When the approach is flown in LOC/FLS , the label F-G/S is displayed above the deviation scale.

L2 The MMR sends the guidance indications to the ND.

L1 For more information about the display of the FLS and ILS data and guidance indications on the ND in ROSE-LS mode, *Refer to DSC-31-CDS-40-40-60 ROSE-LS Mode Overview*.

Ident.: DSC-22-FMS-10-30-40-20-00005117.0001001 / 14 APR 14

FLS ON MFD

The flight crew selects the non-precision approach on the ARRIVAL page.
After the flight crew selects an ILS approach on the ARRIVAL page, they can deselect the glide slope (in order to fly the approach in LOC/FLS) on the POSITION/NAVAIDS page.
The flight crew enters the QNH and temperature (OAT) at destination on the APPR panel of the PERF page.

For more information about the:
- ARRIVAL page, *Refer to DSC-22-FMS-20-20-20 ARRIVAL Page*
- POSITION/NAVAIDS page, *Refer to DSC-22-FMS-20-20-20 POSITION/NAVAIDS Page*
- PERF page, *Refer to DSC-22-FMS-20-20-20 PERF Page*.

ASSOCIATED MESSAGES

Ident.: DSC-22-FMS-10-30-40-00003698.0001001 / 14 APR 14
Applicable to: ALL

On the MFD, the FMS message area displays the following messages:
- ENTER DEST DATA (*Refer to message*)
- F-G/S BASED ON ISA (*Refer to message*)
- NO FLS FOR THIS APPR (*Refer to message*).

HOW TO PERFORM AN NPA WITH THE FLS FUNCTION

Ident.: DSC-22-FMS-10-30-40-00003699.0001001 / 14 APR 14
Applicable to: ALL

For information on how to perform an NPA with the FLS function, *Refer to DSC-22-FG-70-80-00 Sequence of the Approach Guidance*.

For scenario examples:
- For a VOR approach that the flight crew performs with the FLS function, *Refer to DSC-22-FG-70-110-90 VOR Approach Flown with FLS Function*
- For a LOC only approach that the flight crew performs with the FLS function, *Refer to DSC-22-FG-70-110-90 LOC only Approach Flown with FLS Function*.

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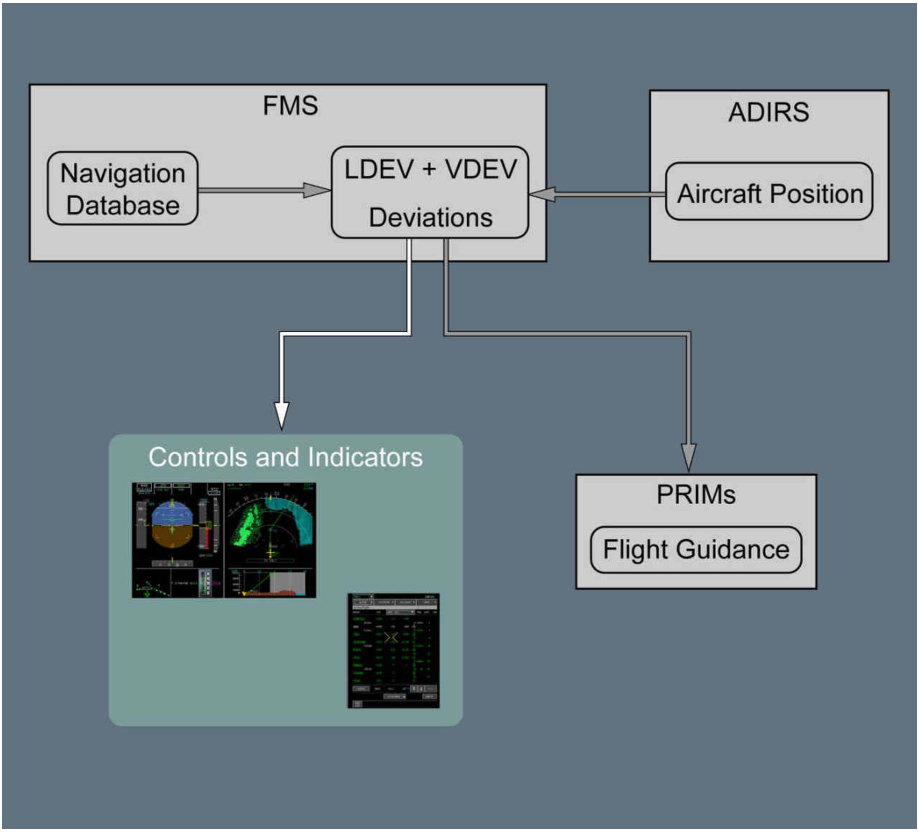
RNP AR Function

OVERVIEW

Ident.: DSC-22-FMS-10-30-50-00020515.0001001 / 02 OCT 14
Applicable to: ALL

The Required Navigation Performance with Authorization Required (RNP AR) function provides the flight crew with cockpit indications and guidance to fly all published RNP AR procedures, provided that the flight crew have special authorization.
The Air Data/Inertial Reference System (ADIRS) sends the aircraft position to the Flight Management System (FMS).
The FMS computes the deviations between the aircraft position and the theoretical flight path stored in the navigation database.
The FMS sends the Lateral Deviation (LDEV) and the Vertical Deviation (VDEV) to the Primary Flight Control and Guidance Computer (PRIM) for flight guidance, and to the PFD and ND for display.

RNP AR overview


FMS
Navigation Database
LDEV + VDEV
Deviations
ADIRS
Aircraft Position
Controls and Indicators
PRIMs
Flight Guidance

The RNP AR function is basically RNP 0.1 capable. No indication informs the flight crew that the aircraft is RNP 0.1 capable. However, if the default capability is not met because of a failure affecting the RNP AR capability, the ECAM and/or the ND display dedicated indications.
The RNP AR function automatically activates during the flight of a RNP AR procedure selected by the flight crew. However, the required navigation precision for RNP AR procedures can only be met if the guidance is in NAV mode, with FD or AP ON.

Note: *For RNP AR procedures strictly below 0.3 NM, the flight crew must engage one AP.*

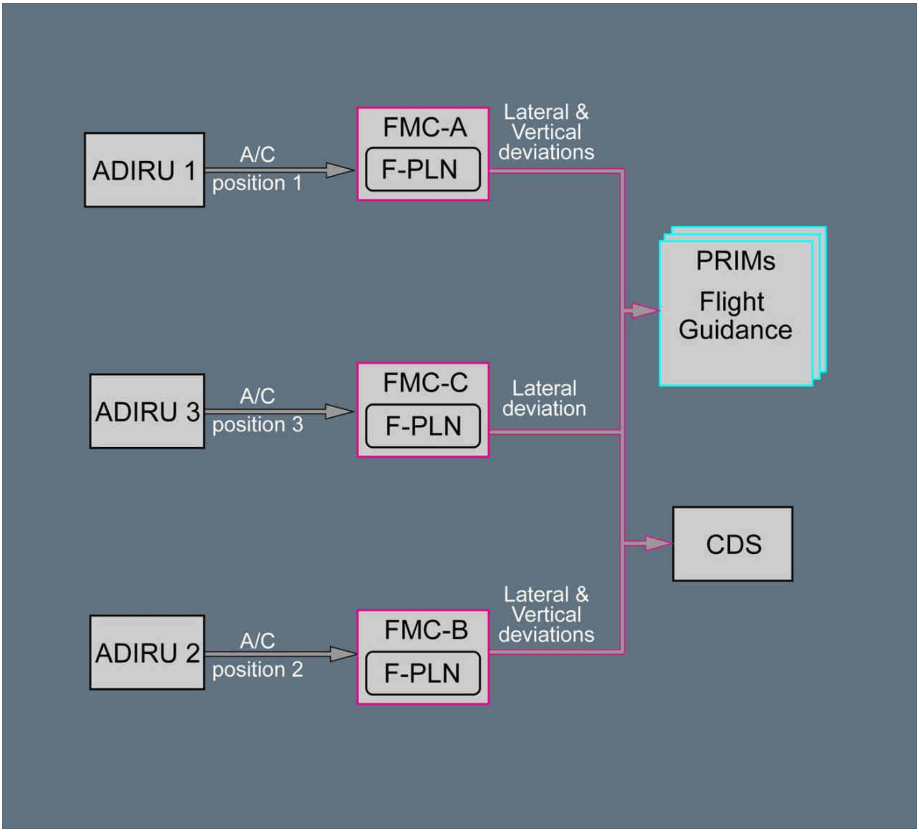
LDEV AND VDEV COMPUTATION

Ident.: DSC-22-FMS-10-30-50-00020524.0001001 / 04 SEP 14
Applicable to: ALL

The FMS computes the lateral and vertical deviations with both:
- The flight plan, based on the Navigation Database
- The aircraft position provided by ADIRS.

The two active FMCs (FMC-A and FMC-B) compute the LDEV and the VDEV. In addition, during RNP AR procedures, FMC-C also computes the LDEV, but keeps its role of backup FMC.

LDEV and VDEV computation


ADIRU 1
A/C
position 1
FMC-A
F-PLN
Lateral &
Vertical
deviations
PRIMs
Flight
Guidance
ADIRU 3
A/C
position 3
FMC-C
F-PLN
Lateral
deviation
CDS
ADIRU 2
A/C
position 2
FMC-B
F-PLN
Lateral &
Vertical
deviations

L2 The two active FMCs (FMC-A and FMC-B) send to the FMC-C the next 20 legs of their flight plans. The FMC-C crosschecks the flight plans provided by the active FMCs, before the computation of the LDEV.

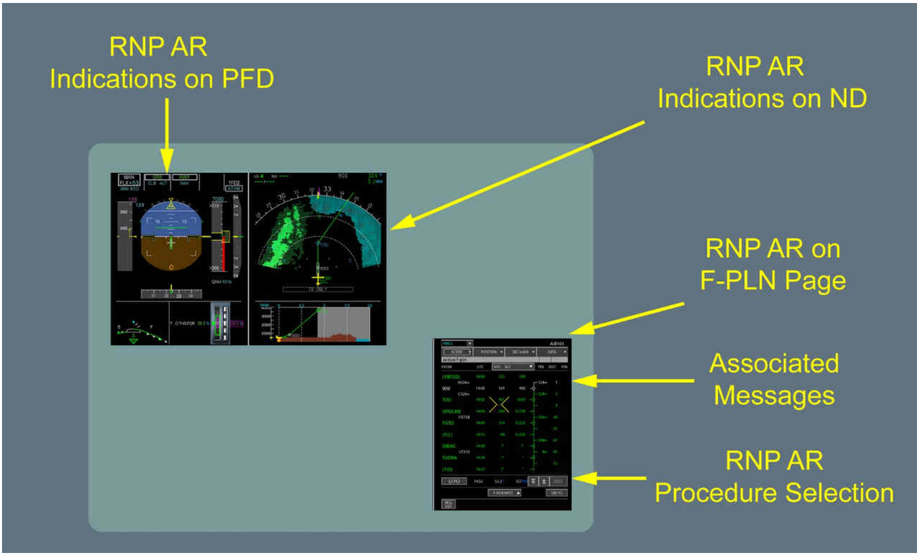
L1 Note: *The flight crew cannot interact with FMC-C.*

CONTROLS AND INDICATORS

Applicable to: ALL

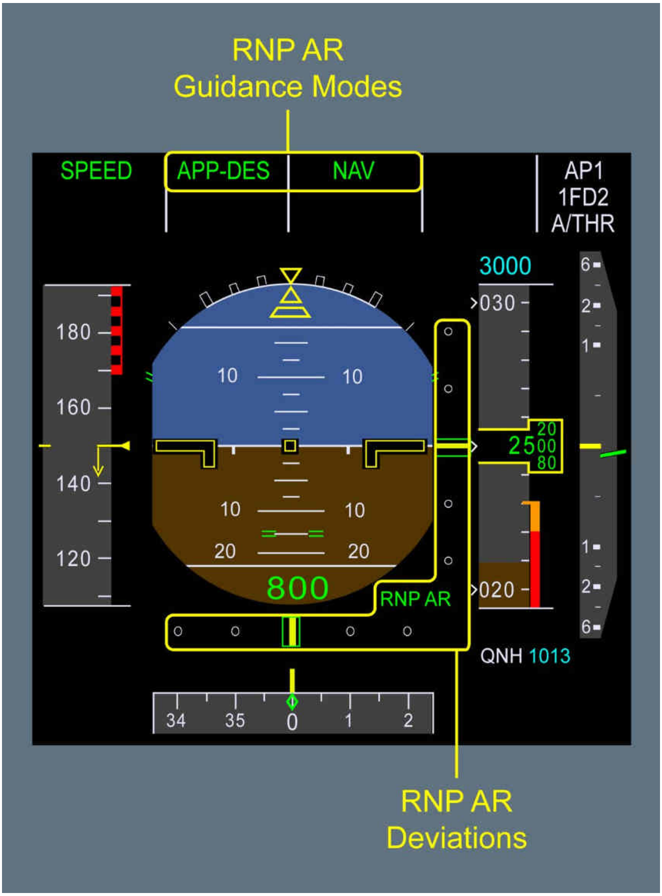
Ident.: DSC-22-FMS-10-30-50-10-00020529.0001001 / 04 SEP 14

RNP AR Controls and Indicators


RNP AR
Indications on PFD
RNP AR
Indications on ND
RNP AR on
F-PLN Page
Associated
Messages
RNP AR
Procedure Selection

RNP AR INDICATION ON PFD

RNP AR Indication on PFD


RNP AR
Guidance Modes
SPEED
APP-DES
NAV
AP1
1FD2
A/THR
3000
030
180
160
140
120
10
10
10
10
20
20
800
RNP AR
2500
020
QNH 1013
34
35
0
1
2
RNP AR
Deviations

Note: *HUD ✇ displays the same guidance modes and the same deviation scales as PFD. However, HUD does not display RNP AR title.*

LATERAL AND VERTICAL DEVIATION AREA

The RNP AR lateral scale automatically appears during RNP AR procedures. The RNP AR vertical scale automatically appears during RNP AR procedures, if FMS flight phase is DES or APPR.

If the lateral deviation is above the current RNP value:
- The aircraft reference flashes
- The lateral deviation scale flashes
- The lateral deviation flashes.

If the aircraft is more than 75 ft below the flight plan and FAF is sequenced:
- The aircraft reference flashes
- The vertical deviation scale flashes
- The vertical deviation flashes.

For more information, *Refer to DSC-31-CDS-40-20-110 RNP AR/RNAV(RNP) Departures and Approaches*.

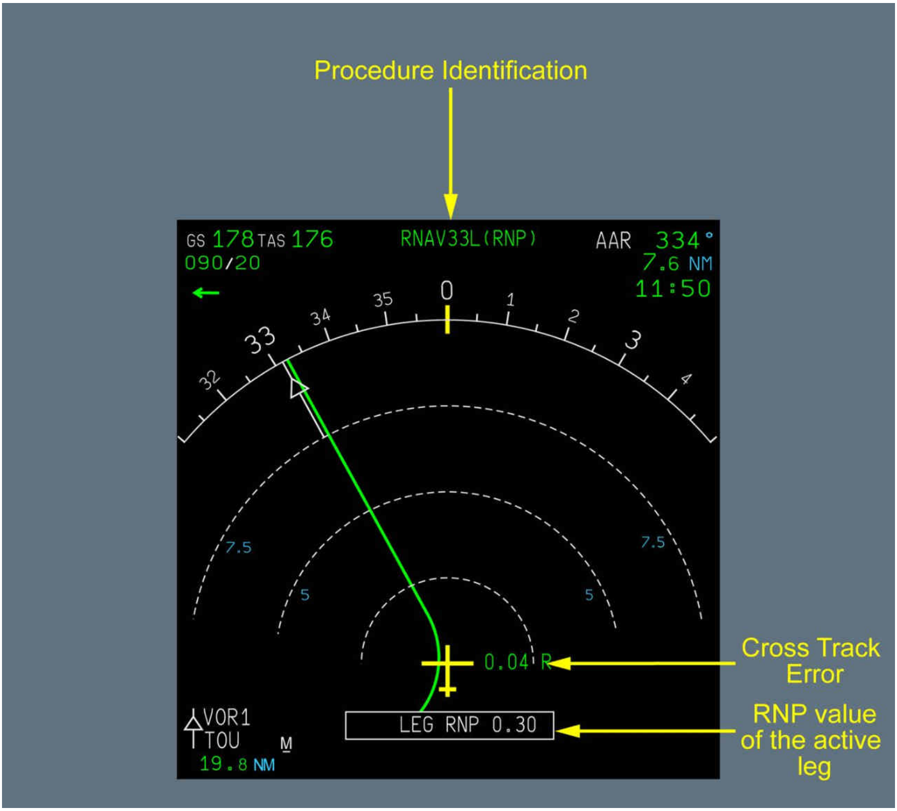
GUIDANCE MODES

The flight crew usually fly the RNP AR procedures with AP ON and FD ON. If AP OFF and FD ON, RNP AR is limited to RNP 0.3.
The lateral guidance mode for RNP AR procedures is NAV. Upon Go-Around initiation, the NAV mode remains engaged.
The vertical guidance mode for RNP AR procedures is APP-DES after the FAF.

Ident.: DSC-22-FMS-10-30-50-10-00020533.0001001 / 04 SEP 14

RNP AR INDICATION ON ND

RNP AR indication on ND


Procedure Identification
GS 178 TAS 176
090/20
RNAV33L(RNP)
AAR 334°
7.6 NM
11:50
32
33
34
35
0
1
2
3
4
7.5
5
7.5
5
0.04 R
LEG RNP 0.30
VOR1
TOU
M
19.8 NM
Cross Track Error
RNP value of the active leg

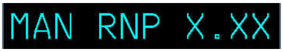
L2 VD does not display RNP AR information.

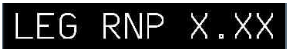
L1 **CROSS TRACK ERROR**

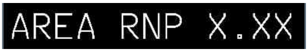
When the flight crew fly a RNP AR procedure, the value of the cross track error appears with two precision digits if the value is below 0.30 NM.
The cross track error pulses if its value is above the current RNP value.
For more information on Cross Track Error, *Refer to DSC-31-CDS-40-40-80 Cross Track Error*.

RNP VALUE APPLICABLE TO THE ACTIVE LEG

While the flight crew fly an RNP AR procedure, the FMS message zone on the ND displays the RNP value applicable to the active leg. The RNP value message depends on the RNP value source, with the following priority:


MAN RNP X.XX : when the flight crew manually selects the RNP value in the POSITION/MONITOR page


LEG RNP X.XX : when the navigation database provides the RNP value


AREA RNP X.XX : when the RNP value is the flight area RNP value.

PROCEDURE IDENTIFICATION

For more information, *Refer to DSC-31-CDS-40-40-80 Departure and Approach Name*.

Ident.: DSC-22-FMS-10-30-50-10-00020535.0001001 / 04 SEP 14

RNP AR PROCEDURE SELECTION

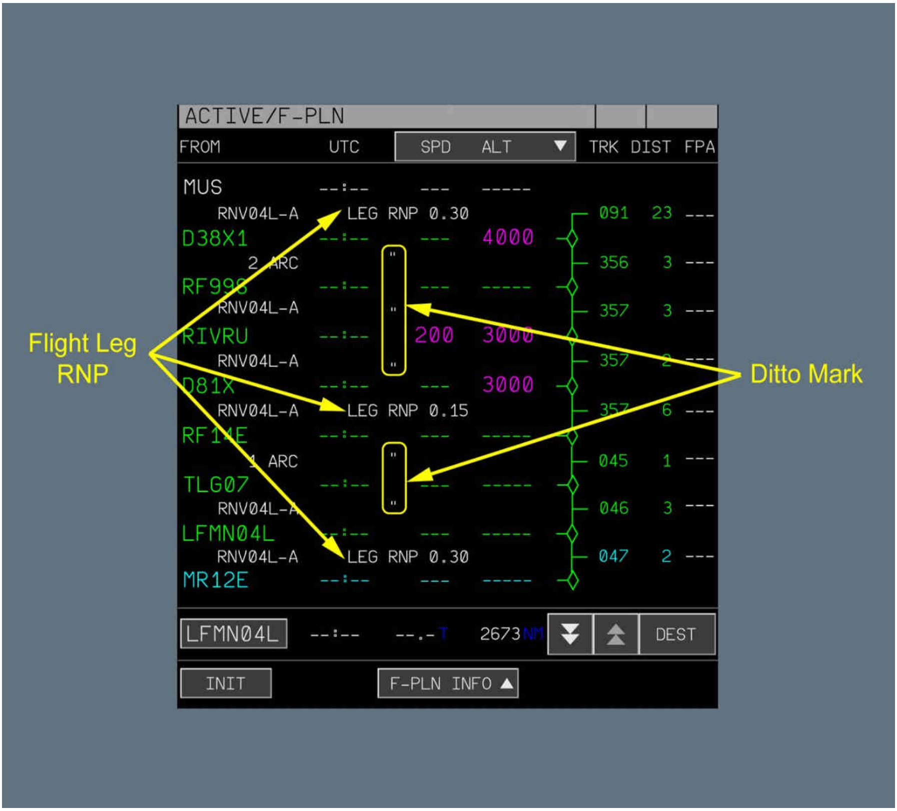
The flight crew selects the RNP AR procedure via the DEPARTURE or ARRIVAL MFD pages.
RNP AR procedures are identified by the suffix (RNP), like on navigation charts.
In the ACTIVE/F-PLN/DEPARTURE page, the flight crew may select a RNP AR procedure in the SID list or in the TRANS list (*Refer to DSC-22-FMS-20-20-20 DEPARTURE Page*).
On the ACTIVE/F-PLN/ARRIVAL page, the flight crew may select a RNP AR procedure in the APPR list or in the VIA list (*Refer to DSC-22-FMS-20-20-20 ARRIVAL Page*).
L2 An approach with xLS guidance may be associated with a RNP AR missed approach. The approach procedure name has then the suffix (RNP).

L1 *Note:* *On the RNAV(RNP) navigation chart, different minima may be identified, associated with several RNP values. For a RNP AR procedure, the navigation database codes the lowest RNP value. If necessary, the flight crew modifies the current RNP value in the POSITION/MONITOR MFD page.*

Ident.: DSC-22-FMS-10-30-50-10-00020536.0001001 / 20 OCT 14

RNP AR ON F-PLN PAGE

RNP AR on F-PLN Page



```
ACTIVE/F-PLN
FROM              UTC     SPD    ALT  ▼   TRK  DIST  FPA
MUS               --:--   ---    -----
    RNV04L-A      LEG RNP 0.30            091   23   ---
D38X1             --:--   ---    4000
         2 ARC          "                 356    3   ---
RF998             --:--   ---    -----
    RNV04L-A            "                 357    3   ---
RIVRU             --:--   200    3000
    RNV04L-A            "                 357    2   ---
D81X              --:--   ---    3000
    RNV04L-A      LEG RNP 0.15            357    6   ---
RF14E             --:--   ---    -----
         1 ARC          "                 045    1   ---
TLG07             --:--   ---    -----
    RNV04L-A            "                 046    3   ---
LFMN04L           --:--   ---    -----
    RNV04L-A      LEG RNP 0.30            047    2   ---
MR12E             --:--   ---    -----
LFMN04L     --:--     --.-T    2673NM              DEST
INIT            F-PLN INFO ▲
```

FLIGHT LEG RNP

Indicates the RNP value associated with the flight leg.
The displayed RNP is the RNP value that is stored in the navigation database.
For additional information, *Refer to DSC-22-FMS-20-20-20 F-PLN Page*.

DITTO MARK

A ditto mark (“) appears instead of the Flight Leg RNP, if the RNP value remains the same as the previous Flight Leg RNP.

For additional information, *Refer to DSC-22-FMS-20-20-20 F-PLN Page*.

Ident.: DSC-22-FMS-10-30-50-10-00020537.0001001 / 04 SEP 14

ASSOCIATED MESSAGES

On the MFD, the FMS message area displays the following messages:
- RNP PROC ERROR: FPLN/NDB MISMATCH RE-ENTER PROC(S) (*Refer to DSC-22-FMS-20-90 RNP PROC ERROR: FPLN/NDB MISMATCH RE-ENTER RNP PROC(S)*)
- PROC RNP IS XX.XX (*Refer to DSC-22-FMS-20-90 PROC RNP IS XX.XX*)

ABNORMAL OPERATIONS

Applicable to: ALL

Ident.: DSC-22-FMS-10-30-50-20-00020019.0001001 / 04 DEC 14

RNP AR CAPABILITY

The aircraft is capable to perform RNP AR operation down to 0.1 in takeoff, approach and/or missed approach.

RNP AR CAPABILITY MONITORED BY THE PRIMS

PRIMs compute RNP AR capability, based on loss of system redundancy, or navigation performance degradation.
For more information on required equipment monitored by the PRIMs, *Refer to PRO-SPO-PBN Required RNP AR Equipment*.

RNP AR CAPABILITY DOWNGRADED

Depending on the affected aircraft systems, the ECAM triggers either of the following:
- The ECAM alerts of the applicable aircraft systems, along with RNP AR CAPABILITY DOWNGRADED subtitle in the second line of each applicable ECAM alert title, or
- NAV RNP AR CAPABILITY DOWNGRADED ECAM alert (refer to *Refer to PRO-ABN-NAV NAV RNP AR CAPABILITY DOWNGRADED*), if the detected failure is not related to any other ECAM alert.

L2 *Note:* *If displayed, the NAV RNP AR CAPABILITY DOWNGRADED ECAM alert may disappear after:*
- *The next waypoint is sequenced. As a result, out of RNP AR operations, the flight crew may check, if necessary, the recovery of the full RNP AR capability at the next waypoint*
- *The flight crew uses, out of RNP AR operations, the DIR TO lateral revision to the next waypoint.*

L1 ECAM displays FOR RNP AR : MINIMUM LIMITED TO RNP 0.30 status.

L2 PRIMs provide RNP AR capability downgraded status during the entire flight, in order to anticipate aircraft capability to fly an RNP AR procedure.
If the flight crew manually selects the aircraft time reference on the POSITION/TIME page, the PRIMs downgrade the RNP AR capability.

L1 RNP AR CAPABILITY LOST

Depending on the affected aircraft systems, ECAM triggers either of the following:
- The ECAM alerts of the applicable aircraft systems, and the RNP AR CAPABILITY LOST subtitle in the second line of each applicable ECAM alert title, or
- NAV RNP AR CAPABILITY LOST ECAM alert (*Refer to PRO-ABN-NAV NAV RNP AR CAPABILITY LOST*), if the detected failure is not related to any other ECAM alert.

In addition, during RNP AR operation, the ND displays RNP AR CAPABILITY LOST message (*Refer to DSC-31-CDS-40-40-150 ND Messages*).
The ECAM displays RNP AR status.

L2 The PRIMs provide RNP AR capability lost status during the entire flight, in order to anticipate aircraft capability to fly an RNP AR procedure.

L1 **RNP AR CAPABILITY NOT MONITORED BY THE PRIMS**

TAWS, MFD and KCCU are required equipment for RNP AR operations.

Ident.: DSC-22-FMS-10-30-50-20-00020020.0001001 / 04 SEP 14

SPECIFIC RNP AR ALERTS

The PRIMs monitor FMS data. The triplex FMS architecture (*Refer to DSC-22-FMS-10-30-50 LDEV and VDEV computation*) enables the PRIMs to identify the FMC data that is not valid. As a result, the PRIMs reject the identified faulty FMC. In addition, the PRIMs reject the FMC in the case of FMC reset.

If the PRIMs reject one FMC, one of the following ECAM alerts is triggered:
- AUTO FLT FMS BKUP REJECTED, if the PRIMs reject the backup FMC
- AUTO FLT FMS 1 REJECTED, if the PRIMs reject the active FMC that controls FMS 1
- AUTO FLT FMS 2 REJECTED, if the PRIMs reject the active FMC that controls FMS 2.

If the PRIMs reject the two active FMCs, the following ECAM alert is triggered:
- AUTO FLT FMS 1+2 REJECTED

For more information on FMC rejected by the PRIMs, *Refer to DSC-22-FMS-40 FMC Data Not Valid during a RNP AR Procedure*.
When both FMS operate in INDEPENDENT mode during RNP AR operation, the PRIMs consider that the data of the two active FMCs is not valid. As a result, AUTO FLT FMS 1+2 REJECTED

ECAM alert is triggered. For additional information, *Refer to DSC-22-FMS-40 INDEPENDENT Mode*.

Note: *In the case of FMS INDEPENDENT mode during a RNP AR operation, the FWC triggers the AUTO FLT FMS 1+2 REJECTED alert on the ECAM. After the flight crew applies the associated procedure (i.e HDG mode engagement), the flight crew may push HDG pb to engage the NAV mode. However, if the aircraft is still on a RNP AR procedure, the NDs display again the BACKUP TRAJ and the backup guidance (from backup FMC) activates again. The flight crew shall modify both active flight plans in order to restore DUAL mode. Then, the flight crew can re-engage the NAV mode.*

General

INTRODUCTION

Ident.: DSC-22-FMS-10-40-10-00004389.0001001 / 14 APR 14
Applicable to: ALL

The primary purpose of the Flight Management System (FMS) is to help the flight crew with flight planning.
The flight crew can enter the **flight plan** in the FMS. This flight plan includes the intended lateral and vertical trajectory. The part of the flight plan that corresponds to the lateral part of the trajectory is referred to as the **lateral** flight plan. The part of the flight plan that corresponds to the vertical part of the trajectory is referred to as the **vertical** flight plan.
When all of the necessary data is entered, the FMS computes and displays the track, speed, altitude, time, and fuel **predictions** that are associated with the flight plan.
The flight crew can change the flight plan at any time. These changes are referred to as **lateral revisions**, if the change is made to the lateral flight plan, and **vertical revisions**, if the change is made to the vertical flight plan.
The FMS can simultaneously store four flight plans: One **active** and three **secondary** flight plans.
The FMS uses the active flight plan for lateral and vertical long-term guidance, and for radio navigation automatic tuning. The flight crew can use the secondary flight plans as a draft to compare predictions, to anticipate a diversion, or to store company, ATC, and OIS flight plans.

For more information about:
- The lateral flight plan, *Refer to DSC-22-FMS-10-40-10 Lateral Flight Plan*
- The vertical flight plan, *Refer to DSC-22-FMS-10-40-10 Vertical Flight Plan*.

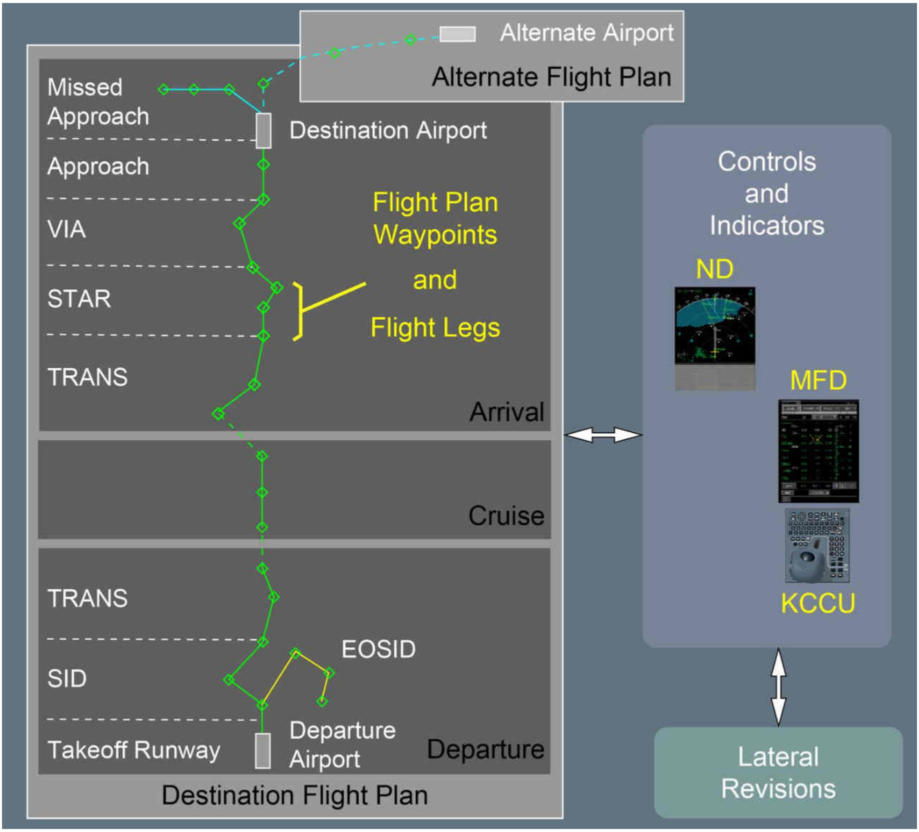
LATERAL FLIGHT PLAN

Applicable to: ALL

Ident.: DSC-22-FMS-10-40-10-10-00004390.0001001 / 14 APR 14

The part of the flight plan that corresponds to the lateral part of the trajectory is referred to as the lateral flight plan.

Lateral Flight Plan


Alternate Airport
Alternate Flight Plan
Missed Approach
Destination Airport
Approach
Flight Plan Waypoints and Flight Legs
VIA
STAR
TRANS
Arrival
Cruise
TRANS
EOSID
SID
Takeoff Runway
Departure Airport
Departure
Destination Flight Plan
Controls and Indicators
ND
MFD
KCCU
Lateral Revisions

Ident.: DSC-22-FMS-10-40-10-10-00004392.0001001 / 14 APR 14

DESTINATION FLIGHT PLAN

The destination flight plan is the flight plan from the departure airport to the destination airport. It has the following elements: Departure, cruise, and arrival.

DEPARTURE

The departure has the following elements:
- The takeoff runway
- The Standard Instrumental Departure (SID)
  The SID is the central part of the departure procedure.
- The departure Transition (TRANS).
  The departure TRANS is the possible trajectory between the last point of the SID and the first en-route waypoint.

The flight crew can insert or change these elements with the DEPARTURE lateral revision. For more information, *Refer to DSC-22-FMS-10-40-20 Purpose*.

CRUISE

The cruise part of the lateral flight plan includes all en-route waypoints.

The flight crew can insert these elements with the AIRWAYS or INSERT NEXT WPT lateral revision. For more information about the:
- AIRWAYS revision, *Refer to DSC-22-FMS-10-40-20 Purpose*
- INSERT NEXT WPT revision, *Refer to DSC-22-FMS-10-40-20 Purpose*.

ARRIVAL

The arrival has the following elements:
- The arrival Transition (TRANS)
  The arrival TRANS is the possible trajectory between the last en-route waypoint and the first waypoint of the STAR.
- The Standard Terminal Arrival Route (STAR)
  The STAR is the central part of the arrival procedure.
- The VIA
  The VIA is the possible trajectory between the last waypoint of the STAR and the first waypoint of the approach.
- Approach and missed approach.
  The approach part includes the runway for landing at the destination airport, and the approach and missed approach procedure.

The flight crew can insert or change these elements with the ARRIVAL lateral revision. For more information, *Refer to DSC-22-FMS-10-40-20 Purpose*.

Ident.: DSC-22-FMS-10-40-10-10-00004393.0001001 / 14 APR 14

ALTERNATE FLIGHT PLAN

The alternate flight plan is the diversion flight plan from the destination airport to the alternate airport. The alternate flight plan has the following elements: Departure, cruise, and arrival.

The flight crew can insert the alternate airport with the ALTERNATE lateral revision. For more information, *Refer to DSC-22-FMS-10-40-20 Purpose*.

The flight crew can insert the departure, cruise, and arrival elements with the DEPARTURE, AIRWAYS, INSERT NEXT WPT, and ARRIVAL lateral revisions. For more information about the:
- DEPARTURE revision, *Refer to DSC-22-FMS-10-40-20 Purpose*
- AIRWAYS revision, *Refer to DSC-22-FMS-10-40-20 Purpose*
- INSERT NEXT WPT revision, *Refer to DSC-22-FMS-10-40-20 Purpose*
- ARRIVAL revision, *Refer to DSC-22-FMS-10-40-20 Purpose*.

Ident.: DSC-22-FMS-10-40-10-10-00004394.0001001 / 28 JUN 18

FLIGHT PLAN WAYPOINTS

The flight plan is defined by waypoints, and flight legs between the waypoints.

There are four different types of flight plan waypoints:
- Navigation database waypoints
  These waypoints are part of the navigation database (e.g. DVL, TOU, LFBO). The flight crew inserts these waypoints as part of a company route, or independently via a lateral revision.
- Flight-crew-created waypoints

  The flight crew can insert the following waypoints that they created:
  - Latitude/longitude waypoints
  - Place/distance waypoints
  - Place/bearing/distance waypoints
  - Place-bearing/place-bearing waypoints
  - Latitude/longitude crossing waypoints
  - Radial intersection waypoints
  - Circle intersection waypoints
  - Abeam waypoints.

L2 The latitude/longitude, place/distance, and place/bearing/distance waypoints, created by the flight crew, are stored in the pilot-stored elements database.
The other flight-crew-created waypoints are not stored in the pilot-stored elements database. Therefore, they are memorized only until they are sequenced.
For more information about the pilot-stored elements database, *Refer to DSC-22-FMS-10-20 Pilot-Stored Elements Database*.

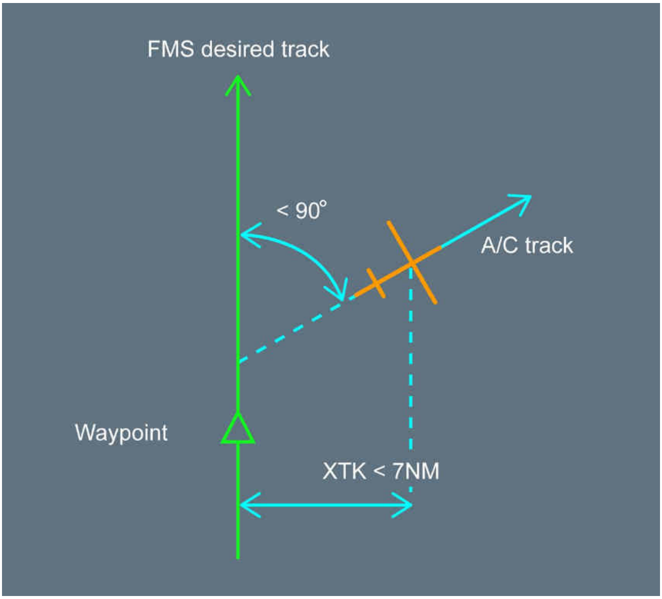
L1

- FMS-created waypoints
  For some flight plan revisions, the FMS inserts a waypoint to indicate a revision in the flight plan (e.g. T-P, IN-BND, OUT-BND).
- Pseudo waypoints.
  Pseudo waypoints are reference points that indicate a vertical flight plan event (e.g. (T/C), (SPDLIM), (T/D)). The pseudo waypoints do not affect the lateral flight plan.
  For more information, *Refer to DSC-22-FMS-10-40-10 Pseudo Waypoints*.

SEQUENCED WAYPOINT

When the lateral managed mode is engaged, a flight plan waypoint is sequenced, when the aircraft overflies (or flies near) the waypoint.

In HDG/TRK mode, a flight plan waypoint is sequenced if all of the following conditions are met:
- The waypoint is behind the aircraft
- The XTK between the FMS lateral flight plan and the aircraft is less than 7 NM
- The angle between the current aircraft track and the FMS desired track is less than 90 °.



Note: *If the flight crew revises the lateral flight plan with the DIR TO COURSE IN function, the waypoints of the revised flight plan are sequenced when the aircraft is in the above mentioned conditions.*

FROM, TO, AND NEXT WAYPOINTS

The FROM waypoint of the flight plan is the last sequenced waypoint.

Note: *The FROM waypoint is the aircraft present position (P.POS), when the aircraft is in a flight plan discontinuity and the next flight plan is not activated.*

The TO waypoint is the next waypoint that will be sequenced.
The NEXT waypoint is the waypoint that will be sequenced after the TO waypoint.

DOWN-PATH AND UP-PATH WAYPOINTS

A down-path waypoint is a waypoint of the flight plan that is between the present position of the aircraft (or another specific waypoint of the flight plan) and the destination airport.
An up-path waypoint is a waypoint of the flight plan that is between the present position of the aircraft (or another specific waypoint of the flight plan) and the departure airport.

Ident.: DSC-22-FMS-10-40-10-10-00004395.0001001 / 14 APR 14

FLIGHT LEGS

The FMS connects the flight plan waypoints with flight legs.

There are many different types of flight legs, e.g.:
- Course-to-a-fix flight leg
- Heading flight leg
- Manual flight leg
- Holding pattern flight leg
- Direct flight leg, etc.

Most of the flight leg types cannot be manually created by the flight crew. They are part of the inserted flight plan elements (company route, departure, arrival, holding pattern, airways, etc.), that are stored in the navigation database.

The flight crew can manually create:

- A holding-pattern flight leg, with the HOLD lateral revision
  For more information, *Refer to DSC-22-FMS-10-40-20 Purpose*.
- A direct flight leg:
  - Between the aircraft present position and a waypoint, navaid, or airport, with the DIR TO lateral revision
    For more information, *Refer to DSC-22-FMS-10-40-20 Purpose*.
  - Between a waypoint of the flight plan and another waypoint, navaid, or airport, with the INSERT NEXT WPT lateral revision
    For more information, *Refer to DSC-22-FMS-10-40-20 Purpose*.
  - Between two waypoints of the flight plan, by clearing the discontinuity in between with the DELETE lateral revision.
    For more information, *Refer to DSC-22-FMS-10-40-20 Purpose*.

ACTIVE FLIGHT LEG

The flight leg that is between the present position of the aircraft and the TO waypoint is referred to as the active flight leg.

FLIGHT PLAN DISCONTINUITY

The flight plan has a discontinuity, if no flight leg is defined between two waypoints.

L2 *Note:* *1. The computation of flight plan predictions is based on the assumption that the aircraft will fly a direct flight leg between the waypoints that define the discontinuity.*
2. When the aircraft moves to a flight plan discontinuity, the NAV mode automatically reverts to the HDG/TRK mode. The flight plan FROM waypoint reverts to P.POS.

L1 MANUAL FLIGHT LEG

A constant course, heading, or track flight leg that has no end, and that the flight crew must manually end, is referred to as a manual flight leg.
A manual flight leg is part of a departure or arrival procedure.
The flight crew cannot manually insert a manual flight leg, except by using the DIR TO - CRS OUT revision. For more information, *Refer to DSC-22-FMS-10-40-20 Purpose*.

L2 When the aircraft flies a manual flight leg, the NAV mode remains engaged. The computation of flight plan predictions is based on the assumption that the aircraft will fly a direct flight leg from its current position to the next waypoint.

Note: *The use of the DES mode is not recommended on a manual flight leg.*

L1

CAUTION	Before flying the manual flight leg, the VD display assumes that the aircraft will fly a direct flight leg from the starting point of the manual flight leg to the next waypoint.

Ident.: DSC-22-FMS-10-40-10-10-00004398.0001001 / 14 APR 14

LATERAL REVISIONS

The flight crew can change the lateral flight plan. A change to the lateral flight plan is referred to as a lateral revision.
For more information, *Refer to DSC-22-FMS-10-40-20 Overview*.

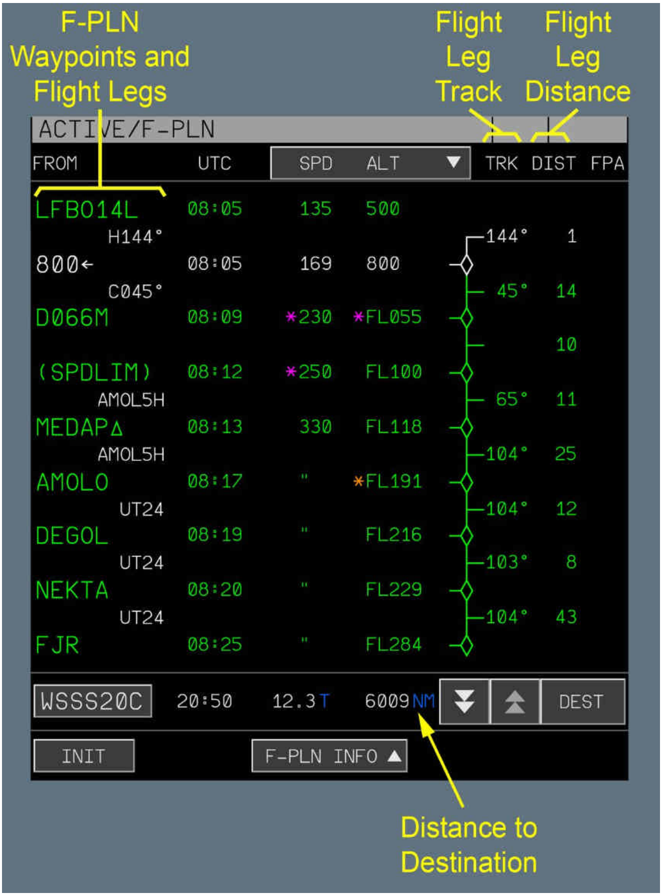
Ident.: DSC-22-FMS-10-40-10-10-00004399.0001001 / 14 APR 14

CONTROLS AND INDICATORS

ON THE MFD

The F-PLN page displays textual lateral flight plan data that includes:
- All flight plan waypoints and flight legs
- The track and distance between two waypoints, and the distance to the destination.

F-PLN Page


F-PLN Waypoints and Flight Legs
Flight Leg Track
Flight Leg Distance
Distance to Destination
ACTIVE/F-PLN
INIT
F-PLN INFO ▲
DEST

FROM	UTC	SPD	ALT	TRK	DIST	FPA
LFBO14L	08:05	135	500			
H144°				144°	1	
800←	08:05	169	800			
C045°				45°	14	
D066M	08:09	*230	*FL055			
					10	
(SPDLIM)	08:12	*250	FL100			
AMOL5H				65°	11	
MEDAP∆	08:13	330	FL118			
AMOL5H				104°	25	
AMOLO	08:17	"	*FL191			
UT24				104°	12	
DEGOL	08:19	"	FL216			
UT24				103°	8	
NEKTA	08:20	"	FL229			
UT24				104°	43	
FJR	08:25	"	FL284			

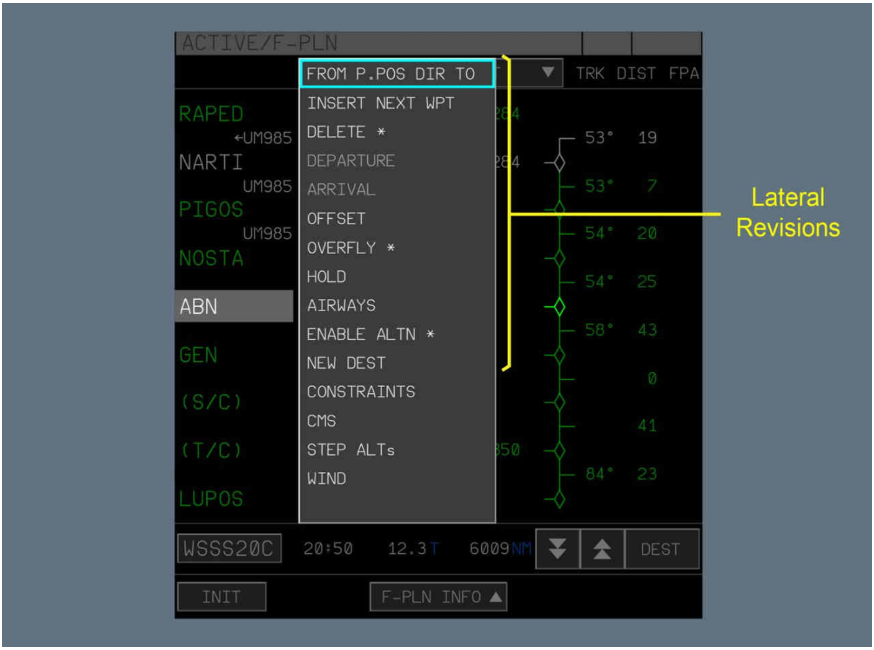
WSSS20C 20:50 12.3T 6009NM

The flight plan waypoints are displayed in green (or blue for the missed approach and alternate flight plan waypoints). The flight leg idents are displayed in white. The lateral distance and track predictions are displayed in green (or blue for the missed approach and alternate flight plan waypoints).

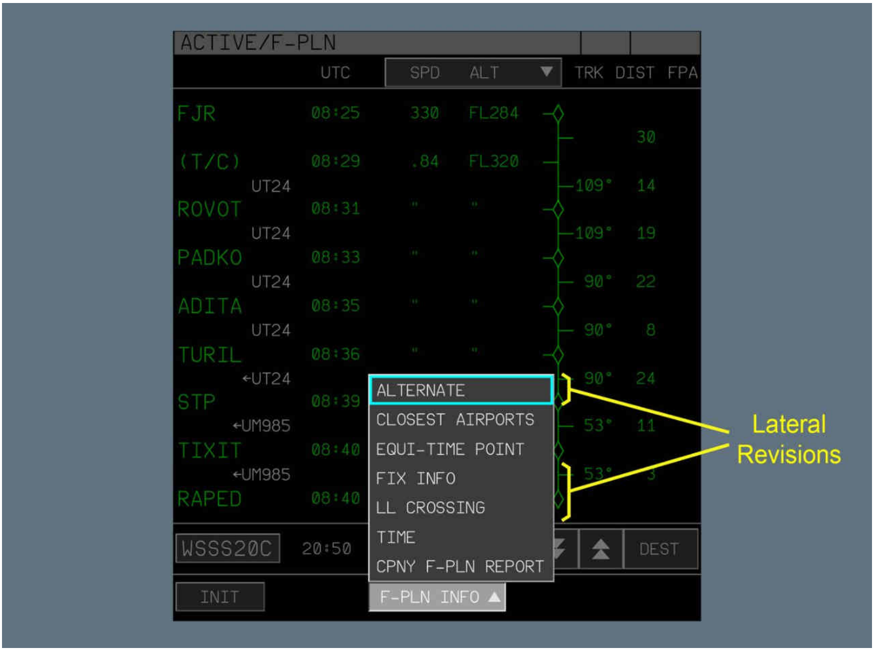
Note: *All of the data that is related to the active flight leg and the TO waypoint is displayed in white.*

The flight crew can access all lateral revisions via the F-PLN page:
- Via the waypoint revisions menu, or
- Via the F-PLN INFO menu.

Waypoint Revisions Menu - Lateral Revisions


ACTIVE/F-PLN
FROM P.POS DIR TO
INSERT NEXT WPT
DELETE *
DEPARTURE
ARRIVAL
OFFSET
OVERFLY *
HOLD
AIRWAYS
ENABLE ALTN *
NEW DEST
CONSTRAINTS
CMS
STEP ALTs
WIND
TRK DIST FPA
RAPED
←UM985
NARTI
UM985
PIGOS
UM985
NOSTA
ABN
GEN
(S/C)
(T/C)
LUPOS
53° 19
53° 7
54° 20
54° 25
58° 43
0
41
84° 23
WSSS20C
20:50
12.3T
6009NM
DEST
INIT
F-PLN INFO
Lateral Revisions

F-PLN INFO Menu - Lateral Revisions



	UTC	SPD	ALT	TRK	DIST	FPA
FJR	08:25	330	FL284			
					30	
(T/C)	08:29	.84	FL320			
UT24				109°	14	
ROVOT	08:31	"	"			
UT24				109°	19	
PADKO	08:33	"	"			
UT24				90°	22	
ADITA	08:35	"	"			
UT24				90°	8	
TURIL	08:36	"	"			
←UT24				90°	24	
STP	08:39					
←UM985				53°	11	
TIXIT	08:40					
←UM985				53°	3	
RAPED	08:40					
WSSS20C	20:50					

For more information about the F-PLN page, *Refer to DSC-22-FMS-20-20-20 F-PLN Page*.

ON THE ND

The ND displays graphical and textual flight plan data. The flight crew can control the display of this data via the EFIS CP.

On the upper part of the ND, the flight crew can perform three lateral revisions via the interactive ND: DIR TO, INSERT NEXT WPT, and DELETE. For more information, *Refer to DSC-31-CDS-40-40-100 Interactive ND Overview*.

VERTICAL FLIGHT PLAN

Applicable to: ALL

Ident.: DSC-22-FMS-10-40-10-20-00004391.0001001 / 23 APR 14

The part of the flight plan that corresponds to the vertical part of the trajectory is referred to as the vertical flight plan.

The vertical flight plan includes all of the data that is required to compute the altitude, speed, and time predictions, that builds up the vertical profile of the flight plan.

The navigation database provides this data, or the flight crew manually enters this data.

L2 For more information about the navigation database, *Refer to DSC-22-FMS-10-20 Navigation Database*.

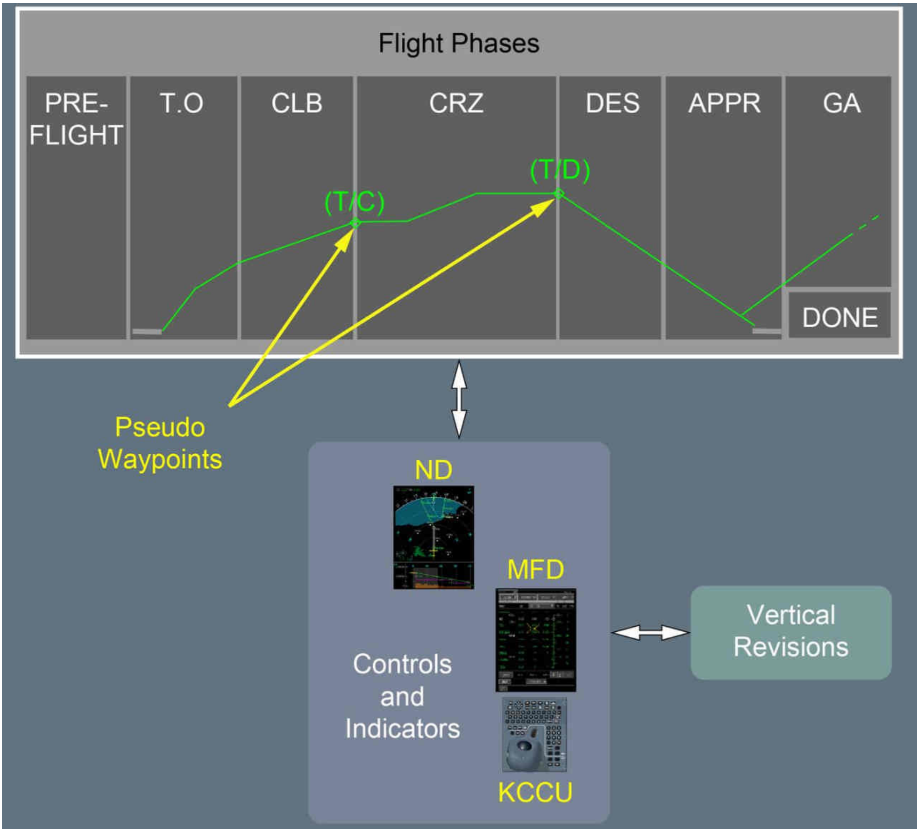
L1 There are four types of vertical data:

- General flight plan data:
  - FMS speed mode (ECON/LRC)
  - Cruise Flight Level (CRZ FL) and Cruise Temperature (CRZ TEMP)
  - Fuel and load data (ZFW, ZFWCG, block fuel)
- Flight-phase-related performance data:
  - Takeoff thrust setting (TOGA, FLX, DTO)
  - Thrust reduction and acceleration altitude
  - Climb, cruise, descent, and approach speeds
  - Pressure and temperature at destination
- Vertical constraints data:
  - Speed limits and constraints
  - Altitude constraints
  - Time constraints
  - Step climb and step descent constraints
- Wind data:
  Climb, cruise, descent, approach, and alternate flight plan winds.

For more information about:

- The general flight plan and flight-phase-related performance data, *Refer to DSC-22-FMS-10-50-10 Overview*
- The vertical constraints and wind, *Refer to DSC-22-FMS-10-40-30 Overview*.

Vertical Flight Plan


Flight Phases
PRE-FLIGHT
T.O
CLB
CRZ
DES
APPR
GA
(T/C)
(T/D)
DONE
Pseudo Waypoints
ND
MFD
Controls and Indicators
KCCU
Vertical Revisions

Ident.: DSC-22-FMS-10-40-10-20-00004400.0001001 / 14 APR 14

FLIGHT PHASES

When all necessary vertical data is entered, the FMS builds up a vertical profile that is divided into 8 flight phases:

- PREFLIGHT
- Takeoff (T.O)
- Climb (CLB)
- Cruise (CRZ)
- Descent (DES)
- Approach (APPR)

- Go-Around (GA)
- DONE.

L2 *Note: The FMS flight phases are different and independent from the flight phases that other aircraft systems compute and use.*

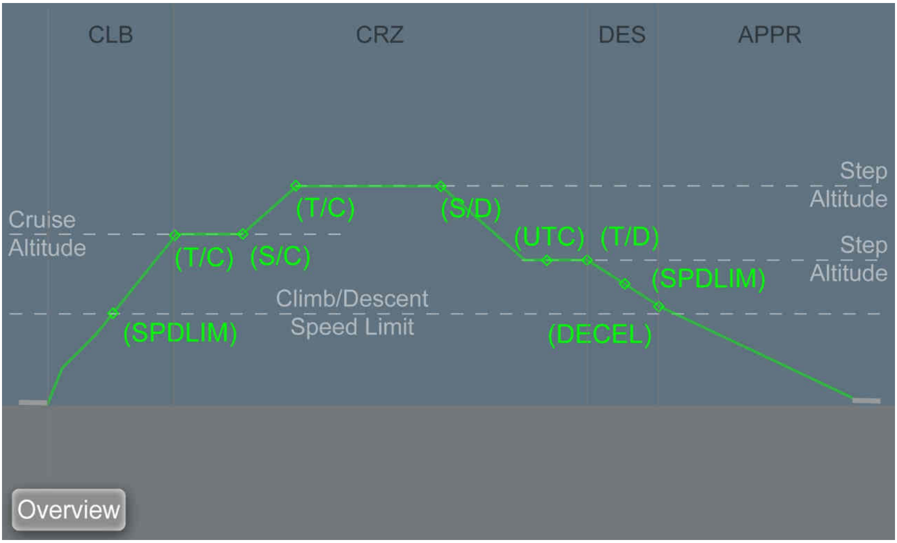
L1 For each flight phase, the FMS computes the optimum speed/Mach profile. The FMS automatically changes from one flight phase to another, when the transition conditions are achieved.
For more information about the flight phases and the speed/Mach profiles, *Refer to DSC-22-FMS-10-50-30 Overview*.

Ident.: DSC-22-FMS-10-40-10-20-00004401.0001001 / 23 APR 14

PSEUDO WAYPOINTS

The vertical flight plan is indicated with pseudo waypoints. Each pseudo waypoint corresponds to a vertical profile event. As the vertical profile is a result of the FMS predictions computation, the position along the flight plan of the pseudo waypoints can move after a data change, or a flight plan revision.
On the MFD, the pseudo waypoints are displayed between parentheses on the F-PLN page. Each pseudo waypoint has time, speed, altitude, and wind predictions.
On the ND, the pseudo waypoints are indicated with their dedicated symbols.
For more information about the display of the pseudo waypoints on the MFD and the ND, *Refer to Controls and Indicators*.

Pseudo Waypoints


CLB
CRZ
DES
APPR
Step Altitude
Cruise Altitude
(T/C)
(S/D)
(UTC)
(T/D)
Step Altitude
(T/C)
(S/C)
(SPDLIM)
Climb/Descent Speed Limit
(SPDLIM)
(DECEL)
Overview

SPDLIM

The SPDLIM pseudo waypoint is the position at which the aircraft will reach the altitude of the climb or descent speed limit.

L2 The flight crew defines the climb and descent speed limit on the SPD panel of the VERT REV page (*Refer to page*).

L1 **T/C**

The T/C pseudo waypoint is the position at which the aircraft will reach:
- The cruise altitude, or
- The descent path, if the descent path is reached before the cruise altitude, or
- The step climb altitude, if there is one.

L2 The flight crew can change the cruise flight level on the PERF page (*Refer to page*), and can define a step climb on the STEP ALTs panel of the VERT REV page (*Refer to page*).

L1 **S/C OR OPT**

The S/C pseudo waypoint is the position at which the FMS determines that the step climb should begin.

Note: *If the step climb is defined at a waypoint, the S/C pseudo waypoint is displayed on the line below this waypoint on the F-PLN page.*
If the start waypoint of the step climb is an optimum start point, the pseudo waypoint is OPT.

L2 The flight crew defines a step climb on the STEP ALTs panel of the VERT REV page (*Refer to page*).

L1 **S/D**

The S/D pseudo waypoint is the position at which the FMS determines that the step descent should begin.

Note: *On the F-PLN page, the S/D pseudo waypoint is displayed on the line below the flight plan start waypoint.*

L2 The flight crew defines a step descent on the STEP ALTs panel of the VERT REV page (*Refer to page*).

L1 **UTC**

The UTC pseudo waypoint is the position at which the aircraft will be at the UTC time that defines the time marker.

L2 The flight crew defines a time marker on the POSITION/TIME page (*Refer to page*).

L1 **T/D**

The T/D pseudo waypoint is the position at which the FMS determines that the descent should begin.

DECEL

The point at which:
- The aircraft will automatically decelerate, for an approach with the managed speed/Mach control, or
- The flight crew should begin the deceleration, for an approach with the selected speed/Mach control.

Ident.: DSC-22-FMS-10-40-10-20-00024627.0001001 / 02 FEB 18

FINAL DESCENT POINT

In the navigation database, the Final Descent Point (FDP) is the point in the approach procedure from which a constant descent path angle is defined.

Ident.: DSC-22-FMS-10-40-10-20-00004402.0001001 / 14 APR 14

VERTICAL REVISIONS

The flight crew can change the vertical flight plan. A change to the vertical flight plan is referred to as a vertical revision.
For more information, *Refer to DSC-22-FMS-10-40-30 Overview*.

Ident.: DSC-22-FMS-10-40-10-20-00004403.0001001 / 14 APR 14

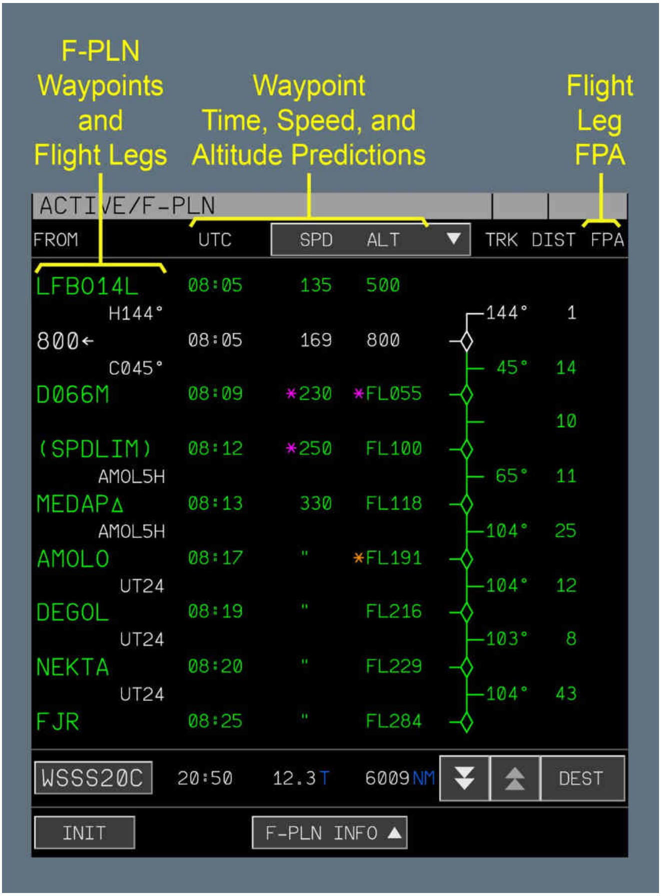
CONTROLS AND INDICATORS

ON THE MFD

The F-PLN page displays the textual vertical data, associated with the lateral flight plan. The F-PLN page displays, for each waypoint of the lateral flight plan:
- The time prediction, in Universal Time Coordinated (UTC) or in flight time (TIME)
- The Speed (SPD) prediction
- The Altitude (ALT) prediction
- The Estimated Fuel On Board (EFOB)
- The True Wind (T.WIND) prediction.

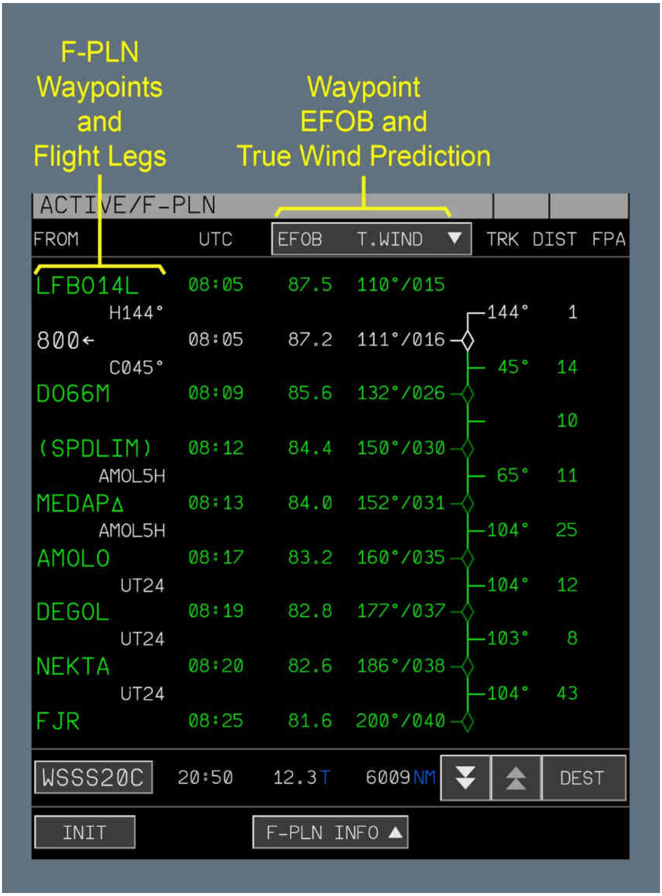
The F-PLN page displays the flight leg RNP, if the RNP value is stored in the navigation database.
A flight leg, that is part of the arrival procedure, can also have an associated Flight Path Angle (FPA).

F-PLN Page - Time, Speed, Altitude, and FPA


F-PLN Waypoints and Flight Legs
Waypoint Time, Speed, and Altitude Predictions
Flight Leg FPA
ACTIVE/F-PLN
▼
⯯
⯭
DEST
INIT
F-PLN INFO ▲

FROM	UTC	SPD	ALT	TRK	DIST	FPA
LFBO14L	08:05	135	500			
H144°				144°	1	
800←	08:05	169	800			
C045°				45°	14	
D066M	08:09	*230	*FL055			
					10	
(SPDLIM)	08:12	*250	FL100			
AMOL5H				65°	11	
MEDAP∆	08:13	330	FL118			
AMOL5H				104°	25	
AMOLO	08:17	"	*FL191			
UT24				104°	12	
DEGOL	08:19	"	FL216			
UT24				103°	8	
NEKTA	08:20	"	FL229			
UT24				104°	43	
FJR	08:25	"	FL284			
WSSS20C	20:50	12.3T	6009NM			

F-PLN Page - EFOB and Wind


F-PLN Waypoints and Flight Legs
Waypoint EFOB and True Wind Prediction
▼
WSSS20C
INIT
F-PLN INFO ▲
DEST

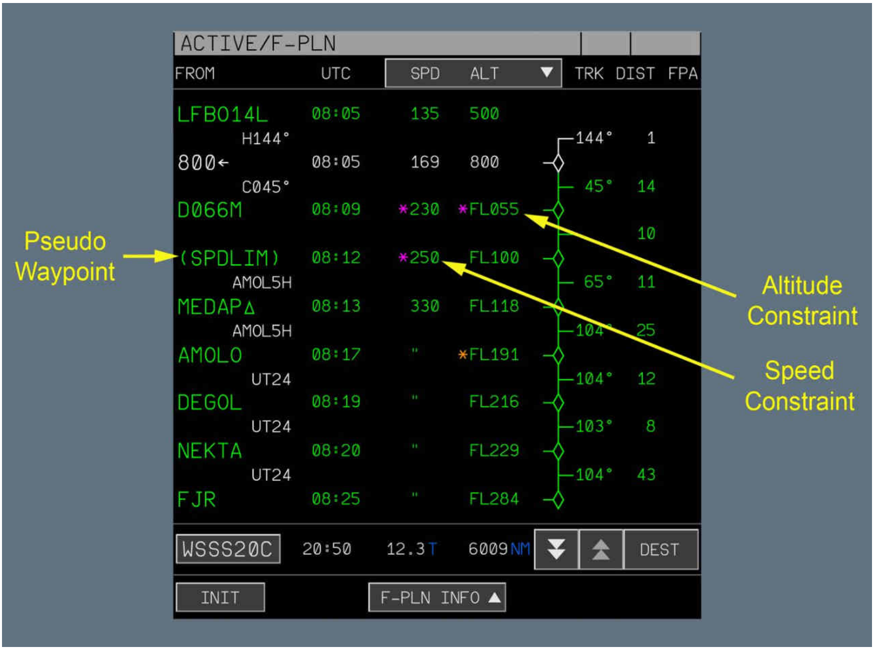
```
ACTIVE/F-PLN
FROM          UTC    EFOB   T.WIND     TRK  DIST  FPA
LFBO14L       08:05  87.5   110°/015
      H144°                            144°    1
800←          08:05  87.2   111°/016
      C045°                             45°   14
D066M         08:09  85.6   132°/026
                                              10
(SPDLIM)      08:12  84.4   150°/030
      AMOL5H                            65°   11
MEDAPΔ        08:13  84.0   152°/031
      AMOL5H                           104°   25
AMOLO         08:17  83.2   160°/035
      UT24                             104°   12
DEGOL         08:19  82.8   177°/037
      UT24                             103°    8
NEKTA         08:20  82.6   186°/038
      UT24                             104°   43
FJR           08:25  81.6   200°/040
WSSS20C       20:50  12.3T  6009NM
```

The F-PLN page also displays the pseudo waypoints, and the speed and altitude symbols.

A pseudo waypoint is displayed between parentheses, and has time, speed, altitude, and wind predictions. Some pseudo waypoints can be displayed in amber. For these pseudo waypoints, the amber color indicates that one or both of the following occur at the pseudo waypoint:
- The aircraft is above the FMS vertical path
- There is an overspeed.

A speed or altitude constraint is indicated with a star next to the speed or altitude prediction.

F-PLN Page - Pseudo Waypoints and Constraint Symbol

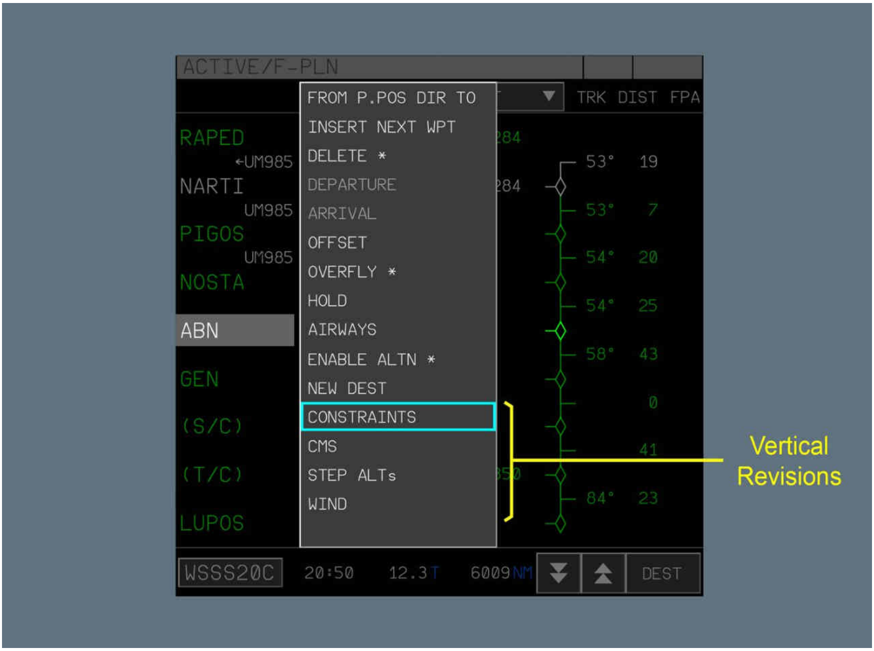

ACTIVE/F-PLN
Pseudo Waypoint
Altitude Constraint
Speed Constraint
DEST
INIT
F-PLN INFO ▲

FROM	UTC	SPD	ALT	TRK	DIST	FPA
LFBO14L	08:05	135	500			
H144°				144°	1	
800←	08:05	169	800			
C045°				45°	14	
D066M	08:09	*230	*FL055			
					10	
(SPDLIM)	08:12	*250	FL100			
AMOL5H				65°	11	
MEDAPΔ	08:13	330	FL118			
AMOL5H				104°	25	
AMOLO	08:17	"	*FL191			
UT24				104°	12	
DEGOL	08:19	"	FL216			
UT24				103°	8	
NEKTA	08:20	"	FL229			
UT24				104°	43	
FJR	08:25	"	FL284			

WSSS20C 20:50 12.3T 6009NM

The flight crew can access all vertical revisions via the F-PLN page:
- By directly clicking on the time, speed, altitude, or wind prediction, or
- Via the waypoint revisions menu.

Waypoint Revisions Menu - Vertical Revisions


ACTIVE/F-PLN
TRK DIST FPA
RAPED
←UM985
NARTI
UM985
PIGOS
UM985
NOSTA
ABN
GEN
(S/C)
(T/C)
LUPOS
FROM P.POS DIR TO
INSERT NEXT WPT
DELETE *
DEPARTURE
ARRIVAL
OFFSET
OVERFLY *
HOLD
AIRWAYS
ENABLE ALTN *
NEW DEST
CONSTRAINTS
CMS
STEP ALTs
WIND
53° 19
53° 7
54° 20
54° 25
58° 43
0
41
84° 23
WSSS20C
20:50
12.3T
6009NM
DEST
Vertical Revisions

For more information about the F-PLN page, *Refer to DSC-22-FMS-20-20-20 F-PLN Page*.

ON THE ND

The upper part of the ND displays pseudo waypoints, and speed and altitude constraints. The flight crew can control the display of this data via the EFIS CP.
The VD displays the profile of the vertical flight plan in relation to weather, terrain, and safety altitudes data.
No vertical revisions are possible via the ND.

Intentionally left blank

Lateral Revisions

OVERVIEW

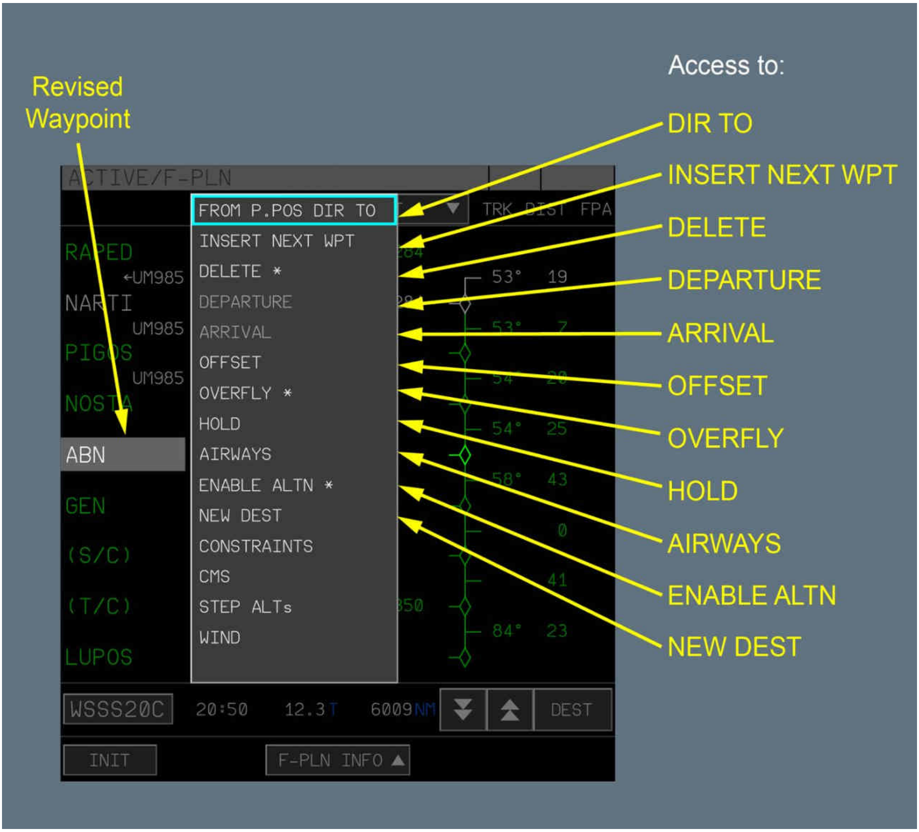
Ident.: DSC-22-FMS-10-40-20-00003600.0001001 / 14 APR 14
Applicable to: ALL

A change to the lateral flight plan is referred to as a lateral revision.

A lateral revision can applies:
- From a specific flight-plan waypoint that is referred to as the revised waypoint, or
- To the entire flight plan.

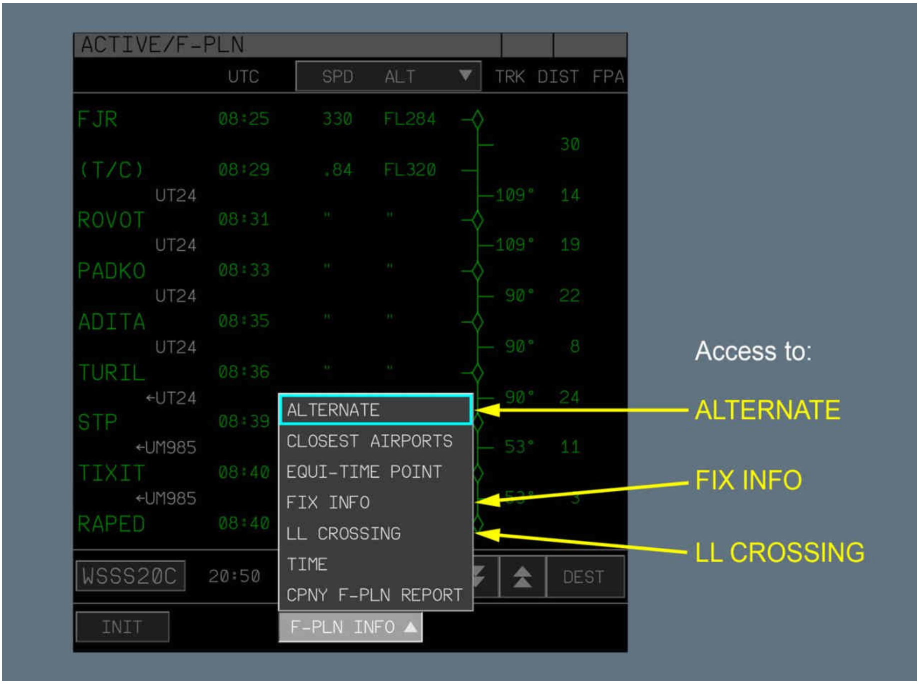
The flight crew can access all lateral revisions via the F-PLN page on the MFD.
To access a lateral revision that applies from a specific flight-plan waypoint, the flight crew clicks on the revised waypoint. The waypoint revisions menu opens.

Waypoint Revisions Menu


Revised Waypoint
Access to:
DIR TO
INSERT NEXT WPT
DELETE
DEPARTURE
ARRIVAL
OFFSET
OVERFLY
HOLD
AIRWAYS
ENABLE ALTN
NEW DEST
ACTIVE/F-PLN
FROM P.POS DIR TO
INSERT NEXT WPT
DELETE *
DEPARTURE
ARRIVAL
OFFSET
OVERFLY *
HOLD
AIRWAYS
ENABLE ALTN *
NEW DEST
CONSTRAINTS
CMS
STEP ALTs
WIND
TRK DIST FPA
RAPED
←UM985
NARTI
UM985
PIGOS
UM985
NOSTA
ABN
GEN
(S/C)
(T/C)
LUPOS
WSSS20C
20:50
12.3T
6009NM
DEST
INIT
F-PLN INFO

To access a lateral revision that applies to the entire flight plan, the flight crew clicks on the F-PLN INFO button. The F-PLN INFO menu opens.

F-PLN INFO Menu



ACTIVE/F-PLN

	UTC	SPD	ALT	TRK	DIST	FPA
FJR	08:25	330	FL284			
					30	
(T/C)	08:29	.84	FL320			
UT24				109°	14	
ROVOT	08:31	"	"			
UT24				109°	19	
PADKO	08:33	"	"			
UT24				90°	22	
ADITA	08:35	"	"			
UT24				90°	8	
TURIL	08:36	"	"			
←UT24				90°	24	
STP	08:39					
←UM985				53°	11	
TIXIT	08:40					
←UM985				53°	3	
RAPED	08:40					

WSSS20C 20:50

ALTERNATE
CLOSEST AIRPORTS
EQUI-TIME POINT
FIX INFO
LL CROSSING
TIME
CPNY F-PLN REPORT
DEST
INIT
F-PLN INFO ▲
Access to:
ALTERNATE
FIX INFO
LL CROSSING

The flight crew can also access the DIR TO, INSERT NEXT WPT, and DELETE revisions via the interactive ND. To access these three lateral revisions, the flight crew clicks on the revised waypoint on the flight plan on the upper part of the ND. The waypoint revisions menu opens.

LATERAL REVISION AND SECONDARY FLIGHT PLAN

All lateral revisions (except DIR TO and FIX INFO) are available for the active and secondary flight plans.

DIR TO

Applicable to: ALL

Ident.: DSC-22-FMS-10-40-20-10-00003601.0001001 / 28 JUN 18

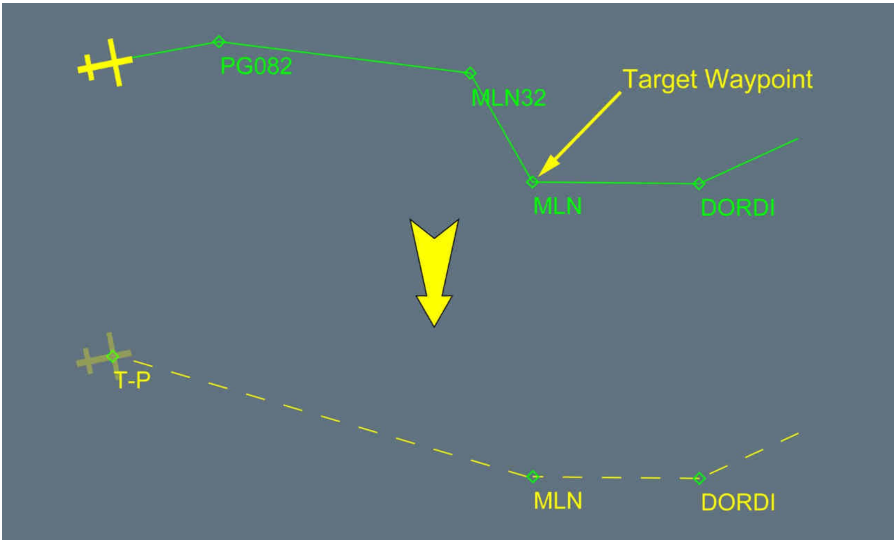
PURPOSE

The flight crew uses the DIR TO revision to create a direct (great circle) flight leg from the aircraft present position to:
- A flight plan waypoint
- Any navigation database waypoint, airport, or navaid
- A Latitude/Longitude (LL), Place/Bearing/Distance (PBD), or Place-Bearing/Place-Bearing (PB/PB) waypoint.

A DIR TO a flight plan waypoint creates a direct flight leg between the aircraft present position and the selected target waypoint. The flight plan waypoints between the aircraft present position and the selected target waypoint are deleted.

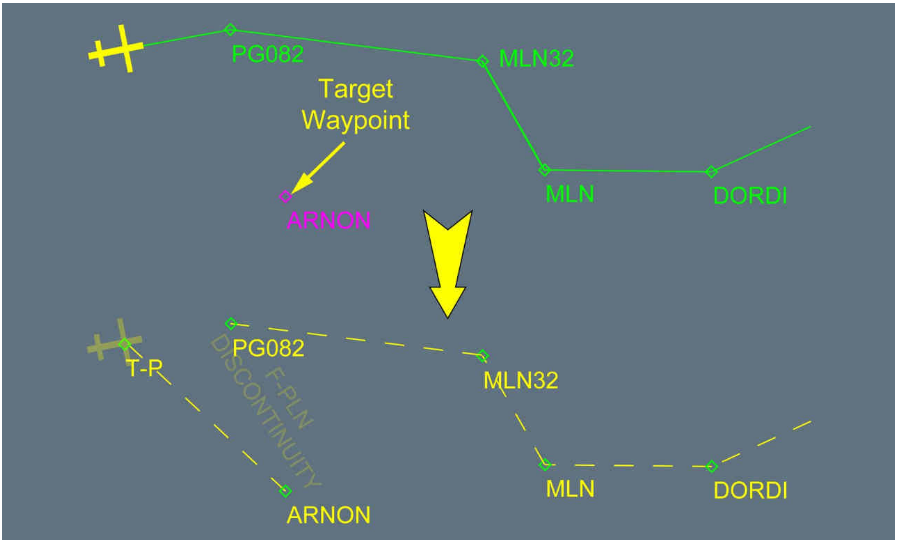
Note: *A lateral revision of the flight path obtained with a DIR TO may also affect the vertical profile of the flight plan.*

DIR TO a Flight Plan Waypoint



A DIR TO any other waypoint, that is not on the flight plan, creates a direct flight leg between the aircraft present position and the selected target waypoint, and a flight plan discontinuity between the target waypoint and the former TO waypoint.

DIR TO a Waypoint that Is Not in the Flight Plan



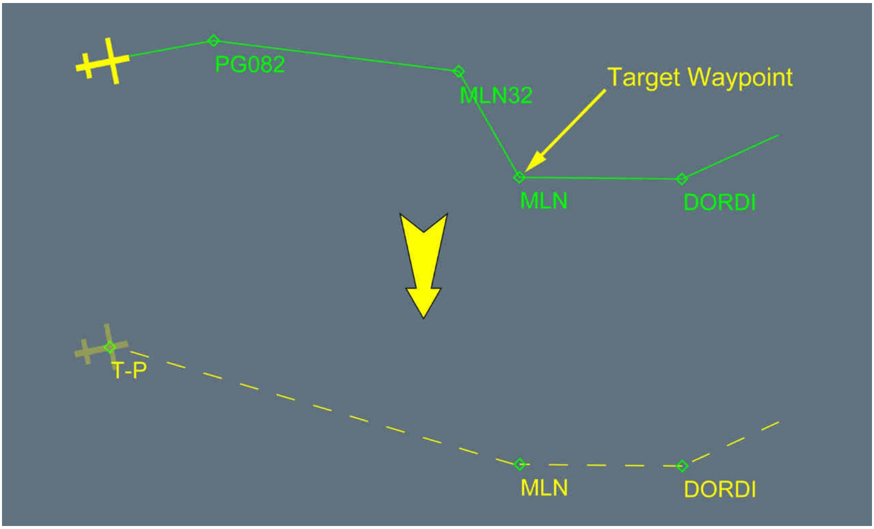
The flight crew has four options for creating the direct flight leg:

- DIR TO (DIRECT), or
- DIR TO with abeam points (DIRECT WITH ABEAM), or
- DIR TO with inbound course (CRS IN), or
- DIR TO with outbound course (CRS OUT).

DIRECT

This option creates a direct flight leg between the aircraft present position and the selected target waypoint.
If the lateral mode is HDG/TRACK or LOC, the NAV mode automatically engages when the DIR TO - DIRECT is inserted.

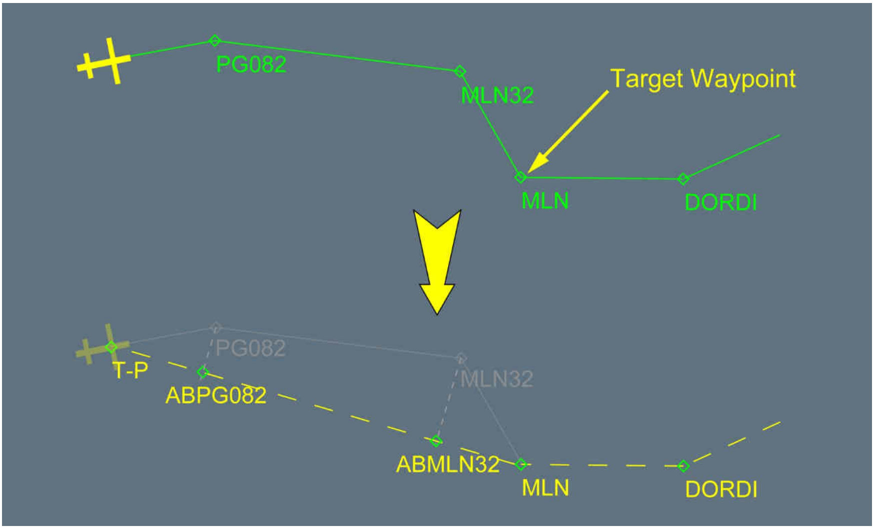
DIRECT



DIRECT WITH ABEAM

This option creates abeam waypoints along the direct flight leg. Abeam waypoints are the projections of the flight plan waypoints on the direct flight leg, that are between the aircraft present position and the selected target waypoint. The initial flight plan waypoints are deleted.
If the lateral mode is HDG/TRACK or LOC, the NAV mode automatically engages when the DIR TO - DIRECT WITH ABEAM is inserted.

DIRECT WITH ABEAM



L2 Abeam waypoints are part of the flight plan, but are not stored in the pilot-stored elements database. This means that the abeam waypoints can be used for every flight plan revision (except AIRWAYS), until they are sequenced. As soon as they are sequenced, they are no longer memorized by the FMS.

L3 When a latitude/longitude crossing, circle/radial intersection, or abeam waypoint is projected, it is recomputed by using the initial latitude/longitude and reference fix waypoint.
Speed and altitude constraints are transferred to the abeam waypoint.
Time constraint is not transferred to the abeam waypoint.
Wind data is transferred, when the distance between the abeam and the initial waypoint is less than 100 NM.

L1 CRS IN

This option creates a direct flight leg from the aircraft present position to intersect an inbound course (selected by the flight crew) of the target waypoint.
The track of the direct flight leg is the current aircraft track.

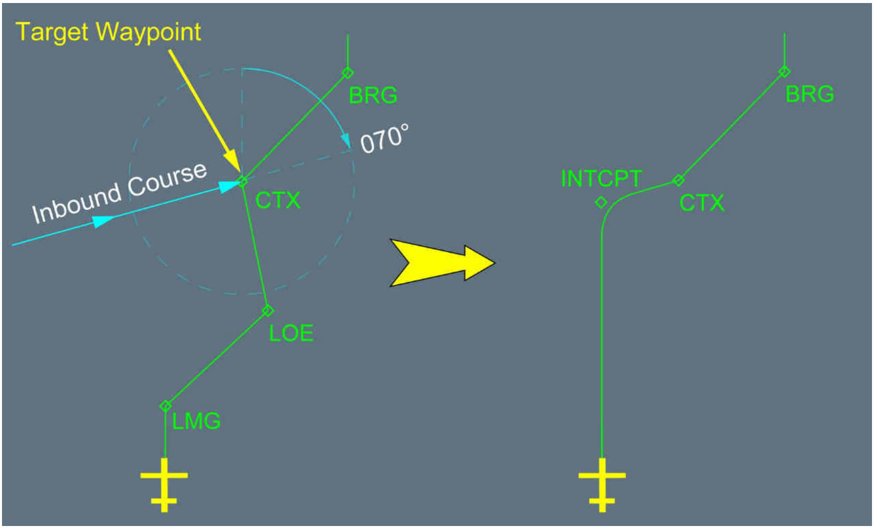
If the angle between the direct flight leg and the inbound course is less than 160 °:
- The FMS computes an intersection point
  This intersection point is the INTCPT waypoint.
- The lateral HDG/TRACK mode is engaged, and NAV is armed.

Note: *1. The INTCPT waypoint is recomputed, when the flight crew changes the aircraft track.*
2. The NAV mode engages automatically, when INTCPT is sequenced.

If the angle between the direct flight leg and the inbound course is more than 160 °:
- No intersection point is computed
- The lateral HDG/TRACK mode is engaged, and NAV is armed.

Note:
- *NAV mode does not engage, if the angle between the direct flight leg and the inbound course remains more than 160 °.*
- *Depending on the aircraft position, an automatic flight plan waypoint sequencing can occur. For more information about the waypoint sequencing, Refer to DSC-22-FMS-10-40-10 Flight Plan Waypoints.*

CRS IN



L2 When the flight crew inserts a DIR TO - CRS IN, the ADJUST DESIRED TRK OR HDG message is displayed.

This message informs the flight crew that it is possible to adjust the aircraft heading/track:
- To enable the computation of the INTCPT waypoint (if, after the heading/track change, the intersection angle becomes less than 160 °), or
- To change the position of the INTCPT waypoint (if it was previously computed).

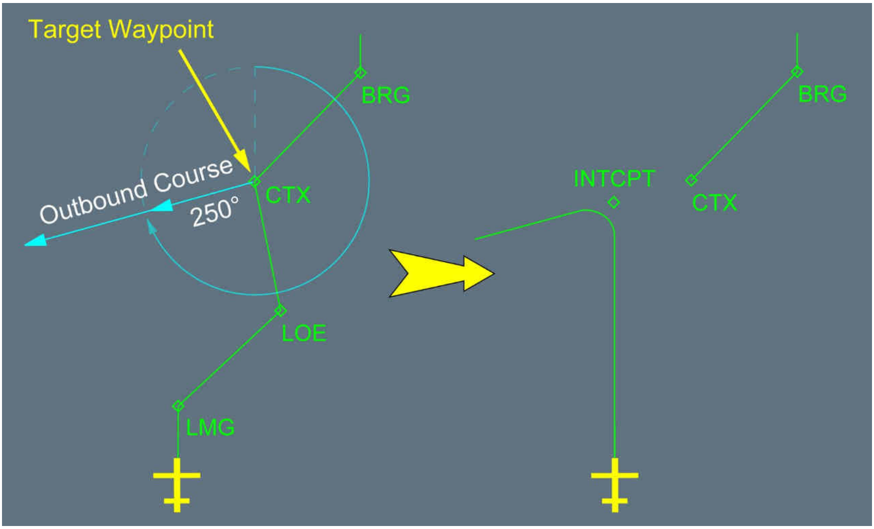
L1 CRS OUT

This option creates a direct flight leg from the aircraft present position to intersect an outbound course (selected by the flight crew) of the target waypoint.
The track of the direct flight leg is the current aircraft track.

If the direct flight leg is not parallel with the outbound course:
- The FMS computes an intersection point
  This intersection point is the INTCPT waypoint.
- The lateral HDG/TRK mode is engaged, and NAV is armed.

Note: 1. *The INTCPT waypoint is recomputed, when the flight crew changes the aircraft track.*
2. *The NAV mode automatically engages, when INTCPT is sequenced.*
3. *When INTCPT is sequenced, the aircraft is on the selected outbound-course flight leg, that is a manual flight leg (Refer to DSC-22-FMS-10-40-10 Flight Legs).*

CRS OUT



L2 When the flight crew inserts a DIR TO - CRS OUT, the ADJUST DESIRED TRK OR HDG message is displayed.
This message informs the flight crew that it is possible to adjust the aircraft heading/track, to change the position of the INTCPT waypoint (if it was previously computed).

DIR TO REVISION AND SECONDARY FLIGHT PLAN

The DIR TO revision is not available for the secondary flight plans.

DIR TO REVISION AND TEMPORARY FLIGHT PLAN

The DIR TO revision creates a temporary flight plan.
No other revisions can be made on this temporary flight plan.

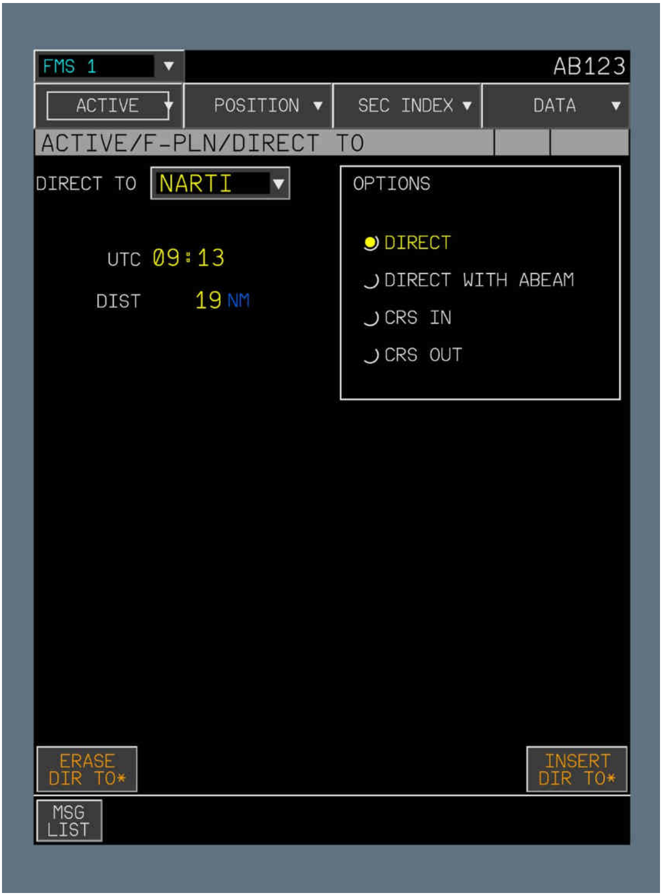
Ident.: DSC-22-FMS-10-40-20-10-00003614.0001001 / 14 APR 14

CONTROLS AND INDICATORS

ON THE MFD

The flight crew can insert a DIR TO flight leg on the DIRECT TO page.

DIRECT TO Page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ERASE DIR TO*
INSERT DIR TO*
MSG LIST

ACTIVE/F-PLN/DIRECT TO

DIRECT TO NARTI

UTC 09:13

DIST 19 NM

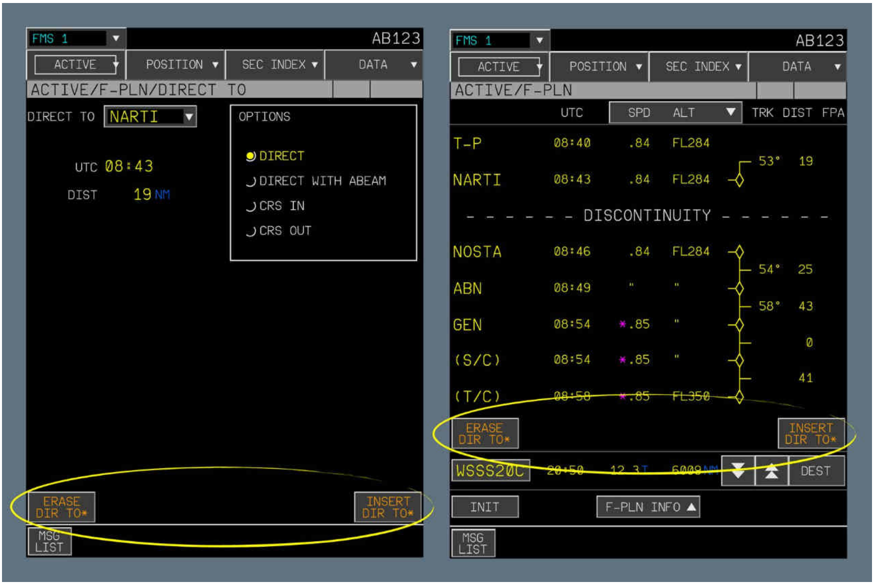
OPTIONS

● DIRECT
○ DIRECT WITH ABEAM
○ CRS IN
○ CRS OUT

For more information about the DIRECT TO page, *Refer to DSC-22-FMS-20-20-20 DIRECT TO Page*.

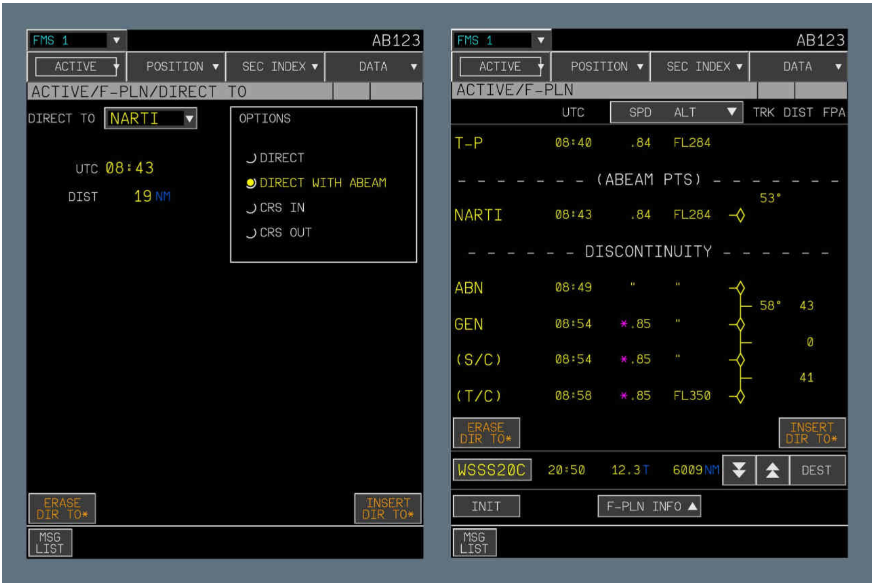
The temporary flight plan, created by the DIR TO revision, can be inserted via the DIRECT TO page or F-PLN page.

Insert DIR TO


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN/DIRECT TO
DIRECT TO NARTI
UTC 08:43
DIST 19 NM
OPTIONS
DIRECT
DIRECT WITH ABEAM
CRS IN
CRS OUT
ERASE DIR TO*
INSERT DIR TO*
MSG LIST
FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN
UTC
SPD
ALT
TRK
DIST
FPA
T-P 08:40 .84 FL284
53° 19
NARTI 08:43 .84 FL284
DISCONTINUITY
NOSTA 08:46 .84 FL284
54° 25
ABN 08:49 " "
58° 43
GEN 08:54 *.85 "
0
(S/C) 08:54 *.85 "
41
(T/C) 08:58 *.85 FL350
ERASE DIR TO*
INSERT DIR TO*
WSSS20C 20:50 12.3T 6009 NM
DEST
INIT
F-PLN INFO
MSG LIST

For more information about the F-PLN page, *Refer to DSC-22-FMS-20-20-20 F-PLN Page*.
The abeam waypoints of a DIR TO - DIRECT WITH ABEAM are not displayed in the temporary flight plan. The ABEAM PTS label is displayed between the Turn Point (T-P) and the target waypoint. When the temporary flight plan is inserted, the label disappears and the abeam waypoints appear.

Insert DIR TO - DIRECT WITH ABEAM


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
OPTIONS
ERASE DIR TO*
INSERT DIR TO*
MSG LIST
INIT
F-PLN INFO
DEST

ACTIVE/F-PLN/DIRECT TO

DIRECT TO NARTI

UTC 08:43

DIST 19 NM

○ DIRECT
● DIRECT WITH ABEAM
○ CRS IN
○ CRS OUT

ACTIVE/F-PLN

	UTC	SPD	ALT	TRK	DIST	FPA
T-P	08:40	.84	FL284			
(ABEAM PTS)						
NARTI	08:43	.84	FL284	53°		
DISCONTINUITY						
ABN	08:49	"	"			
GEN	08:54	*.85	"	58°	43	
(S/C)	08:54	*.85	"		0	
(T/C)	08:58	*.85	FL350		41	

WSSS20C 20:50 12.3T 6009NM

Ident.: DSC-22-FMS-10-40-20-10-00003615.0001001 / 14 APR 14

ASSOCIATED MESSAGES

On the MFD, the FMS message area displays the following message: ADJUST DESIRED TRK OR HDG (*Refer to message*).

INSERT NEXT WPT

Applicable to: ALL

Ident.: DSC-22-FMS-10-40-20-20-00003602.0001001 / 14 APR 14

PURPOSE

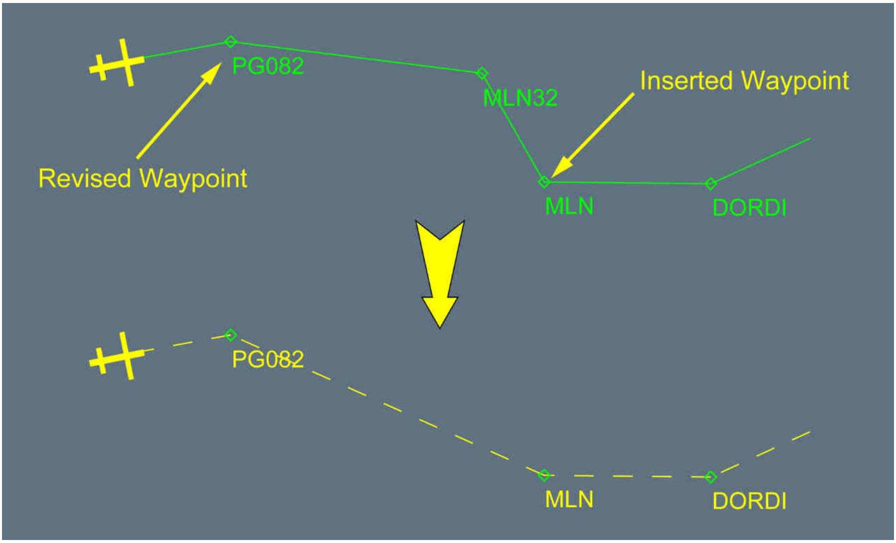
The flight crew uses the INSERT NEXT WPT revision to insert a waypoint after the revised waypoint.

The flight crew can insert:
- A flight plan waypoint
- Any navigation database waypoint, airport, or navaid
- A Latitude/Longitude (LL), a Place/Bearing/Distance (PBD), a Place-Bearing/Place-Bearing (PB/PB), or a Place/Distance (PD) waypoint.

L2 *Note:* *1. A PD waypoint, with a negative distance (e.g: LMG/-15), is inserted "before" the revised waypoint*
2. The "place" waypoint needs to be the revised waypoint.
3. The distance of the PD waypoint is limited so that the PD cannot be before (after) the waypoint that precedes (follows) the revised waypoint.

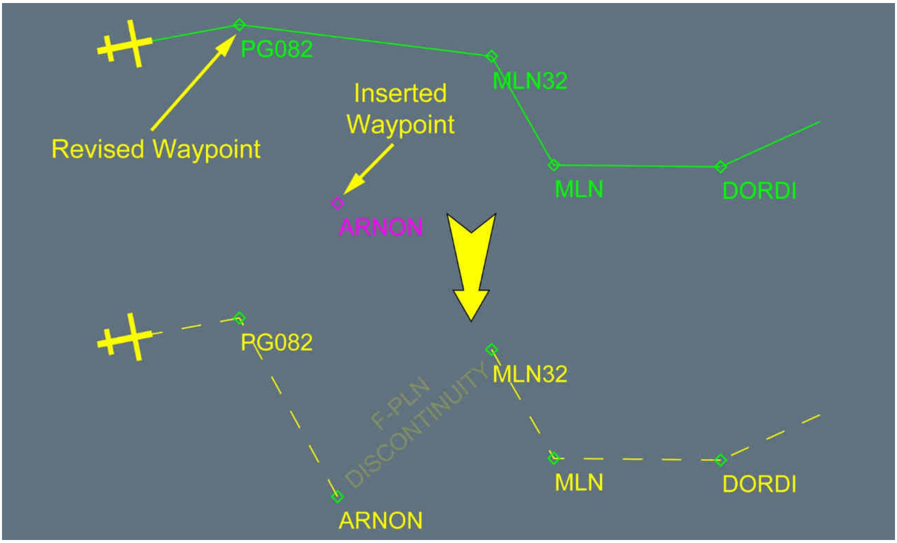
L1 If the flight crew inserts a flight plan waypoint, a direct flight leg is created between the revised waypoint and the inserted waypoint. All waypoints between the revised waypoint and the inserted waypoint are deleted.

Insert a Flight Plan Waypoint



If the flight crew inserts a waypoint that is not in the flight plan, a direct flight leg is created between the revised waypoint and the inserted waypoint, and a flight plan discontinuity is created after the inserted waypoint.

Insert a Waypoint that Is Not in the Flight Plan


PG082
MLN32
Inserted Waypoint
Revised Waypoint
MLN
DORDI
ARNON
PG082
MLN32
F-PLN DISCONTINUITY
MLN
DORDI
ARNON

L2 The flight crew can insert a waypoint on any waypoint of the flight plan. To insert a waypoint on the FROM waypoint, the flight crew must first engage the HDG/TRK mode.

INSERT NEXT WPT REVISION AND SECONDARY FLIGHT PLAN

The INSERT NEXT WPT revision is available for the active (or temporary) flight plan, and for the secondary flight plans.

INSERT NEXT WPT REVISION AND TEMPORARY FLIGHT PLAN

The INSERT NEXT WPT revision creates a temporary flight plan.

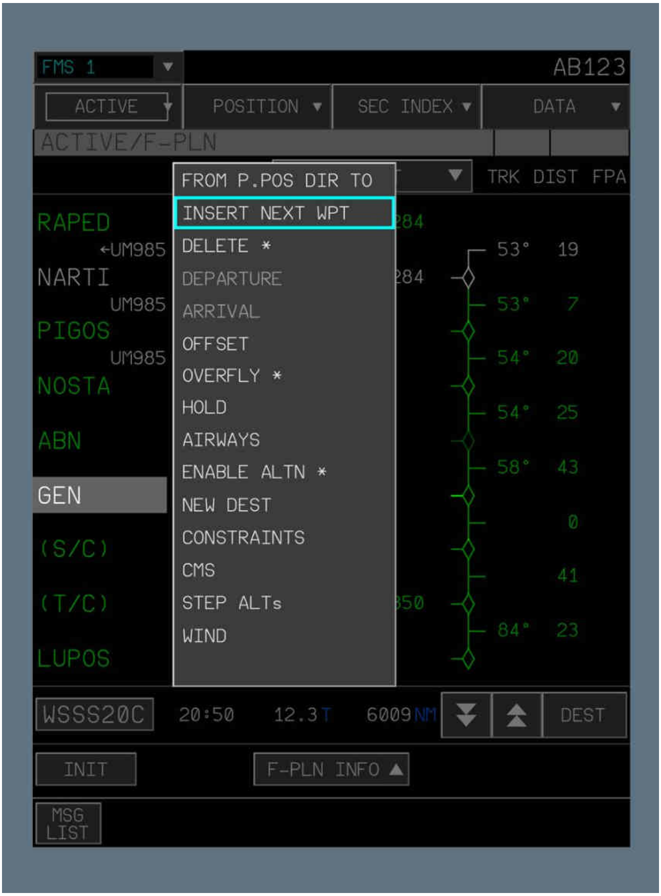
Ident.: DSC-22-FMS-10-40-20-20-00003617.0001001 / 14 APR 14

CONTROLS AND INDICATORS

ON THE MFD

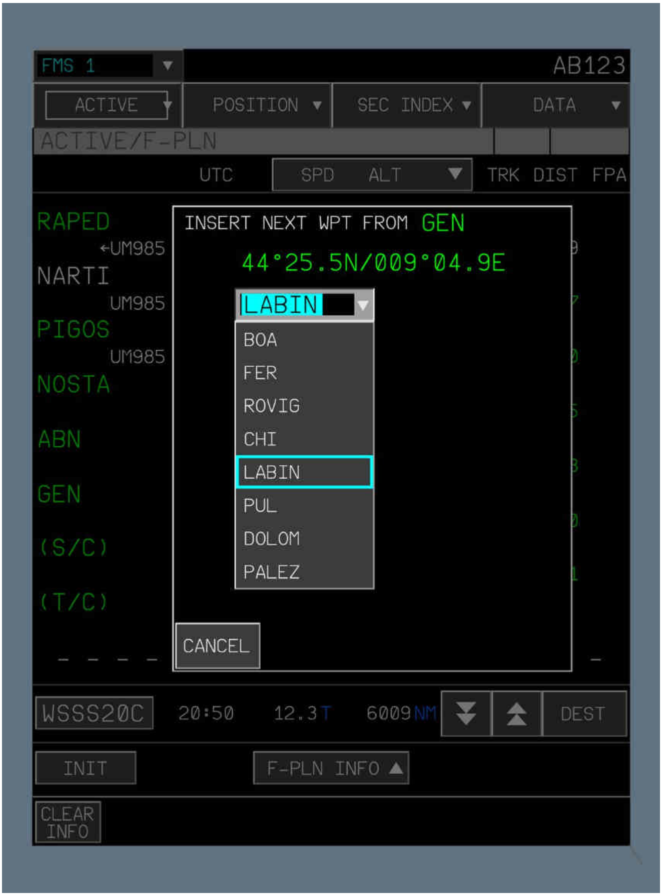
The INSERT NEXT WPT revision is the second revision in the waypoint revisions menu on the F-PLN page.

Waypoint Revisions Menu - INSERT NEXT WPT


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN
FROM P.POS DIR TO
INSERT NEXT WPT
DELETE *
DEPARTURE
ARRIVAL
OFFSET
OVERFLY *
HOLD
AIRWAYS
ENABLE ALTN *
NEW DEST
CONSTRAINTS
CMS
STEP ALTs
WIND
TRK DIST FPA
RAPED
←UM985
NARTI
UM985
PIGOS
UM985
NOSTA
ABN
GEN
(S/C)
(T/C)
LUPOS
53° 19
53° 7
54° 20
54° 25
58° 43
0
41
84° 23
WSSS20C
20:50
12.3T
6009NM
DEST
INIT
F-PLN INFO
MSG LIST

When the flight crew selects the INSERT NEXT WPT revision, the INSERT NEXT WPT window appears on the F-PLN page.

INSERT NEXT WPT Window


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN
UTC
SPD ALT
TRK DIST FPA
RAPED
←UM985
NARTI
UM985
PIGOS
UM985
NOSTA
ABN
GEN
(S/C)
(T/C)
INSERT NEXT WPT FROM GEN
44°25.5N/009°04.9E
LABIN
BOA
FER
ROVIG
CHI
LABIN
PUL
DOLOM
PALEZ
CANCEL
WSSS20C
20:50
12.3T
6009NM
DEST
INIT
F-PLN INFO
CLEAR INFO

For more information about the INSERT NEXT WPT window, *Refer to DSC-22-FMS-20-20-20 INSERT NEXT WPT Window*.

DELETE

Applicable to: ALL

Ident.: DSC-22-FMS-10-40-20-30-00003603.0001001 / 14 APR 14

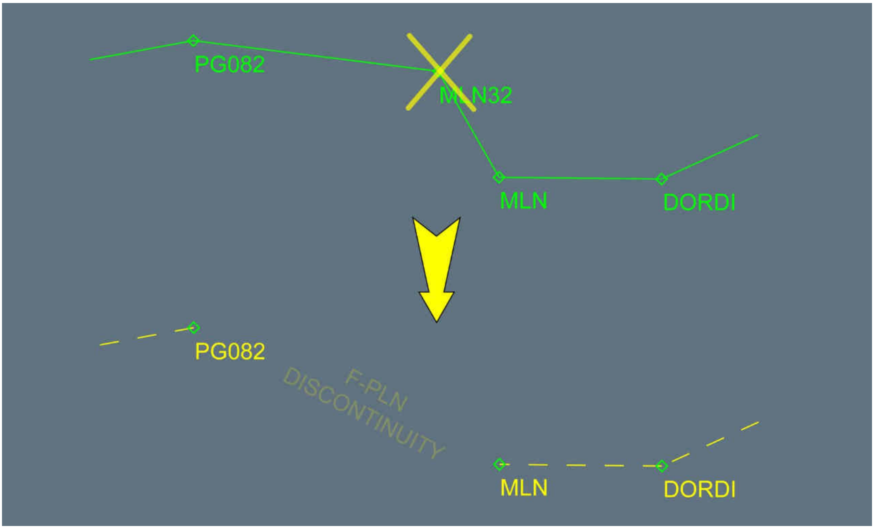
PURPOSE

The flight crew uses the DELETE revision to delete a flight plan waypoint or discontinuity.

DELETION OF A WAYPOINT

Deletion of a waypoint removes the waypoint from the flight plan and inserts a discontinuity in its place.

Deletion of a Waypoint



L2 In NAV mode, the flight crew can delete any waypoint on the flight plan, except the FROM and TO waypoint. To delete the FROM and TO waypoint, the flight crew must engage the HDG/TRACK mode first.

L3 *Note:*
1. *Deletion of the T-P, when an offset or holding pattern is active, removes the offset or the holding pattern from the flight plan.*
2. *Deletion of a holding fix removes the holding pattern from the flight plan, but does not create a discontinuity.*

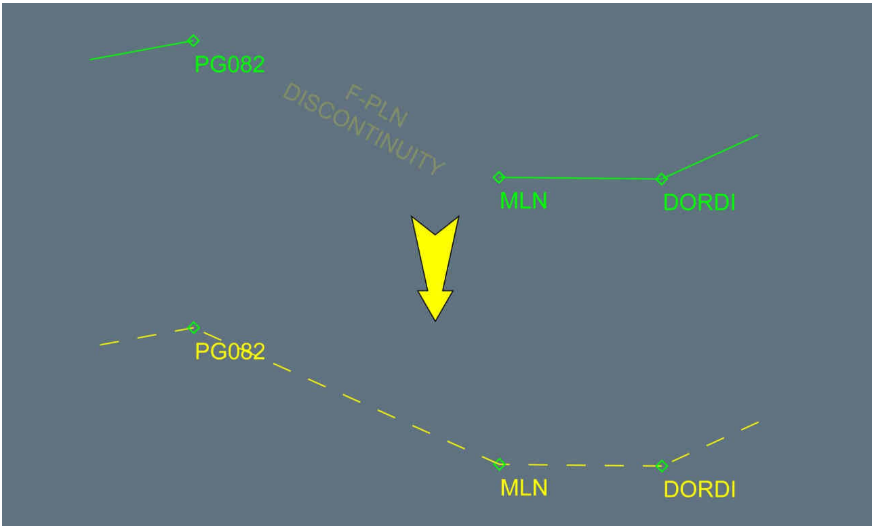
L1

DELETION OF A DISCONTINUITY

The deletion of a discontinuity:

- Removes the discontinuity from the flight plan
- Creates a direct flight leg between the waypoint that was before the discontinuity and the waypoint that was after the discontinuity.

Deletion of a Discontinuity



L2

The flight crew can delete any discontinuity in the flight plan, except a discontinuity after P.POS or a manual flight leg.

DELETE REVISION AND SECONDARY FLIGHT PLAN

The DELETE revision is available for the active (or temporary) flight plan, and for the secondary flight plans.

DELETE REVISION AND TEMPORARY FLIGHT PLAN

The deletion of a waypoint or discontinuity creates a temporary flight plan.

Ident.: DSC-22-FMS-10-40-20-30-00003619.0001001 / 14 APR 14

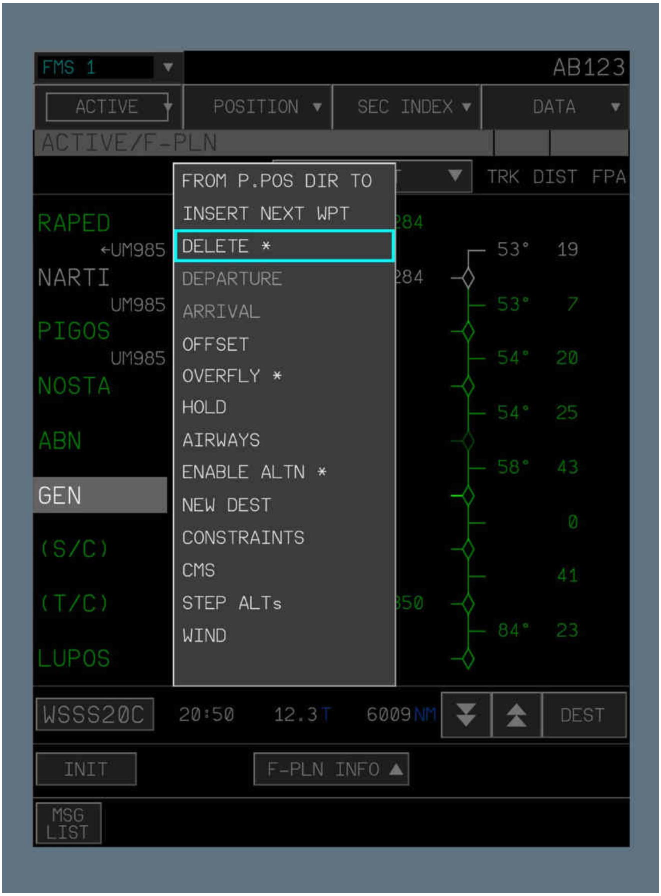
CONTROLS AND INDICATORS

The flight crew can delete a waypoint via the MFD or on the ND. However, a discontinuity can be deleted via the MFD only.

ON THE MFD

The DELETE revision is the third revision in the waypoint revisions menu on the F-PLN page.

Waypoint Revisions Menu - DELETE


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN
TRK DIST FPA
FROM P.POS DIR TO
INSERT NEXT WPT
DELETE *
DEPARTURE
ARRIVAL
OFFSET
OVERFLY *
HOLD
AIRWAYS
ENABLE ALTN *
NEW DEST
CONSTRAINTS
CMS
STEP ALTs
WIND
RAPED
←UM985
NARTI
UM985
PIGOS
UM985
NOSTA
ABN
GEN
(S/C)
(T/C)
LUPOS
284
284
350
53° 19
53° 7
54° 20
54° 25
58° 43
0
41
84° 23
WSSS20C
20:50
12.3T
6009NM
DEST
INIT
F-PLN INFO
MSG LIST

L2 For the waypoints that cannot be deleted, the DELETE revision is inhibited in the waypoint revisions menu.

L1 ON THE ND

The DELETE revision is the third revision in the waypoint revisions menu for a waypoint on the active (or temporary) and secondary flight plans.

For more information on the interactive ND - DELETE revision, *Refer to DSC-31-CDS-40-40-100 DELETE - Purpose*.

DEPARTURE

Applicable to: ALL

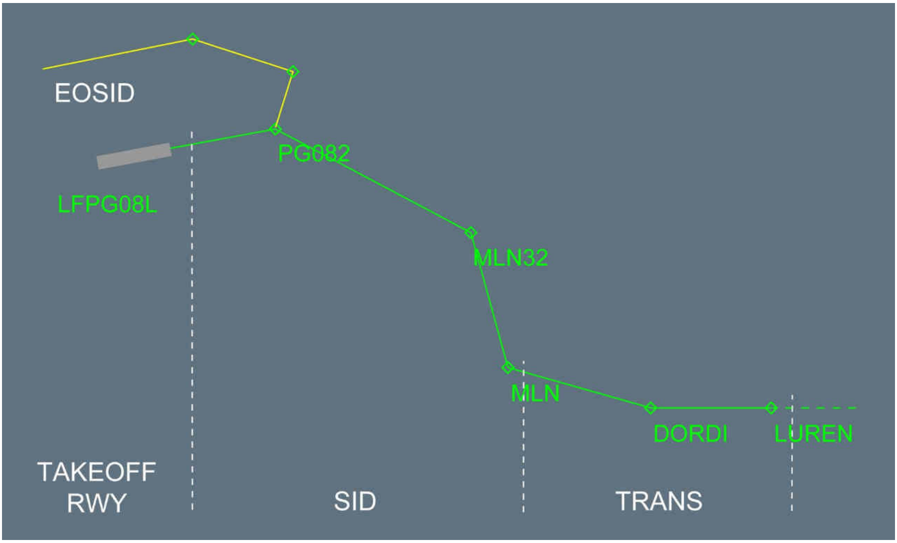
Ident.: DSC-22-FMS-10-40-20-40-00003621.0001001 / 14 APR 14

PURPOSE

The flight crew uses the DEPARTURE revision to insert, or change, the three following elements of the departure procedure:
- The takeoff runway (and the Engine-Out Standard Instrument Departure (EOSID))
- The Standard Instrument Departure (SID)
- The departure Transition (TRANS).

L2 The three above-mentioned elements are part of the navigation database (*Refer to DSC-22-FMS-10-20 Navigation Database*).

Departure Procedure



L1 The flight crew selects a compatible runway, SID, and TRANS. The FMS will connect the elements accordingly, starting with the takeoff runway, up to the en-route waypoints.

The flight crew can choose to have no SID and/or no TRANS, by selecting the NONE option.
This option is automatically selected if, for the selected takeoff runway, no SID and/or TRANS are available in the database.
If the flight crew chooses to have no SID, the FMS inserts a flight leg after the takeoff runway axis.
The flight leg stops at 1 500 ft AGL, and is followed by a discontinuity.

Note: *When a flight plan has a departure procedure (RWY+SID+TRANS), and the flight crew changes the RWY, the FMS may automatically change or delete some elements of the SID. As a result, if the flight crew changes the RWY, they should check all of the elements of the departure procedure, and correct them, if necessary.*

L3 HOW THE FMS CONNECTS THE DIFFERENT DEPARTURE ELEMENTS

The FMS searches for a waypoint of the next element (e.g. the TRANS), that is identical to the last waypoint of the previous element (e.g. the SID). The FMS connects the two elements (the SID and TRANS) at the common waypoint, and ignores all the waypoints of the next element (the TRANS) before the common point.
If no common waypoint is found between the departure procedure and the en-route flight plan, a discontinuity is inserted between them.

L2 DEPARTURE REVISION AND SECONDARY FLIGHT PLAN

The DEPARTURE revision is available for the active (or temporary) flight plan, and for the secondary flight plans.

DEPARTURE REVISION AND TEMPORARY FLIGHT PLAN

The insertion of the entire departure procedure, or a change to an element of the departure procedure, creates a temporary flight plan. In both cases, the entire DEPARTURE revision is considered as a single lateral revision.

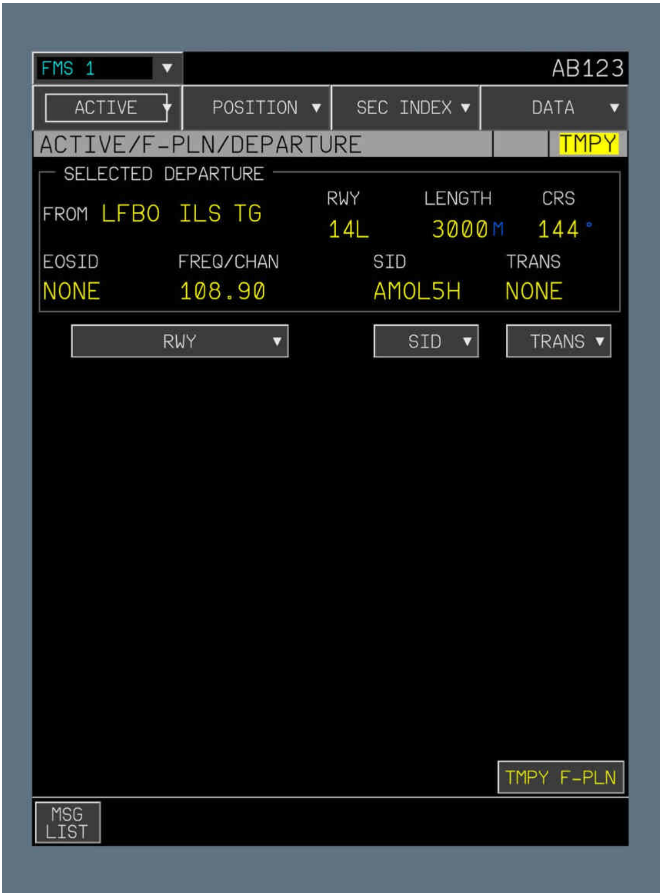
Ident.: DSC-22-FMS-10-40-20-40-00003622.0001001 / 14 APR 14

CONTROLS AND INDICATORS

ON THE MFD

The flight crew can insert, or change, the departure procedure on the DEPARTURE page.

DEPARTURE Page



ACTIVE/F-PLN/DEPARTURE

SELECTED DEPARTURE

FROM LFBO ILS TG

RWY	LENGTH	CRS
14L	3000 M	144 °

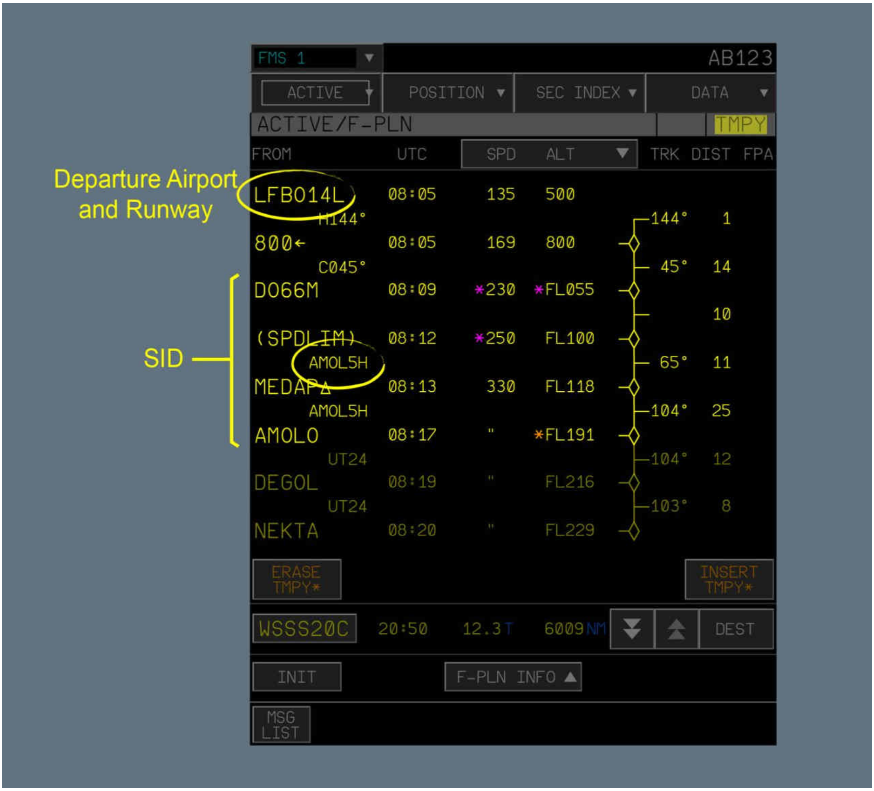
EOSID	FREQ/CHAN	SID	TRANS
NONE	108.90	AMOL5H	NONE

For more information about the DEPARTURE page, *Refer to DSC-22-FMS-20-20-20 DEPARTURE Page*.

The flight crew can access the DEPARTURE page via the F-PLN page, by selecting the DEPARTURE revision in the waypoint revisions menu of the:
- Departure airport
- Destination airport, if there is an alternate flight plan.

The flight crew checks the result of the departure selection on the F-PLN page.

F-PLN Page


Departure Airport and Runway
SID
FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN
TMPY
ERASE TMPY*
INSERT TMPY*
DEST
INIT
F-PLN INFO
MSG LIST

FROM	UTC	SPD	ALT	TRK	DIST	FPA
LFBO14L	08:05	135	500			
H144°				144°	1	
800←	08:05	169	800			
C045°				45°	14	
D066M	08:09	*230	*FL055			
					10	
(SPDLIM)	08:12	*250	FL100			
AMOL5H				65°	11	
MEDAPΔ	08:13	330	FL118			
AMOL5H				104°	25	
AMOLO	08:17	"	*FL191			
UT24				104°	12	
DEGOL	08:19	"	FL216			
UT24				103°	8	
NEKTA	08:20	"	FL229			

WSSS20C 20:50 12.3T 6009NM

For more information about the F-PLN page, *Refer to DSC-22-FMS-20-20-20 F-PLN Page*.

ON THE ND

The departure procedure is graphically displayed on the ND.

ARRIVAL

Applicable to: ALL

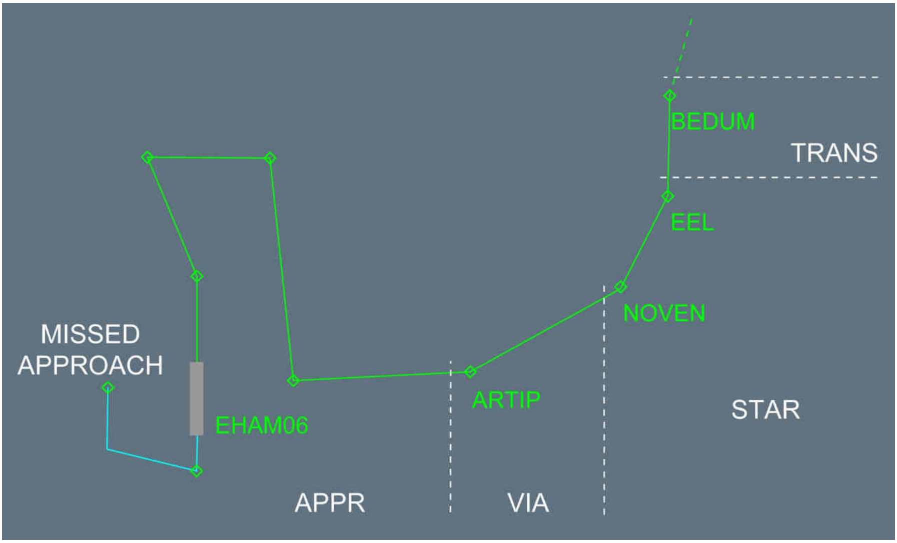
Ident.: DSC-22-FMS-10-40-20-50-00003604.0001001 / 14 APR 14

PURPOSE

The flight crew uses the ARRIVAL revision to insert, or change, the following four elements of the arrival procedure:
- The final Approach (APPR), that includes the landing runway and missed approach
- The approach transition (VIA)
- The Standard Terminal Arrival Route (STAR)
- The arrival Transition (TRANS).

L2 The four above-mentioned elements are part of the navigation database (*Refer to DSC-22-FMS-10-20 Navigation Database*).

Arrival Procedure



L1 The flight crew selects a compatible approach: STAR, VIA, and TRANS. The FMS will connect the elements accordingly, starting with the en-route waypoints, up to the landing runway.
The flight crew can choose to have no STAR, no VIA and/or no TRANS, by selecting the NONE option. This option is automatically selected if, for the selected landing runway, no STAR, VIA and/or TRANS are available in the database.

Note: *When a flight plan has an arrival procedure (APPR+VIA+STAR+TRANS), and the flight crew changes the APPR, the FMS may automatically change or delete some elements of the VIA or STAR. As a result, if the flight crew changes the APPR, they should check all of the elements of the arrival procedure, and correct them, if necessary.*

L3 HOW THE FMS CONNECTS THE DIFFERENT ARRIVAL ELEMENTS

The FMS searches for a waypoint of the next element (e.g. the STAR), that is identical to the last waypoint of the previous element (e.g. the TRANS). The FMS connects the two elements (the STAR and the TRANS) at the common waypoint, and disregards all the waypoints of the next element (the STAR) before the common point.
If no common waypoint is found between two elements, a discontinuity is inserted between them.

L2 ARRIVAL REVISION AND SECONDARY FLIGHT PLAN

The ARRIVAL revision is available for the active (or temporary) flight plan, and for the secondary flight plans.

ARRIVAL REVISION AND TEMPORARY FLIGHT PLAN

The selection of the entire arrival procedure, or a change to an element of the arrival procedure, creates a temporary flight plan. In both cases, the entire ARRIVAL revision is considered as a single lateral revision.

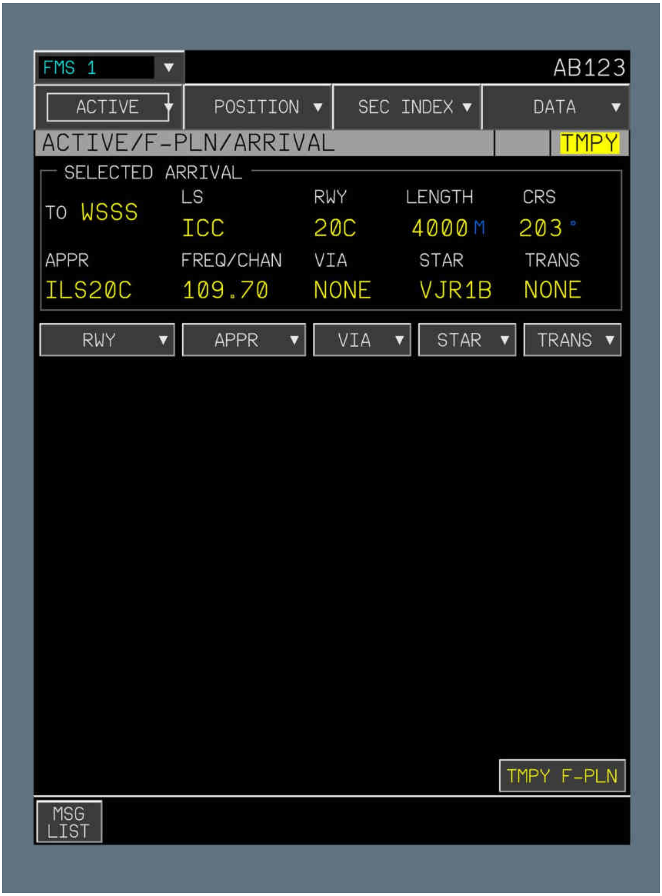
Ident.: DSC-22-FMS-10-40-20-50-00003624.0001001 / 14 APR 14

CONTROLS AND INDICATORS

ON THE MFD

The flight crew can insert, or change, the arrival procedure on the ARRIVAL page.

ARRIVAL Page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN/ARRIVAL
TMPY
RWY
APPR
VIA
STAR
TRANS
TMPY F-PLN
MSG LIST

SELECTED ARRIVAL

TO	LS	RWY	LENGTH	CRS
WSSS	ICC	20C	4000M	203°

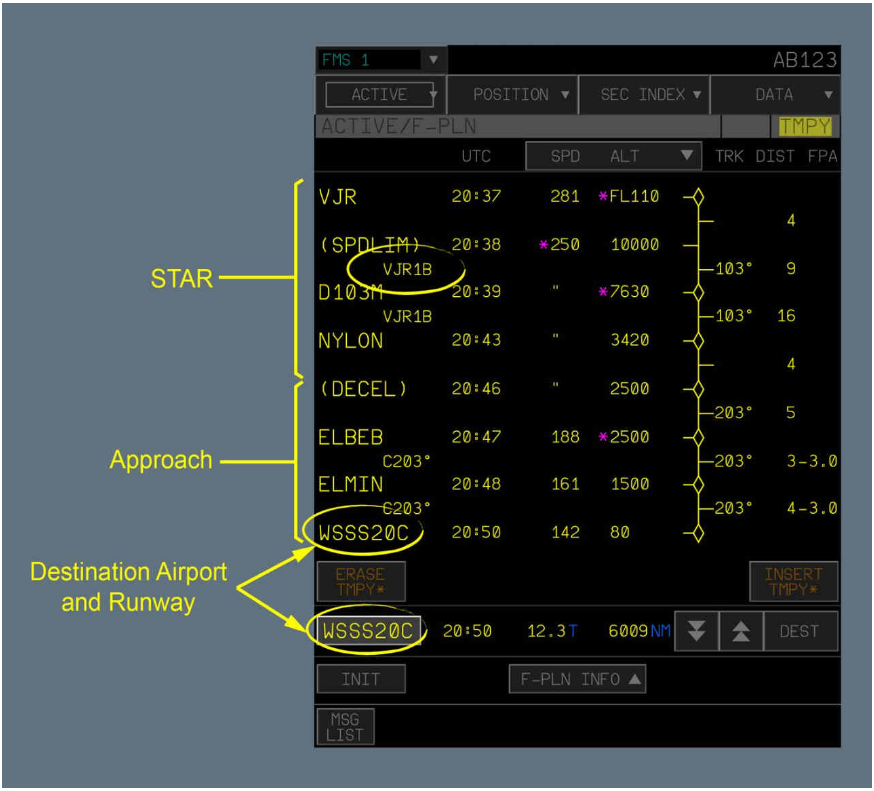
APPR	FREQ/CHAN	VIA	STAR	TRANS
ILS20C	109.70	NONE	VJR1B	NONE

For more information about the ARRIVAL page, *Refer to DSC-22-FMS-20-20-20 ARRIVAL Page*.

The flight crew can access the ARRIVAL page via the F-PLN page, by selecting the ARRIVAL revision in the waypoint revisions menu of the destination (or alternate) airport, or by clicking directly on the destination airport of the destination zone, at the bottom of the F-PLN page.

The flight crew can check the result of the arrival selection on the F-PLN page.

F-PLN Page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN
TMPY
STAR
Approach
Destination Airport and Runway
ERASE TMPY*
INSERT TMPY*
DEST
INIT
F-PLN INFO
MSG LIST

	UTC	SPD	ALT	TRK	DIST	FPA
VJR	20:37	281	*FL110			
					4	
(SPDLIM)	20:38	*250	10000			
VJR1B				103°	9	
D103M	20:39	"	*7630			
VJR1B				103°	16	
NYLON	20:43	"	3420			
					4	
(DECEL)	20:46	"	2500			
				203°	5	
ELBEB	20:47	188	*2500			
C203°				203°	3	-3.0
ELMIN	20:48	161	1500			
C203°				203°	4	-3.0
WSSS20C	20:50	142	80			

WSSS20C 20:50 12.3T 6009NM

For more information about the F-PLN page, *Refer to DSC-22-FMS-20-20-20 F-PLN Page*.

ON THE ND

The arrival procedure is graphically displayed on the ND.

OFFSET

Applicable to: ALL

Ident.: DSC-22-FMS-10-40-20-60-00003605.0001001 / 06 JAN 20

PURPOSE

The flight crew uses the OFFSET revision to create a parallel path from the original lateral flight plan. The offset is defined by:

- The start waypoint

L2 The start waypoint on the flight plan is where the aircraft leaves the original flight plan to join the offset path. The start waypoint may be the aircraft present position.

L1 - The end waypoint

L2 The end waypoint on the flight plan is the first point where the aircraft is back on the original flight path.

L1 - The lateral offset distance

L2 The lateral offset distance is the lateral distance between the offset path and the original flight plan.

L1 - The offset side

L2 The offset path may either be to the left or to the right of the original flight plan. The offset side indicates the location of this offset path.

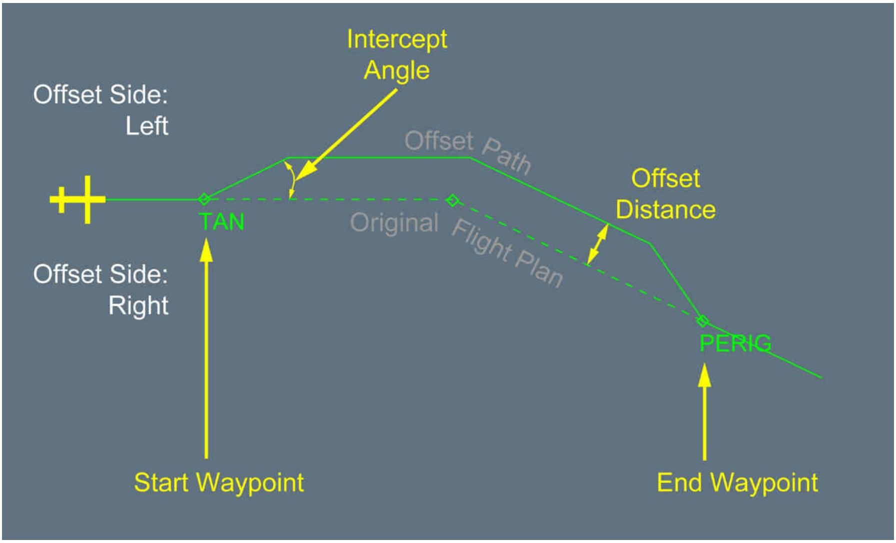
L1 - The intercept angle.

L2 The offset intercept angle is the angle between the original flight plan and the transition trajectory from the original flight plan to the offset path (or vice versa).

L12

Note: *The transition trajectory between the original flight plan and the offset path can be along more than one flight leg, if necessary.*
The insertion of an offset near a lateral turn may cancel the benefit of the offset turn anticipation because the aircraft may overshoot the offset path.

OFFSET Revision


Intercept Angle
Offset Side: Left
Offset Path
Offset Distance
TAN
Original Flight Plan
Offset Side: Right
PERIG
Start Waypoint
End Waypoint

L1 The flight crew can create only one offset path in the flight plan.
The flight crew can delete an existing offset, even if the aircraft is already flying the offset trajectory.

The flight crew can modify the offset:
- Before entering the offset trajectory
- Before flying the last leg of the offset trajectory.

Once the aircraft is flying the last leg of the offset, the flight crew should not modify the offset. If the offset is modified, the flight path will display an overshoot of the final waypoint. If this occurs, the final leg can be flown manually or exited by using one of the DIR TO functions.

Note: An existing offset path is automatically deleted if a revision of a flight plan causes the offset path to be no longer possible (for example: deletion of the start and the end waypoint).

L2 OFFSET REVISION AND SECONDARY FLIGHT PLAN

The OFFSET revision is available for the active (or temporary) flight plan, and for the secondary flight plans.

OFFSET REVISION AND TEMPORARY FLIGHT PLAN

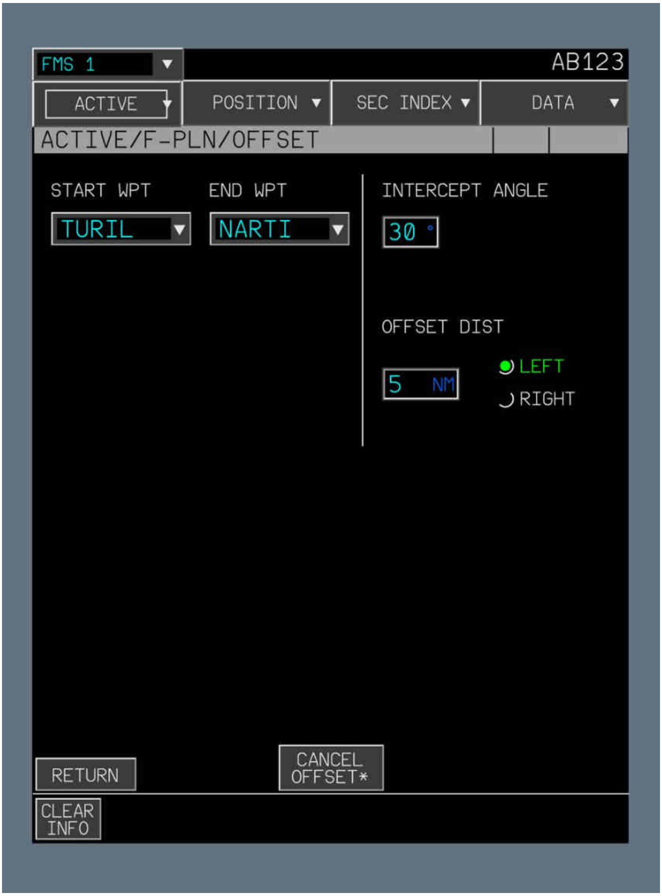
The insertion of an offset path, or a change of an existing offset path, creates a temporary flight plan.

Ident.: DSC-22-FMS-10-40-20-60-00003626.0001001 / 14 APR 14

CONTROLS AND INDICATORS

ON THE MFD

The flight crew can enter, change, or delete the offset path on the OFFSET page.

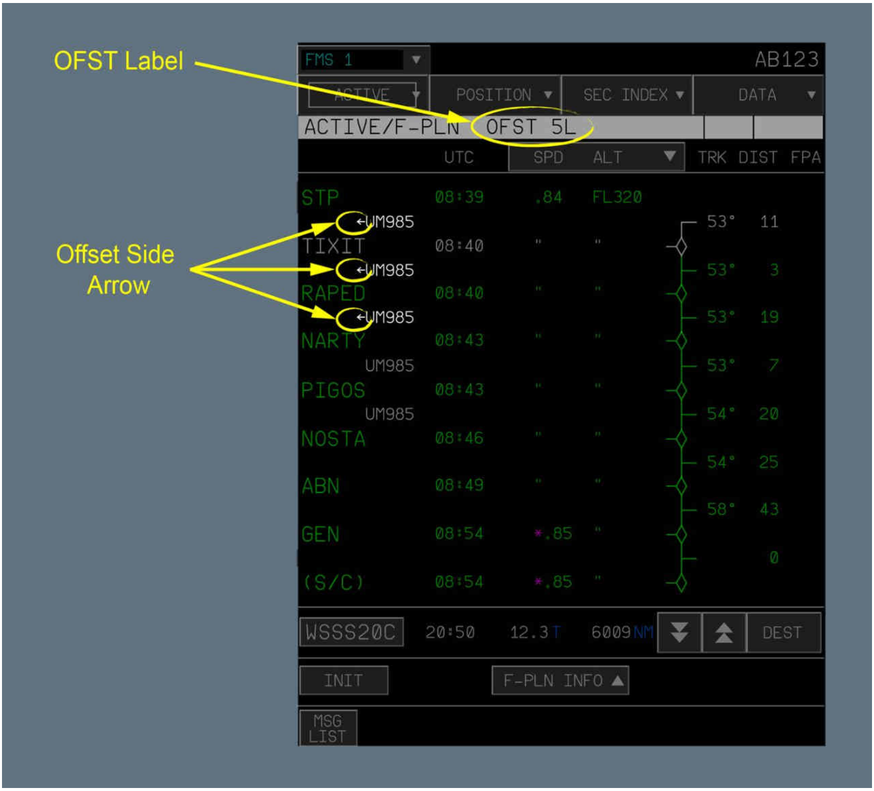

FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN/OFFSET
RETURN
CANCEL OFFSET*
CLEAR INFO

START WPT: TURIL
END WPT: NARTI
INTERCEPT ANGLE: 30 °
OFFSET DIST: 5 NM
● LEFT
○ RIGHT

OFFSET Page

For more information about the OFFSET page, *Refer to DSC-22-FMS-20-20-20 OFFSET Page*.
The flight crew can access the OFFSET page via the F-PLN page, by selecting the OFFSET revision in the waypoint revisions menu.
On the F-PLN page, a left or right arrow next to the flight leg data indicates that there is a left or right side offset defined on the flight leg. While the aircraft is on the offset path, the FMS page header displays OFST NNX. The "NN" corresponds to the lateral offset distance, and the "X" corresponds to the offset side (e.g. OFST 5L).

F-PLN Page


OFST Label
Offset Side
Arrow
FMS 1 ▼
AB123
ACTIVE ▼
POSITION ▼
SEC INDEX ▼
DATA ▼
ACTIVE/F-PLN
OFST 5L

	UTC	SPD	ALT	TRK	DIST	FPA
STP	08:39	.84	FL320			
←UM985				53°	11	
TIXIT	08:40	"	"			
←UM985				53°	3	
RAPED	08:40	"	"			
←UM985				53°	19	
NARTY	08:43	"	"			
UM985				53°	7	
PIGOS	08:43	"	"			
UM985				54°	20	
NOSTA	08:46	"	"			
				54°	25	
ABN	08:49	"	"			
				58°	43	
GEN	08:54	*.85	"			
					0	
(S/C)	08:54	*.85	"			

WSSS20C
20:50
12.3T
6009NM
DEST
INIT
F-PLN INFO ▲
MSG LIST

For more information about the F-PLN page, *Refer to DSC-22-FMS-20-20-20 F-PLN Page*.

ON THE ND

The ND always displays both the offset path (solid line) and the original flight plan (dashed line).

While the aircraft is on the offset path, the ND displays OFST XNN in the bottom left corner. The "X" corresponds to the offset side, and the "NN" corresponds to the lateral offset distance.

Note: This label is not displayed, if the FMS MORA is displayed on the ND.

For more information, *Refer to DSC-31-CDS-40-40-80 FMS Data Overview*.

OVERFLY

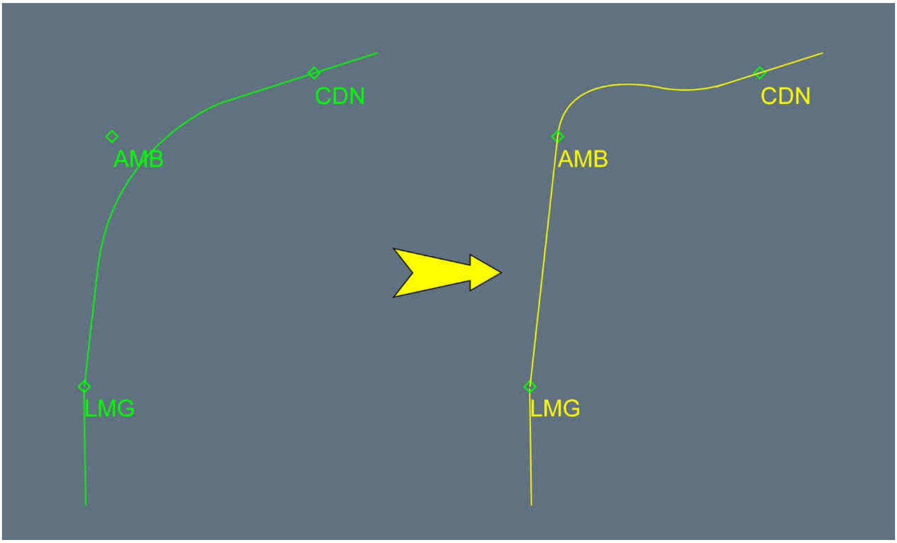
Applicable to: ALL

Ident.: DSC-22-FMS-10-40-20-70-00003608.0001001 / 14 APR 14

PURPOSE

The flight crew uses the OVERFLY revision to ensure that the aircraft overflies a specific flight plan waypoint.

OVERFLY Revision



L2 The flight crew can define an overfly on any waypoint of the flight plan, except:

- On the departure and destination airports
- On the FROM waypoint
- On a holding fix
- On a manual flight leg.

L1 When an overfly is defined on a waypoint, the flight crew can remove it with the DELETE OVERFLY revision .

L2 OVERFLY REVISION AND SECONDARY FLIGHT PLAN

The OVERFLY revision is available for the active (or temporary) flight plan, and for the secondary flight plans.

OVERFLY REVISION AND TEMPORARY FLIGHT PLAN

Creating, or deleting, an overfly creates a temporary flight plan.

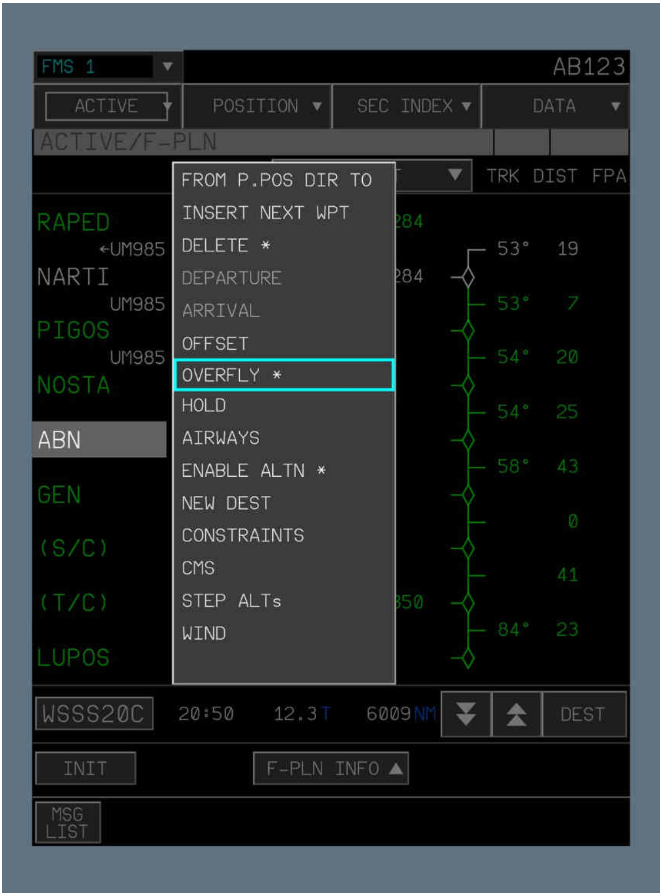
Ident.: DSC-22-FMS-10-40-20-70-00003637.0001001 / 14 APR 14

CONTROLS AND INDICATORS

ON THE MFD

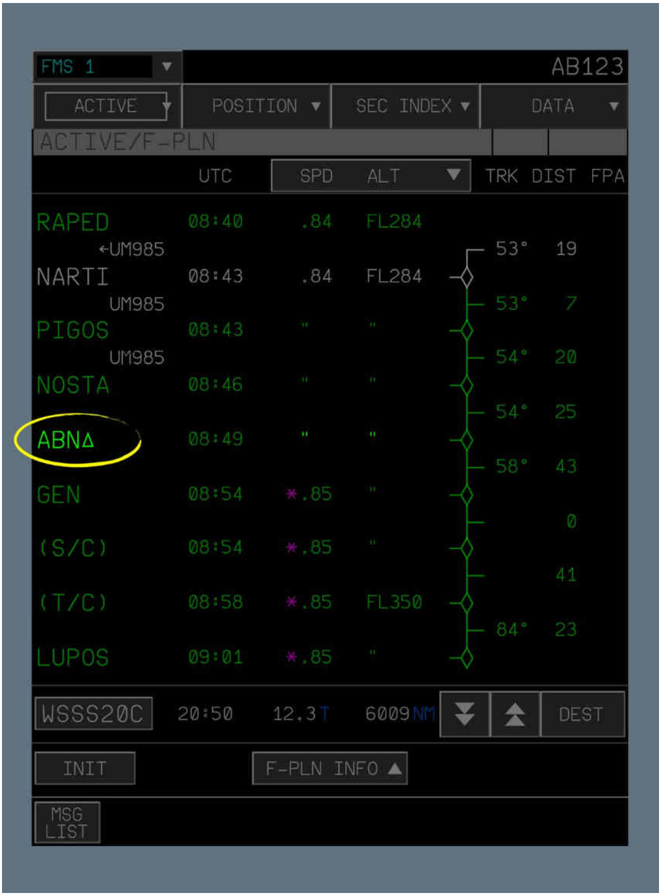
The OVERFLY revision is the 7th revision in the waypoint revisions menu on the F-PLN page.

Waypoint Revisions Menu - OVERFLY


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN
TRK DIST FPA
RAPED
←UM985
NARTI
UM985
PIGOS
UM985
NOSTA
ABN
GEN
(S/C)
(T/C)
LUPOS
FROM P.POS DIR TO
INSERT NEXT WPT
DELETE *
DEPARTURE
ARRIVAL
OFFSET
OVERFLY *
HOLD
AIRWAYS
ENABLE ALTN *
NEW DEST
CONSTRAINTS
CMS
STEP ALTs
WIND
53° 19
53° 7
54° 20
54° 25
58° 43
0
41
84° 23
WSSS20C
20:50
12.3T
6009NM
DEST
INIT
F-PLN INFO
MSG LIST

On the F-PLN page, a triangle, next to the revised waypoint ident, indicates the overfly.

F-PLN Page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN

	UTC	SPD	ALT	TRK	DIST	FPA
RAPED	08:40	.84	FL284			
←UM985				53°	19	
NARTI	08:43	.84	FL284			
UM985				53°	7	
PIGOS	08:43	"	"			
UM985				54°	20	
NOSTA	08:46	"	"			
				54°	25	
ABNΔ	08:49	"	"			
				58°	43	
GEN	08:54	*.85	"			
					0	
(S/C)	08:54	*.85	"			
					41	
(T/C)	08:58	*.85	FL350			
				84°	23	
LUPOS	09:01	*.85	"			

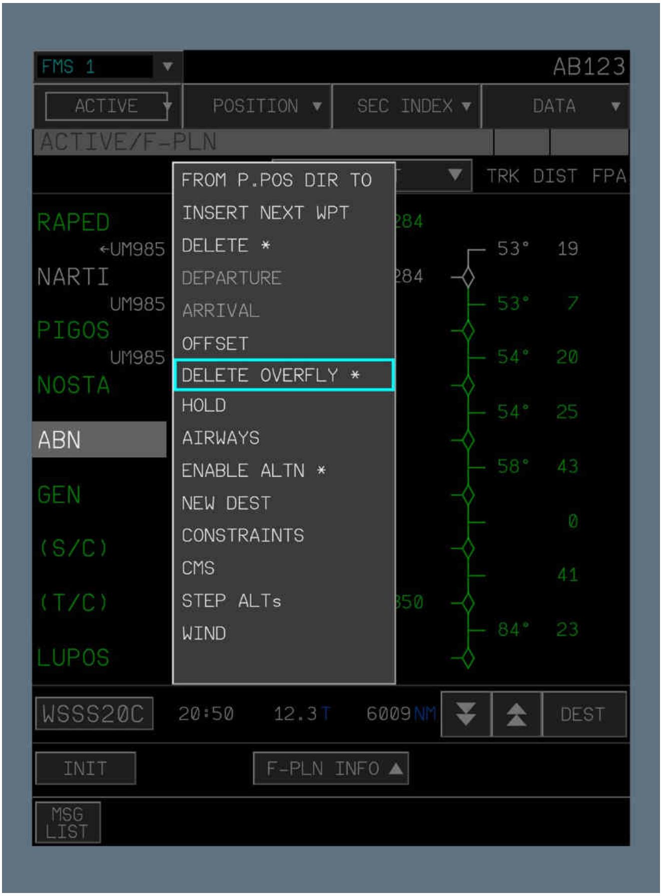
WSSS20C 20:50 12.3T 6009NM

DEST
INIT
F-PLN INFO ▲
MSG LIST

The flight crew can remove an existing overfly, by selecting DELETE OVERFLY in the waypoint revisions menu.

Note: *The 7th item in the waypoint revisions menu is either DELETE OVERFLY (if the revised waypoint has an overfly) or OVERFLY (if the revised waypoint has no overfly).*

Waypoint Revisions Menu - DELETE OVERFLY


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN
TRK DIST FPA
RAPED
←UM985
NARTI
UM985
PIGOS
UM985
NOSTA
ABN
GEN
(S/C)
(T/C)
LUPOS
FROM P.POS DIR TO
INSERT NEXT WPT
DELETE *
DEPARTURE
ARRIVAL
OFFSET
DELETE OVERFLY *
HOLD
AIRWAYS
ENABLE ALTN *
NEW DEST
CONSTRAINTS
CMS
STEP ALTs
WIND
53° 19
53° 7
54° 20
54° 25
58° 43
0
41
84° 23
WSSS20C
20:50
12.3T
6009NM
DEST
INIT
F-PLN INFO
MSG LIST

HOLD

Applicable to: ALL

Ident.: DSC-22-FMS-10-40-20-80-00003620.0001001 / 03 SEP 14

PURPOSE

The flight crew uses the HOLD revision to:
- Insert a holding pattern in the flight plan
- Change an already existing holding pattern.

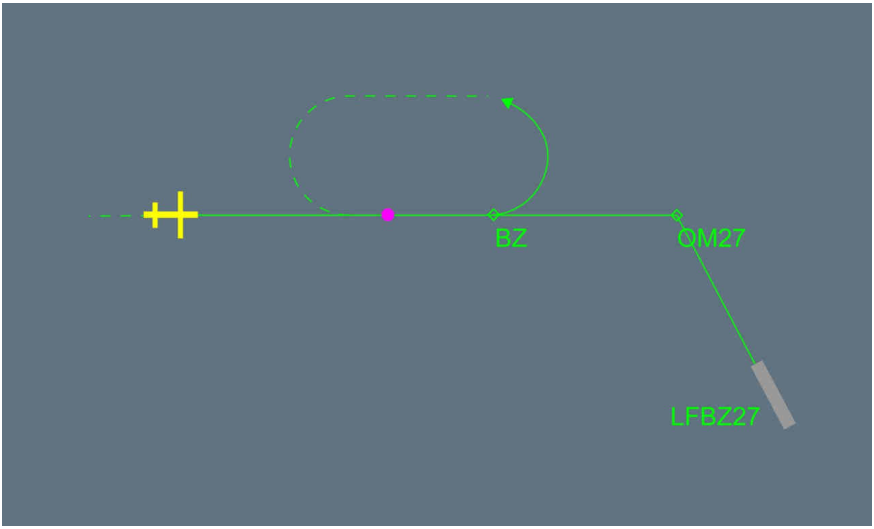
The FMS has three types of holding pattern, based on three different ways to exit the holding pattern:
- Holding Pattern to a Fixed Waypoint (HF)
- Holding Pattern to an Altitude Termination (HA)
- Holding Pattern with a Manual Termination (HM).

The HF and HA are always part of a departure or arrival procedure, and cannot be created by the flight crew. An HM can be part of an arrival procedure, or can be created by the flight crew at any waypoint of the flight plan.

Note: *The entry and exit waypoint of the holding pattern is referred to as the holding fix.*

HOLDING PATTERN TO A FIXED WAYPOINT (HF)

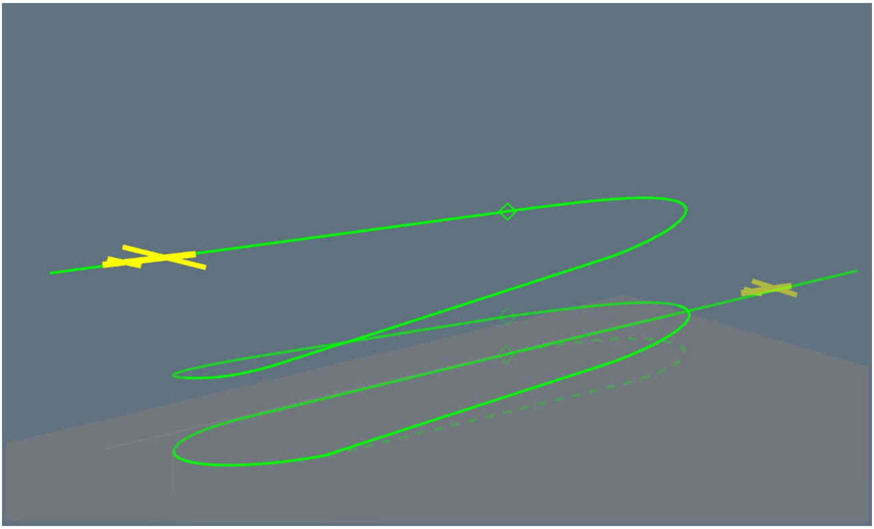
HF



The aircraft flies the holding pattern one time, and automatically exits the holding pattern at the holding fix.
The HF is part of a navigation database departure, or arrival procedure, and cannot be created by the flight crew.
The flight crew can remove the holding pattern from the flight plan, by deleting the holding fix.

HOLDING PATTERN TO AN ALTITUDE TERMINATION (HA)

HA



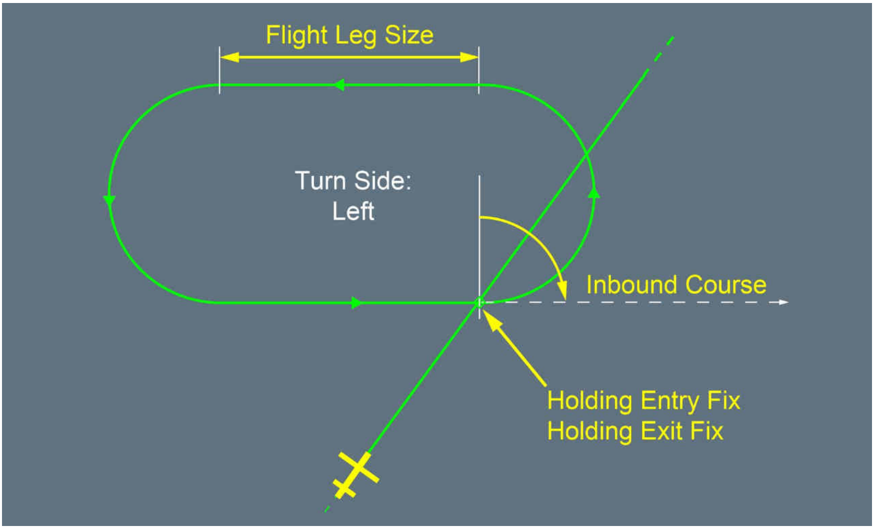
The aircraft flies the holding pattern, until the aircraft reaches the specified altitude. Then, the aircraft automatically exits the holding pattern at the holding fix.
The HA is part of a navigation database departure, or arrival procedure, and cannot be created by the flight crew.
The flight crew can remove the holding pattern from the flight plan, by deleting the holding fix.

HOLDING PATTERN WITH A MANUAL TERMINATION (HM)

The aircraft flies in the holding pattern, until the flight crew decides to exit.
The flight crew can manually enter an HM at P.POS, or at any waypoint of the flight plan to comply with a defined procedure, a clearance limit, or an operational need (e.g. it is necessary to lose altitude, to wait for better weather, or to wait due to an ATC delay).
An HM can also be part of a navigation database arrival procedure.
The flight crew can always change an HM.

The HM is defined by:
- The holding fix
- The inbound course
- The turn side
- The flight leg size (in time or distance).

HM



The flight crew inserts an HM in the flight plan, by performing a lateral revision on the flight plan waypoint, where the holding pattern should start. The revised waypoint becomes the holding fix. To insert an HM at P.POS, the flight crew performs the lateral revision on the flight plan FROM waypoint.
The flight crew can insert three different types of HM:

Database Holding Pattern

The FMS navigation database may have an HM that is associated with the revised waypoint. The inbound course, turn side, and flight leg size are taken from the navigation database.

Computed Holding Pattern

The FMS automatically creates a holding pattern that is associated with the revised waypoint, and displays the parameters of this holding pattern for selection by the flight crew.

L2 This computed holding pattern has the following parameters:

- Inbound course:
  - The track of the flight leg that comes before the holding fix, or
  - The aircraft bearing, if the holding fix is P.POS
- Turn side: Right
- Flight leg size:
  - 1 min, if the predicted aircraft altitude at the holding pattern is below or equal to 14 000 ft , or
  - 1.5 min, if the altitude is above 14 000 ft.

L1 Modified Holding Pattern

The flight crew can always change one or more parameters of a database or computed holding pattern. In this case, the HM is referred to as modified holding pattern.

PREDICTIONS AND GUIDANCE FOR HF AND HA

The FMS considers an HF or HA as a normal flight leg.

The predicted speed on the flight leg of the holding pattern is the lowest of:

- ICAO holding speed limit
- Maximum endurance speed
- Speed constraint or speed limit (if any)

  Note: *If a speed constraint is applicable to a HF flight leg, the FMS applies the speed constraint only at the end of the leg although the speed constraint should apply on the entire leg.*

- Navigation database holding speed.

Note: *The predicted speed is limited by the speed envelope.*

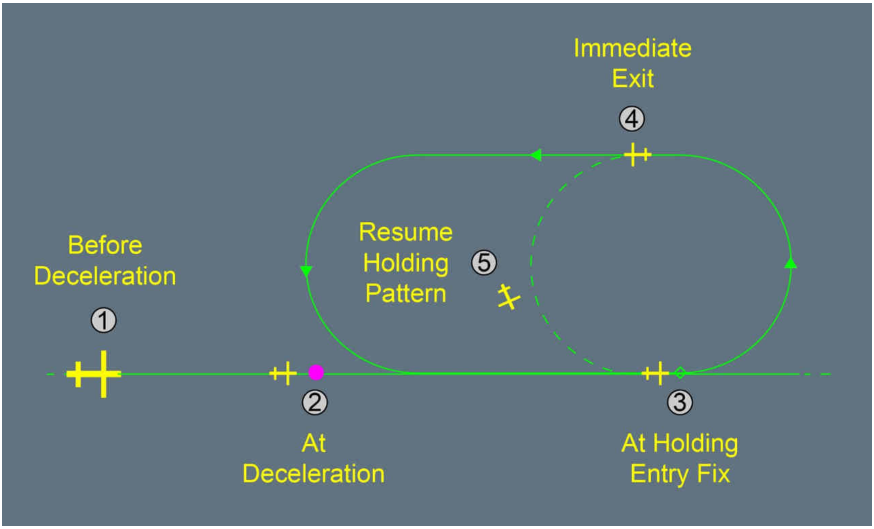
L3 When there is an HF in the arrival procedure, that is on the runway axis, and the aircraft is on the runway axis, and has the correct altitude, the flight crew may decide to engage the approach modes (LOC, G/S, F-LOC, F-G/S), without flying the holding pattern. In this case, the FMS still takes into account the holding pattern for the flight plan predictions. The result of this behavior is that the display on the VD and the PFD is not consistent. The PFD displays the guidance raw data. The VD displays the data along the predicted flight plan. As the holding pattern is still part of the predicted flight plan, the VD distance between the aircraft current position and the destination airport (and FLS beam, if any) is more than the distance that the aircraft will really fly. In this specific case, the flight crew should monitor the PFD deviations, and disregard the VD flight plan data.
When the aircraft sequences the holding fix, the FMS updates the predictions: The holding pattern is no longer part of the predicted flight plan. The PFD and the VD are consistent.

L1

PREDICTIONS AND GUIDANCE FOR HM

The predictions and guidance for an HM depend on the position of the aircraft in the holding pattern, and on the following flight crew actions:

HM



Before Deceleration

Although the holding pattern is inserted in the flight plan, the FMS does not take it into account for predictions.
However, the FMS schedules a deceleration point and displays it on the ND and VD.
If the ND range is 80 NM or less, the ND displays the holding pattern and the entry trajectory, when the aircraft sequences the waypoint that comes before the holding fix, or when the aircraft is at deceleration point.
When the flight leg parameter of the holding pattern is a time (and not a distance), the FMS computes the holding pattern size based on the predicted holding speed.

The predicted holding speed is the lowest of:
- ICAO holding speed limit
- Maximum endurance speed
- Speed constraint or speed limit (if any)
- Navigation database holding speed.

Note: *The predicted speed is limited by the speed envelope.*

L2 When the selected speed/Mach control is engaged, the FMS computes the holding pattern size based on the selected holding speed.

L1 The FMS also predicts the estimated time and amount of fuel remaining at which the aircraft must exit the holding pattern, so as to comply with the fuel policy. The HOLD page displays these time and fuel estimations.

When Reaching the Deceleration Pseudo Waypoint

The FMS assumes that the aircraft will fly one loop of the holding pattern, and revises the predictions accordingly.
The aircraft decelerates to the holding speed.
The holding speed is the speed target that is sent to the flight guidance (PRIM). This may be the predicted holding speed (limited by the speed envelope), or a different target speed associated with a flaps setting when the aircraft is in the approach phase.
When the flight leg parameter of the holding pattern is a time (and not a distance), the FMS computes the holding pattern size based on the holding speed.

L2 When the selected speed control is active and the aircraft reaches the deceleration point, the MFD and the PFD display the SET HOLD SPD message (*Refer to message*).
When the selected speed control is active, the holding pattern size is based on the selected speed target.

L1 The flight crew can still decide not to fly the holding pattern, by using the IMMEDIATE EXIT button on the ACTIVE/F-PLN page.

After Reaching the Holding Fix

The aircraft enters the holding pattern.
When the flight leg parameter of the holding pattern is a time (and not a distance), the FMS revises the size of the holding pattern, based on the speed target at the holding entry fix. The holding pattern size is frozen during one loop, and is updated again at the next overfly of the holding entry fix.

L2 When the selected speed/Mach control is engaged, the revision of the holding pattern size is based on the selected speed target.

L1 Each time the aircraft flies over the holding fix, the FMS updates the predictions for one more holding loop.

Note: *When the aircraft flies on a holding pattern, the flight crew can make a revision of the holding pattern. This revision will create a temporary flight plan. The flight crew can check the new holding pattern in the temporary flight plan (on MFD and ND). When the flight crew inserts the temporary flight plan, the aircraft keeps on flying on the old holding pattern. Only when the aircraft sequences the holding fix, the FMS takes into account and displays the updated holding pattern.*

The flight crew decides to exit the holding pattern immediately

The flight crew clicks on the IMMEDIATE EXIT button on the ACTIVE/F-PLN page.
The FMS assumes that the aircraft will return immediately to the holding exit fix, and revises the predictions accordingly. The aircraft keeps the holding speed, until the aircraft reaches the holding exit fix.
When sequencing the holding fix, the aircraft exits the holding pattern, and resumes its navigation. The FMS sets the target speed to the applicable speed of the current flight phase.

The flight crew decides to resume the holding pattern

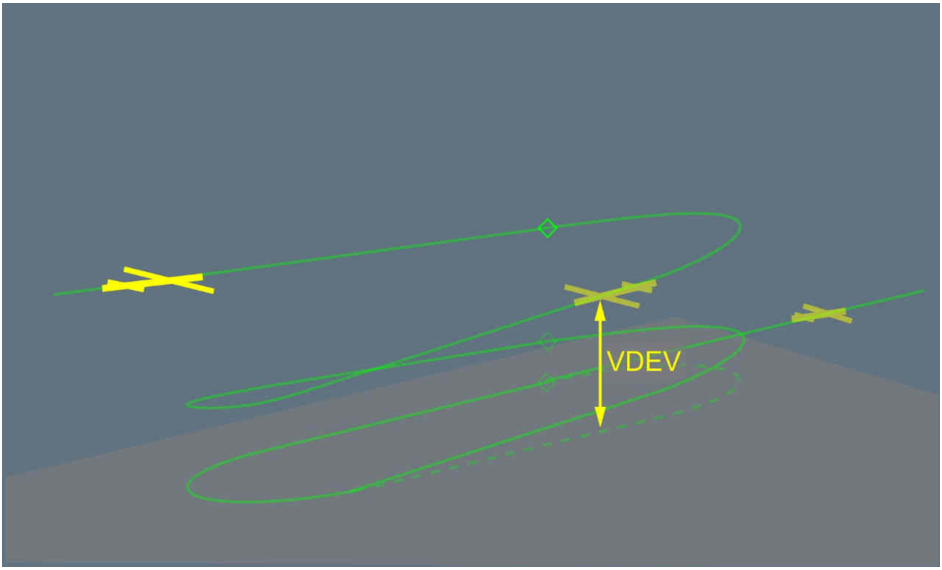
The flight crew clicks on the RESUME HOLD button on the ACTIVE/F-PLN page.
The aircraft intercepts the holding pattern, in accordance with the holding pattern entries logic (See Holding Pattern Entries).
Each time the aircraft flies over the holding fix, the FMS updates the predictions for one more holding loop.

HM and Descent

The following applies for a holding pattern in descent or approach:
- Before the deceleration pseudo waypoint, the FMS does not take into account the holding pattern for the descent path computation.
- When reaching the deceleration pseudo waypoint, the FMS computes the theoretical descent path backward from the destination airport up to the holding exit fix. The FMS does not compute a theoretical descent path inside the holding pattern.

- During descent and approach, the DES and APPR panels of the PERF page and the PFD display the vertical deviation. In the deceleration flight leg and in the holding pattern, the vertical deviation is the difference between the aircraft current altitude and the altitude at which the aircraft should be when it reaches the holding exit fix, in order to be correctly positioned on the theoretical descent path.

VDEV and Holding Pattern



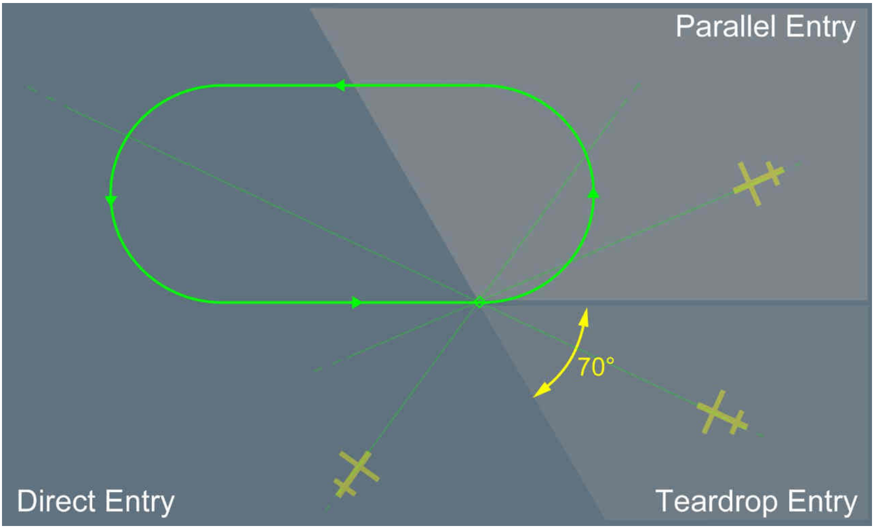
- The vertical guidance in the HM, during the descent phase, targets a descent rate of 1 000 ft/min. However, the FMS takes into account altitude constraints that will take effect down path the flight plan, so that during the holding pattern, the aircraft will not descend below the next altitude constraint. If the aircraft reaches the constraint altitude, it will level off and the ALT CST mode will engage.
- The flight crew cannot enter speed constraints at the holding exit fix (This is possible only at the holding entry fix).

HOLDING PATTERN ENTRIES

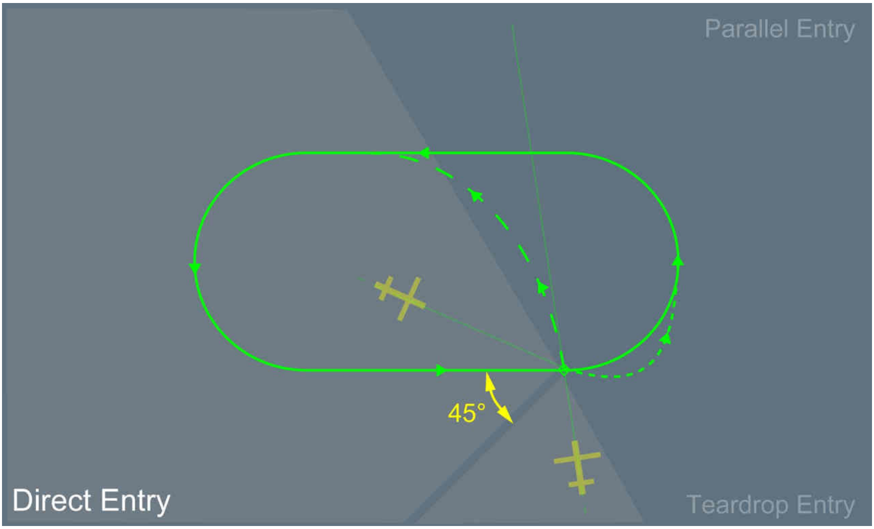
The way of entering a holding pattern depends on the difference of angle between the heading of the aircraft and the holding inbound course.

The FMS applies three holding pattern entries:
- The direct entry
- The teardrop entry
- The parallel entry.

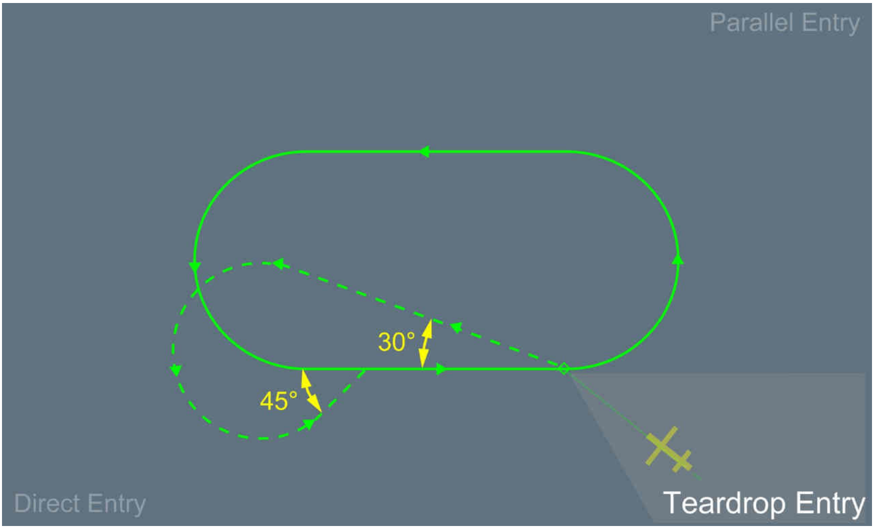
Holding Pattern Entries


Parallel Entry
70°
Direct Entry
Teardrop Entry

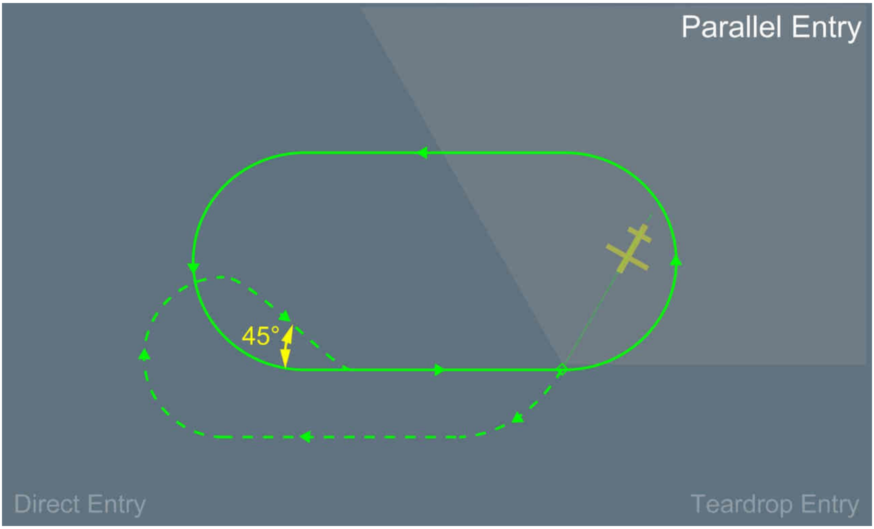
Direct Entry


Parallel Entry
45°
Direct Entry
Teardrop Entry

Teardrop Entry


Parallel Entry
30°
45°
Direct Entry
Teardrop Entry

Parallel Entry



Note: *Specific case: If the flight leg toward the holding entry fix has the opposite course of the holding inbound course, the aircraft will fly a parallel entry.*

L2 HOLD REVISION AND SECONDARY FLIGHT PLAN

The HOLD revision is available for the active (or temporary) flight plan, and for the secondary flight plans.

HOLD REVISION AND TEMPORARY FLIGHT PLAN

The insertion of a holding pattern, or a change of an existing holding pattern, creates a temporary flight plan.

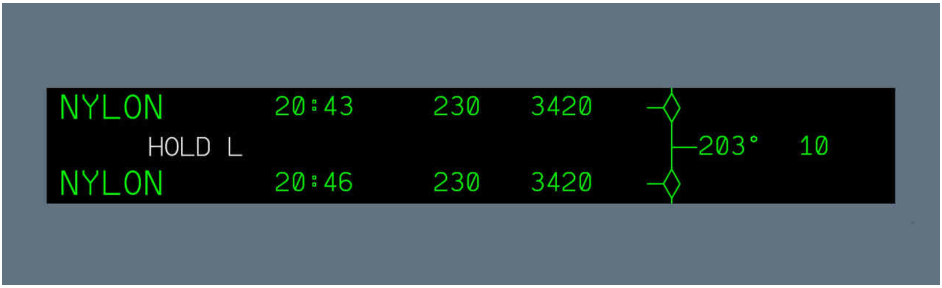
CONTROLS AND INDICATORS

ON THE MFD

On the F-PLN page, the different types of holding pattern are indicated as follows:

- Holding Pattern to a Fixed Waypoint (HF)

HF

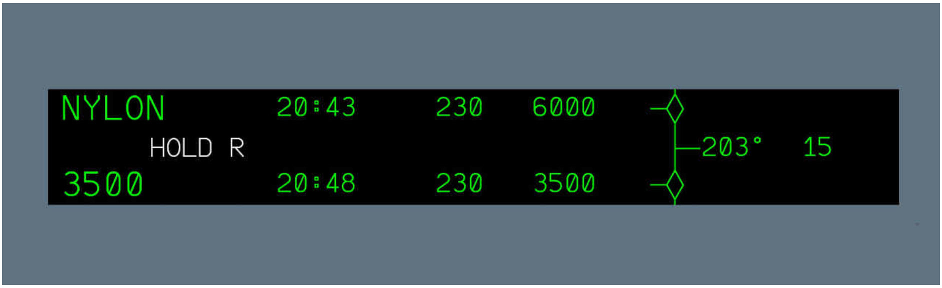


```
NYLON        20:43     230    3420
      HOLD L                          203°   10
NYLON        20:46     230    3420
```

The flight plan displays the holding entry fix and the holding exit fix on two lines. The HOLD L label or HOLD R label, between the holding fix lines, indicates the turn side.
The flight crew can remove the HF from the flight plan, by deleting the holding fix.

- Holding Pattern to an Altitude Termination (HA)

HA

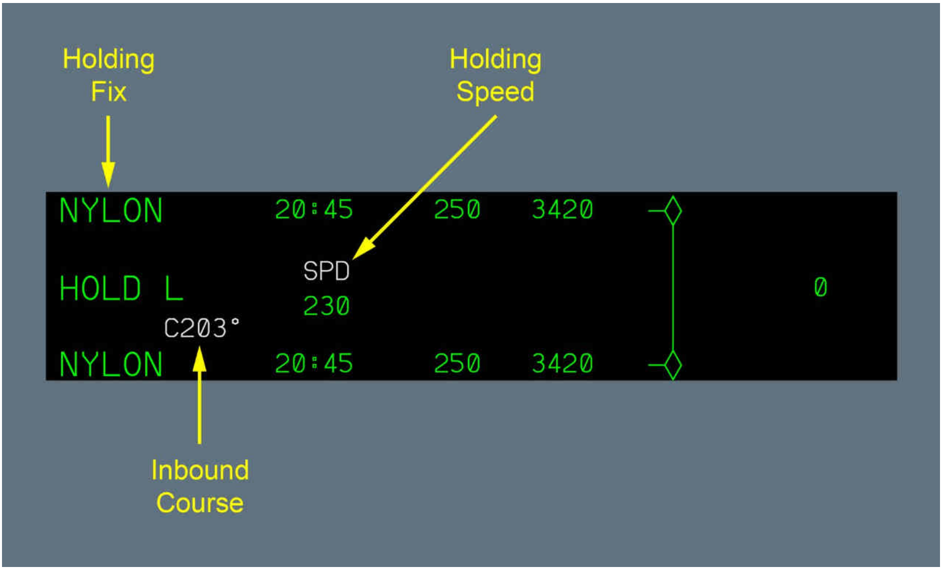


```
NYLON        20:43     230    6000
      HOLD R                          203°   15
3500         20:48     230    3500
```

The flight plan displays the holding entry fix on one line, and the exit altitude on another line. The HOLD L label or HOLD R label, between the holding fix line and the altitude line, indicates the turn side.
The flight crew can remove the HA from the flight plan, by deleting the holding fix.

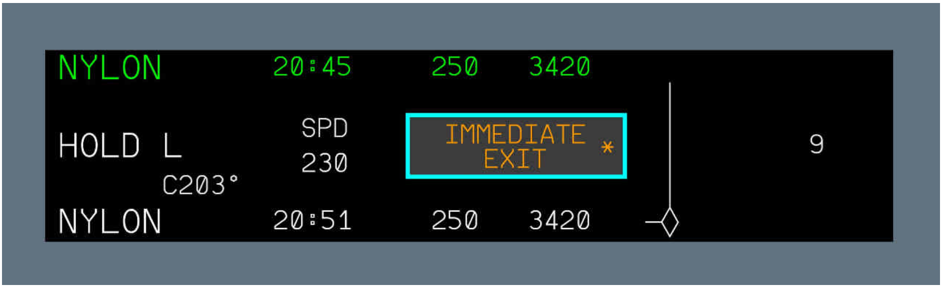
- Holding Pattern with a Manual Termination (HM)

HM


Holding Fix
Holding Speed
NYLON 20:45 250 3420
HOLD L
SPD
230
C203°
0
NYLON 20:45 250 3420
Inbound Course

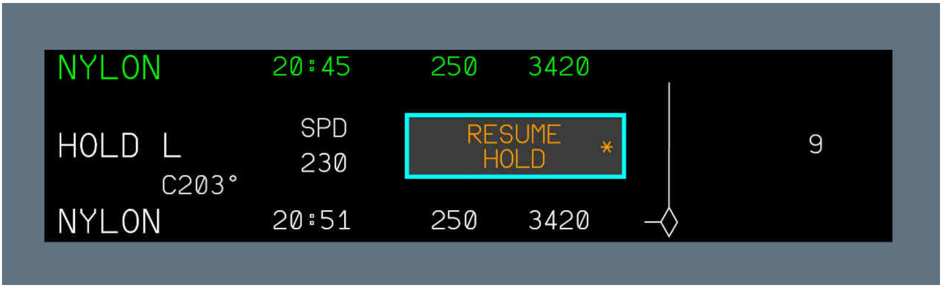
The flight plan displays the holding entry fix and the holding exit fix on two lines. The HOLD L label or HOLD R label (that indicates the turn side), and the SPD label (that indicates the holding managed or selected speed), are displayed on a line between the two holding fix lines. The inbound course is displayed between HOLD L(R) line and the holding exit fix line.
The flight crew can remove the HM from the flight plan, by deleting the holding fix.
After sequencing the holding deceleration point, the flight plan displays the IMMEDIATE EXIT button. The flight crew can use this button to delete the holding pattern, before sequencing the holding entry fix, or to immediately exit the holding pattern when flying it.

IMMEDIATE EXIT Button


NYLON 20:45 250 3420
HOLD L
SPD
230
IMMEDIATE EXIT *
9
C203°
NYLON 20:51 250 3420

The flight crew can resume the holding pattern, that was initially planned, by using the RESUME HOLD button. The F-PLN page displays this button, until the holding fix is sequenced.

RESUME HOLD Button

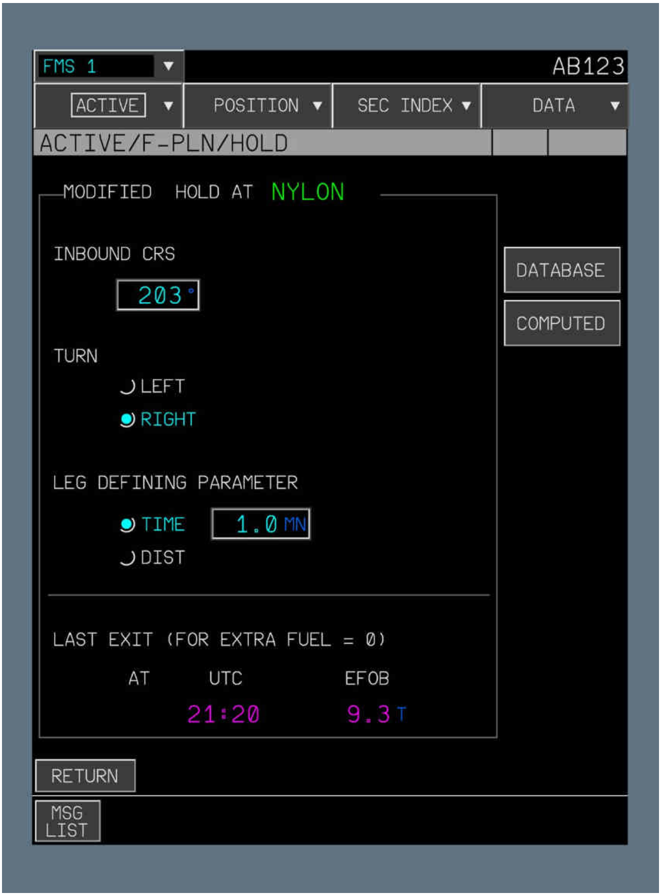


```
NYLON        20:45     250   3420

HOLD L        SPD     RESUME  *             9
               230     HOLD
      C203°
NYLON        20:51     250   3420
```

The flight crew can enter or modify an HM on the HOLD page.

HOLD Page



ACTIVE/F-PLN/HOLD

MODIFIED HOLD AT NYLON

INBOUND CRS 203°

TURN
○ LEFT
● RIGHT

LEG DEFINING PARAMETER
● TIME 1.0 MN
○ DIST

LAST EXIT (FOR EXTRA FUEL = 0)

AT UTC	EFOB
21:20	9.3 T

For more information about the HOLD page , *Refer to DSC-22-FMS-20-20-20 HOLD Page*.
The flight crew can access the HOLD page via the F-PLN page, by selecting the HOLD revision in the waypoint revisions menu.

L2 When the aircraft flies an HM, the DES panel of PERF page displays the Vertical Deviation (VDEV). The VDEV is the difference between the aircraft current altitude and the altitude at which the aircraft should be when it reaches the holding exit fix. The PFD also displays this parameter.

L1 ON THE ND

The ND displays the entire holding pattern and its entry trajectory, only when all of the following occur:
- The ND range is 80 NM or less
- The aircraft sequenced the waypoint that comes before the holding entry fix, or the aircraft is after the holding deceleration point.

In all other cases, the ND displays the holding pattern symbol.

L2 ON THE PFD

When the aircraft flies on an HM, the PFD displays the vertical deviation. The vertical deviation is the difference between the aircraft current altitude and the altitude at which the aircraft should be when it reaches the holding exit fix. The DES panel of the PERF page also displays this parameter.

Ident.: DSC-22-FMS-10-40-20-80-00003632.0001001 / 14 APR 14

ASSOCIATED MESSAGES

On the MFD, the FMS message area displays the following messages:
- SET HOLD SPD (*Refer to message*)
- TIME TO EXIT (*Refer to message*).

AIRWAYS

Applicable to: ALL

Ident.: DSC-22-FMS-10-40-20-90-00003607.0001001 / 14 APR 14

PURPOSE

The flight crew uses the AIRWAYS revision to insert airway segments in the flight plan.

Each airway segment is defined by:

- The start waypoint

  L2 For the first segment, the start waypoint is the revised flight plan waypoint. For any other segment, the start waypoint is the end waypoint of the previous segment.

- L1 The airway

  L2 All airways are included in the navigation database. The flight crew can select the airway by entering the ident of the airway.

- L1 The end waypoint.

  The end waypoint can be defined either manually or automatically:

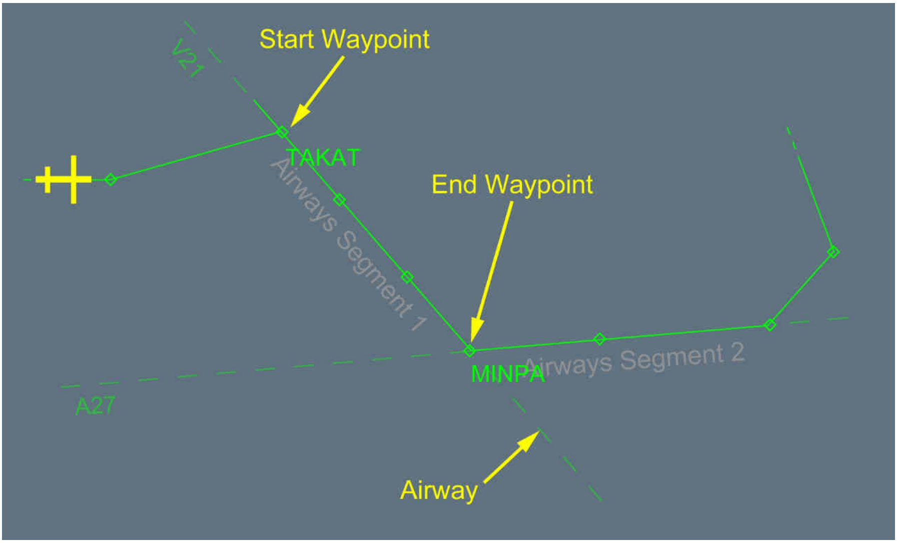
  - Manually
    The flight crew can enter the ident of the end waypoint in the associated entry field.

    Note: The flight crew can enter any waypoint, if it belongs to the defined airway. If not, the AIRWAY / WPT DISAGREE message is displayed.

  - Automatically
    The flight crew can enter two airways of two consecutive segments. Then, the FMS searches the common waypoint or computes the geographic intersection of both airways, and defines it as the end waypoint of the first segment.

    Note: If the FMS does neither find a common waypoint nor geographic intersection for the two defined airways, the NO INTERSECTION FOUND message is displayed.

Airway Segments



L2 The airway segments are inserted in the flight plan, starting with the revised waypoint, and ending with the end waypoint of the last segment. If the end waypoint is part of the original flight plan (i.e. the flight plan before the revision), all waypoints and flight legs of the original flight plan, that are up-path the end waypoint, are deleted.

If the end waypoint is not part of the original flight plan, a discontinuity will be inserted between the end waypoint and the first waypoint of the original flight plan, down-path the revised waypoint.

When inserted in the flight plan, the airway segments are considered as normal flight plan waypoints and flight legs, with their associated flight plan revisions.

FIXED TURN RADIUS AIRWAYS

An airway can have a constant turn radius defined for one or more waypoints. The FMS uses this turn radius to compute the transition between the two flight legs at the specific waypoint.

L3 The turn radius is not taken into account, if:

- The waypoint is the start waypoint of the first airway segment, or the end waypoint of the last airway segment
- The flight crew inserts an overfly at the waypoint
- The flight crew performs DIR TO - CRS IN(OUT) to the waypoint
- The waypoint is part of an offset capture or return path.

L2 AIRWAYS REVISION AND SECONDARY FLIGHT PLAN

The AIRWAYS revision is available for the active (or temporary) flight plan, and for the secondary flight plans.

AIRWAYS REVISION AND TEMPORARY FLIGHT PLAN

Inserting, changing, or removing airways segments creates a temporary flight plan. The entry of several airway segments is considered as a single lateral revision.

Note: *If an airways entry is in progress, the flight crew cannot perform another flight plan revision at the same time. The AIRWAYS INSERTION IN PROGRESS: F-PLN REVISION NOT ALLOWED message is displayed, when the flight crew tries to access a revision.*

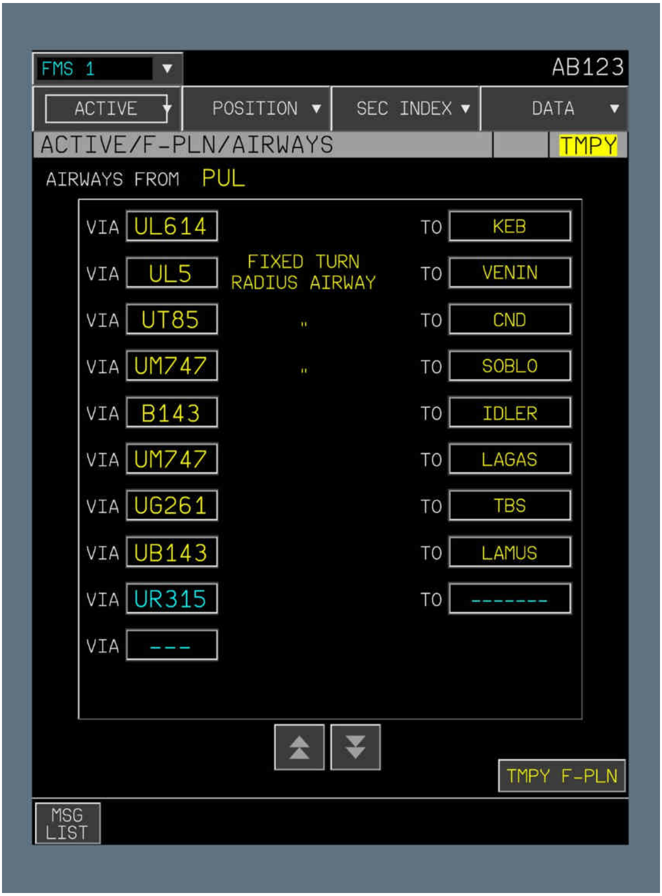
Ident.: DSC-22-FMS-10-40-20-90-00003634.0001001 / 14 APR 14

CONTROLS AND INDICATORS

ON THE MFD

The flight crew can enter airway segments on the AIRWAYS page.

AIRWAYS Page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN/AIRWAYS
TMPY
TMPY F-PLN
MSG LIST

AIRWAYS FROM PUL

VIA	UL614	TO	KEB
VIA	UL5	TO	VENIN
VIA	UT85	TO	CND
VIA	UM747	TO	SOBLO
VIA	B143	TO	IDLER
VIA	UM747	TO	LAGAS
VIA	UG261	TO	TBS
VIA	UB143	TO	LAMUS
VIA	UR315	TO	-------
VIA	---		

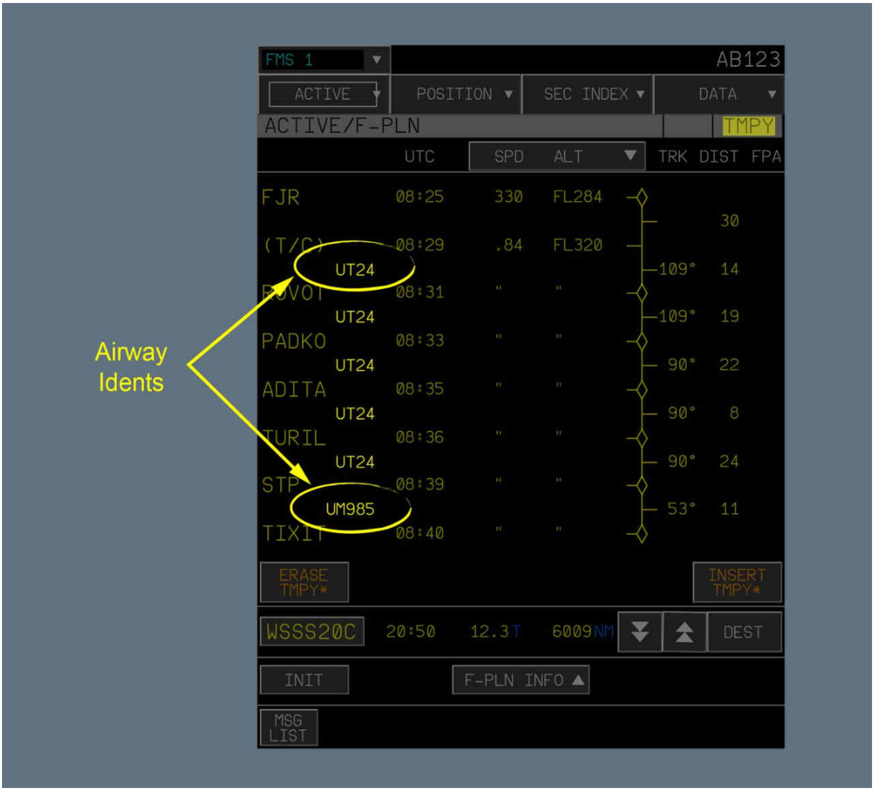
FIXED TURN RADIUS AIRWAY
"
"

For more information about the AIRWAYS page, *Refer to DSC-22-FMS-20-20-20 AIRWAYS Page*.

The flight crew can access the AIRWAYS page via the F-PLN page, by selecting the AIRWAYS revision in the waypoints revisions menu.

On the F-PLN page, the airway ident is indicated in the flight leg label.

F-PLN Page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
TMPY
Airway
Idents
ERASE TMPY*
INSERT TMPY*
DEST
INIT
F-PLN INFO
MSG LIST

ACTIVE/F-PLN

	UTC	SPD	ALT	TRK	DIST	FPA
FJR	08:25	330	FL284			
					30	
(T/C)	08:29	.84	FL320			
UT24				109°	14	
RUVOT	08:31	"	"			
UT24				109°	19	
PADKO	08:33	"	"			
UT24				90°	22	
ADITA	08:35	"	"			
UT24				90°	8	
TURIL	08:36	"	"			
UT24				90°	24	
STP	08:39	"	"			
UM985				53°	11	
TIXIT	08:40	"	"			

WSSS20C 20:50 12.3T 6009NM

For more information about the F-PLN page, *Refer to DSC-22-FMS-20-20-20 F-PLN Page*.

ON THE ND

The airway segments are considered as normal flight plan waypoints and flight legs. On the ND, no special symbology is used to indicate the airway segments.

Ident.: DSC-22-FMS-10-40-20-90-00003635.0001001 / 14 APR 14

ASSOCIATED MESSAGES

On the MFD, the FMS message area displays the following messages:
- AIRWAY / WPT DISAGREE (*Refer to message*)
- AIRWAYS INSERTION IN PROGRESS F-PLN REVISION NOT ALLOWED (*Refer to message*)
- NO INTERSECTION FOUND (*Refer to message*).

ENABLE ALTN

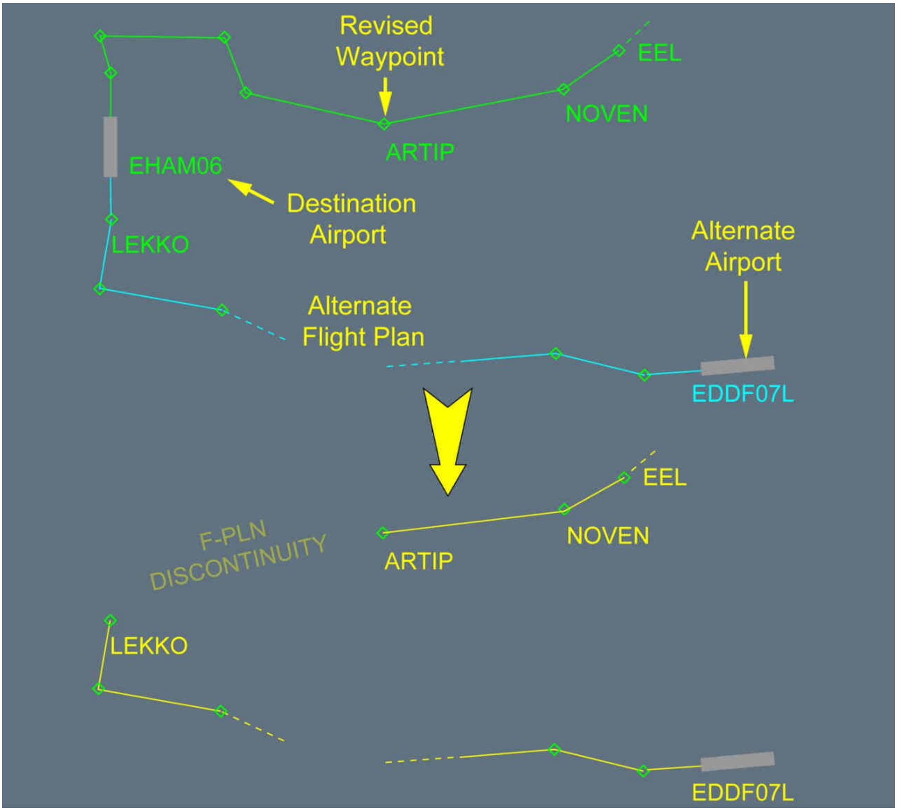
Applicable to: ALL

Ident.: DSC-22-FMS-10-40-20-100-00003609.0001001 / 14 APR 14

PURPOSE

The flight crew uses the ENABLE ALTN revision to initiate a diversion. The ENABLE ALTN revision activates the alternate flight plan.
After the flight crew activates the alternate flight plan, the FMS deletes all waypoints of the destination flight plan beyond the revised waypoint (including the destination airport and the missed approach), and connects the revised waypoint to the first waypoint of the alternate flight plan with a discontinuity.

ENABLE ALTN Revision


Revised Waypoint
EEL
NOVEN
ARTIP
EHAM06
Destination Airport
LEKKO
Alternate Airport
Alternate Flight Plan
EDDF07L
EEL
NOVEN
F-PLN DISCONTINUITY
ARTIP
LEKKO
EDDF07L

L2 The flight crew can activate the alternate flight plan from a waypoint of the destination flight plan, including the flight plan discontinuities.

Note: The flight crew cannot enable the alternate flight plan from a waypoint or airport of the alternate flight plan.

L3 If the revised waypoint is the destination airport, the destination airport becomes a flight plan waypoint, and a discontinuity is inserted between the destination airport and the first waypoint of the alternate flight plan.

If the new destination airport (the former alternate airport) is the same as the previous destination airport, the following parameters remain the same:
- Go-around thrust reduction and acceleration altitudes
- Descent transition altitudes
- Descent speed limit
- Descent winds (not the alternate wind)
- Destination QNH, temperature, wind and landing configuration.

L2

ENABLE ALTN REVISION AND SECONDARY FLIGHT PLAN

The ENABLE ALTN revision is available for the active (or temporary) flight plan, and for the secondary flight plans.

ENABLE ALTN REVISION AND TEMPORARY FLIGHT PLAN

Enabling the alternate flight plan creates a temporary flight plan.

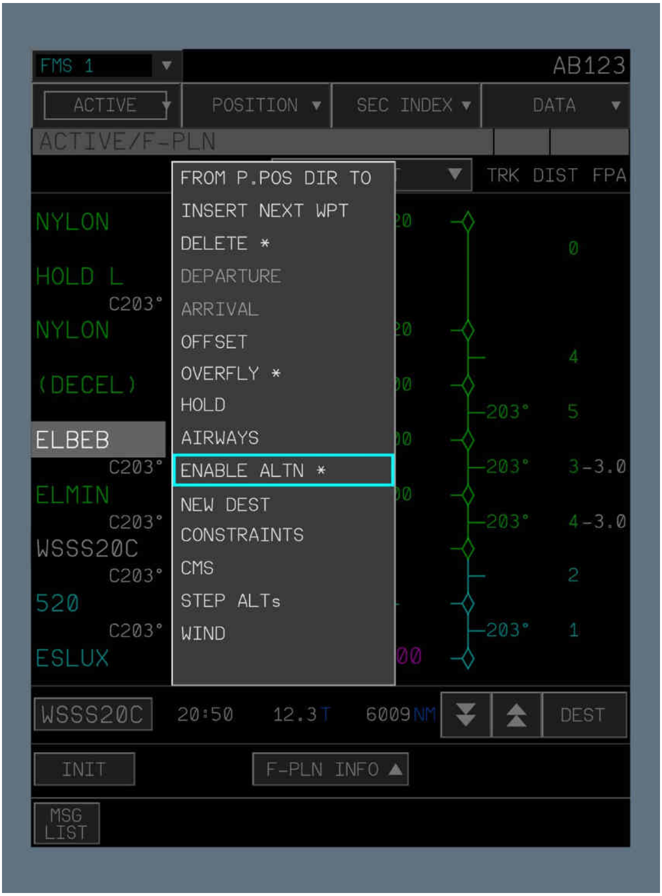
Ident.: DSC-22-FMS-10-40-20-100-00003639.0001001 / 14 APR 14

CONTROLS AND INDICATORS

ON THE MFD

The ENABLE ALTN revision is the 11th revision in the waypoint revisions menu on the F-PLN page.

Waypoint Revisions Menu - ENABLE ALTN


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN
TRK DIST FPA
FROM P.POS DIR TO
INSERT NEXT WPT
DELETE *
DEPARTURE
ARRIVAL
OFFSET
OVERFLY *
HOLD
AIRWAYS
ENABLE ALTN *
NEW DEST
CONSTRAINTS
CMS
STEP ALTs
WIND
NYLON
HOLD L
C203°
NYLON
(DECEL)
ELBEB
C203°
ELMIN
C203°
WSSS20C
C203°
520
C203°
ESLUX
0
4
203° 5
203° 3 -3.0
203° 4 -3.0
2
203° 1
WSSS20C
20:50
12.3T
6009NM
DEST
INIT
F-PLN INFO
MSG LIST

NEW DEST

Applicable to: ALL

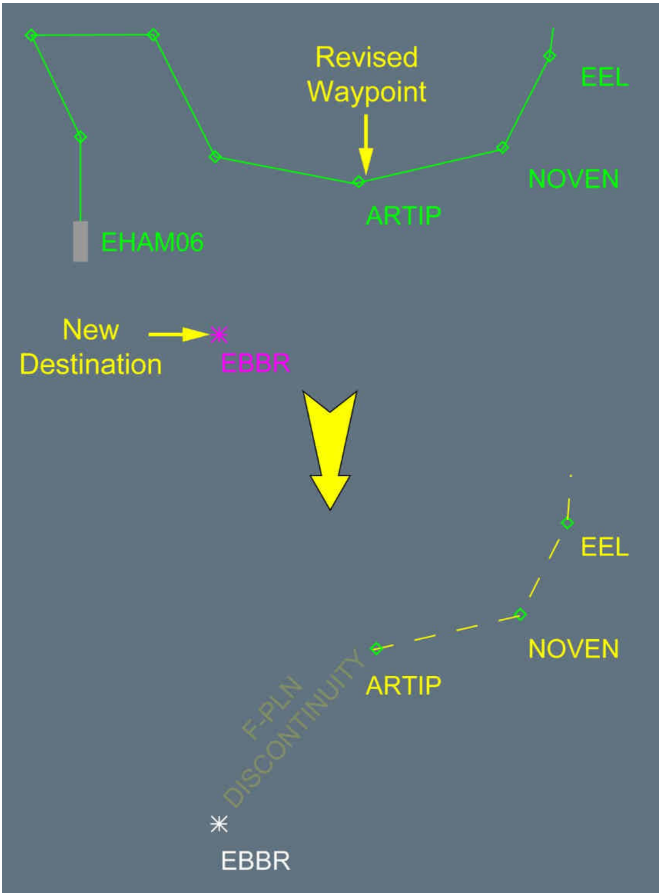
Ident.: DSC-22-FMS-10-40-20-110-00003610.0001001 / 14 APR 14

PURPOSE

The flight crew uses the NEW DEST revision to define a new destination airport.

The insertion of a new destination deletes all waypoints of the flight plan between the revised waypoint and the new destination airport, and inserts a flight plan discontinuity in their place.

NEW DEST Revision


Revised
Waypoint
EEL
NOVEN
ARTIP
EHAM06
New
Destination
EBBR
EEL
NOVEN
ARTIP
F-PLN
DISCONTINUITY
EBBR

L2 After a new destination entry, the alternate flight plan associated with the new destination replaces the old one if it is different.

The flight crew can insert a new destination airport from any waypoint or discontinuity of the destination flight plan (including the departure and destination airports), except:
- From the FROM (or P.POS) waypoint in flight
- From a manual flight leg
- From a flight leg that does not end at a fixed waypoint.

L3 If the revised waypoint is the destination airport, the destination airport becomes a flight plan waypoint, and a discontinuity is inserted between the old and new destination airports.

L2 NEW DEST REVISION AND SECONDARY FLIGHT PLAN

The NEW DEST revision is available for the active (or temporary) flight plan, and for the secondary flight plans.

NEW DEST REVISION AND TEMPORARY FLIGHT PLAN

The insertion of a new destination creates a temporary flight plan.

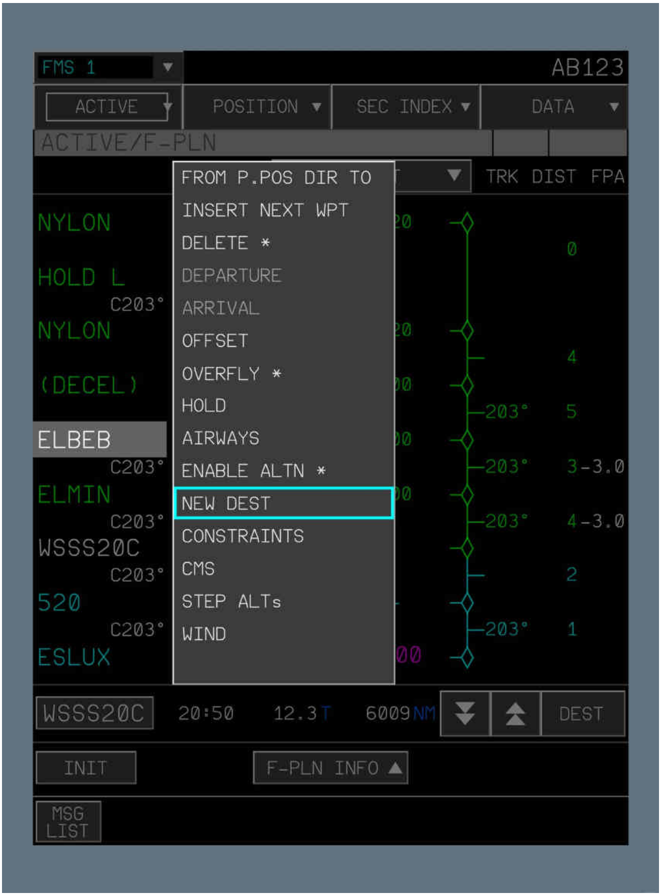
Ident.: DSC-22-FMS-10-40-20-110-00003641.0001001 / 14 APR 14

CONTROLS AND INDICATORS

ON THE MFD

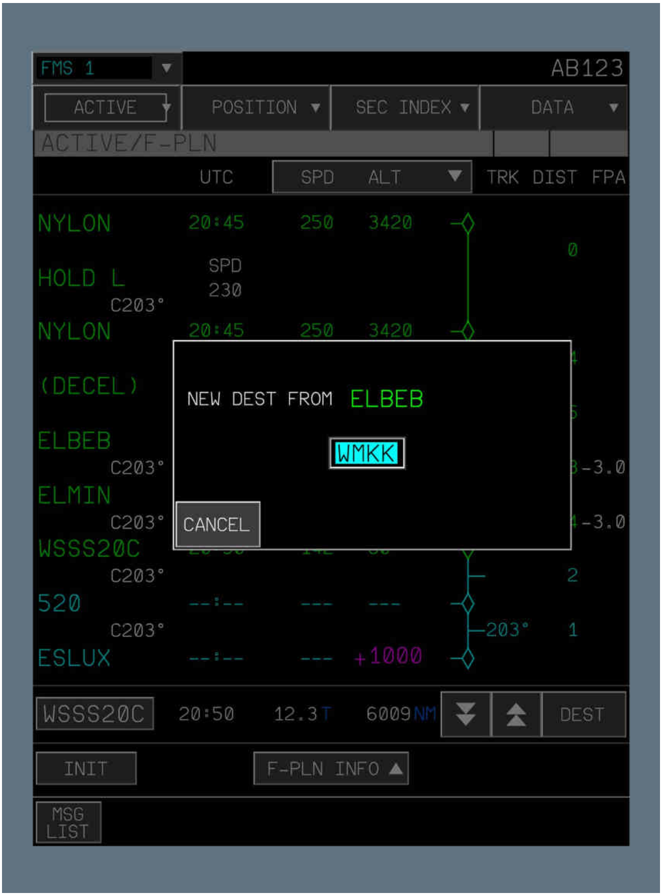
The NEW DEST revision is the 12th revision in the waypoint revisions menu on the F-PLN page.

Waypoint Revisions Menu - NEW DEST


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN
TRK DIST FPA
NYLON
HOLD L
C203°
NYLON
(DECEL)
ELBEB
C203°
ELMIN
C203°
WSSS20C
C203°
520
C203°
ESLUX
FROM P.POS DIR TO
INSERT NEXT WPT
DELETE *
DEPARTURE
ARRIVAL
OFFSET
OVERFLY *
HOLD
AIRWAYS
ENABLE ALTN *
NEW DEST
CONSTRAINTS
CMS
STEP ALTs
WIND
203°
203°
203°
203°
0
4
5
3 -3.0
4 -3.0
2
1
WSSS20C
20:50
12.3T
6009NM
DEST
INIT
F-PLN INFO
MSG LIST

Selecting the NEW DEST revision displays the NEW DEST window.

NEW DEST Window


NEW DEST FROM ELBEB
WMKK
FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN
UTC
SPD ALT
TRK DIST FPA
NYLON 20:45 250 3420
0
HOLD L
SPD
230
C203°
NYLON 20:45 250 3420
(DECEL)
ELBEB
C203°
-3.0
ELMIN
C203°
-3.0
WSSS20C
C203°
2
520 --:-- --- ---
C203°
203°
1
ESLUX --:-- --- +1000
CANCEL
WSSS20C 20:50 12.3T 6009NM
DEST
INIT
F-PLN INFO
MSG
LIST

For more information about the NEW DEST window, *Refer to DSC-22-FMS-20-20-20 NEW DEST Window*.

ALTERNATE

Applicable to: ALL

Ident.: DSC-22-FMS-10-40-20-120-00003611.0001001 / 14 APR 14

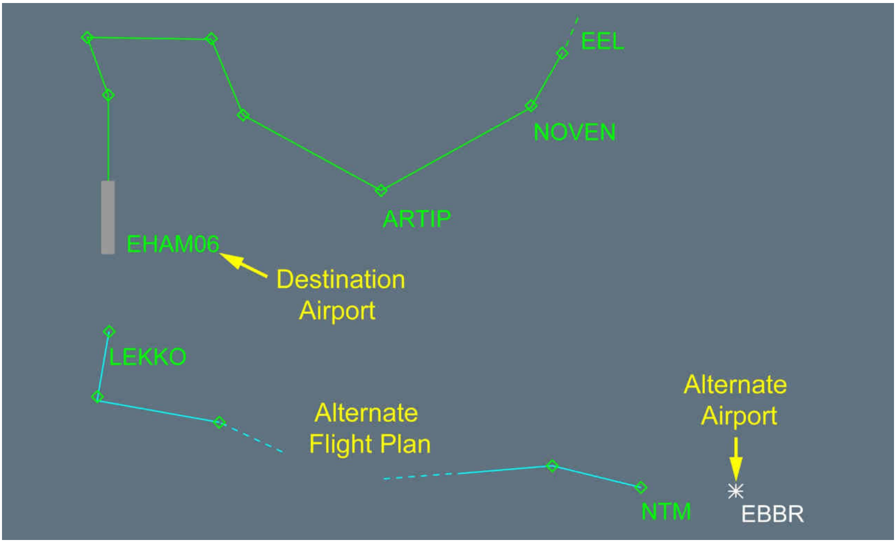
PURPOSE

The flight crew uses the ALTERNATE revision to insert, change, or remove the alternate airport. Associated with the destination airport, the navigation database may have a list of alternate airports (maximum 6) and corresponding company alternate routes. One of the alternate airports is marked, by the Operator, as the preferred one.

Note: *Some airports do not have associated alternate airports in the navigation database.*

When the flight crew enters a city-pair (FROM/TO airports) or a company route, the FMS completes the destination flight plan with the preferred alternate airport and the corresponding company alternate route.
If the navigation database has no company route between the destination airport and the alternate airport, the alternate route will be a direct route (indicated by a flight plan discontinuity) between the destination airport and the alternate airport.

Alternate Airport and Alternate Flight Plan



At any time, the flight crew can display the list of the alternate airports that are associated with the current destination airport, and can designate any of the airports in the list as the alternate airport.

The flight crew can also designate any other airport, that is not in the alternate list, as the alternate airport.

L2 ALTERNATE LIST INFORMATION AND PREDICTIONS

The FMS provides the following information, for each alternate airport in the navigation database alternate list:

- The company alternate route between the destination airport and the alternate airport, if there is one
- The distance between the destination airport and the alternate airport, along the company route, or the direct distance if there is no company route
- The great circle track between the destination airport and the alternate airport
- The estimated extra fuel at the alternate airport.

This information helps the flight crew to compare the alternate airports and to change the alternate airport, if necessary.
As soon as the flight crew inserts the alternate airport and the alternate flight plan, the FMS compute the predictions for the alternate flight plan. For more information, *Refer to DSC-22-FMS-10-40-70 Predictions for the Alternate Flight Plan*.

ALTERNATE REVISION AND SECONDARY FLIGHT PLAN

The alternate revision is available for the active (or temporary) flight plan, and for the secondary flight plans.

ALTERNATE REVISION AND TEMPORARY FLIGHT PLAN

Inserting, changing, or removing the alternate airport creates a temporary flight plan.

Note: *Inserting, changing, or removing the alternate airport (and alternate flight plan) on the INIT page does not create a temporary flight plan.*

L1 ENABLE ALTN

The flight crew activates the alternate flight plan by using the ENABLE ALTN revision.
For more information, *Refer to DSC-22-FMS-10-40-20 Purpose*.

Ident.: DSC-22-FMS-10-40-20-120-00003643.0002001 / 14 APR 16

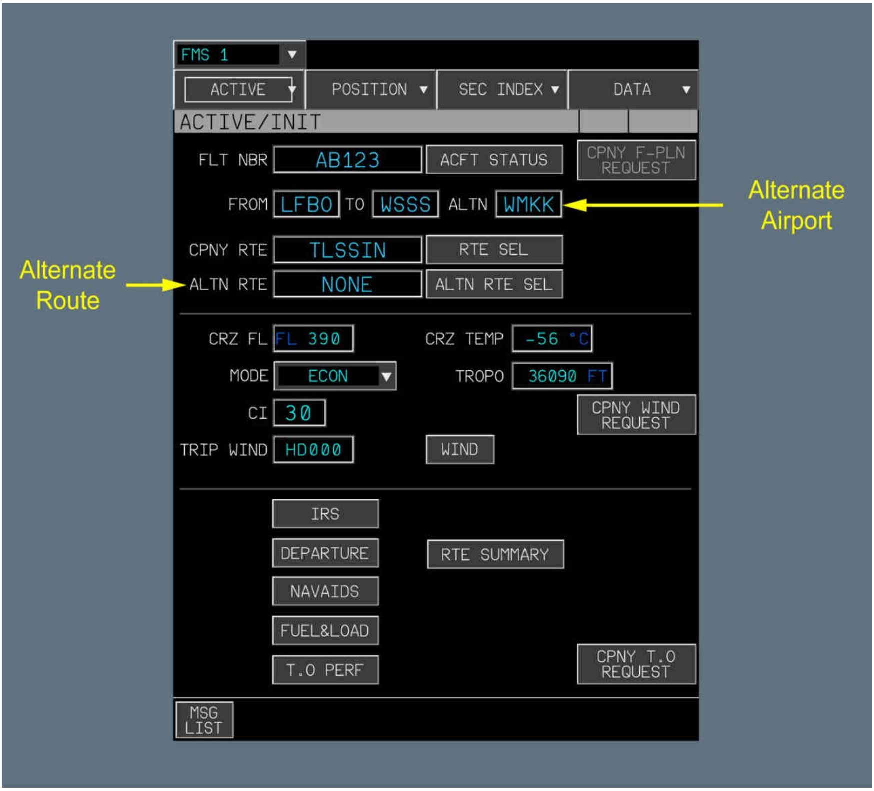
CONTROLS AND INDICATORS

ON THE MFD

During the flight plan initialization, the flight crew can check, enter, and change the alternate airport and the company alternate route on the INIT page.

Note: *The FMS does not create a temporary flight plan, when the flight crew enters or changes the alternate airport or the company alternate route via the INIT page.*

INIT Page



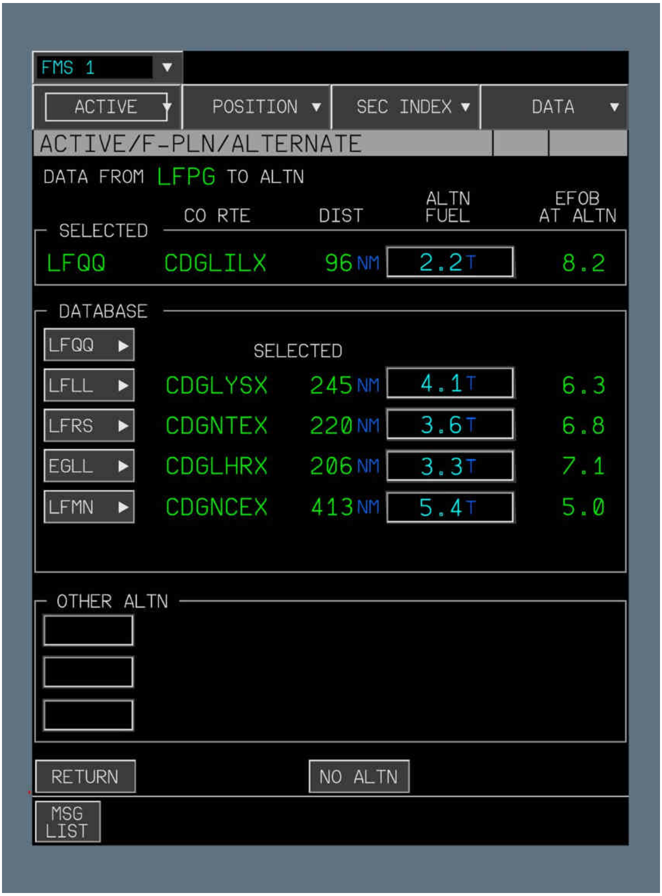
FMS 1
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/INIT
ACFT STATUS
CPNY F-PLN REQUEST
RTE SEL
ALTN RTE SEL
CPNY WIND REQUEST
WIND
IRS
DEPARTURE
NAVAIDS
FUEL&LOAD
T.O PERF
RTE SUMMARY
CPNY T.O REQUEST
MSG LIST
Alternate Airport
Alternate Route

FLT NBR AB123
FROM LFBO TO WSSS ALTN WMKK
CPNY RTE TLSSIN
ALTN RTE NONE
CRZ FL FL 390
CRZ TEMP -56 °C
MODE ECON
TROPO 36090 FT
CI 30
TRIP WIND HD000

For more information about the INIT page, *Refer to DSC-22-FMS-20-20-20 INIT Page*.

On the ALTERNATE page, the flight crew can display the list of possible alternate airports (and the associated predictions), and insert, delete, or change the alternate airport.

ALTERNATE Page



ACTIVE/F-PLN/ALTERNATE

DATA FROM LFPG TO ALTN

	CO RTE	DIST	ALTN FUEL	EFOB AT ALTN
SELECTED				
LFQQ	CDGLILX	96 NM	2.2 T	8.2
DATABASE				
LFQQ ▶	SELECTED			
LFLL ▶	CDGLYSX	245 NM	4.1 T	6.3
LFRS ▶	CDGNTEX	220 NM	3.6 T	6.8
EGLL ▶	CDGLHRX	206 NM	3.3 T	7.1
LFMN ▶	CDGNCEX	413 NM	5.4 T	5.0
OTHER ALTN				

For more information about the ALTERNATE page, *Refer to DSC-22-FMS-20-20-20 ALTERNATE Page*.

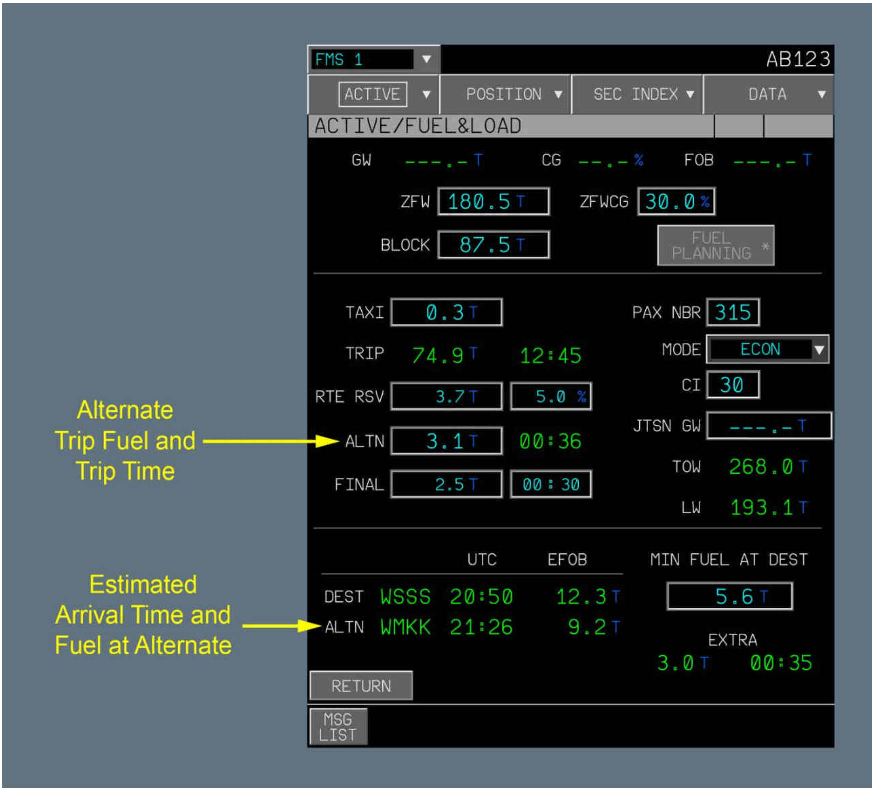
The flight crew can access the ALTERNATE page via the F-PLN page, by selecting the ALTERNATE revision in the F-PLN INFO menu.

The alternate flight plan is displayed in blue on the F-PLN page.

For more information about the F-PLN page, *Refer to DSC-22-FMS-20-20-20 F-PLN Page*.

The FUEL&LOAD page displays:
- The alternate trip fuel and time
- The time of arrival, at the alternate airport
- The estimated fuel on board, at the alternate airport.

FUEL&LOAD Page


Alternate Trip Fuel and Trip Time
Estimated Arrival Time and Fuel at Alternate
FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
FUEL PLANNING
RETURN
MSG LIST

ACTIVE/FUEL&LOAD

GW ---.-T CG --.-% FOB ---.-T

ZFW 180.5T ZFWCG 30.0%

BLOCK 87.5T

TAXI 0.3T PAX NBR 315

TRIP 74.9T 12:45 MODE ECON

CI 30

RTE RSV 3.7T 5.0%

JTSN GW ---.-T

ALTN 3.1T 00:36

TOW 268.0T

FINAL 2.5T 00:30

LW 193.1T

		UTC	EFOB
DEST	WSSS	20:50	12.3T
ALTN	WMKK	21:26	9.2T

MIN FUEL AT DEST 5.6T

EXTRA 3.0T 00:35

Note: The illustration above includes the Fuel Jettison ✳ option.

For more information about the FUEL&LOAD page, *Refer to DSC-22-FMS-20-20-20 FUEL&LOAD Page*.

FIX INFO

Applicable to: ALL

Ident.: DSC-22-FMS-10-40-20-130-00003612.0001001 / 03 JAN 20

PURPOSE

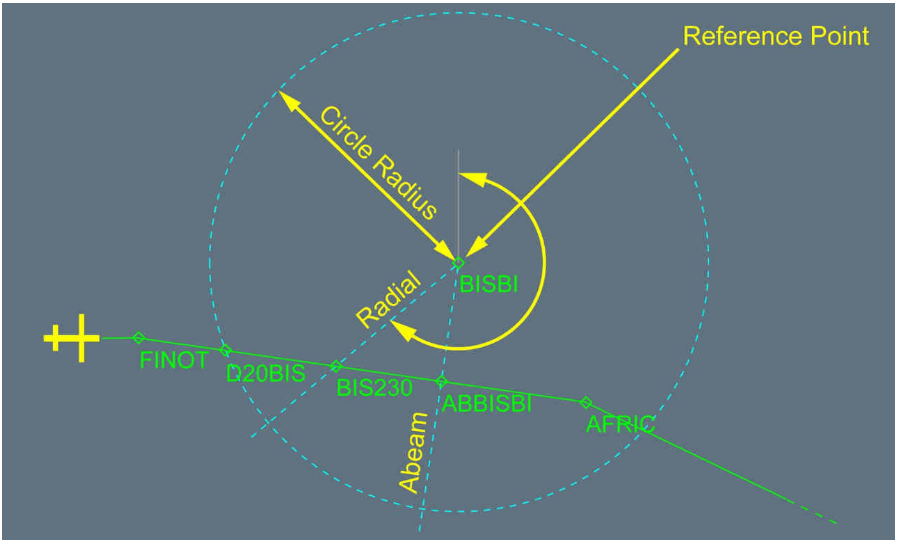
The flight crew uses the FIX INFO revision to compute the intersection of the flight plan and:

- A radial from a specified reference point, and/or
- A circle with a specified reference point as center, and/or

Note: The FMS searches only for the first intersection down-path the flight plan.

- The abeam line from a specified reference point.

FIX INFO Revision



L2 The reference point, also referred to as reference fix, can be a navigation database or pilot-stored waypoint, navaid, airport or runway.

L1 The FMS computes the following predictions for each intersection:

- Time of arrival
- Distance from P.POS
- Altitude.

INSERTION OF THE INTERSECTION IN THE FLIGHT PLAN

The flight crew can insert the computed intersections in the flight plan.

L2 The fix information waypoints are part of the flight plan, but are not stored in the pilot-stored elements database. This means that the fix information waypoints can be used for every flight plan revision (except AIRWAYS), until they are sequenced. As soon as they are sequenced, they are no longer memorized by the FMS.

Note: *The FIX INFO revision can also be used for display purposes only (without flight plan changes). The reference point and selected radial, circle or abeam are highlighted on the ND, as soon as they are computed, whether an intersection with the flight plan is found or not.*
FIX INFO RADIUS with a large radius more than 300 NM, may not appear correctly on the ND. For more information Refer to Abnormal Operations section.

FIX INFO REVISION AND SECONDARY FLIGHT PLAN

The FIX INFO revision is available only for the active (or temporary) flight plan.
Intersections are created only in the destination flight plan of the active flight plan.

FIX INFO REVISION AND TEMPORARY FLIGHT PLAN

Insertion of a fix information waypoint creates a temporary flight plan.

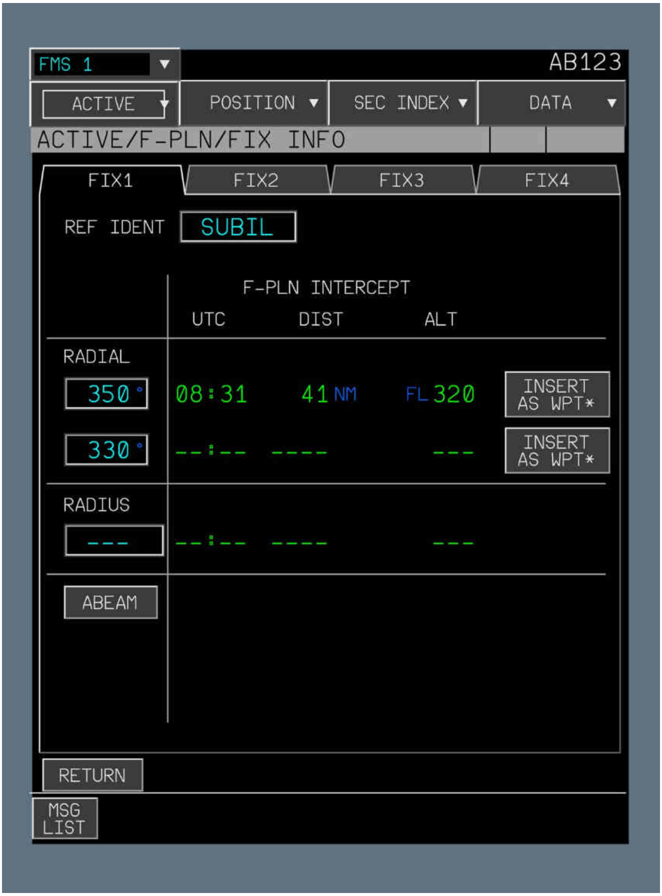
Ident.: DSC-22-FMS-10-40-20-130-00003645.0001001 / 27 FEB 17

CONTROLS AND INDICATORS

ON THE MFD

The flight crew can display and insert fix information waypoints on the FIX INFO page.

FIX INFO Page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN/FIX INFO
FIX1
FIX2
FIX3
FIX4
F-PLN INTERCEPT
UTC
DIST
ALT
INSERT AS WPT*
INSERT AS WPT*
ABEAM
RETURN
MSG LIST

REF IDENT SUBIL

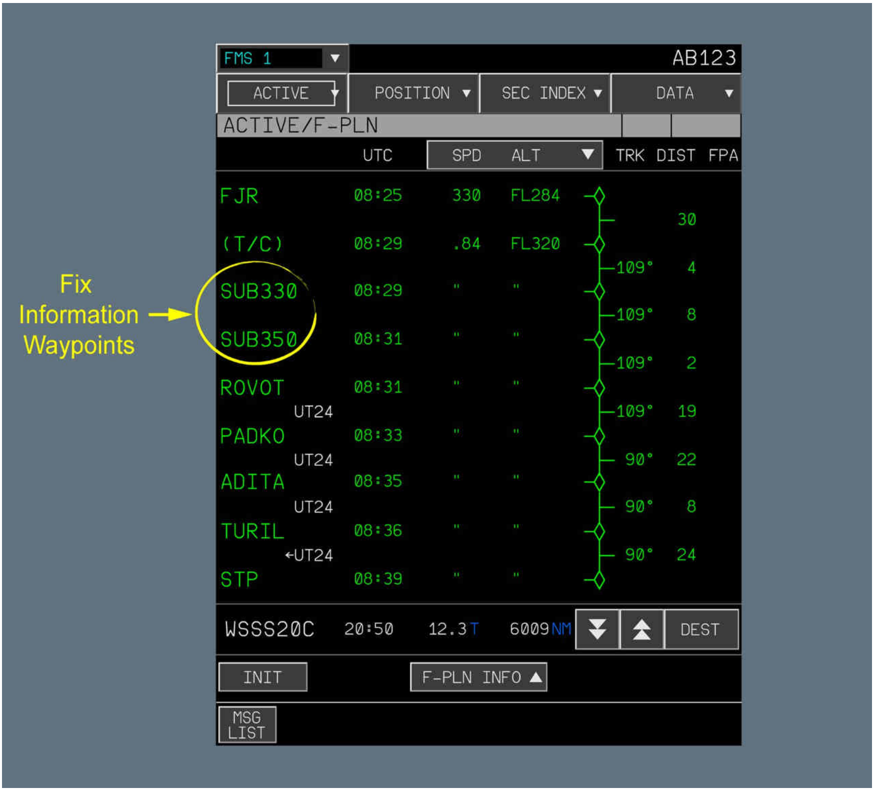
	UTC	DIST	ALT
RADIAL			
350°	08:31	41 NM	FL 320
330°	--:--	----	---
RADIUS			
---	--:--	----	---

For more information about the FIX INFO page, *Refer to DSC-22-FMS-20-20-20 FIX INFO Page*.
The flight crew can access the FIX INFO page via the F-PLN page, by selecting the FIX INFO revision in the F-PLN INFO menu.

L3 The created intersections may be inserted in the flight plan. The fix information waypoints appear with the following ident:

- Intersection with radial: YYYNNN, where YYY are the first three characters of the reference fix, and NNN the radial (e.g. SUB330)
- Intersection with circle: DNNNYYY, where NNN is the radius of the circle (in nm), and YYY the first three characters of the reference fix (e.g. D70BIS)
- Abeam intersection: ABYYYYY, where YYYYY are the first five characters of the reference fix (e.g. ABBISBI).

F-PLN Page



```
FMS 1                                           AB123
ACTIVE/F-PLN
                 UTC     SPD    ALT     TRK  DIST  FPA
FJR             08:25    330   FL284
                                                30
(T/C)           08:29    .84   FL320
                                        109°    4
SUB330          08:29     "      "
                                        109°    8
SUB350          08:31     "      "
                                        109°    2
ROVOT           08:31     "      "
          UT24                          109°   19
PADKO           08:33     "      "
          UT24                           90°   22
ADITA           08:35     "      "
          UT24                           90°    8
TURIL           08:36     "      "
         ←UT24                           90°   24
STP             08:39     "      "
WSSS20C    20:50    12.3T    6009NM
```

ON THE ND

The designated reference point(s) are highlighted on the ND.

The selected radial(s) and circle(s) are also highlighted on the ND, whether an intersection with the flight plan is found or not.
The abeam radial is highlighted on the ND, only if an abeam point is found.
Radials, circles, and abeam radials are no longer displayed on the ND, if their associated intersection is inserted in the flight plan, or if their entry field is cleared.

LL CROSSING

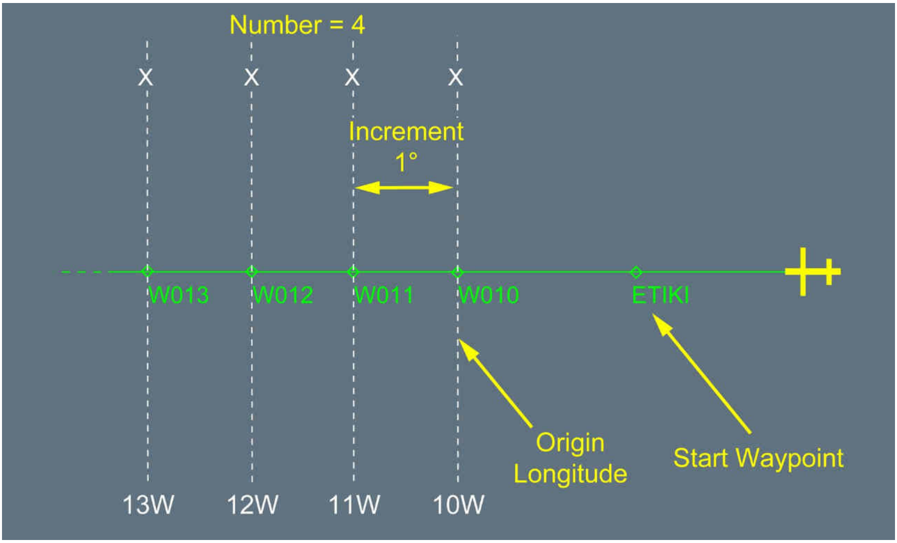
Applicable to: ALL

Ident.: DSC-22-FMS-10-40-20-140-00003613.0001001 / 14 APR 14

PURPOSE

The flight crew uses the LL CROSSING revision to insert a waypoint or a series of waypoints along the flight plan, defined by the intersection(s) of the flight plan with a series of latitudes or longitudes. The flight crew defines the series of waypoints, by entering:
- The start waypoint
- The origin latitude or longitude
- The latitude or longitude increment
- The maximum number of intersections.

LL CROSSING Revision



L2 No intersections are created beyond the last en-route waypoint.

L3 The latitude/longitude crossing waypoints are part of the flight plan, but are not stored in the pilot-stored elements database. This means that the latitude/longitude crossing waypoints can be used for every flight plan revision (except AIRWAYS), until they are sequenced. As soon as they are sequenced, they are no longer memorized by the FMS.

L2 LL CROSSING REVISION AND SECONDARY FLIGHT PLAN

The LL CROSSING revision is available for the active (or temporary) flight plan, and for the secondary flight plans.

LL CROSSING REVISION AND TEMPORARY FLIGHT PLAN

Insertion of a latitude/longitude crossing waypoint, or series of waypoints, creates a temporary flight plan.

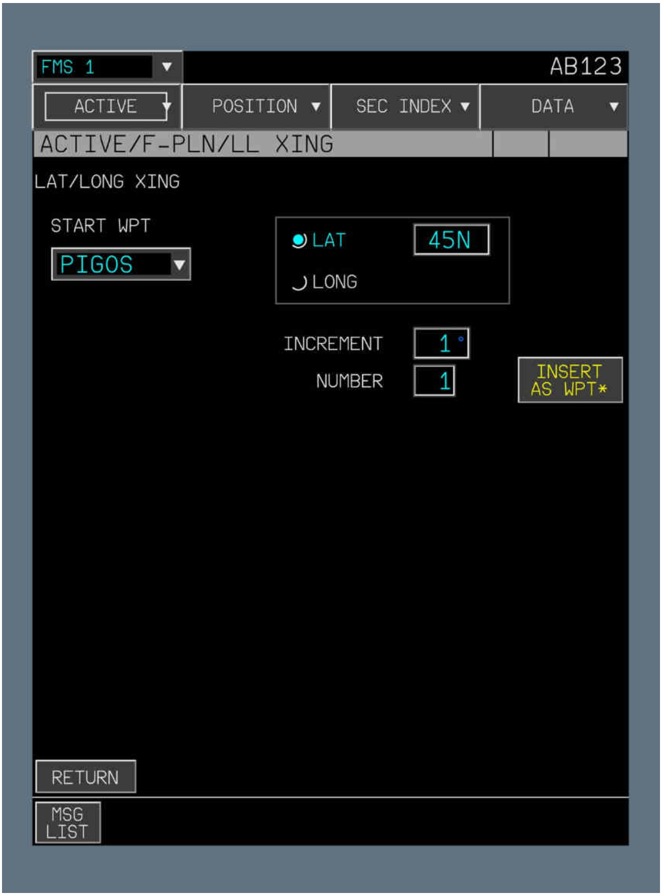
Ident.: DSC-22-FMS-10-40-20-140-00003647.0001001 / 14 APR 14

CONTROLS AND INDICATORS

ON THE MFD

The flight crew can create and insert latitude/longitude crossing waypoints on the LL XING page.

LL XING Page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN/LL XING
LAT/LONG XING
START WPT
PIGOS
● LAT
45N
○ LONG
INCREMENT
1°
NUMBER
1
INSERT AS WPT*
RETURN
MSG LIST

For more information about the LL XING page, *Refer to DSC-22-FMS-20-20-20 LL XING Page*. The flight crew can access the LL XING page via the F-PLN page by selecting the LL CROSSING revision in the F-PLN INFO menu.

The created intersections are inserted in the flight plan, with the following ident:
- NXX or SXX for latitude crossings (e.g. N75)
- EXXX or WXXX for longitude crossings (e.g. W125).

Ident.: DSC-22-FMS-10-40-20-140-00003648.0001001 / 14 APR 14

ASSOCIATED MESSAGES

On the MFD, the FMS message area displays the following message: NO INTERSECTION FOUND (*Refer to message*).

Vertical Revisions

OVERVIEW

Ident.: DSC-22-FMS-10-40-30-00004409.0001001 / 14 APR 14
Applicable to: ALL

A change to the vertical flight plan is referred to as a vertical revision.
The flight plan waypoint from which a vertical revision applies is referred to as the revised waypoint.

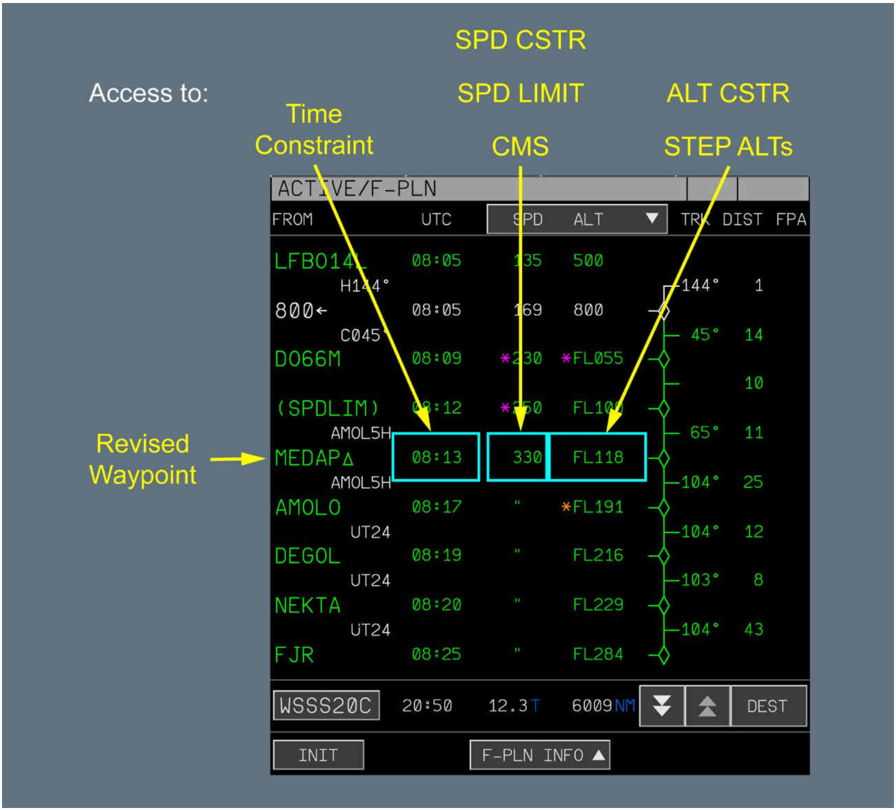
The flight crew can access all vertical revisions via the F-PLN page on the MFD, by:
- Clicking on the time, speed, altitude, or wind prediction of the revised waypoint, or
- Via the waypoint revisions menu of the revised waypoint.

Note: *The flight crew can also access the WIND revision via the ACTIVE menu of the general menu bar.*

ACCESS VIA THE WAYPOINT PREDICTIONS

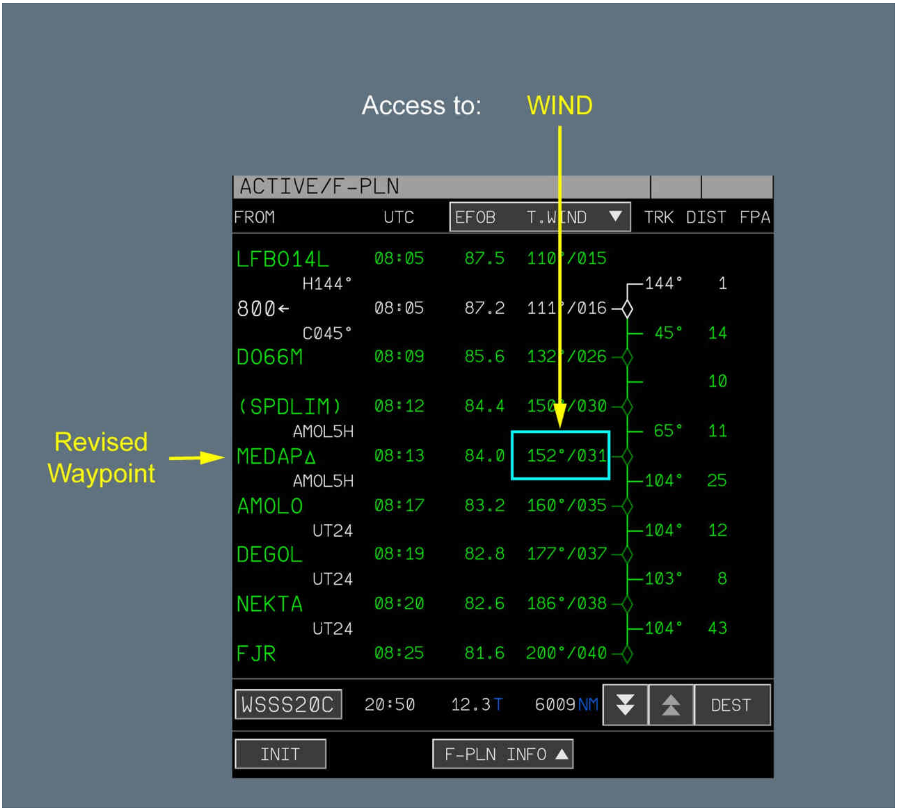
Via the waypoint predictions, the flight crew can access the following vertical revisions:
- The time prediction provides access to the time constraint revision
- The speed prediction provides access to the Speed Constraint (SPD CSTR) revision and Speed Limit (SPD LIMIT) revision, or to the Constant Mach Segment (CMS) revision, depending on the flight phase to which the revised waypoint belongs
- The altitude prediction provides access to the Altitude Constraint (ALT CSTR) revision, or Step Altitudes (STEP ALTs) revision, depending on the flight phase to which the revised waypoint belongs
- The wind prediction provides access to the WIND revision.

Direct Access to Vertical Revisions - Time, Speed, and Altitude


Access to:
Time Constraint
SPD CSTR
SPD LIMIT
CMS
ALT CSTR
STEP ALTs
Revised Waypoint

```
ACTIVE/F-PLN
FROM              UTC     SPD   ALT  ▼   TRK  DIST FPA
LFBO14L           08:05   135   500
        H144°                             144°    1
800←              08:05   169   800
        C045°                              45°   14
D066M             08:09  *230  *FL055
                                                 10
(SPDLIM)          08:12  *250   FL100
        AMOL5H                             65°   11
MEDAPΔ            08:13   330   FL118
        AMOL5H                            104°   25
AMOLO             08:17    "   *FL191
          UT24                            104°   12
DEGOL             08:19    "    FL216
          UT24                            103°    8
NEKTA             08:20    "    FL229
          UT24                            104°   43
FJR               08:25    "    FL284
WSSS20C  20:50   12.3T   6009NM              DEST
INIT             F-PLN INFO ▲
```

Direct Access to Vertical Revisions - Wind



FROM	UTC	EFOB	T.WIND	TRK	DIST	FPA
LFBO14L	08:05	87.5	110°/015			
H144°				144°	1	
800←	08:05	87.2	111°/016			
C045°				45°	14	
DO66M	08:09	85.6	132°/026			
					10	
(SPDLIM)	08:12	84.4	150°/030			
AMOL5H				65°	11	
MEDAP∆	08:13	84.0	152°/031			
AMOL5H				104°	25	
AMOLO	08:17	83.2	160°/035			
UT24				104°	12	
DEGOL	08:19	82.8	177°/037			
UT24				103°	8	
NEKTA	08:20	82.6	186°/038			
UT24				104°	43	
FJR	08:25	81.6	200°/040			

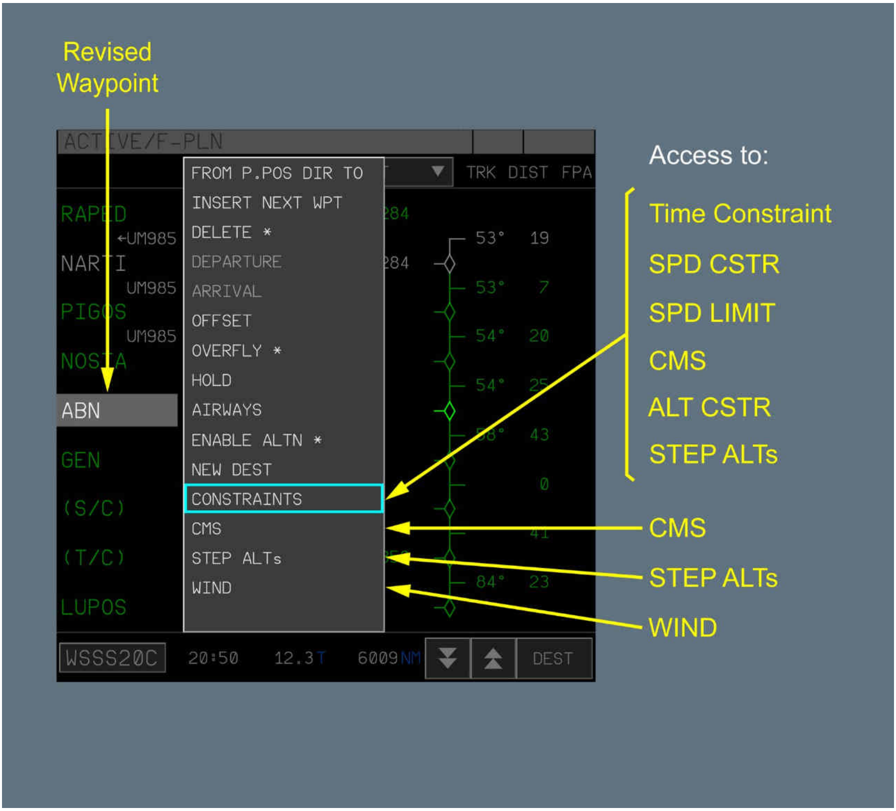
WSSS20C 20:50 12.3T 6009NM

ACCESS VIA THE WAYPOINT REVISION MENU

The lower part of the waypoint revisions menu displays the following vertical revisions:

- CONSTRAINTS: Provides access to the VERT REV page, that collects all vertical revisions, except the WIND revision
- CMS: Provides access to the CMS revision
- STEP ALTs: Provides access to the STEP ALTs revision
- WIND: Provides access to the WIND revision.

Waypoint Revisions Menu


Revised Waypoint
ACTIVE/F-PLN
TRK DIST FPA
RAPED
←UM985
NARTI
UM985
PIGOS
UM985
NOSTA
ABN
GEN
(S/C)
(T/C)
LUPOS
FROM P.POS DIR TO
INSERT NEXT WPT
DELETE *
DEPARTURE
ARRIVAL
OFFSET
OVERFLY *
HOLD
AIRWAYS
ENABLE ALTN *
NEW DEST
CONSTRAINTS
CMS
STEP ALTs
WIND
53° 19
53° 7
54° 20
54° 25
58° 43
0
41
84° 23
WSSS20C
20:50
12.3T
6009NM
DEST
Access to:
Time Constraint
SPD CSTR
SPD LIMIT
CMS
ALT CSTR
STEP ALTs
CMS
STEP ALTs
WIND

TIME CONSTRAINT (RTA)

Applicable to: ALL

Ident.: DSC-22-FMS-10-40-30-10-00004410.0001001 / 14 APR 14

PURPOSE

The flight crew uses the time constraint revision to:

- Enter, change, or delete a Required Time of Arrival (RTA) at a waypoint
- Enter or change the Estimated Takeoff Time (ETT).

REQUIRED TIME OF ARRIVAL (RTA)

The RTA is a time constraint that must be respected at the revised waypoint.
The constraint can be to reach the waypoint AT, AT OR BEFORE, or AT OR AFTER the entered RTA.

L2 The flight crew can define an RTA at all waypoints of the destination flight plan (including the destination airport), except at the departure airport, the FROM waypoint, and the missed approach waypoints.
There can be only one RTA per flight plan. If there is already an RTA in the flight plan and the flight crew enters a new RTA on a different waypoint, the previous RTA is deleted, and the new one is taken into account.

L3 It is not possible to insert an RTA, or the existing RTA is not taken into account, if:

- The Engine-Out (EO) mode is active
- The UTC time is not valid
- The aircraft is in a holding pattern with manual termination, or in the deceleration zone of this holding pattern
- The flight phase is CRZ and the aircraft is closer than 40 NM from the T/D
- The flight phase is DES, APPR, or GA.

Automatic Deletion of the RTA

The existing RTA is automatically deleted, with the associated FMS message RTA DELETED, if one of the following occurs:

- The Engine-Out (EO) mode becomes active
- The UTC time is no longer valid
- The aircraft enters a holding pattern with manual termination, or the deceleration zone of this holding pattern
- The flight phase transitions from DES or APPR, to CLB or CRZ
- The flight phase becomes GA.

The existing RTA is automatically deleted, with no associated FMS message, if one of the following occurs:

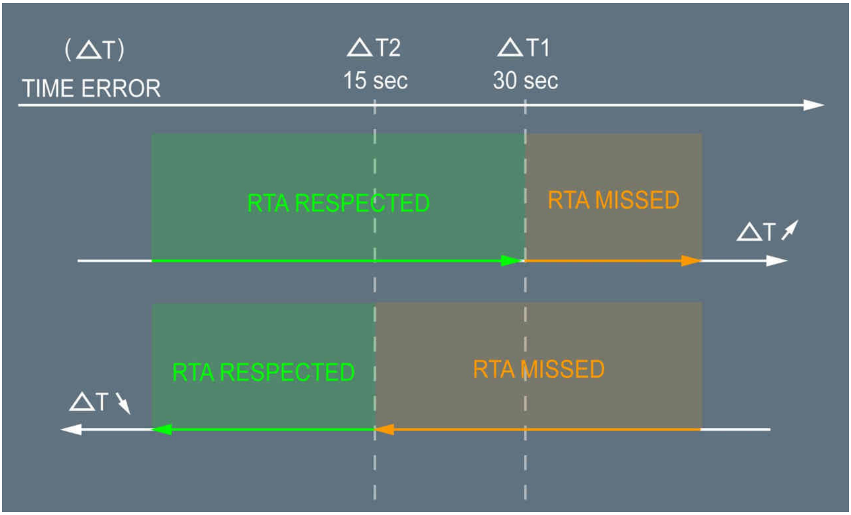
- A second RTA is entered in the flight plan
- The alternate flight plan is enabled
- The waypoint with the time constraint becomes an ABEAM waypoint, when a DIRECT WITH ABEAM is performed.

L1 Time Error

The FMS compares the RTA with the Estimated Time of Arrival (ETA) at the waypoint, and predicts whether the time constraint will be respected or missed. The difference between the RTA and the ETA is referred to as the time error.

The time constraint is predicted as missed, if the time error is more than 30 s. When missed, the time constraint remains missed as long as the time error is more than 15 s.

Time Error



L3 *Note:* *ΔT1 and ΔT2 are respectively 30 s and 15 s, if the distance between the aircraft and the revised waypoint is less than 2 000 NM.*
If the distance is more than 2 000 NM, ΔT1 and ΔT2 linearly increase at a rate of 60 s per 1 000 NM.

L1 When the time constraint is missed, the FMS displays the TIME ERROR AT XXXXXXX message on the MFD, with XXXXXXX the ident of the waypoint with the time constraint.

ESTIMATED TAKEOFF TIME (ETT)

The ETT is the time reference used for flight plan predictions in the PREFLIGHT flight phase. At transition to the T.O flight phase, the predictions are based on the current aircraft time.

The ETT may be (in the following order of priority):

- A flight crew entry
- An FMS computed value:
  The FMS computes an ETT, when there is an RTA in the flight plan. The default ETT is updated after each flight plan revision.

L2 *Note:* *There is an automatically computed ETT, when the necessary flight time from the departure airport to the constrained waypoint is less than the available time between the current aircraft time and the RTA.*

The flight crew can clear the manually entered ETT at any time. However, the automatically computed ETT can only be cleared by deleting the associated RTA.
When the flight crew changes the departure airport, the ETT is cleared automatically.
L1 If the UTC time reaches the ETT, or at transition to the T.O flight phase, the ETT becomes the UTC time.

L3 The ETT can only be defined, if:

- The flight phase is PREFLIGHT
- The UTC time is valid.

L2 TIME CONSTRAINT REVISION AND SECONDARY FLIGHT PLAN

The time constraint revision (RTA and ETT) is available for the active (or temporary) flight plan, and for the secondary flight plans.

TIME CONSTRAINT REVISION AND TEMPORARY FLIGHT PLAN

Insertion, change, or deletion of an RTA, or ETT, creates a temporary flight plan.

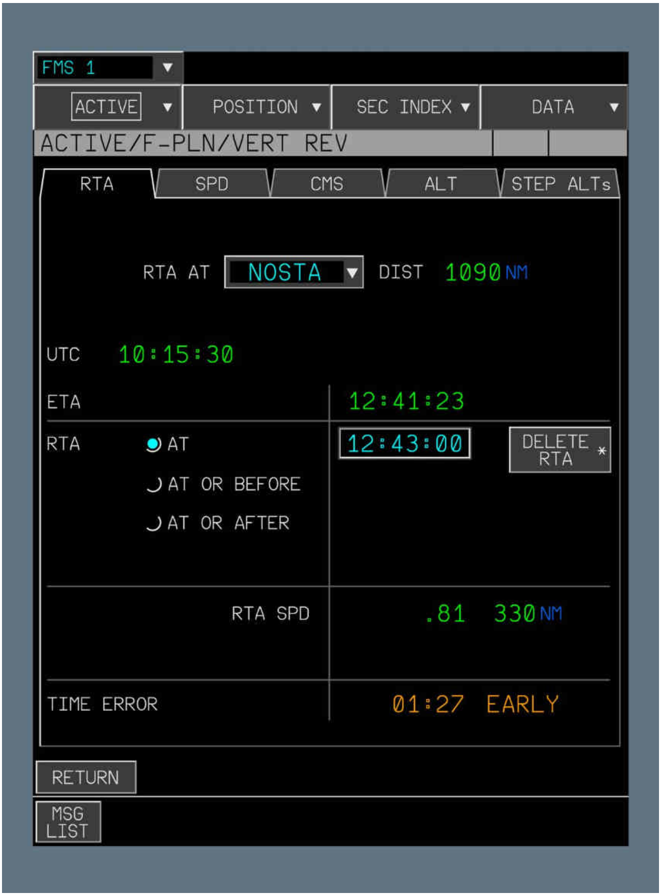
Ident.: DSC-22-FMS-10-40-30-10-00004417.0001001 / 14 APR 14

CONTROLS AND INDICATORS

ON THE MFD

The flight crew can enter, change, or delete the RTA and ETT on the RTA panel of the VERT REV page.

RTA Panel of the VERT REV Page


FMS 1
ACTIVE
POSITION
SEC INDEX
DATA
SPD
CMS
ALT
STEP ALTs
DELETE RTA *
RETURN
MSG LIST

ACTIVE/F-PLN/VERT REV

RTA

RTA AT NOSTA DIST 1090 NM

UTC 10:15:30

ETA 12:41:23

RTA ● AT 12:43:00

○ AT OR BEFORE

○ AT OR AFTER

RTA SPD .81 330 NM

TIME ERROR 01:27 EARLY

For more information about the RTA panel of the VERT REV page, *Refer to DSC-22-FMS-20-20-20 VERT REV Page*.

The flight crew can access the VERT REV page via the F-PLN page, by clicking on the time prediction associated with the revised waypoint, or by selecting the CONSTRAINTS revision in the waypoint revisions menu.

On the F-PLN page:
- The time constraint on a waypoint is indicated by a star to the left of the waypoint time prediction. The color of the star is magenta, if the time constraint will be respected, or amber, if the constraint will be missed
- During the PREFLIGHT phase, the ETT is displayed in magenta in the time prediction column of the FROM waypoint.

For more information about the F-PLN page, *Refer to DSC-22-FMS-20-20-20 F-PLN Page*.

ON THE ND

On the upper part of the ND, the time constraint value is displayed under the waypoint ident, when the CONSTRAINTS option is selected on the EFIS CP. The color of the constraint is magenta, if the time constraint will be respected, or amber, if the time constraint will be missed. The time constraint is not indicated on the VD.

Ident.: DSC-22-FMS-10-40-30-10-00004418.0001001 / 14 APR 14

ASSOCIATED MESSAGES

On the MFD, the FMS message area displays the following messages:
- ADJUSTING SPD DUE TO RTA (*Refer to message*)
- RTA ALREADY EXISTS (*Refer to message*)
- RTA DELETED (*Refer to message*)
- RTA NOT CONSIDERED FOR FUEL PLANNING (*Refer to message*)
- TIME ERROR AT XXXXXXX (*Refer to message*)
- T.O TIME REACHED (*Refer to message*).

SPD CSTR

Applicable to: ALL

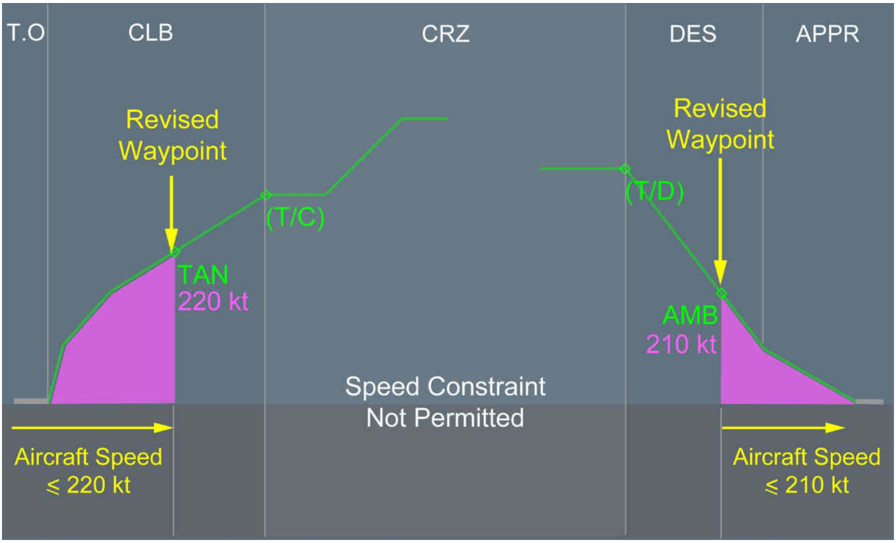
Ident.: DSC-22-FMS-10-40-30-20-00004411.0001001 / 14 APR 14

PURPOSE

The flight crew uses the SPD CSTR revision to enter, change, or delete a speed constraint at a waypoint.

There may be speed constraints for the CLB and the DES flight phases:
- For a climb speed constraint, the aircraft must fly at or below the specified speed, from the departure airport up to the speed constraint waypoint
- For a descent speed constraint, the aircraft must fly at or below the specified speed, from the speed constraint down to the destination airport.

Speed Constraint


T.O
CLB
CRZ
DES
APPR
Revised Waypoint
(T/C)
(T/D)
Revised Waypoint
TAN
220 kt
AMB
210 kt
Speed Constraint Not Permitted
Aircraft Speed ≤ 220 kt
Aircraft Speed ≤ 210 kt

The speed constraint may be (in the following order of priority):
- A flight crew entry
- A database value (the speed constraints can be stored with the terminal area procedures in the navigation database).

L3 A holding pattern that is part of a procedure may have a database speed constraint. However, in this case, the speed constraint will not apply at the holding entry fix, but at the holding exit fix. If the flight crew wants the speed constraint to apply at the holding entry fix, they should manually enter the speed constraint at the holding entry fix, or engage the selected speed/Mach control.

L2 The flight crew can define a speed constraint at the takeoff, climb, descent and approach waypoints of the destination flight plan.

The flight crew cannot define a speed constraint at:
- The departure airport
- The destination airport
- The FROM waypoint
- A pseudo waypoint.

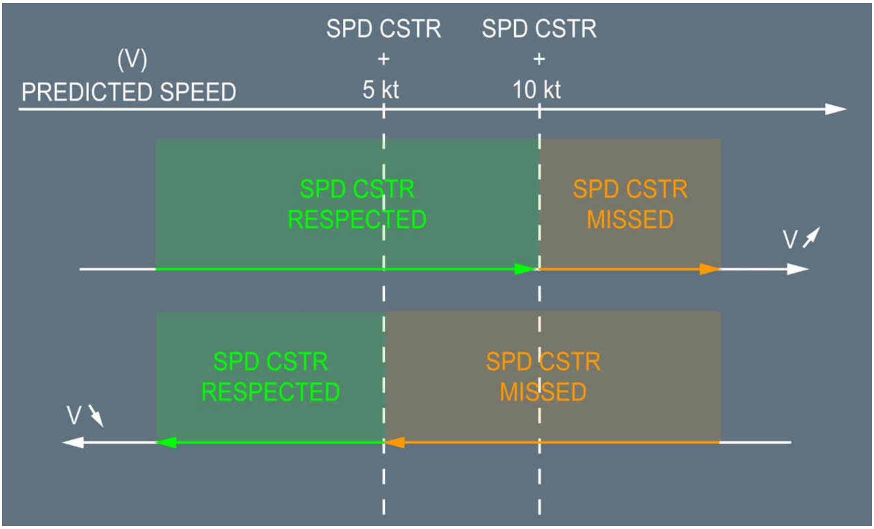
L3 AUTOMATIC DELETION OF THE SPEED CONSTRAINT(S)

- When the flight phase changes from CRZ, DES, or APPR, to GA, all speed constraints between the aircraft and the destination airport are deleted.
  The CONSTRAINTS BEFORE XXXXXXX : DELETED message is displayed on the MFD.
  The "XXXXXXX" corresponds to the ident of the waypoint that follows the last down-path waypoint with a descent speed constraint.
- When the alternate flight plan is enabled, all speed constraints between the aircraft and the former destination airport, and all speed constraints in the alternate flight plan that are below the current aircraft altitude, are deleted.
  The CONSTRAINTS BEFORE XXXXXXX : DELETED message is displayed on the MFD.
  The "XXXXXXX" corresponds to the ident of the waypoint that follows the last down-path waypoint with a speed constraint below the current aircraft altitude.
- When the waypoint, with the speed constraint, becomes an ABEAM waypoint when a DIRECT WITH ABEAM is performed, the constraint is deleted.

L1 SPEED ERROR

The FMS compares the speed constraint value with the predicted speed at the waypoint, and predicts whether the speed constraint will be respected or missed.
The speed constraint is predicted as missed, when the predicted speed is more than 10 kt above the speed constraint value. When missed, the speed constraint remains missed as long as the predicted speed is more than 5 kt above the speed constraint value.

Speed Error


(V)
PREDICTED SPEED
SPD CSTR + 5 kt
SPD CSTR + 10 kt
SPD CSTR RESPECTED
SPD CSTR MISSED
V ↗
SPD CSTR RESPECTED
SPD CSTR MISSED
V ↘

When the speed constraint is missed, the MFD displays the SPD ERROR AT XXXXXXX message on the MFD. The "XXXXXXX" corresponds to the ident of the nearest waypoint (between P.POS and the revised waypoint in climb, or between P.POS and the destination in descent), at which the speed constraint is missed.

L2

SPD CSTR REVISION AND SECONDARY FLIGHT PLAN

The SPD CSTR revision is available for the active (or temporary) flight plan, and for the secondary flight plans.

SPD CSTR REVISION AND TEMPORARY FLIGHT PLAN

The insertion, change, or deletion of a speed constraint creates a temporary flight plan.

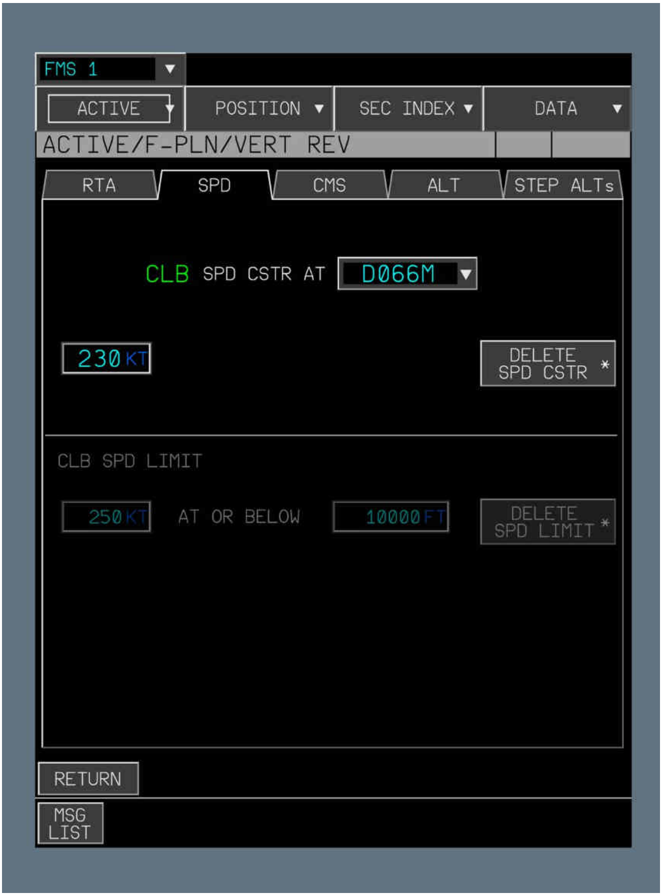
Ident.: DSC-22-FMS-10-40-30-20-00004420.0001001 / 14 APR 14

CONTROLS AND INDICATORS

ON THE MFD

The flight crew can enter, change, or delete a speed constraint on the upper part of the SPD panel of the VERT REV page.

SPD Panel of the VERT REV Page


FMS 1
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN/VERT REV
RTA
SPD
CMS
ALT
STEP ALTs
CLB SPD CSTR AT
D066M
230 KT
DELETE SPD CSTR *
CLB SPD LIMIT
250 KT
AT OR BELOW
10000 FT
DELETE SPD LIMIT *
RETURN
MSG LIST

For more information about the SPD panel of the VERT REV page, *Refer to DSC-22-FMS-20-20-20 VERT REV Page*.

The flight crew can access the VERT REV page via the F-PLN page, by clicking on the speed prediction associated with the revised waypoint, or by selecting the CONSTRAINTS revision in the waypoint revisions menu.

On the F-PLN page, the speed constraint on a waypoint is indicated with a star to the left of the speed prediction of the waypoint. The color of the star is magenta, if the constraint will be respected, or amber, if the constraint will be missed.

For more information about the F-PLN page, *Refer to DSC-22-FMS-20-20-20 F-PLN Page*.

ON THE ND

On the upper part of the ND, the speed constraint value is displayed under the waypoint ident, when the CONSTRAINTS option is selected on the EFIS CP. The color of the constraint is magenta, if the constraint will be respected, or amber, if the constraint will be missed.
The speed constraint is not indicated on the VD.

Ident.: DSC-22-FMS-10-40-30-20-00004421.0001001 / 14 APR 14

ASSOCIATED MESSAGES

On the MFD, the FMS message area displays the following messages:
- CONSTRAINTS BEFORE XXXXXXX : DELETED (*Refer to message*)
- SPD ERROR AT XXXXXXX (*Refer to message*).

SPD LIMIT

Applicable to: ALL

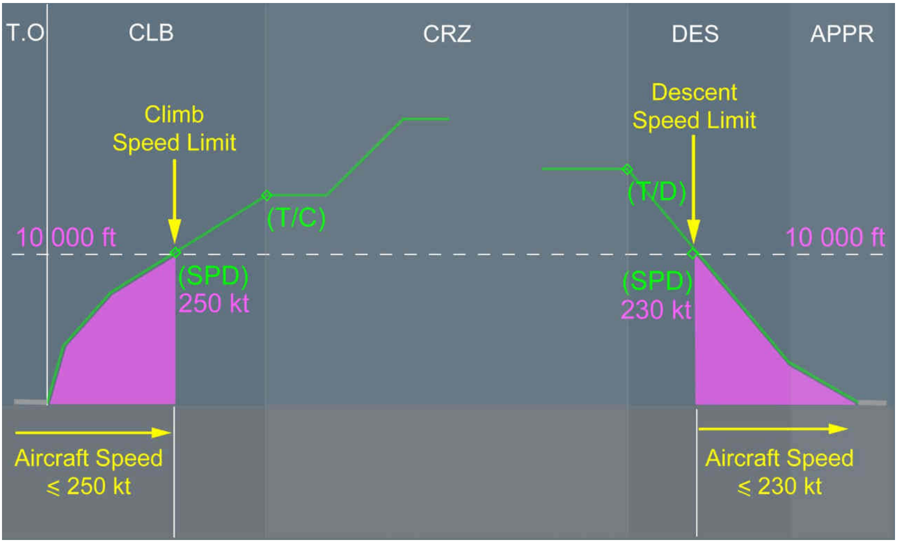
Ident.: DSC-22-FMS-10-40-30-30-00004412.0001001 / 14 APR 14

PURPOSE

The flight crew uses the SPD LIMIT revision to enter, change, or delete the climb or descent speed limit.
The speed limit is a speed constraint to be respected, at and below the specified altitude.
There is only one speed limit for the CLB flight phase (climb speed limit) and/or one for the DES flight phase (descent speed limit).

Note: *The speed limit is not applied in the APPR flight phase.*

Speed Limit

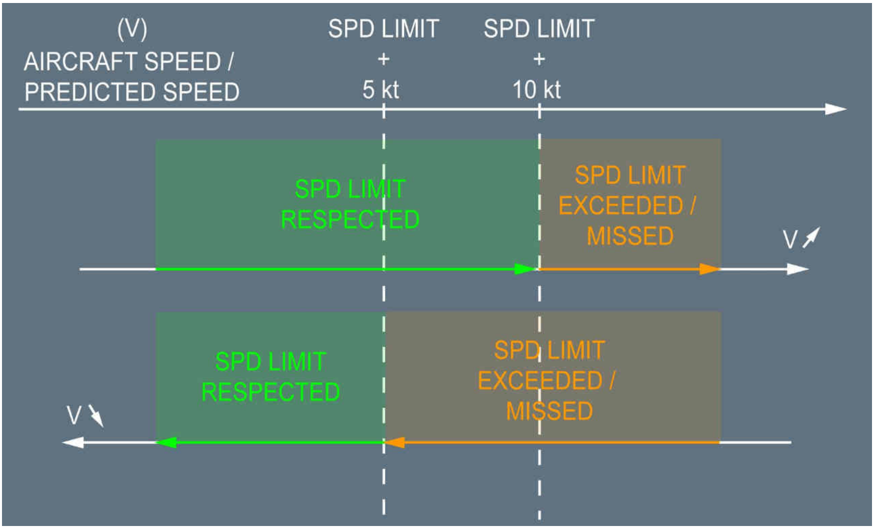

T.O
CLB
CRZ
DES
APPR
Climb
Speed Limit
Descent
Speed Limit
10 000 ft
(T/C)
(T/D)
10 000 ft
(SPD)
250 kt
(SPD)
230 kt
Aircraft Speed
⩽ 250 kt
Aircraft Speed
⩽ 230 kt

The speed limit may be (in the following order of priority):
- A flight crew entry
- A database value (the speed limits can be stored with the associated departure and destination airports in the navigation database)
- The FMS default value, that is 250 kt/10 000 ft.

EXCEEDED/MISSED SPEED LIMIT

The speed limit is exceeded, when the aircraft altitude is below the speed limit altitude, and the aircraft speed is more than 10 kt above the speed limit. When exceeded, the speed limit remains exceeded, as long as the aircraft speed is more than 5 kt above the speed limit.
When the speed limit is exceeded, the FMS displays the SPD LIMIT EXCEEDED message on the MFD.
The speed limit is predicted as missed, when the predicted speed at the speed limit altitude is more than 10 kt above the speed limit. When missed, the speed limit remains missed, as long as the predicted speed is more than 5 kt above the speed limit.

Exceeded/Missed Speed Limit


(V)
AIRCRAFT SPEED /
PREDICTED SPEED
SPD LIMIT + 5 kt
SPD LIMIT + 10 kt
SPD LIMIT RESPECTED
SPD LIMIT EXCEEDED / MISSED
V ↗
SPD LIMIT RESPECTED
SPD LIMIT EXCEEDED / MISSED
V ↘

L2

SPD LIMIT REVISION AND SECONDARY FLIGHT PLAN

The SPD LIMIT revision is available for the active (or temporary) flight plan, and for the secondary flight plans.

SPD LIMIT REVISION AND TEMPORARY FLIGHT PLAN

The insertion, change, or deletion of a speed limit creates a temporary flight plan.

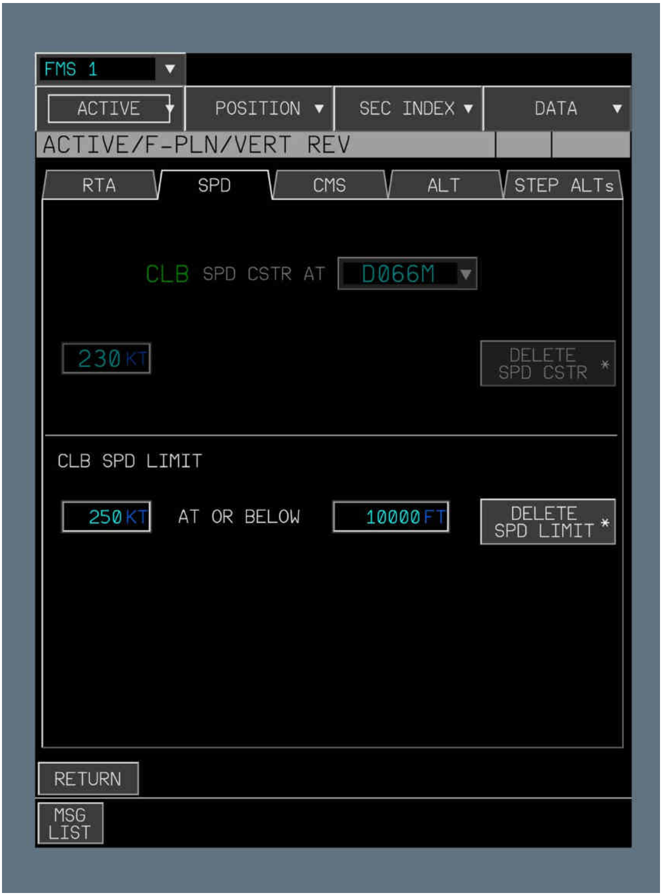
Ident.: DSC-22-FMS-10-40-30-30-00004423.0001001 / 14 APR 14

CONTROLS AND INDICATORS

ON THE MFD

The flight crew can enter, change, or delete a speed limit on the lower part of the SPD panel of the VERT REV page.

SPD Panel of the VERT REV Page


FMS 1
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN/VERT REV
RTA
SPD
CMS
ALT
STEP ALTs
CLB SPD CSTR AT
D066M
230 KT
DELETE SPD CSTR *
CLB SPD LIMIT
250 KT
AT OR BELOW
10000 FT
DELETE SPD LIMIT *
RETURN
MSG LIST

For more information about the SPD panel of the VERT REV page, *Refer to DSC-22-FMS-20-20-20 VERT REV Page*.

The flight crew can access the VERT REV page via the F-PLN page, by clicking on the speed prediction associated with a waypoint of the CLIMB or DESCENT phase, or by selecting the CONSTRAINTS revision in the waypoint revisions menu.

On the F-PLN page, the speed limit is indicated by a pseudo waypoint: (SPD). This pseudo waypoint is inserted in the flight plan, where the aircraft will cross the speed limit altitude. A star to the left of the speed prediction of the pseudo waypoint indicates whether the speed limit is predicted to be respected or missed. The color of the star is magenta, if the constraint is predicted to be respected, or amber, if the constraint is predicted to be missed.

Note: *The flight crew can access the SPD panel of the VERT REV page via the speed limit pseudo waypoint, by clicking on its associated speed prediction, or by selecting the CONSTRAINTS revision in its revisions menu.*

For more information about the F-PLN page, *Refer to DSC-22-FMS-20-20-20 F-PLN Page*.

ON THE ND

On the ND, the speed limit pseudo waypoint is indicated with a magenta dot, if the speed limit is respected. No dot is displayed, if the speed limit is missed.

Ident.: DSC-22-FMS-10-40-30-30-00004424.0001001 / 14 APR 14

ASSOCIATED MESSAGES

On the MFD, the FMS message area displays the following message: SPD LIMIT EXCEEDED (*Refer to message*).

CMS

Applicable to: ALL

Ident.: DSC-22-FMS-10-40-30-40-00004413.0001001 / 14 APR 14

PURPOSE

The flight crew uses the CMS revision to insert a constant Mach constraint on a cruise segment of the destination flight plan. In order to define the CMS, the flight crew enters:

- The start waypoint
  L2 The start waypoint may be any cruise waypoint of the destination flight plan, if it is not part of the departure or arrival procedure.
- L1 The end waypoint
  L2 The end waypoint may be any cruise waypoint of the destination flight plan, if it is not part of the departure or arrival procedure.
- L1 The Mach number.

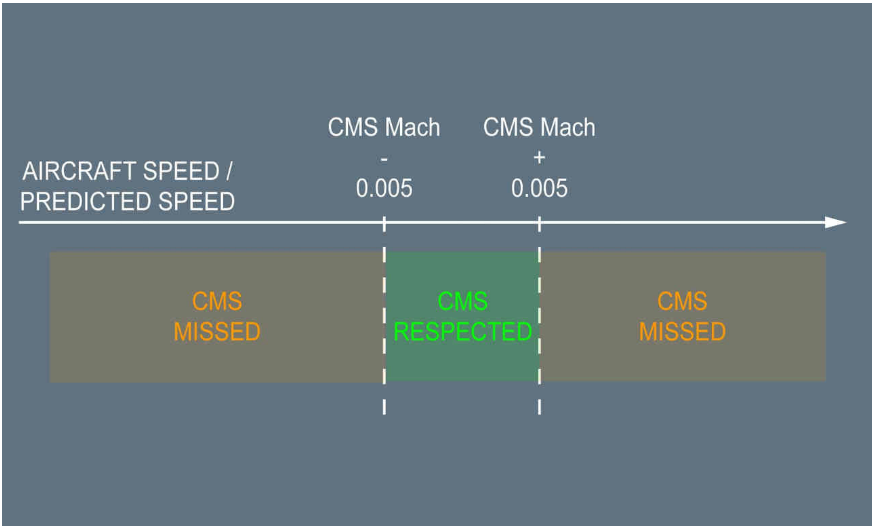
L2 The flight crew can create a CMS at all waypoints of the CRZ flight phase of the destination flight plan. The flight crew cannot create a CMS in the alternate flight plan.
The flight crew can create only one CMS in the flight plan.

L1 The flight crew can change or delete an existing CMS, even while the aircraft flies the cruise segment for which this CMS is defined.

MISSED CMS

The FMS compares the CMS Mach number with the aircraft speed and the predicted speed on the CMS waypoints, and computes whether the CMS will be respected or missed.
The CMS is predicted as missed when the aircraft speed, or predicted speed, is not within (CMS Mach - 0.005, CMS Mach + 0.005).

Missed CMS



L3 AUTOMATIC DELETION OF THE CMS

The existing CMS is automatically deleted, if one of the following occurs:
- The alternate flight plan is enabled
- The Engine-Out (EO) mode becomes active
- The flight phase changes from CRZ to another flight phase.

If the CMS is automatically deleted in the active flight plan, due to a flight phase transition from CRZ to another flight phase, the MACH SEGMENT DELETED message is displayed on the MFD.

L2 CMS REVISION AND SECONDARY FLIGHT PLAN

The CMS revision is available for the active (or temporary) flight plan, and for the secondary flight plans.

CMS REVISION AND TEMPORARY FLIGHT PLAN

The insertion, change, or deletion of a CMS creates a temporary flight plan.

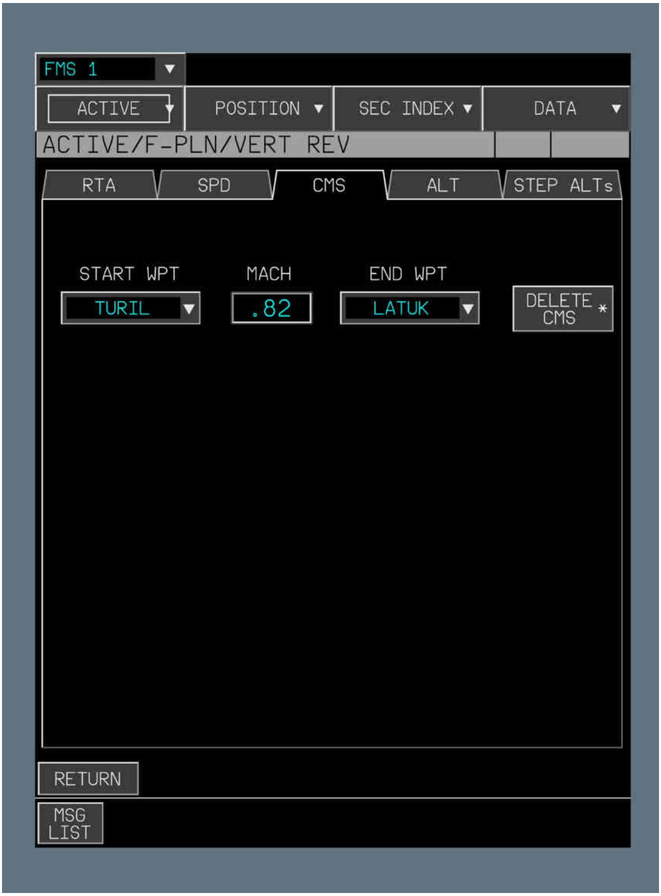
Ident.: DSC-22-FMS-10-40-30-40-00004426.0001001 / 14 APR 14

CONTROLS AND INDICATORS

ON THE MFD

The flight crew can enter, change, or delete the CMS on the CMS panel of the VERT REV page.

CMS Panel of the VERT REV Page


FMS 1
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN/VERT REV
RTA
SPD
CMS
ALT
STEP ALTs
START WPT
TURIL
MACH
.82
END WPT
LATUK
DELETE CMS *
RETURN
MSG LIST

For more information about the CMS panel of the VERT REV page, *Refer to DSC-22-FMS-20-20-20 VERT REV Page*.
The flight crew can access the VERT REV page via the F-PLN page, by clicking on the speed prediction, associated with the revised waypoint, or by selecting the CMS revision in the waypoint revisions menu.
On the F-PLN page, the CMS is indicated with a star to the left of the speed prediction of all the waypoints (except the start waypoint) of the segment. The color of the star is magenta, if the constraint will be respected, or amber, if the constraint will be missed.
For more information about the F-PLN page, *Refer to DSC-22-FMS-20-20-20 F-PLN Page*.

ON THE ND

On the upper part of the ND, the CMS Mach number is displayed under the waypoint ident of all waypoints of the segment (except the start waypoint), when the CONSTRAINTS option is selected on the EFIS CP. The color of the constraint is magenta, if the constraint will be respected, or amber, if the constraint will be missed.
The upper part of the ND also displays the speed change indicator, where the aircraft will accelerate or decelerate to reach the required Mach of the CMS.
The CMS is not indicated on the VD.

Ident.: DSC-22-FMS-10-40-30-40-00004428.0001001 / 14 APR 14

ASSOCIATED MESSAGES

On the MFD, the FMS message area displays the following message: MACH SEGMENT DELETED (*Refer to message*).

ALT CSTR

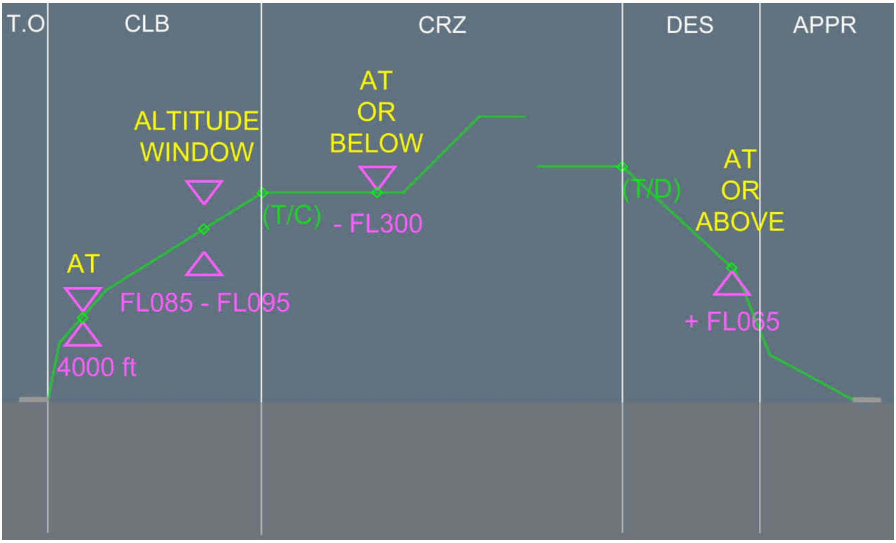
Applicable to: ALL

Ident.: DSC-22-FMS-10-40-30-50-00004414.0001001 / 18 JUN 15

PURPOSE

The flight crew uses the ALT CSTR revision to enter, change, or delete an altitude constraint at a waypoint.
The altitude constraint can be to reach the waypoint AT, AT OR BELOW, or AT OR ABOVE the specified altitude, or between two specified altitudes (ALTITUDE WINDOW).

Altitude Constraint



The altitude constraint can be (in the following order of priority):

- A flight crew entry, or
- A database value (the altitude constraints can be stored with the terminal area procedures in the navigation database).

Note: The ALTITUDE WINDOW constraint can only be a value from the navigation database. The flight crew cannot manually enter or change this constraint.

L2 The flight crew can define an altitude constraint at the takeoff, climb, descent, and approach waypoints of the destination flight plan. The flight crew cannot define an altitude constraint at the departure and destination airports, at the FROM waypoint, or at a pseudo waypoint.

L1 AUTOMATIC DELETION OF THE ALTITUDE CONSTRAINT(S)

The FMS automatically deletes from the F-PLN:

- The altitude constraints (AT, AT OR ABOVE, or AT OR BELOW) with value equal to or greater than the CRZ FL
- The upper constraint of an altitude window constraint if the value of the upper constraint is equal to or greater than the CRZ FL.

The MFD and the ND no longer display the deleted altitude constraints. The deleted altitude constraints are no longer used for the computation of the FMS climb and descent profile. In that case, the MFD displays the CONSTRAINTS ABOVE CRZ FL : DELETED message.

L2 This automatic deletion may occur if the flight crew inserts a SID, a STAR, a new CRZ FL, or step altitudes.

L1 The FMS also deletes obsolete constraints:

- When the FMS flight phase changes from CRZ(DES)(APPR) to GA, the FMS deletes all altitude constraints between the aircraft and the destination airpot
  The CONSTRAINTS BEFORE XXXXXXX : DELETED message is displayed on the MFD.
  L2 The "XXXXXXX" corresponds to the ident of the waypoint that follows the last down-path waypoint with a descent altitude constraint.
- L1 When the alternate flight plan is activated, the FMS deletes the following altitude constraints:
  - Altitude constraints between the aircraft and the initial destination airport
  - Altitude constraints on the alternate flight plan that are below the current aircraft altitude.

  The CONSTRAINTS BEFORE XXXXXXX : DELETED message is displayed on the MFD.
  L2 The "XXXXXXX" corresponds to the ident of the waypoint that follows the last down-path waypoint with a descent altitude constraint.
- L1 When a DIRECT TO with ABEAM is performed, the FMS deletes the altitude constraints of the ABEAM waypoint.

L2 ALTITUDE CONSTRAINT UNIT REFERENCE

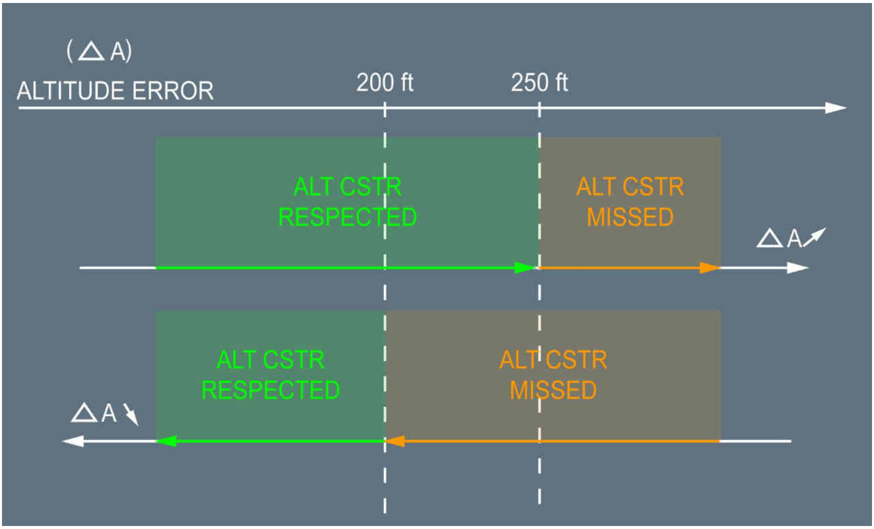
The altitude constraint is in feet, if its value is less than the transition altitude.
The altitude constraint is in FL, if its value is above the transition altitude.
If there is a transition altitude change, the altitude constraints change accordingly.

Note: *The unit of measure of the altitude constraint does not change, if the flight crew changes the barometric reference.*
For example, if the barometric reference is changed from QNH to STD, a down-path altitude constraint that was defined in feet remains defined in feet.

L1 ALTITUDE ERROR

The FMS compares the altitude constraint value with the predicted altitude value at the waypoint, and predicts whether the altitude constraint will be respected or missed. The difference between the two values is referred to as the altitude error.
The altitude constraint is predicted as missed, if the altitude error becomes more than 250 ft.
When missed, the altitude constraint remains missed as long as the altitude error is more than 200 ft.

Altitude Error


(△A)
ALTITUDE ERROR
200 ft
250 ft
ALT CSTR
RESPECTED
ALT CSTR
MISSED
△A↗
ALT CSTR
RESPECTED
ALT CSTR
MISSED
△A↘

L2

ALT CSTR REVISION AND SECONDARY FLIGHT PLAN

The ALT CSTR revision is available for the active (or temporary) flight plan, and for the secondary flight plans.

ALT CSTR REVISION AND TEMPORARY FLIGHT PLAN

The insertion, change, or deletion of an altitude constraint creates a temporary flight plan.

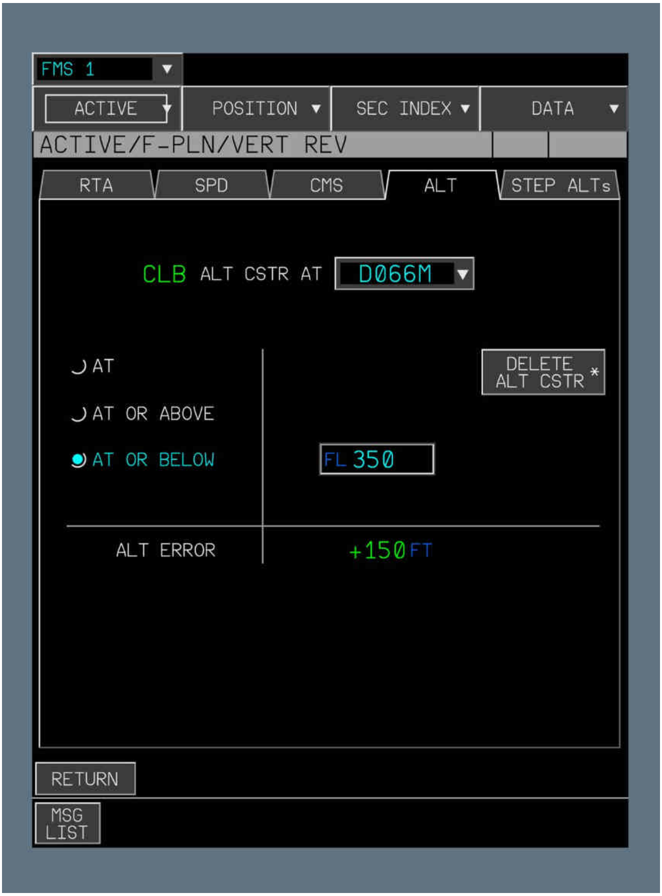
Ident.: DSC-22-FMS-10-40-30-50-00004430.0001001 / 14 APR 14

CONTROLS AND INDICATORS

ON THE MFD

The flight crew can enter, change, or delete the altitude constraint on the ALT panel of the VERT REV page.

ALT Panel of the VERT REV Page


FMS 1
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN/VERT REV
RTA
SPD
CMS
ALT
STEP ALTs
DELETE ALT CSTR *
RETURN
MSG LIST

CLB ALT CSTR AT D066M

○ AT

○ AT OR ABOVE

● AT OR BELOW FL 350

ALT ERROR +150 FT

For more information about the ALT panel of the VERT REV page, *Refer to DSC-22-FMS-20-20-20 VERT REV Page*.

The flight crew can access the VERT REV page via the F-PLN page, by clicking on the altitude prediction, associated with the revised waypoint, or by selecting the CONSTRAINTS revision in the waypoint revisions menu.

On the F-PLN page, the altitude constraint on a waypoint is indicated with a star to the left of the altitude prediction of the waypoint. The color of the star is magenta, if the constraint is predicted to be respected, or amber, if the constraint is predicted to be missed.

For more information about the F-PLN page, *Refer to DSC-22-FMS-20-20-20 F-PLN Page*.

ON THE ND

On the upper part of the ND, the altitude constraint is indicated with a circle around the waypoint symbol. The constraint value under the waypoint ident is displayed, when the CONSTRAINTS option is selected on the EFIS CP. The color of the constraint and the circle is magenta, if the constraint is predicted to be respected, or amber, if the constraint is predicted to be missed.

On the VD, the altitude constraint is indicated with:
- An upside-down triangle, for the AT OR BELOW altitude constraint
- A triangle, for the AT OR ABOVE altitude constraint
- Two triangles (hourglass shape, with touching tips), for the AT altitude constraint
- Two triangles (hourglass shape, with tips that do not touch), for the ALTITUDE WINDOW constraint.

Ident.: DSC-22-FMS-10-40-30-50-00004431.0001001 / 14 APR 14

ASSOCIATED MESSAGES

On the MFD, the FMS message area displays the following messages:
- CONSTRAINTS BEFORE XXXXXXX : DELETED (*Refer to message*)
- CONSTRAINTS ABOVE CRZ FL : DELETED (*Refer to message*).

STEP ALTS

Applicable to: ALL

Ident.: DSC-22-FMS-10-40-30-60-00004415.0001001 / 25 APR 14

PURPOSE

The flight crew uses the STEP ALTs revision to insert or modify a step climb or step descent. A step climb or step descent is a change to a cruise altitude above or below , respectively.
The flight crew inserts step altitudes to create a vertical flight plan, with associated predictions, that correspond as much as possible to the computerized flight plan of the Operator.
The flight crew can define up to 10 steps.

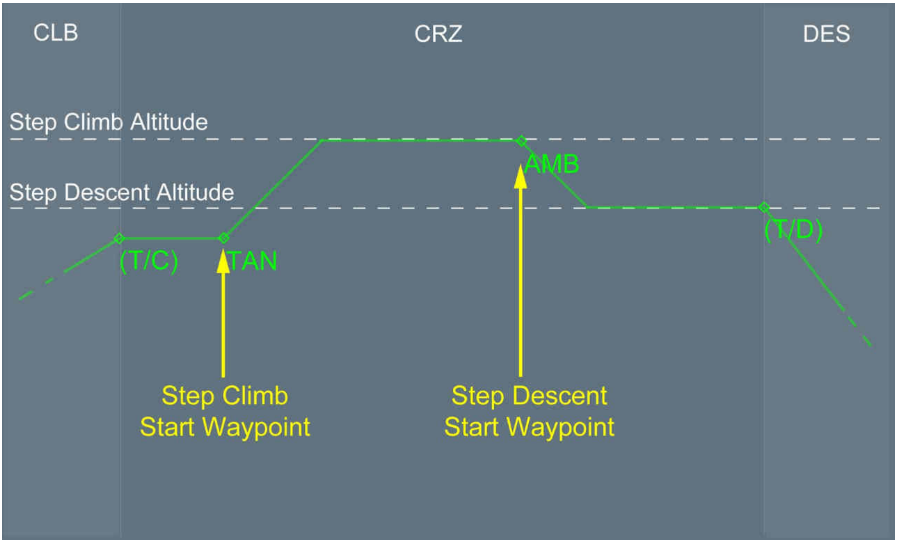
L2 The flight crew can insert up to 10 step altitudes on the cruise waypoints of the destination flight plan.

L1 The flight crew defines the step, by entering:

- The step altitude
- The step start waypoint.
  The step start waypoint is the waypoint on the flight plan, where the aircraft should leave the current cruise altitude to reach the step altitude.

  Note: *An automatic vertical maneuver will not occur, when reaching the step point. The flight crew must manually initiate the step climb or step descent by changing the AFS CP target altitude. The flight crew can do this at any time before reaching the step point.*

Step Altitudes



OPTIMUM STEP POINT

If the flight crew entered one or more altitude steps, the FMS computes an optimum step start point for the next down-path step, if it is a step climb. The FMS also computes the fuel and time savings that would be made, if the step climb was initiated at the optimum step, instead of at the start waypoint entered by the flight crew.

If there is no step in the flight plan, the FMS computes an optimum step start point, after entry of the step altitude. In this case, the fuel and time savings are computed between a flight plan with, and a flight plan without, the step climb.

L2 The optimum step point function is not available for the secondary flight plans.

Note: *When the active flight plan has an optimum step point, and the flight crew imports the active flight plan into a secondary flight plan, the optimum step point will not be copied into the secondary flight plan.*

IGNORED STEP

A step is ignored, when:
- The step end waypoint (the point of reaching the step altitude), is nearer than 50 NM to the T/D, or
- The step start point, or the step end waypoint, is located before the T/C or after the T/D.

Ignored steps are not deleted, but are ignored for the computation of predictions. An ignored step is not indicated in the flight plan on the MFD or the ND, but remains displayed on the STEP ALTS panel of the VERT REV page.
An ignored step may become a predicted step again, after a flight plan change.

L3 AUTOMATIC STEP DELETION

A step climb or step descent is automatically deleted, when:
- The step start waypoint is deleted or sequenced
- The Engine-Out (EO) mode becomes active
- In PREFLIGHT, T.O, or CLB flight phase, the flight crew changes the cruise flight level, and a step climb becomes a step descent, or vice versa
- In CRZ flight phase, the flight crew sets the AFS CP altitude above the aircraft altitude. In this case, all step descents, and all step climbs with a step altitude less than the new AFS CP altitude, are deleted.
- In CRZ flight phase, the flight crew sets the AFS CP altitude below the aircraft altitude. In this case, all step climbs, and all step descents with a step altitude above the new AFS CP altitude, are deleted.

When the step altitude is automatically deleted, the STEP DELETED message is displayed on the MFD.

L2 STEP ALTs REVISION AND SECONDARY FLIGHT PLAN

The STEP ALTs revision is available for the active (or temporary) flight plan, and for the secondary flight plans.

STEP ALTs REVISION AND TEMPORARY FLIGHT PLAN

The insertion, change, or deletion of a step climb or step descent creates a temporary flight plan.

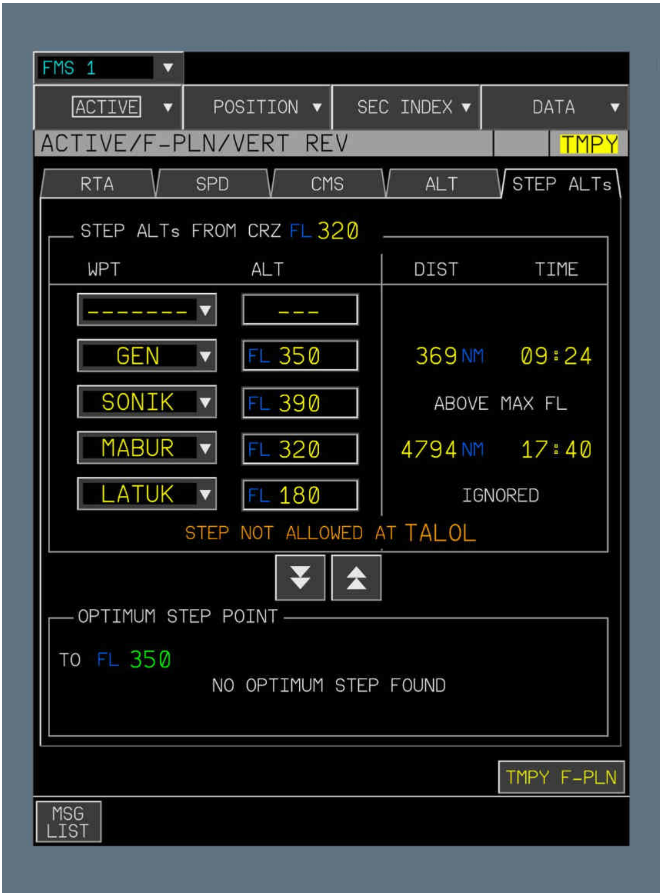
Ident.: DSC-22-FMS-10-40-30-60-00004433.0001001 / 14 APR 14

CONTROLS AND INDICATORS

ON THE MFD

The flight crew can enter, change, or delete step altitudes on the STEP ALTs panel of the VERT REV page.
The flight crew displays, enters, and updates the optimum step point in the OPTIMUM STEP POINT area at the bottom of the page.

STEP ALTs Panel of the VERT REV Page


FMS 1
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN/VERT REV
TMPY
RTA
SPD
CMS
ALT
STEP ALTs
MSG LIST
TMPY F-PLN

STEP ALTs FROM CRZ FL 320

WPT	ALT	DIST	TIME
--------	---		
GEN	FL 350	369 NM	09:24
SONIK	FL 390	ABOVE MAX FL	
MABUR	FL 320	4794 NM	17:40
LATUK	FL 180	IGNORED	

STEP NOT ALLOWED AT TALOL

OPTIMUM STEP POINT
TO FL 350
NO OPTIMUM STEP FOUND

For more information about the STEP ALTs panel of the VERT REV page, *Refer to DSC-22-FMS-20-20-20 VERT REV Page*.
The flight crew can access the VERT REV page via the F-PLN page, by clicking on the altitude prediction, associated with the revised waypoint, or by selecting the STEP ALTs revision in the waypoint revisions menu.
On the F-PLN page, the step point is indicated with the Step Climb (S/C) or Step Descent (S/D) pseudo waypoint.

ON THE ND

On the ND, the step start waypoint is indicated with the step climb or step descent symbol.

Ident.: DSC-22-FMS-10-40-30-60-00004434.0001001 / 14 APR 14

ASSOCIATED MESSAGES

On the MFD, the FMS message area displays the following messages:
- STEP ABOVE MAX FL (*Refer to message*)
- STEP AHEAD (*Refer to message*)
- STEP DELETED (*Refer to message*).

WIND

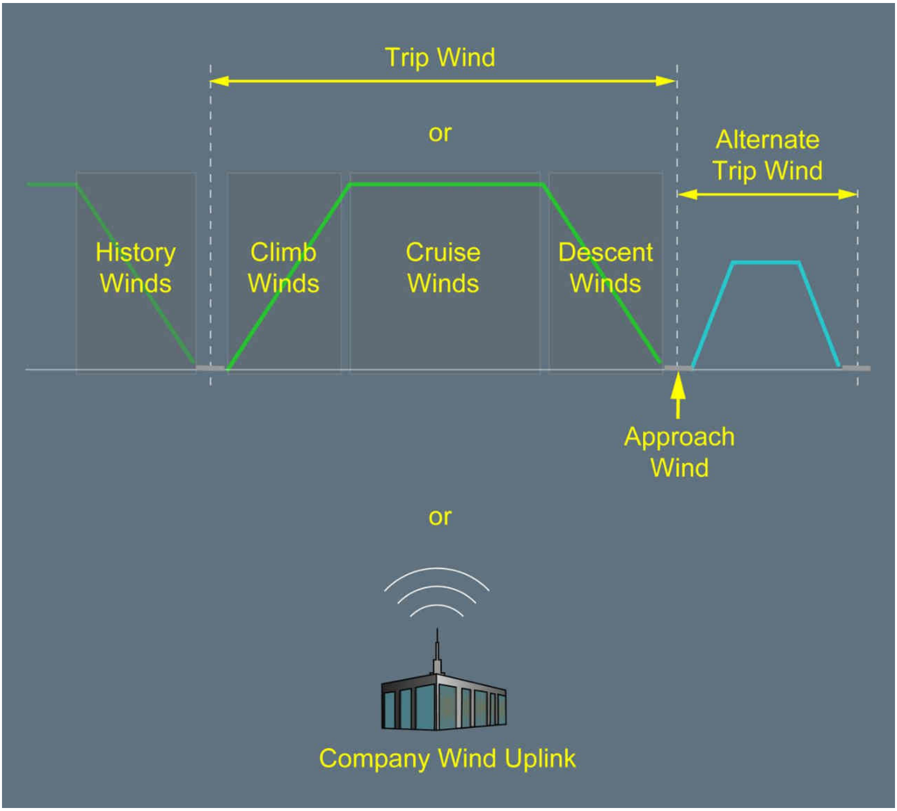
Applicable to: ALL

Ident.: DSC-22-FMS-10-40-30-70-00004416.0001001 / 05 MAY 14

PURPOSE

The flight crew uses the WIND revision to check, insert, and modify flight plan winds.
Wind data must be entered to obtain correct flight plan predictions. The flight crew can enter an average trip wind for the entire flight, or can enter more precise wind data for the different flight phases and different waypoints of the flight plan cruise.
The FMS uses the inserted winds to compute the wind predictions of the flight plan. Then, the FMS uses the wind predictions to compute the other flight plan and performance predictions. For more information, *Refer to DSC-22-FMS-10-40-70 Wind Predictions*.

WIND Revision


Trip Wind
or
Alternate
Trip Wind
History
Winds
Climb
Winds
Cruise
Winds
Descent
Winds
Approach
Wind
or
Company Wind Uplink

TRIP WIND

The trip wind is an average wind for the entire flight from the departure airport to the destination airport.

Note: *The predictions for the alternate flight plan do not take this trip wind into account. The trip wind for the alternate flight plan must be entered separately (See Alternate Trip Wind).*

The trip wind is defined as a headwind or tailwind component.
The FMS uses the trip wind for prediction computation, as long as no climb, cruise, descent, or approach winds are entered.

HISTORY WINDS

The history winds are the stored descent winds of the previous flight.
After the T/D of the previous flight, the FMS measures and stores the winds at CRZ FL, FL 250, FL 150, and FL 050.
In preflight, the flight crew can insert the history winds of the previous flight as the climb winds for the next flight.

CLIMB WINDS

The flight crew can insert climb winds on 5 different levels. The wind at Ground (GND) level can be entered as one of these levels. An altitude entry below 400 ft is considered as a ground level.
The flight crew can also insert the history winds as the climb winds. The inserted history winds can always be changed by the flight crew afterwards.
L2 The climb winds can only be inserted, or changed before the CLB phase.

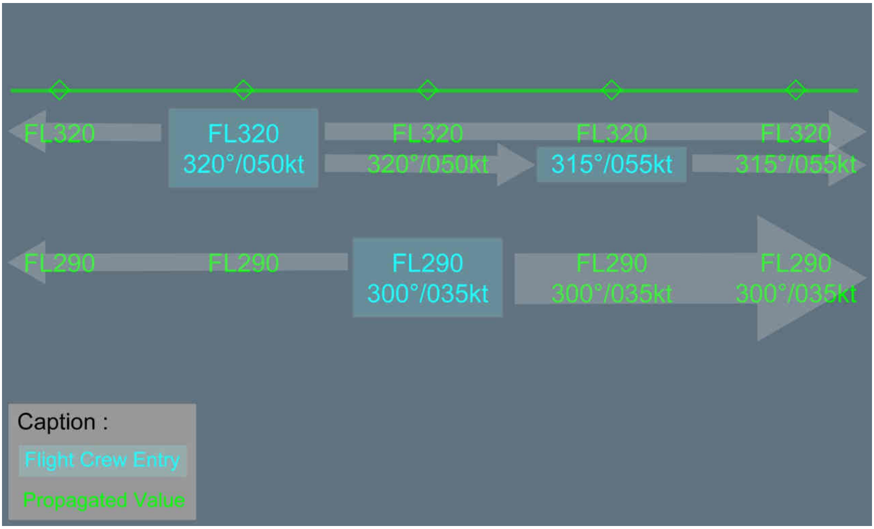
L1 CRUISE WINDS AND TEMPERATURES

The flight crew can insert different cruise wind data for all cruise waypoints, and this for four different flight levels.

When the flight crew enters wind data on a waypoint:
- The associated flight level is propagated to all (up-path and down-path) cruise waypoints
- The wind direction and speed are propagated to the down-path cruise waypoints until the waypoint for which the flight crew has entered wind data for the same flight level.

The flight crew can always change (but not clear) propagated wind data.

Wind Propagation


FL320
FL320
320°/050kt
FL320
320°/050kt
FL320
315°/055kt
FL320
315°/055kt
FL290
FL290
FL290
300°/035kt
FL290
300°/035kt
FL290
300°/035kt
Caption :
Flight Crew Entry
Propagated Value

For each cruise waypoint, the flight crew can insert a temperature for a specific flight level. The FMS uses the temperature data to define a temperature profile, that is used for prediction computation. The temperature is propagated to the down-path cruise waypoints in the same manner as the wind data.

L2 The FMS defines an estimated temperature profile based on the difference between a reference temperature profile, and a measured or entered Static Air Temperature (SAT) at different altitudes.

The reference temperature profile is defined by the tropopause altitude that is entered on the INIT page. The default tropopause altitude is the ISA tropopause.

The flight crew defines the deviation from the reference temperature profile, for the cruise waypoints, by entering the SAT associated to an altitude.

L1 DESCENT WINDS

The flight crew can insert descent winds on 5 different levels. The wind at Ground (GND) level at the destination airport can be entered as one of these levels. An altitude entry below 400 ft is considered as a ground level.

Note: The wind at ground level is also considered as the approach wind.

L2 The descent winds can only be inserted, or changed before the DES phase.

L1

APPROACH WIND

The flight crew can enter the approach wind at the destination airport. The approach wind is used for the approach speed computation.

Note: *The approach wind is also considered as the wind at ground level for the descent wind profile computation.*

ALTERNATE TRIP WIND

The alternate trip wind is an average cruise wind for the alternate flight plan (i.e. from the destination airport to the alternate airport).

The cruise flight level of the alternate flight plan is by default:
- FL 220, if the distance of the alternate flight plan is less than 200 NM
- FL 310, if the distance of the alternate flight plan is 200 NM or more

The alternate trip wind is defined by a wind direction and wind speed.
The flight crew can always change the alternate flight level and the associated trip wind.

COMPANY WIND UPLINK

The flight crew can request company wind and temperature data for the active and the three secondary flight plans. The received wind and temperature data will be associated with the flight plan from which the request was sent.
The company can also uplink wind and temperature data without any request from the flight crew. These wind data will be associated with the active flight plan.

L2

WIND REVISION AND SECONDARY FLIGHT PLAN

The WIND revision is available for the active flight plan, and for the secondary flight plans.

WIND REVISION AND TEMPORARY FLIGHT PLAN

The insertion, change, or deletion of any wind data does not create a temporary flight plan. However, the insertion, change, or deletion of wind data creates a set of temporary winds. The temporary winds are not taken into account for prediction computation, before they are inserted.

Note: *The insertion of history winds does not create temporary winds. The history winds are directly inserted as the climb winds of the active flight plan.*

The insertion, change, or deletion of any wind data is not possible, if a temporary flight plan is on standby.
When temporary winds are on standby and the FMS creates a temporary flight plan, the temporary winds are automatically inserted in the active and temporary flight plans. The FMS message area displays the DRAFT WIND INSERTED message.

Ident.: DSC-22-FMS-10-40-30-70-00004436.0001001 / 14 APR 14

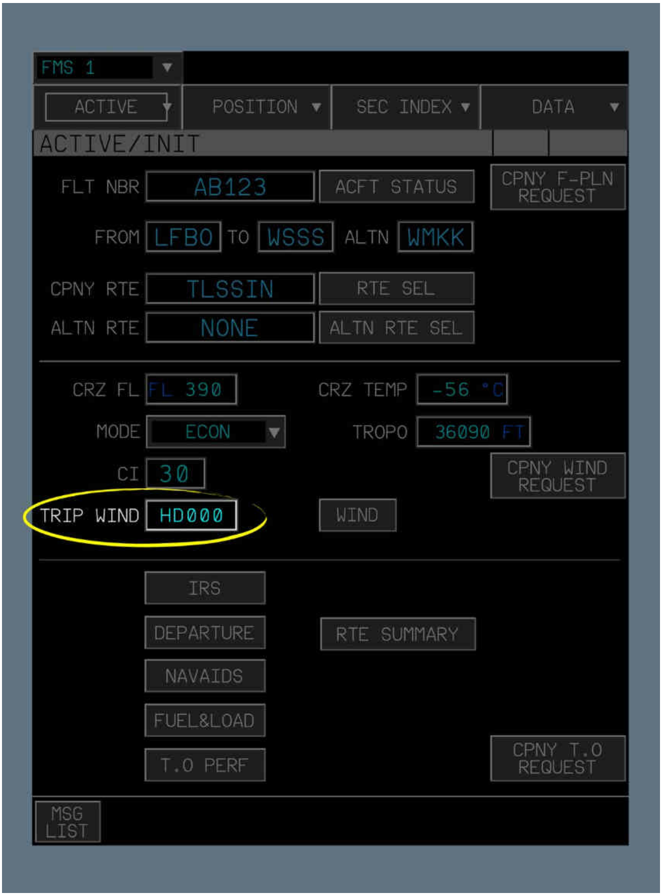
CONTROLS AND INDICATORS

ON THE MFD

The flight crew can:

- Enter the trip wind on the INIT page

INIT Page



FMS 1

ACTIVE/INIT

FLT NBR AB123

FROM LFBO TO WSSS ALTN WMKK

CPNY RTE TLSSIN

ALTN RTE NONE

CRZ FL FL 390

CRZ TEMP -56 °C

MODE ECON

TROPO 36090 FT

CI 30

TRIP WIND HD000

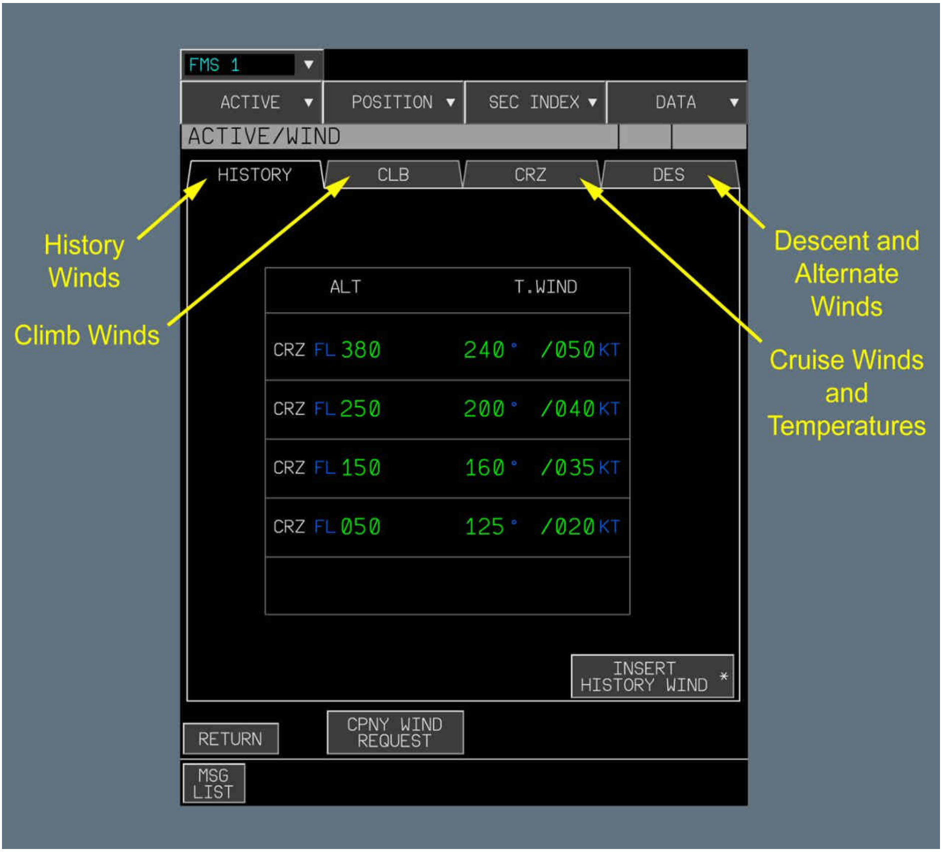
ACTIVE
POSITION
SEC INDEX
DATA
ACFT STATUS
CPNY F-PLN REQUEST
RTE SEL
ALTN RTE SEL
CPNY WIND REQUEST
WIND
IRS
DEPARTURE
RTE SUMMARY
NAVAIDS
FUEL&LOAD
T.O PERF
CPNY T.O REQUEST
MSG LIST

For more information about the INIT page, *Refer to DSC-22-FMS-20-20-20 INIT Page*.

- Insert the history, climb, cruise, descent, and alternate winds on the WIND page

L2 *Note:* *The descent wind at ground level is automatically copied on the APPR panel of the PERF page.*

WIND Page


FMS 1
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/WIND
HISTORY
CLB
CRZ
DES
History Winds
Climb Winds
Descent and Alternate Winds
Cruise Winds and Temperatures
INSERT HISTORY WIND *
RETURN
CPNY WIND REQUEST
MSG LIST

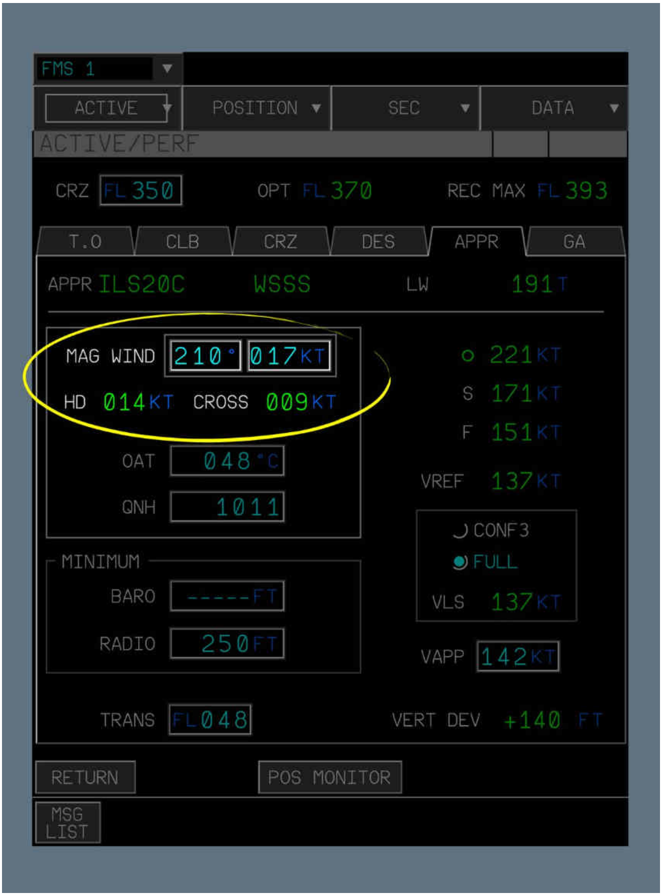
ALT	T.WIND
CRZ FL 380	240° /050KT
CRZ FL 250	200° /040KT
CRZ FL 150	160° /035KT
CRZ FL 050	125° /020KT

L1 For more information about the WIND page, *Refer to DSC-22-FMS-20-20-20 WIND Page*.

- Enter the approach wind on the APPR panel of the PERF page

L2 *Note:* *The approach wind is automatically copied on the DES panel of the WIND page as the wind at Ground (GND) level.*

APPR Panel of the PERF Page


FMS 1
ACTIVE
POSITION
SEC
DATA
ACTIVE/PERF
T.O
CLB
CRZ
DES
APPR
GA
MINIMUM
RETURN
POS MONITOR
MSG LIST

CRZ FL 350
OPT FL 370
REC MAX FL 393

APPR ILS20C WSSS LW 191T

MAG WIND 210° 017KT
HD 014KT CROSS 009KT
OAT 048°C
QNH 1011

BARO -----FT
RADIO 250FT

TRANS FL048

O 221KT
S 171KT
F 151KT
VREF 137KT

○ CONF3
● FULL
VLS 137KT

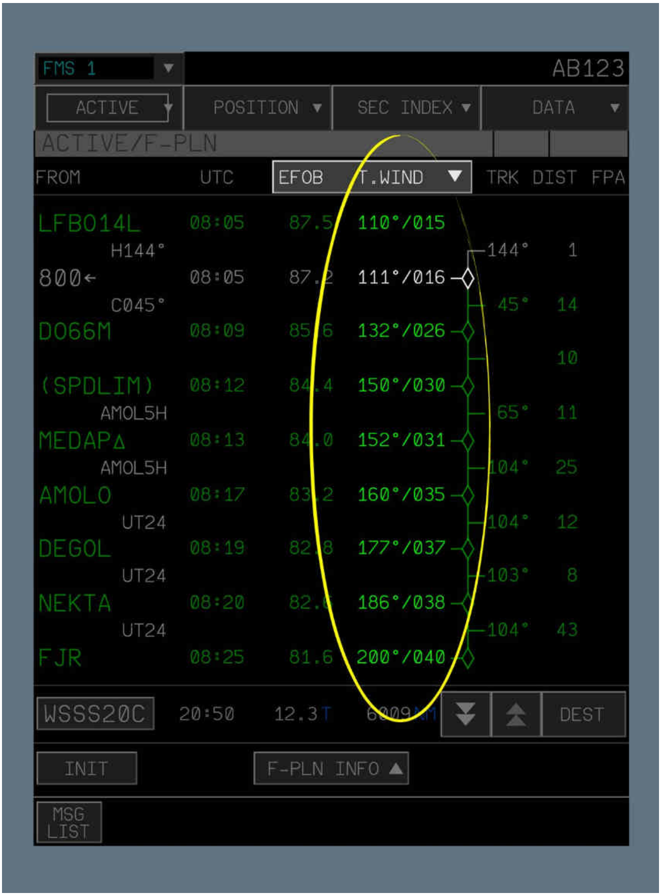
VAPP 142KT

VERT DEV +140 FT

L1 For more information about the PERF page, *Refer to DSC-22-FMS-20-20-20 PERF Page*.

- Check the flight plan wind profile on the F-PLN page

F-PLN Page

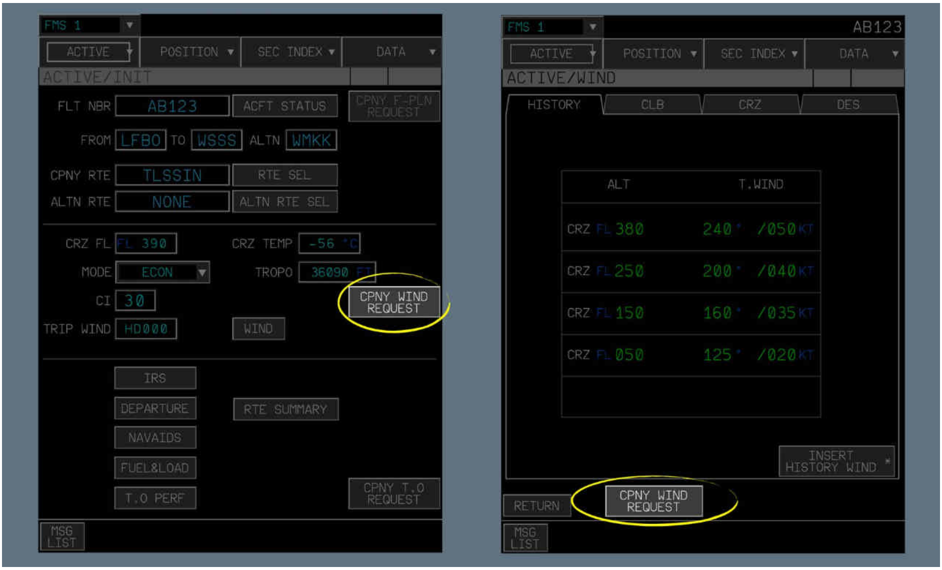

FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN
INIT
F-PLN INFO
MSG LIST
DEST

FROM	UTC	EFOB	T.WIND	TRK	DIST	FPA
LFBO14L	08:05	87.5	110°/015			
H144°				144°	1	
800←	08:05	87.2	111°/016			
C045°				45°	14	
D066M	08:09	85.6	132°/026			
					10	
(SPDLIM)	08:12	84.4	150°/030			
AMOL5H				65°	11	
MEDAP△	08:13	84.0	152°/031			
AMOL5H				104°	25	
AMOLO	08:17	83.2	160°/035			
UT24				104°	12	
DEGOL	08:19	82.8	177°/037			
UT24				103°	8	
NEKTA	08:20	82.6	186°/038			
UT24				104°	43	
FJR	08:25	81.6	200°/040			
WSSS20C	20:50	12.3T	6009NM			

For more information about the F-PLN page, *Refer to DSC-22-FMS-20-20-20 F-PLN Page*.

- Make a wind request on the INIT page or WIND page

Wind Request on INIT Page and WIND Page



FLT NBR AB123
FROM LFBO TO WSSS ALTN WMKK
CPNY RTE TLSSIN
ALTN RTE NONE
CRZ FL FL 390
CRZ TEMP -56 °C
MODE ECON
TROPO 36090 FT
CI 30
TRIP WIND HD000

ALT	T.WIND
CRZ FL 380	240° /050 KT
CRZ FL 250	200° /040 KT
CRZ FL 150	160° /035 KT
CRZ FL 050	125° /020 KT

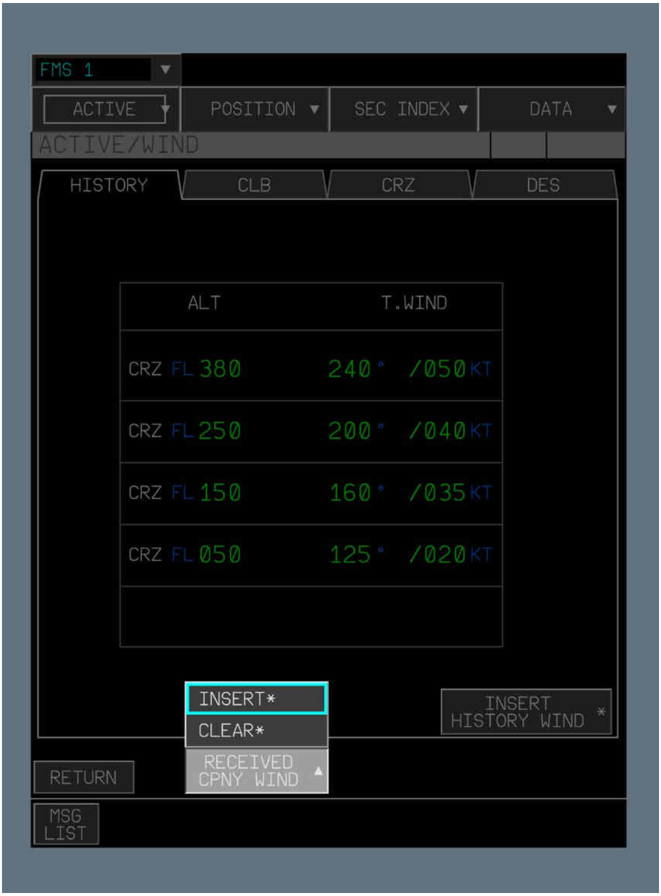
FMS 1
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/INIT
ACFT STATUS
CPNY F-PLN REQUEST
RTE SEL
ALTN RTE SEL
CPNY WIND REQUEST
WIND
IRS
DEPARTURE
NAVAIDS
FUEL&LOAD
T.O PERF
RTE SUMMARY
CPNY T.O REQUEST
MSG LIST
FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/WIND
HISTORY
CLB
CRZ
DES
INSERT HISTORY WIND
RETURN
CPNY WIND REQUEST
MSG LIST

For more information about the:

- INIT page, *Refer to DSC-22-FMS-20-20-20 INIT Page*
- WIND page, *Refer to DSC-22-FMS-20-20-20 WIND Page*.

- Insert or clear received company wind data on the WIND page.

Insert or Clear Company Wind on WIND Page


FMS 1
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/WIND
HISTORY
CLB
CRZ
DES
INSERT*
CLEAR*
RECEIVED CPNY WIND
INSERT HISTORY WIND *
RETURN
MSG LIST

ALT	T.WIND
CRZ FL 380	240° /050 KT
CRZ FL 250	200° /040 KT
CRZ FL 150	160° /035 KT
CRZ FL 050	125° /020 KT

For more information about the WIND page, *Refer to DSC-22-FMS-20-20-20 WIND Page*.

ON THE ND

The ND displays only the current measured wind.
For more information, *Refer to DSC-31-CDS-40-40-70 Wind Indications*.

Ident.: DSC-22-FMS-10-40-30-70-00004437.0001001 / 14 APR 14

ASSOCIATED MESSAGES

On the MFD, the FMS message area displays the following messages:

- COMPANY WIND DATA RECEIVED WAITING FOR INSERTION IN ACTIVE (*Refer to message*)
- COMPANY WIND DATA RECEIVED WAITING FOR INSERTION IN SEC 1(2)(3) (*Refer to message*)
- COMPANY WIND UPLINK PENDING (*Refer to message*)
- L2 DRAFT WIND INSERTED (*Refer to message*)
- L1 RECEIVED COMPANY WIND DATA NOT VALID (*Refer to message*).

Intentionally left blank

Diversion

INTRODUCTION

Ident.: DSC-22-FMS-10-40-40-00004439.0001001 / 14 APR 14
Applicable to: ALL

To prepare an en-route diversion over oceanic and deserted areas, the flight crew uses the Equi-Time Point (ETP) function to determine the diversion point(s) between two diversion airports:*Refer to DSC-22-FMS-10-40-40 Equi-Time Point (ETP) Function*.
The flight crew defines the diversion airports before departure, or in flight, by using the closest airports data: *Refer to DSC-22-FMS-10-40-40 CLOSEST AIRPORTS Function*.
The flight crew can use the WHAT IF function to assess the capability of the aircraft to reach a diversion airport in the case of a specific failure event (engine-out or depressurization): *Refer to DSC-22-FMS-10-40-40 WHAT IF Function*.
When the flight crew defines the most appropriate diversion point and diversion airport, they prepare the diversion on the secondary flight plan: *Refer to DSC-22-FMS-10-40-40 Secondary Flight Plan*.
The flight crew performs a diversion by activating the secondary flight plan: *Refer to DSC-22-FMS-10-40-40 Performing a Diversion*.
If the flight crew decides to divert at the end of the cruise, beyond the last ETP, or in the DES or GA phase, they will most probably divert to the alternate airport by using the ALTERNATE and ENABLE ALTERNATE revisions: *Refer to DSC-22-FMS-10-40-40 Diversion to an Alternate Airport*.

EQUI-TIME POINT (ETP) FUNCTION

Ident.: DSC-22-FMS-10-40-40-00004440.0001001 / 14 APR 14
Applicable to: ALL

The flight crew uses the Equi-Time Point (ETP) function to compute the point along the lateral flight plan where the time to reach two designated reference airports(waypoints) is the same.
The default reference airports are the departure and destination airports. The flight crew may overwrite these default airports, and insert the local wind values at the applicable cruise flight level.

The FMS computes and updates regularly the ETP, by using:
- The current aircraft speed: Managed or selected speed
- The flight plan winds, combined with the winds at the reference airports.

The FMS defines the ETP as a place/distance waypoint associated with the subsequent waypoint (e.g. RANAH/-40.5NM).
L2 The ETP can only be on a cruise flight leg, and cannot be in a holding pattern or procedure turn.

L1 The FMS also provides the following data:

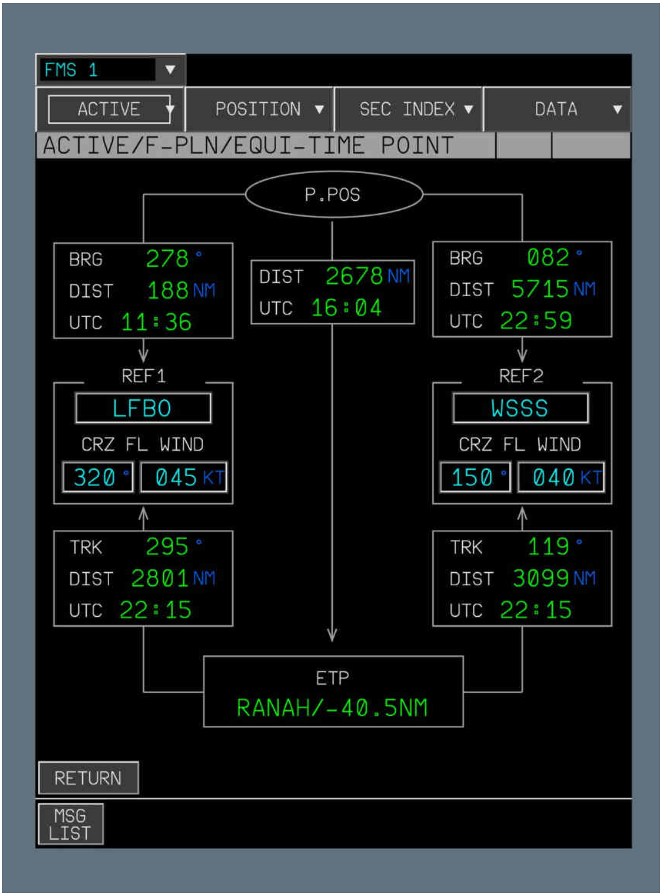
- From the current position of the aircraft to the ETP:
  - Distance along the flight plan
  - Estimated time of arrival at the ETP, based on a trajectory along the flight plan
- From the current position of the aircraft to the reference airports:
  - Bearing (BRG)
  - Direct Distance (DIST)
  - Estimated time of arrival at the reference airport, based on a direct trajectory
- From the ETP to the reference airports:
  - Track (TRK)
  - Direct Distance (DIST)
  - Estimated time of arrival at the reference airport, based on an overfly of the ETP and a direct trajectory between the ETP and the reference airport.

CONTROLS AND INDICATORS

ON THE MFD

The flight crew can compute the ETP on the EQUI-TIME POINT page.

EQUI-TIME POINT Page



ACTIVE/F-PLN/EQUI-TIME POINT

P.POS

BRG 278°
DIST 188NM
UTC 11:36

DIST 2678NM
UTC 16:04

BRG 082°
DIST 5715NM
UTC 22:59

REF1
LFBO
CRZ FL WIND
320° 045KT

REF2
WSSS
CRZ FL WIND
150° 040KT

TRK 295°
DIST 2801NM
UTC 22:15

TRK 119°
DIST 3099NM
UTC 22:15

ETP
RANAH/-40.5NM

For more information about the EQUI-TIME POINT page, *Refer to DSC-22-FMS-20-20-20 EQUI-TIME POINT Page*.

There is no associated pseudo waypoint on the F-PLN page.

Note: *In order to indicate the ETP on the F-PLN page, and/or to prepare the next applicable ETP on the EQUI-TIME POINT page, the flight crew may define a time marker at the estimated time of arrival at the ETP. The flight crew defines time markers on the POSITION/TIME page (Refer to page).*

ON THE ND

The ND displays the ETP pseudo waypoint.

CLOSEST AIRPORTS FUNCTION

Ident.: DSC-22-FMS-10-40-40-00004441.0001001 / 25 APR 14
Applicable to: ALL

The CLOSEST AIRPORTS function computes the four database airports, that are closest to the current position of the aircraft.

For each airport, the FMS computes:
- The direct Distance (DIST) between the current position of the aircraft and the airport
- The Bearing (BRG) to the airport
- The estimated time of arrival at the airport, based on a direct trajectory
- The Estimated Fuel On Board (EFOB) at the airport
- An Effective Wind (EFF WIND) default value, based on the flight plan winds.
  The flight crew may overwrite this default value.

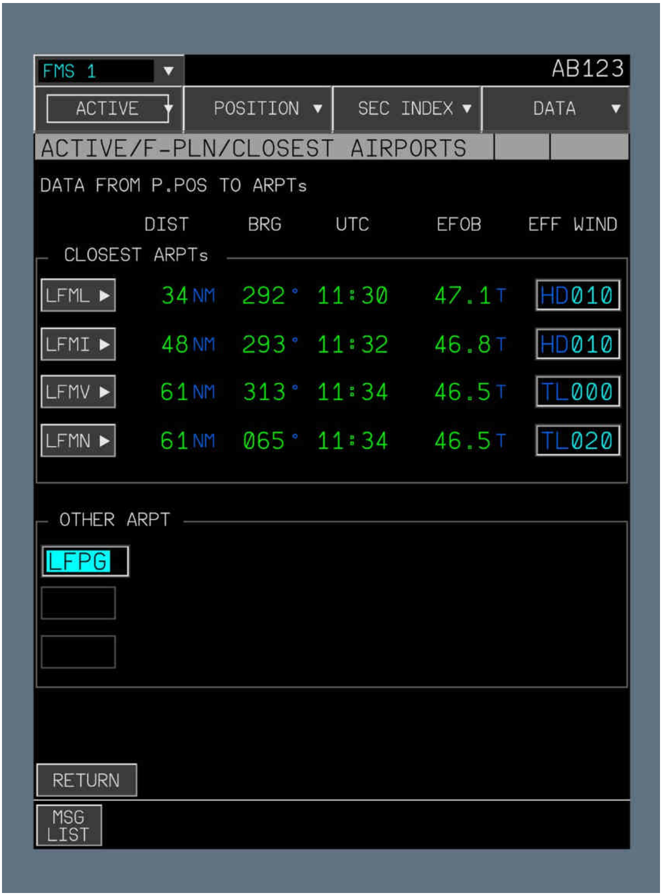
The fuel and time predictions are based on:
- The great circle distance and bearing to the airport
- The effective winds (default values, or values entered by the flight crew)
- The current delta ISA
- A flight from the current position to the ground, based on:
  - A computed cruise distance, flown at an optimum cruise Mach (based on the current CRZ FL, GW, FMS speed mode (ECON/LRC)) in managed speed control, or at the selected Mach in selected speed control.
    L2 In the case of an engine-out, the EO LRC Mach, and the EO MAX FL (or the CRZ FL, if it is less than the EO MAX FL) are considered.
  - L1 A continuous descent from the CRZ FL to the airport elevation.

The flight crew can also enter up to three other airports, for which they want to compute the associated predictions.

CONTROLS AND INDICATORS

The CLOSEST AIRPORTS page displays the closest airports and their associated data.

CLOSEST AIRPORTS Page



ACTIVE/F-PLN/CLOSEST AIRPORTS

DATA FROM P.POS TO ARPTs

CLOSEST ARPTs

	DIST	BRG	UTC	EFOB	EFF WIND
LFML	34 NM	292°	11:30	47.1 T	HD010
LFMI	48 NM	293°	11:32	46.8 T	HD010
LFMV	61 NM	313°	11:34	46.5 T	TL000
LFMN	61 NM	065°	11:34	46.5 T	TL020

OTHER ARPT

LFPG

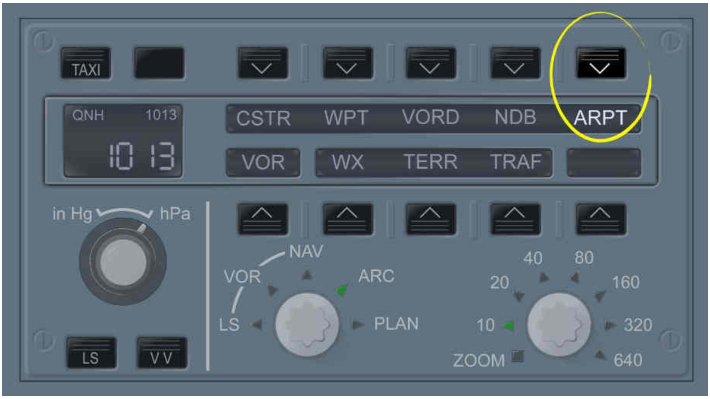
For more information about the CLOSEST AIRPORTS page, *Refer to DSC-22-FMS-20-20-20 CLOSEST AIRPORTS Page*.

AIRPORTS ON THE ND

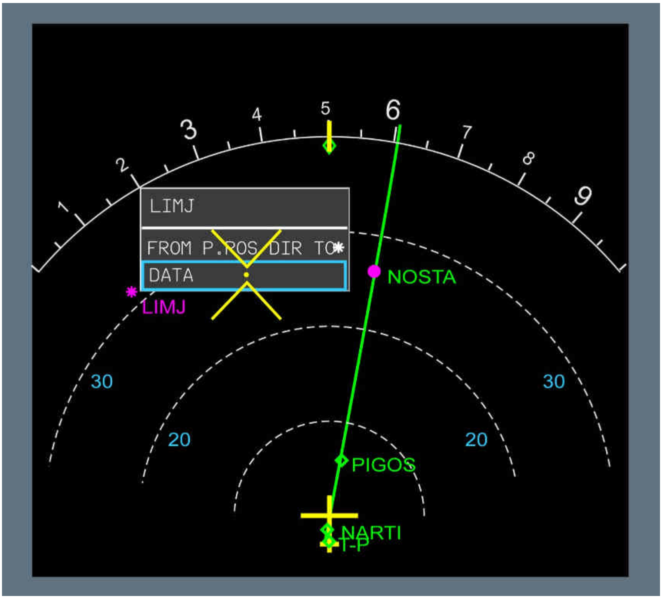
Ident.: DSC-22-FMS-10-40-40-00004442.0001001 / 14 APR 14
Applicable to: ALL

In some cases, the flight crew may select the diversion airport on the ND:
- Display all database airports on the ND by selecting the ARPT option on the EFIS CP

EFIS CP


TAXI
QNH 1013
10 13
CSTR
WPT
VORD
NDB
ARPT
VOR
WX
TERR
TRAF
in Hg
hPa
LS
VV
NAV
VOR
ARC
LS
PLAN
40
80
20
160
10
320
ZOOM
640

- If required, obtain additional information on the database airport(s) by selecting DATA in the airport list. This displays the DATA/AIRPORT page on the MFD (*Refer to DSC-22-FMS-20-20-20 DATA/AIRPORT Page*).



In addition, during oceanic or deserted area flights, the flight crew may use the BRG / DIST TO function on the POSITION/MONITOR page to continuously monitor the direct distance and bearing to the selected diversion airport(s) (*Refer to DSC-22-FMS-20-20-20 POSITION/MONITOR Page*).

WHAT IF FUNCTION

Ident.: DSC-22-FMS-10-40-40-00011320.0001001 / 05 MAY 14
Applicable to: ALL

PURPOSE

The WHAT IF function enables the flight crew to assess the capability of the aircraft to reach a diversion airport in the case of a specific type of failure. This specific type of failure is referred to as a WHAT IF event.

The WHAT IF event can be:
- An engine-out that occurs during the CRZ flight phase, or
- Depressurization that occurs during the CRZ flight phase.

The flight crew uses the WHAT IF function to simulate a WHAT IF event for a secondary flight plan.
The WHAT IF function is not available for the active flight plan.

Note: *The FMS cannot simulate more than one WHAT IF event at a time for one secondary flight plan. However, the flight crew can select one WHAT IF event for each of the three secondary flight plans at the same time. The WHAT IF event can be different for each secondary flight plan.*

The FMS computes the flight plan predictions based on a WHAT IF scenario:
- If the WHAT IF event is a simulated engine-out, the WHAT IF scenario is referred to as the ENGINE OUT scenario
- If the WHAT IF event is simulated depressurization, the WHAT IF scenario is referred to as the DEPRESSURIZATION scenario.

The waypoint at which the WHAT IF event occurs is referred to as the revised waypoint.

L12

Note: *The FMS automatically cancels the WHAT IF scenario in the secondary flight plan, if one of the following occurs:*
- *The flight crew clicks on the CANCEL WHAT IF button*
- *The revised waypoint at which the FMS simulated the WHAT IF event was not P.POS, and the aircraft sequences this revised waypoint*
- *The flight crew uses the SWAP function (i.e. the secondary flight plan becomes the active flight plan, and vice versa)*
- *The revised waypoint at which the FMS simulated the WHAT IF event is no longer a cruise waypoint of the flight plan.*
- *The EO mode becomes active.*

ENGINE OUT SCENARIO

For the ENGINE OUT scenario, the FMS computes the GDOT Engine-Out Maximum Flight Level (GDOT EO MAX FL).

The GDOT EO MAX FL is the maximum flight level at which the aircraft can:
- Level off at EO-GDOT speed
- Begin to accelerate toward the EO-LRC speed.

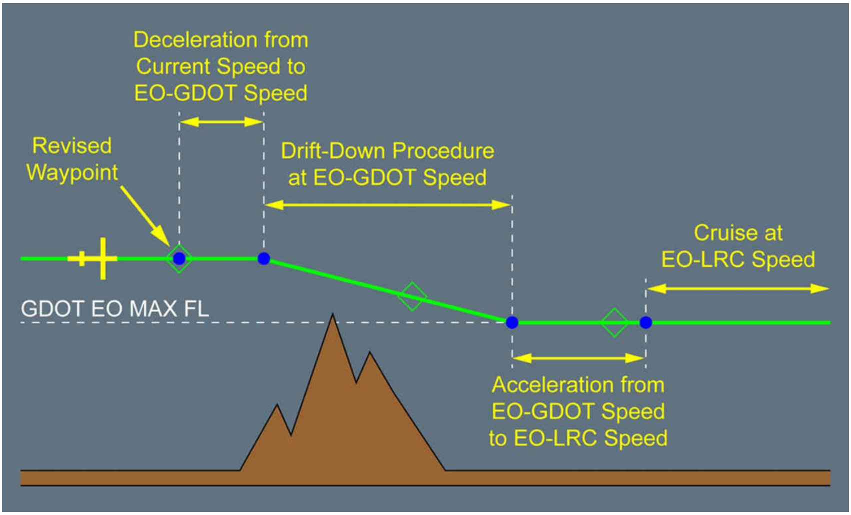
The ENGINE OUT scenario depends on the predicted altitude at the revised waypoint.

Above the GDOT EO MAX FL

If the predicted altitude at the revised waypoint is above the GDOT EO MAX FL, the ENGINE OUT scenario is the following scenario (the following steps occur in the following sequence):
- At the revised waypoint, the aircraft levels off, and decelerates from the current speed to the EO-GDOT speed
- The flight crew performs a drift-down procedure at the EO-GDOT speed

- When the aircraft reaches the GDOT EO MAX FL, the aircraft levels off, and accelerates from the EO-GDOT speed to the EO-LRC speed
- The aircraft performs a cruise at the EO-LRC speed.
  The GDOT EO MAX FL is the cruise flight level by default. The flight crew can change this cruise flight level via the WHAT IF page.

ENGINE OUT Scenario [WHAT IF Event above GDOT EO MAX FL]

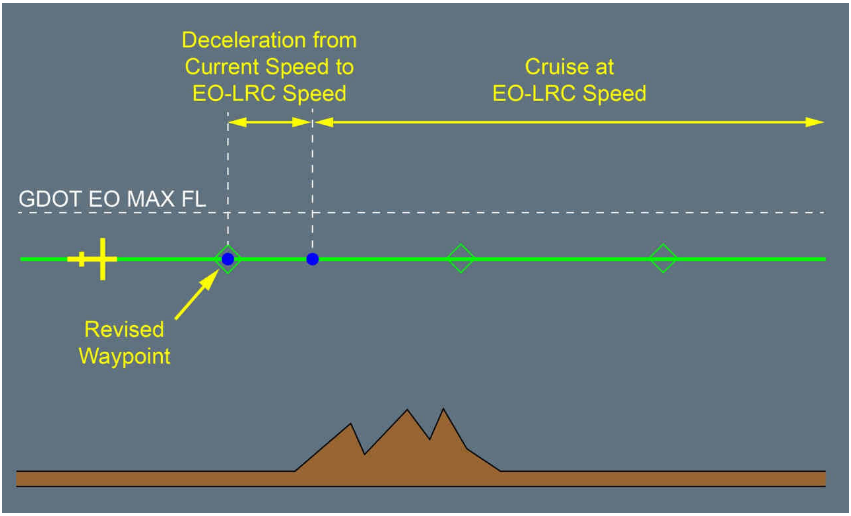

Deceleration from Current Speed to EO-GDOT Speed
Revised Waypoint
Drift-Down Procedure at EO-GDOT Speed
Cruise at EO-LRC Speed
GDOT EO MAX FL
Acceleration from EO-GDOT Speed to EO-LRC Speed

Below the GDOT EO MAX FL

If the predicted altitude at the revised waypoint is below the GDOT EO MAX FL, the ENGINE OUT scenario is the following scenario (the following steps occur in the following sequence):

- At the revised waypoint, the aircraft levels off, and decelerates from the current speed to the EO-LRC speed
- The aircraft performs a cruise at the EO-LRC speed.
  The predicted altitude of the revised waypoint is the cruise flight level by default. The flight crew can change this cruise flight level via the WHAT IF page.

ENGINE OUT Scenario [WHAT IF Event below GDOT EO MAX FL]

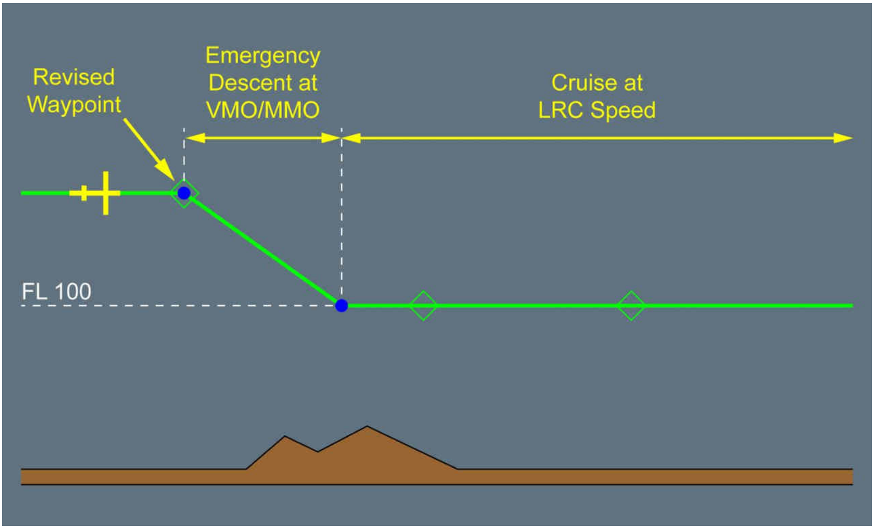

Deceleration from
Current Speed to
EO-LRC Speed
Cruise at
EO-LRC Speed
GDOT EO MAX FL
Revised
Waypoint

DEPRESSURIZATION SCENARIO

The DEPRESSURIZATION scenario is the following scenario (the following steps occur in the following sequence):

- At the revised waypoint, the flight crew performs an emergency descent at VMO/MMO
- When the aircraft reaches FL 100, the aircraft levels off, and performs a cruise at the LRC speed.
  FL 100 is the cruise flight level by default. The flight crew can change this cruise flight level via the WHAT IF page.

DEPRESSURIZATION Scenario

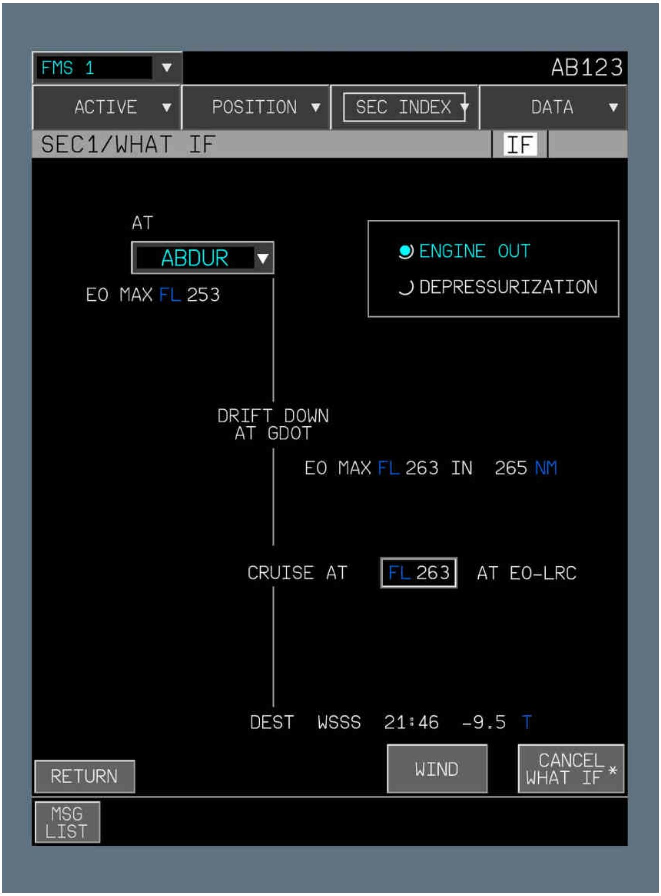

Revised Waypoint
Emergency Descent at VMO/MMO
Cruise at LRC Speed
FL 100

CONTROLS AND INDICATORS

The flight crew uses the WHAT IF page:

- To enter and display the parameters that the FMS uses to simulate a WHAT IF event
- To assess the capability of the aircraft to reach the destination airport of the secondary flight plan, in the case of a WHAT IF event.

WHAT IF Page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
SEC1/WHAT IF
IF
RETURN
WIND
CANCEL WHAT IF *
MSG LIST

AT ABDUR

EO MAX FL 253

○ ENGINE OUT
○ DEPRESSURIZATION

DRIFT DOWN AT GDOT

EO MAX FL 263 IN 265 NM

CRUISE AT FL 263 AT EO-LRC

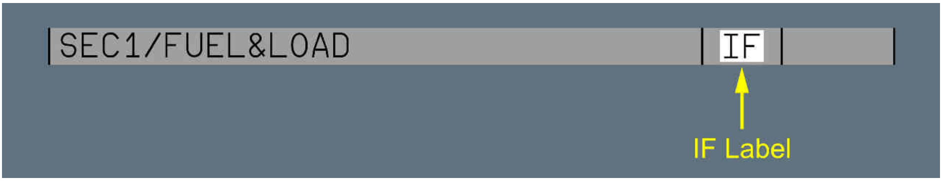
DEST WSSS 21:46 -9.5 T

For more information about the WHAT IF page, *Refer to DSC-22-FMS-20-20-20 WHAT IF Page*.

If the SEC 1(2)(3) flight plan contains a WHAT IF scenario:

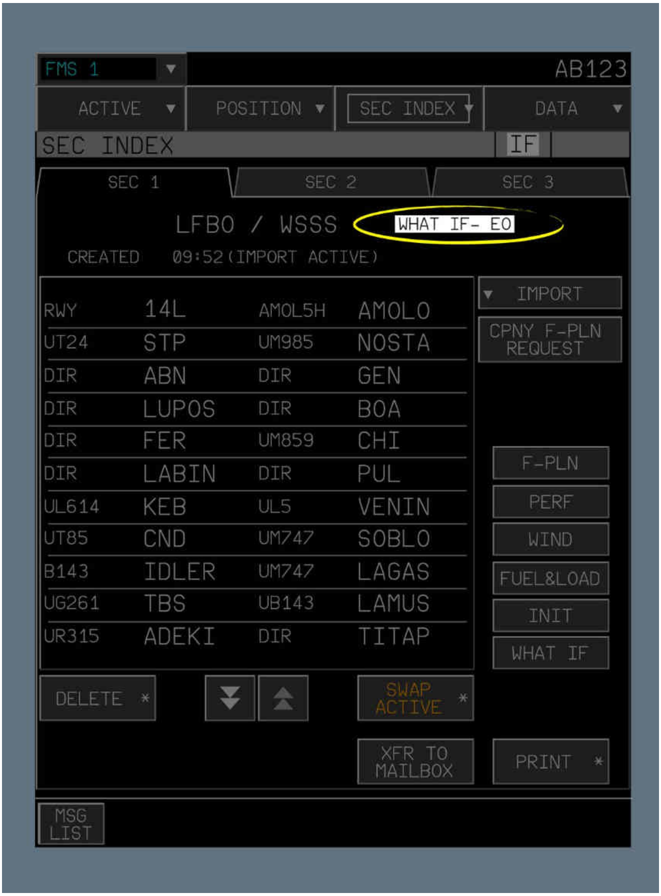
- The FMS page header displays the IF label on all of the FMS pages that are associated with the SEC 1(2)(3) flight plan

IF Label



- The WHAT IF label appears on the SEC 1(2)(3) panel of the SEC INDEX page, as follows:
  - WHAT IF - EO indicates that the WHAT IF scenario is a simulated engine-out
  - WHAT IF - DEPRESS indicates that the WHAT IF scenario is simulated depressurization.

WHAT IF Label on SEC INDEX Page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
SEC INDEX
IF
SEC 1
SEC 2
SEC 3
IMPORT
CPNY F-PLN REQUEST
F-PLN
PERF
WIND
FUEL&LOAD
INIT
WHAT IF
DELETE *
SWAP ACTIVE *
XFR TO MAILBOX
PRINT *
MSG LIST

LFBO / WSSS WHAT IF- EO

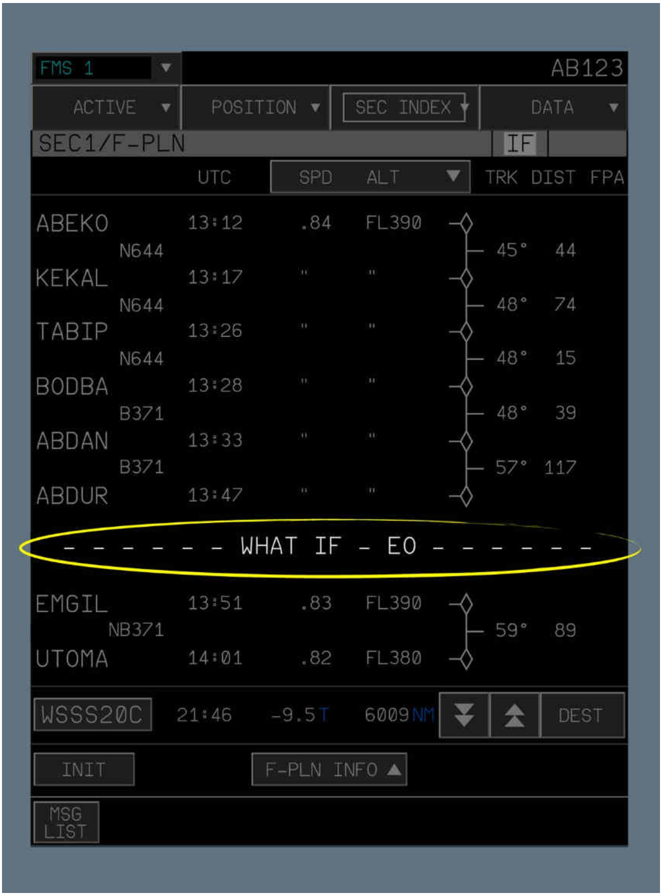
CREATED 09:52(IMPORT ACTIVE)

RWY	14L	AMOL5H	AMOLO
UT24	STP	UM985	NOSTA
DIR	ABN	DIR	GEN
DIR	LUPOS	DIR	BOA
DIR	FER	UM859	CHI
DIR	LABIN	DIR	PUL
UL614	KEB	UL5	VENIN
UT85	CND	UM747	SOBLO
B143	IDLER	UM747	LAGAS
UG261	TBS	UB143	LAMUS
UR315	ADEKI	DIR	TITAP

L2 For more information about the SEC INDEX page, *Refer to DSC-22-FMS-20-20-20 SEC INDEX Page*.

L1 - The WHAT IF label appears on the SEC1(2)(3)/F-PLN page, as follows:
  - If the WHAT IF scenario is a simulated engine-out, WHAT IF - EO appears below the waypoint from which the engine-out is simulated
  - If the WHAT IF scenario is simulated depressurization, WHAT IF - DEPRESS appears below the waypoint from which depressurization is simulated.

WHAT IF Label on SEC/F-PLN Page

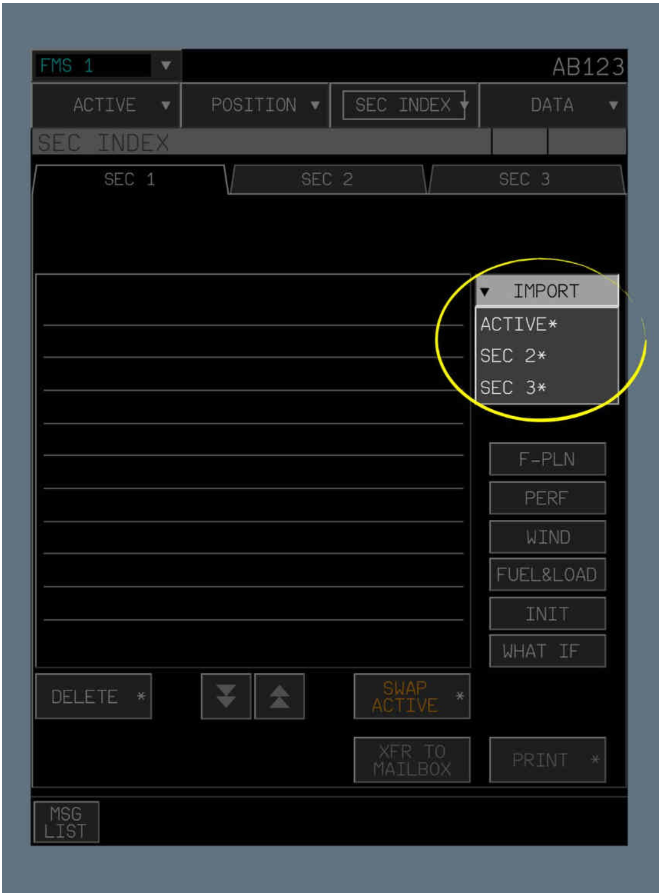

FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
SEC1/F-PLN
IF
UTC
SPD
ALT
TRK
DIST
FPA
ABEKO 13:12 .84 FL390
N644 45° 44
KEKAL 13:17 " "
N644 48° 74
TABIP 13:26 " "
N644 48° 15
BODBA 13:28 " "
B371 48° 39
ABDAN 13:33 " "
B371 57° 117
ABDUR 13:47 " "
- - - - - - WHAT IF - EO - - - - - -
EMGIL 13:51 .83 FL390
NB371 59° 89
UTOMA 14:01 .82 FL380
WSSS20C 21:46 -9.5T 6009NM
DEST
INIT
F-PLN INFO
MSG LIST

L2 For more information about the F-PLN page, *Refer to DSC-22-FMS-20-20-20 SEC INDEX Page*.

SECONDARY FLIGHT PLAN

Ident.: DSC-22-FMS-10-40-40-00004443.0001001 / 14 APR 14
Applicable to: ALL

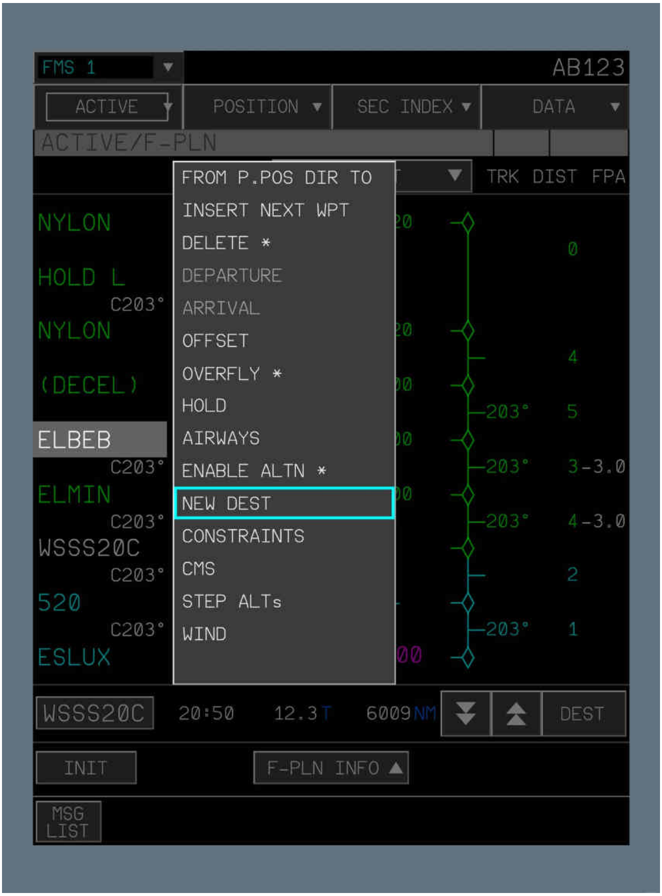
The flight crew prepares the diversion on the secondary flight plan:
- Import the active flight plan in SEC 1(2)(3)


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
SEC INDEX
SEC 1
SEC 2
SEC 3
IMPORT
ACTIVE*
SEC 2*
SEC 3*
F-PLN
PERF
WIND
FUEL&LOAD
INIT
WHAT IF
DELETE *
SWAP ACTIVE *
XFR TO MAILBOX
PRINT *
MSG LIST

Note: *The flight crew should not use SEC 3 for diversion purposes, if they plan to load an ATC flight plan from the ATC mailbox to the FMS. This is because if there is a flight plan in SEC 3, this flight plan will be deleted, when the ATC flight plan is loaded.*

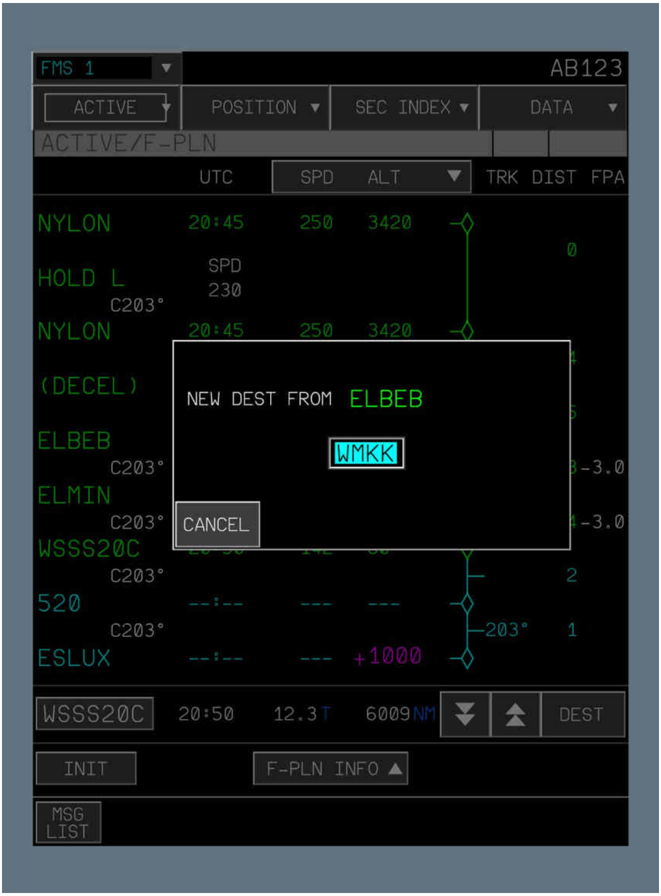
- Select the NEW DEST revision on the diversion waypoint

Waypoint Revisions Menu - NEW DEST


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN
TRK DIST FPA
FROM P.POS DIR TO
INSERT NEXT WPT
DELETE *
DEPARTURE
ARRIVAL
OFFSET
OVERFLY *
HOLD
AIRWAYS
ENABLE ALTN *
NEW DEST
CONSTRAINTS
CMS
STEP ALTs
WIND
NYLON
HOLD L
C203°
NYLON
(DECEL)
ELBEB
C203°
ELMIN
C203°
WSSS20C
C203°
520
C203°
ESLUX
0
4
203° 5
203° 3 -3.0
203° 4 -3.0
2
203° 1
WSSS20C
20:50
12.3T
6009NM
DEST
INIT
F-PLN INFO
MSG LIST

- Enter the ident of the diversion airport in the NEW DEST entry field of the NEW DEST window

NEW DEST Window


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN
UTC
SPD ALT
TRK DIST FPA
NYLON 20:45 250 3420
0
HOLD L
SPD 230
C203°
NYLON 20:45 250 3420
(DECEL)
ELBEB
C203°
-3.0
ELMIN
C203°
-3.0
WSSS20C
C203°
2
520 --:-- --- ---
C203°
203° 1
ESLUX --:-- --- +1000
WSSS20C 20:50 12.3T 6009NM
DEST
INIT
F-PLN INFO
MSG LIST

NEW DEST FROM ELBEB

WMKK

CANCEL

For more information about the NEW DEST revision, *Refer to DSC-22-FMS-10-40-20 Purpose*.

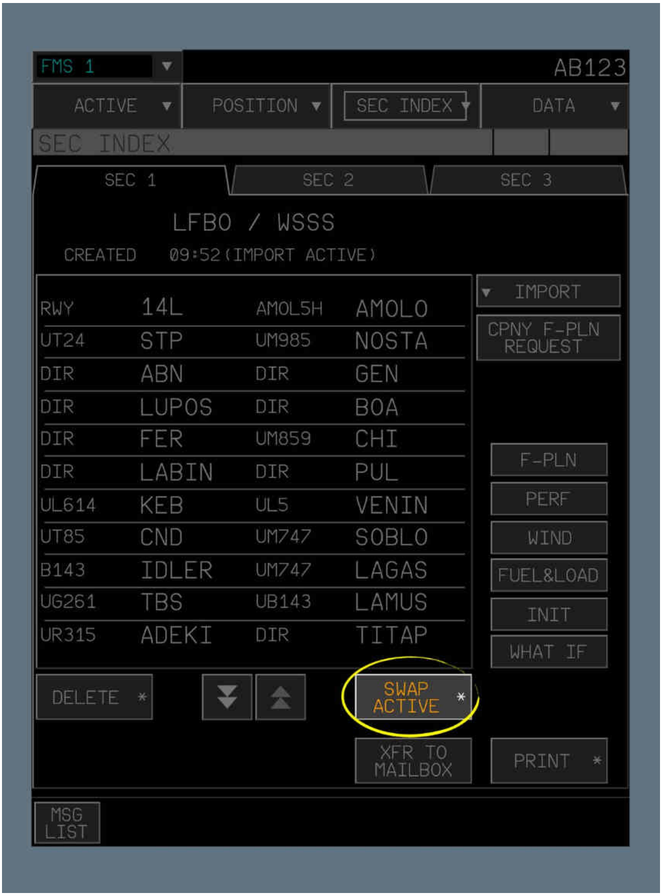
- Complete the flight plan between the diversion waypoint and the diversion airport.

When the diversion airport is no longer applicable or the ETP is sequenced, repeat the same procedure for the next diversion airport.

PERFORMING A DIVERSION

Ident.: DSC-22-FMS-10-40-40-00004444.0001001 / 14 APR 14
Applicable to: ALL

When the flight crew decides to divert:
- Display the secondary flight plan panel on which the diversion is prepared
- Click on the SWAP ACTIVE button to activate the secondary flight plan,


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
SEC INDEX
SEC 1
SEC 2
SEC 3
IMPORT
CPNY F-PLN REQUEST
F-PLN
PERF
WIND
FUEL&LOAD
INIT
WHAT IF
DELETE *
SWAP ACTIVE *
XFR TO MAILBOX
PRINT *
MSG LIST

LFBO / WSSS

CREATED 09:52(IMPORT ACTIVE)

RWY	14L	AMOL5H	AMOLO
UT24	STP	UM985	NOSTA
DIR	ABN	DIR	GEN
DIR	LUPOS	DIR	BOA
DIR	FER	UM859	CHI
DIR	LABIN	DIR	PUL
UL614	KEB	UL5	VENIN
UT85	CND	UM747	SOBLO
B143	IDLER	UM747	LAGAS
UG261	TBS	UB143	LAMUS
UR315	ADEKI	DIR	TITAP

For more information about the SWAP function, *Refer to DSC-22-FMS-10-40-60 Secondary and Active Flight Plan Exchange*.

- Perform a DIR TO, if required.

DIVERSION TO AN ALTERNATE AIRPORT

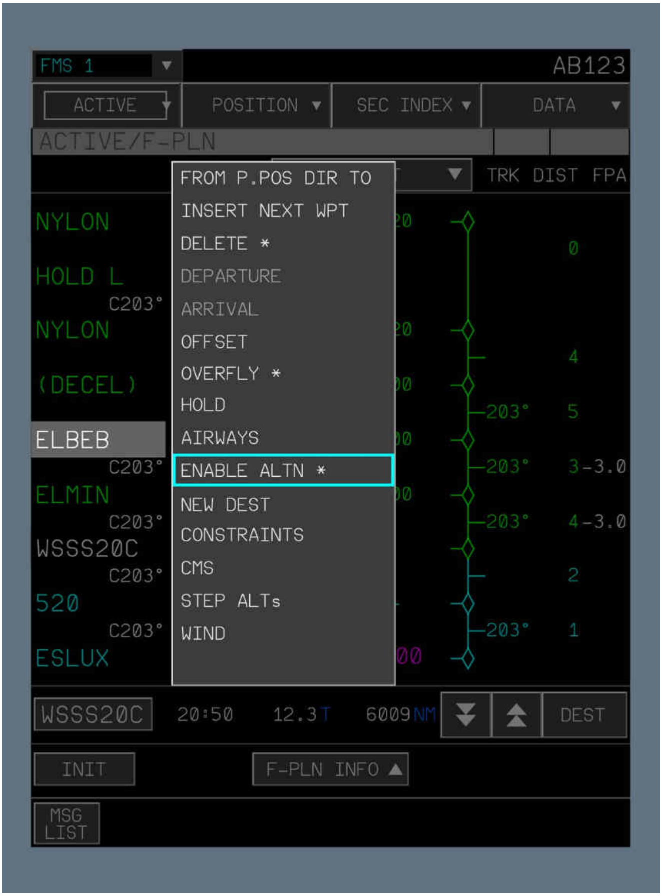
Ident.: DSC-22-FMS-10-40-40-00004445.0001001 / 14 APR 14
Applicable to: ALL

The flight plan includes an alternate flight plan. The alternate flight plan is the diversion flight plan from the destination airport to the alternate airport.
The flight crew selects an alternate airport with the ALTERNATE revision, *Refer to DSC-22-FMS-10-40-20 Purpose*.
After the alternate airport selection, the flight crew completes the alternate flight plan, if required.

When the flight crew decides to divert:

- Select the ENABLE ALTN revision on the TO waypoint (or another flight plan waypoint, if appropriate)

Waypoint Revisions Menu - ENABLE ALTN


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN
TRK DIST FPA
FROM P.POS DIR TO
INSERT NEXT WPT
DELETE *
DEPARTURE
ARRIVAL
OFFSET
OVERFLY *
HOLD
AIRWAYS
ENABLE ALTN *
NEW DEST
CONSTRAINTS
CMS
STEP ALTs
WIND
NYLON
HOLD L
C203°
NYLON
(DECEL)
ELBEB
C203°
ELMIN
C203°
WSSS20C
C203°
520
C203°
ESLUX
203°
0
4
5
3 -3.0
4 -3.0
2
1
WSSS20C
20:50
12.3T
6009NM
DEST
INIT
F-PLN INFO
MSG LIST

For more information about the ENABLE ALTN revision, *Refer to DSC-22-FMS-10-40-20 Purpose*.

- Check the temporary flight plan, and insert the temporary flight plan when it is validated
- Perform a DIR TO, if required.

Intentionally left blank

Temporary Flight Plan

TEMPORARY FLIGHT PLAN

Ident.: DSC-22-FMS-10-40-50-00004446.0001001 / 17 APR 14
Applicable to: ALL

When the flight crew makes a flight plan revision, the FMS creates a temporary flight plan.
A temporary flight plan is a copy of the active flight plan, in which the flight plan revision(s) are taken into account. This revised flight plan temporarily appears instead of the active flight plan to enable the flight crew to check the effect of the revision(s) on the flight plan before the revision(s) are really inserted.
While there is a temporary flight plan, the FMS continues to use the original active flight plan for guidance and radio navigation tuning.

There is a temporary flight plan, until:
- The flight crew inserts the temporary flight plan: The temporary flight plan becomes the new active flight plan
- The flight crew erases the temporary flight plan: The revisions are not taken into account. The active flight plan does not change.

L2 When both FMS are in DUAL mode, there can be only one temporary flight plan at a time.

L1 CREATION OF A TEMPORARY FLIGHT PLAN

The FMS either creates or updates a temporary flight plan, when the flight crew performs a lateral or vertical revision (except for a WIND revision) of the active flight plan. A revision of a secondary flight plan does not create a temporary flight plan.

For more information about:
- Lateral revisions, *Refer to DSC-22-FMS-10-40-20 Overview*
- Vertical revisions, *Refer to DSC-22-FMS-10-40-30 Overview*.

L3 The FMS automatically creates a temporary flight plan, when the FMS Engine-Out (EO) mode becomes active at takeoff, before the EOSID diversion point. For more information, *Refer to DSC-22-FMS-10-60 Engine-Out Standard Instrument Departure (EOSID)*.

L2 The FMS does not create a temporary flight plan, when the flight crew:
- Changes the cruise flight level
- Changes the FMS speed mode (ECON/LRC), CI that is associated with the ECON mode, ZFW, ZFWCG, fuel data, FUEL PENALTY factor, PERF factor, and IDLE factor
- Changes any wind or temperature value

- Inserts a time marker
- Exits or resumes a holding pattern.
  For more information about the HOLD revision, *Refer to DSC-22-FMS-10-40-20 Purpose*.

L1 MULTIPLE REVISIONS

The flight crew can make multiple lateral and vertical revisions in the same temporary flight plan.

Note: *Multiple revisions are not possible, when:*
- *The flight crew created a temporary flight plan via the DIR TO revision. In this case, the flight crew cannot make any other flight plan revisions to this temporary flight plan. The flight crew must first insert or erase the temporary flight plan.*
- *The flight crew created a temporary flight plan via a revision other than the DIR TO revision. In this case, the flight crew cannot insert a DIR TO in this temporary flight plan. The flight crew must first insert or erase the temporary flight plan.*

When there is a temporary flight plan with multiple revisions, the flight crew can UNDO the last revision, in order to remove the last revision from the temporary flight plan.

Note: *The flight crew can only UNDO the last revision made to the temporary flight plan. After the last revision is removed, the flight crew can only insert or erase the entire temporary flight plan.*

L2 TEMPORARY FLIGHT PLAN SEQUENCING

The temporary flight plan is sequenced with the active flight plan, if the first flight leg of the temporary flight plan is identical to the first flight leg of the active flight plan.

Note: *When the NAV mode is engaged, and the flight crew attempts to insert a temporary flight plan with a first flight leg that is different from the active flight leg, the SELECT HDG OR TRK FIRST message appears on the MFD.*

CONTROLS AND INDICATORS

Ident.: DSC-22-FMS-10-40-50-00004447.0001001 / 14 APR 14
Applicable to: ALL

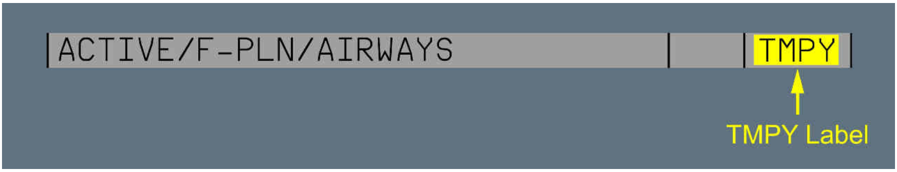
When both FMS are in DUAL mode, the temporary flight plan data is displayed on the MFD and the ND of the Captain, and on the MFD and the ND of the First Officer.

ON THE MFD

If a temporary flight plan is on standby, the FMS page header displays the TMPY label on the following pages:
- The flight-plan revision pages (e.g. AIRWAYS page)
- The F-PLN page
- The FUEL&LOAD page

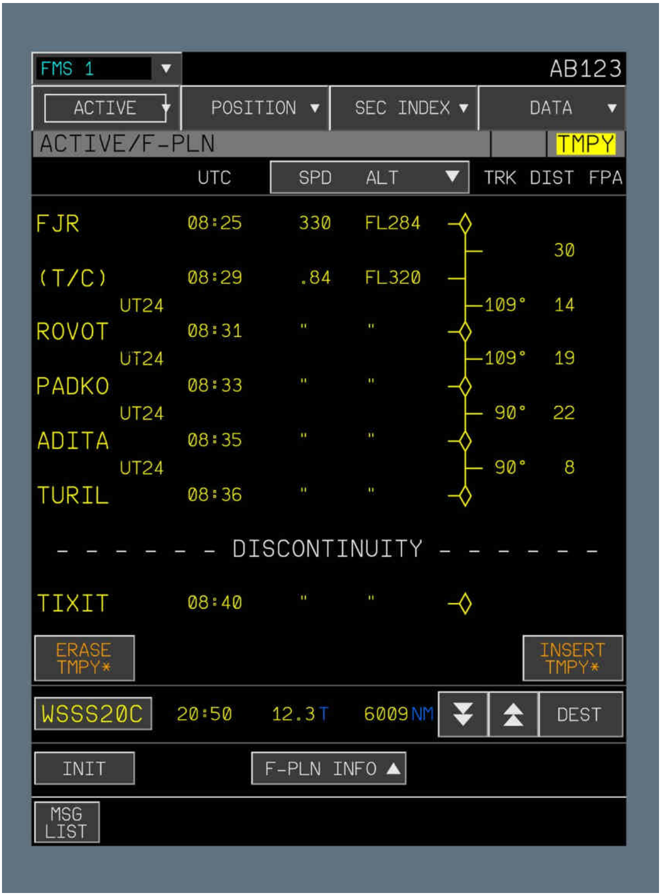
- The INIT page
- The PERF page
- The SEC INDEX page
- The WIND page.

FMS Page Header



The temporary flight plan appears in yellow on the ACTIVE/F-PLN page. The active flight plan that is used for guidance and navaid tuning cannot be displayed on the MFD, when there is a temporary flight plan. The flight crew uses the temporary flight plan as they use the active flight plan.

Temporary Flight Plan on the ACTIVE/F-PLN Page

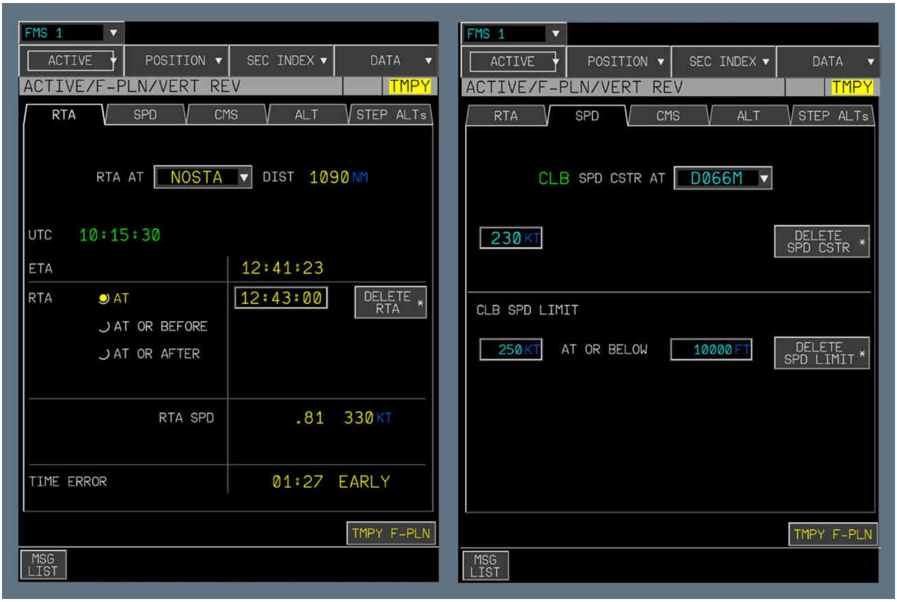

FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN
TMPY
ERASE TMPY*
INSERT TMPY*
DEST
INIT
F-PLN INFO
MSG LIST

	UTC	SPD	ALT	TRK	DIST	FPA
FJR	08:25	330	FL284			
					30	
(T/C)	08:29	.84	FL320			
UT24				109°	14	
ROVOT	08:31	"	"			
UT24				109°	19	
PADKO	08:33	"	"			
UT24				90°	22	
ADITA	08:35	"	"			
UT24				90°	8	
TURIL	08:36	"	"			
- - - - - - DISCONTINUITY - - - - - -						
TIXIT	08:40	"	"			

WSSS20C 20:50 12.3T 6009NM

For more information about the F-PLN page, *Refer to DSC-22-FMS-20-20-20 F-PLN Page*.
The revision data on a flight-plan revision page appears in yellow, if the revision creates or updates the temporary flight plan.
For example, if the flight crew creates a temporary flight plan by inserting a time constraint, the data on the RTA panel of the VERT REV page appears in yellow. However, the data on the other panels of the VERT REV page (ALT, SPD, CMS, and STEP ALTs) does not appear in yellow, because the revisions of these panels are not included in the temporary flight plan.

Temporary Revision Data on the VERT REV Page


FMS 1
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN/VERT REV
TMPY
RTA
SPD
CMS
ALT
STEP ALTs
DELETE RTA
TMPY F-PLN
MSG LIST
DELETE SPD CSTR
DELETE SPD LIMIT

RTA AT NOSTA DIST 1090 NM

UTC 10:15:30

ETA 12:41:23

RTA ● AT 12:43:00

○ AT OR BEFORE

○ AT OR AFTER

RTA SPD .81 330 KT

TIME ERROR 01:27 EARLY

CLB SPD CSTR AT D066M

230 KT

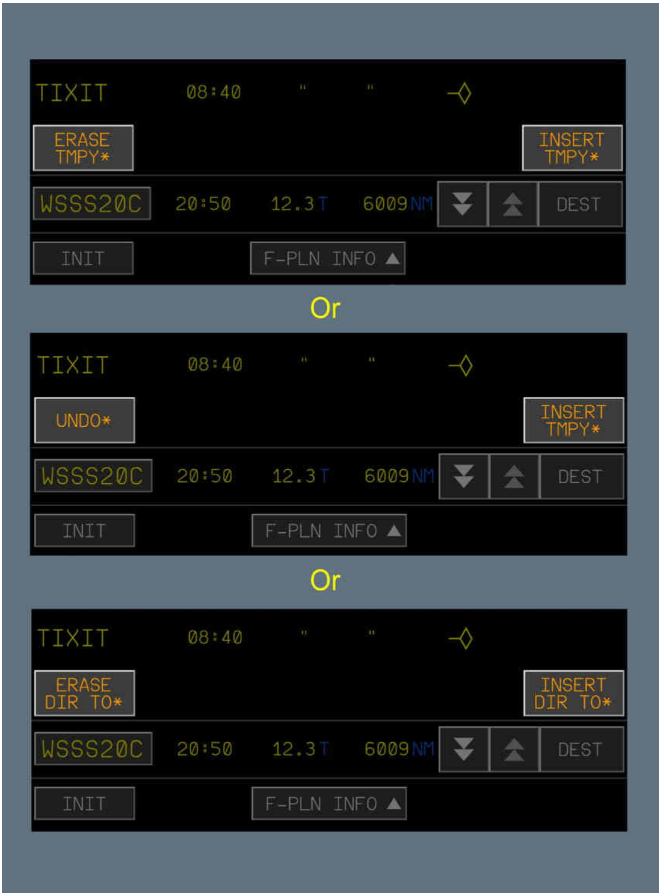
CLB SPD LIMIT

250 KT AT OR BELOW 10000 FT

INSERT/ERASE/UNDO

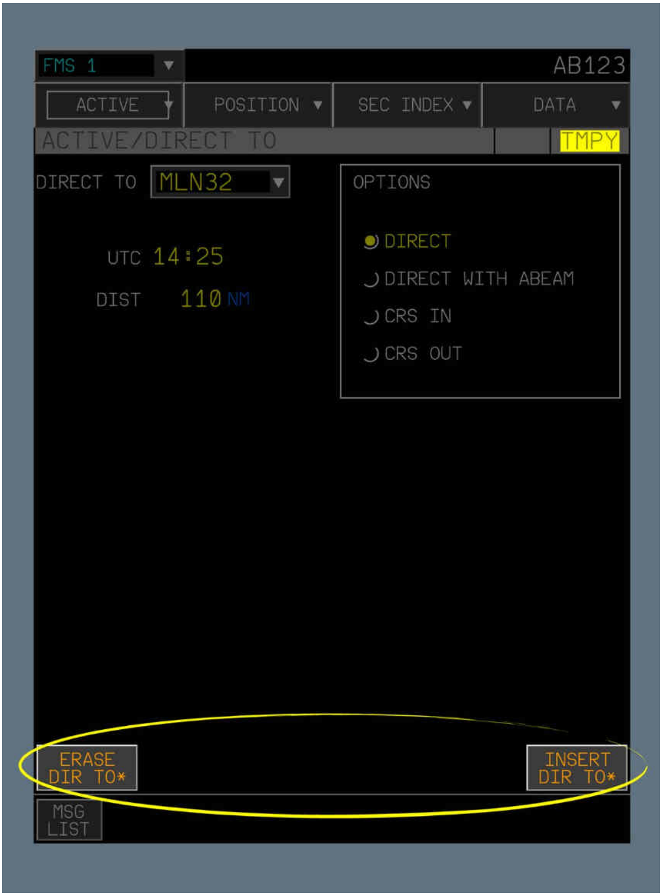
The flight crew can insert or erase the temporary flight plan on the ACTIVE/F-PLN page. The INSERT and ERASE(UNDO) buttons appear in the bottom right and left corners of the ACTIVE/F-PLN page.

INSERT, ERASE, and UNDO Buttons


TIXIT 08:40 " "
ERASE TMPY*
INSERT TMPY*
WSSS20C 20:50 12.3 T 6009 NM
DEST
INIT
F-PLN INFO ▲
Or
TIXIT 08:40 " "
UNDO*
INSERT TMPY*
WSSS20C 20:50 12.3 T 6009 NM
DEST
INIT
F-PLN INFO ▲
Or
TIXIT 08:40 " "
ERASE DIR TO*
INSERT DIR TO*
WSSS20C 20:50 12.3 T 6009 NM
DEST
INIT
F-PLN INFO ▲

The flight crew can also directly insert a temporary flight plan that was created by a DIR TO revision via the DIRECT TO page.

DIRECT TO page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/DIRECT TO
TMPY
OPTIONS
ERASE DIR TO*
INSERT DIR TO*
MSG LIST

DIRECT TO MLN32

UTC 14:25

DIST 110 NM

● DIRECT
○ DIRECT WITH ABEAM
○ CRS IN
○ CRS OUT

ON THE ND

The ND displays the temporary flight plan as a yellow dashed line.
The active flight plan remains on the ND in green, when there is a temporary flight plan. The active flight plan is used for guidance and navaid tuning. However, the waypoints of the active flight plan that are not part of the temporary flight plan are no longer interactive.
The revision data on the DIRECT TO and INSERT NEXT WPT revision windows of the ND appear in yellow.

INSERT/ERASE/UNDO

The flight crew can insert or erase the temporary flight plan on the ND. The INSERT and ERASE(UNDO) buttons appear in the bottom right and left corners of the ND.

Note: *The INSERT and ERASE(UNDO) buttons appear, only when the cursor is on the ND.*

ASSOCIATED MESSAGES

Ident.: DSC-22-FMS-10-40-50-00004448.0001001 / 14 APR 14
Applicable to: ALL

On the MFD, the FMS message area displays the following messages:
- INSERT OR ERASE TMPY F-PLN FIRST (*Refer to message*)
- SELECT HDG OR TRK FIRST (*Refer to message*).

Secondary Flight Plans

ACTIVE AND SECONDARY FLIGHT PLANS

Ident.: DSC-22-FMS-10-40-60-00002138.0001001 / 14 APR 14
Applicable to: ALL

The FMS can simultaneously store four flight plans: One active flight plan, and three secondary flight plans.
The FMS uses the active flight plan for lateral and vertical long-term guidance, and for radio navigation automatic tuning.

The flight crew uses the secondary flight plans to:
- Prepare a second takeoff runway and/or departure procedure, in preflight
- Prepare a second landing runway and/or approach procedure
- Plan a diversion
- Prepare a down-path flight plan or an entire flight plan
- Compare predictions of possible flight plans
- Store a company or an ATC flight plan before this flight plan is activated.

SECONDARY FLIGHT PLAN INITIALIZATION

Ident.: DSC-22-FMS-10-40-60-00002139.0001001 / 14 APR 14
Applicable to: ALL

In order to initialize a secondary flight plan, the flight can:
- Use a copy of the active flight plan, or of one of the secondary flight plans
- Uplink a company flight plan from the company ground station (if the option is installed)
- Enter the initialization data of the flight plan on the SEC 1(2)(3)/INIT and SEC 1(2)(3)/F-PLN pages
- Upload an ATC flight plan from the ATC mailbox.

COPY OF AN ACTIVE (OR SECONDARY) FLIGHT PLAN

A copy of the active (or secondary) flight plan includes:
- Flight plan data (e.g. company route, cruise flight level, FMS speed mode (ECON/LRC), wind, speed constraints, etc.)
- Fuel and load data (e.g. ZFWCG, ZFW, block fuel, etc.)
- Performance data (e.g. V1, VR, V2, flaps setting, etc.)

L2 A copy of the active flight plan remains connected to the active flight plan by the following parameters:
- Flight number
- Cruise flight level and temperature
- Tropopause altitude

- FMS speed mode (ECON/LRC)
- CI, if the FMS speed mode is ECON
- Before engine start: ZFW, ZFWCG, minimum fuel at destination, and block fuel
- Route reserve and final fuel (time) data
- Passenger number.

When the flight crew changes one of the above-mentioned parameters in the active flight plan, the FMS automatically updates the same parameter in the secondary flight plan.
However, if the flight crew changes one of the above-mentioned parameters in the secondary flight plan, the active and secondary flight plans are no longer connected.

Note: *The connection does not apply to a copy of a secondary flight plan: A copy of a secondary flight plan is independent from the original secondary flight plan.*

L1 UPLOAD OF AN ATC FLIGHT PLAN

The flight crew can transfer an ATC flight plan to the FMS via the LOAD function on the ATC mailbox.
By clicking on the LOAD→SEC 3 button on the ATC mailbox, the ATC flight plan is inserted in the third secondary flight plan (SEC 3).

Note: *If there is a flight plan in SEC 3, this flight plan will be deleted, when the ATC flight plan is uploaded.*
To prevent an inadvertent loss of a flight plan, the flight crew must copy SEC 3 flight plan in SEC 1(2), before the flight crew upload the ATC flight plan.

SECONDARY FLIGHT PLAN SEQUENCING

Ident.: DSC-22-FMS-10-40-60-00002140.0001001 / 14 APR 14
Applicable to: ALL

A secondary flight plan is sequenced with the active flight plan, if:
- The secondary flight plan is a copy of the active flight plan (or a copy of a secondary flight plan that was created with a copy of the active flight plan), and
- The first flight leg of the secondary flight plan is identical to the active flight leg of the active flight plan.

Note: *The active flight leg is the flight leg that is between the present position of the aircraft and the TO waypoint.*

SECONDARY FLIGHT PLAN PREDICTIONS

Ident.: DSC-22-FMS-10-40-60-00002141.0001001 / 14 APR 14
Applicable to: ALL

The FMS computes the same flight plan predictions for the three secondary flight plans as for the active flight plan, and uses the same rules and assumptions as for the active flight plan prediction computation.
For more information about flight plan prediction computation, *Refer to DSC-22-FMS-10-40-70 Introduction*.

The predictions of a secondary flight plan, that is created by copying the active flight plan, are based on the following parameters that are related to the current situation and environment of the aircraft:
- GW, FOB, CG
- UTC time
- Aircraft position
- PERF, FUEL PENALTY, and IDLE factors
- Lateral and vertical guidance modes
- AFS CP altitude target
- Wind and temperature values, etc.

However, a secondary flight plan that is created via the SEC1(2)(3)/INIT page considers that the aircraft is on ground, before engine start. In this case, the predictions are not based on the current aircraft and environment parameters. The secondary flight plan is completely independent from the active flight plan.

SECONDARY FLIGHT PLAN REVISIONS

Ident.: DSC-22-FMS-10-40-60-00002142.0001001 / 14 APR 14
Applicable to: ALL

The flight crew can make all lateral (except DIR TO and FIX INFO) and vertical revisions to the three secondary flight plans.

For more information about:
- Lateral revisions, *Refer to DSC-22-FMS-10-40-20 Overview*
- Vertical revisions, *Refer to DSC-22-FMS-10-40-30 Overview*.

If the flight crew makes a flight plan revision to a secondary flight plan, this does not create a temporary flight plan.

SECONDARY AND ACTIVE FLIGHT PLAN EXCHANGE

Ident.: DSC-22-FMS-10-40-60-00002143.0001001 / 14 APR 14
Applicable to: ALL

The SWAP function enables the flight crew to activate the secondary flight plan, and to deactivate the active flight plan. A copy of the deactivated flight plan is stored in the secondary flight plan.

L3 If the flight crew does not define the flight number, FMS speed mode (ECON/LRC), CI (if the FMS speed mode is ECON), ZFW, ZFWCG, block fuel, or taxi fuel for the secondary flight plan, the FMS maintains the value of the deactivated flight plan for the specific parameter, when the exchange is performed.

L1 The SWAP function is always available on ground.

In flight, the SWAP function is available, when:
- The NAV mode is engaged, and the first flight leg of the selected secondary flight plan is identical to the active flight leg, or
- The HDG/TRACK mode is engaged.

When the NAV mode is engaged and the first flight leg of the secondary flight plan is different from the active flight leg, the flight crew cannot use the SWAP function to activate the secondary flight plan: The flight crew cannot select the SWAP ACTIVE button on the SEC INDEX page. In this case, the flight crew must engage the HDG/TRACK mode first. Then, they can use the SWAP function.

Note: The SWAP function is not available, when a temporary flight plan is on standby, or when the secondary flight plan is empty.

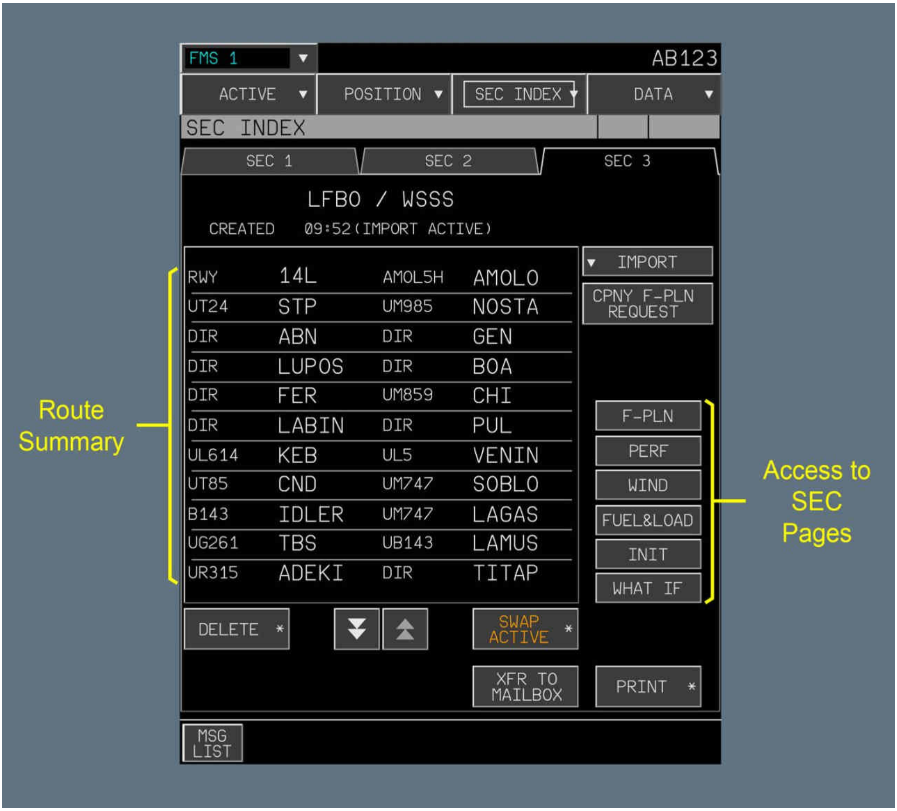
CONTROLS AND INDICATORS

Ident.: DSC-22-FMS-10-40-60-00002144.0001001 / 14 APR 14
Applicable to: ALL

ON THE MFD

The flight crew can access the three secondary flight plans via the SEC INDEX page.
The SEC INDEX page provides a route summary, and access to the main SEC pages that are associated with each secondary flight plan.

SEC INDEX Page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
SEC INDEX
SEC 1
SEC 2
SEC 3
LFBO / WSSS
CREATED 09:52(IMPORT ACTIVE)
IMPORT
CPNY F-PLN REQUEST
F-PLN
PERF
WIND
FUEL&LOAD
INIT
WHAT IF
DELETE *
SWAP ACTIVE *
XFR TO MAILBOX
PRINT *
MSG LIST
Route Summary
Access to SEC Pages

RWY	14L	AMOL5H	AMOLO
UT24	STP	UM985	NOSTA
DIR	ABN	DIR	GEN
DIR	LUPOS	DIR	BOA
DIR	FER	UM859	CHI
DIR	LABIN	DIR	PUL
UL614	KEB	UL5	VENIN
UT85	CND	UM747	SOBLO
B143	IDLER	UM747	LAGAS
UG261	TBS	UB143	LAMUS
UR315	ADEKI	DIR	TITAP

For more information about the SEC INDEX page, *Refer to DSC-22-FMS-20-20-20 SEC INDEX Page*.

L2 The SEC pages have the same content as the ACTIVE pages, except that:

- The system-computed values appear in white (they appear in green on the ACTIVE pages)
- There are no mandatory parameters (i.e. no amber boxes)
- On the SEC/INIT page:
  - It is not possible to access the DEPARTURE, FUEL&LOAD, PERF, POSITION/IRS, POSITION/NAVAIDS, and ROUTE SUMMARY pages
  - The latitude and longitude of the reference point of the departure airport are not displayed

- On the SEC/PERF page:
  - The optimum and recommended maximum flight levels are not displayed
  - It is not possible to access the POSITION/MONITOR page
  - The Engine-Out (EO) mode is not available
  - The ACTIVATE APPR button is not available
  - On the CLB, CRZ, and DES panels, the time and distance predictions for the different speed profiles are not available
  - On the T.O panel, the CPNY T.O REQUEST button is not available
  - On the DES panel, the DES CABIN RATE entry field and the vertical deviation are not available
  - On the APPR panel, the VREF is not available
- On the SEC/WIND page, the history winds are not available.

L1 ON THE ND

When a SEC page is displayed, the associated secondary flight plan appears in white on the ND.

Note: *The flight crew cannot make revisions to the secondary flight plan via the interactive ND.*

Flight Plan Predictions

INTRODUCTION

Ident.: DSC-22-FMS-10-40-70-00004449.0001001 / 14 APR 14
Applicable to: ALL

The FMS computes flight plan predictions for the active, temporary, and secondary flight plans.
The predictions are based on the flight plan, the current state of the aircraft (i.e. position, GW, CG, etc.), and its environment (i.e. wind, temperature, etc.).

Flight plan predictions include:
- Time of arrival, speed, altitude, Estimated Fuel on Board (EFOB), and wind at each waypoint
- Pseudo waypoints
  For more information about pseudo waypoint, *Refer to DSC-22-FMS-10-40-10 Pseudo Waypoints*.
- Equi-Time Point (ETP).

  Note: The FMS does not compute the ETP for secondary flight plans.

  For more information about the ETP function, *Refer to DSC-22-FMS-10-40-40 Equi-Time Point (ETP) Function*.

START AND UPDATE OF PREDICTIONS

Ident.: DSC-22-FMS-10-40-70-00004451.0001001 / 14 APR 14
Applicable to: ALL

In the PREFLIGHT flight phase, the FMS starts to compute the flight plan predictions, when the following data is available:
- The lateral flight plan
- The Cruise Flight Level (CRZ FL)
- The FMS speed mode (ECON/LRC)
- The CI, if the FMS speed mode is ECON

  Note: At power-up and during the PREFLIGHT flight phase, the default FMS speed mode is ECON with no CI value. Then, if the flight crew does not enter a CI value before the flight crew enters the ZFW value or before engine start, the FMS automatically:
  - *Selects the LRC mode*
  - *Sets the CI value to 0.*
- The aircraft Gross Weight (GW).

L2 Before engine start, the FMS computes the GW from the ZFW and block fuel values that the flight crew entered.
After engine start, the FMS uses the GW that the FQMS computes.

L1 The FMS updates the predictions at regular intervals when some specific events occur (e.g. lateral or vertical flight plan change, FMS speed mode change, CI change, load data change, etc.).

Note: *After an FMS reset, the predictions may be lost. Entering the FMS speed mode (ECON/LRC) again (even when the MODE entry field or the CI entry field is not empty) may make the predictions reappear.*

WIND PREDICTIONS

Applicable to: ALL

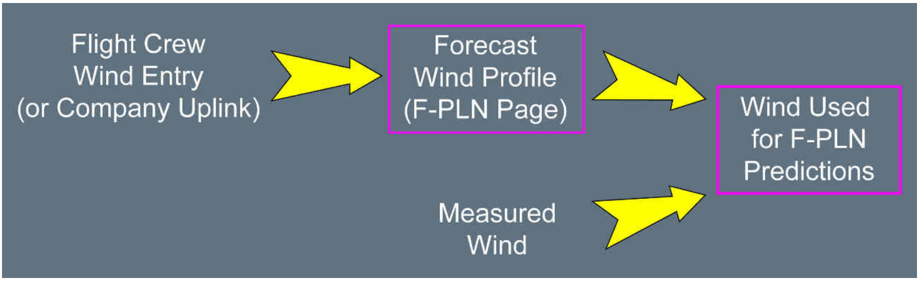
Ident.: DSC-22-FMS-10-40-70-10-00004453.0001001 / 14 APR 14

The computation of the wind predictions considers:

- The wind data that are entered by the flight crew (or sent by the Operator via uplink)
- The measured wind.

The FMS computes a forecast wind profile, based on the wind that is entered by the flight crew. The forecast wind appears on the F-PLN page.
In flight, the FMS takes into account the measured wind to compute a corrected wind profile that is used for the flight plan predictions (i.e. time, EFOB, etc.). This corrected wind profile never appears on the F-PLN page.

Wind Prediction Computation


Flight Crew Wind Entry (or Company Uplink)
Forecast Wind Profile (F-PLN Page)
Wind Used for F-PLN Predictions
Measured Wind

The wind prediction computation is different for the climb, cruise, or descent waypoints.

Ident.: DSC-22-FMS-10-40-70-10-00004458.0001001 / 14 APR 14

WIND PREDICTIONS AND TRIP WIND

TRIP WIND ENTRY

During preflight, the flight crew can enter a trip wind value, in order to obtain flight plan predictions before entering more specific wind data.
The flight crew enters the trip wind value on the INIT page (*Refer to page*).

When the flight crew enters any climb, cruise, or descent data, the trip wind is not taken into account for the prediction computation.

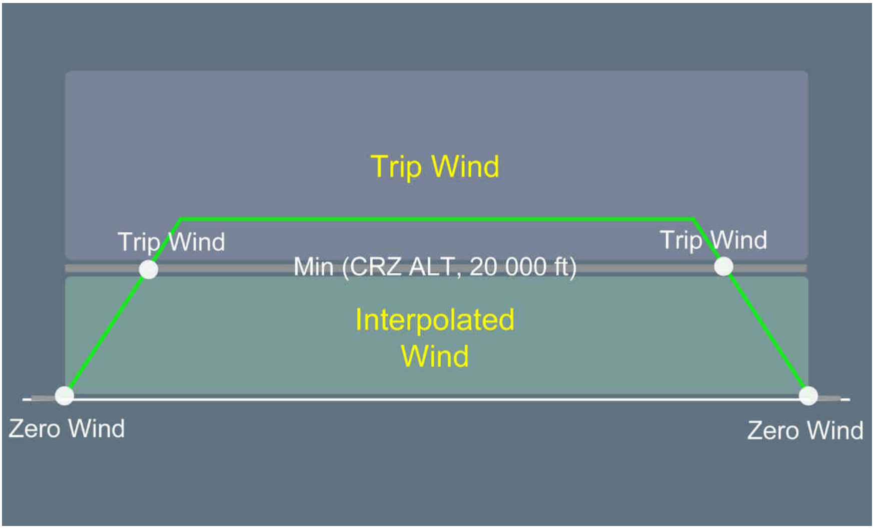
FORECAST WIND PROFILE

The FMS creates the following forecast wind profile, when the flight crew only enters the trip wind value:

- In cruise: The trip wind applies for all altitudes
- In climb and descent:
  - Below 20 000 ft (or below the cruise flight level, if it is below 20 000 ft): The wind is interpolated between zero wind at ground level (departure or destination elevation) and the trip wind at 20 000 ft.
  - Above 20 000 ft (or above the cruise flight level, if it is below 20 000 ft): The trip wind applies for all altitudes.

Note: *The F-PLN page displays the trip wind for all climb, cruise, and descent waypoints. The interpolated wind profile below 20 000 ft is used for prediction computation, but does not appear on the F-PLN page.*

Trip Wind



CORRECTED WIND PROFILE

When in flight, the FMS takes into account the measured wind. This wind correction depends on the flight phase, and is explained below.

Ident.: DSC-22-FMS-10-40-70-10-00004459.0001001 / 14 APR 14

WIND PREDICTIONS FOR CLIMB WAYPOINTS

WIND ENTRY

The flight crew can insert climb wind values for 5 different flight levels, and can enter the wind at Ground (GND) level as one of these levels.
The flight crew enters the climb wind values on the CLB panel of the WIND page (*Refer to page*).

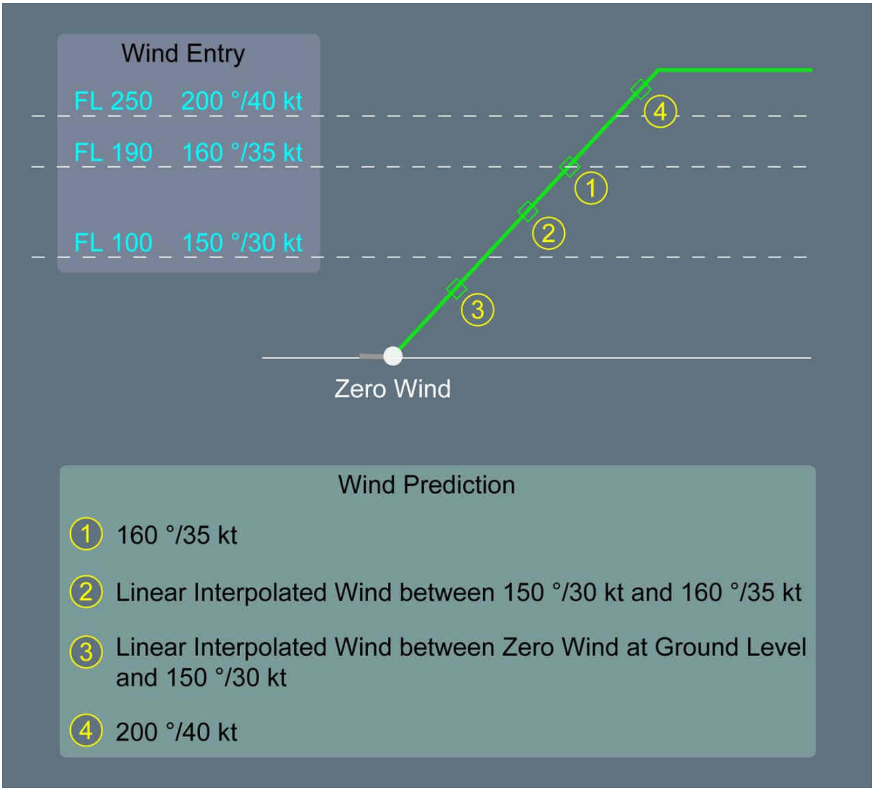
FORECAST WIND PROFILE

The FMS creates a forecast wind profile for the climb waypoints, as follows:

- If the predicted altitude at a waypoint corresponds to one of the entered climb wind altitudes, the predicted wind at the waypoint is the associated climb wind
- If the predicted altitude at a waypoint is between two entered climb wind altitudes, the predicted wind at the waypoint is a linear interpolation between the two associated climb winds
- If the predicted altitude at a waypoint is below the lowest entered climb wind altitude (no surface wind is entered), the predicted wind at the waypoint is a linear interpolation between zero wind at ground level, and the lowest entered climb wind
- If the predicted altitude at a waypoint is above the highest entered climb wind altitude, the predicted wind at the waypoint is the extrapolated highest entered climb wind.

Note: *If the flight crew does not enter any climb wind nor trip wind value, the FMS uses 0 °/0 kt as default value.*

Climb Waypoint Predictions



Wind Prediction

① 160 °/35 kt

② Linear Interpolated Wind between 150 °/30 kt and 160 °/35 kt

③ Linear Interpolated Wind between Zero Wind at Ground Level and 150 °/30 kt

④ 200 °/40 kt

CORRECTED WIND PROFILE

During climb, the FMS takes into account the measured wind, as follows:

- At the current altitude of the aircraft, the corrected wind is equal to the measured wind
- At more than 10 000 ft above the current altitude of the aircraft, the FMS no longer corrects the wind with the measured wind: The wind prediction is equal to the forecast wind
- Between the current altitude of the aircraft and 10 000 ft above the current altitude, the corrected wind is a linear interpolation between the measured wind and the forecast wind.

Ident.: DSC-22-FMS-10-40-70-10-00004460.0001001 / 14 APR 14

WIND PREDICTIONS FOR CRUISE WAYPOINTS

WIND ENTRY

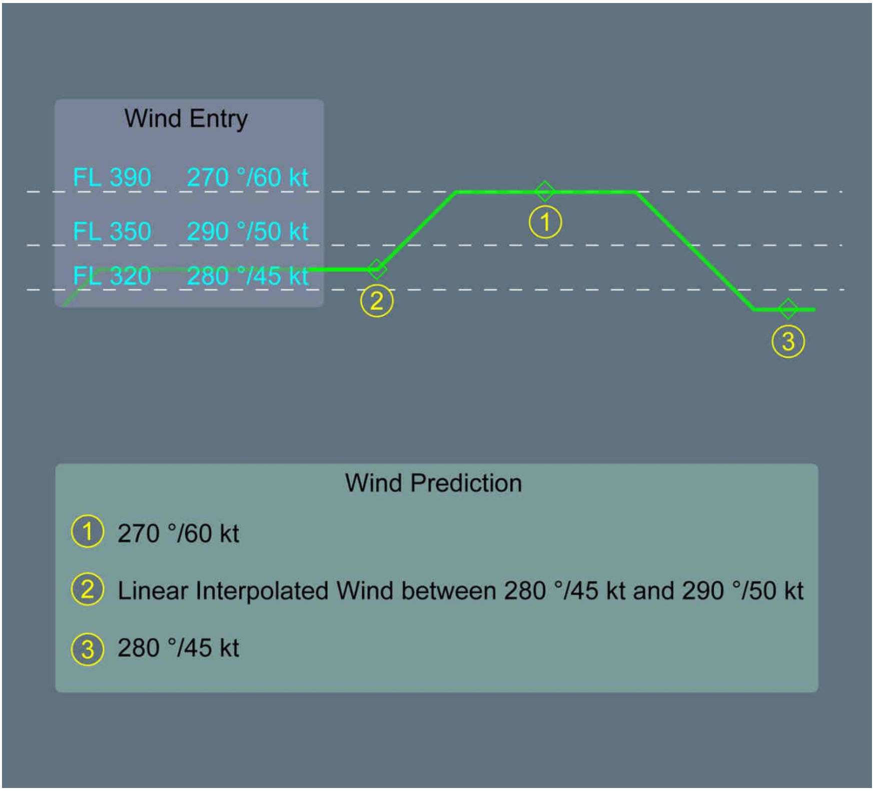
The flight crew can insert different cruise wind data for all cruise waypoints, for four different flight levels.
When the flight crew enters wind data at a waypoint, the wind values are automatically propagated to the down-path cruise waypoints, up to the waypoint for which the flight crew entered other wind data for the same flight level.
The flight crew enters the cruise wind values on the CRZ panel of the WIND page (*Refer to page*).

FORECAST WIND PROFILE

The FMS creates a forecast wind profile for the cruise waypoints, as follows:

- If the predicted altitude at a waypoint corresponds to one of the entered or propagated cruise wind altitudes, the predicted wind at the waypoint is the associated cruise wind
- If the predicted altitude at a waypoint is between two entered or propagated cruise wind altitudes, the predicted wind at the waypoint is a linear interpolation between the two associated cruise winds
- If the predicted altitude at a waypoint is above(below) the highest(lowest) entered or propagated cruise wind altitude, the predicted wind at the waypoint is the wind at the highest(lowest) entered or propagated cruise wind.

Cruise Waypoint Predictions


Wind Entry
FL 390 270 °/60 kt
FL 350 290 °/50 kt
FL 320 280 °/45 kt
①
②
③
Wind Prediction
① 270 °/60 kt
② Linear Interpolated Wind between 280 °/45 kt and 290 °/50 kt
③ 280 °/45 kt

When in flight, the FMS corrects the predicted wind profile with the measured wind. The measured wind is laterally propagated to 200 NM ahead of the aircraft, and to 10 000 ft above and below the aircraft. The influence of the measured wind decreases with the distance and altitude from the aircraft.

The F-PLN page displays the wind predictions without the measured wind correction.

CORRECTED WIND PROFILE

During cruise, the FMS takes into account the measured wind, as follows:

- At the current position and current altitude of the aircraft, the corrected wind is equal to the measured wind
- At more than 200 NM ahead of the aircraft, or more(less) than 10 000 ft above(below) the current altitude of the aircraft, the FMS no longer corrects the wind with the measured wind: The wind prediction is equal to the forecast wind
- Between the current altitude of the aircraft and 10 000 ft above(below) the current altitude, the corrected wind is a linear interpolation between the measured wind and the forecast wind
- Between the current position of the aircraft and 200 NM ahead of the aircraft, the corrected wind is a linear interpolation between the measured wind and the forecast wind.

Ident.: DSC-22-FMS-10-40-70-10-00004461.0001001 / 25 APR 14

WIND PREDICTIONS FOR DESCENT WAYPOINTS

WIND ENTRY

The flight crew can insert descent wind values for 5 different flight levels, and can enter the wind at Ground (GND) level as one of these levels.

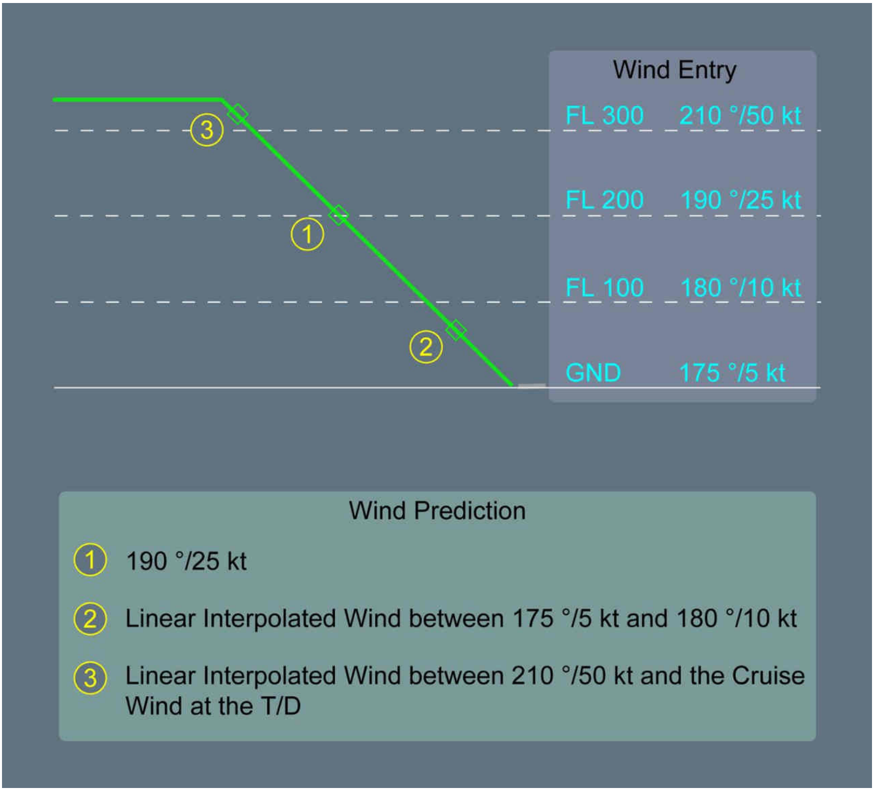
FORECAST WIND PROFILE

The FMS creates a forecast wind profile for the descent waypoints, as follows:

- If the predicted altitude at a waypoint corresponds to one of the entered descent wind altitudes, the predicted wind at the waypoint is the associated descent wind
- If the predicted altitude at a waypoint is between two entered descent wind altitudes, the predicted wind at the waypoint is a linear interpolation between the two associated descent winds
- If the predicted altitude at a waypoint is below the lowest entered descent wind altitude (no surface wind is entered), the predicted wind at the waypoint is a linear interpolation between zero wind at ground level, and the lowest entered descent wind
- If the predicted altitude at a waypoint is above the highest entered descent wind altitude, the predicted wind at the waypoint is a linear interpolation between the cruise wind at the T/D, and the highest entered descent wind.

Note: *If the flight crew does not enter any descent wind nor trip wind value, the predicted descent winds are a linear interpolation between the cruise wind at T/D, and zero wind at ground level.*

Descent Waypoint Predictions


Wind Entry
FL 300 210 °/50 kt
FL 200 190 °/25 kt
FL 100 180 °/10 kt
GND 175 °/5 kt
③
①
②
Wind Prediction
① 190 °/25 kt
② Linear Interpolated Wind between 175 °/5 kt and 180 °/10 kt
③ Linear Interpolated Wind between 210 °/50 kt and the Cruise Wind at the T/D

CORRECTED WIND PROFILE

During descent, the FMS takes into account the measured wind, as follows:

- At the current altitude of the aircraft, the corrected wind is equal to the measured wind
- Less than 10 000 ft below the current altitude of the aircraft, the wind is no longer corrected with the measured wind: The wind prediction is equal to the forecast wind
- Between the current altitude of the aircraft and 10 000 ft below the current altitude, the corrected wind is a linear interpolation between the measured wind and the forecast wind.

Ident.: DSC-22-FMS-10-40-70-10-00004462.0001001 / 05 MAY 14

WIND PREDICTIONS FOR THE ALTERNATE FLIGHT PLAN

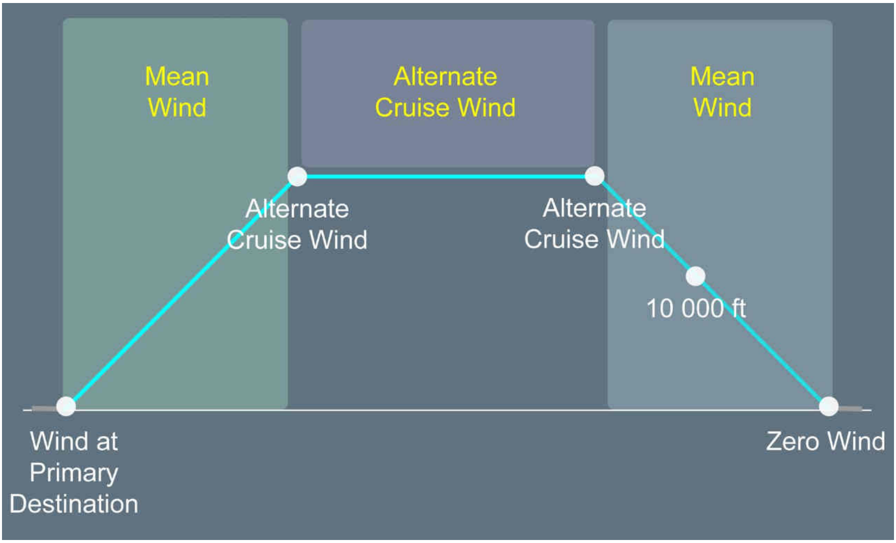
The flight crew can enter an alternate cruise wind.

The cruise flight level of the alternate flight plan is by default:
- FL 220, if the distance of the alternate flight plan is less than 200 NM
- FL 310, if the distance of the alternate flight plan is 200 NM or more

The FMS creates the following forecast wind profile for the alternate flight plan:
- For the alternate climb phase, the FMS applies a mean climb wind between the wind at the destination airport and the entered alternate cruise wind
- For the alternate cruise phase, the FMS applies the entered alternate cruise wind
- For the alternate descent phase, the FMS applies a mean descent wind between the entered alternate cruise wind and the interpolated wind at 10 000 ft. The wind at 10 000 ft is a linear interpolation between the entered alternate cruise wind and zero wind at ground level.

Note: *The FMS uses the alternate wind profile for prediction computation, but the alternate wind profile does not appear on the F-PLN page.*
When the flight crew enables the alternate flight plan, it becomes part of the active flight plan, and the wind profile is computed in the same manner as for the active flight plan.

Predictions for the Alternate Flight Plan



PREDICTIONS AND SELECTED MODES

Applicable to: ALL

Ident.: DSC-22-FMS-10-40-70-20-00004454.0001001 / 14 APR 14

The FMS creates a lateral and vertical flight plan that the aircraft will fly, when the lateral and vertical managed modes are engaged.
When one or more selected modes are engaged, the predictions are updated to indicate the new situation of the aircraft.
The update of the predictions is based on the following philosophy: The selected modes are short-term modes, and are only engaged temporarily. The FMS assumes that the flight crew will quickly return to managed modes. The assumed moment of return to managed flight plan predictions depends on the selected mode, and the flight phase, as explained below.

Ident.: DSC-22-FMS-10-40-70-20-00004463.0001001 / 14 APR 14

HDG/TRACK MODE

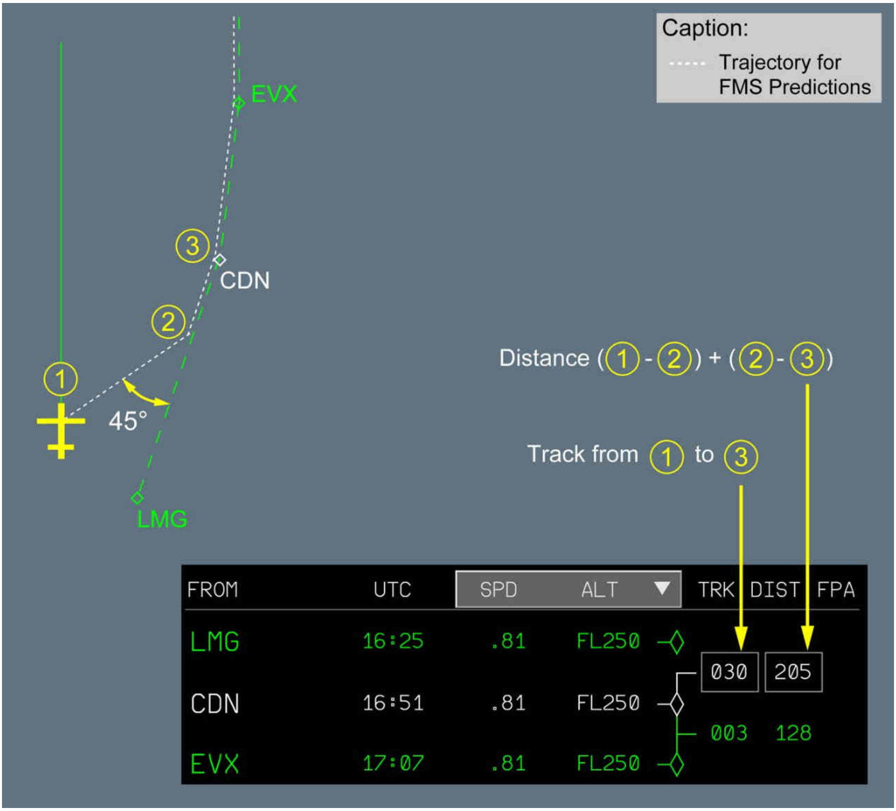
When the HDG/TRACK mode engages, the FMS assumes an immediate return to the lateral flight plan. This rule is valid for all flight phases.
The return path is the direct flight leg from the aircraft present position to the TO waypoint, with an intersection angle of 45 ° between the direct flight leg and the lateral flight plan.

If a direct flight leg with an intersection angle of 45 ° is not possible, the return path has two flight legs:

- An intersection flight leg from the aircraft present position to an intersection point on the lateral flight plan
  The intersection point corresponds to an intersection angle of 45 ° between the intersection flight leg and the lateral flight plan.
- A flight leg from the intersection point and the TO waypoint.

In all cases, on the F-PLN page, the return path appears as a direct flight leg (with its distance and track), and as the first flight leg of the flight plan.

Immediate Return to Lateral Flight Plan



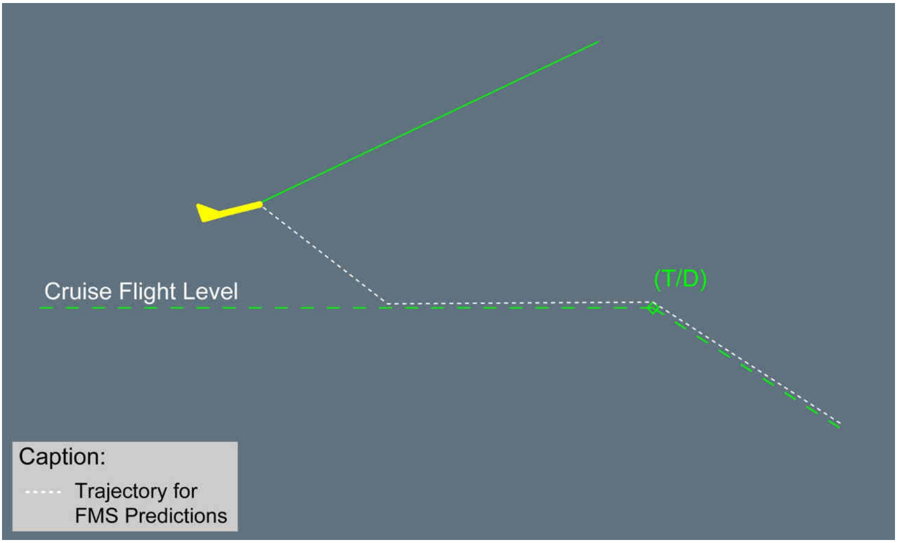
FROM	UTC	SPD	ALT	TRK	DIST	FPA
LMG	16:25	.81	FL250			
				030	205	
CDN	16:51	.81	FL250			
				003	128	
EVX	17:07	.81	FL250			

Ident.: DSC-22-FMS-10-40-70-20-00004464.0001001 / 14 APR 14

OP CLB, OP DES, OR V/S / FPA MODE

When the OP CLB, OP DES, or V/S / FPA mode engages, the FMS assumes that the flight crew will immediately disengage the selected mode, and:
- During the climb phase: The CLB mode will immediately reengage
- During the cruise phase: The aircraft will immediately return to the cruise flight level (in CLB or DES mode, if necessary)
- During the descent phase: The aircraft will immediately return to the FMS descent profile in the DES mode.

Immediate Return to Cruise Altitude



Ident.: DSC-22-FMS-10-40-70-20-00004465.0001001 / 14 APR 14

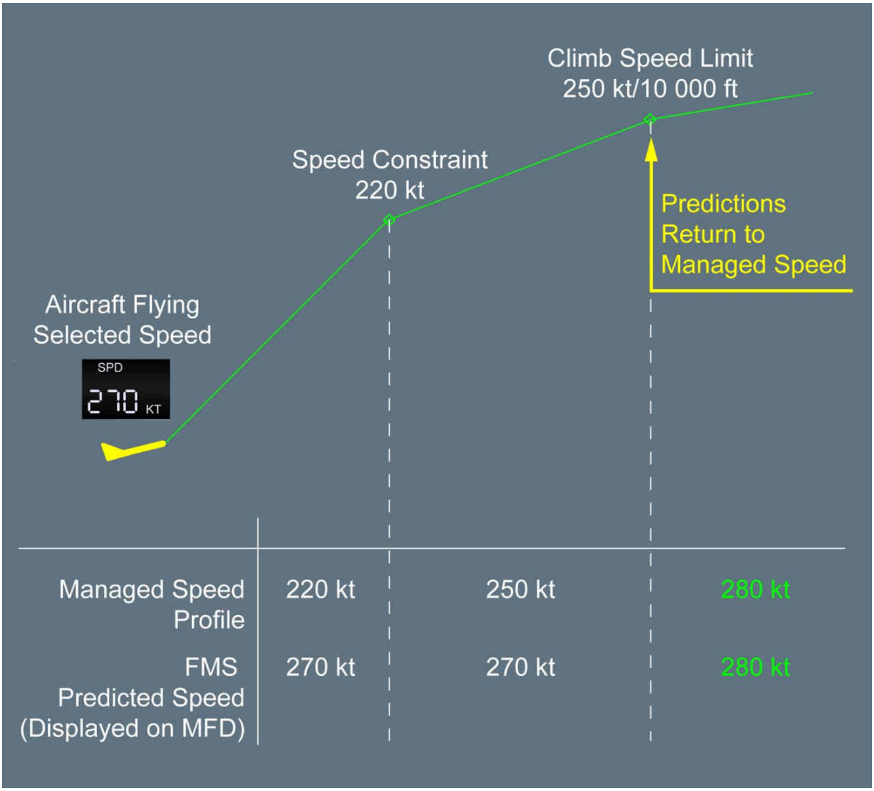
SELECTED SPEED/MACH

The FMS assumptions depend on the flight phase:

DURING TAKEOFF AND CLIMB

When the selected speed/Mach control engages, the FMS assumes that the flight crew will engage the managed speed control at the next speed limit(constraint), if at this speed limit(constraint) the managed speed becomes more than the selected speed.
If the managed speed does not become more than the selected speed at the speed limit(constraint), or if there is no speed limit(constraint), the FMS assumes that the flight crew will engage the managed speed control at the Top of Climb (T/C).

Selected Speed during Climb


Climb Speed Limit
250 kt/10 000 ft
Speed Constraint
220 kt
Predictions
Return to
Managed Speed
Aircraft Flying
Selected Speed
SPD
270 KT
Managed Speed Profile
220 kt
250 kt
280 kt
FMS Predicted Speed (Displayed on MFD)
270 kt
270 kt
280 kt

DURING CRUISE

When the selected speed/Mach control engages, the FMS assumes that the flight crew will engage the managed speed control at the top of descent (T/D).

L3 When the flight crew selects a CAS(Mach) and there is a step altitude in the flight plan, that intersects the CAS/Mach crossover altitude, the FMS uses the Mach(CAS) that corresponds to the selected CAS(Mach) for the predictions beyond the crossover altitude.

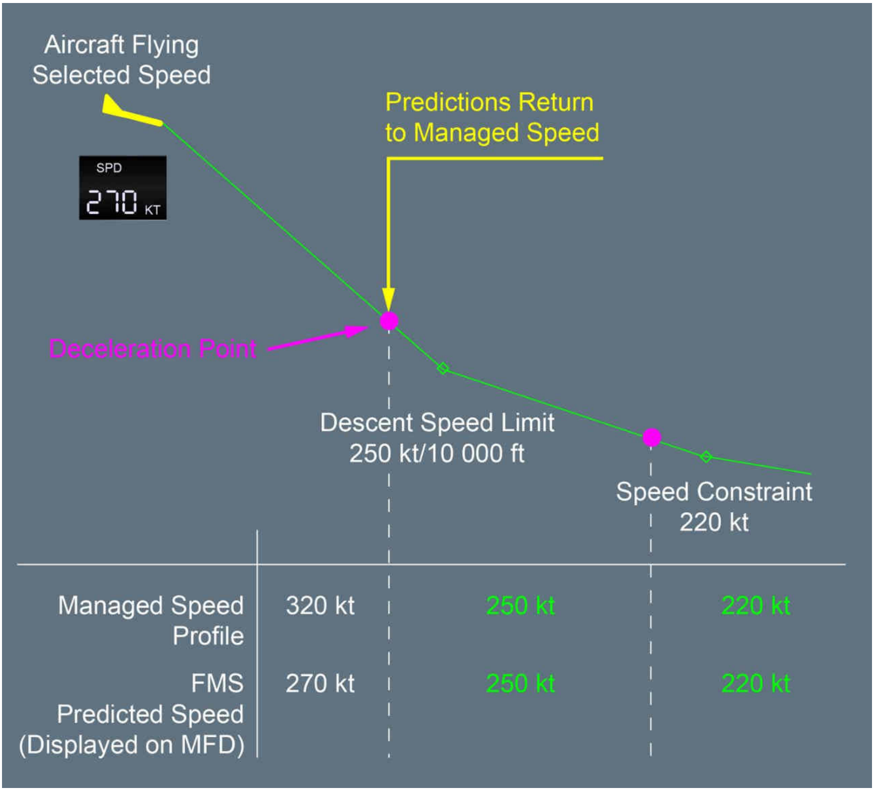
L1 DURING DESCENT

When the selected speed/Mach control engages, the FMS assumes that the flight crew will engage the managed speed control at the start of the deceleration to the next speed limit(constraint), if at this speed limit(constraint) the managed speed becomes less than the selected speed.

If the managed speed does not become less than the selected speed at the speed limit(constraint), or if there is no speed limit(constraint), the FMS assumes that the flight crew will engage the managed speed control:
- At the deceleration point (start of the approach segment), if the managed speed after deceleration is less than the selected speed, or
- Beyond the deceleration point, when the managed speed becomes less than the selected speed.

L3 When the flight crew selects a Mach, the FMS uses the CAS that corresponds to the selected Mach, for predictions beyond the crossover altitude.

Selected Speed during Descent


Aircraft Flying
Selected Speed
SPD
270 KT
Predictions Return
to Managed Speed
Deceleration Point
Descent Speed Limit
250 kt/10 000 ft
Speed Constraint
220 kt
Managed Speed
Profile
320 kt
250 kt
220 kt
FMS
Predicted Speed
(Displayed on MFD)
270 kt
250 kt
220 kt

L1 **DURING APPROACH**

When the selected speed/Mach control engages, the FMS assumes that the flight crew will immediately engage the managed speed control.

PREDICTIONS DURING A GO-AROUND

Ident.: DSC-22-FMS-10-40-70-00004455.0001001 / 14 APR 14
Applicable to: ALL

The FMS does not compute the waypoint vertical predictions for the missed approach segment.
The F-PLN page only displays the distance and track of the missed approach flight legs, and displays dashes for the time, speed, altitude, EFOB, and wind predictions. If there is an altitude or speed constraint on a missed approach waypoint, the constraint value appears in magenta on the F-PLN page.

During the GA flight phase, the FMS provides only the following data for the destination and alternate airports:
- Distance
- EFOB
- Estimated Time of Arrival (ETA)
- Route reserve, final, and extra fuel.

For these predictions, the FMS does not consider any speed or altitude constraints, or wind.

L2 Note: *The FMS does not compute the vertical predictions during the GA phase. The FMS cannot manage a vertical flight plan, when the vertical predictions are not available. At the GA ACCEL ALT, the CLB phase becomes active and the FMS computes again the vertical predictions, by taking into account the flight plan constraints.*
When the flight crew sets an AT or AT OR BELOW constraint, that has a constraint value that is equal to the GA ACCEL ALT, the FMS will not take into account this constraint, because the FMS will start the prediction computation when the constraint altitude is already sequenced.

PREDICTIONS FOR THE ALTERNATE FLIGHT PLAN

Ident.: DSC-22-FMS-10-40-70-00004456.0001001 / 14 APR 14
Applicable to: ALL

As soon as the flight crew inserts the alternate airport and the alternate flight plan, the FMS computes the following predictions:
- The alternate trip time and trip fuel
- The Estimated time and Fuel On Board (FOB) at the alternate airport
- The estimated extra fuel at the alternate airport.

The alternate predictions are based on the following assumptions:
- The initial aircraft weight for the alternate flight plan is equal to the estimated landing weight at the destination airport
- The alternate flight plan corresponds to a flight from takeoff at the destination airport to landing at the alternate airport
- The distance of the alternate flight plan is:
  - The distance along the company alternate route, or
  - The distance along the alternate flight plan, if the flight crew created the alternate flight plan, or
  - The direct distance between the destination airport and the alternate airport, if there are no waypoints between the destination airport and the alternate airport
- The cruise flight level of the alternate flight plan is by default:
  - FL 220, if the distance of the alternate flight plan is less than 200 NM
  - FL 310, if the distance of the alternate flight plan is equal to or more than 200 NM.
- The delta ISA is constant along the alternate flight plan, and is equal to the delta ISA at the destination airport
- The alternate trip wind is a constant value that the flight crew enters on the DES panel of the WIND page

L2 For more information about the WIND page, *Refer to DSC-22-FMS-20-20-20 WIND Page*.
For more information about the wind predictions for the alternate flight plan, *Refer to DSC-22-FMS-10-40-70 Wind Predictions for the Alternate Flight Plan*.

L1 - The FMS speed mode (ECON/LRC) is LRC (minimum fuel optimization).

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Datalink with Company Ground Station

INTRODUCTION

Ident.: DSC-22-FMS-10-40-80-00004466.0001001 / 14 APR 14
Applicable to: ALL

With the COMPANY COM application, it is possible to transfer data:
- From the FMS to the company ground station, i.e data requests and reports
- From the company ground station to the FMS, i.e. data messages.

The COMPANY COM application enables the transfer of the following data:
- F-PLN initialization data: *Refer to DSC-22-FMS-10-40-80 Initialization Data of the Flight Plan*
- Wind data: *Refer to DSC-22-FMS-10-40-80 Wind Data*
- Takeoff data: *Refer to DSC-22-FMS-10-40-80 Takeoff Data*
- Flight reports: *Refer to DSC-22-FMS-10-40-80 Flight Reports*
- Broadcast data: *Refer to DSC-22-FMS-10-40-80 Broadcast Data*.

For more information about the COMPANY COM application, *Refer to DSC-46-OIS-10-40 COMPANY COM*.

L2 The FMS sends the requests and reports to the ground station via the Avionics Communication Router (ACR).
The ACR receives the data from the company ground station, and sends it to the FMS.
If a communication failure occurs between the FMS and the ACR, the FMS message area displays the NOT TRANSMITTED TO ACR message.

L3 For more information about the ACR, *Refer to DSC-23-10-10 ACR*.

INITIALIZATION DATA OF THE FLIGHT PLAN

Applicable to: ALL

Ident.: DSC-22-FMS-10-40-80-10-00004467.0001001 / 14 APR 14

The flight crew can request and receive the following initialization data of the flight plan from the company ground station:

- Flight number
- Lateral and vertical F-PLN data:
  - FROM, TO, and ALTN airports
  - Waypoints, airways, speed/altitude constraints, step, hold procedures
- Associated performance and load data:
  - Cruise flight level
  - Tropopause altitude
  - Cruise temperature
  - PERF factor
  - CI
  - Climb transition altitude
  - ZFW, ZFWCG
  - Block fuel
  - Taxi fuel
  - Route reserve.

Ident.: DSC-22-FMS-10-40-80-10-00004472.0001001 / 14 APR 14

COMPANY F-PLN REQUEST

The flight crew can send a F-PLN request:

- Before engine start: For the active and secondary flight plans

L2 *Note: For active F-PLN, a request is only possible, when active F-PLN is empty.*

L1
- After engine start: For the secondary flight plan only.

Only one request is possible at a time, for active or secondary flight plan.
The flight crew can initiate a company F-PLN request by using the CPNY F-PLN REQUEST button on the INIT page, or on the SEC INDEX page.

For more information about:

- The INIT page, *Refer to DSC-22-FMS-20-20-20 INIT Page*
- The SEC INDEX page, *Refer to DSC-22-FMS-20-20-20 SEC INDEX Page*.

CPNY F-PLN REQUEST Button

CPNY F-PLN
REQUEST

When clicked, displays the COMPANY F-PLN REQUEST page, where the flight crew can add the flight number, the company route, and any free text before sending the request.
For more information about the COMPANY F-PLN REQUEST page, *Refer to DSC-22-FMS-20-20-20 COMPANY F-PLN REQUEST Page*.
After the flight crew sends the request, the button label changes to REQUEST PENDING... , until the flight plan data is received.

REQUEST PENDING Label

REQUEST
PENDING...

L2 If the FMS does not receive a response from the company ground station within 4 min after the request:
- The FMS message area displays the NO COMPANY REPLY message
- The associated buttons on the INIT, SEC INDEX, and COMPANY F-PLN REQUEST pages enable a new flight plan request.

Ident.: DSC-22-FMS-10-40-80-10-00004473.0001001 / 14 APR 14

RECEIVED COMPANY F-PLN

The FMS receives initialization data of the flight plan:
- In response to the flight crew request, or
- Directly without previous request from the flight crew.

The FMS may receive:
- Flight plan data only
- Flight plan data with associated performance and load data
- Performance and load data only.

When the FMS receives the uplink, it displays one of the following messages in the FMS message area:
- COMPANY F-PLN RECEIVED WAITING FOR INSERTION: The uplink has only flight plan data
- COMPANY F-PLN & LOAD RECEIVED WAITING FOR INSERTION: The uplink has flight plan and performance and load data
- COMPANY LOAD DATA RECEIVED WAITING FOR INSERTION: The uplink has only performance and load data

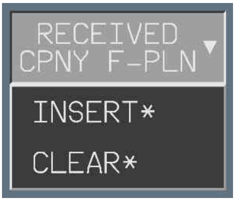
- RECEIVED COMPANY F-PLN NOT VALID: The flight plan, uplinked from the company ground station, is not valid
- RECEIVED FLT NUMBER NOT VALID: The received flight number, that is part of the uplinked flight plan data, is not valid.

L3 After insertion, the FMS message area may display one of the following messages:

- CHECK CPNY RTE: The company route ident of the uplinked flight plan differs from the company route ident of the flight plan request
- FLT NUMBER RECEIVED: The FMS received the flight number, as part of the uplinked flight plan data, without previous request from the flight crew
- CHECK FLT NUMBER: The company uplinked flight number differs from the flight number of the flight plan request.

L1 The flight crew can insert the uplink via the RECEIVED CPNY F-PLN button (or the RECEIVED CPNY LOAD button, if the uplink has only performance and load data) on the INIT page, or on the SEC INDEX /page.

RECEIVED CPNY F-PLN Menu



When clicked, opens a menu:

- INSERT: Inserts the uplink
- CLEAR: Clears the uplink.

Note: *The flight crew cannot preview the received data before insertion.*

The following table indicates the rules of insertion for the active and secondary flight plans:

	The active flight plan is empty			**There is an active flight plan**	
	Uplink received without request	Request from active	Request from secondary	Uplink received without request	Request from secondary
Before Engine Start	Insertion in active or secondary		Insertion in secondary only		
After Engine Start	Insertion in secondary only				

Note: *The flight crew can only insert performance and load data before engine start.*

WIND DATA

Applicable to: ALL

Ident.: DSC-22-FMS-10-40-80-20-00004468.0001001 / 14 APR 14

The flight crew can request and receive the following wind data from the company ground station:
- Climb winds
- Cruise winds
- Descent winds
- Alternate winds.

The flight crew can request and receive the wind data for active or secondary flight plans.

Ident.: DSC-22-FMS-10-40-80-20-00004474.0001001 / 14 APR 14

COMPANY WIND REQUEST

The flight crew can send a wind request in all flight phases, except in DES, APPR, and GA.
Before sending a request to the ground, the flight crew may define a minimum of flight plan information, depending on the forecast wind data they need (e.g. cruise flight level, waypoints, top of climb, step climb, etc.). The FMS will send this information with the request .
Only one request is possible at a time, for active or secondary flight plan.
The flight crew can initiate a wind request by using the CPNY WIND REQUEST button on the INIT page or WIND page.

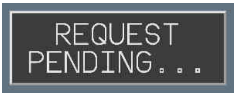
For more information about the:
- INIT page, *Refer to DSC-22-FMS-20-20-20 INIT Page*
- WIND page, *Refer to DSC-22-FMS-20-20-20 WIND Page*.

CPNY WIND REQUEST Button

CPNY WIND
REQUEST

When clicked, displays the COMPANY WIND DATA REQUEST page, where the flight crew can add any free text before sending the request. The request refers to the F-PLN from where it is sent.
For more information about the COMPANY WIND DATA REQUEST page, *Refer to DSC-22-FMS-20-20-20 COMPANY WIND DATA REQUEST Page*.
After the flight crew sends the request, the button label changes to REQUEST PENDING... , until the wind data is received.

REQUEST PENDING Label



REQUEST
PENDING...

L2 If the FMS does not receive a response from the company ground station within 4 min after the request:

- The FMS message area displays the NO COMPANY REPLY message
- The associated buttons on the INIT page and WIND page enable a new wind request.

Ident.: DSC-22-FMS-10-40-80-20-00004475.0001001 / 14 APR 14

RECEIVED COMPANY WIND

The FMS receives the wind data:

- In response to the flight crew request: The received wind data is associated with the flight plan from which the request was sent
- Directly without previous request from the flight crew: The received wind data is associated with the active flight plan only.

Note: *If the active flight plan is empty, the received data are in a buffer, until the active flight plan is filled.*

To ensure its compatibility with the active or secondary flight plans, the received wind message has wind data for different waypoints on different altitudes or flight levels. The wind data that is not compatible with the flight plan is automatically deleted.

The FMS may receive:

- Climb wind data: Wind direction and wind speed for up to 5 altitudes and/or flight levels
- Cruise wind data: Wind direction and wind speed for up to 4 flight levels, for a list of cruise waypoints
- Descent wind data:
  - Wind direction and wind speed for up to 5 altitudes and/or flight levels
  - The destination delta ISA, QNH, and the transition flight level
- Alternate wind data: Wind direction and wind speed for the alternate cruise flight level.

Note: *If the flight crew inserts wind data, with destination QNH, and/or destination surface wind, and/or destination OAT, the three values are updated on the APPR panel of the PERF page.*
In this case, when the aircraft is less than 180 NM from destination, the FMS displays the CHECK DES DATA message to notify the flight crew that the QNH, and/or surface wind, and/or OAT, were completed by a company wind uplink.

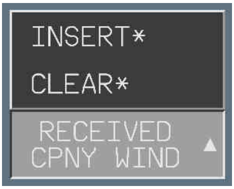
When the FMS receives the uplink, the MFD displays one of the following messages in the FMS message area:

- COMPANY WIND DATA RECEIVED WAITING FOR INSERTION IN ACTIVE: The uplink has wind data compatible with the active flight plan
- COMPANY WIND DATA RECEIVED WAITING FOR INSERTION IN SEC1(2)(3): The uplink has wind data compatible with the secondary 1(2)(3) flight plan
- COMPANY WIND UPLINK PENDING: The FMS receives company wind data, while there is a temporary flight plans, or the DIRECT TO page is displayed. The flight crew needs to insert or clear the temporary flight plan, or needs to complete the DIRECT TO revision, before they can insert the received wind data.

L3 - RECEIVED COMPANY WIND DATA NOT VALID: The wind data, uplinked from the company ground station, is not valid.

L1 The flight crew can insert the uplink via the RECEIVED CPNY WIND button on the WIND page.

RECEIVED CPNY WIND Menu



When clicked, opens a menu:

- INSERT: Inserts the uplink
- CLEAR: Clears the uplink.

TAKEOFF DATA

Applicable to: ALL

Ident.: DSC-22-FMS-10-40-80-30-00004469.0001001 / 14 APR 14

The flight crew can request and receive the following takeoff data from the company ground station:

- Takeoff speeds: V1, VR, V2
- Thrust rating: TOGA, FLEX
- Flaps setting
- Thrust reduction and acceleration altitudes
- Noise procedure parameters.

The flight crew can request and receive takeoff data for the active flight plan only.

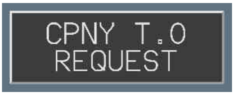
Ident.: DSC-22-FMS-10-40-80-30-00004476.0001001 / 14 APR 14

COMPANY TAKEOFF DATA REQUEST

The flight crew can send a takeoff data request before engine start, for the active flight plan only. The flight crew can initiate a takeoff data request for two runways by using the CPNY T.O REQUEST button on the INIT page or PERF page.

For more information about the:
- INIT page, *Refer to DSC-22-FMS-20-20-20 INIT Page*
- PERF page, *Refer to DSC-22-FMS-20-20-20 PERF Page*.

COMPANY T.O REQUEST Button



When clicked, displays the COMPANY T.O DATA REQUEST page (*Refer to page*).

The COMPANY T.O DATA REQUEST page displays the data that are sent in the request message. The FMS automatically completes the data, based on the available flight plan and load data. The flight crew may always complete or change the takeoff request data:
- The departure airport
- The runway ident
- The takeoff weight
- The takeoff CG
- The environmental conditions:
  - Barometric reference
  - Wind
  - Runway state
  - Temperature
- The takeoff thrust rating
- The flaps setting
- The takeoff shift
- The takeoff limit
- Any free text.

The flight crew clicks on the SEND T.O REQUEST button to send the request.
After the flight crew sends the request, the button label changes to REQUEST PENDING... , until the flight plan data is received.

REQUEST PENDING Label

REQUEST
PENDING...

L2 If the FMS does not receive a response from the company ground station within 4 min after the request:

- The FMS message area displays the NO COMPANY REPLY message
- The associated buttons on the INIT page, PERF page, and COMPANY T.O DATA REQUEST page enable a new flight plan request.

Ident.: DSC-22-FMS-10-40-80-30-00004477.0001001 / 09 MAR 16

RECEIVED COMPANY TAKEOFF DATA

The FMS receives the takeoff data:

- In response to the flight crew request
- Directly, without previous request from the flight crew.

When the FMS receives the uplink, the MFD displays one of the following messages in the FMS message area:

- COMPANY T.O DATA RECEIVED WAITING FOR INSERTION
- L3 RECEIVED COMPANY T.O DATA NOT VALID: The takeoff data, uplinked from the company ground station, is not valid.

L1 The flight crew displays the received takeoff data by using the RECEIVED CPNY T.O button on INIT page or PERF page.

RECEIVED CPNY T.O Button

RECEIVED
CPNY T.O

When clicked, displays the RECEIVED COMPANY T.O DATA page (*Refer to page*).

The received takeoff data (for up to four different takeoff runways, and for up to two engine thrust ratings per runway) are:

- The takeoff runway
- The takeoff weight
- The takeoff CG

- The environmental conditions:
  - Barometric reference
  - Wind
  - Runway state
  - Temperature
- The takeoff speeds: V1, VR, V2
- The takeoff thrust rating
- The flaps setting
- The takeoff shift
- The takeoff limit
- The thrust reduction and acceleration altitudes
- The noise procedure parameters.

The flight crew can insert (or clear) this data by using the INSERT (or CLEAR) button. When inserted, the T.O panel of the PERF page is updated.

L2 The flight crew can insert the received takeoff data, only if the following conditions are achieved:
- The departure airport and runway correspond to the departure airport and runway of the active flight plan
- The takeoff weight is not more than 1 t (2.2 klb) below or 3 t (6.6 klb) above the takeoff weight on the FUEL&LOAD page
- The takeoff CG does not differ by more than 0.5 % from the takeoff CG on the ACTIVE/FUEL&LOAD page
- The following data are part of the received data: The takeoff speeds (V1, VR, V2), wind, runway state, barometric reference, and temperature.

Note: *1. If one of these conditions is not achieved, the flight crew cannot insert the uplinked data.*
2. If the condition on the takeoff weight is not achieved and the received runway corresponds to the active runway, the TOW value appears in amber on the RECEIVED COMPANY T.O DATA page, associated with the UPLINK/ACTIVE TOW DISAGREE label.

FLIGHT REPORTS

Applicable to: ALL

Ident.: DSC-22-FMS-10-40-80-40-00004470.0001001 / 14 APR 14

The FMS sends real-time flight reports to provide information about the aircraft current position and situation to the company ground station. There are four types of reports:
- Position report: Current aircraft position
- Progress report: Destination data

- F-PLN report: Active flight plan data
- Performance data report: Active performance data.

The flight crew can manually send the position and F-PLN reports.
The FMS can automatically send the position, progress, F-PLN, and performance data reports after specific events or in response to a ground request.

Ident.: DSC-22-FMS-10-40-80-40-00004478.0001001 / 14 APR 14

POSITION REPORT

The position report has the following information:
- Last sequenced waypoint with its related SAT, wind, and FOB
- TO waypoint
- NEXT waypoint
- Next cruise vertical profile change
- Destination with its related ETA, distance, and EFOB

The flight crew can display and send the position report on the POSITION/REPORT page (*Refer to page*).

Ident.: DSC-22-FMS-10-40-80-40-00004479.0001001 / 14 APR 14

PROGRESS REPORT

The progress report has the ETA and EFOB at destination.

The FMS automatically sends a progress report on a ground request, or if one of the following occurs:
- A change of the destination airport in flight
- A change of the destination runway in flight
- A specific event (optional):
  - X minutes to T/D
  - X minutes to destination
  - The ETA differs from the initial ETA by more than X minutes.

  The Operator defines X.

Ident.: DSC-22-FMS-10-40-80-40-00004480.0001001 / 14 APR 14

F-PLN REPORT

The F-PLN report has the following information:
- Company route
- Flight number
- Departure airport
- Takeoff runway
- Departure procedure

- En-route segment
- Destination airport
- Arrival procedure
- Approach procedure
- Destination runway
- Step.

The flight crew can send an F-PLN report by selecting CPNY F-PLN REPORT in the F-PLN INFO menu of the F-PLN page.
For more information about the COMPANY F-PLN REPORT page, *Refer to DSC-22-FMS-20-20-20 COMPANY F-PLN REPORT Page*.

Ident.: DSC-22-FMS-10-40-80-40-00004481.0001001 / 14 APR 14

PERFORMANCE DATA REPORT

The performance data report has the following information:
- Current GW
- Cruise flight level
- Current CG
- FOB
- Block fuel
- Route reserve
- CI, if the FMS speed mode (ECON/LRC) is ECON
- T/C temperature
- Climb transition altitude
- PERF factor
- Tropopause altitude
- Taxi fuel
- ZFW
- ZFWCG.

The FMS automatically sends a performance data report on a ground request.

BROADCAST DATA

Ident.: DSC-22-FMS-10-40-80-00004471.0001001 / 14 APR 14
Applicable to: ALL

The FMS automatically sends data to the company ground station. The FMS acts as an information provider without any flight crew action.

L2 The FMS automatically sends the following data:
- FMS identifier word (system address label)
- Flight number

- Active database
- Company route
- TO waypoint
- Wind direction and wind speed
- ZFW
- Block fuel
- FOB
- GW
- Destination runway
- Alternate airport
- ETA
- AP modes
- Flight phase
- Aircraft altitude and latitude/longitude
- Roll angle
- City-pair.

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Datalink with ATC Center

INTRODUCTION

Ident.: DSC-22-FMS-10-40-90-00004482.0001001 / 08 JUL 14
Applicable to: ALL

The ATC function of the FMS enables the flight crew to:
- Prepare and send flight plan clearance requests to an ATC center: *Refer to DSC-22-FMS-10-40-90 ATC F-PLN Clearance Request*
- Receive ATC flight plan clearances from an ATC center: *Refer to DSC-22-FMS-10-40-90 Received ATC F-PLN Clearance* .

To request or receive flight plan clearances, the ATC datalink system must be connected and notified to an ATC center. For more information, *Refer to DSC-46-ATC-10-10 Overview*.

The ATC flight plan clearances, requested or received, may have the following information:
- Departure:
  - Airport
  - Runway
  - Standard Instrument Departure (SID)
  - Departure Transition (TRANS)
- En-route segment:
  - Waypoints
  - Holding patterns
  - Speed constraints
  - Altitude constraints
  - Time constraints
  - Airways
- Arrival:
  - Arrival Transition (TRANS)
  - Standard Terminal Area Route (STAR)
  - Approach transition (VIA)
  - Final Approach (APPR)
  - Airport
  - Runway.

L2 In addition, the FMS automatically sends data (position, altitude, speed, etc.) to the ATC datalink system. This data is used for the:

- ATC reports:
  - Position report: *Refer to DSC-46-ATC-10-30 Position Report*
  - Modify report: *Refer to DSC-46-ATC-10-30 Modify*
  - Other reports: *Refer to DSC-46-ATC-10-30 Other Reports*.
- ATC confirm messages
- ADS-C function: *Refer to DSC-46-ATC-10-60 Automatic Dependent Surveillance - Contract (ADS-C)*.

Note: *For all automatically-sent ATC data, the FMS acts as an information provider without any flight crew action.*

ATC F-PLN CLEARANCE REQUEST

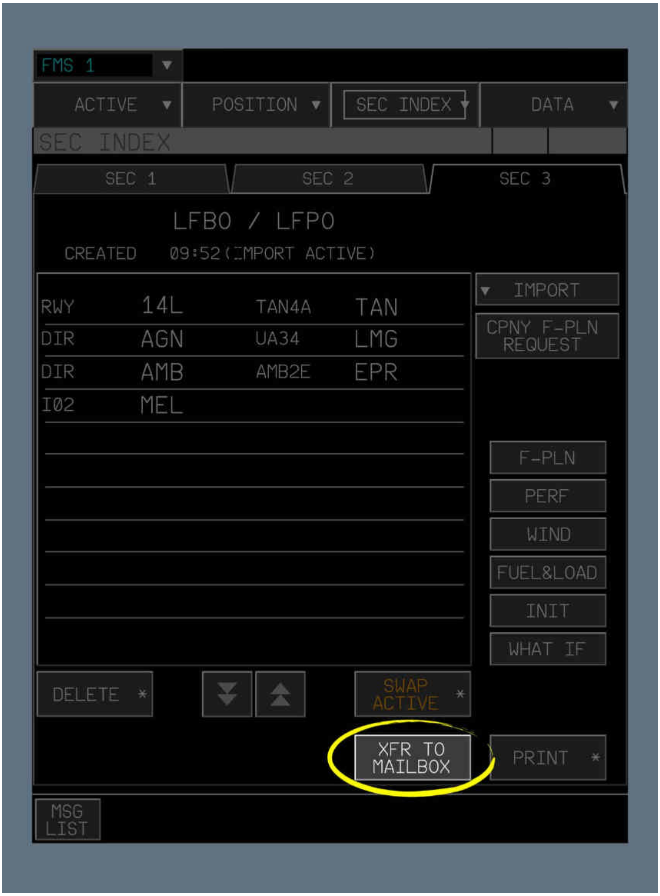
Ident.: DSC-22-FMS-10-40-90-00004483.0001001 / 14 APR 14
Applicable to: ALL

The flight crew can, during all the phases of flight, request an ATC F-PLN clearance:

- To initialize the flight plan
- To modify the flight plan.

To initialize an ATC F-PLN request, the flight crew will prepare the desired flight plan in the Secondary (SEC) flight plan 1(2)(3), and then transfer it to the mailbox.
For more information, *Refer to DSC-22-FMS-10-40-60 Active and Secondary Flight Plans*.
The flight crew sends the desired flight plan to the mailbox by clicking on the XFR TO MAILBOX button on the SEC INDEX page.

SEC INDEX Page


FMS 1
ACTIVE
POSITION
SEC INDEX
DATA
SEC INDEX
SEC 1
SEC 2
SEC 3
IMPORT
CPNY F-PLN REQUEST
F-PLN
PERF
WIND
FUEL&LOAD
INIT
WHAT IF
DELETE *
SWAP ACTIVE *
XFR TO MAILBOX
PRINT *
MSG LIST

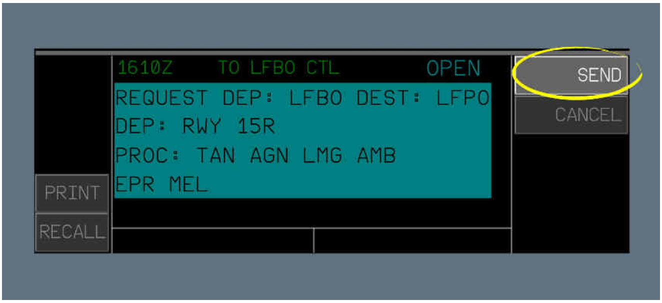
LFBO / LFPO

CREATED 09:52 (IMPORT ACTIVE)

RWY	14L	TAN4A	TAN
DIR	AGN	UA34	LMG
DIR	AMB	AMB2E	EPR
I02	MEL		

Then, the flight crew sends the ATC flight plan request to the ATC center by clicking on the SEND button on the mailbox.

SEND Button on the Mailbox



1610Z TO LFBO CTL OPEN

REQUEST DEP: LFBO DEST: LFPO
DEP: RWY 15R
PROC: TAN AGN LMG AMB
EPR MEL

Only one F-PLN clearance request can be loaded in the mailbox at a time.
L2 In addition, as soon as the request is transferred to the mailbox, the flight crew has 2 min to send the clearance request to the ATC center.

RECEIVED ATC F-PLN CLEARANCE

Ident.: DSC-22-FMS-10-40-90-00004484.0001001 / 03 JUL 20
Applicable to: ALL

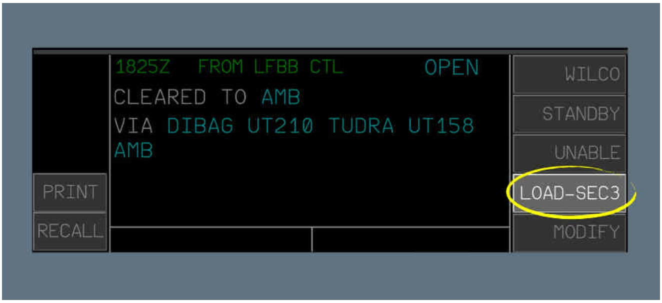
1 The ATC center may authorize the flight crew to fly a route by sending a loadable flight plan clearance:

- To initialize the flight plan
- To modify the flight plan.

When the flight crew receives the ATC F-PLN clearance in the mailbox, the flight crew can:

- copy the active flight plan to the third secondary flight plan (SEC 3) by clicking on the IMPORT/ ACTIVE button in SEC 3 on the FMS SEC INDEX Page.
L2 With the copy of the active flight plan, the FMS inserts in the SEC 3 the data listed in the FCOM. For more information, *Refer to DSC-22-FMS-10-40-60 Secondary Flight Plan Initialization*.
- L1 load the F-PLN clearance to the third secondary flight plan (SEC 3) by clicking on the mailbox LOAD→SEC3 button.

LOAD→SEC3 Button on the Mailbox



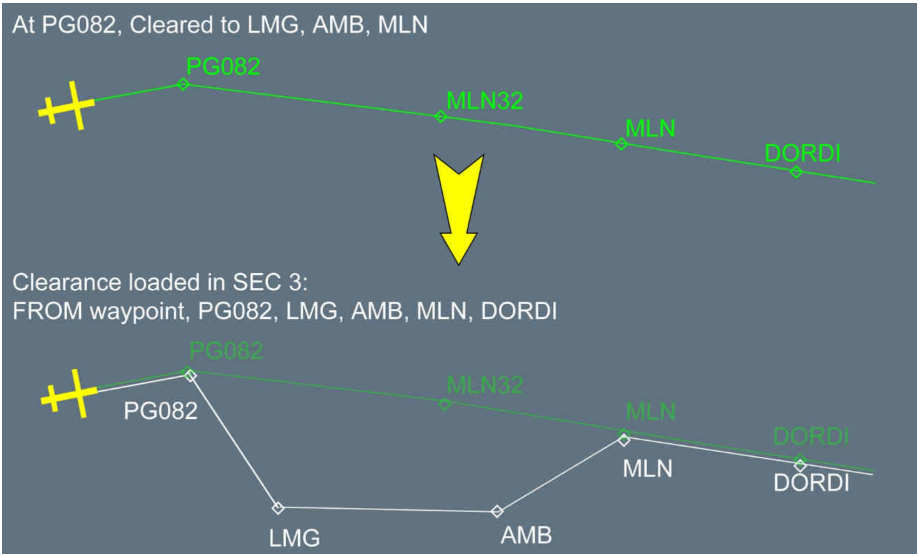
1825Z FROM LFBB CTL OPEN
CLEARED TO AMB
VIA DIBAG UT210 TUDRA UT158
AMB

L2 To load the ATC F-PLN clearance, the FMS automatically inserts the ATC F-PLN clearance into the third secondary flight plan (SEC 3) created as a copy from the active flight plan. When the clearance is a flight plan initialization, the FMS also copies all data from the ACTIVE/INIT and ACTIVE/FUEL&LOAD pages in SEC 3.

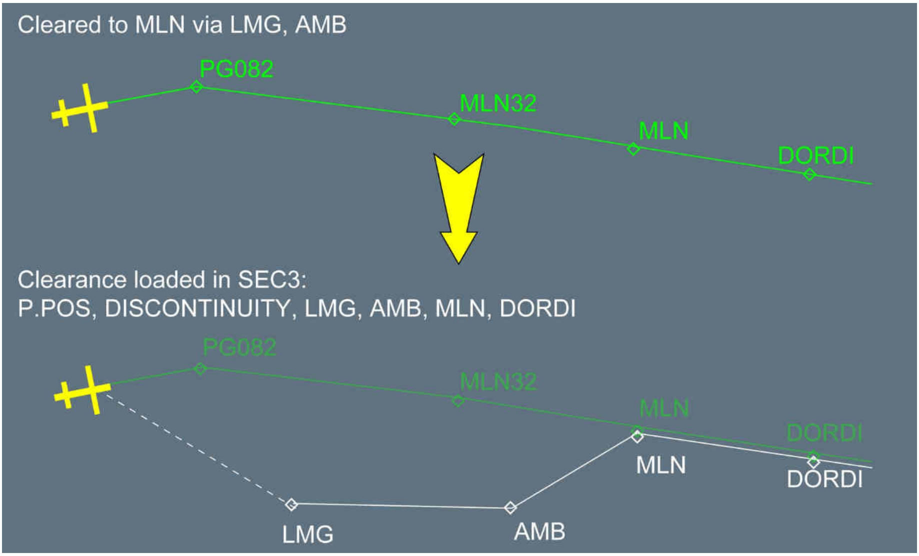
L1 Note: *If there is a flight plan in SEC 3, this flight plan will be deleted, when the ATC flight plan is uploaded.*
To prevent an inadvertent loss of a flight plan, the flight crew must copy SEC 3 flight plan in SEC 1(2), before the flight crew upload the ATC flight plan.

L2 Examples:

Clearance from a Specified Waypoint


At PG082, Cleared to LMG, AMB, MLN
PG082
MLN32
MLN
DORDI
Clearance loaded in SEC 3:
FROM waypoint, PG082, LMG, AMB, MLN, DORDI
PG082
MLN32
MLN
DORDI
PG082
MLN
DORDI
LMG
AMB

Clearance from P.POS


Cleared to MLN via LMG, AMB
PG082
MLN32
MLN
DORDI
Clearance loaded in SEC3:
P.POS, DISCONTINUITY, LMG, AMB, MLN, DORDI
PG082
MLN32
MLN
DORDI
MLN
DORDI
LMG
AMB

L1 When the received ATC F-PLN clearance is loaded in the FMS, one of the following messages appears in the FMS message area:

- ATC F-PLN INSERTED IN SEC 3: The received ATC F-PLN is loaded in the third secondary flight plan (SEC 3).

L2 The mailbox displays the LOADED IN SEC3 message (*Refer to message*).

L1 - ATC F-PLN INSERTED IN SEC 3 REJECTED INFO SEE SEC / INDEX: The received ATC F-PLN is partially loaded in the third secondary flight plan (SEC 3) due to not valid data sent by the ATC center.
The flight crew can check the rejected data on the REJECTED ATC INFO page (*Refer to page*).

L2 The mailbox displays the LOAD PARTIAL message (*Refer to message*).

L1 - RECEIVED ATC MSG NOT VALID: The FMS totally rejects the received ATC F-PLN because the data sent by the ATC center is not valid.
The flight crew can check the rejected data on the REJECTED ATC INFO page (*Refer to page*).

L2 The mailbox displays the LOAD REJECTED message (*Refer to message*).
Any data that was previously entered in SEC 3 is deleted.

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Overview

OVERVIEW

Ident.: DSC-22-FMS-10-50-10-00003580.0001001 / 23 APR 14
Applicable to: ALL

The performance function of the FMS:

- Computes a speed/Mach profile for each flight phase
  For the CLB, CRZ, and DES flight phases, the speed/Mach profile is based on the FMS speed mode (ECON/LRC).
- Computes the operating speeds for takeoff, approach, and go-around
- Computes the auto-derated thrust that the A/THR applies during climb
- Computes a descent path from the cruise flight level to the destination airport
- Computes the following flight levels:
  - The Optimum Flight Level (OPT FL)
  - The Recommended Maximum Flight Level (REC MAX FL)
- Enables the flight crew to fly a Noise Abatement Departure Procedure (NADP) with the NOISE function
- Uses the PERF factor, the IDLE factor, and the FUEL PENALTY factor to compute aircraft performance.

Note: *The FMS has an Engine-Out (EO) mode that enables the FMS to take an engine failure into account. For information about the computation of aircraft performance in the case of an engine failure, Refer to DSC-22-FMS-10-60 General.*

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FMS Speed Mode (ECON/LRC)

FMS SPEED MODE (ECON/LRC)

Ident.: DSC-22-FMS-10-50-20-00003581.0001001 / 06 MAY 14
Applicable to: ALL

For the CLB, CRZ, and DES flight phases, the FMS computes the optimum speed/Mach based on the FMS speed mode, as follows:

- When the FMS speed mode is LRC, the FMS computes the optimum speed/Mach that corresponds to the Long Range Cruise (LRC)
  In LRC mode, the optimum speed/Mach is referred to as the LRC speed/Mach.
- When the FMS speed mode is ECON, the FMS computes the optimum speed/Mach based on the Cost Index (CI).
  In ECON mode, the optimum speed/Mach is referred to as the ECON speed/Mach.

Note: *If the EO mode of the FMS is active, the FMS takes the engine failure into account to compute the optimum speed/Mach. Therefore:*
- *The LRC mode is referred to as the EO-LRC mode, and the optimum speed/Mach is referred to as the EO-LRC speed/Mach*
- *The ECON mode is referred to as the EO-ECON mode, and the optimum speed/Mach is referred to as the EO-ECON speed/Mach.*

L2 For more information about the optimum speed/Mach, *Refer to DSC-22-FMS-10-50-30 Speed/Mach Profiles*.

L1 The FMS also computes the Optimum Flight Level (OPT FL) based on the FMS speed mode.

L2 For more information about the OPT FL, *Refer to DSC-22-FMS-10-50-50 Optimum Flight Level (OPT FL)*.

L1 COST INDEX (CI)

The Operator uses the Cost Index (CI) to achieve minimum flight cost via a compromise between operating costs per hour (time cost) and fuel consumption per hour (fuel cost).
The CI is defined as follows:

$$CI = \frac{\text{Time Cost}}{\text{Fuel Cost}}$$

The CI can vary from 0 to 999:
- CI = 0 corresponds to the minimum fuel cost (maximum range)
- CI = 999 corresponds to the minimum time cost (minimum time).

The CI is often automatically associated with a company route.
The flight crew can also enter (or change) the CI manually. However, the flight crew cannot change the CI, when the DES, APPR, or GA flight phase is active.

At power-up and during the PREFLIGHT flight phase, the default FMS speed mode is ECON with no CI value. Then, if the flight crew does not enter a CI value before the flight crew enters the ZFW value or before engine start, the FMS automatically:
- Selects the LRC mode
- Sets the CI value to 0.

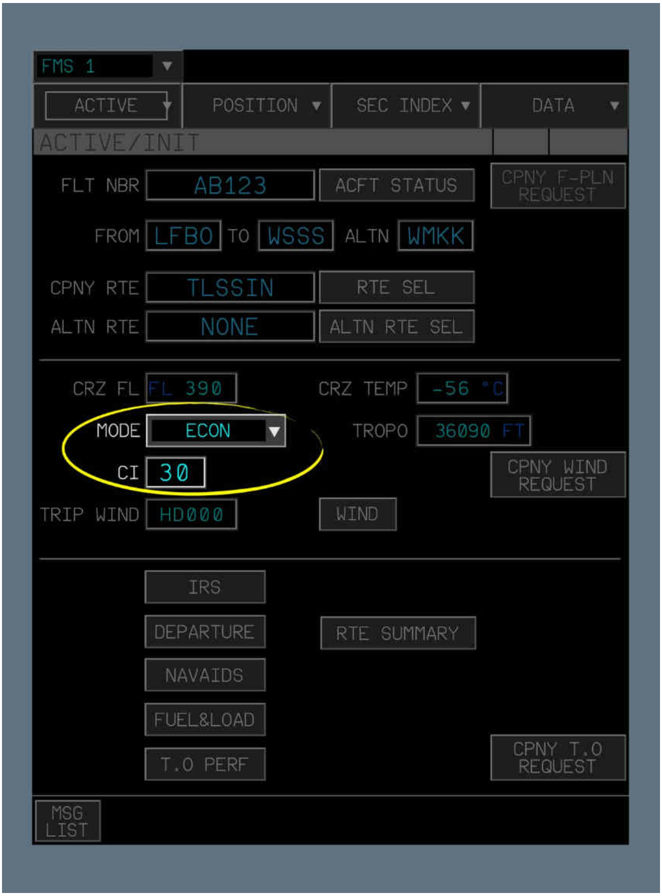
CONTROLS AND INDICATORS

Ident.: DSC-22-FMS-10-50-20-00003582.0002001 / 06 MAY 14
Applicable to: ALL

The flight crew can select the FMS speed mode, and enter (or change) the CI on:

- The INIT page

INIT Page

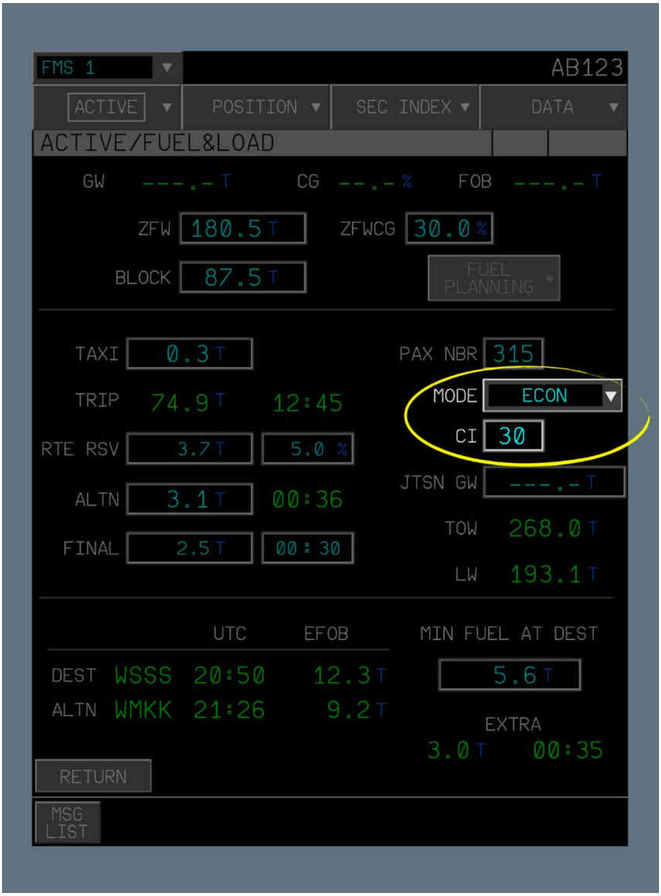

FMS 1
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/INIT
ACFT STATUS
CPNY F-PLN REQUEST
RTE SEL
ALTN RTE SEL
CPNY WIND REQUEST
WIND
IRS
DEPARTURE
NAVAIDS
FUEL&LOAD
T.O PERF
RTE SUMMARY
CPNY T.O REQUEST
MSG LIST

FLT NBR AB123
FROM LFBO TO WSSS ALTN WMKK
CPNY RTE TLSSIN
ALTN RTE NONE
CRZ FL FL 390
CRZ TEMP -56 °C
MODE ECON
TROPO 36090 FT
CI 30
TRIP WIND HD000

L2 For more information about the INIT page, *Refer to DSC-22-FMS-20-20-20 INIT Page*.

L1 - The FUEL&LOAD page

FUEL&LOAD Page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
FUEL PLANNING
RETURN
MSG LIST

ACTIVE/FUEL&LOAD

GW ---.- T CG --.- % FOB ---.- T

ZFW 180.5 T ZFWCG 30.0 %

BLOCK 87.5 T

TAXI 0.3 T PAX NBR 315

TRIP 74.9 T 12:45 MODE ECON

RTE RSV 3.7 T 5.0 % CI 30

ALTN 3.1 T 00:36 JTSN GW ---.- T

FINAL 2.5 T 00:30 TOW 268.0 T

LW 193.1 T

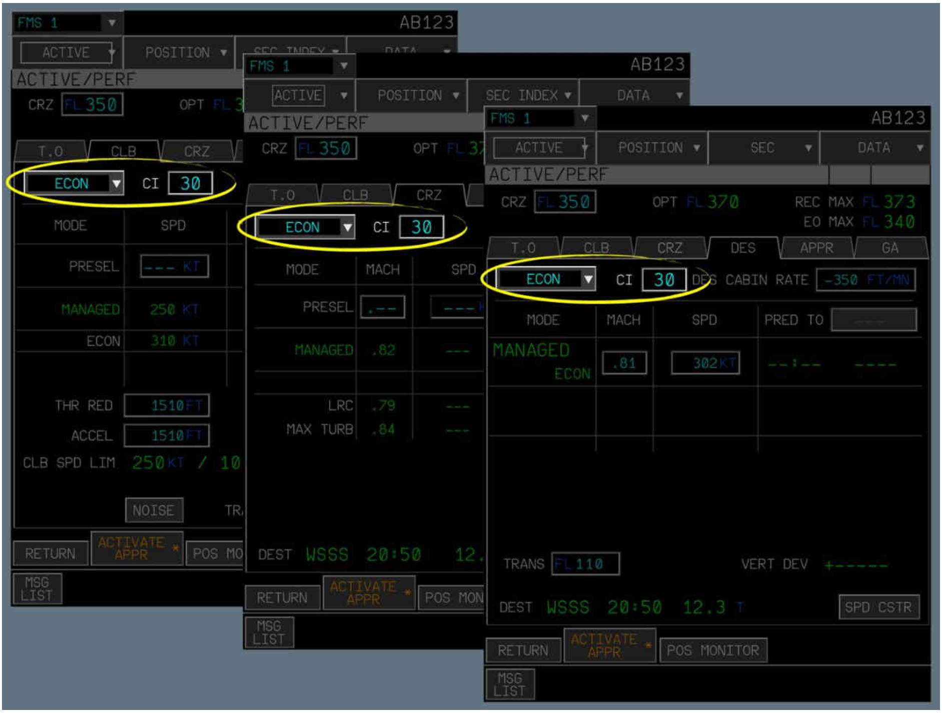
		UTC	EFOB	MIN FUEL AT DEST
DEST	WSSS	20:50	12.3 T	5.6 T
ALTN	WMKK	21:26	9.2 T	

EXTRA 3.0 T 00:35

L2 For more information about the FUEL&LOAD page, *Refer to DSC-22-FMS-20-20-20 FUEL&LOAD Page*.

L1 - The CLB, CRZ, and DES panels of the PERF page.

PERF Page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/PERF
T.O
CLB
CRZ
DES
APPR
GA
MODE
SPD
MACH
PRED TO
NOISE
RETURN
ACTIVATE APPR
POS MONITOR
MSG LIST
SPD CSTR

CRZ FL350 OPT FL370 REC MAX FL373 EO MAX FL340

ECON CI 30

T.O: PRESEL --- KT; MANAGED 250 KT; ECON 310 KT; THR RED 1510FT; ACCEL 1510FT; CLB SPD LIM 250KT / 10

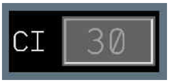
CRZ: PRESEL .--; MANAGED .82; LRC .79; MAX TURB .84; DEST WSSS 20:50 12.

DES: DES CABIN RATE -350 FT/MN; MANAGED ECON .81 302KT --:-- ----; TRANS FL110; VERT DEV +-----; DEST WSSS 20:50 12.3 T

L2 For more information about the PERF page, *Refer to DSC-22-FMS-20-20-20 PERF Page*.

L1 *Note:* 1. *If the FMS speed mode is LRC(EO-LRC), the CI entry field still displays the CI value that is associated with the ECON(EO-ECON) mode, but the flight crew cannot change the CI value.*

CI Entry Field in LRC(EO-LRC) Mode



CI 30

2. *The flight crew can change neither the FMS speed mode nor the CI, when the DES, APPR, or GA flight phase is active.*

ASSOCIATED MESSAGES

Ident.: DSC-22-FMS-10-50-20-00003583.0001001 / 23 APR 14
Applicable to: ALL

On the MFD, the FMS message area displays the following message: LRC MODE IN USE (*Refer to message*).

Flight Phases and Speed/Mach Profiles

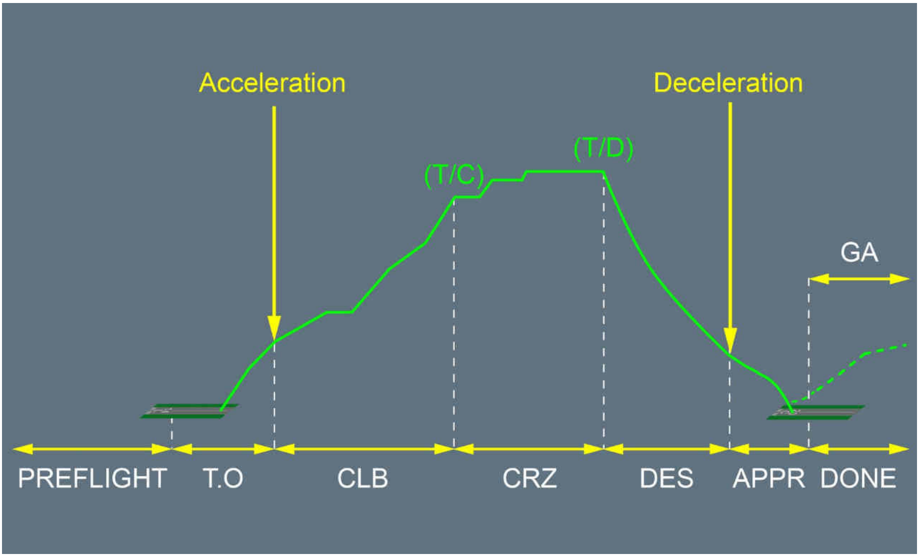
OVERVIEW

Ident.: DSC-22-FMS-10-50-30-00003584.0001001 / 05 MAY 14
Applicable to: ALL

The vertical flight plan is divided into 8 flight phases:
- PREFLIGHT
- Takeoff (T.O)
- Climb (CLB)
- Cruise (CRZ)
- Descent (DES)
- Approach (APPR)
- Go-Around (GA)
- DONE.

L2 *Note:* *The FMS flight phases are different and independent from the flight phases that other aircraft systems compute and use.*

FMS Flight Phases



L1 For each flight phase, the FMS computes the optimum speed/Mach profile. If the flight crew engages the managed speed/Mach control, the aircraft flies this speed/Mach profile.

The FMS changes from one flight phase to another, when the transition conditions are achieved.

L123

Flight Phase	For speed/Mach profile:	Flight Phase Transitions	
		Possible Transitions	For transition conditions:
PREFLIGHT *(1)*	-	PREFLIGHT → T.O	*Refer to DSC-22-FMS-10-50-30 From PREFLIGHT to T.O*
T.O	*Refer to DSC-22-FMS-10-50-30 T.O*	T.O → CLB	*Refer to DSC-22-FMS-10-50-30 From T.O to CLB*
CLB	*Refer to DSC-22-FMS-10-50-30 CLB*	CLB → CRZ	*Refer to DSC-22-FMS-10-50-30 From CLB to CRZ*
		CLB → APPR	*Refer to DSC-22-FMS-10-50-30 From CLB to APPR*
		CLB → DES	*Refer to DSC-22-FMS-10-50-30 From CLB to DES*
		CLB → GA	*Refer to DSC-22-FMS-10-50-30 From CLB to GA*
CRZ	*Refer to DSC-22-FMS-10-50-30 CRZ*	CRZ → DES	*Refer to DSC-22-FMS-10-50-30 From CRZ to DES*
		CRZ → APPR	*Refer to DSC-22-FMS-10-50-30 From CRZ to APPR*
		CRZ → GA	*Refer to DSC-22-FMS-10-50-30 From CRZ to GA*
DES	*Refer to DSC-22-FMS-10-50-30 DES*	DES → APPR	*Refer to DSC-22-FMS-10-50-30 From DES to APPR*
		DES → CRZ	*Refer to DSC-22-FMS-10-50-30 From DES to CRZ*
		DES → GA	*Refer to DSC-22-FMS-10-50-30 From DES to GA*
		DES → CLB	*Refer to DSC-22-FMS-10-50-30 From DES to CLB*

Continued on the following page

Continued from the previous page

Flight Phase	For speed/Mach profile:	Flight Phase Transitions	
		Possible Transitions	For transition conditions:
APPR	*Refer to DSC-22-FMS-10-50-30 APPR*	APPR → DONE	*Refer to DSC-22-FMS-10-50-30 From APPR to DONE*
		APPR → GA	*Refer to DSC-22-FMS-10-50-30 From APPR to GA*
		APPR → CLB	*Refer to DSC-22-FMS-10-50-30 From APPR to CLB*
		APPR → CRZ	*Refer to DSC-22-FMS-10-50-30 From APPR to CRZ*
GA	*Refer to DSC-22-FMS-10-50-30 GA*	GA → CLB	*Refer to DSC-22-FMS-10-50-30 From GA to CLB*
		GA → APPR	*Refer to DSC-22-FMS-10-50-30 From GA to APPR*
Any Flight Phase (except PREFLIGHT and APPR)	-	Any flight phase (except PREFLIGHT and APPR) → DONE	*Refer to DSC-22-FMS-10-50-30 From Any Flight Phase (except PREFLIGHT and APPR) to DONE*
DONE (2)	-	DONE → PREFLIGHT	*Refer to DSC-22-FMS-10-50-30 From DONE to PREFLIGHT*
		DONE → T.O	*Refer to DSC-22-FMS-10-50-30 From DONE to T.O*

(1) *In the PREFLIGHT flight phase, the flight crew inserts the flight plan, and all other data that is necessary for the flight.*

(2) *In the DONE flight phase, the FMS erases the data that was entered for the flight.*

FLIGHT PHASE TRANSITIONS

Applicable to: ALL

Ident.: DSC-22-FMS-10-50-30-10-00004070.0001001 / 23 APR 14

The FMS changes from one flight phase to another, when the transition conditions are achieved.

Ident.: DSC-22-FMS-10-50-30-10-00014697.0001001 / 23 APR 14

PREFLIGHT → T.O

The flight phase changes from PREFLIGHT to T.O, when:
- The SRS TO mode is engaged, and
- The current engine thrust is sufficient (50 % ≤ N3 ≤ 60 % for both engines), or the ground speed is above 90 kt.

Ident.: DSC-22-FMS-10-50-30-10-00014699.0001001 / 23 APR 14

T.O → CLB

The flight phase changes from T.O to CLB, when:
- The aircraft is at the acceleration attitude, or
- One of the following vertical modes engages: V/S, FPA, ALT*, ALT, ALT CST*, ALT CST, CLB, OP CLB, DES or OP DES.

Ident.: DSC-22-FMS-10-50-30-10-00004499.0001001 / 23 APR 14

CLB → CRZ

The flight phase changes from CLB to CRZ, when the aircraft reaches the cruise flight level (the ALT CRZ* or ALT CRZ mode engages).

Ident.: DSC-22-FMS-10-50-30-10-00004497.0001001 / 23 APR 14

CLB → APPR

The flight phase changes from CLB to APPR, if the flight crew activates the APPR flight phase via the ACTIVATE APPR button on the PERF page (*Refer to page*).

Ident.: DSC-22-FMS-10-50-30-10-00004069.0001001 / 07 MAY 18

L3 CLB → DES

The flight phase changes from CLB to DES, if all of the following occur:
- There is no destination, or the distance to destination (along the flight plan) is equal to or less than 200 NM, or the selected altitude target is equal to or below the highest of the following:
  - FL 200
  - the highest descent altitude constraint.
- The selected altitude target is equal to or below the cruise flight level, and
- One of the following occurs:
  - DES or OP DES is engaged, or
  - V/S or FPA is engaged, and the selected altitude target is equal to or below the current aircraft altitude.

Ident.: DSC-22-FMS-10-50-30-10-00013665.0001001 / 23 APR 14

L3 CLB → GA

The flight phase changes from CLB to GA, if the SRS GA mode engages.

Ident.: DSC-22-FMS-10-50-30-10-00000327.0001001 / 07 MAY 18

CRZ → DES

The flight phase changes from CRZ to DES, if all of the following occur:

- The flight plan has no step descent ahead of the aircraft
- The distance to the destination airport (along the flight plan) is equal to or less than 200 NM, or the selected altitude target is equal to or below the highest of the following:
  - FL 200
  - the highest descent altitude constraint.
- The selected altitude target is equal to or below the cruise flight level, and
- One of the following occurs:
  - DES or OP DES is engaged, or
  - APP-DES is engaged, or
  - V/S or FPA is engaged, and the selected altitude target is equal to or below the current aircraft altitude.

Ident.: DSC-22-FMS-10-50-30-10-00000326.0001001 / 23 APR 14

CRZ → APPR

The flight phase changes from CRZ to APPR, if:

- The NAV mode is engaged, and the aircraft sequences the DECEL pseudo waypoint, or
- The flight crew activates the APPR flight phase via the ACTIVATE APPR button on the PERF page (*Refer to page*).

Ident.: DSC-22-FMS-10-50-30-10-00000325.0001001 / 23 APR 14

L3 CRZ → GA

The flight phase changes from CRZ to GA, if the SRS GA mode engages.

Ident.: DSC-22-FMS-10-50-30-10-00000324.0001001 / 23 APR 14

DES → APPR

The flight phase changes from DES to APPR, when:

- The NAV, LOC*, LOC, F-LOC*, or F-LOC mode is engaged, and the aircraft sequences the DECEL pseudo waypoint, or
- The flight crew activates the APPR flight phase via the ACTIVATE APPR button on the PERF page (*Refer to page*).

Ident.: DSC-22-FMS-10-50-30-10-00014701.0001001 / 23 APR 14

L2 DES → CRZ

The flight phase changes from DES to CRZ, if all of the following occur:

- The flight crew defines a new cruise flight level on the PERF page (*Refer to page*)
- The aircraft altitude is above the cruise flight level.

Ident.: DSC-22-FMS-10-50-30-10-00014703.0001001 / 23 APR 14

L3 DES → GA

The flight phase changes from DES to GA, if the SRS GA mode engages.

Ident.: DSC-22-FMS-10-50-30-10-00014704.0001001 / 23 APR 14

L3 DES → CLB

The flight phase changes from DES to CLB, if all of the following occur:

- The flight crew defines a new cruise flight level on the PERF page (*Refer to page*)
- The aircraft altitude is below the cruise flight level.

Ident.: DSC-22-FMS-10-50-30-10-00005554.0001001 / 02 OCT 14

APPR → DONE

The flight phase changes from APPR to DONE 30 s after landing.

Ident.: DSC-22-FMS-10-50-30-10-00005555.0001001 / 23 APR 14

APPR → GA

The flight phase changes from APPR to GA, if the SRS GA mode engages.

Ident.: DSC-22-FMS-10-50-30-10-00005556.0001001 / 23 APR 14

L3 APPR → CLB

The flight phase changes from APPR to CLB, if all of the following occur:

- The flight crew defines a new cruise flight level on the PERF page (*Refer to page*)
- The aircraft altitude is below the cruise flight level.

Ident.: DSC-22-FMS-10-50-30-10-00005557.0001001 / 23 APR 14

L3 APPR → CRZ

The flight phase changes from APPR to CRZ, if all of the following occur:

- The flight crew defines a new cruise flight level on the PERF page (*Refer to page*)
- The aircraft altitude is equal to or above the cruise flight level.

Ident.: DSC-22-FMS-10-50-30-10-00005558.0001001 / 23 APR 14

GA → CLB

The flight phase changes from GA to CLB, when:

- The aircraft is at the go-around acceleration altitude, or
- One of the following vertical modes engages: V/S, FPA, ALT*, ALT, ALT CST*, ALT CST, CLB, OP CLB, DES or OP DES.

Ident.: DSC-22-FMS-10-50-30-10-00005559.0001001 / 23 APR 14

GA → APPR

The flight phase changes from GA to APPR, if the flight crew activates the APPR flight phase via the ACTIVATE APPR button on the PERF page (*Refer to page*).

Ident.: DSC-22-FMS-10-50-30-10-00005560.0001001 / 23 APR 14

L3 ANY FLIGHT PHASE (EXCEPT PREFLIGHT AND APPR) → DONE

The flight phase changes from T.O, CLB, CRZ, DES, or GA to DONE, if all of the following occur:

- The aircraft is on ground for 30 s
- All engines are off.

Ident.: DSC-22-FMS-10-50-30-10-00005561.0001001 / 23 APR 14

DONE → PREFLIGHT

The flight phase changes from DONE to PREFLIGHT, when:

- The flight crew displays the ACTIVE/INIT, ACTIVE/FUEL&LOAD, or ACTIVE/PERF page, or
- In order to initialize the flight plan, the flight crew:
  - Activates a secondary flight plan with the SWAP function, or
  - Inserts a company flight plan received via datalink.

Ident.: DSC-22-FMS-10-50-30-10-00005553.0001001 / 23 APR 14

L3 DONE → T.O

The flight phase changes from DONE to T.O, if:

- The SRS TO mode is engaged, and
- The current engine thrust is sufficient (50 % ≤ N3 ≤ 60 % for both engines), or the ground speed is above 90 kt.

SPEED/MACH PROFILES

Applicable to: ALL

Ident.: DSC-22-FMS-10-50-30-20-00003585.0001001 / 23 APR 14

For each flight phase, the FMS computes the optimum speed/Mach profile. If the flight crew engages the managed speed/Mach control, the aircraft flies this speed/Mach profile.

Ident.: DSC-22-FMS-10-50-30-20-00003586.0001001 / 23 APR 14

T.O

OPERATING SPEEDS

The FMS computes the following operating speeds for takeoff:

- F
  F is the minimum recommended speed at which the flaps may be retracted from CONF 2 or CONF 3 to CONF 1+F.
- S
  S is the minimum recommended speed at which the slats may be retracted from CONF 1+F or CONF 1 to CONF 0.
- GDOT.
  GDOT is the final takeoff speed.
  GDOT is an optimized speed. It is an approximation of the best lift to drag ratio. Flying at GDOT provides the best climb performance.

The T.O panel of the PERF page displays the operating speeds that the FMS computes for takeoff.

L2 For more information about the PERF page, *Refer to DSC-22-FMS-20-20-20 PERF Page*.

L1 During the PREFLIGHT flight phase, the FMS uses the estimated weight and CG to compute the operating speeds. During the T.O flight phase, the FMS uses the current weight and CG.

L12

Note: *The PRIMs always use the current weight and CG to compute the operating speeds that are displayed on the PFD. Therefore, during the PREFLIGHT flight phase, the operating speeds that are displayed on the PFD may be different from the operating speeds that are displayed on the T.O panel of the PERF page.*

For more information about the speeds that the PRIMs compute:

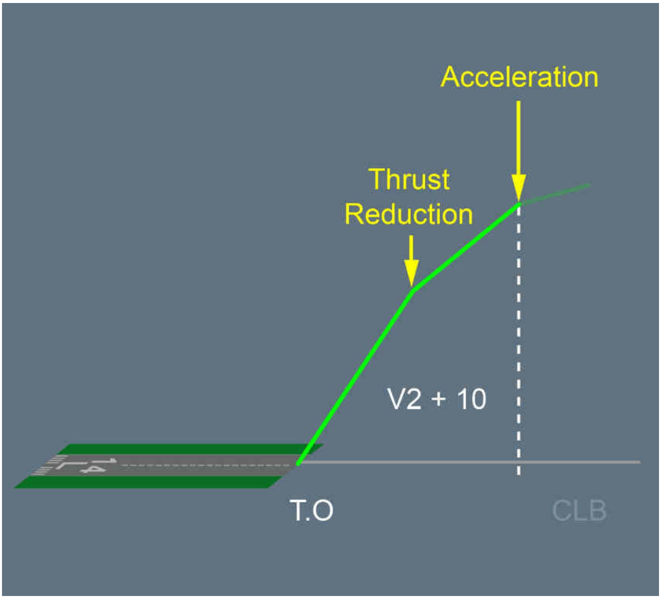
- *For F, Refer to DSC-22-27-10-20 F*
- *For S, Refer to DSC-22-27-10-20 S*
- *For GDOT, Refer to DSC-22-27-10-20 GREEN DOT.*

MANAGED SPEED PROFILE

From liftoff to the acceleration altitude, the managed speed target is V2 + 10 kt.

Note: *The magenta triangle on the PFD airspeed scale indicates V2. However, the managed speed target is V2 + 10 kt.*

Managed Speed Profile during T.O



Ident.: DSC-22-FMS-10-50-30-20-00003587.0001001 / 23 APR 14

CLB

OPTIMIZED SPEED/MACH

The FMS computes an optimized speed/Mach. The optimized speed/Mach is:
- The ECON speed/Mach, when the FMS speed mode is ECON
- The LRC speed/Mach, when the FMS speed mode is LRC.

For the CLB flight phase, the FMS computes the optimized speed/Mach based on:
- The cost index, if the FMS speed mode is ECON
- The aircraft gross weight
- The cruise flight level

- The wind and temperature data
- A time constraint, if any.

L2 For more information about the time constraint revision, *Refer to DSC-22-FMS-10-40-30 Purpose*.

L1 If a time constraint is defined in the flight plan, the optimized speed/Mach is referred to as the RTA speed/Mach.

L3 The optimized speed/Mach is limited by the following operational speed envelope:

- Minimum speed = MAX (VLS, GDOT)
- Maximum speed = MIN (MMO-ΔMMO, VMO-ΔVMO, Mach[0.3 g buffet margin]).

L1 The CLB panel of the PERF page displays the ECON, LRC, and RTA speed/Mach for the CLB flight phase.

L2 For more information about the PERF page, *Refer to DSC-22-FMS-20-20-20 PERF Page*.

L1 MANAGED SPEED/MACH PROFILE

If a climb speed limit (or a climb speed constraint) is defined in the flight plan, the managed speed/Mach target is:

- The speed limit (or the speed constraint), from the acceleration altitude to the speed limit altitude (or the speed constraint waypoint)
- The optimized speed/Mach (ECON, LRC, or RTA), from the speed limit altitude (or the speed constraint waypoint) to the T/C.

L3 The aircraft flies at the optimized speed until the crossover altitude. Between the crossover altitude and the T/C, the aircraft flies at the optimized Mach. The crossover altitude is the altitude at which the optimized speed and the optimized Mach correspond to the same TAS.

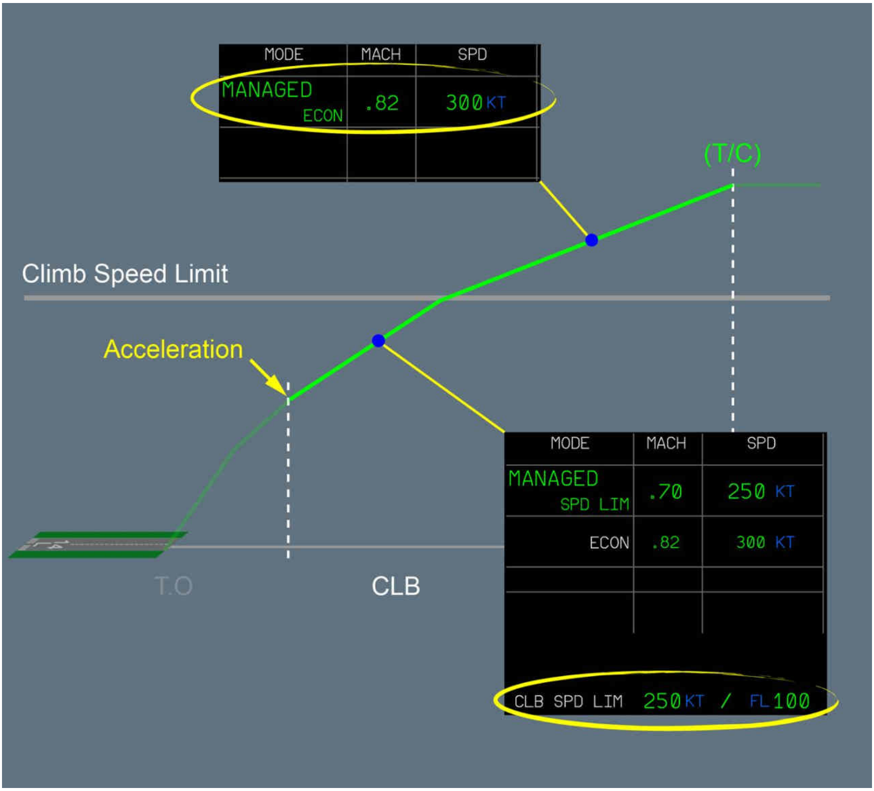
L1 The CLB panel of the PERF page displays the climb speed limit (or the climb speed constraint), if any.

L2 For more information about:

- The SPD LIMIT revision, *Refer to DSC-22-FMS-10-40-30 Purpose*
- The SPD CSTR revision, *Refer to DSC-22-FMS-10-40-30 Purpose*

L1 If no climb speed limit and no climb speed constraint are defined in the flight plan, the managed speed/Mach target, from the acceleration altitude and to the T/C, is the optimized speed/Mach (ECON, LRC, or RTA).

Managed Speed/Mach Profile during CLB


MODE
MACH
SPD
MANAGED
ECON
.82
300 KT
(T/C)
Climb Speed Limit
Acceleration
T.O
CLB
MODE
MACH
SPD
MANAGED
SPD LIM
.70
250 KT
ECON
.82
300 KT
CLB SPD LIM 250 KT / FL 100

Ident.: DSC-22-FMS-10-50-30-20-00003588.0001001 / 03 JUL 14

CRZ

OPTIMIZED SPEED/MACH

The FMS computes an optimized speed/Mach. The optimized speed/Mach is:

- The ECON speed/Mach, when the FMS speed mode is ECON
- The LRC speed/Mach, when the FMS speed mode is LRC.

For the CRZ flight phase, the FMS computes the optimized Mach/speed based on:

- The cost index, if the FMS speed mode is ECON
- The aircraft gross weight
- The cruise flight level

- The wind and temperature data
- A time constraint, if any.

L2 For more information about the time constraint revision, *Refer to DSC-22-FMS-10-40-30 Purpose*.

L1 If a time constraint is defined in the flight plan, the optimized speed/Mach is referred to as the RTA speed/Mach.

L2 The FMS computes:
- A cruise Mach, when the cruise flight level is at or above FL 250
- A cruise speed, when the cruise flight level is below FL 250.

L3 The optimized speed/Mach is limited by the following operational speed envelope:
- Minimum speed = MAX (VLS, GDOT)
- Maximum speed = MIN (MMO-ΔMMO, VMO-ΔVMO, Mach[0.3 g buffet margin], Mach[Thrust limitation]).

L1 The CRZ panel of the PERF page displays the ECON, LRC, and RTA speed/Mach for the CRZ flight phase.

L2 For more information about the PERF page, *Refer to DSC-22-FMS-20-20-20 PERF Page*.

L1 MAXIMUM TURBULENCE (MAX TURB) SPEED/MACH

For the CRZ flight phase, the FMS computes the Maximum Turbulence (MAX TURB) speed/Mach.
The MAX TURB speed/Mach is the maximum speed/Mach to safely fly in a turbulent atmosphere.
The MAX TURB speed/Mach is a protection against both inadvertent stall and structural damage.

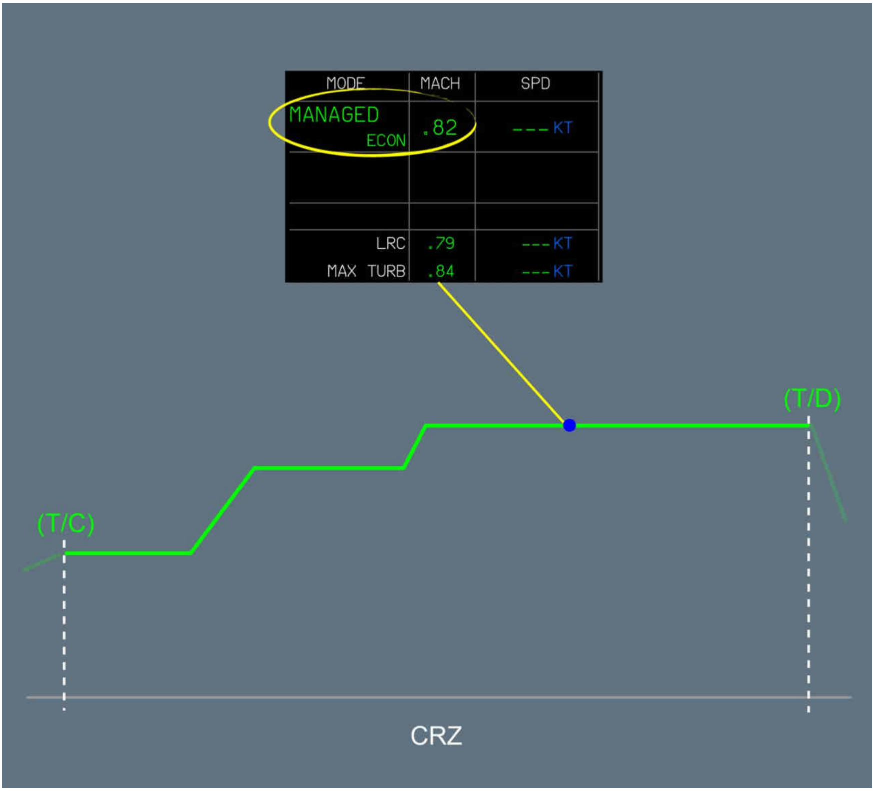
The MAX TURB speed/Mach depends on:
- The aircraft gross weight
- The altitude.

The CRZ panel of the PERF page displays the MAX TURB speed/Mach.
To fly this speed, the flight crew selects the MAX TURB Mach on the AFS CP, and engages the manual speed control.

MANAGED SPEED/MACH PROFILE

If no Constant Mach Segment (CMS) is defined in the flight plan, the managed speed/Mach target, from the T/C to the T/D, is the optimized speed/Mach (ECON, LRC, or RTA).

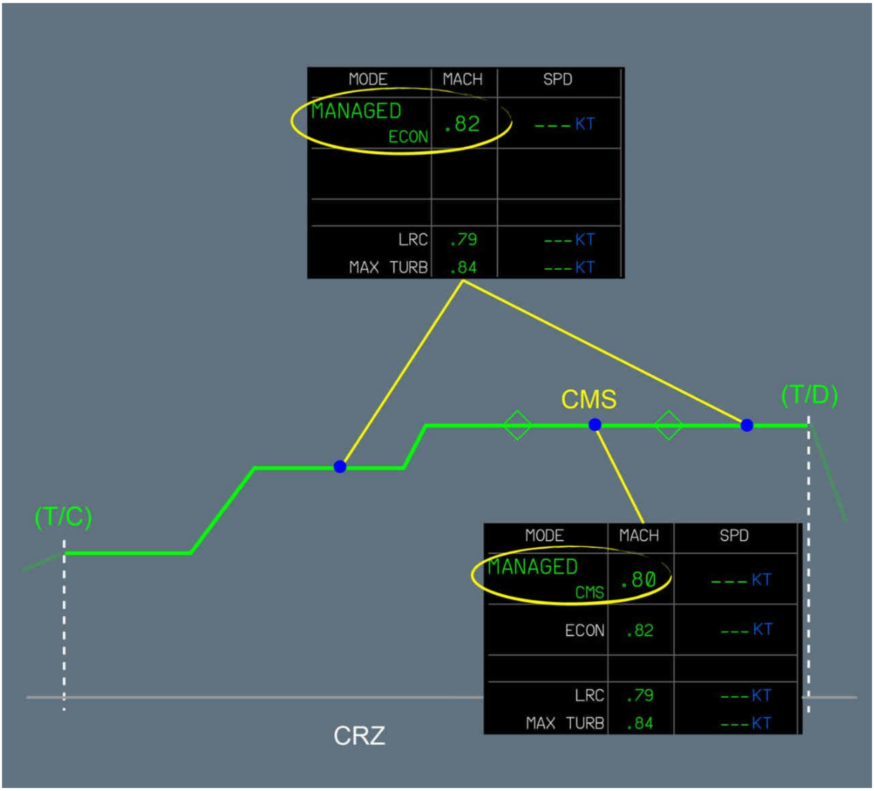
Managed Speed/Mach Profile during CRZ



If a CMS is defined in the flight plan, the managed speed target is:

- The Mach defined by the flight crew, when the aircraft flies the CMS
  If the aircraft flies a CMS, the speed mode table of the PERF page displays the CMS label to indicate that there is a CMS. A CMS has priority over a time constraint.
  L2 For more information about the CMS revision, *Refer to DSC-22-FMS-10-40-30 Purpose*.
- L1 The optimized speed/Mach (ECON, LRC, or RTA), when the aircraft is out of the CMS.

Managed Speed/Mach Profile during CRZ with CMS


MODE
MACH
SPD
MANAGED
ECON
.82
---KT
LRC
.79
---KT
MAX TURB
.84
---KT
CMS
(T/D)
(T/C)
MODE
MACH
SPD
MANAGED
CMS
.80
---KT
ECON
.82
---KT
LRC
.79
---KT
MAX TURB
.84
---KT
CRZ

Ident.: DSC-22-FMS-10-50-30-20-00003589.0001001 / 23 APR 14

DES

OPTIMIZED SPEED/MACH

The FMS computes an optimized speed/Mach. The optimized speed/Mach is:
- The ECON speed/Mach, when the FMS speed mode is ECON
- The LRC speed/Mach, when the FMS speed mode is LRC.

For the DES flight phase, the FMS computes the optimized Mach/speed based on:
- The cost index, if the FMS speed mode is ECON
- The aircraft gross weight at the T/D
- The cruise flight level

- The wind and temperature data
- A time constraint, if any.

L2 For more information about the time constraint revision, *Refer to DSC-22-FMS-10-40-30 Purpose*.

L1 If a time constraint is defined in the flight plan, the optimized speed/Mach is referred to as the RTA speed/Mach.

L3 The optimized speed/Mach is limited by the following operational speed envelope:
- Minimum speed = MAX (VLS, GDOT)
- Maximum speed = MIN (MMO-ΔMMO, VMO-ΔVMO, Mach[0.3 g buffet margin]).

L1 The DES panel of the PERF page displays the ECON, LRC, and RTA speed/Mach for the DES flight phase.

L2 For more information about the PERF page, *Refer to DSC-22-FMS-20-20-20 PERF Page*.

OPTIMIZED DESCENT PATH

The FMS computes the descent path in order to minimize the fuel consumption, and to reach VAPP at 1 000 ft AGL.

The computed descent path:
- Complies with the altitude constraints
- Complies with the descent speed/Mach profile
- Is based on:
  - The data of the lateral and vertical flight plans
  - The descent and approach winds
  - The maximum cabin descent rate.

During the DES flight phase, the FMS updates the descent path, if the flight crew changes the flight plan or any approach data (approach wind, VAPP, or landing configuration).

Note: *The descent path computation does not take into account the position of the speed brakes.*

L1 MANAGED SPEED/MACH PROFILE

Before the DES flight phase becomes active, the flight crew can preset the managed speed/Mach target for the descent via the PERF page. In this case, the FMS will not update the speed/Mach during the DES flight phase, when the flight conditions change.
If the flight crew does not preset a managed speed/Mach target, the FMS computes a default value for the managed speed/Mach target.

If a descent speed limit (or descent speed constraint) is defined in the flight plan, the default value of the managed speed/Mach target is:

- The optimized speed/Mach (ECON, LRC, or RTA, from the T/D to the speed limit altitude (or the speed constraint waypoint)

  L3 The aircraft flies at the optimized Mach until the crossover altitude. Between the crossover altitude and the DECEL pseudo waypoint, the aircraft flies at the optimized speed. The crossover altitude is the altitude at which the optimized speed and the optimized Mach correspond to the same TAS.
- L1 The speed limit (or the speed constraint), from the speed limit altitude (or the speed constraint waypoint) to the DECEL pseudo waypoint.

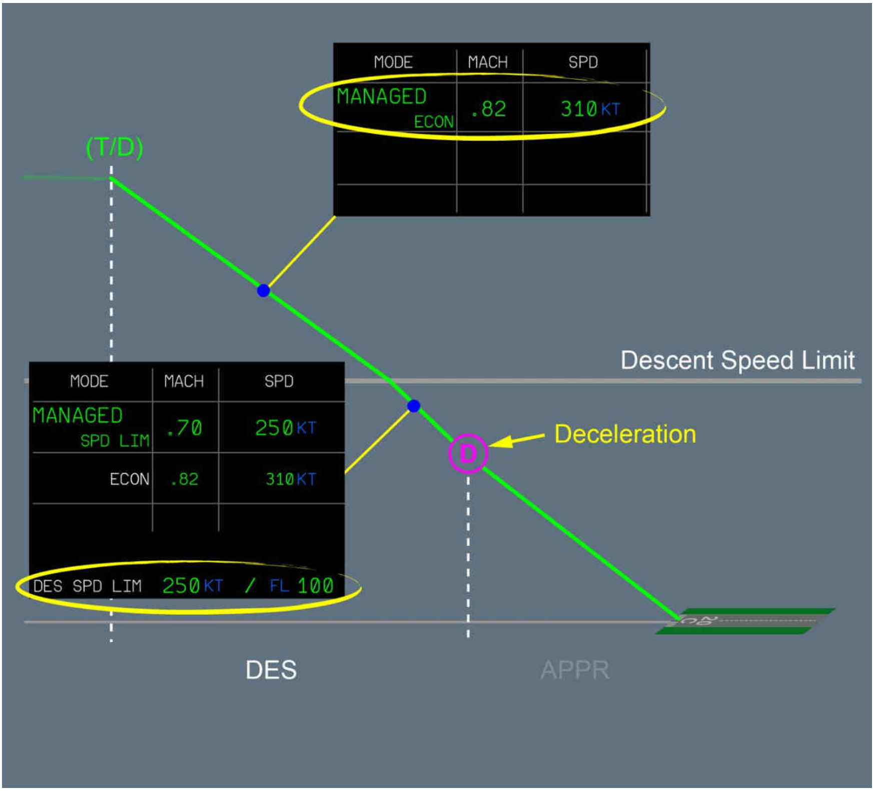
The DES panel of the PERF page displays the descent speed limit (or the descent speed constraint), if any.

L2 For more information about:

- The SPD LIMIT revision, *Refer to DSC-22-FMS-10-40-30 Purpose*
- The SPD CSTR revision, *Refer to DSC-22-FMS-10-40-30 Purpose*

L1 If no descent speed limit and no descent speed constraint are defined in the flight plan, the default value of the managed speed/Mach target, from the T/D to the DECEL pseudo waypoint, is the optimized speed/Mach (ECON, LRC, or RTA).

Managed Speed/Mach Profile during DES


MODE
MACH
SPD
MANAGED
ECON
.82
310 KT
(T/D)
Descent Speed Limit
MODE
MACH
SPD
MANAGED
SPD LIM
.70
250 KT
ECON
.82
310 KT
DES SPD LIM 250 KT / FL 100
D
Deceleration
DES
APPR

Note: *If the flight crew manually activates the APPR flight phase, the DES flight phase does not end at the DECEL pseudo waypoint. The DES flight phase ends at the position at which the flight crew manually activates the APPR flight phase.*

Ident.: DSC-22-FMS-10-50-30-20-00003590.0001001 / 01 SEP 16

APPR

REFERENCE AND OPERATING SPEEDS

The FMS computes the following speeds for approach:
- GDOT, S, and F
- VLS of the selected landing configuration

- VAPP
- VREF.

The APPR panel of the PERF page displays these speeds.

L2 For more information about the PERF page, *Refer to DSC-22-FMS-20-20-20 PERF Page*.

L1 GDOT, S, and F

The FMS computes the following operating speeds for approach:
- GDOT
  GDOT is the managed speed target, when in CONF 0.
  GDOT is an optimized speed. It is an approximation of the best lift to drag ratio. Flying at GDOT provides the best climb performance.
- S
  S is the managed speed target, when in CONF 1 or CONF 1+F.
- F.
  F is the managed speed target, when in CONF 2 or CONF 3.

Before the APPR flight phase is active, the FMS uses the estimated landing weight and CG to compute the operating speeds. When the APPR flight phase is active, the FMS uses the current GW and CG.

L3 The FMS receives the current GW and CG from the FQMS.

L12

Note: *The PRIMs always use the current weight and CG to compute the operating speeds that are displayed on the PFD. Therefore, before the APPR flight phase is active, the operating speeds that are displayed on the PFD may be different from the operating speeds that are displayed on the APPR panel of the PERF page.*

For more information about the speeds that the PRIMs compute:
- *For F, Refer to DSC-22-27-10-20 F*
- *For S, Refer to DSC-22-27-10-20 S*
- *For GDOT, Refer to DSC-22-27-10-20 GREEN DOT.*

L1 VLS

VLS is the lowest selectable speed for the selected landing configuration.

VLS depends on:
- The selected landing configuration (The FMS computes VLS for CONF 3 or CONF FULL)
- The landing weight and CG
- The destination airport elevation.

Before the APPR flight phase is active, the FMS uses the estimated landing weight and CG to compute VLS. When the APPR flight phase is active, the FMS uses the current weight and CG.

L3 The FMS receives the current GW and CG from the FQMS.

L12

Note: *The PRIMs use the current weight, CG, flaps configuration, and altitude to compute the VLS that is displayed on the PFD. Therefore, the VLS that is displayed on the PFD may be different from the VLS that is displayed on the APPR panel of the PERF page.*
For more information about the VLS that the PRIMs compute, Refer to DSC-22-27-10-20 VLS.

L1 VAPP

VAPP is the final approach speed.
VAPP is the managed speed target, when in the approach configuration (CONF 3 or CONF FULL).

To compute a default VAPP, the FMS takes into account:
- VLS, that depends on the selected landing configuration
- The wind at the destination airport.

The flight crew can always overwrite the default value.

VREF

VREF is the reference speed for normal approach and landing.
This speed is used to compute the regulatory landing performance of the aircraft.
The flight crew also uses this speed to compute landing performance with failures.

L2 VREF is equal to the VLS of CONF FULL.

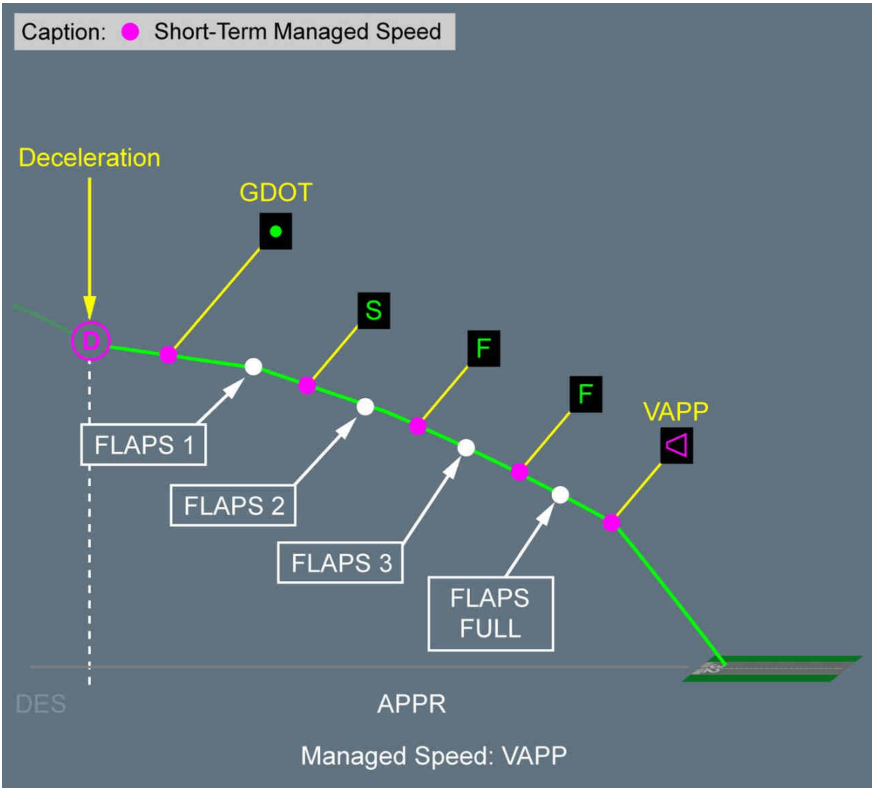
L1 MANAGED SPEED PROFILE

During the APPR flight phase, the managed speed target is VAPP.

However, the flight guidance uses the short-term managed speed as the current speed target, as follows:
- When the aircraft sequences the DECEL pseudo waypoint or when the flight crew manually activates the APPR flight phase, the short-term managed speed is GDOT
  The aircraft decelerates from the descent speed to GDOT.
- When the flight crew selects FLAPS 1, the short-term managed speed becomes the S speed
  The aircraft decelerates from GDOT to S,
- When the flight crew selects FLAPS 2, the short-term managed speed becomes the F speed
  The aircraft decelerates from S to F.

- When the flight crew selects FLAPS 3:
    - If the landing flaps setting is CONF FULL, the short-term managed speed becomes the F speed for CONF 3
      The aircraft decelerates from F for CONF 2 to F for CONF 3.
    - If the landing flaps setting is CONF 3, the aircraft decelerates from F to VAPP.
- When the flight crew selects FLAPS FULL, the aircraft decelerates from F to VAPP.

Managed Speed Profile during APPR


Caption: ● Short-Term Managed Speed
Deceleration
GDOT
D
S
F
F
VAPP
FLAPS 1
FLAPS 2
FLAPS 3
FLAPS FULL
DES
APPR
Managed Speed: VAPP

Ident.: DSC-22-FMS-10-50-30-20-00003591.0001001 / 23 APR 14

GA

OPERATING SPEEDS

The FMS computes the following operating speeds for go-around:
- F
  F is the minimum recommended speed at which the flaps may be retracted from CONF 2 or 3 to CONF 1+F.
- S
  S is the minimum recommended speed at which the slaps may be retracted from CONF 1+F or CONF 1 to CONF 0.
- GDOT.
  GDOT is an optimized speed. It is an approximation of the best lift to drag ratio. Flying at GDOT provides the best climb performance.

The GA panel of the PERF page displays these speeds.

L2 For more information about the PERF page, *Refer to DSC-22-FMS-20-20-20 PERF Page*.

L1 Before the APPR flight phase is active, the FMS uses the estimated landing weight and CG to compute the operating speeds. When the APPR or GA flight phase is active, the FMS uses the current GW and CG.

L3 The FMS receives the current GW and CG from the FQMS.

L12

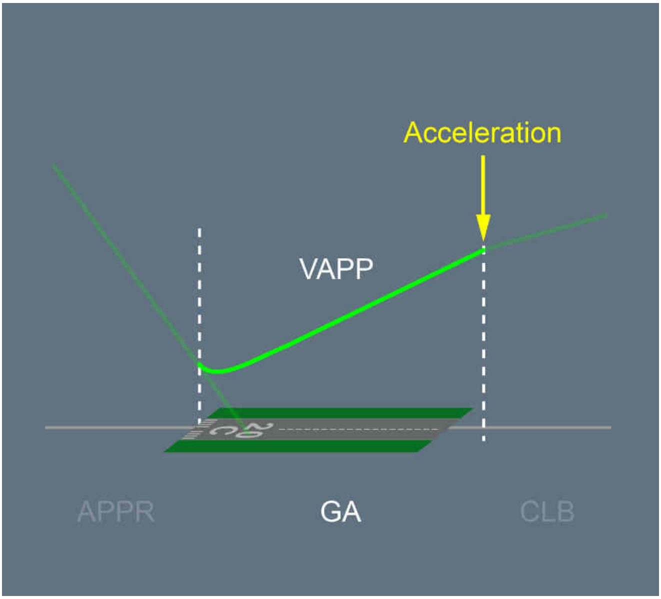
Note: *The PRIMs always use the current weight and CG to compute the operating speeds that are displayed on the PFD. Therefore, before the APPR flight phase is active, the operating speeds that are displayed on the PFD may be different from the operating speeds that are displayed on the GA panel of the PERF page.*

For more information about the speeds that the PRIMs compute:
- *For F, Refer to DSC-22-27-10-20 F*
- *For S, Refer to DSC-22-27-10-20 S*
- *For GDOT, Refer to DSC-22-27-10-20 GREEN DOT.*

L1 MANAGED SPEED PROFILE

During the GA flight phase, the managed speed target is the speed at which the aircraft flied, when the GA flight phase became active.
The lower limit of the managed speed target is VAPP.

Managed Speed Profile during GA


Acceleration
VAPP
20
APPR
GA
CLB

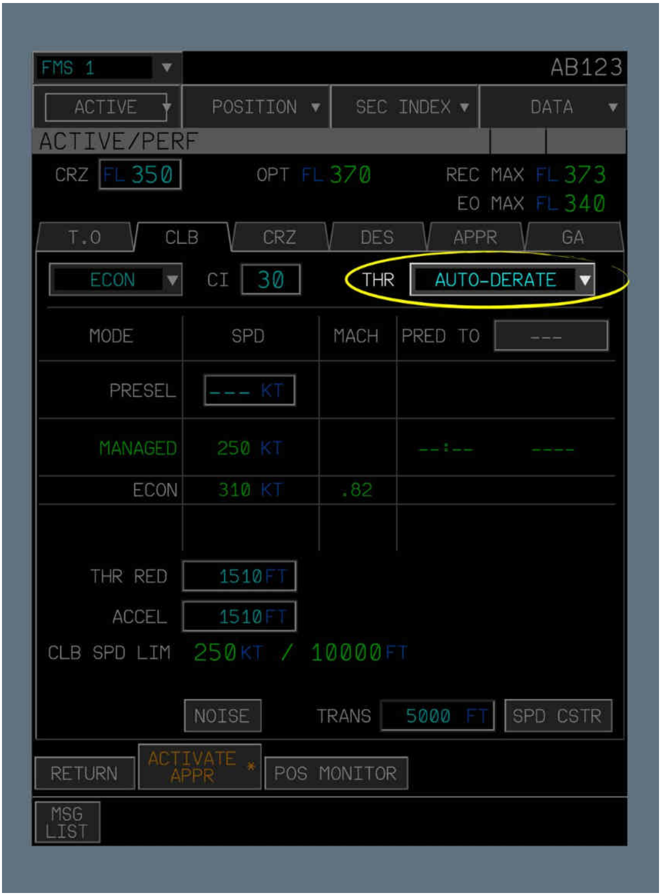
Auto-Derated Thrust during Climb

AUTO-DERATED THRUST DURING CLIMB

Ident.: DSC-22-FMS-10-50-40-00016123.0001001 / 25 APR 14
Applicable to: ALL

The AUTO-DERATE function automatically reduces thrust during climb.
If the AUTO-DERATE function is active, the climb thrust is an auto-derated thrust. The FMS automatically computes the appropriate reduced level of the climb thrust.
The AUTO-DERATE function is active by default. However, the flight crew can deactivate the AUTO-DERATE function via the THR list on the CLB panel of the PERF page.

PERF Page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/PERF
T.O
CLB
CRZ
DES
APPR
GA
NOISE
SPD CSTR
RETURN
ACTIVATE APPR *
POS MONITOR
MSG LIST

CRZ FL 350
OPT FL 370
REC MAX FL 373
EO MAX FL 340

ECON
CI 30
THR AUTO-DERATE

MODE	SPD	MACH	PRED TO ---	
PRESEL	--- KT			
MANAGED	250 KT		--:--	----
ECON	310 KT	.82		

THR RED 1510FT
ACCEL 1510FT
CLB SPD LIM 250KT / 10000FT
TRANS 5000 FT

L2 For more information about the PERF page, *Refer to DSC-22-FMS-20-20-20 PERF Page*.
For more information about the AUTO-DERATE function, *Refer to PER-IFT-20-10-20 Auto-Derated Climb Thrust*.

Optimum Flight Level and Recommended Maximum Flight Level

OPTIMUM FLIGHT LEVEL

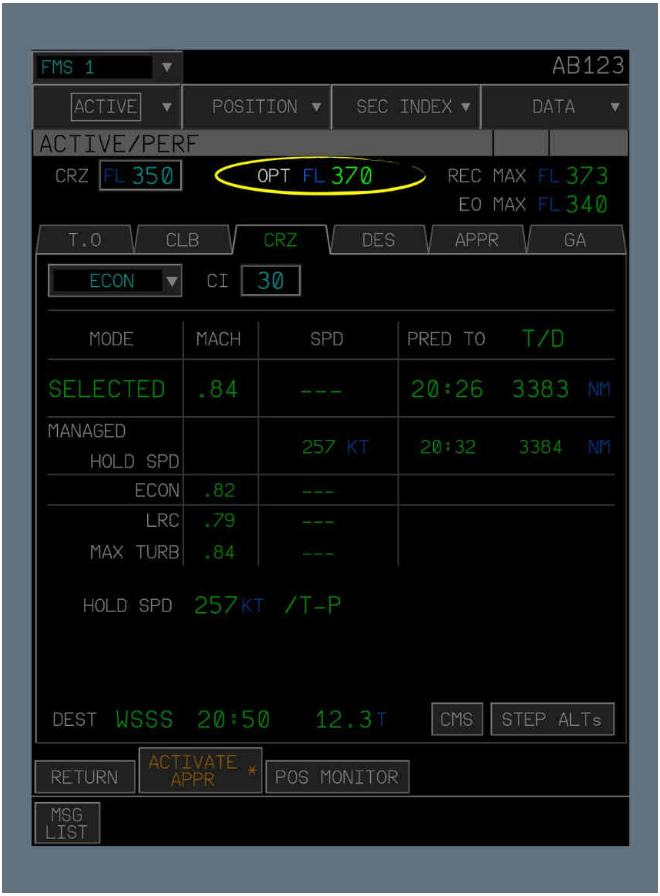
Ident.: DSC-22-FMS-10-50-50-00003592.0001001 / 23 APR 14
Applicable to: ALL

The FMS computes the Optimum Flight Level (OPT FL).
The OPT FL is the flight level at which the fuel consumption is the lowest.

The computation of the OPT FL is based on:
- The aircraft gross weight
- The FMS speed mode (ECON/LRC)
- The CI, if the FMS speed mode is ECON
- The temperature and winds
- L2 The following assumption: The engine anti-ice and the wing anti-ice are off
- L1 A minimum cruise time of 5 min at the OPT FL.

The computation does not take into account any Constant Mach Segment (CMS).
The FMS computes the OPT FL, until the aircraft is at 5 min before the T/D.
The FMS does not computes the OPT FL, if the EO mode is active.
The PERF page displays the current OPT FL.

PERF Page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
T.O
CLB
CRZ
DES
APPR
GA
CMS
STEP ALTs
RETURN
ACTIVATE APPR
POS MONITOR
MSG LIST

ACTIVE/PERF

CRZ FL 350
OPT FL 370
REC MAX FL 373
EO MAX FL 340

ECON
CI 30

MODE	MACH	SPD	PRED TO	T/D
SELECTED	.84	---	20:26	3383 NM
MANAGED HOLD SPD		257 KT	20:32	3384 NM
ECON	.82	---		
LRC	.79	---		
MAX TURB	.84	---		

HOLD SPD 257KT /T-P

DEST WSSS 20:50 12.3T

L2 For more information about the PERF page, *Refer to DSC-22-FMS-20-20-20 PERF Page*.

RECOMMENDED MAXIMUM FLIGHT LEVEL (REC MAX FL)

Ident.: DSC-22-FMS-10-50-50-00003593.0001001 / 23 APR 14
Applicable to: ALL

The FMS computes the Recommended Maximum Flight Level (REC MAX FL).

At the REC MAX FL, the aircraft:
- Can fly at a speed between GDOT and VMO/MMO
- Can keep a thrust rating, without acceleration, that is less than the maximum thrust for the cruise
- Has a buffeting margin of 0.3 g.

The aircraft can reach the REC MAX FL with a minimum vertical speed of 300 ft/min at the maximum CLB thrust.

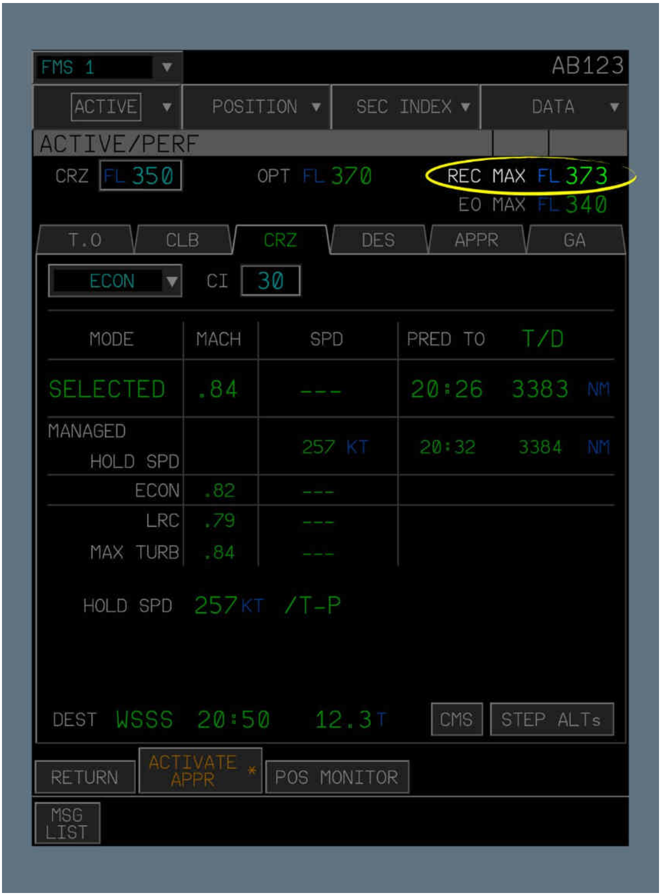
The computation of the REC MAX FL is based on:
- The current gross weight of the aircraft
- L2 The following assumption: The engine anti-ice and the wing anti-ice are off
- L1 The delta ISA.

L3 The vertical profile of the delta ISA is defined by the CRZ FL, the CRZ TEMP, and the TROPO that are entered on the INIT page. In cruise, the vertical profile of the delta ISA is corrected by the measured temperature.

L2 The FMS message area displays:
- The CRZ FL ABOVE MAX FL message, if the flight crew enters a cruise flight level that is above the REC MAX FL
- The STEP ABOVE MAX FL message, if the flight crew enters a step altitude that is above the REC MAX FL.

L1 The PERF page displays the current REC MAX FL.

PERF Page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
T.O
CLB
CRZ
DES
APPR
GA
CMS
STEP ALTs
RETURN
ACTIVATE APPR *
POS MONITOR
MSG LIST

ACTIVE/PERF

CRZ FL 350 OPT FL 370 REC MAX FL 373
EO MAX FL 340

ECON CI 30

MODE	MACH	SPD	PRED TO T/D	
SELECTED	.84	---	20:26	3383 NM
MANAGED HOLD SPD		257 KT	20:32	3384 NM
ECON	.82	---		
LRC	.79	---		
MAX TURB	.84	---		

HOLD SPD 257KT /T-P

DEST WSSS 20:50 12.3T

L2 For more information about the PERF page, *Refer to DSC-22-FMS-20-20-20 PERF Page*.

L1 *Note:* *The REC MAX FL applies, when all engines are operative. The FMS also computes the LRC Engine-Out Maximum Flight Level (LRC EO MAX FL) that applies in the case of engine-out. For more information about the LRC EO MAX FL, Refer to DSC-22-FMS-10-60 LRC Engine-Out Maximum Flight Level (LRC EO MAX FL).*

NOISE Function

INTRODUCTION

Ident.: DSC-22-FMS-10-50-60-00003594.0001001 / 23 APR 14
Applicable to: ALL

The NOISE function of the FMS enables the flight crew to perform an optimized Noise Abatement Departure Procedure (NADP) with the managed speed/Mach control.
The flight crew uses the NOISE function, if the Operator defines specific parameters (i.e. the NOISE END altitude, the NOISE thrust, and the NOISE speed) for the NADP.

There are two types of NADP:
- A **close-in** NADP is a departure procedure that aims to reduce noise levels near to the airport During this procedure, the flight crew performs a thrust reduction either at or above the published minimum altitude, and delays the retraction of the slats/flaps. However, the retraction of the slats/flaps still occurs before the published maximum altitude.
- A **distant** NADP is a departure procedure that aims to reduce noise levels far from the airport. During this procedure, the flight crew retracts the slats/flaps, and then reduces the thrust. With this procedure, the thrust reduction altitude is above the acceleration altitude.

The NOISE function enables the flight crew to perform both types of NADP.
An NADP that the flight crew performs with the NOISE function is referred to as a NOISE procedure.

NOISE PARAMETERS AND NOISE PROFILE

Applicable to: ALL

Ident.: DSC-22-FMS-10-50-60-10-00016841.0001001 / 23 APR 14

The vertical profile of the NOISE procedure is referred to as the NOISE profile.

The FMS computes the NOISE profile based on the following parameters:
- The thrust reduction altitude
- The acceleration altitude
- The NOISE parameters.

  The NOISE parameters are:
  - The NOISE END altitude
  - The NOISE thrust
  - The NOISE speed.

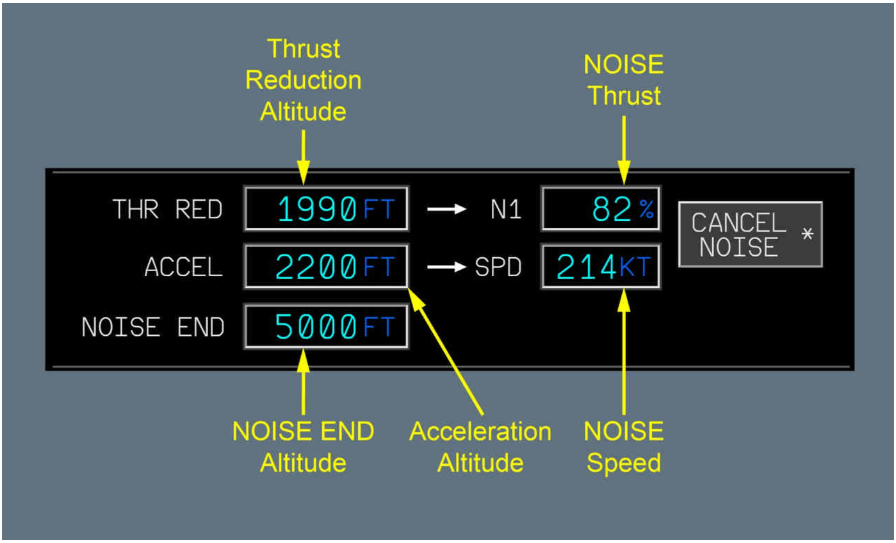
Ident.: DSC-22-FMS-10-50-60-10-00003595.0001001 / 23 APR 14

NOISE PARAMETERS

The flight crew enters the thrust reduction altitude, the acceleration altitude, and the NOISE parameters in the dedicated entry fields on the T.O or CLB panel of the PERF page.

L2 For more information about the PERF page (*Refer to DSC-22-FMS-20-20-20 PERF Page*).

Thrust Reduction Altitude, Acceleration Altitude, and NOISE Parameters


Thrust Reduction Altitude
NOISE Thrust
THR RED
1990FT
N1
82%
CANCEL NOISE *
ACCEL
2200FT
SPD
214KT
NOISE END
5000FT
NOISE END Altitude
Acceleration Altitude
NOISE Speed

L1 THRUST REDUCTION ALTITUDE

The thrust reduction altitude is the altitude at which the flight crew should reduce the thrust from TOGA, FLX, or DTO, to CLB or DCLB.
In the case of a NOISE procedure, at the thrust reduction altitude, the thrust target changes from TOGA, FLX, or DTO thrust to NOISE thrust.

The default value for the thrust reduction altitude is:
- The value that is associated with the departure airport, and that is stored in the navigation database, or
- The value that is the sum of:
  - The departure airport elevation (stored in the navigation database)
  - The thrust reduction height (defined by the Operator in the AMI file).
    The default value for the thrust reduction height is 1 500 ft.

The flight crew can always overwrite the default value.

ACCELERATION ALTITUDE

The acceleration altitude is the altitude at which the aircraft accelerates toward the NOISE speed.

The default value for the acceleration altitude is:
- The value that is associated with the departure airport, and that is stored in the navigation database, or
- The value that is sum of:
  - The departure airport elevation (stored in the navigation database)
  - The acceleration height (defined by the Operator in the AMI file).
    The default value for the acceleration height is 1 500 ft.

The flight crew can always overwrite the default value.

NOISE END ALTITUDE

The NOISE END altitude is the altitude at which the noise restrictions no longer apply. Below the NOISE END altitude, a speed restriction and a thrust restriction may apply.
At the NOISE END altitude, the thrust target automatically changes from NOISE thrust to CLB or DCLB thrust.
The transition from NOISE thrust to CLB or DCLB thrust is a smooth transition with a thrust gradient of 0.2 % N1 per second. This thrust transition is referred to as the thrust ramp. During the thrust ramp, the aircraft still flies at the NOISE speed.
If the flight crew does not enter the NOISE END altitude, the FMS does not compute the NOISE profile.

NOISE THRUST

The NOISE thrust is the thrust target (in percentage of N1) that the A/THR applies between the thrust reduction altitude and the NOISE END altitude.
The lowest noise thrust that is acceptable is 40 % N1.
If the flight crew does not enter the NOISE thrust, the CLB thrust will apply.
If the flight crew did not previously enter the NOISE END altitude in the NOISE END entry field, the flight crew cannot enter the NOISE thrust.

NOISE SPEED

The NOISE speed is the managed speed target that applies between the acceleration altitude and the end of the thrust ramp.
After the flight crew enters a NOISE END altitude, the FMS computes a default NOISE speed.

The default NOISE speed is the highest of the following two values:
- S + 15 kt
  S is the minimum recommended speed at which the flight crew can retract the slats.
- VLS + 10 kt.
  VLS is the lowest speed that the flight crew can select in clean configuration at the NOISE END altitude.

Note: *The default NOISE speed may be less than GDOT speed.*

The flight crew can always overwrite the default value.
If the flight crew did not previously enter the NOISE END altitude in the NOISE END entry field, the FMS does not compute the default NOISE speed, and the flight crew cannot enter the NOISE speed.

Ident.: DSC-22-FMS-10-50-60-10-00003597.0001001 / 23 APR 14

NOISE PROFILE

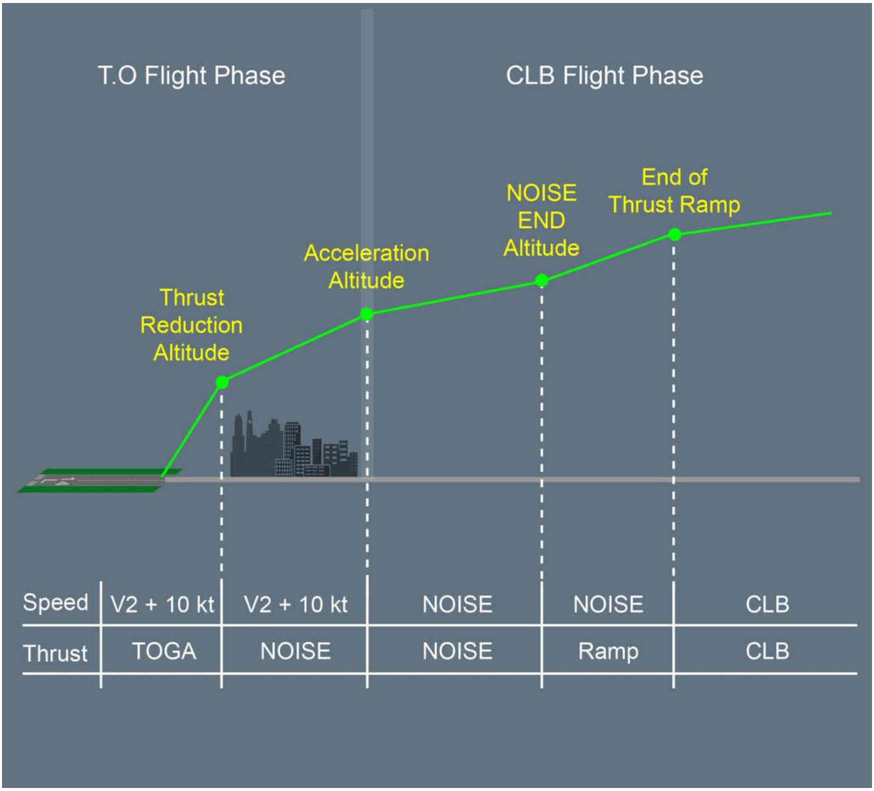
The FMS computes the NOISE profile, as soon as the flight crew enters:
- The NOISE END altitude and the NOISE speed, or
- The NOISE END altitude and the NOISE thrust.

L2 If the flight crew does not enter the NOISE END altitude, the FMS does not compute the NOISE profile.
If the flight crew enters the NOISE END altitude and the NOISE speed, but not the NOISE thrust, the FMS computes the NOISE profile based on the maximum CLB thrust.
If the flight crew enters the NOISE END altitude and the NOISE thrust, but not the NOISE speed, the FMS computes the NOISE profile based on the ECON/LRC climb speed.
The following description is based on the assumption that the flight crew enters all NOISE parameters.

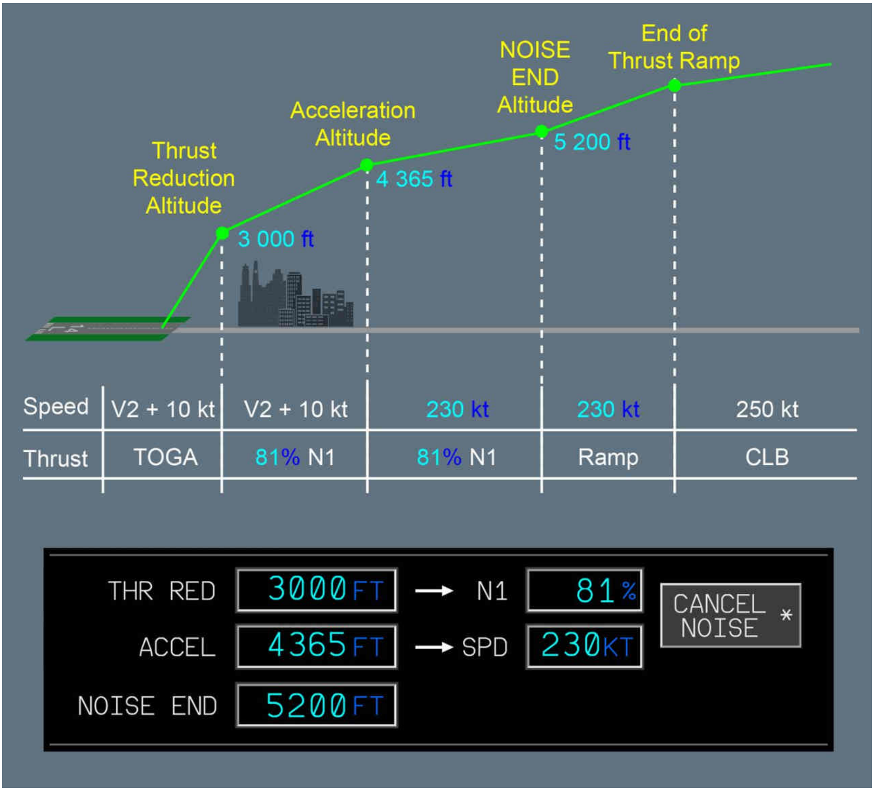
L1 The flight crew can change the NOISE parameters, until the aircraft reaches the NOISE END altitude.

CLOSE-IN NADP WITH THE NOISE FUNCTION

Close-In NADP with the NOISE Function


T.O Flight Phase
CLB Flight Phase
Thrust Reduction Altitude
Acceleration Altitude
NOISE END Altitude
End of Thrust Ramp
Speed
V2 + 10 kt
V2 + 10 kt
NOISE
NOISE
CLB
Thrust
TOGA
NOISE
NOISE
Ramp
CLB

Example of Close-In NADP with the NOISE Function

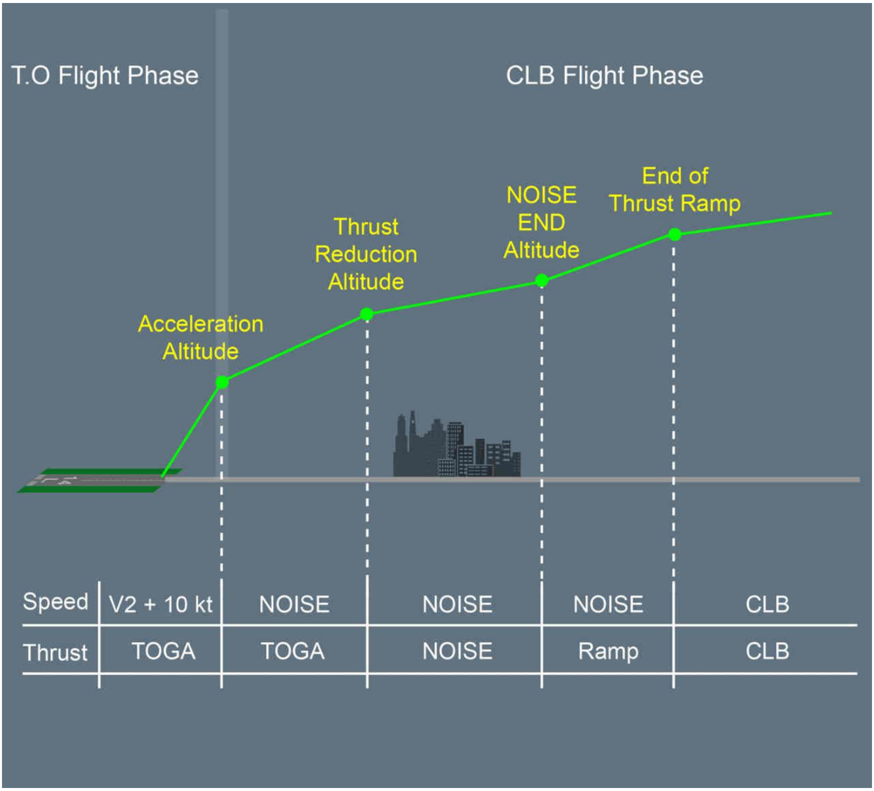

Thrust
Reduction
Altitude
3 000 ft
Acceleration
Altitude
4 365 ft
NOISE
END
Altitude
5 200 ft
End of
Thrust Ramp

Speed	V2 + 10 kt	V2 + 10 kt	230 kt	230 kt	250 kt
Thrust	TOGA	81% N1	81% N1	Ramp	CLB

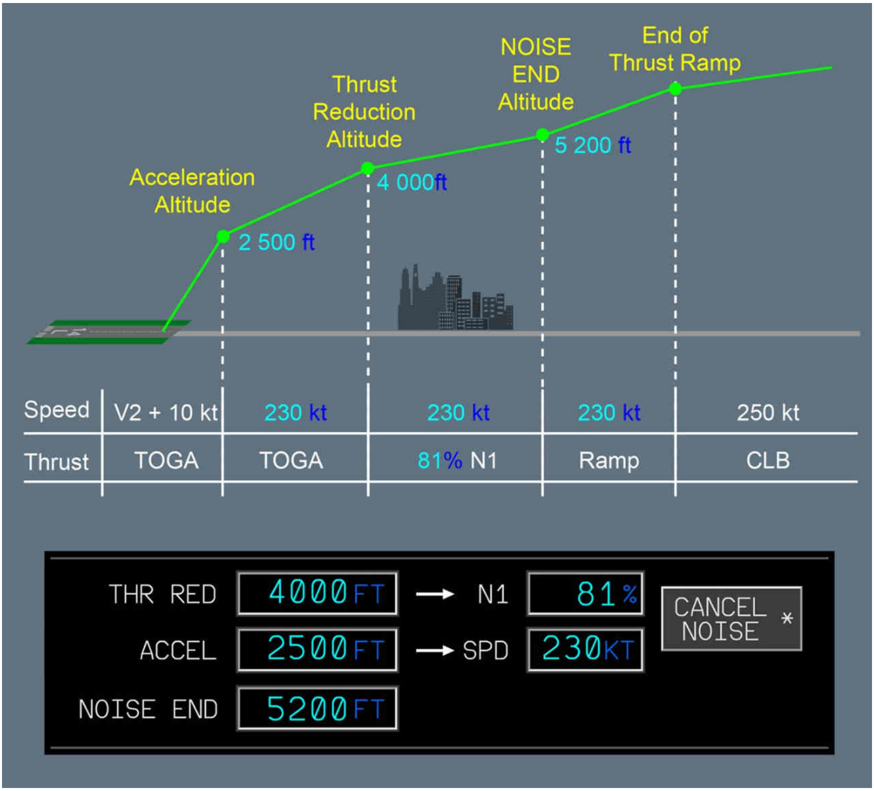
THR RED	3000FT	→ N1	81%	CANCEL NOISE *
ACCEL	4365FT	→ SPD	230KT	
NOISE END	5200FT			

DISTANT NADP WITH THE NOISE FUNCTION

Distant NADP with the NOISE Function


T.O Flight Phase
CLB Flight Phase
Acceleration Altitude
Thrust Reduction Altitude
NOISE END Altitude
End of Thrust Ramp
Speed
V2 + 10 kt
NOISE
NOISE
NOISE
CLB
Thrust
TOGA
TOGA
NOISE
Ramp
CLB

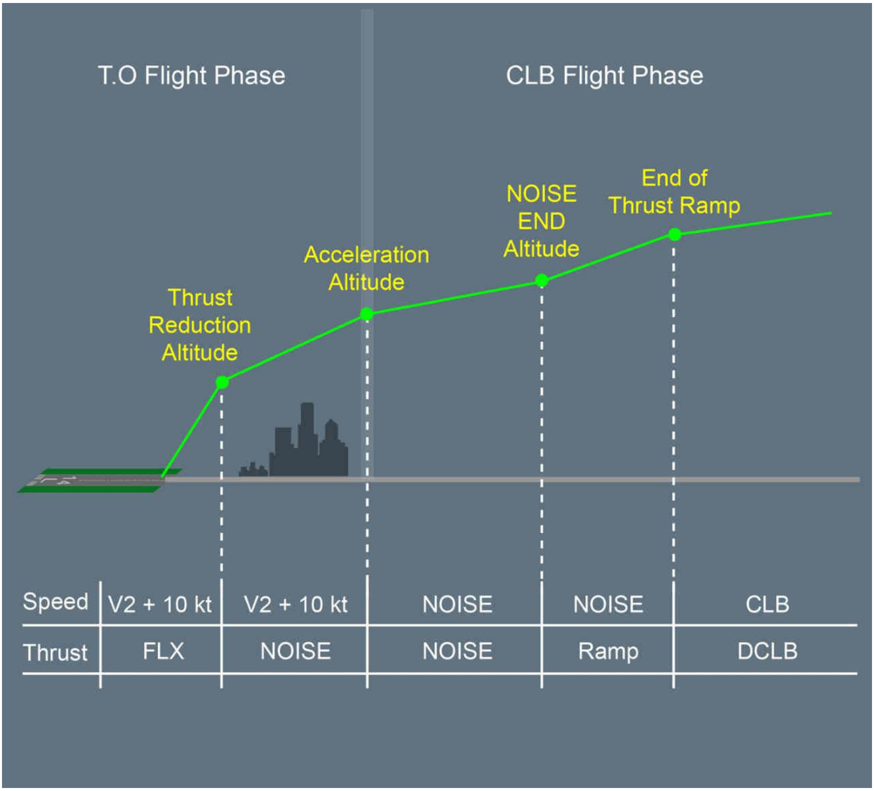
Example of Distant NADP with the NOISE Function


Acceleration Altitude
2 500 ft
Thrust Reduction Altitude
4 000ft
NOISE END Altitude
5 200 ft
End of Thrust Ramp
Speed
V2 + 10 kt
230 kt
230 kt
230 kt
250 kt
Thrust
TOGA
TOGA
81% N1
Ramp
CLB
THR RED
4000FT
N1
81%
ACCEL
2500FT
SPD
230KT
NOISE END
5200FT
CANCEL NOISE *

NOISE FUNCTION COMBINED WITH FLX(DTO) THRUST AND DCLB THRUST

The NOISE function can be combined with:
- A takeoff at FLX or DTO thrust, or
- A takeoff at FLX or DTO thrust, and a climb at DCLB thrust.

FLX and DCLB

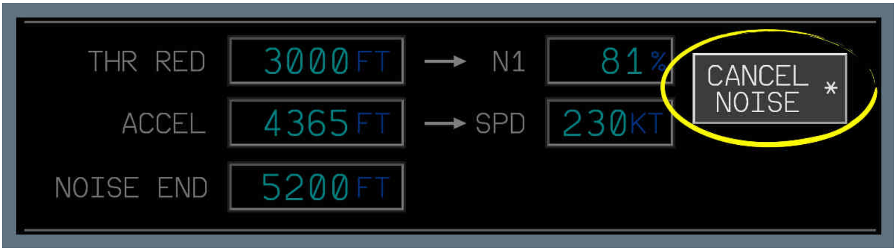

T.O Flight Phase
CLB Flight Phase
Thrust Reduction Altitude
Acceleration Altitude
NOISE END Altitude
End of Thrust Ramp
Speed
V2 + 10 kt
V2 + 10 kt
NOISE
NOISE
CLB
Thrust
FLX
NOISE
NOISE
Ramp
DCLB

Ident.: DSC-22-FMS-10-50-60-10-00003598.0001001 / 23 APR 14

END OF THE NOISE PROCEDURE

The NOISE procedure ends at the end of the thrust ramp.
The flight crew can always manually cancel the NOISE procedure. To cancel the NOISE procedure, the flight crew clicks on the CANCEL NOISE button on the T.O or CLB panel of the PERF page.
The FMS may also automatically cancel the NOISE procedure.

CANCEL NOISE Button



L2 For more information about the PERF page, *Refer to DSC-22-FMS-20-20-20 PERF Page*.

L1 After the NOISE procedure ends or is canceled:

- The thrust target reverts to:
  - The climb thrust (CLB or DCLB), if the aircraft is above the thrust reduction altitude
  - The takeoff thrust (TOGA, FLX, or DTO), if the aircraft is below the thrust reduction altitude
- The managed speed target reverts to:
  - The climb speed (ECON or LRC), if the aircraft is above the acceleration altitude
  - V2 + 10 kt, if the aircraft is below the acceleration altitude.

Note: *In flight, after the NOISE procedure is canceled, the flight crew cannot reactivate the NOISE procedure.*

NOISE PROCEDURE AND ENGINE-OUT

If the Engine-Out (EO) mode of the FMS becomes active, the FMS automatically cancels the NOISE procedure.

L2 NOISE PROCEDURE AND FLIGHT GUIDANCE MODES

The NOISE profile is part of the FMS climb profile. As a result, if the flight crew engages a selected guidance mode, the guidance rules, as described in the Flight Guidance chapter, apply.

Some examples:

- If the flight crew disconnects the A/THR while the flight crew performs the NOISE procedure, the NOISE thrust is disregarded. However, the managed speed target is still the NOISE speed. If the flight crew activates the A/THR again, the thrust target becomes the NOISE thrust.
- If the V/S / FPA mode engages, the NOISE thrust is disregarded. The THRUST mode changes to SPEED mode in order to reach the managed speed target that is still the NOISE speed.
- If the flight crew activates the selected speed/Mach control, the NOISE speed is disregarded. However, the thrust target is still the NOISE thrust. If the flight crew activates the managed speed/Mach control again, the managed speed target becomes the NOISE speed.

  Note: *If the flight crew previously preset a selected speed on the CLB panel of the PERF page, the selected speed/Mach control automatically engages at the acceleration altitude. In this case, the aircraft will fly at the selected speed between the acceleration altitude and the NOISE END altitude. The thrust target is still the NOISE thrust.*

If the V/S or ALT mode engages while the aircraft flies the thrust ramp, the FMS cancels the NOISE procedure, and the flight crew cannot reactivate the NOISE procedure.

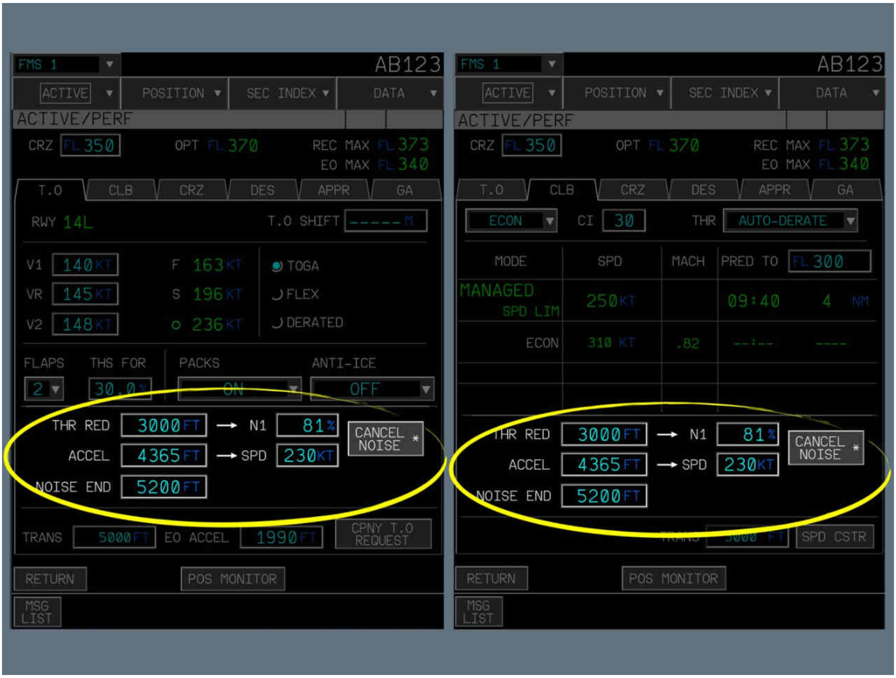
CONTROLS AND INDICATORS

Ident.: DSC-22-FMS-10-50-60-00003596.0001001 / 04 DEC 14
Applicable to: ALL

ON THE MFD

The flight crew enters the NOISE parameters on the T.O or CLB panel of the PERF page.

PERF Page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/PERF
T.O
CLB
CRZ
DES
APPR
GA
RETURN
POS MONITOR
MSG LIST
CANCEL NOISE *
CPNY T.O REQUEST
SPD CSTR

CRZ FL 350
OPT FL 370
REC MAX FL 373
EO MAX FL 340

RWY 14L
T.O SHIFT -----M
V1 140KT
VR 145KT
V2 148KT
F 163KT
S 196KT
O 236KT
● TOGA
FLEX
DERATED
FLAPS 2
THS FOR 30.0%
PACKS ON
ANTI-ICE OFF
THR RED 3000FT → N1 81%
ACCEL 4365FT → SPD 230KT
NOISE END 5200FT
TRANS 5000FT
EO ACCEL 1990FT

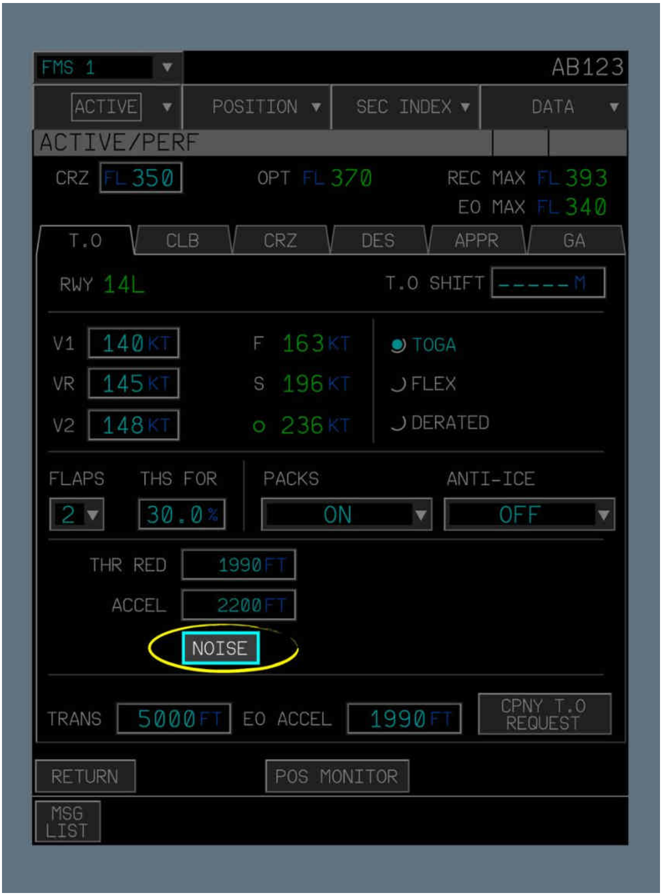
ECON
CI 30
THR AUTO-DERATE

MODE	SPD	MACH	PRED TO FL 300	
MANAGED SPD LIM	250KT		09:40	4 NM
ECON	310 KT	.82	--:--	----

THR RED 3000FT → N1 81%
ACCEL 4365FT → SPD 230KT
NOISE END 5200FT
TRANS 5000 FT

Note: *To display the entry fields of the NOISE parameters, the flight crew clicks on the NOISE button on the T.O panel of the PERF page.*

PERF Page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
T.O
CLB
CRZ
DES
APPR
GA
NOISE
CPNY T.O REQUEST
RETURN
POS MONITOR
MSG LIST

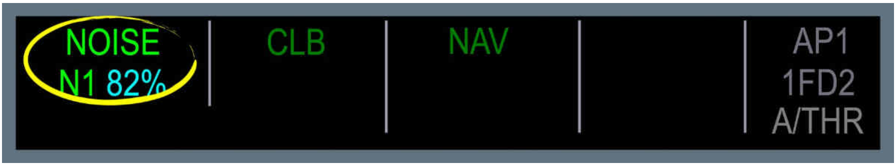
ACTIVE/PERF
CRZ FL350
OPT FL370
REC MAX FL393
EO MAX FL340
RWY 14L
T.O SHIFT -----M
V1 140KT
VR 145KT
V2 148KT
F 163KT
S 196KT
O 236KT
● TOGA
○ FLEX
○ DERATED
FLAPS 2
THS FOR 30.0%
PACKS ON
ANTI-ICE OFF
THR RED 1990FT
ACCEL 2200FT
TRANS 5000FT
EO ACCEL 1990FT

L2 For more information about the PERF page, *Refer to DSC-22-FMS-20-20-20 PERF Page*.

L1 ON THE FMA (PFD)

While the flight crew performs the NOISE procedure, the Flight Mode Annunciator (FMA) of the PFD displays the NOISE thrust (percentage of N1), when the NOISE thrust is the thrust target.

FMA


NOISE
N1 82%
CLB
NAV
AP1
1FD2
A/THR

PERF Factor, IDLE Factor, and FUEL PENALTY Factor

PERF FACTOR AND IDLE FACTOR

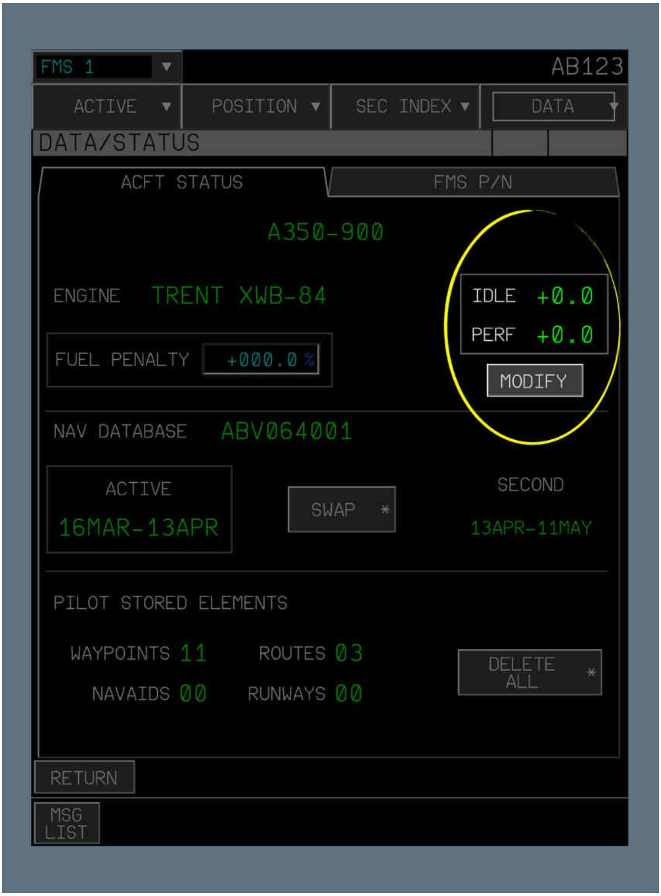
Ident.: DSC-22-FMS-10-50-70-00003599.0001001 / 03 JUL 14
Applicable to: ALL

The IDLE factor and the PERF factor are correction factors that the FMS uses to compute the aircraft performance and the flight plan predictions.
The PERF factor is a correction factor of the fuel flow. The FMS takes the PERF factor into account to compute the managed speed/Mach profile, the optimum flight level, and the predictions.
The IDLE factor is a correction factor of the idle engine rating. The FMS takes the IDLE factor into account to compute the path for the descent and the approach, and to compute predictions.

The IDLE factor and the PERF factor are updated at the discretion of the Operator, as necessary:
- The Operator should define and apply the IDLE factor, if the computation of the path for the descent and the approach needs to be modified
- The Operator should define and apply the PERF factor, if there is any degradation in aerodynamic performance or engine performance.

L2 The Operator can define a default value for both factors in the AMI file.
L1 The IDLE factor and the PERF factor can be automatically changed via datalink with the company ground station. The flight crew can also manually change these factors via the ACFT STATUS panel of the DATA/STATUS page.

DATA/STATUS Page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
DATA/STATUS
ACFT STATUS
FMS P/N
MODIFY
SWAP *
DELETE ALL *
RETURN
MSG LIST

A350-900

ENGINE TRENT XWB-84

IDLE +0.0

PERF +0.0

FUEL PENALTY +000.0 %

NAV DATABASE ABV064001

ACTIVE 16MAR-13APR

SECOND 13APR-11MAY

PILOT STORED ELEMENTS

WAYPOINTS 11

ROUTES 03

NAVAIDS 00

RUNWAYS 00

L2 For more information about the DATA/STATUS page, *Refer to DSC-22-FMS-20-20-20 DATA/STATUS Page*.

FUEL PENALTY

Ident.: DSC-22-FMS-10-50-70-00005215.0001001 / 20 OCT 14
Applicable to: ALL

The FUEL PENALTY is a correction of the fuel flow.

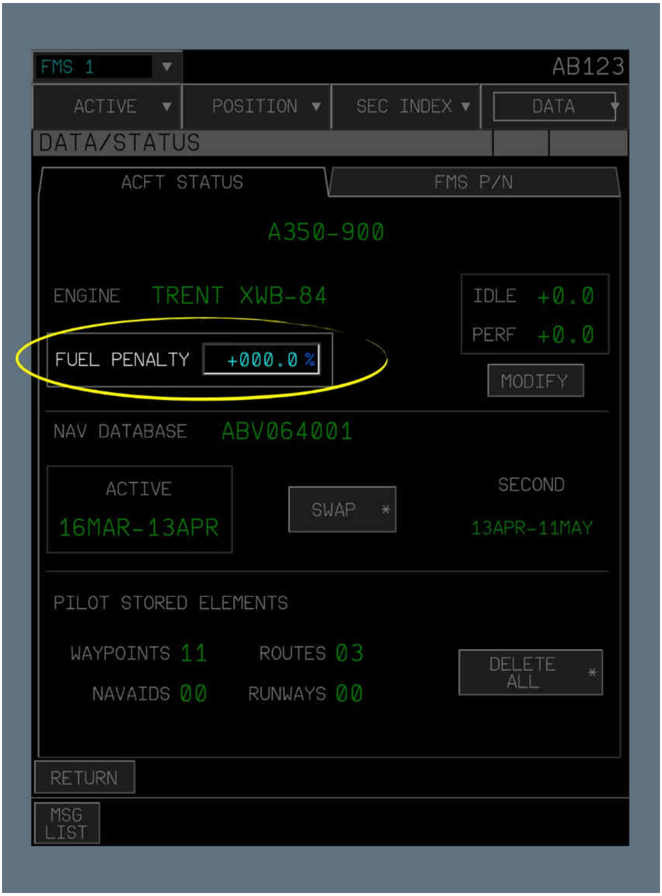
The flight crew can define and change the FUEL PENALTY via the ACFT STATUS panel of the DATA/STATUS page.

The FMS takes the FUEL PENALTY into account to compute the managed speed/Mach profile, the optimum flight level, and the flight plan predictions.

For additional information, *Refer to FCTM/PR-AEP-FUEL Fuel Penalty*.

For more information on the Fuel Penalty assesment, *Refer to PER-IFT-FP Fuel Penalty Tables - Fuel Consumption Increased*.

DATA/STATUS Page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
DATA/STATUS
ACFT STATUS
FMS P/N
MODIFY
SWAP *
DELETE ALL *
RETURN
MSG LIST

A350-900

ENGINE TRENT XWB-84

IDLE +0.0
PERF +0.0

FUEL PENALTY +000.0 %

NAV DATABASE ABV064001

ACTIVE 16MAR-13APR
SECOND 13APR-11MAY

PILOT STORED ELEMENTS

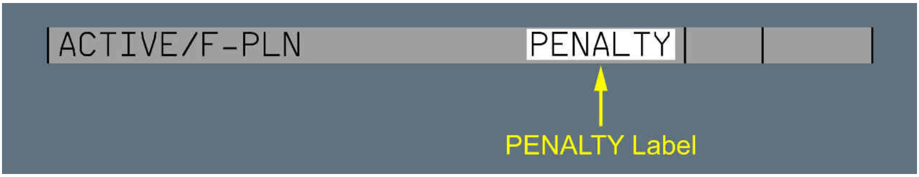
WAYPOINTS 11 ROUTES 03
NAVAIDS 00 RUNWAYS 00

L2 For more information about the DATA/STATUS page, *Refer to DSC-22-FMS-20-20-20 DATA/STATUS Page*.

L1 If the FMS fuel predictions take a FUEL PENALTY factor into account (i.e. the flight crew entered a value in the FUEL PENALTY entry field on the DATA/STATUS page), the FMS page header displays the PENALTY label on the following pages:

- The ALTERNATE page
- The DATA/STATUS page
- The F-PLN page
- The FUEL&LOAD page
- The HOLD page
- The WHAT IF page.

PENALTY Label



GENERAL

Ident.: DSC-22-FMS-10-60-00004485.0001001 / 14 APR 14
Applicable to: ALL

The FMS has an Engine-Out (EO) mode. The EO mode enables the FMS to take an engine failure into account for the computation of the performance data, the flight plan predictions, and the long-term guidance targets.
If an engine failure occurs, the FMS considers that the engine is out, and automatically activates the EO mode.

When the EO mode becomes active, the FMS:
- Changes the managed speed target
- Updates the flight plan predictions, based on:
  - The new managed speed target
  - The EO maximum altitudes:
    - ■ The LRC Engine-Out Maximum Flight Level (LRC EO MAX FL)
    - ■ The drift-down altitude
- Deletes all preselected speeds, if any
  The flight crew can enter new preselected speeds, if required.
- Creates a temporary flight plan with the Engine-Out Standard Instrument Departure (EOSID), if applicable
- Deletes all altitude steps (climb or descent), if any
- Deletes the time constraint, if any
- Displays the PERF page (*Refer to page*).

As soon as the engine is recovered, the FMS automatically deactivates the EO mode. As a result, the FMS automatically returns to the normal computation of the performance data, the flight plan predictions, and the long-term guidance targets.
At all times, the flight crew can manually deactivate the EO mode via the use of the CLEAR EO button on the PERF page.

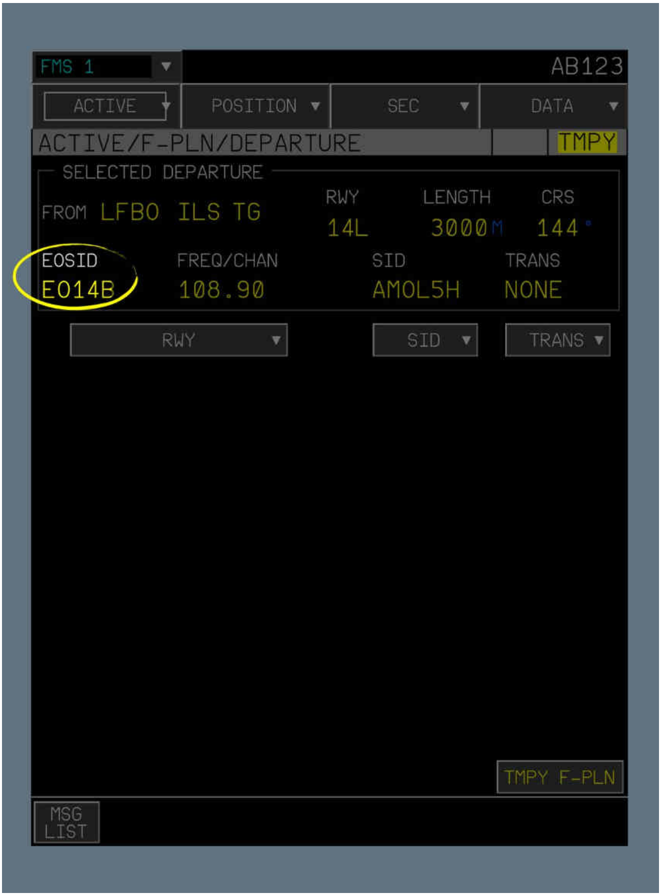
Note: 1. *If the flight crew manually deactivates the EO mode, the flight crew cannot reactivate the EO mode. The EO mode will remain inactive. The FMS will reactivate the EO mode, only if the engine is recovered, and then an engine-out occurs again.*
2. *The EO mode is applicable only in the case of a real engine failure. If the flight crew needs to simulate an engine-out, they can use the WHAT IF function. For more information about the WHAT IF function, Refer to DSC-22-FMS-10-40-40 WHAT IF Function.*

ENGINE-OUT SID

Ident.: DSC-22-FMS-10-60-00004486.0001001 / 03 JUL 20
Applicable to: ALL

The Engine-Out Standard Instrument Departure (EOSID) is a standard procedure to fly, if an engine-out occurs just after takeoff.
The DEPARTURE page displays the ident of the EOSID that is stored in the navigation database. If there is no stored EOSID, the NONE label appears instead of the ident.

DEPARTURE Page


FMS 1
AB123
ACTIVE
POSITION
SEC
DATA
ACTIVE/F-PLN/DEPARTURE
TMPY
SELECTED DEPARTURE
RWY
LENGTH
CRS
RWY
SID
TRANS
TMPY F-PLN
MSG LIST

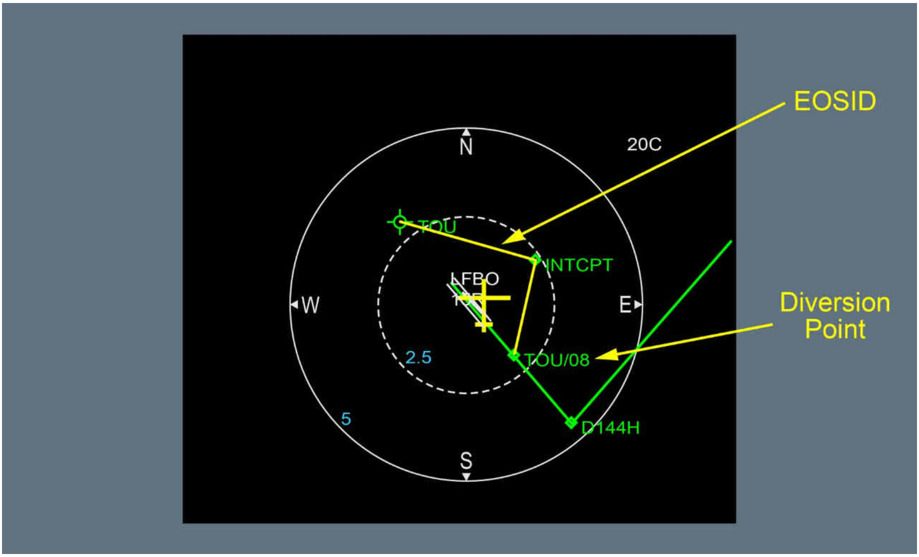
FROM LFBO ILS TG

EOSID	FREQ/CHAN	RWY	LENGTH	CRS	SID	TRANS
E014B	108.90	14L	3000M	144°	AMOL5H	NONE

The flight crew can check the stored EOSID via the PLAN mode of the ND. A yellow line indicates the EOSID.

The point from which the SID and the EOSID diverge is referred to as the diversion point.

EOSID in PLAN Mode on the ND

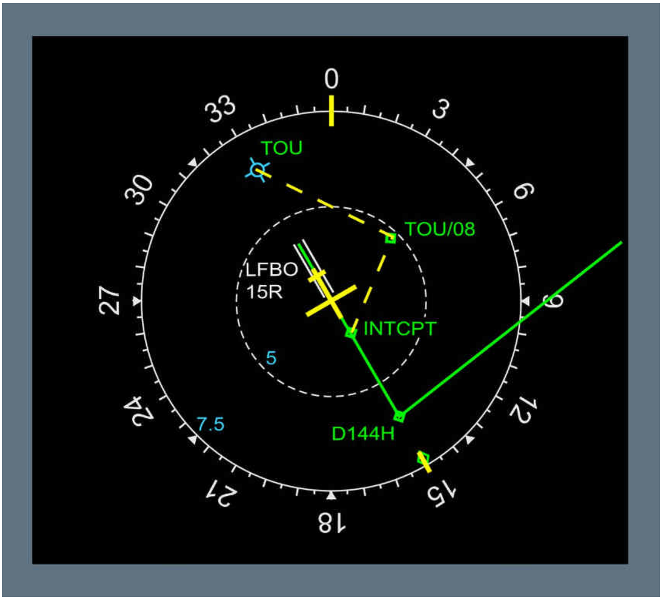


If an EOSID is stored in the navigation database, the FMS can take this EOSID into account. The FMS compares the position of the aircraft to the diversion point in order to take the EOSID into account.

1 BEFORE THE DIVERSION POINT

If an engine failure occurs before the diversion point, the FMS creates a temporary flight plan in which the FMS strings the EOSID after the diversion point. A discontinuity follows the EOSID. The flight crew can insert(erase) the temporary flight plan, if they want(do not want) to fly the EOSID.

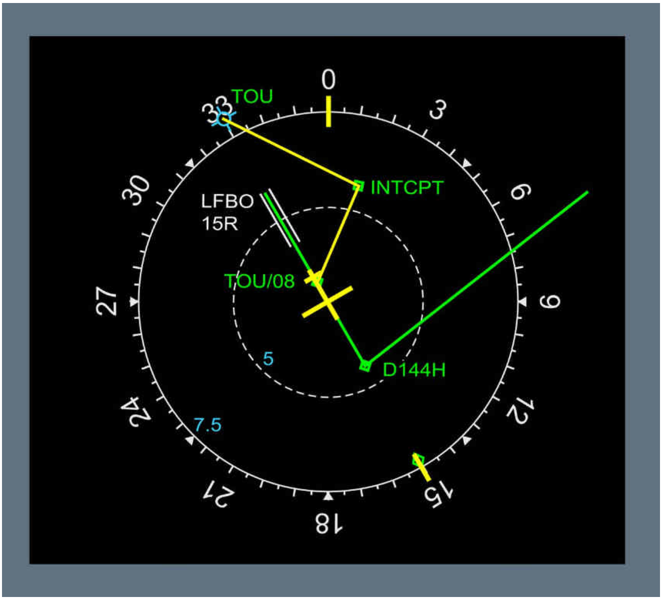
Before Diversion Point


0
3
6
9
12
15
18
21
24
27
30
33
TOU
TOU/08
LFBO
15R
INTCPT
5
7.5
D144H

2 **AFTER THE DIVERSION POINT**

If an engine failure occurs after the diversion point, the FMS does not insert the EOSID in the flight plan. On the ND, a yellow line indicates the EOSID for information only.
To fly the EOSID, the flight crew can perform a DIR TO a waypoint of the EOSID, and then adjusts the flight plan.

After Diversion Point



LRC ENGINE-OUT MAXIMUM FLIGHT LEVEL (LRC EO MAX FL)

Ident.: DSC-22-FMS-10-60-00004488.0001001 / 09 MAR 16
Applicable to: ALL

The FMS computes the LRC Engine-Out Maximum Flight Level (LRC EO MAX FL).

At the LRC EO MAX FL, the aircraft:
- Is able to level off at the EO-LRC speed, with the running engine at MCT, the anti-ice OFF, and the failed engine in windmilling
- Has a buffet margin of 0.3 g.

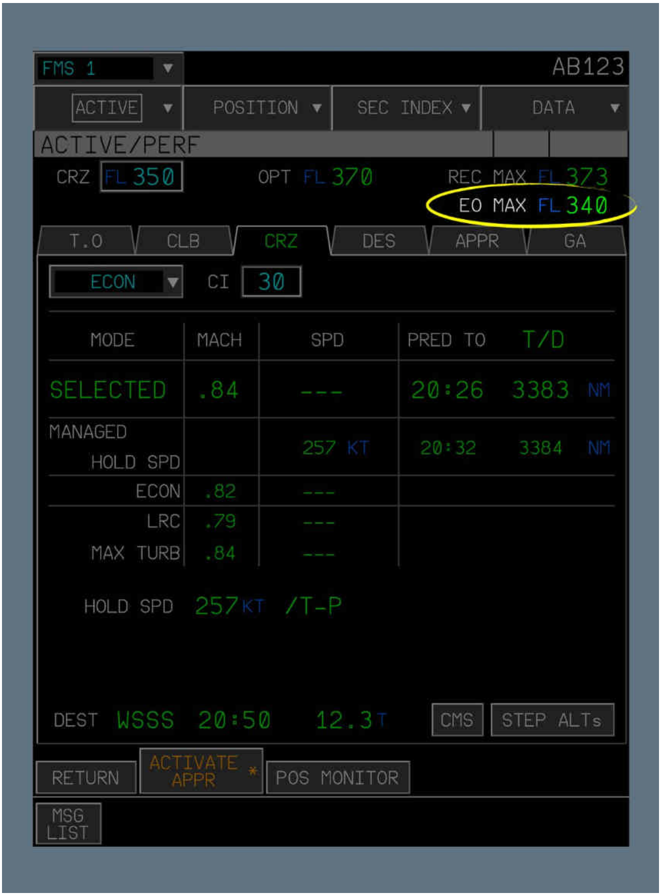
The computation of the LRC EO MAX FL is based on the current gross weight of the aircraft and the delta ISA.
The PERF page displays the current LRC EO MAX FL.
L2 Since the LRC EO MAX FL is intended for use during the cruise phase, it is not relevant for the takeoff phase.

Therefore, before takeoff, the LRC EO MAX FL may display an invalid value (XXX) if:

- The TOW of the aircraf is near MTOW, and
- The atmosphere temperature is high.

After takeoff, the TOW decreases. As soon as the TOW is sufficiently low to permit the calculation of the LRC EO MAX FL, the LRC EO MAX FL is recovered and valid.

PERF Page


FMS 1 ▼
AB123
ACTIVE ▼
POSITION ▼
SEC INDEX ▼
DATA ▼
T.O
CLB
CRZ
DES
APPR
GA
CMS
STEP ALTs
RETURN
ACTIVATE APPR *
POS MONITOR
MSG LIST

ACTIVE/PERF

CRZ FL350 OPT FL370 REC MAX FL373

EO MAX FL340

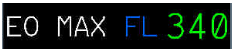
ECON ▼ CI 30

MODE	MACH	SPD	PRED TO T/D	
SELECTED	.84	---	20:26	3383 NM
MANAGED HOLD SPD		257 KT	20:32	3384 NM
ECON	.82	---		
LRC	.79	---		
MAX TURB	.84	---		

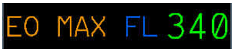
HOLD SPD 257KT /T-P

DEST WSSS 20:50 12.3T

L1 The color of the EO MAX label depends on the engine state.


EO MAX FL 340

Both engines are operative.


EO MAX FL 340

One engine is failed.

L2 For more information about the PERF page, *Refer to DSC-22-FMS-20-20-20 PERF Page*.

DRIFT-DOWN ALTITUDE

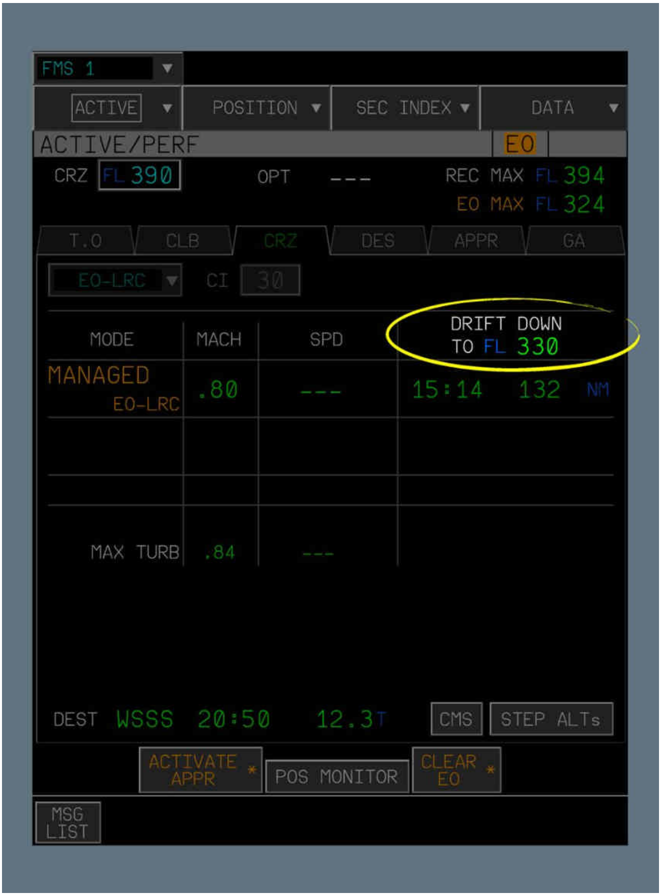
Ident.: DSC-22-FMS-10-60-00004489.0001001 / 14 APR 14
Applicable to: ALL

When the EO mode is active, during the CRZ flight phase, the FMS computes the drift-down altitude. The drift-down altitude is the maximum flight level at which the aircraft is able to level off at the EO-GDOT speed, with the running engine at MCT.

L2 The FMS computes the drift-down altitude as follows: When the aircraft descends at the EO-GDOT speed, the drift-down altitude is the altitude at which the aircraft will begins to level off.

L1 The CRZ panel of the PERF page displays the drift-down altitude.

PERF Page


FMS 1
ACTIVE
POSITION
SEC INDEX
DATA
T.O
CLB
CRZ
DES
APPR
GA
CMS
STEP ALTs
ACTIVATE APPR *
POS MONITOR
CLEAR EO *
MSG LIST

ACTIVE/PERF EO

CRZ FL 390 OPT --- REC MAX FL 394

EO MAX FL 324

EO-LRC CI 30

MODE	MACH	SPD	DRIFT DOWN TO FL 330
MANAGED EO-LRC	.80	---	15:14 132 NM
MAX TURB	.84	---	

DEST WSSS 20:50 12.3T

For more information about the PERF page, *Refer to DSC-22-FMS-20-20-20 PERF Page*.

ENGINE-OUT DURING THE T.O FLIGHT PHASE

Ident.: DSC-22-FMS-10-60-00004490.0001001 / 14 APR 14
Applicable to: ALL

BELOW THE THRUST REDUCTION ALTITUDE

If an engine failure occurs below the thrust reduction altitude during the T.O flight phase:

- The speed target is the current aircraft speed
  The lower limit of the speed target is V2. The upper limit of the speed target is V2 + 15 kt.
- The FMS takes the EOSID into account as follows:
  - If the aircraft is before the diversion point, the FMS creates a temporary flight plan with the EOSID, or
  - If the aircraft is after the diversion point, the ND displays the EOSID for information only

  For more information about the EOSID, *Refer to DSC-22-FMS-10-60 Engine-Out Standard Instrument Departure (EOSID)*.
- The FMS displays the PERF page (*Refer to page*).

  On the PERF page:
  - The EO MAX label is displayed in amber
  - The CLR EO button is displayed at the bottom of the page.

FLIGHT PLAN PREDICTIONS

The FMS does not compute the flight plan predictions, until the aircraft reaches the acceleration altitude.

ABOVE THE THRUST REDUCTION ALTITUDE

If an engine failure occurs above the thrust reduction altitude during the T.O flight phase:

- The speed target is the current aircraft speed
  The lower limit of the speed target is V2. The upper limit of the speed target is V2 + 15 kt.
- LVR MCT flashes on the FMA
- The ND displays the EOSID for information only
  For more information about the EOSID, *Refer to DSC-22-FMS-10-60 Engine-Out Standard Instrument Departure (EOSID)*.
- The FMS displays the PERF page (*Refer to page*).

  On the PERF page:
  - The EO MAX label is displayed in amber
  - The CLR EO button is displayed at the bottom of the page.

FLIGHT PLAN PREDICTIONS

The FMS does not compute the flight plan predictions, until the aircraft reaches the acceleration altitude.

ENGINE-OUT DURING THE CLB FLIGHT PHASE

Ident.: DSC-22-FMS-10-60-00004491.0001001 / 04 MAY 16
Applicable to: ALL

BELOW THE LRC EO MAX FL

If an engine failure occurs below the LRC EO MAX FL during the CLB flight phase:
- The FMS defines the managed speed target as follows:
  - When the aircraft climbs (in CLB or OP CLB mode), the managed speed target is the EO-GDOT speed
  - When the aircraft is in level flight (in ALT, ALT*, ALT CST, or ALT CST* mode), the managed speed target is the EO-LRC speed, limited by the speed limit or the speed constraint, if any

  Note: To prevent significant thrust reduction, the FMS gradually decreases the managed speed target from the current speed to the EO-GDOT (or EO-LRC) speed at a rate of 1 kt per second.

- LVR MCT flashes on the FMA
- The FMS displays the PERF page (*Refer to page*).

  On the PERF page:
  - The EO MAX label is displayed in amber
  - The CLR EO button is displayed at the bottom of the page
  - The speed mode table of the CLB panel displays the managed speed (the EO-GDOT or EO-LRC speed).

    Note: The flight crew can manually select the ECON speed mode instead of the LRC speed mode. In ECON speed mode, the managed EO speed is the EO-ECON speed instead of the EO-LRC speed.

FLIGHT PLAN PREDICTIONS

The FMS computes the flight plan predictions based on the following assumptions:
- The speed is the EO-GDOT (or EO-LRC) speed
- The aircraft performs the cruise at the lowest of the following two flight levels:
  - The CRZ FL
  - The LRC EO MAX FL.

ABOVE THE LRC EO MAX FL

If an engine failure occurs above the LRC EO MAX FL during the CLB flight phase:

- The CLB mode, if engaged, reverts to OP CLB (or V/S, with the current vertical speed)

  Note: The flight crew cannot arm or engage the CLB mode above the LRC EO MAX FL.

- The FMS defines the managed speed target as follows:
  - When the aircraft climbs (in OP CLB or V/S mode), the managed speed target is the EO-GDOT speed

    Note: To prevent significant thrust reduction, the FMS gradually decreases the managed speed target from the current speed to the EO-GDOT speed at a rate of 1 kt per second.

  - When the aircraft is in level flight (in ALT, ALT*, ALT CST, or ALT CST* mode), the managed speed target does not change (however, the aircraft decelerates due to engine performance)
- LVR MCT flashes on the FMA
- The FMS displays the PERF page (*Refer to page*).

  On the PERF page:
  - The EO MAX label is displayed in amber
  - The CLR EO button is displayed at the bottom of the page
  - The speed mode table of the CLB panel displays the managed speed (the EO-GDOT speed or the current managed speed target).

FLIGHT PLAN PREDICTIONS

The FMS computes the flight plan predictions based on the following assumptions:

- The aircraft immediately levels off, and decelerates to the EO-GDOT speed
- Then, the aircraft descends (at the EO-GDOT speed with a minimum vertical speed of -100 ft/min) to the LRC EO MAX FL
- The aircraft levels off at the LRC EO MAX FL and at the EO-LRC speed.

ENGINE-OUT DURING THE CRZ FLIGHT PHASE

Ident.: DSC-22-FMS-10-60-00004492.0001001 / 14 APR 14
Applicable to: ALL

If an engine failure occurs during the CRZ flight phase:

- The FMS defines the managed speed target as follows:
  - When the aircraft is above the LRC EO MAX FL, the managed speed target does not change (However, the aircraft will decelerate due to engine performance.)
    When the flight crew engages the OP DES mode, the managed speed target becomes the EO-GDOT speed.
  - When the aircraft is at or below the LRC EO MAX FL, the managed speed target depends on the FMS speed mode that the flight crew selects:
    - ■ EO-LRC speed mode: The managed speed target is the EO-LRC speed that ensures a minimum fuel consumption (long range)
    - ■ EO-ECON speed mode: The managed speed target is the EO-ECON speed that is based on the current cost index

    If the flight crew initiates a climb (and the aircraft is below the drift-down altitude), the managed speed target is the EO-GDOT speed.
- LVR MCT flashes on the FMA
- The FMS displays the PERF page (*Refer to page*).

  On the PERF page:
  - The EO MAX label is displayed in amber
  - The CLR EO button is displayed at the bottom of the page
  - The speed mode table of the CRZ panel displays:
    - ■ The managed speed (the EO-GDOT, EO-LRC, or EO-ECON speed)
    - ■ The drift-down altitude.

FLIGHT PLAN PREDICTIONS

The FMS computes the flight plan predictions based on the following assumptions:

- The aircraft decelerates to the EO-GDOT speed
- Then, the aircraft descents (at the EO-GDOT speed with a minimum vertical speed of -100 ft/min) to the LRC EO MAX FL
- The aircraft levels off at the LRC EO MAX FL and at the EO-LRC speed.

ENGINE-OUT DURING THE DES OR APPR FLIGHT PHASE

Ident.: DSC-22-FMS-10-60-00004493.0001001 / 14 APR 14
Applicable to: ALL

If an engine failure occurs during the DES or APPR flight phase:
- The managed speed target does not change
- The DES mode, if engaged, reverts to the V/S mode (with the current vertical speed)

  Note: *The flight crew can keep the V/S mode, or can engage the OP DES mode, as appropriate.*
  Below the LRC EO MAX FL, the flight crew can engage the DES mode again.

- LVR MCT flashes on the FMA
- The FMS displays the PERF page (*Refer to page*).

  On the PERF page:
  - The EO MAX label is displayed in amber
  - The CLR EO button is displayed at the bottom of the page.

FLIGHT PLAN PREDICTIONS

The FMS computes the theoretical descent and approach path, based on a one-operative engine model.

If the engine failure occurs above the LRC EO MAX FL, the FMS computes the flight plan predictions based on the following assumptions:
- The flight crew engages the OP DES mode
- The OP DES mode remains engaged, until the aircraft reaches the LRC EO MAX FL
- At the LRC EO MAX FL, the flight crew engages the DES mode.

ENGINE-OUT DURING THE GA FLIGHT PHASE

Ident.: DSC-22-FMS-10-60-00004494.0001001 / 14 APR 14
Applicable to: ALL

For an engine failure during the GA flight phase, the computations and procedures of the T.O flight phase apply.
However, the ND does not display the EOSID.

CONTROLS AND INDICATORS

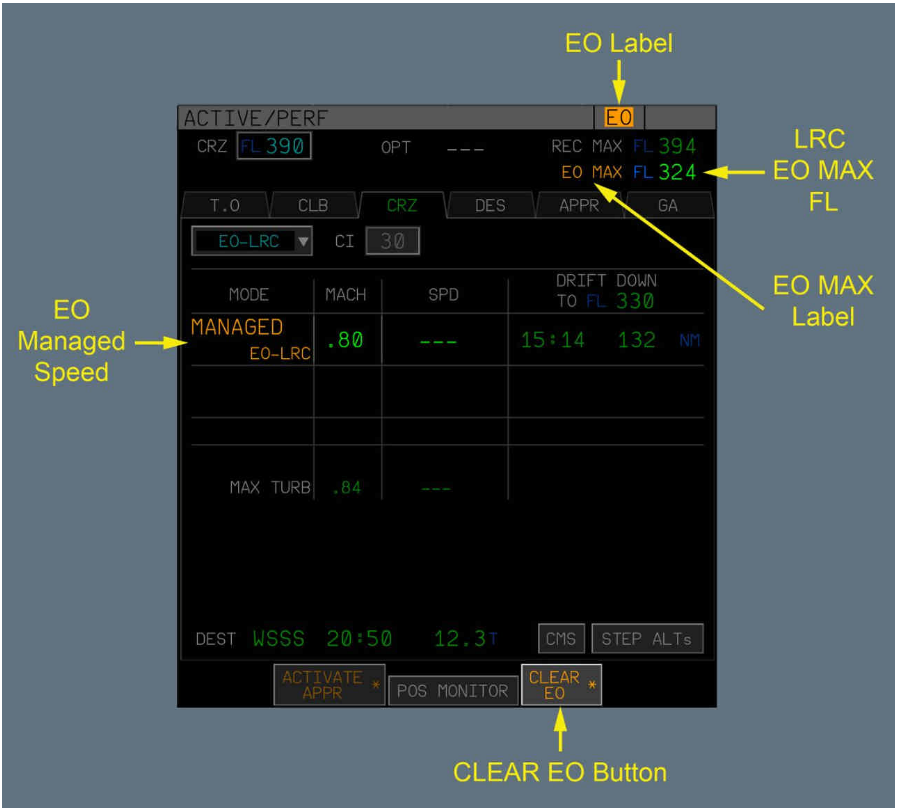
Ident.: DSC-22-FMS-10-60-00004495.0001001 / 14 APR 14
Applicable to: ALL

ON THE MFD

The PERF page permanently displays the current LRC EO MAX FL in the upper right corner of the page.

If the EO mode is active:
- The FMS page header displays the EO label
- On the PERF page:
  - The EO MAX label is displayed in amber
  - The CLEAR EO button is displayed at the bottom of the page
  - The speed mode tables of the CLB and CRZ panels display the EO managed speeds (the EO-GDOT, EO-LRC, or EO-ECON speed), if applicable.

PERF Page



ACTIVE/PERF EO

CRZ FL 390 OPT --- REC MAX FL 394
EO MAX FL 324

EO-LRC CI 30

MODE	MACH	SPD	DRIFT DOWN TO FL 330
MANAGED EO-LRC	.80	---	15:14 132 NM
MAX TURB	.84	---	

DEST WSSS 20:50 12.3T

EO Label
LRC EO MAX FL
EO MAX Label
EO Managed Speed
CLEAR EO Button
T.O
CLB
CRZ
DES
APPR
GA
CMS
STEP ALTs
ACTIVATE APPR *
POS MONITOR
CLEAR EO *

ON THE ND

The ND displays the EOSID.
If the engine failure occurs before the diversion point, the ND displays the EOSID as a part of the temporary flight plan (dashed yellow line).
If the engine failure occurs after the diversion point, the ND displays the EOSID for information only (with a solid yellow line).
For more information about the display of the EOSID on the ND, *Refer to DSC-31-CDS-40-40-80 FMS Data Overview*.

ASSOCIATED MESSAGES

Ident.: DSC-22-FMS-10-60-00004496.0001001 / 14 APR 14
Applicable to: ALL

On the MFD, the FMS message area displays the following message: CHECK EO SPD SETTING (*Refer to message*).

Takeoff Monitoring Function

TAKEOFF MONITORING FUNCTION ⋪

Ident.: DSC-22-FMS-10-70-10-00023927.0001001 / 03 JAN 19
Applicable to: ALL

From 30 kt IAS to 90 kt IAS during takeoff roll, the Takeoff Monitoring (TOM) function monitors the real acceleration of the aircraft. When the aircraft reaches 90 kt, the TOM function compares the real distance covered by the aircraft with the distance corresponding to the nominal performance of the aircraft. If the TOM function detects that the aircraft performance is degraded by more than 15 %, the T.O ACCELERATION DEGRADED ECAM alert is triggered.
The TOM function alerts the flight crew of a significant reduction in performance. It does not determine the primary cause of the degradation.

The following are examples of factors that can affect the acceleration of the aircraft during takeoff roll:
- ZFW entry error
- Residual braking
- Reduced engine performance
- Extension of a flight control surface that modifies the expected drag.

Note: The triggering of the T.O ACCELERATION DEGRADED ECAM alert is independent from the takeoff thrust setting (FMS entry and thrust lever position).

Intentionally left blank

Takeoff Surveillance Function

TAKEOFF SURVEILLANCE FUNCTION

Ident.: DSC-22-FMS-10-70-20-10-00023495.0001001 / 14 JUN 16
Applicable to: ALL

The Takeoff Surveillance (TOS) function checks the takeoff data that the flight crew enters and selects on the FMS pages.
The takeoff surveillance function applies to the FMS pages that are associated with the active flight plan only.

The checks aim to ensure that the takeoff data is:
- Consistent
- Compatible with the aircraft performance data that is required for takeoff.

The FMS performs the following takeoff checks:
- The ZFW check
- The takeoff speeds check
- The liftoff distance check
- The aircraft position check.

Ident.: DSC-22-FMS-10-70-20-10-00023496.0001001 / 14 JUN 16
Applicable to: ALL

ZFW CHECK

The FMS checks that the ZFW value that the flight crew enters on the FUEL&LOAD page is within the acceptable range.
If the entered ZFW is not within the acceptable range, the FMS message area displays the ENTRY OUT OF RANGE message.

Ident.: DSC-22-FMS-10-70-20-10-00023497.0001001 / 14 JUN 16
Applicable to: ALL

TAKEOFF SPEEDS CHECK

For the takeoff speeds (V1, VR, and V2) that the flight crew enters on the T.O panel of the PERF page:

- The FMS checks that the V1, VR, and V2 entry fields contain values.

  If the flight crew does not enter one or more of the takeoff speed values, the ECAM triggers the T.O SPEEDS NOT INSERTED alert, when:
  - The flight crew presses the T.O CONFIG pb of the ECP, or
  - The engines are set to takeoff power.
- The FMS compares V1, VR, and V2.

  If the entered V1, VR, and V2 do not satisfy the condition V1 ≤ VR ≤ V2:
  - The FMS message area displays the V1/VR/V2 DISAGREE message
  - The ECAM triggers the T.O V1/VR/V2 DISAGREE alert, when:
    - The flight crew presses the T.O CONFIG pb of the ECP, or
    - The engines are set to takeoff power.
- The FMS checks that V1, VR, and V2 satisfy the regulatory requirements for the minimum speeds (VMCG, VMCA, VMU, and VS1G). If the entered V1, VR, and V2 do not satisfy the regulatory requirements for the minimum speeds (VMCG, VMCA, VMU, and VS1G):
  - The FMS message area displays the T.O SPEED TOO LOW CHECK TOW & T.O DATA message
  - The ECAM triggers the T.O SPEEDS TOO LOW alert, when:
    - The flight crew presses the T.O CONFIG pb of the ECP, or
    - The engines are set to takeoff power.

Ident.: DSC-22-FMS-10-70-20-10-00023498.0001001 / 14 JUN 16
Applicable to: ALL

LIFTOFF DISTANCE CHECK

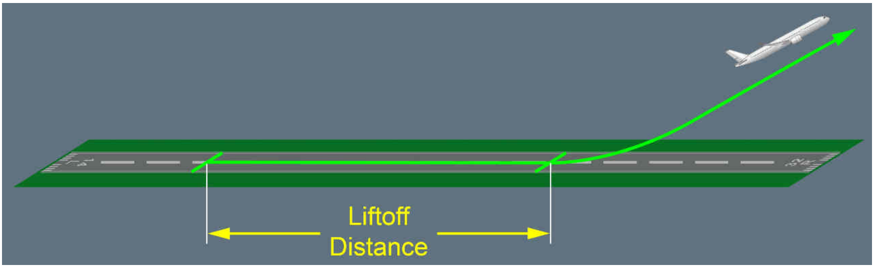
The FMS computes the runway length available for takeoff, and the liftoff distance.
The FMS compares the liftoff distance with the available runway length.

If the liftoff distance is more than the available runway length:
- The FMS message area displays the T.O RWY TOO SHORT CHECK TOW & T.O DATA message
- The ECAM triggers:
  - The T.O RWY TOO SHORT alert, when the flight crew presses the T.O CONFIG pb of the ECP
  - The T.O RWY TOO SHORT alert, when the engines are set to takeoff power.

COMPUTATION OF THE LIFTOFF DISTANCE

The liftoff distance is the distance between the position at which the flight crew releases the aircraft brakes in order to take off, and the position at which the aircraft leaves the ground.

Liftoff Distance



The FMS computes the liftoff distance based on the following data:
- The aircraft weight (the TOW or the GW)
- VR and V2
- The flaps setting
- The T.O thrust
- The anti-ice setting
- The pack setting.

Before the engines are set to takeoff power, in order to compute the liftoff distance, the FMS uses:
- The TOW
  The FMS computes the TOW with the ZFW, the block fuel, and the taxi fuel that the flight crew enters on the FUEL&LOAD page
- The VR, the V2, the flaps setting, the T.O thrust, the anti-ice setting, and the pack setting that the flight crew enters and selects on the T.O panel of the PERF page.

When the engines are set to takeoff power, in order to compute the liftoff distance, the FMS uses:

- The real aircraft weight (i.e. the GW)
  L3 The FQMS provides the GW.
- L1 The VR and the V2 that the flight crew enters on the T.O panel of the PERF page
- The flaps setting that corresponds to the real position of the FLAPS lever
  L3 The slats/flaps system provides the real position of the FLAPS lever.
- L1 The real T.O thrust, the real anti-ice setting, and the real pack setting.
  L3 The engines provide the real T.O thrust, the real anti-ice setting, and the real pack setting.

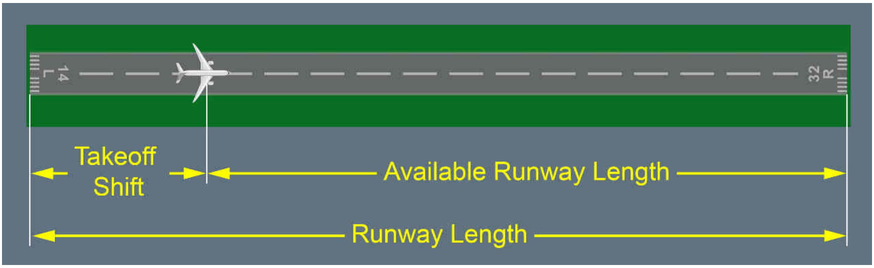
L1 **CAUTION** The FMS does not use the wind data to compute the liftoff distance.

L2 The FMS also uses the following data to compute the liftoff distance:

- The altitude
  L3 The ADIRS provides the altitude.
- L2 The OAT
  L3 The ADIRS provides the OAT.
- L2 The slope of the departure runway.
  L3 The FMS computes the slope based on the data that is stored in the navigation database.
  If the departure runway is not in the navigation database, the FMS uses a default value.

L1 COMPUTATION OF THE AVAILABLE RUNWAY LENGTH

The FMS computes the available runway length as follows: Available runway length = runway length - runway takeoff shift.
The runway takeoff shift is the distance between the runway threshold, and the position at which the flight crew releases the aircraft brakes in order to take off.



Before the engines are set to takeoff power, the FMS uses:
- The runway length of the departure runway that is in the active flight plan.
  The runway length is the runway length stored in the navigation database.
  L3 If the departure runway is a pilot-stored runway, the runway length is the runway length stored in the pilot-stored elements database.
- L1 The runway takeoff shift that the flight crew enters on the T.O panel of the PERF page.

When the engines are set to takeoff power:
- The FMS uses the runway length of the current runway.
  The Airport Navigation Function (ANF) provides the ident of the current runway, based on the current position of the aircraft.
  The runway length is the runway length stored in the navigation database.

  Note: *If the ANF does not provide the runway ident, the FMS does not perform the liftoff distance check.*
- The FMS computes the runway takeoff shift based on the current aircraft position.
  The ADIRS provides the current aircraft position.

Ident.: DSC-22-FMS-10-70-20-10-00023499.0003001 / 07 MAY 18
Applicable to: ET-AUC

AIRCRAFT POSITION CHECK

The aircraft position check aims at preventing takeoff on an unexpected runway or on a taxiway.
ANF compares the aircraft position with the different runways provided through the ANF database.

When one thrust lever is set at or above the CLB detent, the ECAM triggers:
- The NAV ON TAXIWAY alert, when the aircraft is not on a runway
- The NAV NOT ON FMS RUNWAY alert, when the aircraft is on a runway different from the one selected on DEPARTURE page.

Ident.: DSC-22-FMS-10-70-20-10-00023499.0001001 / 03 JAN 19
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB

AIRCRAFT POSITION CHECK

The aircraft position check aims at preventing takeoff on an unexpected runway or on a taxiway.
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When one thrust lever is set at or above the CLB detent, the ECAM triggers:
- The NAV ON TAXIWAY alert, when the aircraft is not on a runway
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ASSOCIATED ALERTS AND MESSAGES

Ident.: DSC-22-FMS-10-70-20-30-00016531.0003001 / 23 OCT 17
Applicable to: ET-AUC

ASSOCIATED ALERTS

If the takeoff surveillance function of the FMS detects an abnormal situation, one or more of the following ECAM alerts are triggered:

- T.O RWY TOO SHORT (*Refer to procedure*)
- T.O RWY TOO SHORT (*Refer to procedure*)
- T.O SPEEDS NOT INSERTED (*Refer to procedure*)
- T.O SPEEDS TOO LOW (*Refer to procedure*)
- T.O V1/VR/V2 DISAGREE (*Refer to procedure*)
- NAV NOT ON FMS RUNWAY (*Refer to procedure*)
- NAV ON TAXIWAY (*Refer to procedure*).

Ident.: DSC-22-FMS-10-70-20-30-00016531.0001001 / 03 JAN 19
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB

ASSOCIATED ALERTS

If the takeoff surveillance function of the FMS detects an abnormal situation, one or more of the following ECAM alerts are triggered:

- T.O RWY TOO SHORT (*Refer to procedure*)
- T.O RWY TOO SHORT (*Refer to procedure*)
- T.O SPEEDS NOT INSERTED (*Refer to procedure*)
- T.O SPEEDS TOO LOW (*Refer to procedure*)
- T.O V1/VR/V2 DISAGREE (*Refer to procedure*)
- NAV NOT ON FMS RUNWAY (*Refer to procedure*)
- NAV ON TAXIWAY (*Refer to procedure*).

Ident.: DSC-22-FMS-10-70-20-30-00016532.0001001 / 23 OCT 17
Applicable to: ALL

ASSOCIATED MESSAGES

On the MFD, the FMS message area displays the following messages:

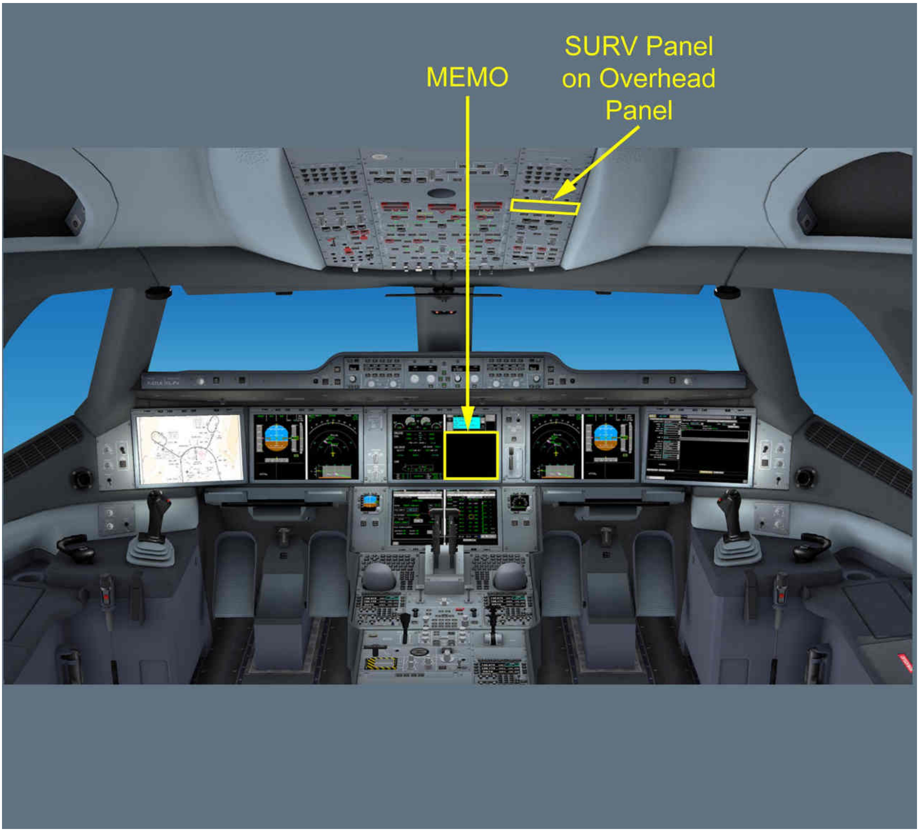
- ENTRY OUT OF RANGE (*Refer to message*)
- T.O RWY TOO SHORT CHECK TOW & T.O DATA (*Refer to message*)
- T.O SPEED TOO LOW CHECK TOW & T.O DATA (*Refer to message*)
- V1/VR/V2 DISAGREE (*Refer to message*).

Controls and Indicators

COCKPIT VIEW

Ident.: DSC-22-FMS-10-70-30-00024639.0001001 / 29 JAN 18
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB

Cockpit View

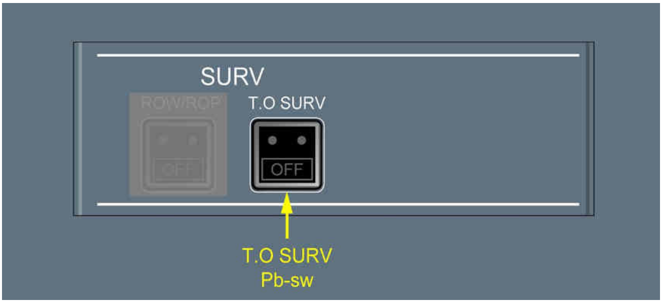


SURV PANEL ON OVERHEAD PANEL

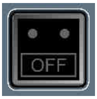
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB

Ident.: DSC-22-FMS-10-70-30-10-00024477.0001001 / 30 NOV 17

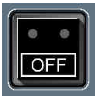
SURV Panel



Ident.: DSC-22-FMS-10-70-30-10-00024478.0003001 / 03 JAN 19



All the ECAM alerts that are related to the Takeoff Surveillance and Takeoff Monitoring ⊲ functions are available.



The following ECAM alerts are inhibited:
- NAV NOT ON FMS RUNWAY
- NAV ON TAXIWAY
- T.O RWY TOO SHORT
- T.O RWY TOO SHORT
- T.O ACCELERATION DEGRADED ⊲ .

MEMO

Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB

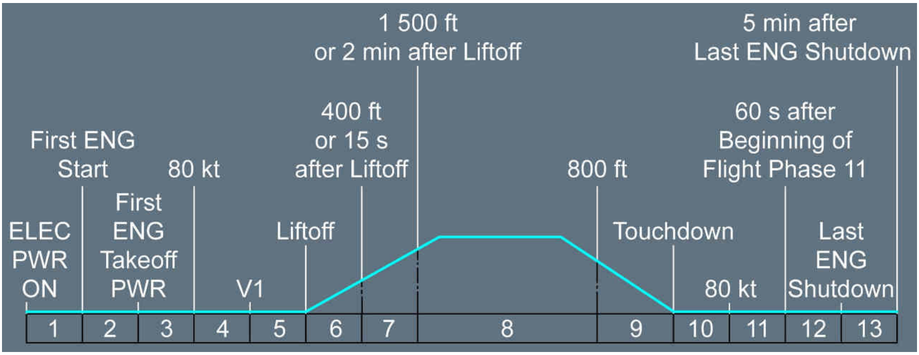
Ident.: DSC-22-FMS-10-70-30-20-00024630.0002001 / 03 JAN 19

L12

T.O SURV OFF	The following ECAM alerts are inhibited: - NAV NOT ON FMS RUNWAY - NAV ON TAXIWAY - T.O RWY TOO SHORT - T.O RWY TOO SHORT - T.O ACCELERATION DEGRADED ◁✻ . Appears on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

Intentionally left blank

TIME FUNCTION

Ident.: DSC-22-FMS-10-80-00009742.0001001 / 14 APR 14
Applicable to: ALL

The time function of the ADIRS provides the aircraft time reference (date and UTC time).

L2 For more information about the time function of the ADIRS, *Refer to DSC-34-NAV-20-10-70 Time Function*.

L1 In addition, the time function of the FMS:
- Computes the block time and the flight time
- Enables the flight crew to define time markers
- Computes airport local times.

FLIGHT TIME AND BLOCK TIME

The FMS computes the block time and the flight time, based on the start and stop times.

Usually, the block time is the elapsed time between the start and stop times that are defined as follows:
- The start time is the time at which the aircraft leaves the gate at the departure airport
- The stop time is the time at which the aircraft reaches the gate at the destination airport.

Usually, the flight time is the elapsed time between the start and stop times that are defined as follows:
- The start time is the time at which the aircraft takes off
- The stop time is the time at which the aircraft lands.

The Operator defines the start and stop times.

L2 The Operator defines the start and stop times via the Out-Off-On-In (OOOI) function of the COMPANY COM application. For more information about the COMPANY COM application, *Refer to DSC-46-OIS-10-40 COMPANY COM*.

L1 On the POSITION/TIME page, the flight crew can manually modify the start and stop times that the FMS uses to compute the block time and the flight time.
The flight crew can display the block time or the flight time in the permanent data, via the POSITION/TIME page.

TIME MARKERS

A time marker is a time reminder.
The flight crew can define up to three time markers.

The flight crew defines the time markers via the POSITION/TIME page. To define a time marker, the flight crew:
- Enters the UTC time that defines the time marker, or
- Enters the remaining time between the current UTC time and the UTC time that defines the time marker.

The upper part of the ND displays the UTC pseudo waypoint. The UTC pseudo waypoint is the position at which the aircraft will be at the UTC time that defines the time marker.
The flight crew selects the AURAL ALERT option on the POSITION/TIME page, if they want the "Time Marker" audio indicator to sound.
The "Time Marker" audio indicator sounds, when the remaining time between the current UTC time and the UTC time that defines the time marker is equal to 30 s.

Time Marker (Sound and Synthetic Voice)
On the POSITION/TIME page, the flight crew can enter text in order to identify the time marker. This text is not mandatory for definition of the time marker, and is displayed on the POSITION/TIME page only.
When the current UTC time is equal to the UTC time that defines the time marker, the FMS message area displays the TIME MARKER REACHED message.

AIRPORT LOCAL TIMES

On the POSITION/TIME page, the flight crew can display the local time at two different airports.
One of these two airports is automatically the destination airport.
The FMS computes the local time as follows: Local time = UTC time + Time difference.
The flight crew manually enters the time difference.
Example: The UTC time is 13:00. The flight crew enters the time difference in the UTC DIFF entry fields as follows: +8 in the UTC DIFF H entry field, and 00 in the UTC DIFF MN entry field. As a result, the local time is 21:00.

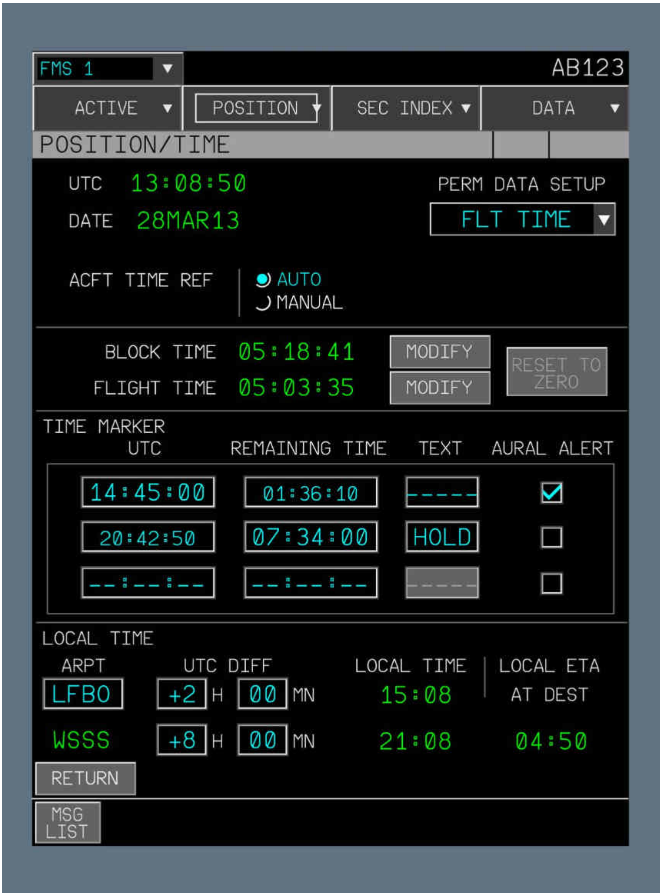
CONTROLS AND INDICATORS

Ident.: DSC-22-FMS-10-80-00016529.0001001 / 14 APR 14
Applicable to: ALL

ON THE MFD

The flight crew can manage all of the time information via the POSITION/TIME page.

POSITION/TIME Page


FMS 1 ▼
AB123
ACTIVE ▼
POSITION ▼
SEC INDEX ▼
DATA ▼
POSITION/TIME
MODIFY
MODIFY
RESET TO ZERO
RETURN
MSG LIST

UTC 13:08:50
DATE 28MAR13
PERM DATA SETUP FLT TIME ▼
ACFT TIME REF ● AUTO ○ MANUAL
BLOCK TIME 05:18:41
FLIGHT TIME 05:03:35

TIME MARKER

UTC	REMAINING TIME	TEXT	AURAL ALERT
14:45:00	01:36:10	-----	☑
20:42:50	07:34:00	HOLD	☐
--:--:--	--:--:--	-----	☐

LOCAL TIME

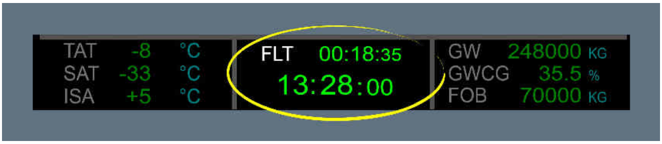
ARPT	UTC DIFF	LOCAL TIME	LOCAL ETA AT DEST
LFBO	+2 H 00 MN	15:08	
WSSS	+8 H 00 MN	21:08	04:50

L2 For more information about the POSITION/TIME page, *Refer to DSC-22-FMS-20-20-20 POSITION/TIME Page*.

L1 ON THE PERMANENT DATA

The permanent data displays the UTC time.
In addition, the permanent data can display optional time data. The optional time data is either the date, the flight time, or the block time. On the POSITION/TIME page, the flight crew selects the optional time data that they want to display on the permanent data.

Permanent Data


TAT -8 °C
SAT -33 °C
ISA +5 °C
FLT 00:18:35
13:28:00
GW 248000 KG
GWCG 35.5 %
FOB 70000 KG

L2 For more information about the permanent data, *Refer to DSC-31-CDS-60-10-80 Permanent Data*.

ASSOCIATED MESSAGES

Ident.: DSC-22-FMS-10-80-00016530.0001001 / 14 APR 14
Applicable to: ALL

On the MFD, the FMS message area displays the following messages:
- CHECK TIME REF (*Refer to message*)
- TIME MARKER REACHED (*Refer to message*).

PRINT FUNCTION

Ident.: DSC-22-FMS-10-90-00004500.0001001 / 01 SEP 16
Applicable to: ALL

The print function of the FMS enables the flight crew to print the following data and reports:
- The flight plan data
- The flight plan reports
- The data received via datalink.

These data and reports are printed:
- Manually, at the request of the flight crew , or
- Automatically, in the case of specific events.

L2 The print function also enables the flight crew to print FMS database reports.

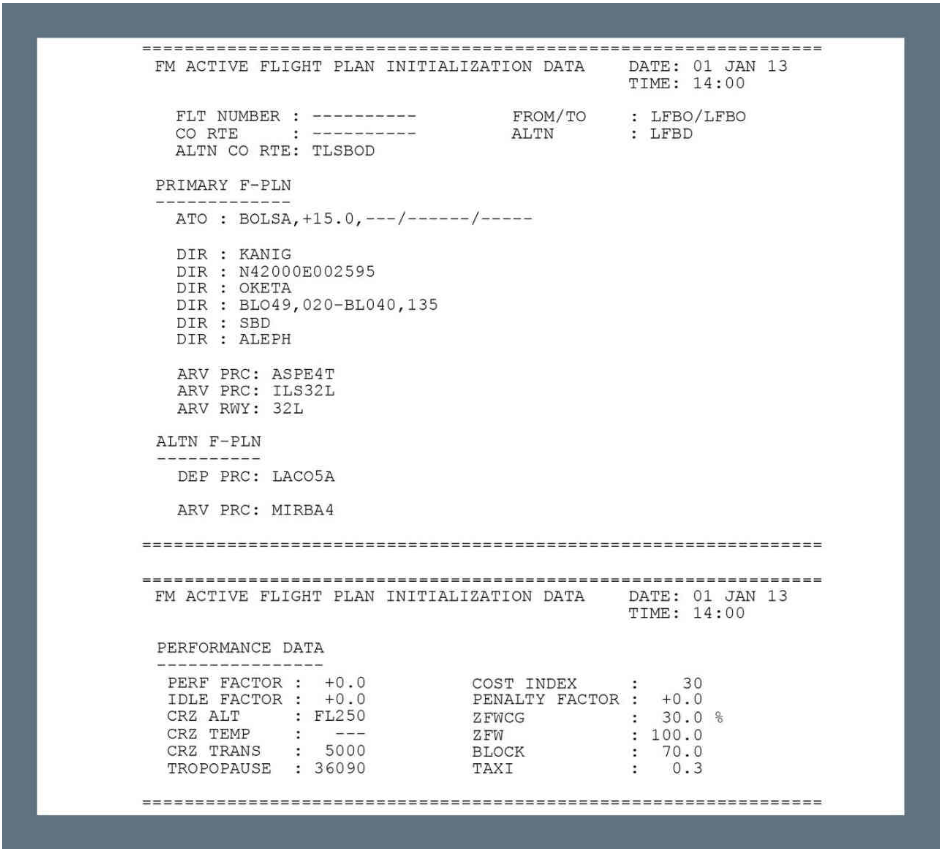
Note: *In the printed data:*
- *The destination flight plan is referred to as the PRIMARY F-PLN*
- *The alternate flight plan is referred to as the ALTN F-PLN.*

L1 FLIGHT PLAN DATA

The flight plan data includes:

- The initialization data of the flight plan

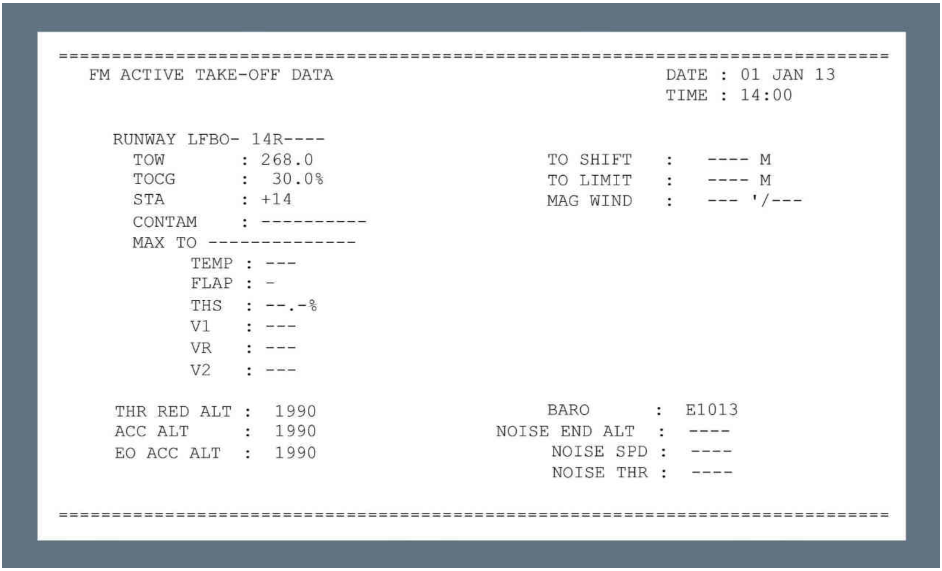
Initialization Data of the Flight Plan



```
=================================================================
 FM ACTIVE FLIGHT PLAN INITIALIZATION DATA    DATE: 01 JAN 13
                                              TIME: 14:00

   FLT NUMBER : ----------          FROM/TO    : LFBO/LFBO
   CO RTE     : ----------          ALTN       : LFBD
   ALTN CO RTE: TLSBOD

 PRIMARY F-PLN
 -------------
   ATO : BOLSA,+15.0,---/------/-----

   DIR : KANIG
   DIR : N42000E002595
   DIR : OKETA
   DIR : BL049,020-BL040,135
   DIR : SBD
   DIR : ALEPH

   ARV PRC: ASPE4T
   ARV PRC: ILS32L
   ARV RWY: 32L

 ALTN F-PLN
 ----------
   DEP PRC: LACO5A

   ARV PRC: MIRBA4

=================================================================

=================================================================
 FM ACTIVE FLIGHT PLAN INITIALIZATION DATA    DATE: 01 JAN 13
                                              TIME: 14:00

 PERFORMANCE DATA
 ----------------
  PERF FACTOR :  +0.0         COST INDEX     :    30
  IDLE FACTOR :  +0.0         PENALTY FACTOR :  +0.0
  CRZ ALT     : FL250         ZFWCG          :  30.0 %
  CRZ TEMP    :   ---         ZFW            : 100.0
  CRZ TRANS   :  5000         BLOCK          :  70.0
  TROPOPAUSE  : 36090         TAXI           :   0.3

=================================================================
```

- The takeoff data

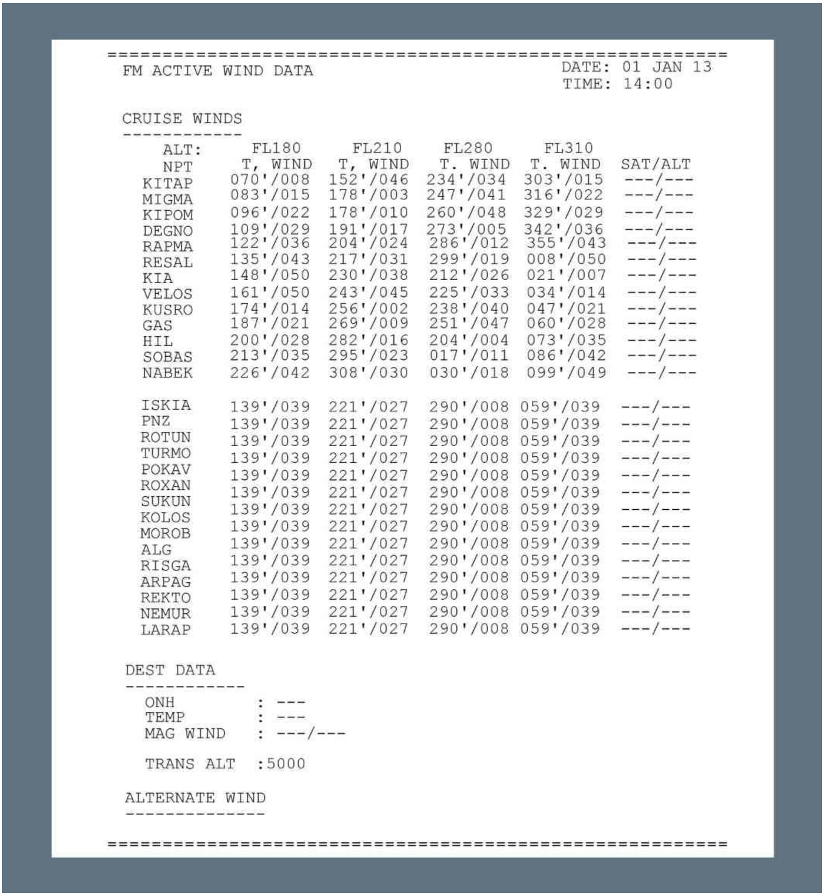
Takeoff Data



```
==============================================================================
   FM ACTIVE TAKE-OFF DATA                                   DATE : 01 JAN 13
                                                             TIME : 14:00

     RUNWAY LFBO- 14R----
       TOW        : 268.0                     TO SHIFT    :    ---- M
       TOCG       :  30.0%                    TO LIMIT    :    ---- M
       STA        : +14                       MAG WIND    :    --- '/---
       CONTAM     : ----------
       MAX TO --------------
            TEMP  : ---
            FLAP  : -
            THS   : --.-%
            V1    : ---
            VR    : ---
            V2    : ---

     THR RED ALT :  1990                      BARO        :  E1013
     ACC ALT     :  1990                 NOISE END ALT    :  ----
     EO ACC ALT  :  1990                      NOISE SPD :  ----
                                              NOISE THR :  ----

==============================================================================
```

- The wind data.

Wind Data



```
===============================================================
 FM ACTIVE WIND DATA                               DATE: 01 JAN 13
                                                   TIME: 14:00

 CRUISE WINDS
 ------------
     ALT:      FL180      FL210      FL280      FL310
     NPT      T, WIND    T, WIND    T. WIND    T. WIND   SAT/ALT
   KITAP     070'/008   152'/046   234'/034   303'/015   ---/---
   MIGMA     083'/015   178'/003   247'/041   316'/022   ---/---
   KIPOM     096'/022   178'/010   260'/048   329'/029   ---/---
   DEGNO     109'/029   191'/017   273'/005   342'/036   ---/---
   RAPMA     122'/036   204'/024   286'/012   355'/043   ---/---
   RESAL     135'/043   217'/031   299'/019   008'/050   ---/---
   KIA       148'/050   230'/038   212'/026   021'/007   ---/---
   VELOS     161'/050   243'/045   225'/033   034'/014   ---/---
   KUSRO     174'/014   256'/002   238'/040   047'/021   ---/---
   GAS       187'/021   269'/009   251'/047   060'/028   ---/---
   HIL       200'/028   282'/016   204'/004   073'/035   ---/---
   SOBAS     213'/035   295'/023   017'/011   086'/042   ---/---
   NABEK     226'/042   308'/030   030'/018   099'/049   ---/---

   ISKIA     139'/039   221'/027   290'/008  059'/039   ---/---
   PNZ       139'/039   221'/027   290'/008  059'/039   ---/---
   ROTUN     139'/039   221'/027   290'/008  059'/039   ---/---
   TURMO     139'/039   221'/027   290'/008  059'/039   ---/---
   POKAV     139'/039   221'/027   290'/008  059'/039   ---/---
   ROXAN     139'/039   221'/027   290'/008  059'/039   ---/---
   SUKUN     139'/039   221'/027   290'/008  059'/039   ---/---
   KOLOS     139'/039   221'/027   290'/008  059'/039   ---/---
   MOROB     139'/039   221'/027   290'/008  059'/039   ---/---
   ALG       139'/039   221'/027   290'/008  059'/039   ---/---
   RISGA     139'/039   221'/027   290'/008  059'/039   ---/---
   ARPAG     139'/039   221'/027   290'/008  059'/039   ---/---
   REKTO     139'/039   221'/027   290'/008  059'/039   ---/---
   NEMUR     139'/039   221'/027   290'/008  059'/039   ---/---
   LARAP     139'/039   221'/027   290'/008  059'/039   ---/---

 DEST DATA
 ------------
   ONH          : ---
   TEMP         : ---
   MAG WIND     : ---/---

   TRANS ALT    :5000

 ALTERNATE WIND
 --------------

===============================================================
```

The flight crew can manually print the flight plan data via the DATA/PRINTER page.
The flight crew can print the flight plan data for the active flight plan only.

FLIGHT PLAN REPORTS

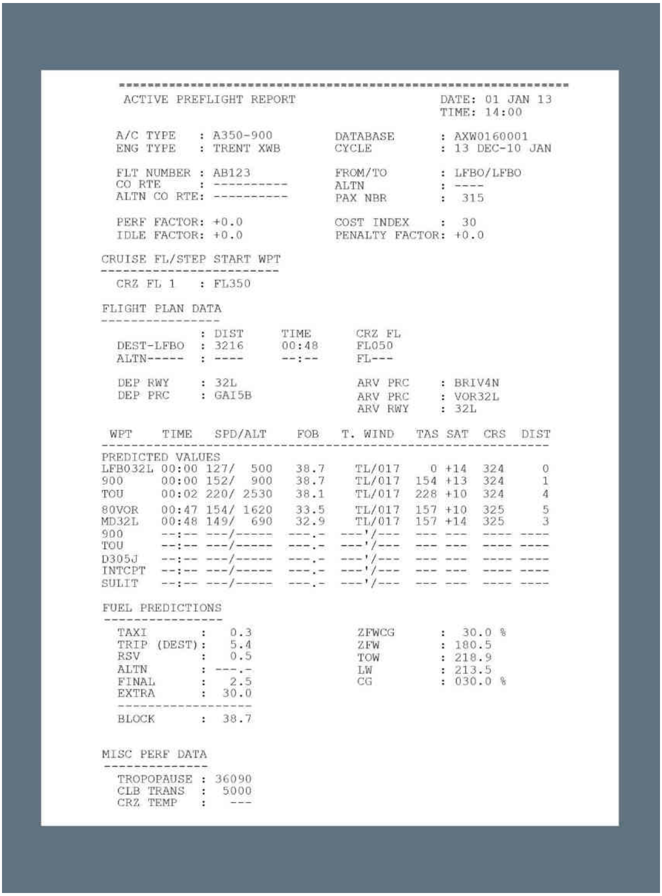
The flight crew can print flight plan reports for:
- The active flight plan
- The secondary flight plans.

FLIGHT PLAN REPORTS FOR THE ACTIVE FLIGHT PLAN

The flight plan reports for the active flight plan include:

- The preflight report

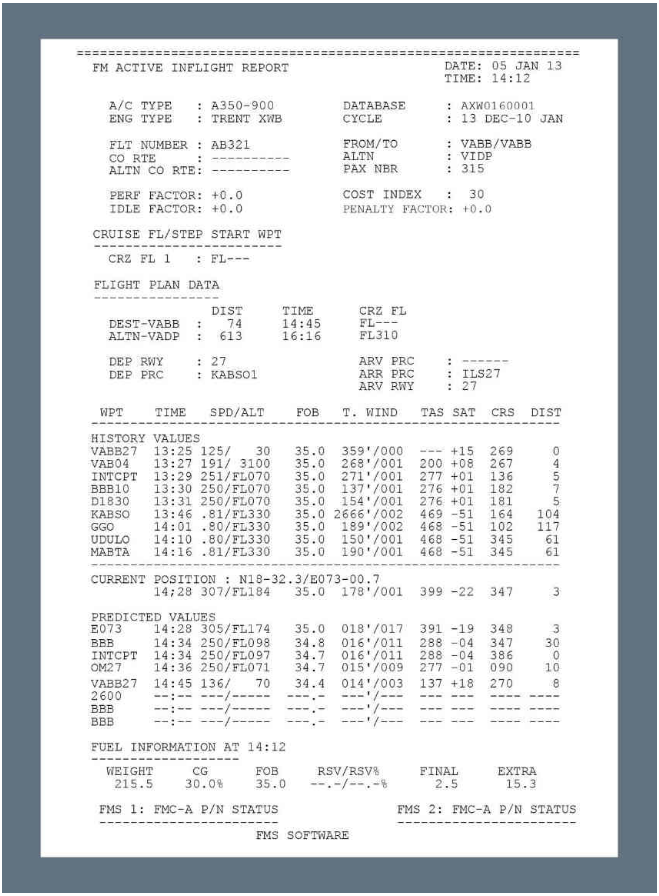
Preflight Report for the Active Flight Plan



```
  =============================================================
   ACTIVE PREFLIGHT REPORT                   DATE: 01 JAN 13
                                             TIME: 14:00

  A/C TYPE   : A350-900        DATABASE      : AXW0160001
  ENG TYPE   : TRENT XWB       CYCLE         : 13 DEC-10 JAN

  FLT NUMBER : AB123           FROM/TO       : LFBO/LFBO
  CO RTE     : ----------      ALTN          : ----
  ALTN CO RTE: ----------      PAX NBR       :  315

  PERF FACTOR: +0.0            COST INDEX    :  30
  IDLE FACTOR: +0.0            PENALTY FACTOR: +0.0

CRUISE FL/STEP START WPT
------------------------
  CRZ FL 1   : FL350

FLIGHT PLAN DATA
----------------
             : DIST     TIME      CRZ FL
  DEST-LFBO  : 3216     00:48     FL050
  ALTN-----  : ----     --:--     FL---

  DEP RWY    : 32L                ARV PRC    : BRIV4N
  DEP PRC    : GAI5B              ARV PRC    : VOR32L
                                  ARV RWY    : 32L

 WPT    TIME   SPD/ALT    FOB   T. WIND   TAS SAT  CRS   DIST
------------------------------------------------------------
PREDICTED VALUES
LFBO32L 00:00 127/  500   38.7    TL/017    0 +14  324      0
900     00:00 152/  900   38.7    TL/017  154 +13  324      1
TOU     00:02 220/ 2530   38.1    TL/017  228 +10  324      4
80VOR   00:47 154/ 1620   33.5    TL/017  157 +10  325      5
MD32L   00:48 149/  690   32.9    TL/017  157 +14  325      3
900     --:-- ---/-----  ---.-  ---'/---  --- ---  ---- ----
TOU     --:-- ---/-----  ---.-  ---'/---  --- ---  ---- ----
D305J   --:-- ---/-----  ---.-  ---'/---  --- ---  ---- ----
INTCPT  --:-- ---/-----  ---.-  ---'/---  --- ---  ---- ----
SULIT   --:-- ---/-----  ---.-  ---'/---  --- ---  ---- ----

FUEL PREDICTIONS
----------------
  TAXI       :    0.3             ZFWCG      :  30.0 %
  TRIP (DEST):    5.4             ZFW        : 180.5
  RSV        :    0.5             TOW        : 218.9
  ALTN       :  ---.-             LW         : 213.5
  FINAL      :    2.5             CG         : 030.0 %
  EXTRA      :   30.0
  -------------------
  BLOCK      :   38.7


MISC PERF DATA
--------------
  TROPOPAUSE :  36090
  CLB TRANS  :   5000
  CRZ TEMP   :    ---
```

- The in-flight report

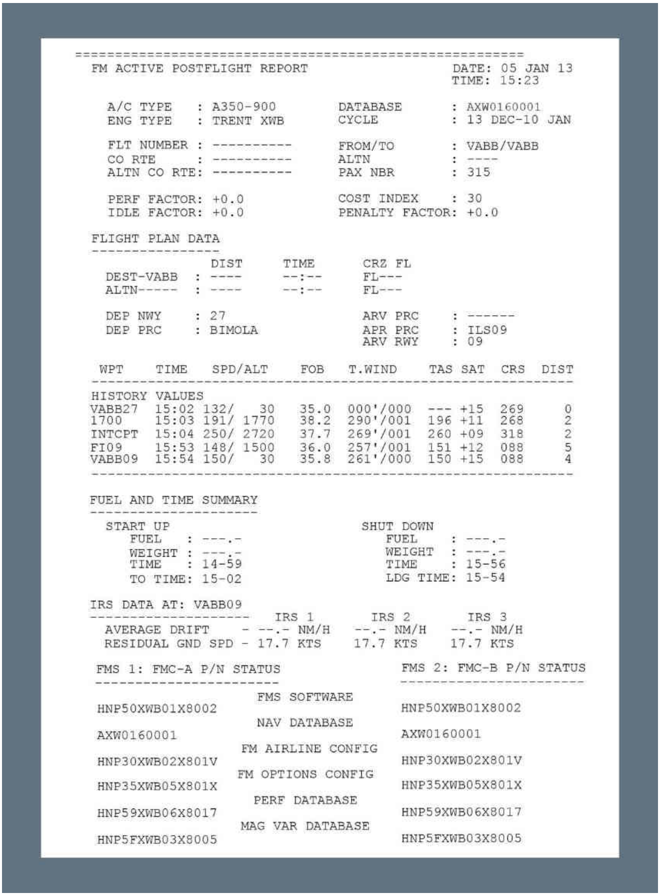
In-Flight Report for the Active Flight Plan



```
=================================================================
 FM ACTIVE INFLIGHT REPORT                         DATE: 05 JAN 13
                                                   TIME: 14:12

   A/C TYPE    : A350-900          DATABASE      : AXW0160001
   ENG TYPE    : TRENT XWB         CYCLE         : 13 DEC-10 JAN

   FLT NUMBER : AB321              FROM/TO       : VABB/VABB
   CO RTE     : ----------         ALTN          : VIDP
   ALTN CO RTE: ----------         PAX NBR       : 315

   PERF FACTOR: +0.0               COST INDEX    :  30
   IDLE FACTOR: +0.0               PENALTY FACTOR: +0.0

 CRUISE FL/STEP START WPT
 ------------------------
   CRZ FL 1    : FL---

 FLIGHT PLAN DATA
 ----------------
               DIST      TIME       CRZ FL
   DEST-VABB  :  74      14:45      FL---
   ALTN-VADP  : 613      16:16      FL310

   DEP RWY    : 27                  ARV PRC     : ------
   DEP PRC    : KABSO1              ARR PRC     : ILS27
                                    ARV RWY     : 27

  WPT     TIME   SPD/ALT    FOB   T. WIND   TAS SAT  CRS  DIST
 --------------------------------------------------------------
 HISTORY VALUES
 VABB27  13:25 125/   30   35.0  359'/000  --- +15  269     0
 VAB04   13:27 191/ 3100   35.0  268'/001  200 +08  267     4
 INTCPT  13:29 251/FL070   35.0  271'/001  277 +01  136     5
 BBB10   13:30 250/FL070   35.0  137'/001  276 +01  182     7
 D1830   13:31 250/FL070   35.0  154'/001  276 +01  181     5
 KABSO   13:46 .81/FL330   35.0 2666'/002  469 -51  164   104
 GGO     14:01 .80/FL330   35.0  189'/002  468 -51  102   117
 UDULO   14:10 .80/FL330   35.0  150'/001  468 -51  345    61
 MABTA   14:16 .81/FL330   35.0  190'/001  468 -51  345    61
 --------------------------------------------------------------
 CURRENT POSITION : N18-32.3/E073-00.7
         14;28 307/FL184   35.0  178'/001  399 -22  347     3

 PREDICTED VALUES
 E073    14:28 305/FL174   35.0  018'/017  391 -19  348     3
 BBB     14:34 250/FL098   34.8  016'/011  288 -04  347    30
 INTCPT  14:34 250/FL097   34.7  016'/011  288 -04  386     0
 OM27    14:36 250/FL071   34.7  015'/009  277 -01  090    10
 VABB27  14:45 136/   70   34.4  014'/003  137 +18  270     8
 2600    --:-- ---/-----  ---.-  ---'/---  --- ---  ---- ----
 BBB     --:-- ---/-----  ---.-  ---'/---  --- ---  ---- ----
 BBB     --:-- ---/-----  ---.-  ---'/---  --- ---  ---- ----

 FUEL INFORMATION AT 14:12
 -------------------
   WEIGHT     CG       FOB     RSV/RSV%      FINAL      EXTRA
    215.5    30.0%    35.0   --.-/--.-%       2.5       15.3

  FMS 1: FMC-A P/N STATUS              FMS 2: FMC-A P/N STATUS
  -----------------------              -----------------------
                     FMS SOFTWARE
```

- The postflight report.

Postflight Report for the Active Flight Plan



```
========================================================
  FM ACTIVE POSTFLIGHT REPORT                    DATE: 05 JAN 13
                                                 TIME: 15:23

    A/C TYPE   : A350-900        DATABASE      : AXW0160001
    ENG TYPE   : TRENT XWB       CYCLE         : 13 DEC-10 JAN

    FLT NUMBER : ----------      FROM/TO       : VABB/VABB
    CO RTE     : ----------      ALTN          : ----
    ALTN CO RTE: ----------      PAX NBR       : 315

    PERF FACTOR: +0.0            COST INDEX    : 30
    IDLE FACTOR: +0.0            PENALTY FACTOR: +0.0

  FLIGHT PLAN DATA
  ----------------
                 DIST     TIME      CRZ FL
    DEST-VABB  : ----     --:--     FL---
    ALTN-----  : ----     --:--     FL---

    DEP NWY    : 27                 ARV PRC    : ------
    DEP PRC    : BIMOLA             APR PRC    : ILS09
                                    ARV RWY    : 09

   WPT    TIME   SPD/ALT    FOB   T.WIND    TAS SAT  CRS  DIST
  ------------------------------------------------------------
  HISTORY VALUES
  VABB27  15:02 132/   30   35.0  000'/000  --- +15  269     0
  1700    15:03 191/ 1770   38.2  290'/001  196 +11  268     2
  INTCPT  15:04 250/ 2720   37.7  269'/001  260 +09  318     2
  FI09    15:53 148/ 1500   36.0  257'/001  151 +12  088     5
  VABB09  15:54 150/   30   35.8  261'/000  150 +15  088     4
  ------------------------------------------------------------

  FUEL AND TIME SUMMARY
  ---------------------
    START UP                         SHUT DOWN
       FUEL   : ---.-                   FUEL     : ---.-
       WEIGHT : ---.-                   WEIGHT   : ---.-
       TIME   : 14-59                   TIME     : 15-56
       TO TIME: 15-02                   LDG TIME: 15-54

  IRS DATA AT: VABB09
  --------------------    IRS 1       IRS 2       IRS 3
    AVERAGE DRIFT     - --.- NM/H   --.- NM/H   --.- NM/H
    RESIDUAL GND SPD - 17.7 KTS    17.7 KTS    17.7 KTS

   FMS 1: FMC-A P/N STATUS                FMS 2: FMC-B P/N STATUS
   -----------------------                -----------------------
                      FMS SOFTWARE
   HNP50XWB01X8002                        HNP50XWB01X8002
                      NAV DATABASE
   AXW0160001                             AXW0160001
                    FM AIRLINE CONFIG
   HNP30XWB02X801V                        HNP30XWB02X801V
                    FM OPTIONS CONFIG
   HNP35XWB05X801X                        HNP35XWB05X801X
                      PERF DATABASE
   HNP59XWB06X8017                        HNP59XWB06X8017
                    MAG VAR DATABASE
   HNP5FXWB03X8005                        HNP5FXWB03X8005
```

Via the DATA/PRINTER page, the flight crew can manually print the flight plan reports for the active flight plan, or select the AUTO PRINT option to automatically print the reports. When the flight crew selects the AUTO PRINT option, the reports are automatically printed as follows:

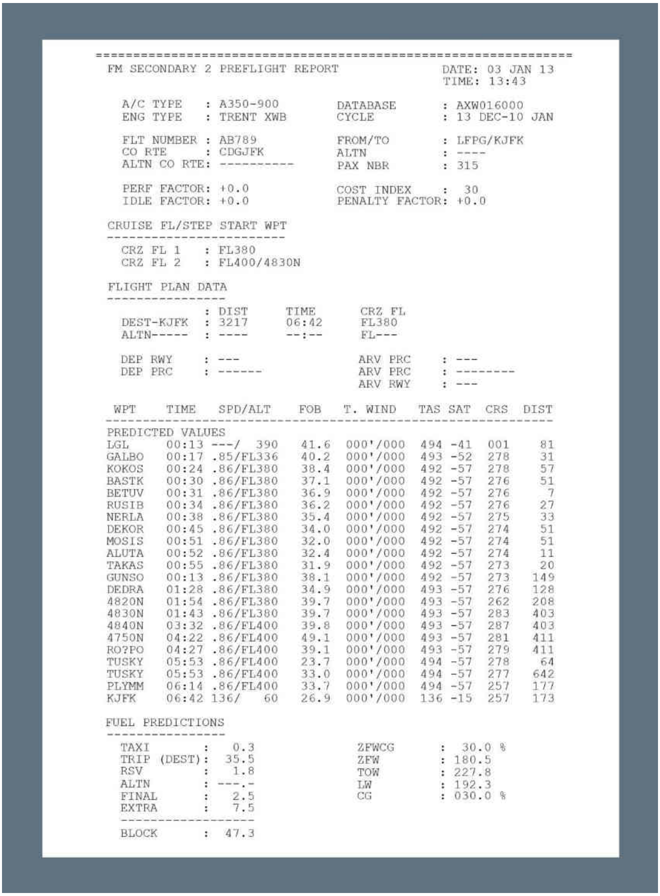
- At engine start, the preflight report is automatically printed
- When the T.O flight phase becomes active, the in-flight report is automatically printed
- At engine shutdown, the postflight report is automatically printed.

FLIGHT PLAN REPORTS FOR THE SECONDARY FLIGHT PLANS

The flight plan reports for the secondary flight plans include:

- The preflight report

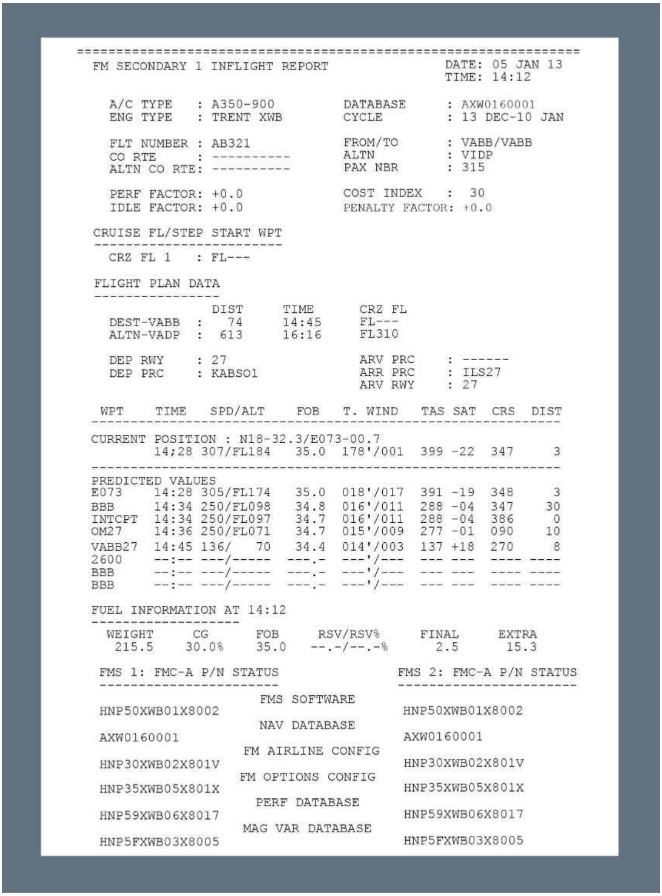
Preflight Report for a Secondary Flight Plan



```
=================================================================
 FM SECONDARY 2 PREFLIGHT REPORT                    DATE: 03 JAN 13
                                                    TIME: 13:43

   A/C TYPE    : A350-900          DATABASE         : AXW016000
   ENG TYPE    : TRENT XWB         CYCLE            : 13 DEC-10 JAN

   FLT NUMBER  : AB789             FROM/TO          : LFPG/KJFK
   CO RTE      : CDGJFK            ALTN             : ----
   ALTN CO RTE : ----------        PAX NBR          : 315

   PERF FACTOR : +0.0              COST INDEX       :  30
   IDLE FACTOR : +0.0              PENALTY FACTOR   : +0.0

 CRUISE FL/STEP START WPT
 ------------------------
   CRZ FL 1    : FL380
   CRZ FL 2    : FL400/4830N

 FLIGHT PLAN DATA
 ----------------
               : DIST     TIME      CRZ FL
   DEST-KJFK   : 3217     06:42     FL380
   ALTN-----   : ----     --:--     FL---

   DEP RWY     : ---                ARV PRC     : ---
   DEP PRC     : ------             ARV PRC     : --------
                                    ARV RWY     : ---

  WPT     TIME   SPD/ALT    FOB   T. WIND   TAS SAT  CRS  DIST
 --------------------------------------------------------------
 PREDICTED VALUES
 LGL     00:13 ---/  390   41.6  000'/000  494 -41  001    81
 GALBO   00:17 .85/FL336   40.2  000'/000  493 -52  278    31
 KOKOS   00:24 .86/FL380   38.4  000'/000  492 -57  278    57
 BASTK   00:30 .86/FL380   37.1  000'/000  492 -57  276    51
 BETUV   00:31 .86/FL380   36.9  000'/000  492 -57  276     7
 RUSIB   00:34 .86/FL380   36.2  000'/000  492 -57  276    27
 NERLA   00:38 .86/FL380   35.4  000'/000  492 -57  275    33
 DEKOR   00:45 .86/FL380   34.0  000'/000  492 -57  274    51
 MOSIS   00:51 .86/FL380   32.0  000'/000  492 -57  274    51
 ALUTA   00:52 .86/FL380   32.4  000'/000  492 -57  274    11
 TAKAS   00:55 .86/FL380   31.9  000'/000  492 -57  273    20
 GUNSO   00:13 .86/FL380   38.1  000'/000  492 -57  273   149
 DEDRA   01:28 .86/FL380   34.9  000'/000  493 -57  276   128
 4820N   01:54 .86/FL380   39.7  000'/000  493 -57  262   208
 4830N   01:43 .86/FL380   39.7  000'/000  493 -57  283   403
 4840N   03:32 .86/FL400   39.8  000'/000  493 -57  287   403
 4750N   04:22 .86/FL400   49.1  000'/000  493 -57  281   411
 RO?PO   04:27 .86/FL400   39.1  000'/000  493 -57  279   411
 TUSKY   05:53 .86/FL400   23.7  000'/000  494 -57  278    64
 TUSKY   05:53 .86/FL400   33.0  000'/000  494 -57  277   642
 PLYMM   06:14 .86/FL400   33.7  000'/000  494 -57  257   177
 KJFK    06:42 136/   60   26.9  000'/000  136 -15  257   173

 FUEL PREDICTIONS
 ----------------
   TAXI        :   0.3              ZFWCG       :  30.0 %
   TRIP (DEST) :  35.5              ZFW         : 180.5
   RSV         :   1.8              TOW         : 227.8
   ALTN        : ---.-              LW          : 192.3
   FINAL       :   2.5              CG          : 030.0 %
   EXTRA       :   7.5
   -------------------
   BLOCK       :  47.3
```

- The in-flight report.

In-Flight Report for a Secondary Flight Plan



```
================================================================
  FM SECONDARY 1 INFLIGHT REPORT                DATE: 05 JAN 13
                                                TIME: 14:12

    A/C TYPE   : A350-900         DATABASE     : AXW0160001
    ENG TYPE   : TRENT XWB        CYCLE        : 13 DEC-10 JAN

    FLT NUMBER : AB321            FROM/TO      : VABB/VABB
    CO RTE     : -----------      ALTN         : VIDP
    ALTN CO RTE: -----------      PAX NBR      : 315

    PERF FACTOR: +0.0             COST INDEX   :  30
    IDLE FACTOR: +0.0             PENALTY FACTOR: +0.0

  CRUISE FL/STEP START WPT
  ------------------------
    CRZ FL 1   : FL---

  FLIGHT PLAN DATA
  ----------------
                 DIST     TIME      CRZ FL
    DEST-VABB  :   74     14:45     FL---
    ALTN-VADP  :  613     16:16     FL310

    DEP RWY    : 27                 ARV PRC      : ------
    DEP PRC    : KABSO1             ARR PRC      : ILS27
                                    ARV RWY      : 27

   WPT    TIME   SPD/ALT    FOB   T. WIND   TAS SAT  CRS  DIST
  -----------------------------------------------------------
  CURRENT POSITION : N18-32.3/E073-00.7
          14;28 307/FL184   35.0  178'/001  399 -22  347     3
  -----------------------------------------------------------
  PREDICTED VALUES
  E073    14:28 305/FL174   35.0  018'/017  391 -19  348     3
  BBB     14:34 250/FL098   34.8  016'/011  288 -04  347    30
  INTCPT  14:34 250/FL097   34.7  016'/011  288 -04  386     0
  OM27    14:36 250/FL071   34.7  015'/009  277 -01  090    10
  VABB27  14:45 136/   70   34.4  014'/003  137 +18  270     8
  2600    --:-- ---/-----  ---.-  ---'/---  --- ---  ---- ----
  BBB     --:-- ---/-----  ---.-  ---'/---  --- ---  ---- ----
  BBB     --:-- ---/-----  ---.-  ---'/---  --- ---  ---- ----

  FUEL INFORMATION AT 14:12
  -------------------
    WEIGHT     CG      FOB     RSV/RSV%      FINAL     EXTRA
     215.5    30.0%    35.0   --.-/--.-%      2.5       15.3

   FMS 1: FMC-A P/N STATUS                FMS 2: FMC-A P/N STATUS
   -----------------------                -----------------------
                      FMS SOFTWARE
   HNP50XWB01X8002                         HNP50XWB01X8002
                      NAV DATABASE
   AXW0160001                              AXW0160001
                    FM AIRLINE CONFIG
   HNP30XWB02X801V                         HNP30XWB02X801V
                    FM OPTIONS CONFIG
   HNP35XWB05X801X                         HNP35XWB05X801X
                     PERF DATABASE
   HNP59XWB06X8017                         HNP59XWB06X8017
                    MAG VAR DATABASE
   HNP5FXWB03X8005                         HNP5FXWB03X8005
```

L2 If the flight crew used a copy of the active flight plan to create the SEC 1(2)(3) flight plan, and if the active flight leg of the SEC 1(2)(3) flight plan is identical to the active flight leg of the active flight plan:

- A preflight report is available during the PREFLIGHT flight phase
- An in-flight report is available in flight, except during the DONE flight phase.

In all other cases, the SEC 1(2)(3) flight-plan report is a preflight report.

L1 The flight crew can manually print the flight plan reports for the secondary flight plans via the DATA/PRINTER page and the SEC INDEX page.

DATA RECEIVED VIA DATALINK

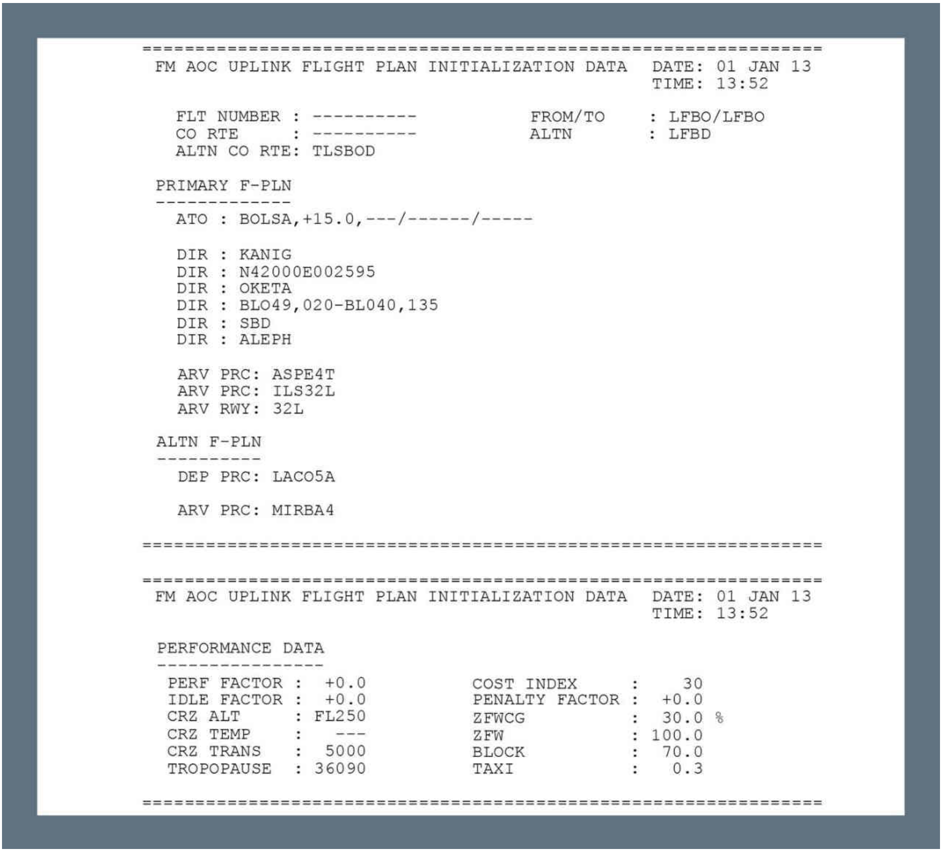
The data received via datalink includes:
- The data received via datalink with the company ground station
- The data received via datalink with the ATC center.

DATA RECEIVED VIA DATALINK WITH THE COMPANY GROUND STATION

The data received via datalink with the company ground station includes:

- The initialization data of the flight plan

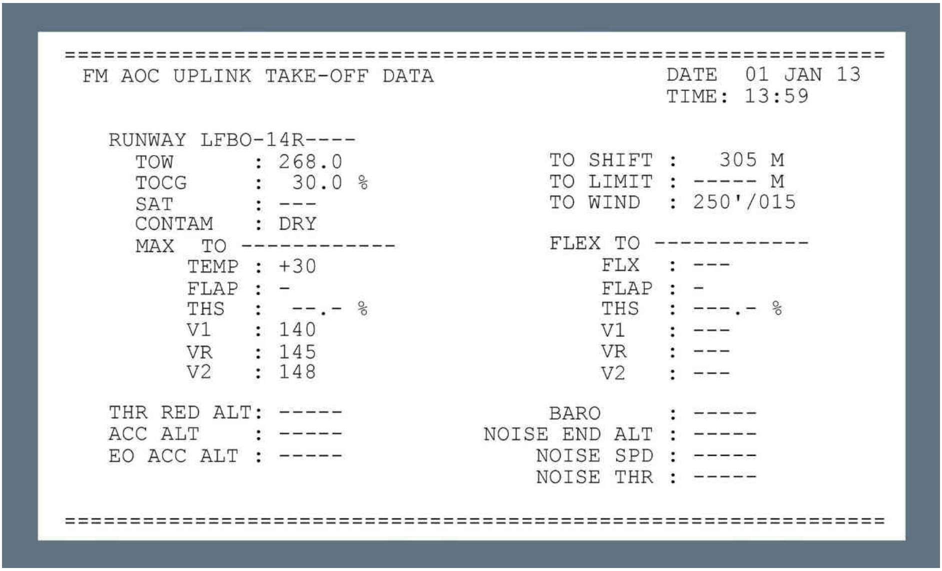
Initialization Data of the Flight Plan (Received via Datalink with Company Ground Station)



```
=================================================================
 FM AOC UPLINK FLIGHT PLAN INITIALIZATION DATA   DATE: 01 JAN 13
                                                 TIME: 13:52

   FLT NUMBER : ----------             FROM/TO     : LFBO/LFBO
   CO RTE     : ----------             ALTN        : LFBD
   ALTN CO RTE: TLSBOD

 PRIMARY F-PLN
 -------------
   ATO : BOLSA,+15.0,---/------/-----

   DIR : KANIG
   DIR : N42000E002595
   DIR : OKETA
   DIR : BLO49,020-BL040,135
   DIR : SBD
   DIR : ALEPH

   ARV PRC: ASPE4T
   ARV PRC: ILS32L
   ARV RWY: 32L

 ALTN F-PLN
 ----------
   DEP PRC: LACO5A

   ARV PRC: MIRBA4

=================================================================

=================================================================
 FM AOC UPLINK FLIGHT PLAN INITIALIZATION DATA   DATE: 01 JAN 13
                                                 TIME: 13:52

 PERFORMANCE DATA
 ----------------
  PERF FACTOR :  +0.0             COST INDEX     :    30
  IDLE FACTOR :  +0.0             PENALTY FACTOR :  +0.0
  CRZ ALT     : FL250             ZFWCG          :  30.0 %
  CRZ TEMP    :   ---             ZFW            : 100.0
  CRZ TRANS   :  5000             BLOCK          :  70.0
  TROPOPAUSE  : 36090             TAXI           :   0.3

=================================================================
```

- The takeoff data

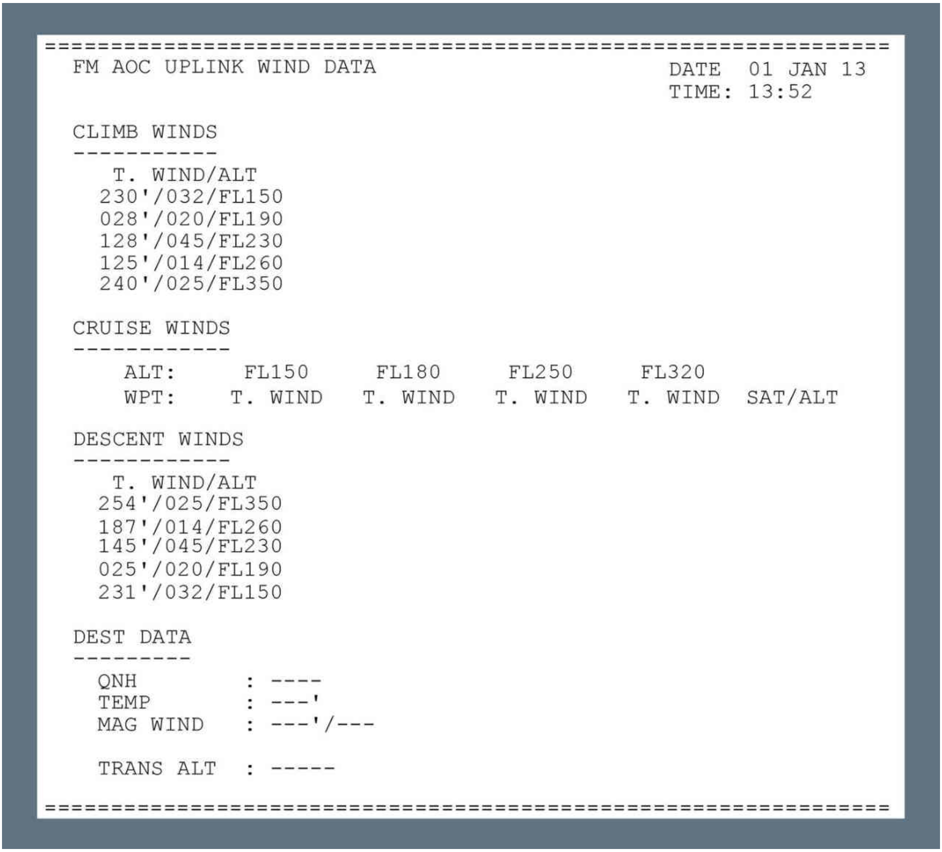
Takeoff Data (Received via Datalink with Company Ground Station)



```
===============================================================
 FM AOC UPLINK TAKE-OFF DATA                       DATE   01 JAN 13
                                                   TIME: 13:59

   RUNWAY LFBO-14R----
     TOW        : 268.0                     TO SHIFT :    305 M
     TOCG       :  30.0 %                   TO LIMIT : ----- M
     SAT        : ---                       TO WIND  : 250'/015
     CONTAM     : DRY
     MAX  TO ------------                   FLEX TO ------------
         TEMP : +30                             FLX  : ---
         FLAP : -                               FLAP : -
         THS  :  --.- %                         THS  : ---.- %
         V1   : 140                             V1   : ---
         VR   : 145                             VR   : ---
         V2   : 148                             V2   : ---

   THR RED ALT: -----                           BARO     : -----
   ACC ALT    : -----                      NOISE END ALT : -----
   EO ACC ALT : -----                          NOISE SPD : -----
                                               NOISE THR : -----

===============================================================
```

- The wind data.

Wind Data (Received via Datalink with Company Ground Station)



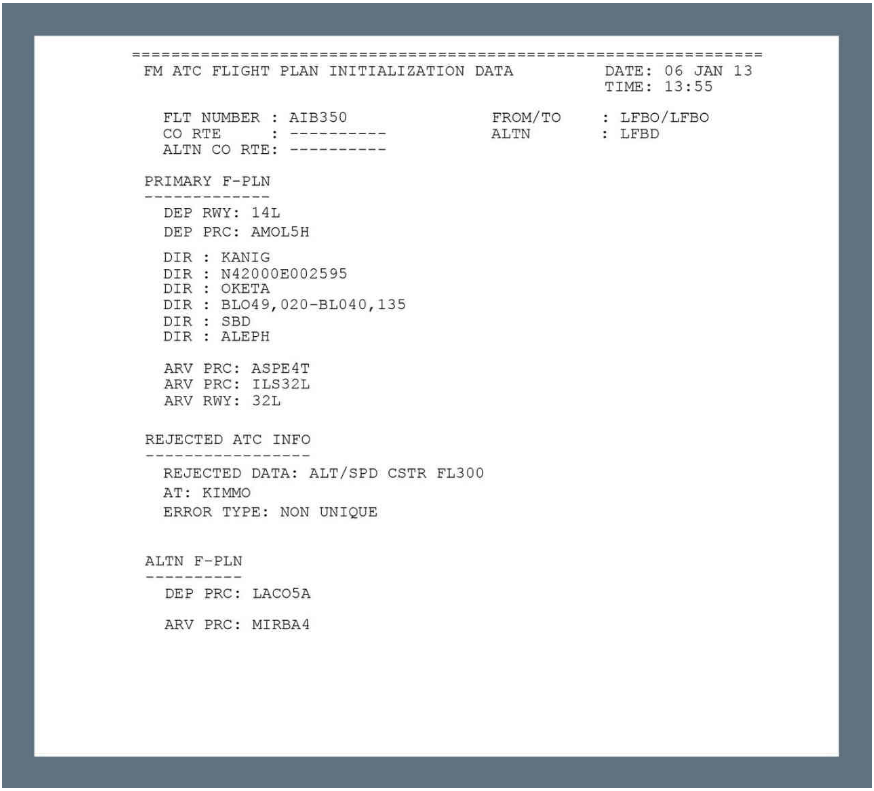
```
================================================================
  FM AOC UPLINK WIND DATA                             DATE  01 JAN 13
                                                      TIME: 13:52

  CLIMB WINDS
  -----------
     T. WIND/ALT
    230'/032/FL150
    028'/020/FL190
    128'/045/FL230
    125'/014/FL260
    240'/025/FL350

  CRUISE WINDS
  ------------
      ALT:      FL150     FL180     FL250     FL320
      WPT:     T. WIND   T. WIND   T. WIND   T. WIND   SAT/ALT

  DESCENT WINDS
  -------------
     T. WIND/ALT
    254'/025/FL350
    187'/014/FL260
    145'/045/FL230
    025'/020/FL190
    231'/032/FL150

  DEST DATA
  ---------
    QNH          : ----
    TEMP         : ---'
    MAG WIND     : ---'/---

    TRANS ALT    : -----

================================================================
```

On the DATA/PRINTER page, the flight crew can select the AUTO PRINT option to automatically print the received company data. When the flight crew selects the AUTO PRINT option, the company data is automatically printed, when the company data is received from the company ground station.

DATA RECEIVED VIA DATALINK WITH THE ATC CENTER

The data received via datalink with the ATC center is the initialization data of the flight plan.

Initialization Data of the Flight Plan (Received via Datalink with ATC Center)



```
=================================================================
 FM ATC FLIGHT PLAN INITIALIZATION DATA          DATE: 06 JAN 13
                                                 TIME: 13:55

   FLT NUMBER : AIB350                 FROM/TO     : LFBO/LFBO
   CO RTE     : ----------             ALTN        : LFBD
   ALTN CO RTE: ----------

 PRIMARY F-PLN
 -------------
   DEP RWY: 14L
   DEP PRC: AMOL5H

   DIR : KANIG
   DIR : N42000E002595
   DIR : OKETA
   DIR : BLO49,020-BL040,135
   DIR : SBD
   DIR : ALEPH

   ARV PRC: ASPE4T
   ARV PRC: ILS32L
   ARV RWY: 32L

 REJECTED ATC INFO
 -----------------
   REJECTED DATA: ALT/SPD CSTR FL300
   AT: KIMMO
   ERROR TYPE: NON UNIQUE


 ALTN F-PLN
 ----------
   DEP PRC: LACO5A

   ARV PRC: MIRBA4
```

The initialization data is automatically printed, when the initialization data is received from the ATC center.
In addition, if the initialization data received from the ATC center contains elements that the FMS rejects, the flight crew can use the REJECTED ATC INFO page to manually print the initialization data received from the ATC center.

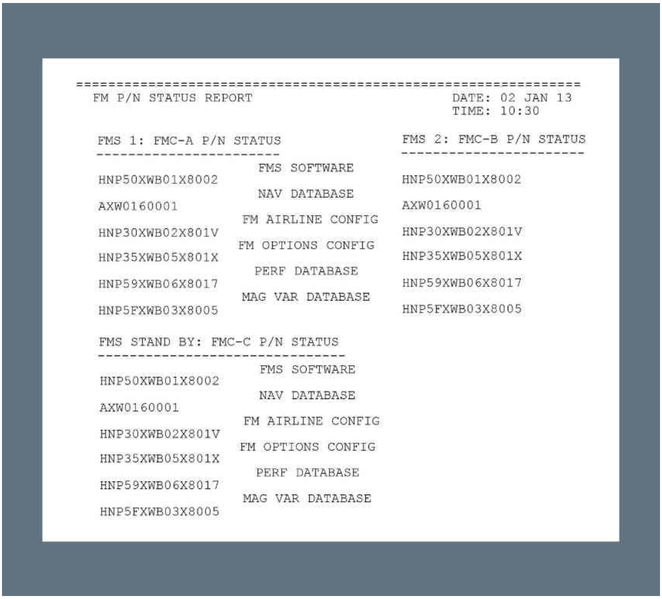
L2 FMS DATABASE REPORTS

The FMS database reports include:

- The FM P/N STATUS report

  The FM P/N STATUS report indicates the part numbers of:
  - The FMS software
  - The FMC databases
  - The configuration file (AMI file).

FM P/N STATUS Report

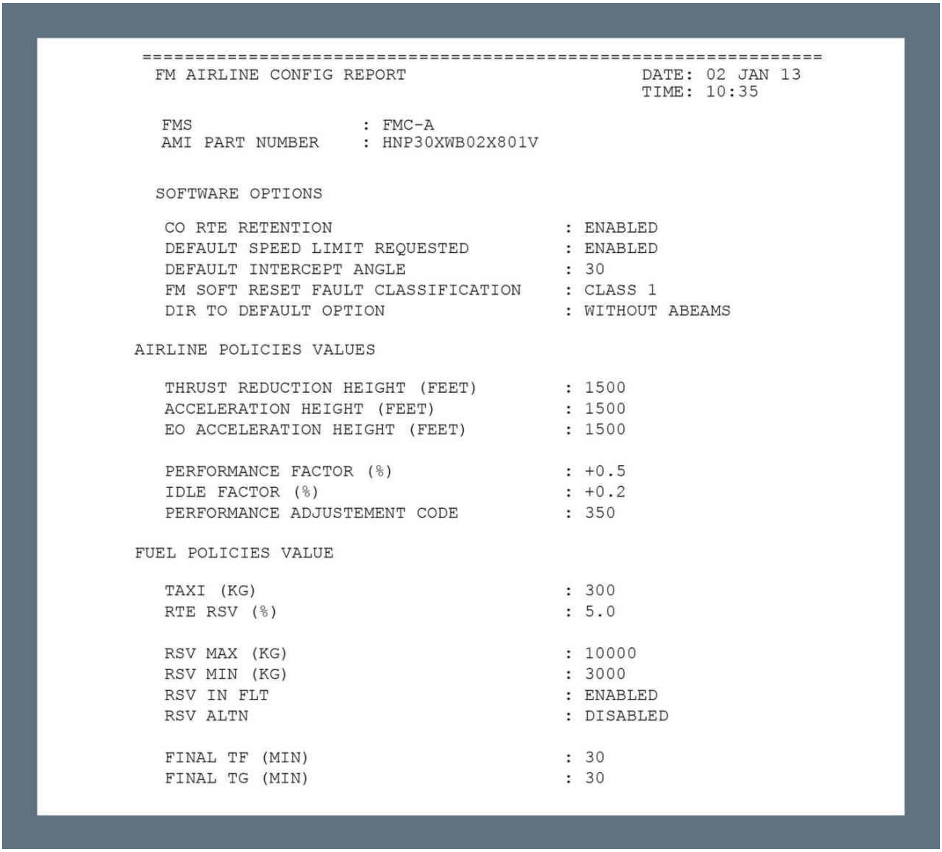


```
================================================================
 FM P/N STATUS REPORT                          DATE: 02 JAN 13
                                               TIME: 10:30

  FMS 1: FMC-A P/N STATUS                FMS 2: FMC-B P/N STATUS
 -----------------------                -----------------------
                      FMS SOFTWARE
  HNP50XWB01X8002                        HNP50XWB01X8002
                      NAV DATABASE
  AXW0160001                             AXW0160001
                    FM AIRLINE CONFIG
  HNP30XWB02X801V                        HNP30XWB02X801V
                   FM OPTIONS CONFIG
  HNP35XWB05X801X                        HNP35XWB05X801X
                     PERF DATABASE
  HNP59XWB06X8017                        HNP59XWB06X8017
                    MAG VAR DATABASE
  HNP5FXWB03X8005                        HNP5FXWB03X8005

  FMS STAND BY: FMC-C P/N STATUS
 --------------------------------
                      FMS SOFTWARE
  HNP50XWB01X8002
                      NAV DATABASE
  AXW0160001
                    FM AIRLINE CONFIG
  HNP30XWB02X801V
                   FM OPTIONS CONFIG
  HNP35XWB05X801X
                     PERF DATABASE
  HNP59XWB06X8017
                    MAG VAR DATABASE
  HNP5FXWB03X8005
```

- The FM AIRLINE CONFIG report

  The FM AIRLINE CONFIG report contains the AMI file.

FM AIRLINE CONFIG Report



```
================================================================
 FM AIRLINE CONFIG REPORT                       DATE: 02 JAN 13
                                                TIME: 10:35

  FMS                  : FMC-A
  AMI PART NUMBER      : HNP30XWB02X801V

 SOFTWARE OPTIONS

  CO RTE RETENTION                      : ENABLED
  DEFAULT SPEED LIMIT REQUESTED         : ENABLED
  DEFAULT INTERCEPT ANGLE               : 30
  FM SOFT RESET FAULT CLASSIFICATION    : CLASS 1
  DIR TO DEFAULT OPTION                 : WITHOUT ABEAMS

AIRLINE POLICIES VALUES

  THRUST REDUCTION HEIGHT (FEET)        : 1500
  ACCELERATION HEIGHT (FEET)            : 1500
  EO ACCELERATION HEIGHT (FEET)         : 1500

  PERFORMANCE FACTOR (%)                : +0.5
  IDLE FACTOR (%)                       : +0.2
  PERFORMANCE ADJUSTEMENT CODE          : 350

FUEL POLICIES VALUE

  TAXI (KG)                             : 300
  RTE RSV (%)                           : 5.0

  RSV MAX (KG)                          : 10000
  RSV MIN (KG)                          : 3000
  RSV IN FLT                            : ENABLED
  RSV ALTN                              : DISABLED

  FINAL TF (MIN)                        : 30
  FINAL TG (MIN)                        : 30
```

The flight crew can manually print the FMS database reports via the FMS P/N panel of the DATA/STATUS page.

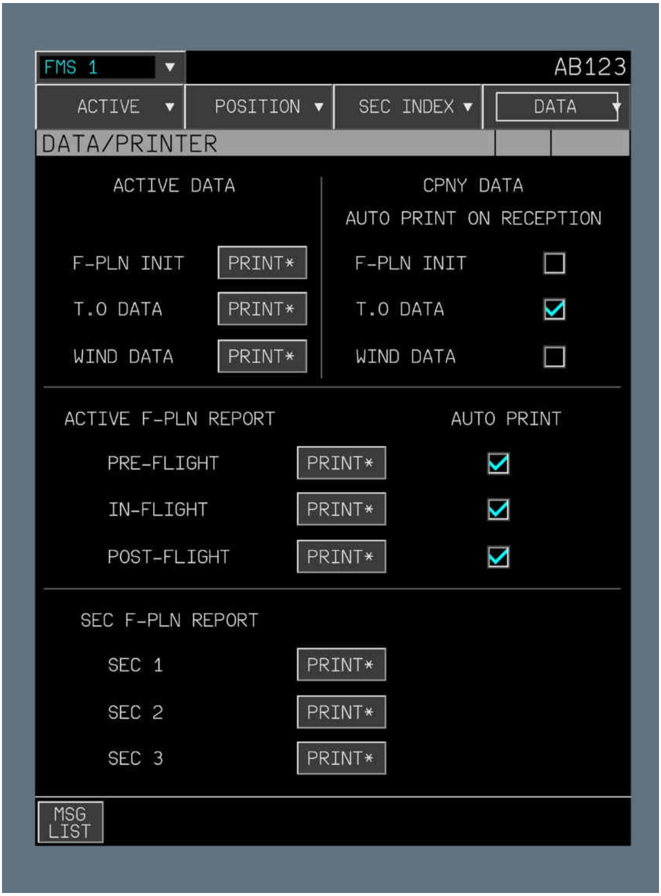
CONTROLS AND INDICATORS

Ident.: DSC-22-FMS-10-90-00014180.0001001 / 01 SEP 16
Applicable to: ALL

On the DATA/PRINTER page, the flight crew can:

- Click on the PRINT buttons to manually print:
  - The flight plan data for the active flight plan
  - The flight plan reports for the active and secondary flight plans
- Select the AUTO PRINT option to automatically print:
  - The data received via datalink with the company ground station
  - The flight plan reports for the active flight plan.

DATA/PRINTER Page



DATA/PRINTER

ACTIVE DATA
F-PLN INIT PRINT*
T.O DATA PRINT*
WIND DATA PRINT*

CPNY DATA
AUTO PRINT ON RECEPTION
F-PLN INIT ☐
T.O DATA ☑
WIND DATA ☐

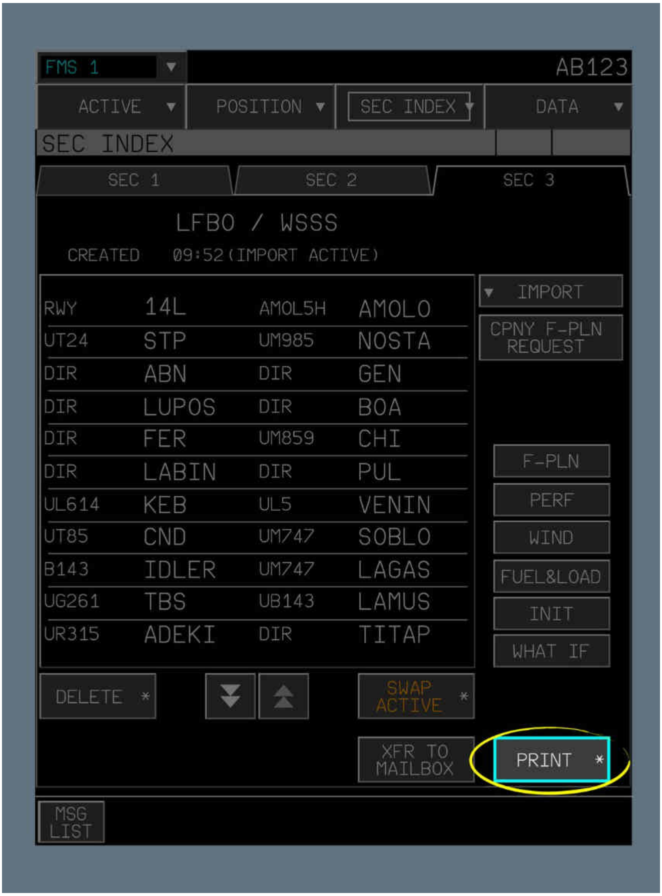
ACTIVE F-PLN REPORT — AUTO PRINT
PRE-FLIGHT PRINT* ☑
IN-FLIGHT PRINT* ☑
POST-FLIGHT PRINT* ☑

SEC F-PLN REPORT
SEC 1 PRINT*
SEC 2 PRINT*
SEC 3 PRINT*

For more information about the DATA/PRINTER page, *Refer to DSC-22-FMS-20-20-20 DATA/PRINTER Page*.

On the SEC INDEX page, the flight crew can click on the PRINT button to manually print the flight plan reports for the secondary flight plans.

SEC INDEX Page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
SEC INDEX
SEC 1
SEC 2
SEC 3
IMPORT
CPNY F-PLN REQUEST
F-PLN
PERF
WIND
FUEL&LOAD
INIT
WHAT IF
DELETE *
SWAP ACTIVE *
XFR TO MAILBOX
PRINT *
MSG LIST

LFBO / WSSS

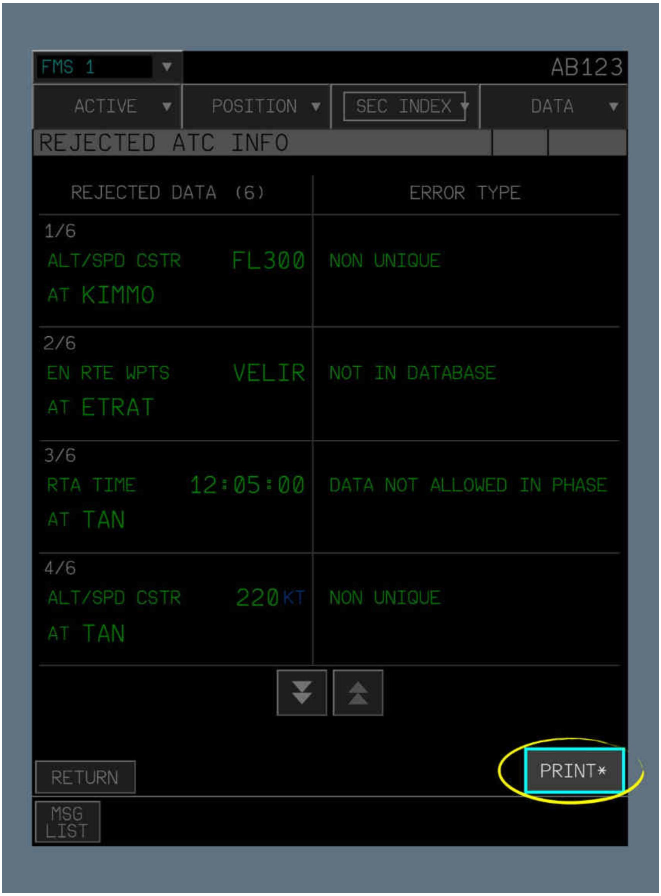
CREATED 09:52(IMPORT ACTIVE)

RWY	14L	AMOL5H	AMOLO
UT24	STP	UM985	NOSTA
DIR	ABN	DIR	GEN
DIR	LUPOS	DIR	BOA
DIR	FER	UM859	CHI
DIR	LABIN	DIR	PUL
UL614	KEB	UL5	VENIN
UT85	CND	UM747	SOBLO
B143	IDLER	UM747	LAGAS
UG261	TBS	UB143	LAMUS
UR315	ADEKI	DIR	TITAP

For more information about the SEC INDEX page, *Refer to DSC-22-FMS-20-20-20 SEC INDEX Page*.

On the REJECTED ATC INFO page, the flight crew can click on the PRINT button to manually print the data received via datalink with the ATC center, if this ATC data contains elements that the FMS rejects.

REJECTED ATC INFO Page



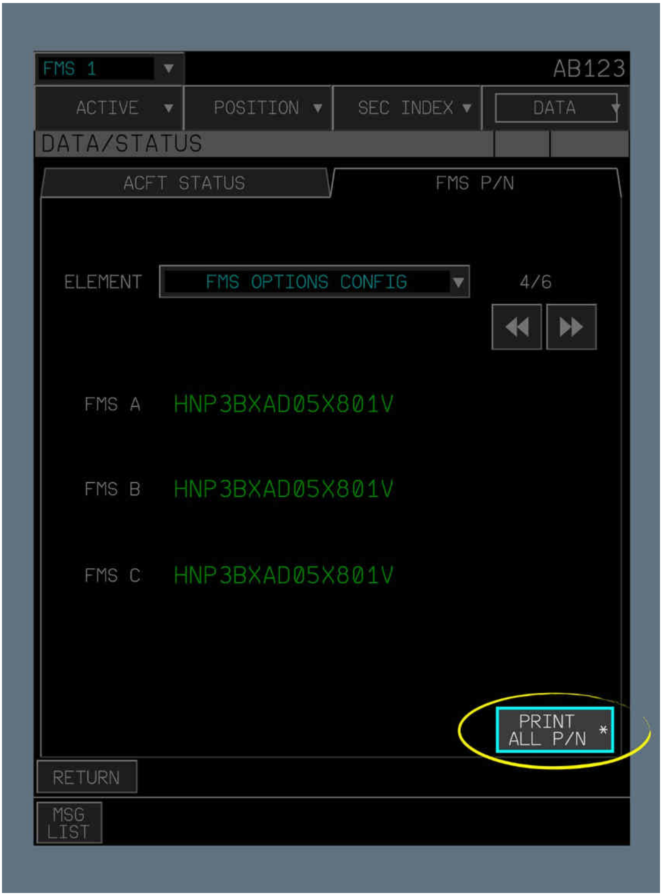
REJECTED ATC INFO

REJECTED DATA (6)		ERROR TYPE
1/6 ALT/SPD CSTR AT KIMMO	FL300	NON UNIQUE
2/6 EN RTE WPTS AT ETRAT	VELIR	NOT IN DATABASE
3/6 RTA TIME AT TAN	12:05:00	DATA NOT ALLOWED IN PHASE
4/6 ALT/SPD CSTR AT TAN	220KT	NON UNIQUE

For more information about the REJECTED ATC INFO page, *Refer to DSC-22-FMS-20-20-20 REJECTED ATC INFO Page*.

L2 On the FMS P/N panel of the DATA/STATUS page, the flight crew can click on the PRINT FMC-A(B)(C) AMI CONFIG button and the PRINT ALL P/N button to manually print the FMS database reports.

DATA/STATUS Page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
DATA/STATUS
ACFT STATUS
FMS P/N
ELEMENT
FMS OPTIONS CONFIG
4/6
FMS A
HNP3BXAD05X801V
FMS B
HNP3BXAD05X801V
FMS C
HNP3BXAD05X801V
PRINT ALL P/N *
RETURN
MSG LIST

For more information about the DATA/STATUS page, *Refer to DSC-22-FMS-20-20-20 DATA/STATUS Page*.

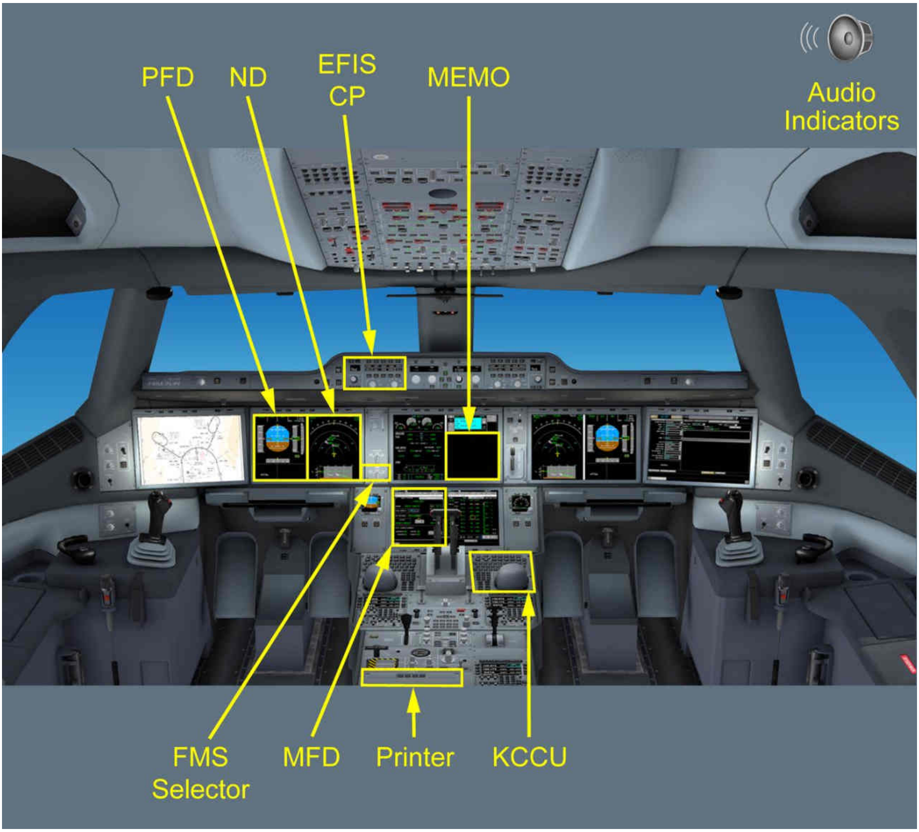
L1 The printer that prints the data and the reports is on the center pedestal.

Intentionally left blank

COCKPIT VIEW

Ident.: DSC-22-FMS-20-10-00002145.0001001 / 22 APR 14
Applicable to: ALL

Cockpit View


PFD
ND
EFIS CP
MEMO
Audio Indicators
FMS Selector
MFD
Printer
KCCU

Intentionally left blank

AUDIO INDICATORS

Ident.: DSC-22-FMS-20-95-00015449.0001001 / 14 APR 14
Applicable to: ALL

Audio Indicator	Condition or Cause	Duration (1)
Time Marker (Sound and Synthetic Voice)	The remaining time between the current UTC time and the UTC time that defines the time marker is equal to 30 s.	Sounds one time.

(1) *All audio indicators are canceled if the flight crew presses the EMER CANC pb on the ECP.*

Intentionally left blank

GENERAL

Ident.: DSC-22-FMS-20-80-00005226.0001001 / 22 APR 14
Applicable to: ALL

This chapter provides the list of all of the data that the flight crew can enter on the MFD and interactive ND.

For each data, the table displays:
- The format

  Note: *The flight crew can omit leading and trailing zeros. If not, a note specifies that the flight crew must enter leading or trailing zeros.*

  The following characters are usually used to indicate the format:
  - A: Letters
  - T: True reference
  - N: Numeric (numbers)
  - X: Alphanumeric (letters and numbers).
- The units
- The range
- The resolution

  Note: *When the flight crew scrolls the data with the wheel of the KCCU, the resolution is the scroll increment/decrement.*
- The FMS page(s) on which the flight crew enters the data.

ACCEL ALT

Ident.: DSC-22-FMS-20-80-00005227.0001001 / 14 APR 14
Applicable to: ALL

Format	NNNNN
Units	Feet MSL (FL) *Note:* *If the flight crew enters three characters or less, the FMS considers the entry as a flight level. In this case, the unit of the entry field reverts to FL.*
Range	*Min*: Takeoff(go-around) runway elevation +400 ft *Max*: Maximum certified altitude (performance database)
Resolution	1
Page	PERF page (*Refer to page*)

ADF FREQ ◁

Ident.: DSC-22-FMS-20-80-00005260.0001001 / 14 APR 16
Applicable to: ALL

Format	NNNN.N
Range	*Min*: 190.0 *Max*: 1750.0
Resolution	0.5
Page	POSITION/NAVAIDS page (*Refer to page*)

AIRPORT (ARPT)

Ident.: DSC-22-FMS-20-80-00005228.0001001 / 14 APR 14
Applicable to: ALL

Format	AAAA
Range	Maximum four letters
Page	CLOSEST AIRPORT page (*Refer to page*) DATA/AIRPORT page (*Refer to page*) DATA/ROUTE page (*Refer to page*) DATA/WAYPOINT page (*Refer to page*) EQUI-TIME POINT page (*Refer to page*) F-PLN page (*Refer to DSC-22-FMS-20-20-20 F-PLN Page*) INIT page (*Refer to page*) POSITION/MONITOR page (*Refer to page*) POSITION/TIME page (*Refer to page*) ND - Revisions (*Refer to Interactive ND*)

ALT

Ident.: DSC-22-FMS-20-80-00005229.0001001 / 14 APR 14
Applicable to: ALL

Format	NNNNN
Units	Feet MSL (FT) Note: *If the flight crew enters three characters or less, the FMS considers the entry as a flight level. In this case, the unit of the entry field reverts to FL.*
Range	*Min*: 1 ft *Max*: Maximum certified altitude (performance database)
Resolution	1
Page	VERT REV page (*Refer to page*)

ALTN

Ident.: DSC-22-FMS-20-80-00005230.0001001 / 14 APR 14
Applicable to: ALL

Format	AAAA *Note:* *NONE is a valid entry. The flight crew enters NONE, if there is no alternate airport.*
Range	Maximum four letters
Page	ALTERNATE page (*Refer to page*) INIT page (*Refer to page*)

ALTN (FUEL)

Ident.: DSC-22-FMS-20-80-00005231.0001001 / 09 MAR 16
Applicable to: ALL

Format	NNN.N	NNN.N
Units	Tons (T)	1000 pounds (KLB)
Range	*Min*: 0 t *Max*: 140.0 t	*Min*: 0 klb *Max*: 309 klb
Resolution	0.1	0.1
Page	ALTERNATE page (*Refer to page*) FUEL&LOAD page (*Refer to page*)	

Note: *Depending on the aircraft, the unit is either a metric unit (t, kg) or a US unit (klb, lb).*

ALTN RTE

Ident.: DSC-22-FMS-20-80-00005232.0001001 / 14 APR 14
Applicable to: ALL

Format	XXXXXXXXXX *Note:* *NONE is a valid entry. The flight crew enters NONE, if there is no company alternate route.*
Range	Maximum 10 alphanumeric characters
Page	INIT page (*Refer to page*)

BARO (ALTITUDE)

Ident.: DSC-22-FMS-20-80-00005234.0001001 / 14 APR 14
Applicable to: ALL

Format	NNNNN
Units	Feet AMSL (FT)
Range	*Min*: 1 ft *Max*: Maximum certified altitude (performance database)

Continued on the following page

Continued from the previous page

Resolution	1
Page	PERF page (*Refer to page*)

BLOCK (FUEL)

Ident.: DSC-22-FMS-20-80-00005235.0001001 / 09 MAR 16
Applicable to: ALL

Format	NNN.N	NNN.N
Units	Tons (T)	1000 pounds (KLB)
Range	*Min* : 0 t *Max*: 200.0 t	*Min*: 0 klb *Max*: 440 klb
Resolution	0.1	0.1
Page	FUEL&LOAD page (*Refer to page*)	

Note: *Depending on the aircraft, the unit is either a metric unit (t, kg) or a US unit (klb, lb).*

BRG

Ident.: DSC-22-FMS-20-80-00005236.0001001 / 14 APR 14
Applicable to: ALL

Format	NNN
Units	Degrees (°) *Note:* *The unit is °T, when the bearing is defined in the true north reference.*
Range	*Min*: 0 ° *Max*: 360 °
Resolution	1
Page	DATA/WAYPOINT page (*Refer to page*)

CATEGORY (CAT)

Ident.: DSC-22-FMS-20-80-00005237.0001001 / 14 APR 14
Applicable to: ALL

Format	N
Range	*Min* : 1 *Max*: 3
Resolution	1
Page	DATA/NAVAID page (*Refer to page*)

CHANNEL (GLS ◁)

Ident.: DSC-22-FMS-20-80-00005238.0001001 / 14 APR 16
Applicable to: ALL

Format	NNNNN
Range	*Min*: 20001 *Max*: 39999
Resolution	1
Page	DATA NAVAID page (*Refer to page*) POSITION/NAVAIDS page (*Refer to page*)

COST INDEX (CI)

Ident.: DSC-22-FMS-20-80-00005240.0001001 / 14 APR 14
Applicable to: ALL

Format	NNN
Units	Kilogram per minute *Note:* *The unit is not displayed.*
Range	*Min*: 0 *Max*: 999
Resolution	1
Page	FUEL&LOAD page (*Refer to page*) INIT page (*Refer to page*) PERF page (*Refer to page*)

CPNY RTE

Ident.: DSC-22-FMS-20-80-00005242.0001001 / 14 APR 14
Applicable to: ALL

Format	XXXXXXXXXX
Range	Maximum 10 alphanumeric characters
Page	COMPANY F-PLN REQUEST page (*Refer to page*) DATA/ROUTE page (*Refer to page*) INIT page (*Refer to page*) ROUTE SELECTION page (*Refer to page*)

CRS IN(OUT)

Ident.: DSC-22-FMS-20-80-00005241.0001001 / 14 APR 14
Applicable to: ALL

Format	NNNB or BNNN NNN: Course B: TRUE/MAG heading reference (default: MAG reference)
Units	Degrees (°)
Range	NNN: *Min*: 0 °, *Max*: 360 ° B: "M" or nothing for MAG, or "T" for TRUE
Resolution	NNN: 1
Page	DIRECT TO page (*Refer to page*) ND - DIRECT TO revision (*Refer to Interactive ND*)

CRZ FL

Ident.: DSC-22-FMS-20-80-00005243.0001001 / 14 APR 14
Applicable to: ALL

Format	NNN or FLNNN
Units	Flight Level (FL)
Range	*Min*: FL 1 *Max*: Maximum certified altitude (in feet)/100 (performance database)
Resolution	1
Page	INIT page (*Refer to page*) WHAT IF page (*Refer to page*)

CRZ TEMP

Ident.: DSC-22-FMS-20-80-00005244.0001001 / 14 APR 14
Applicable to: ALL

Format	±NN *Note:* *If the flight crew enters no sign, the FMS considers the entry as a negative value.*
Units	Degrees Celsius (°C)
Range	*Min*: -99 °C *Max*: 99 °C
Resolution	1
Page	INIT page (*Refer to page*)

DATE

Ident.: DSC-22-FMS-20-80-00005239.0001001 / 22 APR 14
Applicable to: ALL

Format	DDMMMYY DD: Day MMM: Month YY: Year _Note:_ *The flight crew cannot omit the leading zero for YY.*
Range	DD: *Min*: 01, *Max*: 31 MMM: "JAN", "FEB", "MAR", "APR", "MAY", "JUN", "JUL", "AUG", "SEP", "OCT", "NOV", or "DEC" YY: *Min*: 00, *Max*: 99
Resolution	DD : 1 MMM: One month YY : 1
Page	POSITION/TIME page (*Refer to page*)

DERATED T.O

Ident.: DSC-22-FMS-20-80-00005246.0001001 / 02 OCT 14
Applicable to: ALL

Format	DNN
Range	*Min*: D04 *Max*: D24 _Note:_ *The possible DERATED levels are defined in the performance database.*
Resolution	One level
Page	COMPANY T.O DATA REQUEST (*Refer to page*) PERF page (*Refer to page*)

DES CABIN RATE

Ident.: DSC-22-FMS-20-80-00005247.0001001 / 22 APR 14
Applicable to: ALL

Format	-NNN _Note:_ *The flight crew can omit the minus sign. If the flight crew enters no sign, the FMS considers the entry as a negative value.*
Units	Feet per Minute (FT/MN)
Range	*Min*: -100 ft/min *Max*: -999 ft/min
Resolution	1
Page	PERF page (*Refer to page*)

DIST

Ident.: DSC-22-FMS-20-80-00005248.0001001 / 22 APR 14
Applicable to: ALL

Format	NNN.N
Units	Nautical Miles (NM)
Range	*Min*: 0 NM *Max*: 999.9 NM
Resolution	0.1
Page	DATA/WAYPOINT page (*Refer to page*)

EFF WIND

Ident.: DSC-22-FMS-20-80-00005249.0001001 / 22 APR 14
Applicable to: ALL

Format	XXNNN XX: Wind orientation NNN: Wind speed
Units	NNN: Knots *Note: The unit is not displayed.*
Range	XX: “-“, “H”, or “HD” for headwind, or “+”, “T”, “TL”, or nothing for tailwind NNN: *Min*: 0 kt, *Max*: 250 kt
Resolution	NNN: 1
Page	CLOSEST AIRPORTS page (*Refer to page*)

EO ACCEL (ALTITUDE)

Ident.: DSC-22-FMS-20-80-00005251.0001001 / 22 APR 14
Applicable to: ALL

Format	NNNNN
Units	Feet MSL (FT) *Note: If the flight crew enters three characters or less, the FMS considers the entry as a flight level. In this case, the unit of the entry field reverts to FL.*
Range	*Min*: Takeoff(Go-around) runway elevation +400 ft *Max*: Maximum certified altitude (performance database)
Resolution	1
Page	PERF page (*Refer to page*)

ETT

Ident.: DSC-22-FMS-20-80-00005253.0001001 / 22 APR 14
Applicable to: ALL

Format	HHMM or HHMMSS HH: Hours MM: Minutes SS: Seconds
Units	HH: Hours MM: Minutes SS: Seconds *Note:* *The units are not displayed.*
Range	HH: *Min*:0 h, *Max*: 23 h MM: *Min*: 0 min, *Max*: 59 min SS: *Min*: 0 s, *Max*: 59 s (RTA < UTC time + 20 h)
Resolution	HH: 1 MM: 1 SS: 1
Page	VERT REV page (*Refer to page*)

FINAL (FUEL)

Ident.: DSC-22-FMS-20-80-00005254.0001001 / 09 MAR 16
Applicable to: ALL

Format	NNN.N	NNN.N
Units	Tons (T)	1000 pounds (KLB)
Range	*Min*: 0 t *Max*: 100 t	Min: 0 klb Max: 220.5 klb
Resolution	0.1	0.1
Page	FUEL&LOAD page (*Refer to page*)	

Note: *Depending on the aircraft, the unit is either a metric unit (t, kg) or a US unit (klb, lb).*

FINAL (TIME)

Ident.: DSC-22-FMS-20-80-00005255.0001001 / 22 APR 14
Applicable to: ALL

Format	HHMM or MM HH: Hours MM: Minutes
Units	HH: Hours MM: Minutes *Note:* *The units are not displayed.*
Range	HH: *Min*: 0 h, *Max*: 23 h MM: *Min*: 0 min, *Max*: 59 min (The maximum FINAL time is 0 h and 30 min.)
Resolution	HH: 1 MM: 1
Page	FUEL&LOAD page (*Refer to page*)

FLAPS

Ident.: DSC-22-FMS-20-80-00005256.0001001 / 22 APR 14
Applicable to: ALL

Format	N
Range	*Min*: 1 *Max*: 3
Resolution	1
Page	COMPANY T.O DATA REQUEST page (*Refer to page*) PERF page (*Refer to page*)

FLEX

Ident.: DSC-22-FMS-20-80-00005257.0001001 / 22 APR 14
Applicable to: ALL

Format	±NN *Note:* *If the flight crew enters no sign, the FMS considers the entry as a positive value.*
Units	Degrees Celsius (°C)
Range	*Min*: -99 °C *Max*: 99 °C
Resolution	1
Page	COMPANY T.O DATA REQUEST page (*Refer to page*) PERF page (*Refer to page*)

FLT NBR

Ident.: DSC-22-FMS-20-80-00005258.0001001 / 22 APR 14
Applicable to: ALL

Format	XXXXXXXXXX
Range	Maximum 10 alphanumeric characters
Page	COMPANY F-PLN REQUEST page (*Refer to page*) INIT page (*Refer to page*)

FREE TEXT

Ident.: DSC-22-FMS-20-80-00005259.0001001 / 22 APR 14
Applicable to: ALL

Format	XXXXXXXXXXXXXXXXXXXXXXXX
Range	Maximum 24 characters
Page	COMPANY F-PLN REPORT page (*Refer to page*) COMPANY F-PLN REQUEST page (*Refer to page*) COMPANY T.O DATA REQUEST page (*Refer to page* COMPANY WIND DATA REQUEST page (*Refer to page* POSITION/REPORT page (*Refer to page*) TRANSFER TO MAILBOX page (*Refer to page*)

FREQUENCY (ILS)

Ident.: DSC-22-FMS-20-80-00005261.0001001 / 22 APR 14
Applicable to: ALL

Format	NNN.NN
Range	*Min*: 108.0 *Max*: 111.95
Resolution	0.05
Page	POSITION/NAVAIDS page (*Refer to page*)

FREQUENCY (VOR/DME)

Ident.: DSC-22-FMS-20-80-00005262.0001001 / 22 APR 14
Applicable to: ALL

Format	NNN.NN
Range	*Min*: 108.0 *Max*: 117.95
Resolution	0.05
Page	POSITION/NAVAIDS page (*Refer to page*)

FROM

Ident.: DSC-22-FMS-20-80-00005263.0001001 / 22 APR 14
Applicable to: ALL

Format	AAAA
Range	Maximum four letters
Page	DATA/ROUTE page (*Refer to page*) INIT page (*Refer to page*)

FUEL PENALTY (FACTOR)

Ident.: DSC-22-FMS-20-80-00005204.0001001 / 22 APR 14
Applicable to: ALL

Format	+NNN.N *Note:* *The flight crew can omit the plus sign. If the flight crew enters no sign, the FMS considers the entry as a positive value.*
Units	Percent (%)
Range	*Min*: 0 % *Max*: +999.9 %
Resolution	0.1
Page	DATA/STATUS page (*Refer to page*)

HEADING (SET HDG)

Ident.: DSC-22-FMS-20-80-00005264.0001001 / 22 APR 14
Applicable to: ALL

Format	NNN.N
Units	Degrees (°) *Note:* *The unit is °T, when the heading is defined in the true north reference.*
Range	*Min*: 000.0 ° *Max*: 360.0 °
Resolution	0.1
Page	POSITION/IRS page (*Refer to page*)

HOLD DIST

Ident.: DSC-22-FMS-20-80-00005265.0001001 / 22 APR 14
Applicable to: ALL

Format	NN.N
Units	Nautical Miles (NM)

Continued on the following page

Continued from the previous page

Range	*Min*: 0.0 NM *Max*: 99.9 NM
Resolution	0.1
Page	HOLD page (*Refer to page*)

HOLD TIME

Ident.: DSC-22-FMS-20-80-00005266.0001001 / 22 APR 14
Applicable to: ALL

Format	N.N
Units	Minutes (MN)
Range	*Min*: 0.0 min *Max*: 9.9 min
Resolution	0.1
Page	HOLD page (*Refer to page*)

IDLE (FACTOR)

Ident.: DSC-22-FMS-20-80-00005267.0001001 / 22 APR 14
Applicable to: ALL

Format	±N.N *Note:* *If the flight crew enters no sign, the FMS considers the entry as a positive value.*
Units	Percent (%)
Range	*Min*: -9.9 % *Max*: 9.9 %
Resolution	0.1
Page	DATA/STATUS page (*Refer to page*)

INBOUND CRS

Ident.: DSC-22-FMS-20-80-00005268.0001001 / 22 APR 14
Applicable to: ALL

Format	NNNB or BNNN NNN: Course B: TRUE/MAG heading reference (default: MAG reference)
Units	Degrees (°)
Range	NNN: *Min*: 0 °, *Max*: 360 ° B: "M" or nothing for MAG, or "T" for TRUE
Resolution	1
Page	HOLD page (*Refer to page*)

INCREMENT

Ident.: DSC-22-FMS-20-80-00005269.0001001 / 22 APR 14
Applicable to: ALL

Format	NN
Units	Degrees (°)
Range	*Min*: 1 ° *Max*: 20 °
Resolution	1
Page	LL XING page (*Refer to page*)

INTERCEPT ANGLE

Ident.: DSC-22-FMS-20-80-00005270.0001001 / 22 APR 14
Applicable to: ALL

Format	NN
Units	Degrees (°)
Range	*Min*: 10 ° *Max*: 50 °
Resolution	1
Page	OFFSET page (*Refer to page*)

JTSN GW

Ident.: DSC-22-FMS-20-80-00005271.0001001 / 14 APR 16
Applicable to: ALL

Format	NNN.N	NNNN.N
Units	Tons (T)	1000 pounds (KLB)
Range	*Min* : ZFW + 5 t *Max*: Maximum GW	*Min*: ZFW + 11 klb *Max*: Maximum GW
Resolution	0.1	0.1
Page	FUEL&LOAD page (*Refer to page*)	

Note: *Depending on the aircraft, the unit is either a metric unit (t, kg), or a US unit (klb, lb).*

LAT

Ident.: DSC-22-FMS-20-80-00005272.0001001 / 22 APR 14
Applicable to: ALL

Format	XDD°MM.M, DD°MM.MX, XDDMM.M, DDMM.MX, XDD, or DDX DD: Degrees MM.M: Minutes X: Hemisphere
Units	DD: Degrees MM.M: Minutes *Note:* *The units are not displayed.*
Range	DD: *Min*: 0 °, *Max*: 90 ° MM.M: *Min*: 0 min, *Max*: 59.9 min X: "N" for north, or "S" for south
Resolution	DD: 1 MM.M: 0.1
Page	DATA/AIRPORT page (*Refer to page*) DATA/NAVAID page (*Refer to page*) DATA/WAYPOINT page (*Refer to page*) POSITION/IRS page (*Refer to page*)

LAT (LL XING)

Ident.: DSC-22-FMS-20-80-00005273.0001001 / 22 APR 14
Applicable to: ALL

Format	XDD or DDX DD: Degrees X: Hemisphere
Units	DD: Degrees *Note:* *The unit is not displayed.*
Range	DD: *Min*: 0 °, *Max*: 90 ° X: "N" for north, or "S" for south
Resolution	DD: 1
Page	LL XING page (*Refer to page*)

LAT/LONG

Ident.: DSC-22-FMS-20-80-00005274.0001001 / 08 JUL 19
Applicable to: ALL

Format	LAT/LONG LAT: XDD°MM.M, DD°MM.MX, XDDMM.M, DDMM.MX, XDD, or DDX LONG: YDDD°MM.M, DDD°MM.MY, YDDDMM.M, DDDMM.MY, YDDD, or DDDY DD and DDD: Degrees MM.M: Minutes X: Hemisphere Y: East/West reference
Units	DD and DDD: Degrees MM.M: Minutes *Note:* *The units are not displayed.*
Range	DD: *Min*: 0 °, *Max*: 90 ° DDD: *Min*: 0 °, *Max*: 180 ° MM.M: *Min*: 0 min, *Max*: 59.9 min X: "N" for north, or "S" for south Y: "W" for west, or "E" for east
Resolution	DD: 1 DDD: 1 MM.M: 0.1
Page	DATA/AIRPORT page (*Refer to page*) DATA/NAVAID page (*Refer to page*) DATA/WAYPOINT page (*Refer to page*) DIRECT TO page (*Refer to page*) POSITION/GNSS page (*Refer to page*) POSITION/IRS page (*Refer to page*) POSITION/MONITOR page (*Refer to page*) POSITION/NAVAIDS page (*Refer to page*) POSITION/REPORT page (*Refer to page*)

LEVEL OFF FL

Ident.: DSC-22-FMS-20-80-00005280.0001001 / 22 APR 14
Applicable to: ALL

Format	NNN or FLNNN
Units	Flight Level (FL)
Range	*Min*: 1 *Max*: Maximum certified altitude (in feet)/100 (performance database)
Resolution	1
Page	WHAT IF page (*Refer to page*)

LONG

Ident.: DSC-22-FMS-20-80-00005276.0001001 / 08 JUL 19
Applicable to: ALL

Format	YDDD°MM.M, DDD°MM.MY, YDDDMM.M, DDDMM.MY, YDDD, or DDDY DDD: Degrees MM.M: Minutes Y: East/West reference
Units	DDD: Degrees MM.M: Minutes
Range	DDD: *Min*: 0 °, *Max*: 180 ° MM.M: *Min*: 0 min, *Max*: 59.9 min Y: "W" for west, or "E" for east
Resolution	DDD: 1 MM.M: 0.1
Page	DATA/AIRPORT page (*Refer to page*) *Refer to page* DATA/WAYPOINT page (*Refer to page*) POSITION/IRS page (*Refer to page*)

LONG (LL XING)

Ident.: DSC-22-FMS-20-80-00005275.0001001 / 08 JUL 19
Applicable to: ALL

Format	YDDD or DDDY DDD: Degrees Y: East/West reference
Units	DDD: Degrees *Note:* *The unit is not displayed.*
Range	DDD: *Min*: 0 °, *Max*: 180 ° Y: "E" for east, or "W" for west
Resolution	DDD: 1
Page	LL XING page (*Refer to page*)

LS CRS

Ident.: DSC-22-FMS-20-80-00005277.0001001 / 22 APR 14
Applicable to: ALL

Format	ANNN or NNNA NNN: Course A: Beam direction
Units	Degrees (°) *Note:* *The unit is °T, when the course is defined in the true north reference.*
Range	NNN: *Min*: 000 °, *Max*: 360 ° A : "F" or nothing for front beam course, or "B" for back beam course (only for ILS).
Resolution	NNN: 1
Page	POSITION/NAVAIDS page (*Refer to page*)

LS FREQ

Ident.: DSC-22-FMS-20-80-00005278.0001001 / 22 APR 14
Applicable to: ALL

Format	NNN.NN
Range	*Min*: 108.0 *Max*: 111.95
Resolution	0.05
Page	POSITION/NAVAIDS page (*Refer to page*)

LS IDENT

Ident.: DSC-22-FMS-20-80-00005279.0001001 / 22 APR 14
Applicable to: ALL

Format	XXXX
Range	Maximum four alphanumeric characters
Page	DATA/AIRPORT page (*Refer to page*) POSITION/NAVAIDS page (*Refer to page*)

MACH

Ident.: DSC-22-FMS-20-80-00005281.0001001 / 22 APR 14
Applicable to: ALL

Format	0.NN, .NN, or NN
Range	On the CMS panel of the VERT REV page: *Min*: 0.3, *Max*: (MMO-ΔMMO) (performance database) On the CRZ panel of the PERF page: *Min*: 0.1, *Max*: MMO (performance database) On the DES panel of the PERF page: *Min*: 0.1, *Max*: (MMO-ΔMMO) (performance database)
Resolution	0.01
Page	PERF page (*Refer to page*) VERT REV page (*Refer to page*)

MIN FUEL AT DEST

Ident.: DSC-22-FMS-20-80-00005284.0001001 / 09 MAR 16
Applicable to: ALL

Format	NNN.N	NNN.N
Units	Tons (T)	1000 pounds (KLB)
Range	*Min*: 0 t *Max*: 180 t	*Min*: 0 klb *Max*: 396 klb
Resolution	0.1	0.1
Page	FUEL&LOAD page (*Refer to page*)	

Note: Depending on the aircraft, the unit is either a metric unit (t, kg) or a US unit (klb, lb).

N1 (NOISE)

Ident.: DSC-22-FMS-20-80-00005285.0001001 / 22 APR 14
Applicable to: ALL

Format	NNN
Units	Percent (%)
Range	*Min*: 40 % *Max*: 110 %
Resolution	1
Page	PERF page (*Refer to page*)

NAVAID CRS

Ident.: DSC-22-FMS-20-80-00005286.0001001 / 22 APR 14
Applicable to: ALL

Format	NNNB or BNNN NNN: Course B: TRUE/MAG heading reference (default: MAG reference)
Units	Degrees (°)
Range	NNN: *Min*: 0 °, *Max*: 360 ° B: "M" or nothing for MAG, or "T" for TRUE
Resolution	1
Page	DATA/NAVAID page (*Refer to page*)

NAVAID ELEVATION

Ident.: DSC-22-FMS-20-80-00005287.0001001 / 22 APR 14
Applicable to: ALL

Format	±NNNNN *Note:* *If the flight crew enters no sign, the FMS considers the entry as a positive value.*
Units	Feet MSL (FT)
Range	*Min*: -1 000 ft *Max*: 20 470 ft
Resolution	1
Page	DATA/NAVAID page (*Refer to page*)

NAVAID IDENT

Ident.: DSC-22-FMS-20-80-00005288.0001001 / 22 APR 14
Applicable to: ALL

Format	XXXX
Range	Maximum 4 alphanumeric characters
Page	DATA/NAVAID page (*Refer to page*) DATA/WAYPOINT page (*Refer to page*) EQUI-TIME POINT page (*Refer to page*) POSITION/NAVAIDS page (*Refer to page*)

NOISE END (ALTITUDE)

Ident.: DSC-22-FMS-20-80-00005250.0001001 / 22 APR 14
Applicable to: ALL

Format	NNNNN or NNN
Units	NNNNN: Feet MSL (FT), rounded to the nearest 10 ft NNN: Flight Level (FL)

Continued on the following page

Continued from the previous page

Range	NNNN: *Min*: Altitude of the takeoff departure airport + 400 ft, *Max*: Maximum certified altitude (performance database) NNN: *Min*: (Altitude of the takeoff departure airport + 400 ft)/100 ft, *Max*: (Maximum certified altitude (performance database))/100 ft
Resolution	NNNNN: 10 NNN: 1
Page	PERF page (*Refer to page*)

NUMBER

Ident.: DSC-22-FMS-20-80-00005289.0001001 / 22 APR 14
Applicable to: ALL

Format	NN
Range	*Min*: 1 *Max*: 99
Resolution	1
Page	LL XING page (*Refer to page*)

OAT

Ident.: DSC-22-FMS-20-80-00005290.0001001 / 22 APR 14
Applicable to: ALL

Format	± NN *Note:* *If the flight crew enters no sign, the FMS considers the entry as a positive value.*
Units	Degrees Celsius (°C)
Range	*Min*: -99 °C *Max*: 99 °C
Resolution	1
Page	PERF page (*Refer to page*)

OFFSET DIST

Ident.: DSC-22-FMS-20-80-00005291.0001001 / 22 APR 14
Applicable to: ALL

Format	NN, ANN, or NNA NN: Offset distance A: Offset side
Units	Nautical Miles (NM)
Range	NN: *Min*: 0 NM, *Max*: 50 NM A: "L" for left , or "R" for right

Continued on the following page

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Resolution	NN: 1
Page	OFFSET page (*Refer to page*)

PAX NBR

Ident.: DSC-22-FMS-20-80-00005292.0001001 / 22 APR 14
Applicable to: ALL

Format	NNN
Range	*Min*: 0 *Max*: 999
Resolution	1
Page	FUEL&LOAD page (*Refer to page*)

PERF (FACTOR)

Ident.: DSC-22-FMS-20-80-00005293.0001001 / 22 APR 14
Applicable to: ALL

Format	±N.N *Note:* *If the flight crew enters no sign, the FMS considers the entry as a positive value.*
Units	Percent (%)
Range	*Min*: -9.9 % *Max*: 9.9 %
Resolution	0.1
Page	DATA/STATUS page (*Refer to page*)

PLACE

Ident.: DSC-22-FMS-20-80-00005294.0001001 / 22 APR 14
Applicable to: ALL

Format	XXXXXXX
Range	Maximum 7 alphanumeric characters
Page	DATA/WAYPOINT page (*Refer to page*)

PLACE/BEARING/DISTANCE (PBD)

Ident.: DSC-22-FMS-20-80-00005295.0001001 / 22 APR 14
Applicable to: ALL

Format	PLACE/BEARING/DISTANCE PLACE: XXXXXXX BEARING: NNN DISTANCE: NNN.N
Units	NNN: Degrees (°) NNN.N: Nautical Miles (NM)
Range	XXXXXXX: Maximum 7 alphanumeric characters NNN: *Min:* 0 °, *Max:* 360 ° NNN.N: *Min:* 0 NM, *Max:* 999.9 NM
Resolution	NNN: 1 NNN.N: 0.1
Page	DIRECT TO page (*Refer to page*) F-PLN page (*Refer to page*) POSITION/MONITOR page (*Refer to page*) ND - DIRECT TO revision (*Refer to Interactive ND*) ND - INSERT NEXT WPT revision (*Refer to Interactive ND*)

PLACE/DISTANCE (PD)

Ident.: DSC-22-FMS-20-80-00005296.0001001 / 22 APR 14
Applicable to: ALL

Format	PLACE/DISTANCE PLACE: XXXXXXX DISTANCE: ± NNN.N *Note:* *For the distance, if the flight crew enters no sign, the FMS considers the entry as a positive value.*
Units	NNN.N: Nautical Miles (NM)
Range	XXXXXXX: Maximum 7 alphanumeric characters NNN.N: *Min:* 0 NM, *Max:* 999.9 NM *Note:* *The "NNN.N" must also comply with the following requirement: The place/distance waypoint cannot be before(after) the waypoint that is before(after) the place waypoint.*
Resolution	NNN.N: 0.1
Page	DIRECT TO page (*Refer to page*) F-PLN page (*Refer to page*) VERT REV page (*Refer to page*) ND - DIRECT TO revision (*Refer to Interactive ND*) ND - INSERT NEXT WPT revision (*Refer to Interactive ND*)

PLACE-BEARING/PLACE-BEARING (PB/PB)

Ident.: DSC-22-FMS-20-80-00005297.0001001 / 22 APR 14
Applicable to: ALL

Format	PLACE-BEARING/PLACE-BEARING PLACE: XXXXXXX BEARING: NNN
Units	NNN: Degrees (°)
Range	XXXXXXX: Maximum 7 alphanumeric characters NNN: *Min:* 0 °, *Max:* 360 °
Resolution	NNN: 1
Page	DIRECT TO page (*Refer to page*) POSITION/MONITOR page (*Refer to page*)

PRED TO (ALTITUDE)

Ident.: DSC-22-FMS-20-80-00005298.0001001 / 22 APR 14
Applicable to: ALL

Format	NNNNN or FLNNN
Units	NNNNN: Feet MSL (FT) *Note: If the flight crew enters three characters or less, the FMS considers the entry as a flight level. In this case, the unit of the entry field reverts to FL.* NNN: Flight Level (FL)
Range	On the CLB panel of the PERF page: *Min*: Aircraft altitude, *Max*: Maximum certified altitude (performance database) On the DES panel of the PERF page: *Min*: Destination runway elevation + 50 ft, *Max*: Aircraft altitude
Resolution	1
Page	PERF page (*Refer to page*)

QNH(QFE ◁)

Ident.: DSC-22-FMS-20-80-00005299.0001001 / 14 APR 16
Applicable to: ALL

Format	NNNN or NN.NN
Units	NNNN: Hectopascal NN.NN: Inches of mercury *Note: 1. The unit is not displayed.* *2. For hectopascal entry, the flight crew may enter only three digits, if applicable.*
Range	NNNN: *Min*:745 hPa, *Max*: 1 100 hPa NN.NN: *Min*: 22.00 inHg, *Max*: 32.48 inHg

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Resolution	NNNN: 1 NN.NN: 0.01
Page	COMPANY T.O DATA REQUEST page (*Refer to page*) PERF page (*Refer to page*)

RADIAL

Ident.: DSC-22-FMS-20-80-00005300.0001001 / 22 APR 14
Applicable to: ALL

Format	NNN
Units	Degrees (°)
Range	*Min*: 0 ° *Max*: 360 °
Resolution	1
Page	FIX INFO page (*Refer to page*)

RADIO (ALTITUDE)

Ident.: DSC-22-FMS-20-80-00005301.0001001 / 22 APR 14
Applicable to: ALL

Format	NNNNN *Note:* *NONE, NO, NO DH, and NODH are valid entries.*
Units	Feet AGL (FT)
Range	*Min*: 1 ft *Max*: Maximum certified altitude (performance database)
Resolution	1
Page	PERF page (*Refer to page*)

RADIUS

Ident.: DSC-22-FMS-20-80-00005302.0001001 / 22 APR 14
Applicable to: ALL

Format	NNNN
Units	Nautical Miles (NM)
Range	*Min*: 1 NM *Max*: 9 999 NM
Resolution	1
Page	FIX INFO page (*Refer to page*)

REMAINING TIME

Ident.: DSC-22-FMS-20-80-00005303.0001001 / 22 APR 14
Applicable to: ALL

Format	HHMM or HHMMSS HH: Hours MM: Minutes SS: Seconds *Note:* *The flight crew cannot omit the leading zero for MM and SS.*
Units	HH: Hours MM: Minutes SS: Seconds *Note:* *The units are not displayed.*
Range	HH: *Min*:0 h, *Max*: 23 h MM: *Min*: 0 min, *Max*: 59 min SS: *Min*: 0 s, *Max*: 59 s
Resolution	HH: 1 MM: 1 SS: 1
Page	POSITION/TIME page (*Refer to page*)

RNP

Ident.: DSC-22-FMS-20-80-00005304.0001001 / 22 APR 14
Applicable to: ALL

Format	N.NN or NN.N
Units	Nautical Miles (NM)
Range	*Min*: 0.01 NM *Max*: 20.0 NM
Resolution	When RNP < 10.0: 0.01 When RNP > 10.0: 0.1
Page	POSITION/MONITOR page (*Refer to page*)

RTA

Ident.: DSC-22-FMS-20-80-00005305.0001001 / 22 APR 14
Applicable to: ALL

Format	HHMM or HHMMSS HH: Hours MM: Minutes SS: Seconds
Units	HH: Hours MM: Minutes SS: Seconds *Note: The units are not displayed.*
Range	HH: *Min*:0 h, *Max*: 23 h MM: *Min*: 0 min, *Max*: 59 min SS: *Min*: 0 s, *Max*: 59 s (RTA < UTC time + 20 h)
Resolution	HH: 1 MM: 1 SS: 1
Page	VERT REV page (*Refer to page*)

RTE RSV (%)

Ident.: DSC-22-FMS-20-80-00005805.0001001 / 22 APR 14
Applicable to: ALL

Format	NN.N
Units	Percent (%)
Range	*Min*: 0 % *Max*: 15 %
Resolution	0.1
Page	FUEL&LOAD page (*Refer to page*)

RTE RSV (FUEL)

Ident.: DSC-22-FMS-20-80-00005306.0001001 / 09 MAR 16
Applicable to: ALL

Format	NNN.N	NNN.N
Units	Tons (T)	1000 pounds (KLB)
Range	*Min*: Defined in the AMI file. Default value: 0 t *Max*: Defined in the AMI file. Default value: 20 t	*Min*: Defined in the AMI file. Default value: 0 klb *Max*: Defined in the AMI file. Default value: 44 klb
Resolution	0.1	0.1
Page	FUEL&LOAD page (*Refer to page*)	

Note: *1. The minimum and maximum values of the route reserve fuel are defined in the AMI file. Default values are provided for information only.*
2. Depending on the aircraft, the unit is either a metric unit (t, kg) or a US unit (klb, lb).

RWY

Ident.: DSC-22-FMS-20-80-00005307.0001001 / 22 APR 14
Applicable to: ALL

Format	NN or NND NN: Runway number D: Runway position *Note:* *The flight crew cannot omit the leading zero for NN.*
Range	NN: *Min*: 01, *Max*: 36 D: "L" for left, "C" for center, or "R" for right
Page	COMPANY T.O DATA REQUEST (*Refer to page*) DATA/AIRPORT page (*Refer to page*)

RWY CRS

Ident.: DSC-22-FMS-20-80-00005308.0001001 / 22 APR 14
Applicable to: ALL

Format	NNNB or BNNN NNN: Course B: TRUE/MAG heading reference (default: MAG reference)
Units	Degrees (°)
Range	NNN: *Min*: 0 °, *Max*: 360 ° B: "M" or nothing for MAG, or "T" for TRUE
Resolution	NNN: 1
Page	DATA/AIRPORT page (*Refer to page*)

RWY ELEVATION

Ident.: DSC-22-FMS-20-80-00005309.0001001 / 22 APR 14
Applicable to: ALL

Format	± NNNNN *Note:* *If the flight crew enters no sign, the FMS considers the entry as a positive value.*
Units	Feet MSL (FT)
Range	*Min*: -1 000 ft *Max*: 20 470 ft
Resolution	1
Page	DATA/AIRPORT (*Refer to page*)

RWY IDENT

Ident.: DSC-22-FMS-20-80-00005310.0001001 / 17 NOV 17
Applicable to: ALL

Format	AAAANN or AAAANND AAA: Airport NN: Runway number D: Runway position *Note:* *The flight crew cannot omit the leading zero for NN.*
Range	AAAA: Maximum four letters NN: *Min*: 01, *Max*: 36 D: "L" for left, "C" for center, or "R" for right
Page	DATA/NAVAID page (*Refer to page*) DATA/WAYPOINT (*Refer to page*) EQUI-TIME POINT page (*Refer to page*) F-PLN page (*Refer to page*) POSITION/MONITOR page (*Refer to page*) ND - DIRECT TO revision (*Refer to Interactive ND*) ND - INSERT NEXT WPT revision (*Refer to Interactive ND*)

RWY LENGTH

Ident.: DSC-22-FMS-20-80-00005311.0001001 / 22 APR 14
Applicable to: ALL

Format	NNNN
Units	Meters (M)
Range	*Min*: 1 000 m *Max*: 8 000 m
Resolution	1
Page	DATA/AIRPORT page (*Refer to page*)

SAT

Ident.: DSC-22-FMS-20-80-00005312.0001001 / 22 APR 14
Applicable to: ALL

Format	±NN *Note:* *If the flight crew enters no sign, the FMS considers the entry as a negative value.*
Units	Degrees Celsius (°C)
Range	*Min*: -99 °C *Max*: 99 °C
Resolution	1
Page	WIND page (*Refer to page*)

SAT ALTITUDE

Ident.: DSC-22-FMS-20-80-00005313.0001001 / 22 APR 14
Applicable to: ALL

Format	NNN or NNNNN
Units	NNN: Flight Level (FL) NNNNN: Feet MSL (FT)
Range	NNN: *Min*: FL 1, *Max*: Maximum certified altitude (in feet)/100 (performance database) NNNNN: *Min*: 1 ft, *Max*: Maximum certified altitude (performance database)
Resolution	NNNNN: 1 NNN: 1
Page	WIND page (*Refer to page*)

SPD

Ident.: DSC-22-FMS-20-80-00005315.0001001 / 22 APR 14
Applicable to: ALL

Format	NNN
Units	Knots (KT)
Range	*Min*: 90 kt *Max*: VMO (performance database) *Note:* *For the SPD entry field on the DES panel of the PERF page, the maximum value is VMO-ΔVMO (performance database).*
Resolution	1
Page	PERF page (*Refer to page*) VERT REV page (*Refer to page*)

START TIME

Ident.: DSC-22-FMS-20-80-00005314.0001001 / 22 APR 14
Applicable to: ALL

Format	HHMM or HHMMSS HH: Hours MM: Minutes SS: Seconds *Note:* *The flight crew cannot omit the leading zero for MM and SS.*
Units	HH: Hours MM: Minutes SS: Seconds *Note:* *The units are not displayed.*

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Range	HH: *Min*:0 h, *Max*: 23 h MM: *Min*: 0 min, *Max*: 59 min SS: *Min*: 0 s, *Max*: 59 s
Resolution	HH: 1 MM: 1 SS: 1
Page	POSITION/TIME page (*Refer to page*)

STATION DECLINATION (STATION DEC)

Ident.: DSC-22-FMS-20-80-00005316.0001001 / 22 APR 14
Applicable to: ALL

Format	NNNY NNN: Declination value Y: East/West reference
Units	Degrees (°)
Range	NNN: *Min*: 0 °, *Max*: 360 ° Y: "W" for west, or "E" for east
Resolution	1
Page	DATA/NAVAID page (*Refer to page*)

STOP TIME

Ident.: DSC-22-FMS-20-80-00005252.0001001 / 22 APR 14
Applicable to: ALL

Format	HHMM or HHMMSS HH: Hours MM: Minutes SS: Seconds *Note:* *The flight crew cannot omit the leading zero for MM and SS.*
Units	HH: Hours MM: Minutes SS: Seconds *Note:* *The units are not displayed.*
Range	HH: *Min*:0 h, *Max*: 23 h MM: *Min*: 0 min, *Max*: 59 min SS: *Min*: 0 s, *Max*: 59 s
Resolution	HH: 1 MM: 1 SS: 1
Page	POSITION/TIME page (*Refer to page*)

T.O LIMIT

Ident.: DSC-22-FMS-20-80-00005317.0001001 / 22 APR 14
Applicable to: ALL

Format	NNNN
Units	METERS (M)
Range	*Min*: 1 000 m *Max*: 8 000 m
Resolution	1
Page	COMPANY T.O DATA REQUEST page (*Refer to page*)

T.O SHIFT

Ident.: DSC-22-FMS-20-80-00005318.0001001 / 22 APR 14
Applicable to: ALL

Format	NNNN
Units	Meters (M)
Range	*Min*: 1 *Max*: Length of the takeoff runway
Resolution	1
Page	COMPANY T.O DATA REQUEST page (*Refer to page*) PERF page (*Refer to page*)

TAXI (FUEL)

Ident.: DSC-22-FMS-20-80-00005319.0001001 / 09 MAR 16
Applicable to: ALL

Format	N.N	NN.N
Units	Tons (T)	1000 pounds (KLB)
Range	*Min*: 0 t *Max*: 9.9 t	*Min*: 0 klb *Max*: 21.8 klb
Resolution	0.1	0.1
Page	FUEL&LOAD page (*Refer to page*)	

Note: *Depending on the aircraft, the unit is either a metric unit (t, kg) or a US unit (klb, lb).*

TEXT

Ident.: DSC-22-FMS-20-80-00005233.0001001 / 22 APR 14
Applicable to: ALL

Format	XXXXX
Range	Maximum 5 alphanumeric characters
Page	POSITION/TIME page (*Refer to page*)

THR RED (ALTITUDE)

Ident.: DSC-22-FMS-20-80-00005320.0001001 / 22 APR 14
Applicable to: ALL

Format	NNNNN
Units	Feet MSL (FL) *Note:* *If the flight crew enters three characters or less, the FMS considers the entry as a flight level. In this case, the unit of the entry field reverts to FL.*
Range	*Min*: Takeoff(go-around) runway elevation +400 ft *Max*: Maximum certified altitude (performance database)
Resolution	1
Page	PERF page (*Refer to page*)

THS

Ident.: DSC-22-FMS-20-80-00005325.0001001 / 22 APR 14
Applicable to: ALL

Format	NN.N
Units	Percent (%)
Range	*Min*: 0.0 % *Max*: 99.9 %
Resolution	0.1
Page	PERF page (*Refer to page*)

TIME MARKER UTC

Ident.: DSC-22-FMS-20-80-00005321.0001001 / 22 APR 14
Applicable to: ALL

Format	HHMM or HHMMSS HH: Hours MM: Minutes SS: Seconds *Note:* *The flight crew cannot omit the leading zero for MM and SS.*
Units	HH: Hours MM: Minutes SS: Seconds *Note:* *The units are not displayed.*
Range	HH: *Min*:0 h, *Max*: 23 h MM: *Min*: 0 min, *Max*: 59 min SS: *Min*: 0 s, *Max*: 59 s

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Resolution	HH: 1 MM: 1 SS: 1
Page	POSITION/TIME page (*Refer to page*)

TO

Ident.: DSC-22-FMS-20-80-00005322.0001001 / 22 APR 14
Applicable to: ALL

Format	AAAA
Range	Maximum four letters
Page	DATA/ROUTE page (*Refer to page*) INIT page (*Refer to page*)

TRANS (ALTITUDE)

Ident.: DSC-22-FMS-20-80-00005323.0001001 / 22 APR 14
Applicable to: ALL

Format	NNNNN
Units	Feet MSL (FT)
Range	*Min*: 1 ft *Max*: Maximum certified altitude (performance database)
Resolution	1
Page	PERF page (*Refer to page*)

TRANS (FLIGHT LEVEL)

Ident.: DSC-22-FMS-20-80-00005324.0001001 / 22 APR 14
Applicable to: ALL

Format	NNN or FLNNN
Units	Flight Level (FL)
Range	*Min*: 1 *Max*: Maximum certified altitude (in feet)/100 (performance database)
Resolution	FL 1
Page	PERF page (*Refer to page*)

TRIP WIND

Ident.: DSC-22-FMS-20-80-00005326.0001001 / 22 APR 14
Applicable to: ALL

Format	XXNNN XX: Wind orientation NNN: Wind speed
Units	NNN: Knots (KT)
Range	XX: “-“, “H”, or “HD” for headwind, or “+”, “T”, “TL”, or nothing for tailwind NNN: *Min*: 0 kt, *Max*: 250 kt
Resolution	NNN: 1
Page	INIT page (*Refer to page*)

TROPO

Ident.: DSC-22-FMS-20-80-00005327.0001001 / 22 APR 14
Applicable to: ALL

Format	NNNNN or NNN *Note:* *When the flight crew enters the data on 3 digits, the FMS multiplies by 100 for display.*
Units	Feet (FT), rounded to the nearest 10 ft
Range	*Min*: 10 000 ft *Max*: 60 000 ft
Resolution	10
Page	INIT page (*Refer to page*)

UTC

Ident.: DSC-22-FMS-20-80-00005328.0001001 / 22 APR 14
Applicable to: ALL

Format	HHMM or HHMMSS HH: Hours MM: Minutes SS: Seconds *Note:* *The flight crew cannot omit the leading zero for MM and SS.*
Units	HH: Hours MM: Minutes SS: Seconds *Note:* *The units are not displayed.*
Range	HH: *Min*:0 h, *Max*: 23 h MM: *Min*: 0 min, *Max*: 59 min SS: *Min*: 0 s, *Max*: 59 s

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Resolution	HH: 1 MM: 1 SS: 1
Page	POSITION/TIME page (*Refer to page*)

UTC DIFF (HOURS)

Ident.: DSC-22-FMS-20-80-00005472.0001001 / 22 APR 14
Applicable to: ALL

Format	±HH *Note:* *If the flight crew enters no sign, the FMS considers the entry as a positive value.*
Units	Hours (H)
Range	*Min*: -11 h *Max*: +12 h
Resolution	1
Page	POSITION/TIME page (*Refer to page*)

UTC DIFF (MINUTES)

Ident.: DSC-22-FMS-20-80-00005460.0001001 / 22 APR 14
Applicable to: ALL

Format	±MM *Note:* *If the flight crew enters no sign, the FMS considers the entry as a positive value.*
Units	Minutes (MIN)
Range	*Min*: -59 min *Max*: +59 min
Resolution	1
Page	POSITION/TIME page (*Refer to page*)

V1

Ident.: DSC-22-FMS-20-80-00005331.0001001 / 22 APR 14
Applicable to: ALL

Format	NNN
Units	Knots (KT)
Range	*Min*: 90 kt *Max*: VMO-ΔVMO (performance database)
Resolution	1
Page	PERF page (*Refer to page*)

V2

Ident.: DSC-22-FMS-20-80-00005332.0001001 / 22 APR 14
Applicable to: ALL

Format	NNN
Units	Knots (KT)
Range	*Min*: 90 kt *Max*: VMO-ΔVMO (performance database)
Resolution	1
Page	PERF page (*Refer to page*)

VAPP

Ident.: DSC-22-FMS-20-80-00005329.0001001 / 22 APR 14
Applicable to: ALL

Format	NNN
Units	Knots (KT)
Range	*Min*: 90 kt *Max*: VMO-ΔVMO (performance database)
Resolution	1
Page	PERF page (*Refer to page*)

VIA

Ident.: DSC-22-FMS-20-80-00005711.0001001 / 22 APR 14
Applicable to: ALL

Format	XXXXX
Range	Maximum 5 alphanumeric characters
Page	AIRWAYS page (*Refer to page*)

VOR CRS

Ident.: DSC-22-FMS-20-80-00005333.0001001 / 22 APR 14
Applicable to: ALL

Format	NNN
Units	Degrees (°) *Note:* *The unit is °T, when the course is defined in the true north reference.*
Range	*Min*: 0 ° *Max*: 360 °
Resolution	1
Page	POSITION/NAVAIDS page (*Refer to page*)

VOR FREQ

Ident.: DSC-22-FMS-20-80-00005334.0001001 / 22 APR 14
Applicable to: ALL

Format	NNN.NN
Range	*Min*: 108.0 *Max*: 117.95
Resolution	0.05
Page	POSITION/NAVAIDS page (*Refer to page*)

VR

Ident.: DSC-22-FMS-20-80-00005330.0001001 / 22 APR 14
Applicable to: ALL

Format	NNN
Units	Knots (KT)
Range	*Min*: 90 kt *Max*: VMO (performance database)
Resolution	1
Page	PERF page (*Refer to page*)

WAYPOINT

Ident.: DSC-22-FMS-20-80-00005335.0001001 / 22 APR 14
Applicable to: ALL

Format	XXXXXXX
Range	Maximum 7 alphanumeric characters
Page	AIRWAYS page (*Refer to page*) DATA/WAYPOINT page (*Refer to page*) DIRECT TO page (*Refer to page*) EQUI-TIME POINT page (*Refer to page*) FIX INFO page (*Refer to page*) F-PLN page (*Refer to page*) OFFSET page (*Refer to page*) POSITION/GNSS page (*Refer to page*) POSITION/MONITOR page (*Refer to page*) VERT REV page (*Refer to page*) ND - DIRECT TO revision (*Refer to Interactive ND*) ND - INSERT NEXT WPT revision (*Refer to Interactive ND*)

WIND ALTITUDE

Ident.: DSC-22-FMS-20-80-00005336.0001001 / 22 APR 14
Applicable to: ALL

Format	NNN or NNNNN
Units	NNN: Flight Level (FL) NNNNN: Feet MSL (FT)
Range	NNN: *Min*: FL 1, *Max*: Maximum certified altitude (in feet)/100 (performance database) NNNNN: *Min*: 1 ft, *Max*: Maximum certified altitude (performance database)
Resolution	NNNNN: 1 NNN: 1
Page	WIND page (*Refer to page*)

WIND DIRECTION

Ident.: DSC-22-FMS-20-80-00005337.0001001 / 22 APR 14
Applicable to: ALL

Format	On the COMPANY T.O DATA REQUEST page and WIND page: NNN, TNNN, or NNNT On the EQUI-TIME POINT page and PERF page: NNN T: True heading reference NNN: Wind direction
Units	NNN: Degrees (°)
Range	NNN: *Min*: 0 °, *Max*: 359 °
Resolution	1
Page	COMPANY T.O DATA REQUEST page (*Refer to page*) EQUI-TIME POINT page (*Refer to page*) PERF page (*Refer to page*) WIND page (*Refer to page*)

WIND SPEED

Ident.: DSC-22-FMS-20-80-00005338.0001001 / 22 APR 14
Applicable to: ALL

Format	NNN
Units	Knots (KT)
Range	*Min*: 0 kt *Max*: 250 kt
Resolution	1
Page	COMPANY T.O DATA REQUEST page (*Refer to page*) EQUI-TIME POINT page (*Refer to page*) PERF page (*Refer to page*) WIND page (*Refer to page*)

ZFW

Ident.: DSC-22-FMS-20-80-00005339.0001001 / 22 APR 14
Applicable to: ALL

Format	NNN.N
Units	Tons (T)
Range	The minimum and maximum zero fuel weights are defined in the performance database.
Resolution	0.1
Page	FUEL&LOAD page (*Refer to page*)

ZFWCG

Ident.: DSC-22-FMS-20-80-00005340.0001001 / 22 APR 14
Applicable to: ALL

Format	NN.N
Units	Percent (%)
Range	*Min*: 06.0 % *Max*: 50.0 %
Resolution	0.1
Page	FUEL&LOAD page (*Refer to page*)

EFIS CP

Ident.: DSC-22-FMS-20-60-00005222.0001001 / 22 APR 14
Applicable to: ALL

For information about the EFIS CP, *Refer to DSC-31-CDS-40-60 EFIS CP*.

Intentionally left blank

GENERAL

Applicable to: ALL

Ident.: DSC-22-FMS-20-90-10-00005341.0001001 / 03 JUL 20

There are two types of FMS messages:
- Type I messages: These messages are a direct result of a flight crew action
- Type II messages: These messages automatically appear to inform the flight crew of a specific situation, or to request a flight crew action.

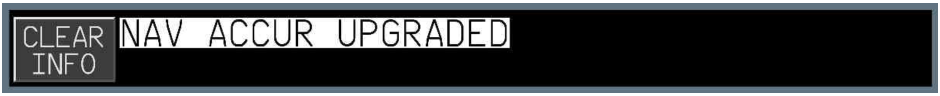
The FMS messages appear in the FMS message area on the MFD.

Note: *Some Type II messages also appear on the ND, or on the PFD.*

Type I messages always have priority over Type II messages.

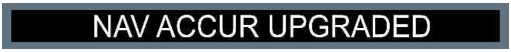
1 MESSAGE COLOR

In the FMS message area, the messages appear:
- In black on a white background for messages that result from a flight crew entry, and for messages that are not of high importance

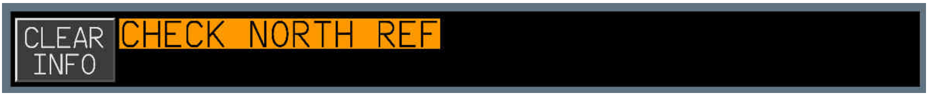


NAV ACCUR UPGRADED

Note: *On the ND and the PFD, these messages appear in white.*

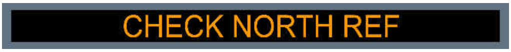

NAV ACCUR UPGRADED

- In black on an amber background for messages that are related to navigation, for messages that request the flight crew to enter data, and for messages with a high level of importance.



CHECK NORTH REF

Note: *On the ND and the PFD, these messages appear in amber.*


CHECK NORTH REF

CONDITIONS REQUIRED TO AUTOMATICALLY CLEAR MESSAGES

Type I messages are automatically cleared, when one of the following occurs:

- The display conditions of the message no longer apply, because the flight crew makes a valid entry or selection
- The flight crew presses the DIR TO, F-PLN, INIT, NAVAIDS, PERF, or SEC key on the KCCU.

Type II messages are automatically cleared, when the display conditions of the message no longer apply.

MESSAGE LIST

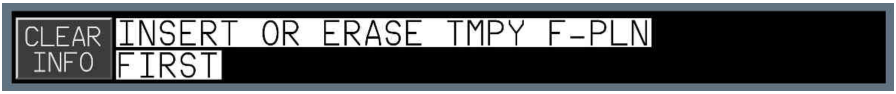
Type II messages are stored in a message list.
This message list can contain a maximum of 5 messages. When the message list is full, the message that is first removed from the list is the message that was first stored in the list.
The first message of the message list is displayed in the FMS message area (if no Type I message is currently displayed).
A message is automatically removed from the list as soon as the display conditions of the message no longer apply.
When the flight crew clears a Type II message, this message is not removed from the message list, as long as the display conditions apply. After the flight crew clears a Type II message, the FMS message area displays the next message of the message list. The next message that appears is the next message of the message list that the flight crew did not previously clear.
The message list is displayed on the MESSAGES LIST page. The flight crew can access this page via the MSG LIST button of the FMS message area. This button appears, only when no messages are displayed in the FMS message area.

Ident.: DSC-22-FMS-20-90-10-00005343.0001001 / 17 APR 14

FMS MESSAGE AREA

The FMS message area displays the messages on two lines of 33 characters.

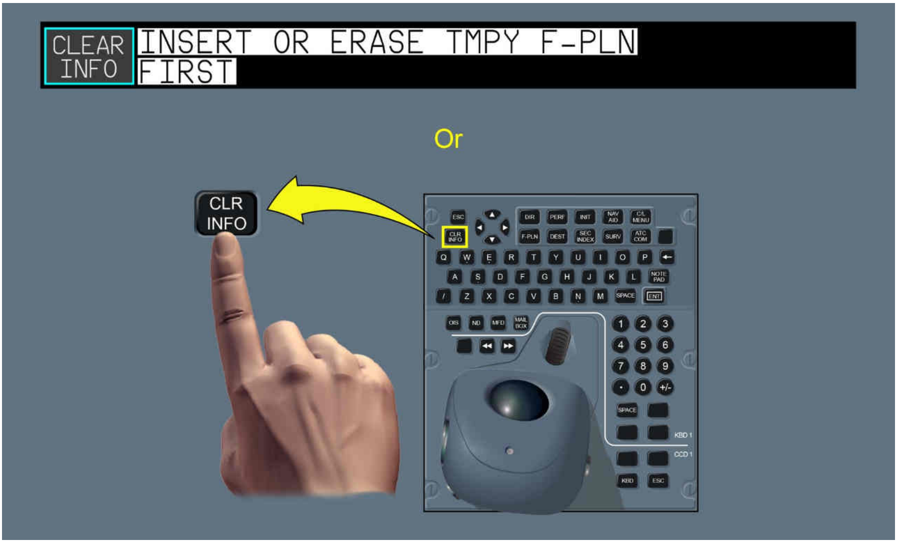
FMS Message Area



INSERT OR ERASE TMPY F-PLN
FIRST

In order to clear the displayed message, the flight crew clicks on the CLEAR INFO button, or presses the CLR INFO key on the KCCU.

Clear Info



INSERT OR ERASE TMPY F-PLN FIRST

When no messages are displayed, the flight crew can access the MESSAGES LIST page. In order to access the MESSAGES LIST page, the flight crew clicks on the MSG LIST button.

Message List

The MESSAGES LIST page displays the last 5 Type II messages.
For more information about the MESSAGES LIST page, *Refer to DSC-22-FMS-20-20-20 MESSAGES LIST Page*.

10 RWY s MAX : ALL IN USE

Ident.: DSC-22-FMS-20-90-00005490.0001001 / 14 APR 14
Applicable to: ALL

Message Type	I
Display Type	MFD
Display Conditions	The pilot-stored elements database is full, and the flight crew tries to store a new runway. The 10 RWYs MAX : ALL IN USE message informs the flight crew that the new runway cannot be stored.

20 NAVAIDS MAX : ALL IN USE

Ident.: DSC-22-FMS-20-90-00005491.0001001 / 14 APR 14
Applicable to: ALL

Message Type	I
Display Type	MFD
Display Conditions	The pilot-stored elements database is full, and the flight crew tries to store a new navaid. The 20 NAVAIDS MAX: ALL IN USE message informs the flight crew that the new navaid cannot be stored.

99 WPT s MAX : ALL IN USE

Ident.: DSC-22-FMS-20-90-00005202.0001001 / 14 APR 14
Applicable to: ALL

Message Type	I
Display Type	MFD
Display Conditions	The pilot-stored elements database is full, and the flight crew tries to store a new waypoint. The 99 WPTs MAX : ALL IN USE message informs the flight crew that the new waypoint cannot be stored.

ACFT POSITION NOT VALID

Ident.: DSC-22-FMS-20-90-00005344.0001001 / 14 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The aircraft position is no longer valid (while the HOLD, DIRECT TO, or CLOSEST AIRPORTS page is displayed).

ADJUST DESIRED TRK OR HDG

Ident.: DSC-22-FMS-20-90-00005345.0001001 / 14 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The flight crew inserted a DIR TO - CRS IN or a DIR TO - CRS OUT. The ADJUST DESIRED TRK OR HDG message informs the flight crew that they can adjust the aircraft heading/track to enable the computation of the INTCPT, or to change the position of the INTCPT (if the INTCPT was already computed).

ADJUSTING SPD DUE TO RTA

Ident.: DSC-22-FMS-20-90-00005346.0001001 / 14 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The FMS computes a new managed speed target in order to comply with the time constraint. The ADJUSTING SPD DUE TO RTA message is automatically cleared after 15 s.

AIRWAY / WPT DISAGREE

Ident.: DSC-22-FMS-20-90-00005347.0001001 / 14 APR 14
Applicable to: ALL

Message Type	I
Display Type	MFD
Display Conditions	One of the following occurs: - The entered end waypoint of the airway segment does not belong to the defined airway - The entered airway does not contain the end waypoint of the previous airway segment - The waypoint that is entered at the end of a DCT and at the beginning of an airway segment does not belong to the defined airway.

AIRWAYS INSERTION IN PROGRESS F-PLN REVISION NOT ALLOWED

Ident.: DSC-22-FMS-20-90-00005348.0001001 / 14 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	An AIRWAYS revision is in progress on the MFD of the Captain(First Officer), and the flight crew tries to access another revision on the MFD of the First Officer(Captain).

ALIGN IRS

Ident.: DSC-22-FMS-20-90-00005349.0001001 / 14 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	At least one IR waits for an alignment position. In normal operation, the IR automatically aligns on the GNSS position. If the IR cannot automatically align on the GNSS position, the flight crew needs to initiate the alignment via the POSITION/IRS page (*Refer to page*).

AREA RNP IS XX.XX

Ident.: DSC-22-FMS-20-90-00005350.0001001 / 14 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The flight crew entered an RNP value that is more than the default RNP value of the current flight phase, and there is no RNP value that is defined in the navigation database for the active flight leg or route.

ARPT REF / GPS POSITION DISAGREE

Ident.: DSC-22-FMS-20-90-00005351.0001001 / 14 APR 14
Applicable to: ALL

Message Type	I
Display Type	MFD
Display Conditions	The IR alignment failed. The GNSS position disagrees with the alignment position that the flight crew entered on the POSITION/IRS page (*Refer to page*).

ARPT REF / LAST IRS POSITION DISAGREE

Ident.: DSC-22-FMS-20-90-00005352.0001001 / 14 APR 14
Applicable to: ALL

Message Type	I
Display Type	MFD
Display Conditions	The IR alignment failed. The last stored IR position disagrees with the alignment position that the flight crew entered on the POSITION/IRS page (*Refer to page*).

ATC F-PLN INSERTED IN SEC 3

Ident.: DSC-22-FMS-20-90-00005353.0001001 / 14 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The received ATC F-PLN is correctly loaded in the third secondary flight plan (SEC 3).

ATC F-PLN INSERTED IN SEC 3 REJECTED INFO SEE SEC/INDEX

Ident.: DSC-22-FMS-20-90-00005354.0001001 / 14 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The received ATC F-PLN is partially loaded in the third secondary flight plan (SEC 3), because the ATC center sent not valid data. The flight crew can check the rejected data on the REJECTED ATC INFO page (*Refer to page*).

CABIN RATE EXCEEDED

Ident.: DSC-22-FMS-20-90-00005355.0001001 / 14 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The aircraft is in CRZ flight phase, at less than 200 NM from the destination, and the cabin rate that is associated with the theoretical descent profile is more than the maximum cabin rate. The flight can check or change the maximum cabin rate on the DES panel of the PERF page (*Refer to page*).

CHECK ALTN WIND

Ident.: DSC-22-FMS-20-90-00005356.0001001 / 14 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The company alternate-cruise flight level that was received via uplink is not the same as the default alternate-cruise flight level.

CHECK APPR SEL

Ident.: DSC-22-FMS-20-90-00005357.0001001 / 14 APR 14
Applicable to: ALL

L12

Message Type	II
Display Type	MFD and PFD
Display Conditions	The flight crew manually tuned a landing system on the POSITION/NAVAIDS page. This manually-tuned landing system does not correspond to the approach that is selected in the flight plan. The CHECK APPR SEL message is displayed, only when the aircraft is: - In cruise, and at less than 100 NM from the T/D, or - In descent, or - In approach, and the altitude is above 800 ft.

CHECK CPNY RTE

Ident.: DSC-22-FMS-20-90-00005358.0001001 / 14 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The company route ident of the flight plan that was received via uplink is not the same as the company route ident of the flight plan request.

CHECK DATABASE CYCLE

Ident.: DSC-22-FMS-20-90-00005359.0001001 / 14 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The current date disagrees with the validity period of the active navigation database. The CHECK DATABASE CYCLE message appears, when the flight crew enters a FROM/TO airport or company route.

CHECK DEST DATA

Ident.: DSC-22-FMS-20-90-00005360.0001001 / 14 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The QNH, OAT, or destination wind, that is displayed on the APPR panel of the PERF page, is completed by a company wind uplink. The flight crew should check the uplink values.

CHECK EO SPD SETTING

Ident.: DSC-22-FMS-20-90-00005361.0001001 / 14 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD and PFD
Display Conditions	In CLB flight phase, or CRZ flight phase (and the guidance mode is not ALT* or ALT): The Engine-Out (EO) mode is active, and the selected speed target is not within the range (green dot speed - 10 kt, green dot speed + 10 kt).

CHECK FLT NUMBER

Ident.: DSC-22-FMS-20-90-00005363.0001001 / 14 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The company flight number that was received via uplink is not the same as the flight number of the flight plan request.

CHECK IRS / ARPT POSITION

Ident.: DSC-22-FMS-20-90-00005362.0001001 / 14 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The difference between at least one IR position (IR 1, IR 2, or IR 3) and the airport position is 5 NM or more.

CHECK MIN FUEL AT DEST

Ident.: DSC-22-FMS-20-90-00002148.0001001 / 14 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The value of the minimum fuel at destination that is entered in the MIN FUEL AT DEST entry field of the FUEL &LOAD page (*Refer to page*) is below the ALTN + FINAL value.

CHECK NORTH REF

Ident.: DSC-22-FMS-20-90-00005365.0001001 / 14 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD and ND
Display Conditions	The position of the TRUE/MAG pb disagrees with the airport north reference. The airport north reference is stored in the navigation database. The CHECK NORTH REF message can appear for the departure airport (in preflight), or for the destination airport (in arrival and approach). For more information, *Refer to DSC-22-FMS-10-30-30 Flight Management*.

CHECK ONSIDE FMS P/N

Ident.: DSC-22-FMS-20-90-00005366.0001001 / 14 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The part numbers of the FMCs are not compatible. The MFD automatically displays the FMS P/N panel of the STATUS page (*Refer to page*).

CHECK QFE

Ident.: DSC-22-FMS-20-90-00005367.0001001 / 14 APR 16
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The QFE altitude and the predicted aircraft altitude differ by more than 100 ft. For this computation, the FMS uses the QNH entry of the APPR panel of the PERF page (*Refer to page*), and the destination airport elevation. The CHECK QFE message is displayed, when the flight phase is DES or APPR, and the flight crew changes the barometric reference from QNH(STD) to QFE.

CHECK SPD MODE

Ident.: DSC-22-FMS-20-90-00005368.0001001 / 14 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The selected speed/Mach control is active, and: - The flight phase changes from CLB to CRZ, or - The flight phase changes from CLB(CRZ) to DES, or - The aircraft sequences the start waypoint of a Constant Mach Segment (CMS).

CHECK T.O DATA

Ident.: DSC-22-FMS-20-90-00005369.0001001 / 14 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The takeoff data is already entered, and the flight crew: - Changes the takeoff runway, flaps setting, or takeoff shift, or - Activates a secondary flight plan (in PREFLIGHT or DONE flight phase).

CHECK TIME REF

Ident.: DSC-22-FMS-20-90-00004374.0001001 / 14 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The aircraft time reference is set to MANUAL on the POSITION/TIME page (*Refer to page*), and the GNSS time becomes valid.

CHECK ZFW

Ident.: DSC-22-FMS-20-90-00005370.0001001 / 14 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The flight crew changed a secondary flight plan to the active flight plan, and theses two flight plans have a different ZFW or ZFWCG. *Note:* *This can happen, only before engine start.* *Before engine start, and when an exchange is performed, the FQMS uses the new ZFW and ZFWCG values to initialize.* *After engine start, the active ZFW and ZFWCG values do not change after an exchange. The FQMS does not initialize again.*

COMPANY F-PLN & LOAD DATA RECEIVED WAITING FOR INSERTION

Ident.: DSC-22-FMS-20-90-00005372.0001001 / 14 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The FMS received a flight plan and performance and load data via uplink. The flight crew should insert, or clear, the uplink data via the RECEIVED CPNY F-PLN button on: - The INIT page (*Refer to page*), or - The SEC INDEX page (*Refer to page*).

COMPANY F-PLN RECEIVED WAITING FOR INSERTION

Ident.: DSC-22-FMS-20-90-00005373.0001001 / 14 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The FMS received a flight plan data via uplink. The flight crew should insert, or clear, the uplink data via the RECEIVED CPNY F-PLN button on: - The INIT page (*Refer to page*), or - The SEC INDEX page (*Refer to page*).

COMPANY LOAD DATA RECEIVED WAITING FOR INSERTION

Ident.: DSC-22-FMS-20-90-00005374.0001001 / 14 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The FMS received a performance and load data via uplink. The flight crew should insert, or clear, the uplink data via the RECEIVED CPNY LOAD button on the INIT page (*Refer to page*).

COMPANY MSG INSERTION IN PROGRESS

Ident.: DSC-22-FMS-20-90-00005375.0001001 / 14 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The insertion of the received company takeoff data is in progress.

COMPANY T.O DATA RECEIVED WAITING FOR INSERTION

Ident.: DSC-22-FMS-20-90-00005376.0001001 / 14 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The FMS received takeoff data via uplink. The flight crew should insert, or clear, the uplink data via the RECEIVED CPNY T.O DATA page (*Refer to page*).

COMPANY WIND DATA RECEIVED WAITING FOR INSERTION IN ACTIVE

Ident.: DSC-22-FMS-20-90-00005377.0001001 / 14 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The FMS received wind data via uplink for the active flight plan. The flight crew should insert, or clear, the uplink data via the RECEIVED CPNY WIND button on the ACTIVE/WIND page (*Refer to page*).

COMPANY WIND DATA RECEIVED WAITING FOR INSERTION IN SEC 1(2)(3)

Ident.: DSC-22-FMS-20-90-00005378.0001001 / 14 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The FMS received wind data via uplink for the first(second)(third) secondary flight plan (SEC 1(2)(3)). The flight crew should insert, or clear, the uplink data via the RECEIVED CPNY WIND button on the SEC1(2)(3)/WIND page (*Refer to page*).

COMPANY WIND UPLINK PENDING

Ident.: DSC-22-FMS-20-90-00005379.0001001 / 14 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The FMS received company wind data via uplink, while there is a temporary flight plan, or while the DIRECT TO page is displayed. The flight crew must insert(clear) the temporary flight plan, or must complete the DIR TO revision, before they can insert(clear) the uplink data.

CONSTRAINTS ABOVE CRZ FL : DELETED

Ident.: DSC-22-FMS-20-90-00005380.0001001 / 14 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The CRZ FL or step altitudes changed. As a result, the following constraints are deleted: The climb and descent constraints that are at or above the new CRZ FL, and the descent constraints that are at or above any inserted step altitude.

CONSTRAINTS BEFORE XXXXXXX : DELETED

Ident.: DSC-22-FMS-20-90-00005381.0001001 / 14 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	One of the following occurs: - The flight phase changes from CRZ(DES)(APPR) to GA As a result, all altitude and speed constraints between the aircraft and the destination airport are deleted. The "XXXXXXX" corresponds to the ident of the waypoint that is after the last down-path waypoint with a descent altitude or speed constraint. - The alternate flight plan is activated. As a result, all altitude and speed constraints between the aircraft and the previous destination airport are deleted, and all altitude and speed constraints on the alternate flight plan that are below the current aircraft altitude are deleted. The "XXXXXXX" corresponds to the ident of the waypoint that is after the last down-path waypoint with a speed constraint, below the current aircraft altitude.

CRZ FL ABOVE MAX FL

Ident.: DSC-22-FMS-20-90-00005383.0001001 / 14 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The flight crew entered a flight level that is above the recommended maximum flight level. For information about the recommended maximum flight level, *Refer to DSC-22-FMS-10-50-50 Recommended Maximum Flight Level (REC MAX FL)*.

DEST / ALTN CPNY RTE DISAGREE

Ident.: DSC-22-FMS-20-90-00005385.0001001 / 17 APR 14
Applicable to: ALL

Message Type	I
Display Type	MFD
Display Conditions	The flight crew tried to enter an company alternate route, and the departure airport of the company alternate route disagrees with the destination airport of the flight plan.

DEST EFOB BELOW MIN

Ident.: DSC-22-FMS-20-90-00005386.0001001 / 17 APR 14
Applicable to: ALL

L12

Message Type	II
Display Type	MFD
Display Conditions	The EFOB at the destination airport of the active flight plan is below the specified minimum fuel at destination. This message is displayed, only if one of the following applies: - The active flight phase is CRZ - The active flight phase is CLB, and the ALT mode is engaged for more than 10 min - The active flight phase is DES - The active flight phase is APPR, and the aircraft is above 800 ft AGL - The active flight phase is GA, and the aircraft is above 800 ft AGL.

DRAFT WIND INSERTED

Ident.: DSC-22-FMS-20-90-00005387.0001001 / 17 APR 14
Applicable to: ALL

Message Type	I
Display Type	MFD
Display Conditions	Temporary winds are on standby, and the FMS creates a temporary flight plan. As a result, the temporary winds are automatically inserted in the active and temporary flight plans.

ENTER DEST DATA

Ident.: DSC-22-FMS-20-90-00005388.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	All of the following occur: - The flight crew did not enter one or more of the destination data (QNH, OAT, or wind) - The flight phase is: • CRZ, and the aircraft is at less than 180 NM from the destination, or • DES, or • APPR.

ENTRY ABOVE EO MAX FL

Ident.: DSC-22-FMS-20-90-00004068.0001001 / 17 APR 14
Applicable to: ALL

Message Type	I
Display Type	MFD
Display Conditions	On the WHAT IF page, an engine-out is simulated, and the flight crew enters a cruise FL that is above the engine-out maximum FL.

ENTRY NOT IN LIST

Ident.: DSC-22-FMS-20-90-00005389.0001001 / 17 APR 14
Applicable to: ALL

Message Type	I
Display Type	MFD
Display Conditions	The flight crew tried to manually enter data, and the data is not in the list that is associated with the entry field.

ENTRY OUT OF RANGE

Ident.: DSC-22-FMS-20-90-00005391.0001001 / 17 APR 14
Applicable to: ALL

Message Type	I
Display Type	MFD
Display Conditions	The flight crew entered a value that is not within the acceptable range of the data, or the entered value results in the computation of a parameter that is not within the acceptable range. When applicable, the expected range and units are displayed on the second line of the FMS message area in the following format: “RNG: *(lower range limit)* TO *(upper range limit) (unit)*”. Example: RNG: 23.0 TO 28.0 %

EXPECT TURN AREA EXCEEDANCE

Ident.: DSC-22-FMS-20-90-00005392.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The aircraft will fly (or is flying) a procedure turn, and the FMS predicts that the aircraft will exceed the excursion distance (based on the predicted CAS, converted to a ground speed). The excursion distance is part of the navigation database, associated with the procedure turn.

EXTEND SPD BRK

Ident.: DSC-22-FMS-20-90-00005393.0001001 / 09 MAR 16
Applicable to: ALL

Message Type	II
Display Type	MFD and PFD
Display Conditions	Appears, if all of the following apply: - The DES or APP-DES mode is engaged - The flaps setting is neither 3 nor FULL - The aircraft needs to decelerate in order to: • Recover the FMS vertical path, or • Comply with an altitude constraint, a speed constraint, or a speed limit, or • Prevent the aircraft from being above the FMS vertical path or in an overspeed situation at a speed-monitored pseudo waypoint.

F-G/S BASED ON ISA

Ident.: DSC-22-FMS-20-90-00005394.0001001 / 17 APR 14
Applicable to: ALL

L12

Message Type	II
Display Type	MFD
Display Conditions	The computation of the F-G/S deviation is based on the ISA temperature at destination. The flight crew did not enter the temperature at destination (OAT) on the APPR panel of the PERF page (*Refer to page*). The F-G/S BASED ON ISA message is displayed, after the flight crew presses the LS pb on the EFIS CP, and when the DES or APPR flight phase becomes active.

FLT NUMBER RECEIVED

Ident.: DSC-22-FMS-20-90-00005395.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The FMS received the flight number, as part of the flight-plan data uplink, without previous request from the flight crew.

FMC s ACFT STATUS DISAGREE

Ident.: DSC-22-FMS-20-90-00005396.0001001 / 01 SEP 16
Applicable to: ALL

L13

Message Type	II
Display Type	MFD
Display Conditions	At power-up, the critical aircraft status data is not identical between one active FMC and the backup FMC. The critical aircraft status data is: - Navigation database - Performance database - Magnetic variation database - AMI file - FM operational program - Aircraft , engine type, and engine manufacturer program pins.

FMCs ACFT STATUS DISAGREE INDEPENDENT OPERATION

Ident.: DSC-22-FMS-20-90-00005397.0001001 / 01 SEP 16
Applicable to: ALL

L13

Message Type	II
Display Type	MFD
Display Conditions	At power-up, the critical aircraft status data is not identical for the two active FMCs. FMS 1 and FMS 2 independently operate. The critical aircraft status data is: - Navigation database - Performance database - Magnetic variation database - AMI file - FM operational program - Aircraft , engine type, and engine manufacturer program pins.

FMC s PIN PROG TYPE DISAGREE

Ident.: DSC-22-FMS-20-90-00005398.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	At power-up, critical program pins (not aircraft-related or engine-type-related) are not identical between one active FMC and the backup FMC.

FMCs PIN PROG TYPE DISAGREE INDEPENDENT OPERATION

Ident.: DSC-22-FMS-20-90-00005399.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	At power-up, critical program pins (not aircraft-related or engine-type-related) are not identical for the two active FMCs. FMS 1 and FMS 2 independently operate.

FMS DATALINK NOT AVAIL

Ident.: DSC-22-FMS-20-90-00005400.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The data communication between the FMS and the Avionics Communication Router (ACR) is not available.

FMS1 / FMS2 GW DISAGREE

Ident.: DSC-22-FMS-20-90-00005401.0001001 / 09 MAR 16
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The FMS 1 and FMS 2 gross weights differ by 2 t (4.4 klb) or more. The FMS1 / FMS2 GW DISAGREE message is automatically cleared, when the difference between the two gross weights becomes less than 1.5 t (3.3 klb).

FMS1 / FMS2 SPD TARGET DISAGREE

Ident.: DSC-22-FMS-20-90-00005806.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The FMS 1 and FMS 2 target speeds differ by 5 kt or more. The FMS1 / FMS2 SPD TARGET DISAGREE message is automatically cleared, when the difference between the two target speeds becomes less than 2.5 kt.

FORMAT ERROR

Ident.: DSC-22-FMS-20-90-00005403.0001001 / 08 JUL 19
Applicable to: ALL

Message Type	I
Display Type	MFD
Display Conditions	The format of the value that the flight crew entered is not correct. When applicable, the expected format and units are displayed on the second line of the FMS message area in the following format: “FORMAT: *(format) (unit)*”. The following characters are used to indicate the format: - A: Letters - X: Alphanumeric (letters and numbers) - HHMMSS: Hours, minutes, and seconds - N/S: North/South - E/W: East/West - F/B: Frontbeam/Backbeam - L/R: Left/Right - UP/DN: Up/Down. Example: FORMAT: NN.N %

FORMAT ERROR ENTER ALT BEFORE PLACE/DIST

Ident.: DSC-22-FMS-20-90-00005404.0001001 / 17 APR 14
Applicable to: ALL

Message Type	I
Display Type	MFD
Display Conditions	The flight crew needs to enter the step altitude first, before they can enter a place/distance start waypoint.

F-PLN ELEMENT RETAINED

Ident.: DSC-22-FMS-20-90-00005405.0001001 / 17 APR 14
Applicable to: ALL

Message Type	I
Display Type	MFD
Display Conditions	The pilot-stored elements are deleted, except the elements that are still used by the FMS. The F-PLN ELEMENT RETAINED message informs the flight crew that the elements that are still used by the FMS are not deleted.

F-PLN FULL

Ident.: DSC-22-FMS-20-90-00005406.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The flight plan data memory is exceeded.

GLIDE DESELECTED

Ident.: DSC-22-FMS-20-90-00005410.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	All of the following occur: - The flight crew manually deselected the glide slope data on the POSITION/NAVAIDS page (*Refer to DSC-22-FMS-20-20-20 POSITION/NAVAIDS Page*) - The LOC mode is armed, or the LOC*, LOC, or LAND mode is engaged.

GPS DESELECTED

Ident.: DSC-22-FMS-20-90-00005407.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The flight crew manually deselected the GPS, and: - The aircraft is at 80 NM from the T/D, or - The APPR flight phase becomes active.

INDEPENDENT OPERATION

Ident.: DSC-22-FMS-20-90-00005411.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	A communication failure occurred between the two active FMCs: FMS 1 and FMS 2 independently operate.

INITIALIZE ZFW / ZFWCG

Ident.: DSC-22-FMS-20-90-00005412.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The flight crew started at least on engine, and the ZFW and ZFWCG are still not defined.

INSERT OR ERASE TMPY F-PLN FIRST

Ident.: DSC-22-FMS-20-90-00005413.0001001 / 17 APR 14
Applicable to: ALL

Message Type	I
Display Type	MFD
Display Conditions	A temporary flight plan that is not created by a DIR TO is on standby, and the flight crew tries to access the DIR TO revision via the KCCU.

LATERAL DISCONTINUITY AHEAD

Ident.: DSC-22-FMS-20-90-00005414.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The aircraft is at 30 s or less from flying a flight plan discontinuity.

LRC MODE IN USE

Ident.: DSC-22-FMS-20-90-00005382.0001001 / 17 APR 14
Applicable to: ALL

Message Type	I
Display Type	MFD
Display Conditions	The FMS automatically set the FMS speed mode to LRC. The flight crew can manually change the FMS speed mode.

MACH SEGMENT DELETED

Ident.: DSC-22-FMS-20-90-00005415.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The Constant Mach Segment (CMS) is automatically deleted in the active flight plan, due to a flight phase transition from CRZ to another flight phase.

NAV ACCUR DOWNGRADED

Ident.: DSC-22-FMS-20-90-00005416.0001001 / 20 OCT 14
Applicable to: ALL

Message Type	II
Display Type	MFD and ND
Display Conditions	The navigation accuracy changed from HIGH to LOW. For more information, *Refer to DSC-34-NAV-20-10-60 Position Accuracy and Navigation Accuracy*.

NAV ACCUR UPGRADED

Ident.: DSC-22-FMS-20-90-00005417.0001001 / 20 OCT 14
Applicable to: ALL

Message Type	II
Display Type	MFD and ND
Display Conditions	The navigation accuracy changed from LOW to HIGH. For more information, *Refer to DSC-34-NAV-20-10-60 Position Accuracy and Navigation Accuracy*.

NAV PRIMARY

Ident.: DSC-22-FMS-20-90-00005408.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD and ND
Display Conditions	For the computation of the aircraft position, at least one of the following conditions was no longer achieved, and both conditions are now achieved again: - The navigation mode is IRS/GNSS - The navigation accuracy is HIGH. For more information, *Refer to DSC-34-NAV-20-10-60 Position Accuracy and Navigation Accuracy*.

NAV PRIMARY LOST

Ident.: DSC-22-FMS-20-90-00005409.0001001 / 03 JUL 14
Applicable to: ALL

Message Type	II
Display Type	MFD and ND
Display Conditions	For the computation of the aircraft position, at least one of the following conditions is no longer achieved: - The navigation mode is IRS/GNSS - The navigation accuracy is HIGH. For more information, *Refer to DSC-34-NAV-20-10-60 Position Computation*.

NEW ACCEL ALT : HHHHH

Ident.: DSC-22-FMS-20-90-00005418.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The flight crew entered on a climb waypoint an AT or AT OR BELOW altitude constraint. As a result, the FMS considers that the aircraft levels off below the acceleration altitude. The constraint altitude becomes the new acceleration altitude. The "HHHHH" corresponds to the altitude of the altitude constraint.

NEW CRZ ALT : HHHHH

Ident.: DSC-22-FMS-20-90-00005419.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The cruise flight level (on the INIT page (*Refer to page*) and PERF page (*Refer to page*) was automatically updated with the AFS CP selected altitude. The "HHHHH" corresponds to the new cruise flight level.

NEW THR RED ALT : HHHHH

Ident.: DSC-22-FMS-20-90-00005420.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The flight crew entered on a climb waypoint an AT or AT OR BELOW altitude constraint. As a result, the FMS considers that the aircraft levels off below the thrust reduction altitude. The constraint altitude becomes the new thrust reduction altitude. The "HHHHH" corresponds to the altitude of the altitude constraint.

NO COMPANY REPLY

Ident.: DSC-22-FMS-20-90-00005421.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The FMS did not receive any response from the company ground station within 4 min after the company request.

NO FLS FOR THIS APPR

Ident.: DSC-22-FMS-20-90-00005422.0001001 / 17 APR 14
Applicable to: ALL

L12

Message Type	II
Display Type	MFD
Display Conditions	The FMS does not compute the FLS beam for the approach that the flight crew selected. The FLS function is not available. The FMS does not compute the FLS beam: - For IGS without G/S, SDF, and LDA approaches, or - If all of the following occur: • The MAP is before the runway threshold • The angle between the course of the final-approach flight leg and the runway course is more than 50 °.

NO INTERSECTION FOUND

Ident.: DSC-22-FMS-20-90-00005423.0001001 / 17 APR 14
Applicable to: ALL

Message Type	I
Display Type	MFD
Display Conditions	The FMS can neither find a shared waypoint nor an intersection (for the definition of an airway segment, LAT/LONG crossing waypoint, or place-bearing/place-bearing waypoint).

NO NAV INTERCEPTION

Ident.: DSC-22-FMS-20-90-00005424.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD and PFD
Display Conditions	The HDG(TRACK) mode is engaged, and the NAV mode is armed. The NAV mode cannot engage, because all of the following occur: - The aircraft is not on the trajectory of the FMS flight plan - The current aircraft trajectory does not intersect the FMS flight plan before the TO waypoint. The ND displays no intersection path.

NO SLS FOR THIS APPR FOR FLS: DESELECT SLS ON NAVAIDS

Ident.: DSC-22-FMS-20-90-00013760.0001001 / 14 APR 16
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The SLS function is not available for the approach that the flight crew selected. To fly the approach with the FLS function, the flight crew must deselect the SLS function via the POSITION/NAVAIDS page (*Refer to page*).

NO VERT PATH INTERCEPT

Ident.: DSC-22-FMS-20-90-00004384.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD and PFD
Display Conditions	The APP-DES mode is armed. The APP-DES mode cannot engage, because all of the following occur: - The aircraft is not on the FMS vertical profile - The current aircraft trajectory does not intersect the FMS vertical profile.

NOT ALLOWED

Ident.: DSC-22-FMS-20-90-00005425.0001001 / 17 APR 14
Applicable to: ALL

Message Type	I
Display Type	MFD
Display Conditions	The data entry or the data selection is not permitted.

NOT ALLOWED DATABASE ARPT s ONLY

Ident.: DSC-22-FMS-20-90-00005426.0001001 / 17 APR 14
Applicable to: ALL

Message Type	I
Display Type	MFD
Display Conditions	On the DATABASE RTEs panel of the DATA/ROUTE page (*Refer to page*), the flight crew entered an airport that is a pilot-created airport.

NOT ALLOWED IN TURN

Ident.: DSC-22-FMS-20-90-00003625.0001001 / 17 APR 14
Applicable to: ALL

Message Type	I
Display Type	MFD
Display Conditions	While the aircraft performs a turn, data entry or data selection is not permitted.

NOT IN DATABASE

Ident.: DSC-22-FMS-20-90-00005427.0001001 / 17 APR 14
Applicable to: ALL

Message Type	I
Display Type	MFD
Display Conditions	The flight crew entered the ident of an element (e.g. route, airport) that is neither in the navigation database nor in the pilot-stored elements database.

NOT TRANSMITTED TO ACR

Ident.: DSC-22-FMS-20-90-00005428.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The flight crew tried to send a company request or report, and a communication failure occurred between the FMS and the Avionics Communication Router (ACR).

PILOT RTE s LIST FULL

Ident.: DSC-22-FMS-20-90-00005442.0001001 / 17 APR 14
Applicable to: ALL

Message Type	I
Display Type	MFD
Display Conditions	The pilot-stored route database is full. The PILOT RTEs LIST FULL message informs the flight crew that the new route creation is rejected.

PLACE / DIST IN TRANS

Ident.: DSC-22-FMS-20-90-00005444.0001001 / 17 APR 14
Applicable to: ALL

Message Type	I
Display Type	MFD
Display Conditions	The flight crew tried to define a place/distance waypoint within a planned fixed-turn-radius transition between two flight legs.

PLACE / WPT DISAGREE

Ident.: DSC-22-FMS-20-90-00005445.0001001 / 17 APR 14
Applicable to: ALL

Message Type	I
Display Type	MFD
Display Conditions	To define a place/distance waypoint, the flight crew entered a PLACE that is different from the revised waypoint.

PLEASE WAIT

Ident.: DSC-22-FMS-20-90-00005446.0001001 / 17 APR 14
Applicable to: ALL

Message Type	I
Display Type	MFD
Display Conditions	The FMS is processing.

PLEASE WAIT FOR COMPANY F-PLN UPLINK

Ident.: DSC-22-FMS-20-90-00005447.0001001 / 17 APR 14
Applicable to: ALL

Message Type	I
Display Type	MFD
Display Conditions	The flight crew made a change on the INIT, PERF, or FUEL&LOAD page, or made a flight plan revision, while a flight plan request is in progress. The flight crew should make the flight plan changes after the flight-plan uplink data is received and inserted, to prevent data to be overwritten.

PLEASE WAIT FOR FMS RESYNCH

Ident.: DSC-22-FMS-20-90-00005448.0001001 / 17 APR 14
Applicable to: ALL

Message Type	I
Display Type	MFD
Display Conditions	An FMC resynchronization is in progress.

PRINTER NOT AVAIL

Ident.: DSC-22-FMS-20-90-00005449.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	A printer communication error occurred, while printing a report.

PROC RNP IS XX.XX

Ident.: DSC-22-FMS-20-90-00005450.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The flight crew entered an RNP value that is more than the RNP value that is defined in the navigation database for the active flight leg or route.

RECEIVED ATC MSG NOT VALID

Ident.: DSC-22-FMS-20-90-00005451.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The FMS totally rejected the received ATC F-PLN, because the ATC center sent not valid data. The flight crew can check the rejected data on the REJECTED ATCINFO page (*Refer to page*).

RECEIVED COMPANY F-PLN NOT VALID

Ident.: DSC-22-FMS-20-90-00005452.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The flight plan that was received from the company ground station via uplink is not valid.

RECEIVED COMPANY LOAD DATA NOT VALID

Ident.: DSC-22-FMS-20-90-00005453.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The performance data that was received from the company ground station via uplink is not valid.

RECEIVED COMPANY T.O DATA NOT VALID

Ident.: DSC-22-FMS-20-90-00005455.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The takeoff data that was received from the company ground station via uplink is not valid.

RECEIVED COMPANY WIND DATA NOT VALID

Ident.: DSC-22-FMS-20-90-00005454.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The wind data that was received from the company ground station via uplink is not valid.

RECEIVED FLT NUMBER NOT VALID

Ident.: DSC-22-FMS-20-90-00005456.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The received flight number that is part of the flight-plan uplink data is not valid.

REENTER ZFW / ZFWCG

Ident.: DSC-22-FMS-20-90-00005461.0001001 / 09 MAR 16
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The ZFW/ZFWCG that were entered by the flight crew and the ZFW/ZFWCG that were received from the FQMS. differ by more than 0.1 t (0.2 klb) or 0.1 %. The flight crew needs to enter again the ZFW and ZFWCG values. *Note:* *The FMS also displays the REENTER ZFW / ZFWCG message, if the FUEL FQMS 1+2 FAULT alert (Refer to procedure) is triggered. In this case, the flight crew should disregard the REENTER ZFW / ZFWCG message.*

RETRACT SPD BRK

Ident.: DSC-22-FMS-20-90-00005462.0001001 / 09 MAR 16
Applicable to: ALL

Message Type	II
Display Type	MFD and PFD
Display Conditions	The DES or APP-DES mode is engaged, the speed brakes are extended, and: - The DES or APP-DES mode disengages, or - The aircraft is below the FMS vertical path and needs to recover it, or - The speed brakes are no longer necessary: • To comply with a speed limit or a speed constraint, or • To prevent the aircraft from being in an overspeed situation at a speed-monitored pseudo waypoint.

RNP PROC ERROR: FPLN/NDB MISMATCH RE-ENTER RNP PROC(S)

Ident.: DSC-22-FMS-20-90-00005371.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The RNP AR procedure that is in the active or temporary flight plan disagrees with the corresponding RNP AR procedure that is stored in the navigation database. To fly the RNP AR procedure, the flight crew must reinsert the RNP AR procedure in the flight plan. This message is not displayed, if one of the following applies: - The aircraft currently flies an RNP AR procedure - The active flight phase is T.O, and the aircraft is below 800 ft AGL - The active flight phase is APPR, and the aircraft is below 800 ft AGL - The active flight phase is GA, and the aircraft is below 800 ft AGL.

RTA ALREADY EXISTING

Ident.: DSC-22-FMS-20-90-00005463.0001001 / 17 APR 14
Applicable to: ALL

Message Type	I
Display Type	MFD
Display Conditions	In preflight, the flight crew tries to delete the FMS-computed ETT, while there is a RTA.

RTA DELETED

Ident.: DSC-22-FMS-20-90-00003640.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The RTA is automatically deleted in the active flight plan, because one of the following occurs: - The Engine-Out (EO) mode becomes active - The UTC time is no longer valid - The aircraft is in a holding pattern with manual termination, or in the deceleration zone of a holding pattern with manual termination - The flight phase changes from DES or APPR to CLB or CRZ - The flight phase becomes GA.

RTA NOT CONSIDERED FOR FUEL PLANNING

Ident.: DSC-22-FMS-20-90-00005465.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The flight crew initiates the fuel planning computation on the FUEL&LOAD page (*Refer to page*), and there is an RTA in the flight plan.

RTE IDENT ALREADY USED

Ident.: DSC-22-FMS-20-90-00005466.0001001 / 17 APR 14
Applicable to: ALL

Message Type	I
Display Type	MFD
Display Conditions	The RTE IDENT ALREADY USED message informs the flight crew that the new route ident is already in the navigation database or in the pilot-stored elements database.

RUNWAY / LS DISAGREE

Ident.: DSC-22-FMS-20-90-00005467.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The flight crew manually tuned a landing system on the POSITION/NAVAIDS page (*Refer to page*), and this landing system disagrees with the selected runway in the flight plan.

SELECT HDG OR TRK FIRST

Ident.: DSC-22-FMS-20-90-00005468.0001001 / 17 APR 14
Applicable to: ALL

Message Type	I
Display Type	MFD
Display Conditions	The NAV mode is engaged, the flight crew tries to insert(activate) a temporary(secondary) flight plan, and the first flight leg of the temporary(secondary) flight plan is different from the active flight leg of the active flight plan.

SELECT TRUE NORTH REF

Ident.: DSC-22-FMS-20-90-00005469.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD and ND
Display Conditions	At least one IR reached an extreme latitude (> 82 ° N), and the TRUE/MAG pb is still in the MAG position.

SET HOLD SPD

Ident.: DSC-22-FMS-20-90-00005470.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD and PFD
Display Conditions	All of the following occur: - The selected speed/Mach control is engaged - The aircraft is between the deceleration point and the holding entry fix - The selected speed and the holding speed differ by more than 5 kt.

SLS MANUAL TUNING NOT ALLOWED

Ident.: DSC-22-FMS-20-90-00013761.0001001 / 14 APR 16
Applicable to: ALL

Message Type	I
Display Type	MFD
Display Conditions	The flight crew tried to manually enter a channel that corresponds to an RNAV (GNSS) approach with LPV minima. Manual tuning for an RNAV (GNSS) approach with LPV minima is not permitted.

SLS NOT AVAIL: SBAS DESELECTED FOR FLS: DESELECT SLS ON NAVAIDS

Ident.: DSC-22-FMS-20-90-00013763.0001001 / 14 APR 16
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The SLS function is not available for the approach that the flight crew selected, because the SBAS is deselected. To fly the approach with the SLS function, the flight crew must reselect the SBAS via the POSITION/GNSS page (*Refer to page*). To fly the approach with the FLS function, the flight crew must deselect the SLS function via the POSITION/NAVAIDS page (*Refer to page*).

SOME REVISIONS NOT STORED

Ident.: DSC-22-FMS-20-90-00005471.0001001 / 17 APR 14
Applicable to: ALL

L12

Message Type	II
Display Type	MFD
Display Conditions	The flight crew stored a route, and some flight plan elements are removed from the stored flight plan. When a route is stored, the following flight plan elements are removed: - Holding patterns that were entered by the flight crew - Offsets - Changes to terminal area procedures - Constraints that were entered by the flight crew - Waypoints that were created by the FMS (e.g. latitude/longitude crossing waypoints) - Optimum step - CMS that was defined by the flight crew. When a route is stored, only the first 30 flight plan elements are stored. All other elements are removed.

SPD ERROR AT XXXXXXX

Ident.: DSC-22-FMS-20-90-00005473.0002001 / 14 APR 16
Applicable to: ALL

L12

Message Type	II
Display Type	MFD
Display Conditions	The speed constraint will be missed at waypoint XXXXXXX: - For waypoints: if the speed error is more than 10 kt - For pseudo-waypoints: if the speed error is more than 20 kt. Only with CDA ✻ option. *Note:* *The FMS does not simultaneously trigger the SPD ERROR AT DECEL and SPD ERROR AT XXXXXXX messages. If the conditions of display are achieved for two or more of these messages, the FMS message area displays only the message that is related to the nearest waypoint or pseudo waypoint.*

SPD LIMIT EXCEEDED

Ident.: DSC-22-FMS-20-90-00005474.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The speed limit is exceeded: The aircraft altitude is below the speed limit altitude, and the aircraft speed is more than 10 kt above the speed limit.

SPECIF NDB NOT AVAIL ◁

Ident.: DSC-22-FMS-20-90-00005475.0001001 / 14 APR 16
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The NDB (defined for an NDB approach) is deselected or not available.

SPECIF VOR-D NOT AVAIL

Ident.: DSC-22-FMS-20-90-00005476.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD and ND
Display Conditions	The VOR or VOR/DME (defined for an RNAV or VOR approach) is deselected or not available.

STEP ABOVE MAX FL

Ident.: DSC-22-FMS-20-90-00005477.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The entered step altitude is above the recommended maximum flight level. For information about the recommended maximum flight level, *Refer to DSC-22-FMS-10-50-50 Recommended Maximum Flight Level (REC MAX FL)*.

STEP AHEAD

Ident.: DSC-22-FMS-20-90-00005478.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The aircraft is at less than 20 NM from the start waypoint of a step climb or step descent.

STEP DELETED

Ident.: DSC-22-FMS-20-90-00005479.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The step is automatically deleted in the active or temporary flight plan. For the active flight plan, the STEP DELETED message appears, when one of the following occurs: - The step start waypoint is sequenced, and the flight crew did not initiate the step climb or step descent - The Engine-Out (EO) mode becomes active - After a cruise altitude change in PREFLIGHT, T.O, or CLB flight phase, a step climb becomes a step descent, or vice versa - The AFS CP altitude is increased to 100 ft or more above the aircraft altitude In CRZ flight phase, all step descents and all step climbs with a step altitude below the new AFS CP altitude are deleted. - The AFS CP altitude is decreased to 100 ft or more below the aircraft altitude In CRZ flight phase, all step climbs and all step descents with a step altitude above the new AFS CP altitude are deleted. For the temporary flight plan, the STEP DELETED message appears, when the step start waypoint is deleted.

T.O RWY TOO SHORT CHECK TOW & T.O DATA

Ident.: DSC-22-FMS-20-90-00005384.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The liftoff distance check of the takeoff surveillance function is not successful. The flight crew should compute again the takeoff data, and correct the corresponding FMS entries.

T.O SPEED TOO LOW CHECK TOW & T.O DATA

Ident.: DSC-22-FMS-20-90-00005390.0001001 / 13 JAN 15
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The entered takeoff speeds (V1, VR, and V2) do not satisfy the regulatory requirements for the minimum speeds (VMCG, VMCA, VMU, and VS1G).

T.O TIME REACHED

Ident.: DSC-22-FMS-20-90-00005486.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The current UTC time is equal to the ETT.

T/D REACHED

Ident.: DSC-22-FMS-20-90-00005481.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD and PFD
Display Conditions	The managed speed/Mach control is engaged, and the aircraft reaches the top of descent (T/D).

TIME ERROR AT XXXXXXX

Ident.: DSC-22-FMS-20-90-00005482.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The time constraint will be missed at waypoint XXXXXXX. The time error is more than 30 s.

TIME MARKER REACHED

Ident.: DSC-22-FMS-20-90-00005483.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The current UTC time is equal to the UTC time that defines the time marker.

TIME TO EXIT

Ident.: DSC-22-FMS-20-90-00005484.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The aircraft must immediately leave the holding pattern in order to comply with the fuel reserve requirements. The fuel reserve requirements consider that the extra fuel is equal to 0 at landing at the destination airport.

TOO STEEP PATH AHEAD

Ident.: DSC-22-FMS-20-90-00005485.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The FMS detected a too steep path in the vertical descent profile. *Note:* *The TOO STEEP PATH AHEAD message is displayed only one time per destination.*

TRUE NORTH REFERENCED ENTRY EXPECTED

Ident.: DSC-22-FMS-20-90-00005487.0001001 / 17 APR 14
Applicable to: ALL

Message Type	I
Display Type	MFD
Display Conditions	The flight crew tried to enter a course with magnetic reference, while the aircraft flies at extreme latitudes.

TUNE BBB FFF.FF

Ident.: DSC-22-FMS-20-90-00005488.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	The FMS cannot tune the desired navaid due to a manual navaid selection. The "BBB" corresponds to the navaid ident. The "FFF.FF" corresponds to the associated frequency.

V1/VR/V2 DISAGREE

Ident.: DSC-22-FMS-20-90-00005429.0001001 / 17 APR 14
Applicable to: ALL

Message Type	II
Display Type	MFD
Display Conditions	V1, VR, and V2 do not satisfy the condition V1 ≤ VR ≤ V2.

XXXX IS DESELECTED

Ident.: DSC-22-FMS-20-90-00005489.0001001 / 07 MAY 18
Applicable to: ALL

Message Type	I
Display Type	MFD
Display Conditions	The flight crew tried to manually tune a deselected navaid, or tried to deselect a navaid that was already deselected. The "XXXX" corresponds to the ident of the navaid.

FMS SELECTOR

Applicable to: ALL

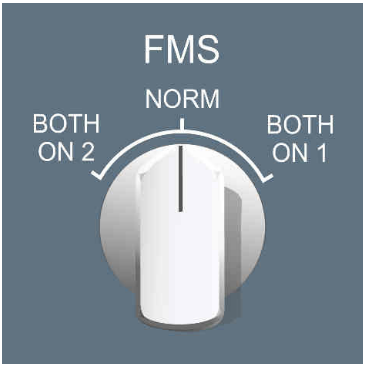
Ident.: DSC-22-FMS-20-70-10-00005103.0001001 / 22 APR 14

In the case of an FMS failure, the flight crew uses the FMS selector in order to display:
- FMS 1 data on both sides of the cockpit, or
- FMS 2 data on both sides of the cockpit.

L2 For more information about FMS abnormal operation, *Refer to DSC-22-FMS-40 Abnormal Operation*.

L1 *Note:* *The use of the FMS selector has no influence on the display of the weather and terrain data.*

FMS Selector

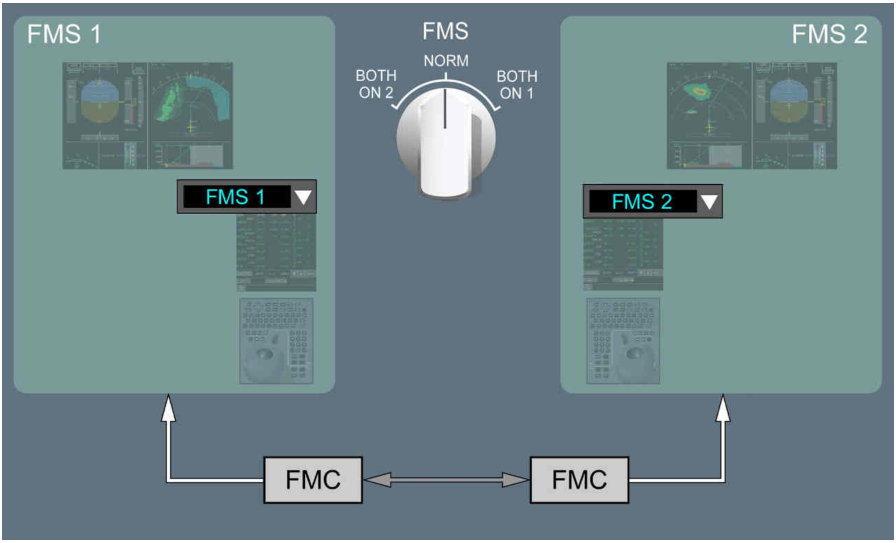


Ident.: DSC-22-FMS-20-70-10-00005223.0001001 / 22 APR 14

NORM

When the FMS selector is set to NORM:
- The data of the FMC that controls FMS 1 is displayed on the side of the Captain
- The data of the FMC that controls FMS 2 is displayed on the side of the First Officer.

FMS Selector Set to NORM



Ident.: DSC-22-FMS-20-70-10-00005224.0001001 / 14 APR 14

BOTH ON 1

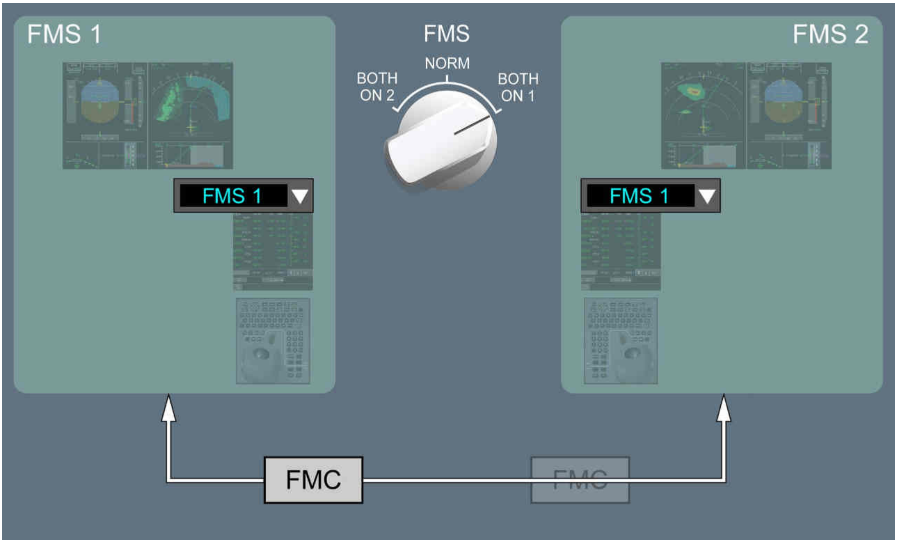
If the flight crew sets the FMS selector to BOTH ON 1, the data of the FMC that controls FMS 1 is displayed on both sides of the cockpit.

After the flight crew sets the FMS selector to BOTH ON 1:
- The MFD of the First Officer displays the ACTIVE/F-PLN page
  The MFD system menu displays the same label as on the MFD of the Captain. The fact that both MFD system menus display the same label indicates that both sides of the cockpit display data that comes from the same FMC.
- The ND of the First Officer displays the OFFSIDE FM CONTROL message
  This message indicates that the active FMC on the side of the Captain provides the FMS data for the side of the First Officer.
- On the EFIS CP of the First Officer, the flight crew can no longer select:
  - The FMS display options: CSTR, WPT, VORD, NDB, and ARPT
  - The ND mode (except the ROSE-VOR and ROSE-LS modes)
  - The ND range (except the ZOOM position).

  The flight crew manages these display options via the EFIS CP of the Captain.

Note: *The ND and VD displays of weather(terrain) data remain operative.*

FMS Selector Set to BOTH ON 1



Ident.: DSC-22-FMS-20-70-10-00005225.0001001 / 14 APR 14

BOTH ON 2

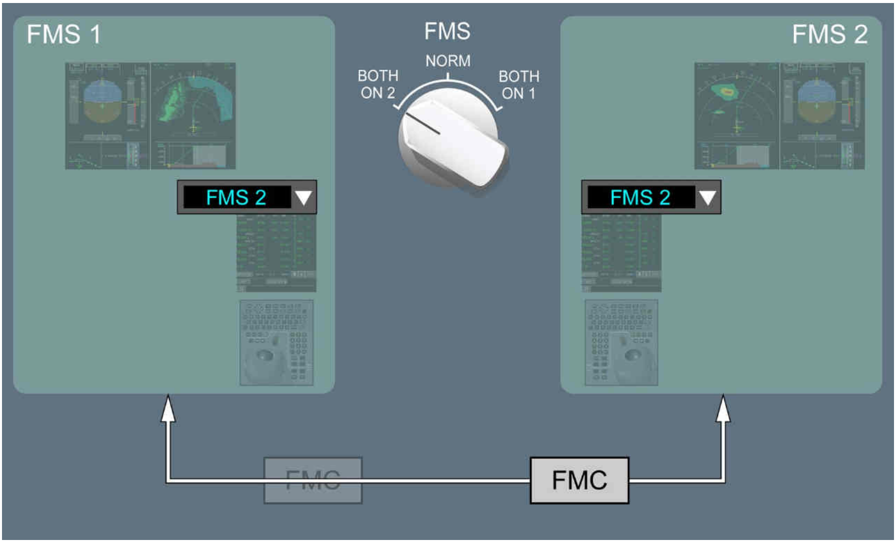
If the flight crew sets the FMS selector to BOTH ON 2, the data of the FMC that controls FMS 2 is displayed on both sides of the cockpit.

After the flight crew sets the FMS selector to BOTH ON 2:
- The MFD of the Captain displays the ACTIVE/F-PLN page
  The MFD system menu displays the same label as on the MFD of the First Officer. The fact that both MFD system menus display the same label indicates that both sides of the cockpit display data that comes from the same FMC.
- The ND of the Captain displays the OFFSIDE FM CONTROL message
  This message indicates that the active FMC on the side of the First Officer provides the FMS data for the side of the Captain.
- On the EFIS CP of the Captain, the flight crew can no longer select:
  - The FMS display options: CSTR , WPT, VORD, NDB, and ARPT
  - The ND mode (except the ROSE-VOR, and ROSE-LS modes)
  - The ND range (except the ZOOM position).

  The flight crew manages these display options via the EFIS CP of the First Officer.

Note: *The ND and VD displays of weather(terrain) data remain operative.*

FMS Selector Set to BOTH ON 2


FMS 1
FMS
NORM
BOTH ON 2
BOTH ON 1
FMS 2
FMS 2
FMS 2
FMC
FMC

KCCU CONTROLS FOR THE FMS

Applicable to: ALL

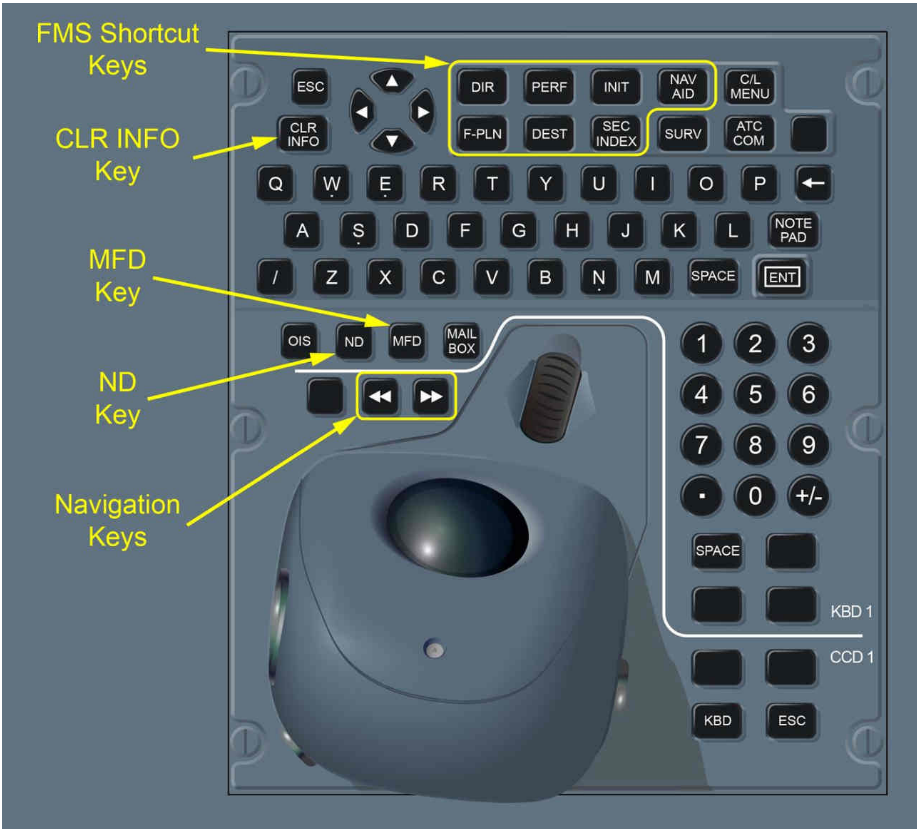
Ident.: DSC-22-FMS-20-30-10-00005101.0001001 / 22 APR 14

There are two Keyboard and Cursor Control Units (KCCUs) on the pedestal:
- One KCCU for the Captain (CAPT)
- One KCCU for the First Officer (F/O).

The flight crew uses the KCCU to:
- Display the FMS pages on the MFD
- Enter and modify data on the MFD FMS pages
- Perform some flight plan revisions on the ND.

The KCCU controls for the FMS are:
- The FMS shortcut keys
- The CLR INFO key
- The ND key and the MFD key
- The navigation keys.

KCCU

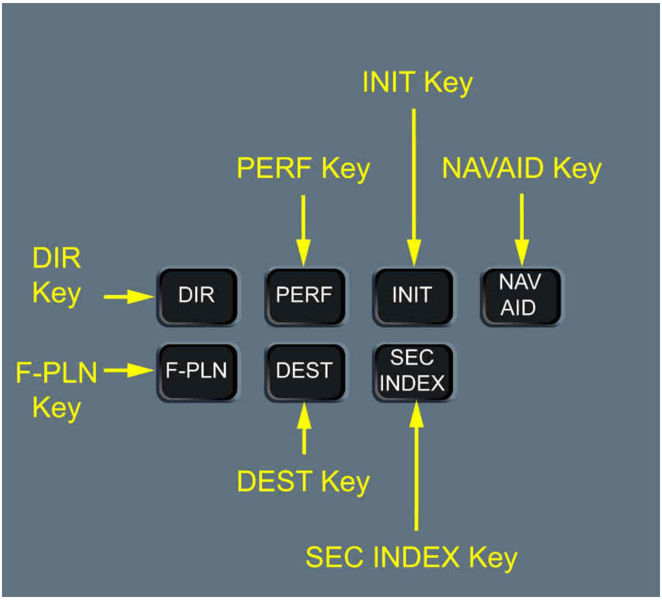

FMS Shortcut Keys
CLR INFO Key
MFD Key
ND Key
Navigation Keys
ESC
CLR INFO
DIR
PERF
INIT
NAV AID
C/L MENU
F-PLN
DEST
SEC INDEX
SURV
ATC COM
Q W E R T Y U I O P
A S D F G H J K L
NOTE PAD
/ Z X C V B N M
SPACE
ENT
OIS
ND
MFD
MAIL BOX
1 2 3 4 5 6 7 8 9 0
+/-
SPACE
KBD 1
CCD 1
KBD
ESC

Note: *This description applies to the KCCU controls that the flight crew uses for the FMS. For more information about the KCCU, Refer to DSC-31-CDS-100-20 Overview.*

Ident.: DSC-22-FMS-20-30-10-00005199.0001001 / 22 APR 14

FMS SHORTCUT KEYS

FMS Shortcut Keys


INIT Key
PERF Key
NAVAID Key
DIR Key
DIR
PERF
INIT
NAV AID
F-PLN Key
F-PLN
DEST
SEC INDEX
DEST Key
SEC INDEX Key

DIR KEY

When pressed:
- Displays the FMS DIRECT TO page on the MFD (*Refer to DSC-22-FMS-20-20-20 DIRECT TO Page*)
- Moves the cursor back to the MFD, if the cursor was previously on another display.

PERF KEY

When pressed:
- Displays the FMS ACTIVE/PERF page (on the panel that corresponds to the active flight phase) on the MFD (*Refer to DSC-22-FMS-20-20-20 PERF Page*)
- Moves the cursor back to the MFD, if the cursor was previously on another display.

INIT KEY

When pressed:
- Displays the FMS ACTIVE/INIT page on the MFD (*Refer to DSC-22-FMS-20-20-20 INIT Page*)
- Moves the cursor back to the MFD, if the cursor was previously on another display.

NAVAID KEY

When pressed:
- Displays the FMS POSITION/NAVAIDS page on the MFD (*Refer to DSC-22-FMS-20-20-20 POSITION/NAVAIDS Page*)
- Moves the cursor back to the MFD, if the cursor was previously on another display.

F-PLN KEY

When pressed:
- Displays the top of the flight plan on the FMS ACTIVE/F-PLN page on the MFD (*Refer to DSC-22-FMS-20-20-20 F-PLN Page*)
- Moves the cursor back to the MFD, if the cursor was previously on another display.

DEST KEY

When pressed:
- Displays the bottom of the destination flight plan on the FMS ACTIVE/F-PLN page on the MFD (*Refer to DSC-22-FMS-20-20-20 F-PLN Page*)
- Moves the cursor back to the MFD, if the cursor was previously on another display.

SEC INDEX KEY

When pressed:
- Displays the FMS SEC INDEX page on the MFD (*Refer to DSC-22-FMS-20-20-20 SEC INDEX Page*)
- Moves the cursor back to the MFD, if the cursor was previously on another display.

Ident.: DSC-22-FMS-20-30-10-00005207.0001001 / 14 APR 14

CLR INFO KEY

When pressed, clears the message that is currently displayed in the FMS message area.

Ident.: DSC-22-FMS-20-30-10-00005208.0001001 / 22 APR 14

ND KEY

When pressed, moves the cursor to the onside ND.
If the ND is not displayed, the ND appears.

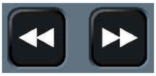
Ident.: DSC-22-FMS-20-30-10-00016537.0001001 / 22 APR 14

MFD KEY

When pressed, the cursor moves to the onside MFD.
If the MFD is not displayed, the MFD appears.

Ident.: DSC-22-FMS-20-30-10-00005209.0001001 / 22 APR 14

NAVIGATION KEYS



Moves the cursor to the next display unit with an interactive format that is to the right, or to the left, of the one that is currently selected.

Intentionally left blank

MEMO

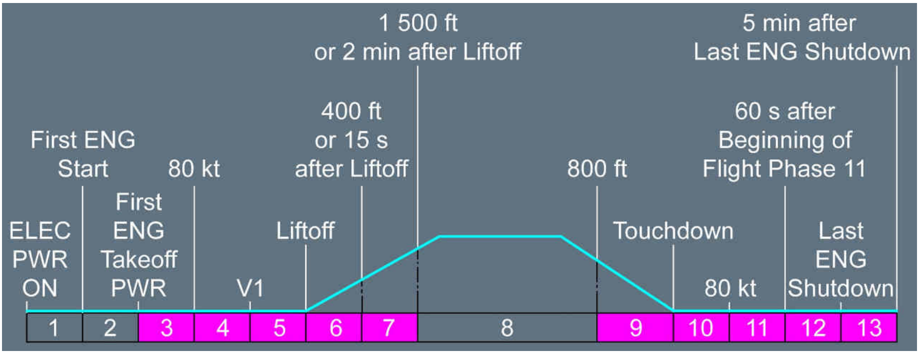
Applicable to: ALL

Ident.: DSC-22-FMS-20-100-10-00013759.0001001 / 22 APR 14

L12

DEST EFOB	The EFOB at the destination airport of the active flight plan is below the specified minimum fuel at destination. Appears on the WD.

L2 Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
2
3
4
5
6
7
8
9
10
11
12
13

Flight Phase Inhibition

Ident.: DSC-22-FMS-20-100-10-00000521.0001001 / 22 APR 14

L12

FMS SWTG	The FMS selector is in the BOTH ON 1 or BOTH ON 2 position. Appears on the WD.

Intentionally left blank

Overview

OVERVIEW

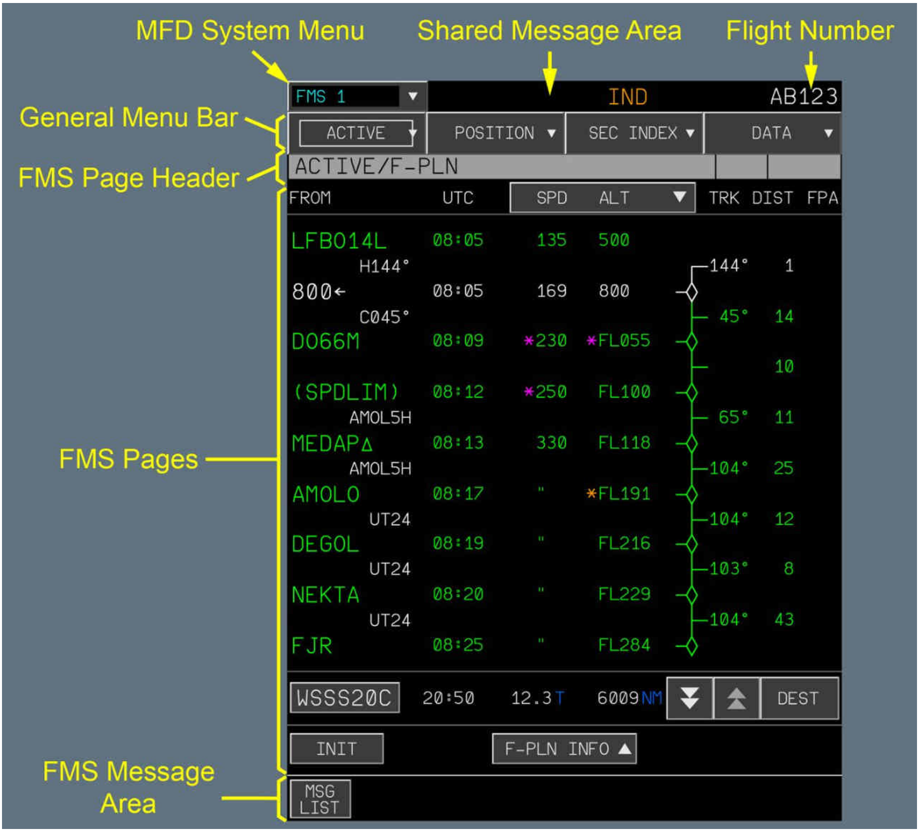
Applicable to: ALL

Ident.: DSC-22-FMS-20-20-10-10-00002146.0001001 / 22 APR 14

The aircraft has two Multifunction Displays (MFDs):
- One MFD for the Captain (CAPT)
- One MFD for the First Officer (F/O).

The MFD displays FMS textual data on more than 50 FMS pages.
The MFD is interactive. Therefore, the flight crew can move from one FMS page to another, and can display, enter, or modify data via the KCCU.

MFD

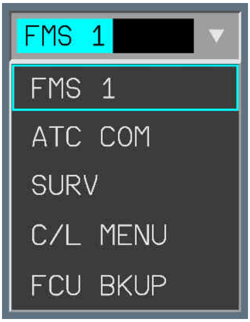

MFD System Menu
Shared Message Area
Flight Number
General Menu Bar
FMS Page Header
FMS Pages
FMS Message Area
FMS 1
IND
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN
WSSS20C
20:50
12.3T
6009NM
DEST
INIT
F-PLN INFO
MSG LIST

FROM	UTC	SPD	ALT	TRK	DIST	FPA
LFBO14L	08:05	135	500			
H144°				144°	1	
800←	08:05	169	800			
C045°				45°	14	
D066M	08:09	*230	*FL055			
					10	
(SPDLIM)	08:12	*250	FL100			
AMOL5H				65°	11	
MEDAPΔ	08:13	330	FL118			
AMOL5H				104°	25	
AMOLO	08:17	"	*FL191			
UT24				104°	12	
DEGOL	08:19	"	FL216			
UT24				103°	8	
NEKTA	08:20	"	FL229			
UT24				104°	43	
FJR	08:25	"	FL284			

Note: *This overview applies to information that is related to the FMS only. For more information about the MFD, Refer to DSC-31-CDS-70-10 MFD.*

Ident.: DSC-22-FMS-20-20-10-10-00002149.0001001 / 22 APR 14

MFD SYSTEM MENU



In order to access the FMS pages, the flight crew selects the FMS identifier in the MFD system menu.
The label of the FMS identifier is different on the MFD of the CAPT and on the MFD of the F/O. In addition, the label of the FMS identifier depends on the FMC that provides data for display on the MFD.
On the MFD of the CAPT:

FMS Identifier	FMC Configuration
FMS 1	Normal configuration: FMC-A provides data for FMS 1.
FMS 1-C	Abnormal configuration: FMC-C provides data for FMS 1.
FMS 2	Abnormal Configuration: The FMS selector is set to BOTH ON 2. FMC-B provides data for FMS 2, and the data from FMS side 2 is displayed on side 1.
FMS 2-C	Abnormal Configuration: The FMS selector is set to BOTH ON 2. FMC-C provides data for FMS 2, and the data from FMS side 2 is displayed on side 1.

On the MFD of the F/O:

FMS Identifier	FMC Configuration
FMS 2	Normal configuration: FMC-B provides data for FMS 2.
FMS 2-C	Abnormal configuration: FMC-C provides data for FMS 2.
FMS 1	Abnormal Configuration: The FMS selector is set to BOTH ON 1. FMC-A provides data for FMS 1, and the data from FMS side 1 is displayed on side 2.
FMS 1-C	Abnormal Configuration: The FMS selector is set to BOTH ON 1. FMC-C provides data for FMS 1, and the data from FMS side 1 is displayed on side 2.

For more information:
- About the FMC configuration, *Refer to DSC-22-FMS-40 Normal Operation*
- About the FMS selector, *Refer to DSC-22-FMS-20-70 FMS Selector*.

Ident.: DSC-22-FMS-20-20-10-10-00002150.0001001 / 22 APR 14

SHARED MESSAGE AREA

The shared message area displays messages in order to inform the flight crew about an event that is related to the FMS or ATC communication.
The shared message area displays the following messages:

D-ATIS RECEIVED	Indicates that a new ATIS report is received. Only appears if the MFD displays a page that is not an ATC COM page. Disappears when the flight crew accesses an ATC COM page.
D-ATIS GROUND MSG	Indicates that an ATIS FSM message is received. Only appears if the MFD displays a page that is not an ATC COM page. Disappears when the flight crew accesses an ATC COM page.
D-ATIS NO REPLY	Appears when the time-out (7.5 min) is reached and that no ATIS was received. Only appears if the MFD displays a page that is not an ATC COM page. Disappears when the flight crew accesses an ATC COM page.
D-ATIS SEND FAIL	Appears when an ATIS request failed for one of the following reasons: - The sending of the ATIS request failed, or - The time-out (6 min) for acknowledgement is reached, or - A negative answer for the ATIS request is received. Only appears if the MFD displays a page that is not an ATC COM page. Disappears when the flight crew accesses an ATC COM page.
CHECK FMS MESSAGE	Indicates that the FMS triggered an amber FMS message. Only appears if the MFD displays a page that is not an FMS page. Disappears when the flight crew accesses an FMS page.

L12

IND	Indicates that both FMS operate in INDEPENDENT mode. For information about the INDEPENDENT mode, *Refer to DSC-22-FMS-40 INDEPENDENT Mode*.

L2 Note: *The shared message area displays only one message at a time. However, the IND message can appear in addition to another message.*

Ident.: DSC-22-FMS-20-20-10-10-00002151.0001001 / 22 APR 14

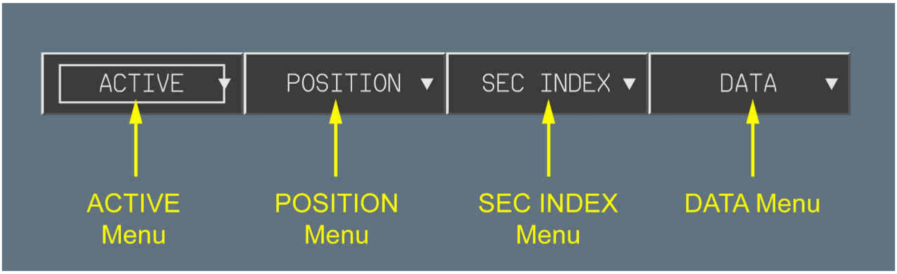
FLIGHT NUMBER

Indicates the flight number that the flight crew entered on the FMS ACTIVE/INIT page (*Refer to DSC-22-FMS-20-20-20 INIT Page*).

Ident.: DSC-22-FMS-20-20-10-10-00002152.0001001 / 22 APR 14

GENERAL MENU BAR

General Menu Bar



The flight crew can access the main FMS pages with the general menu bar. The general menu bar has four menus. Each menu corresponds to one group of main FMS pages.

The four menus of the general menu bar are:
- The ACTIVE menu
- The POSITION menu
- The SEC INDEX menu
- The DATA menu.

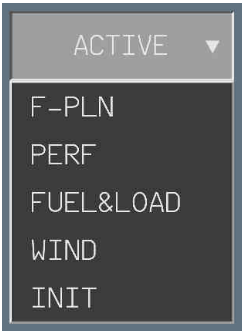
Note: *1. The general menu bar enables the flight crew to directly access the main FMS pages only. The flight crew accesses the other FMS pages via the main FMS pages.*

For example:
- *The flight crew accesses the ACTIVE/F-PLN/OFFSET page via the ACTIVE/F-PLN page*
- *The flight crew accesses the COMPANY T.O DATA REQUEST page via the ACTIVE/INIT page.*

2. A rectangle around the menu name indicates that the displayed page belongs to this menu.

ACTIVE MENU

ACTIVE Menu

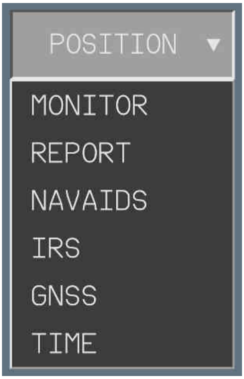

ACTIVE ▼
F-PLN
PERF
FUEL&LOAD
WIND
INIT

The ACTIVE menu groups the main FMS pages that are associated with the active flight plan:

- ACTIVE/F-PLN page (*Refer to page*)
- ACTIVE/PERF page (*Refer to page*)
- ACTIVE/FUEL&LOAD page (*Refer to page*)
- ACTIVE/WIND page (*Refer to page*)
- ACTIVE/INIT page (*Refer to page*).

POSITION MENU

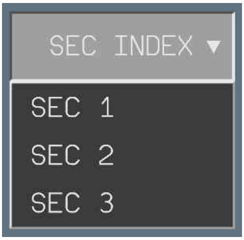
POSITION Menu


POSITION ▼
MONITOR
REPORT
NAVAIDS
IRS
GNSS
TIME

The POSITION menu groups the main FMS pages that are related to the aircraft position and time data:
- POSITION/MONITOR page (*Refer to page*)
- POSITION/REPORT page (*Refer to page*)
- POSITION/NAVAIDS page (*Refer to page*)
- POSITION/IRS page (*Refer to page*)
- POSITION/GNSS page (*Refer to page*)
- POSITION/TIME page (*Refer to page*).

SEC INDEX MENU

SEC INDEX Menu

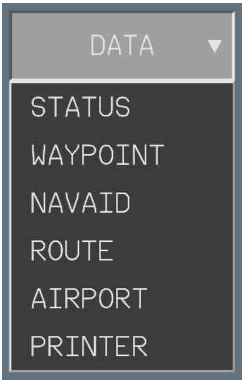


The SEC INDEX menu groups the three secondary flight plans:
- SEC 1
- SEC 2
- SEC 3.

Selecting SEC 1(2)(3) displays the SEC INDEX page with the SEC 1(2)(3) panel opened.
For more information about the SEC INDEX page, *Refer to DSC-22-FMS-20-20-20 SEC INDEX Page*.

DATA MENU

DATA Menu

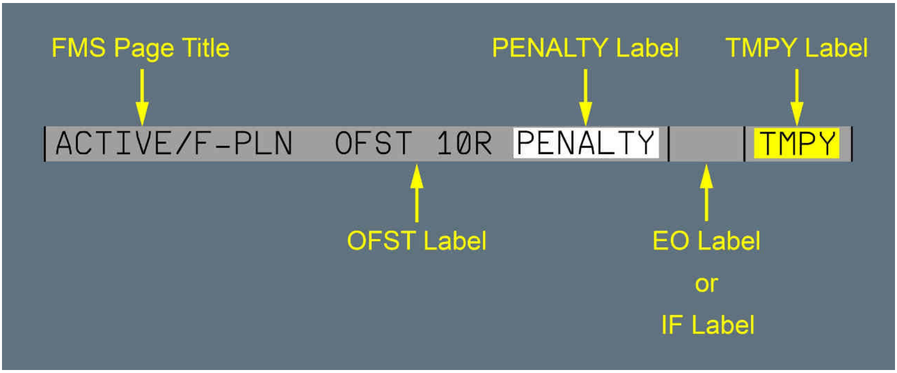


The DATA menu groups the main FMS pages that are related to the databases, the aircraft status, and printer configuration:

- DATA/STATUS page (*Refer to page*)
- DATA/WAYPOINT page (*Refer to page*)
- DATA/NAVAID page (*Refer to page*)
- DATA/ROUTE page (*Refer to page*)
- DATA/AIRPORT page (*Refer to page*)
- DATA/PRINTER page (*Refer to page*).

FMS PAGE HEADER

FMS Page Header


FMS Page Title
PENALTY Label
TMPY Label
ACTIVE/F-PLN
OFST 10R
PENALTY
TMPY
OFST Label
EO Label
or
IF Label

FMS PAGE TITLE

Indicates the title of the displayed FMS page.

The page title contains the different levels of the complete path name. A slash (/) separates each level.

Note: *In the FCOM, in order to simplify the description, the FMS page title that is usually used to refer to an FMS page is the last level of the complete path name. The complete path name is used only if necessary.*

For example:

- *If an information applies to the ACTIVE/F-PLN/OFFSET, SEC1/F-PLN/OFFSET, SEC2/F-PLN/OFFSET, and SEC3/F-PLN/OFFSET pages, the used page title is "OFFSET"*
- *If an information applies only to the ACTIVE/F-PLN/OFFSET page, the used page title is "ACTIVE/F-PLN/OFFSET"*
- *If an information applies only to the SEC1/F-PLN/OFFSET, SEC2/F-PLN/OFFSET, and SEC3/F-PLN/OFFSET pages, the used page title is "SEC/F-PLN/OFFSET"*
- *If an information applies only to the SEC3/F-PLN/OFFSET page, the used page title is "SEC3/F-PLN/OFFSET"*
- *"The flight crew can access the OFFSET page via the F-PLN page" means that the flight crew can access:*
  - *The ACTIVE/F-PLN/OFFSET page via the ACTIVE/F-PLN page*
  - *The SEC1/F-PLN/OFFSET page via the SEC1/F-PLN page*
  - *The SEC2/F-PLN/OFFSET page via the SEC2/F-PLN page*
  - *The SEC3/F-PLN/OFFSET page via the SEC3/F-PLN page.*

OFST LABEL

While the aircraft is on an offset path, the FMS page header displays OFST NNX. The "NN" corresponds to the lateral offset distance, and the "X" corresponds to the offset side (e.g. OFST 10R).

PENALTY LABEL

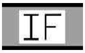
If the FMS fuel predictions take a FUEL PENALTY factor into account (i.e. the flight crew entered a value in the FUEL PENALTY entry field on the DATA/STATUS page), the FMS page header displays the PENALTY label on the following pages:

- The ALTERNATE page
- The DATA/STATUS page
- The F-PLN page
- The FUEL&LOAD page
- The HOLD page
- The WHAT IF page.

EO LABEL

If the FMS Engine-Out (EO) mode is currently active, the FMS page header displays the EO label.
For more information about the EO mode, *Refer to DSC-22-FMS-10-60 General*.

IF LABEL



If there is a WHAT IF scenario in a specific secondary flight plan, the FMS page header displays the IF label on all of the pages that are associated with this secondary flight plan.
For more information about the WHAT IF function, *Refer to DSC-22-FMS-10-40-40 WHAT IF Function*.

TMPY LABEL

If a temporary flight plan is on standby, the FMS page header displays the TMPY label on the following pages:
- The flight-plan revision pages (e.g. AIRWAYS page)
- The F-PLN page
- The FUEL&LOAD page
- The INIT page
- The PERF page
- The SEC INDEX page
- The WIND page.

For more information about temporary flight plan, *Refer to DSC-22-FMS-10-40-50 Temporary Flight Plan*.

Ident.: DSC-22-FMS-20-20-10-10-00013680.0001001 / 22 APR 14

FMS PAGES

There are more than 50 FMS pages that provide information about the flight plan, the aircraft position, and flight performance.
For the list of the FMS pages, *Refer to DSC-22-FMS-20-20-20 FMS Pages Index*.

Ident.: DSC-22-FMS-20-20-10-10-00013681.0001001 / 22 APR 14

FMS MESSAGE AREA

The FMS message area displays FMS messages.

These messages can be:
- A direct result of a flight crew action, or
- Automatically displayed to inform the flight crew of a specific situation, or to request a flight crew action.

For more information about the FMS messages and the layout of the FMS message area, *Refer to DSC-22-FMS-20-90 General*.

FMS Pages

FMS PAGES INDEX

Ident.: DSC-22-FMS-20-20-20-00004014.0001001 / 22 APR 14
Applicable to: ALL

AIRWAYS (*Refer to page*)
ALTERNATE (*Refer to page*)
ARRIVAL (*Refer to page*)
CLOSEST AIRPORTS (*Refer to page*)
COMPANY F-PLN REPORT (*Refer to page*)
COMPANY F-PLN REQUEST (*Refer to page*)
COMPANY T.O DATA REQUEST (*Refer to page*)
COMPANY WIND DATA REQUEST (*Refer to page*)
DATA/AIRPORT (*Refer to page*)
DATA/NAVAID (*Refer to page*)
DATA/PRINTER (*Refer to page*)
DATA/ROUTE (*Refer to page*)
DATA/STATUS (*Refer to page*)
DATA/WAYPOINT (*Refer to page*)
DEPARTURE (*Refer to page*)
DIRECT TO (*Refer to page*)
DUPLICATE NAMES (*Refer to page*)
EQUI-TIME POINT (*Refer to page*)
FIX INFO (*Refer to page*)
F-PLN (*Refer to page*)
FUEL&LOAD (*Refer to page*)
HOLD (*Refer to page*)
INIT (*Refer to page*)
LL XING (*Refer to page*)
MESSAGES LIST (*Refer to page*)
OFFSET (*Refer to page*)
PERF (*Refer to page*)
POSITION/GNSS (*Refer to page*)
POSITION/IRS (*Refer to page*)
POSITION/MONITOR (*Refer to page*)
POSITION/NAVAIDS (*Refer to page*)
POSITION/REPORT (*Refer to page*)
POSITION/TIME (*Refer to page*)
RECEIVED COMPANY T.O DATA (*Refer to page*)

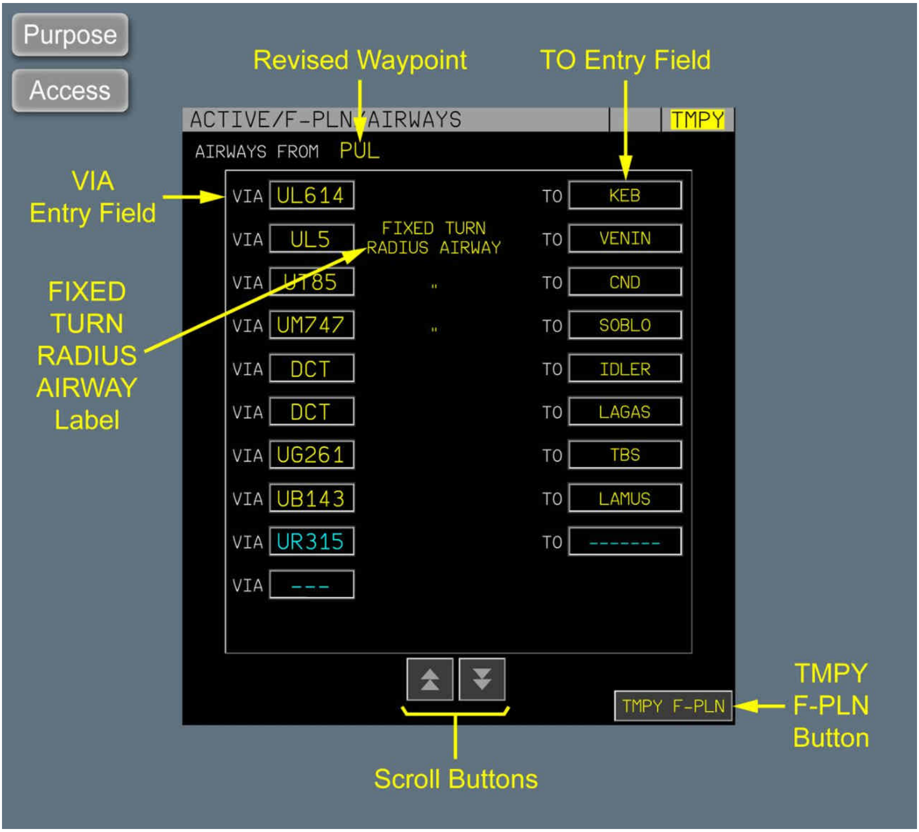
REJECTED ATC INFO (*Refer to page*)
ROUTE SELECTION (*Refer to page*)
SEC INDEX (*Refer to page*)
TRANSFER TO MAILBOX (*Refer to page*)
VERT REV (*Refer to page*)
WHAT IF (*Refer to page*)
WIND (*Refer to page*)

AIRWAYS PAGE

Applicable to: ALL

Ident.: DSC-22-FMS-20-20-20-10-00002700.0001001 / 14 APR 14

AIRWAYS Page


Purpose
Access
Revised Waypoint
TO Entry Field
VIA Entry Field
FIXED TURN RADIUS AIRWAY Label
TMPY F-PLN Button
Scroll Buttons

ACTIVE/F-PLN/AIRWAYS TMPY

AIRWAYS FROM PUL

VIA			TO	
VIA	UL614		TO	KEB
VIA	UL5	FIXED TURN RADIUS AIRWAY	TO	VENIN
VIA	UT85	"	TO	CND
VIA	UM747	"	TO	SOBLO
VIA	DCT		TO	IDLER
VIA	DCT		TO	LAGAS
VIA	UG261		TO	TBS
VIA	UB143		TO	LAMUS
VIA	UR315		TO	-------
VIA	---			

TMPY F-PLN

Ident.: DSC-22-FMS-20-20-20-10-00003747.0001001 / 22 APR 14

PURPOSE

The AIRWAYS page enables the flight crew to insert up to 31 airway segments or waypoints in the flight plan, starting from the revised waypoint.
The AIRWAYS page is available for the active and secondary flight plans.

LINKS

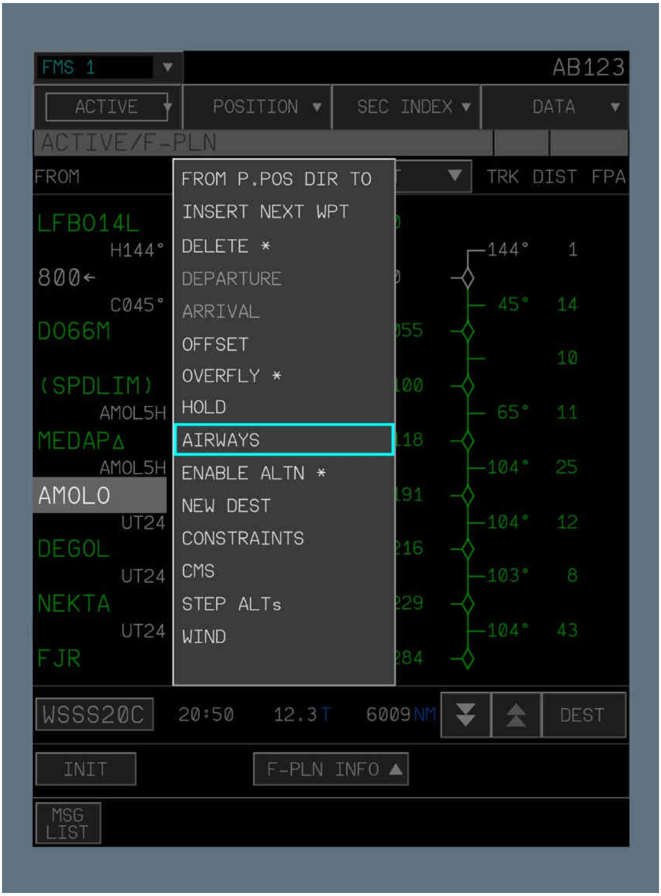
For information about the AIRWAYS revision, *Refer to DSC-22-FMS-10-40-20 Purpose*.

Ident.: DSC-22-FMS-20-20-20-10-00003748.0001001 / 14 APR 14

ACCESS

The flight crew can access the AIRWAYS page via the F-PLN page, by selecting AIRWAYS in the waypoint revisions menu.

F-PLN Page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN
FROM
TRK DIST FPA
LFBO14L
H144°
800←
C045°
D066M
(SPDLIM)
AMOL5H
MEDAPΔ
AMOL5H
AMOLO
UT24
DEGOL
UT24
NEKTA
UT24
FJR
FROM P.POS DIR TO
INSERT NEXT WPT
DELETE *
DEPARTURE
ARRIVAL
OFFSET
OVERFLY *
HOLD
AIRWAYS
ENABLE ALTN *
NEW DEST
CONSTRAINTS
CMS
STEP ALTs
WIND
144° 1
45° 14
10
65° 11
104° 25
104° 12
103° 8
104° 43
055
100
118
191
216
229
284
WSSS20C
20:50
12.3T
6009NM
DEST
INIT
F-PLN INFO
MSG LIST

Ident.: DSC-22-FMS-20-20-20-10-00003749.0001001 / 22 APR 14

REVISED WAYPOINT

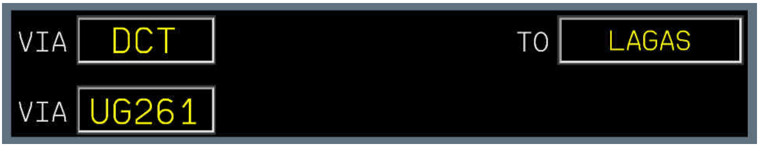
The revised waypoint is the waypoint from which the flight crew selected the AIRWAYS revision.

Ident.: DSC-22-FMS-20-20-20-10-00003750.0001001 / 22 APR 14

VIA ENTRY FIELD

Indicates one of the following:
- The ident of the airway
- DCT.

The flight crew can enter DCT or an airway ident in the VIA entry field.
DCT creates a direct flight leg between the previous waypoint and the following waypoint.
If the VIA entry field contains DCT and the flight crew enters an airway ident in the following VIA entry field, the FMS checks that the waypoint of the TO entry field is part of the airway. In the example below, the FMS checks that LAGAS is part of the UG261 airway.



ENTRY FORMAT

Refer to DSC-22-FMS-20-80 VIA.

Ident.: DSC-22-FMS-20-20-20-10-00003751.0001001 / 22 APR 14

TO ENTRY FIELD

Indicates one of the following:
- The end waypoint of the airway segment
- The end waypoint of the direct flight leg.

WHEN THERE ARE AIRWAYS IN THE VIA ENTRY FIELDS BEFORE AND AFTER THE TO ENTRY FIELD

When the flight crew enters the ident of two airways in the two VIA entry fields that are before and after the TO entry field, the TO entry field displays the shared waypoint of both airways.
L2 If the two entered airways do not have a shared waypoint in the navigation database, the FMS creates a latitude/longitude waypoint at the geographic intersection of the airways. The ident of this waypoint starts with an “X” and is followed by the ident of the second airway (e.g. XUB4).
L1 The flight crew can also manually enter or change the end waypoint of the airway segment.

WHEN THERE IS NO AIRWAY IN THE VIA ENTRY FIELD BEFORE THE TO ENTRY FIELD

In this case, the VIA entry field, that is before the TO entry field, is either empty, or contains DCT.
The flight crew can enter a waypoint in the TO entry field.
When the flight crew enters a waypoint in the TO entry field, if the VIA entry field is empty, the VIA entry field automatically displays DCT.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 WAYPOINT.

Ident.: DSC-22-FMS-20-20-20-10-00003753.0001001 / 22 APR 14

FIXED TURN RADIUS AIRWAY LABEL

Indicates that the flight crew inserted a fixed turn radius airway.
L2 A fixed turn radius airway has a constant turn radius that is defined for one or more waypoints.

Ident.: DSC-22-FMS-20-20-20-10-00003752.0001001 / 22 APR 14

SCROLL BUTTONS

The flight crew uses the scroll down(up) button to move, page by page, downward(upward) through the airway segment list.

Ident.: DSC-22-FMS-20-20-20-10-00003754.0001001 / 22 APR 14

TMPY F-PLN BUTTON

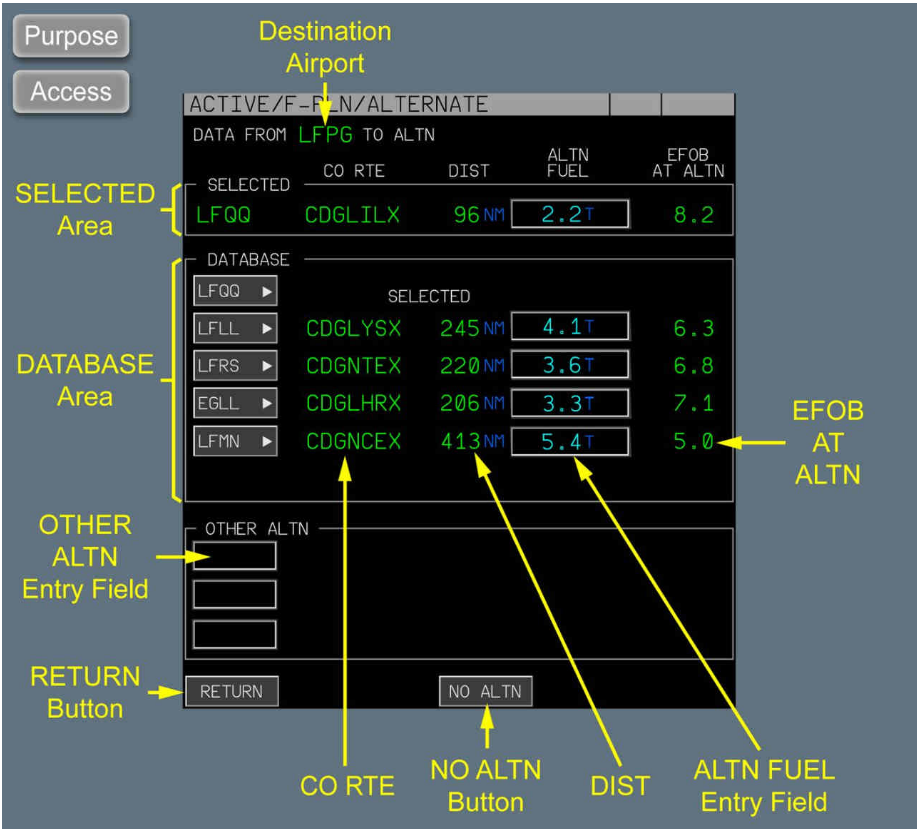
When clicked, displays the ACTIVE/F-PLN page (*Refer to page*).
L2 The TMPY F-PLN button is displayed, only if there is a temporary flight plan. If there is no temporary flight plan, the RETURN button is displayed instead of the TMPY F-PLN button. When the flight crew clicks on the RETURN button, the F-PLN page appears.

ALTERNATE PAGE

Applicable to: ALL

Ident.: DSC-22-FMS-20-20-20-20-00002701.0001001 / 14 APR 14

ALTERNATE Page



ACTIVE/F-PLN/ALTERNATE

DATA FROM LFPG TO ALTN

	CO RTE	DIST	ALTN FUEL	EFOB AT ALTN
SELECTED				
LFQQ	CDGLILX	96 NM	2.2 T	8.2
DATABASE				
LFQQ ▶	SELECTED			
LFLL ▶	CDGLYSX	245 NM	4.1 T	6.3
LFRS ▶	CDGNTEX	220 NM	3.6 T	6.8
EGLL ▶	CDGLHRX	206 NM	3.3 T	7.1
LFMN ▶	CDGNCEX	413 NM	5.4 T	5.0

Purpose
Access
Destination Airport
SELECTED Area
DATABASE Area
OTHER ALTN
OTHER ALTN Entry Field
RETURN
RETURN Button
NO ALTN
CO RTE
NO ALTN Button
DIST
ALTN FUEL Entry Field
EFOB AT ALTN

Ident.: DSC-22-FMS-20-20-20-20-00003755.0001001 / 22 APR 14

PURPOSE

On the ALTERNATE page, the flight crew can:

- Access and compare the different alternate airports and the associated information (i.e. company alternate route, distance from the destination airport to the alternate airport, alternate fuel, and EFOB at the alternate airport)
- Enter any other airport (different from the alternate airports that are stored in the navigation database), and access and compare their associated information
- Select any airport, that is displayed on this page, as the alternate airport.

The ALTERNATE page is available for the active and secondary flight plans.

LINKS

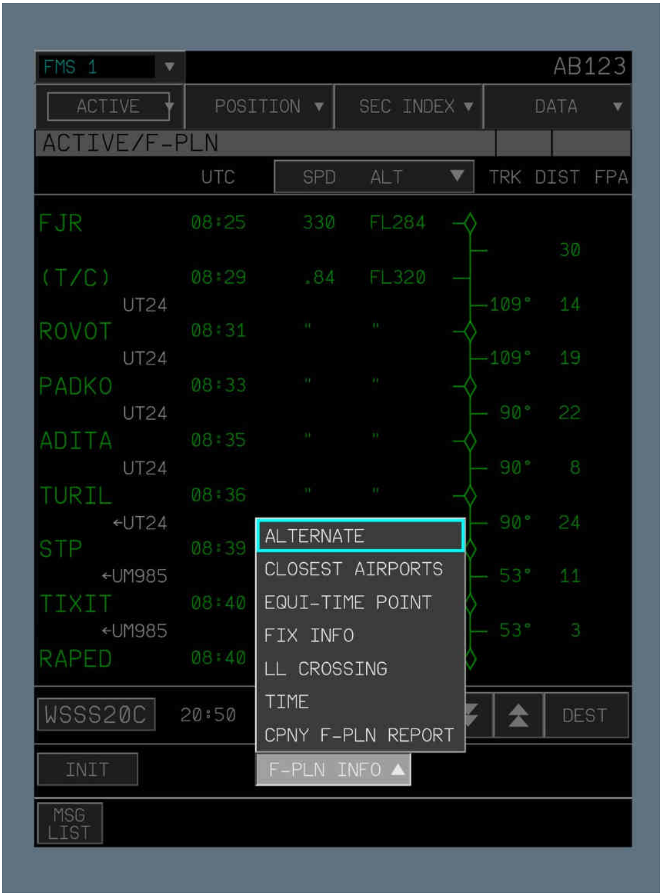
For information about the ALTERNATE revision, *Refer to DSC-22-FMS-10-40-20 Purpose*.

Ident.: DSC-22-FMS-20-20-20-20-00003756.0001001 / 14 APR 14

ACCESS

The flight crew can access the ALTERNATE page via the F-PLN page, by selecting ALTERNATE in the F-PLN INFO menu.

F-PLN Page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN
ALTERNATE
CLOSEST AIRPORTS
EQUI-TIME POINT
FIX INFO
LL CROSSING
TIME
CPNY F-PLN REPORT
F-PLN INFO
WSSS20C
20:50
DEST
INIT
MSG LIST

	UTC	SPD	ALT	TRK	DIST	FPA
FJR	08:25	330	FL284			
					30	
(T/C)	08:29	.84	FL320			
UT24				109°	14	
ROVOT	08:31	"	"			
UT24				109°	19	
PADKO	08:33	"	"			
UT24				90°	22	
ADITA	08:35	"	"			
UT24				90°	8	
TURIL	08:36	"	"			
←UT24				90°	24	
STP	08:39					
←UM985				53°	11	
TIXIT	08:40					
←UM985				53°	3	
RAPED	08:40					

Ident.: DSC-22-FMS-20-20-20-20-00004092.0001001 / 22 APR 14

DESTINATION AIRPORT

Indicates the destination airport.

Ident.: DSC-22-FMS-20-20-20-20-00003757.0001001 / 22 APR 14

SELECTED AREA

Indicates the selected alternate airport.

Also indicates the following information that is associated with the selected alternate airport:
- The company alternate route, if any
- The distance from the destination airport to the alternate airport
- The alternate fuel
- The EFOB at the alternate airport.

Note: *1. The FMS automatically synchronizes the SELECTED area of the ACTIVE/ALTERNATE page and all of the following:*
  - *The ALTN entry field of the ACTIVE/INIT page (Refer to page)*
  - *The ALTN RTE entry field of the ACTIVE/INIT page (Refer to page).*

2. The FMS automatically synchronizes the SELECTED area of the SEC1(2)(3)/ALTERNATE page and all of the following:
  - *The ALTN entry field of the SEC1(2)(3)/INIT page (Refer to page)*
  - *The ALTN RTE entry field of the SEC1(2)(3)/INIT page (Refer to page).*

Ident.: DSC-22-FMS-20-20-20-20-00003759.0001001 / 22 APR 14

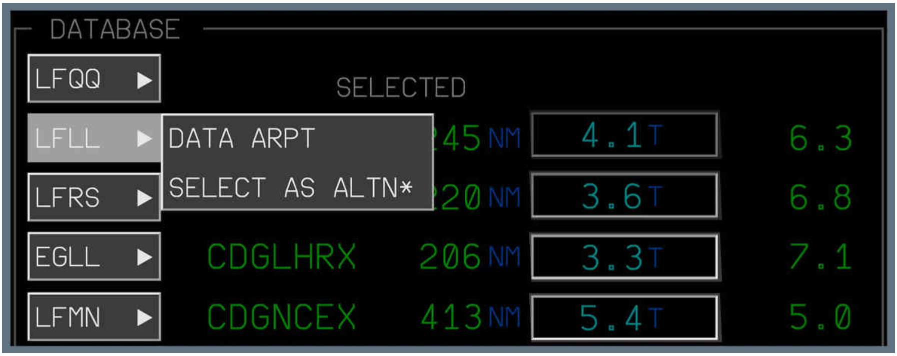
DATABASE AREA

Provides the list of all of the alternate airports that are associated with the destination airport, and that are stored in the navigation database (a maximum of 6).
If one of the database alternate airports is the selected alternate airport, the SELECTED label appears next to the airport ident.

For each other database alternate airport, the DATABASE area indicates the following information:
- The company alternate route, if any
- The distance from the destination airport to the alternate airport
- The alternate fuel
- The EFOB at the alternate airport.

When the flight crew clicks on the airport ident button, the database alternate airport menu appears.

Database Alternate Airport Menu


DATABASE
LFQQ
SELECTED
LFLL
DATA ARPT
SELECT AS ALTN*
45 NM
4.1T
6.3
LFRS
20 NM
3.6T
6.8
EGLL
CDGLHRX
206 NM
3.3T
7.1
LFMN
CDGNCEX
413 NM
5.4T
5.0

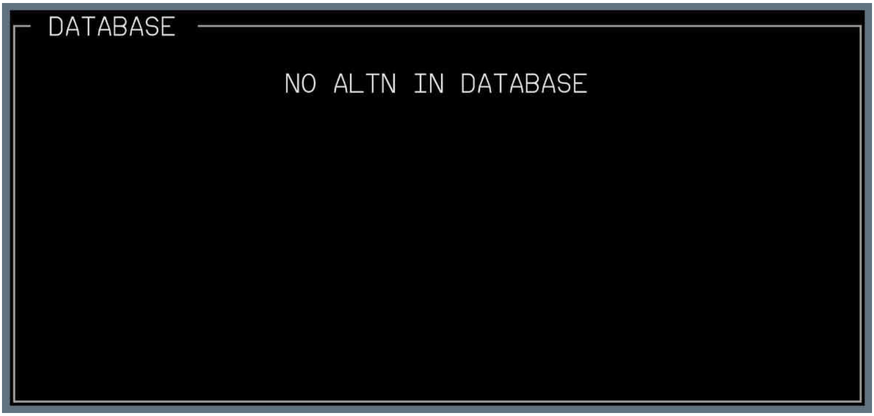
The database alternate airport menu has the following options:

- DATA ARPT: Displays the DATA/AIRPORT page
  The DATA/AIRPORT page provides additional information about the alternate airport. For more information, *Refer to DSC-22-FMS-20-20-20 DATA/AIRPORT Page*.
- SELECT AS ALTN: Selects the associated airport as the new alternate airport, and creates a temporary flight plan.

NO ALTERNATE AIRPORTS IN THE NAVIGATION DATABASE

If the navigation database has no stored alternate airports that are associated with the destination airport, the DATABASE area displays the NO ALTN IN DATABASE message.

NO ALTN IN DATABASE Message



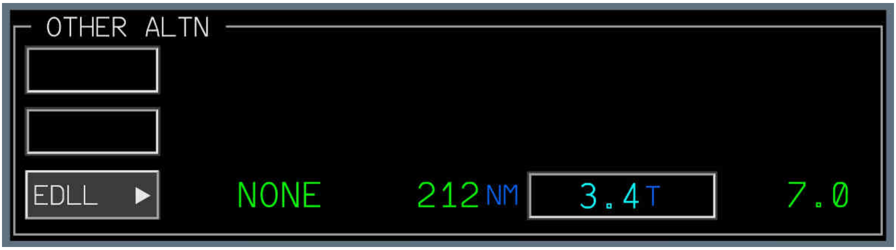
NO ALTN IN DATABASE

OTHER ALTN ENTRY FIELD

The flight crew can enter any airport ident in the OTHER ALTN entry field.

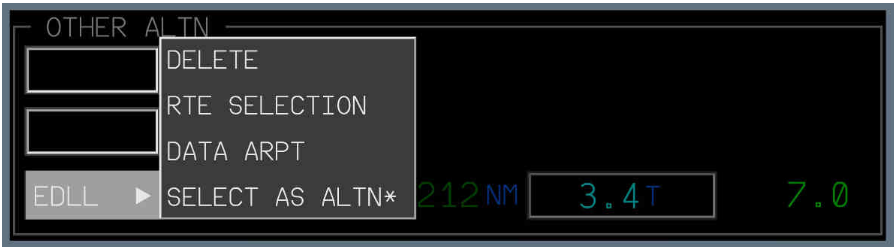
After the flight crew enters the airport ident in the OTHER ALTN entry field, the following information, that is associated with the entered alternate airport, appears:
- The company alternate route, if any
- The distance from the destination airport to the alternate airport
- The alternate fuel
- The EFOB at the alternate airport.

OTHER ALTN Entry Field


OTHER ALTN
EDLL ▶
NONE
212 NM
3.4 T
7.0

When the flight crew clicks on the airport ident button, the other alternate airport menu appears.

Other Alternate Airport Menu


OTHER ALTN
DELETE
RTE SELECTION
DATA ARPT
SELECT AS ALTN*
EDLL ▶
212 NM
3.4 T
7.0

The other alternate airport menu has the following options:

- DELETE: Delete the associated airport from the list of the other alternate airports

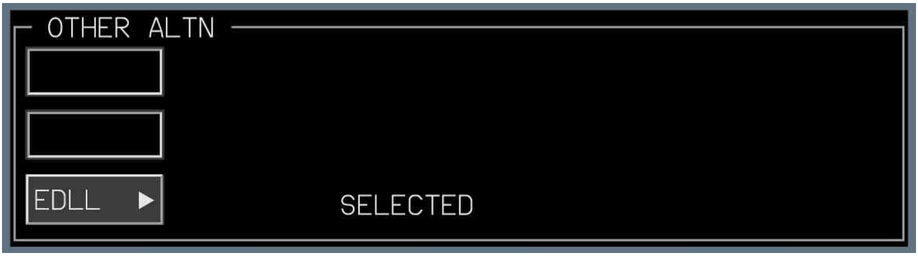
  Note: *The DELETE option is not available, when the associated airport is the selected alternate airport. In order to be able to delete the airport, the flight crew must first deselect the airport (the airport is no longer the selected alternate airport).*

- RTE SELECTION: Displays the ROUTE SELECTION page
  The ROUTE SELECTION page enables the flight crew to select a company route. For more information, *Refer to DSC-22-FMS-20-20-20 ROUTE SELECTION Page*.

  Note: *The RTE SELECTION option is not available, when:*
  - *The associated airport is the selected alternate airport, or*
  - *There is no company route in the navigation database for the associated airport.*

- DATA ARPT: Displays the DATA/AIRPORT page
  The DATA/AIRPORT page provides additional information about the alternate airport. For more information, *Refer to DSC-22-FMS-20-20-20 DATA/AIRPORT Page*.
- SELECT AS ALTN: Selects the associated airport as the new alternate airport, and creates a temporary flight plan.
  If the flight crew selects the associated airport as the alternate airport, the SELECTED label appears next to the airport ident instead of the associated information (i.e. company alternate route, distance, alternate fuel, and EFOB at the alternate airport).

SELECTED Label



ENTRY FORMAT

Refer to DSC-22-FMS-20-80 ALTN.

Ident.: DSC-22-FMS-20-20-20-20-00003761.0001001 / 14 APR 14

CO RTE

Indicates the company alternate route.
If there is no company alternate route, the NONE label is displayed.

Ident.: DSC-22-FMS-20-20-20-20-00003763.0001001 / 22 APR 14

DIST

Indicates the distance between the destination airport and the alternate airport.

The distance between the destination airport and the alternate airport is:
- The distance along the company alternate route, or
- The direct distance, if there is no company alternate route.

Ident.: DSC-22-FMS-20-20-20-20-00003762.0001001 / 14 APR 14

ALTN FUEL ENTRY FIELD

Indicates the alternate fuel.

The alternate fuel is the fuel quantity that is necessary for all of the following:
- The flight between the destination airport and the alternate airport
- The approach and landing at the alternate airport.

The FMS computes the default value.

L2 The computation of the default value is based on the following assumptions:
- The FMS speed mode (ECON/LRC) is LRC (in order to optimize the fuel consumption)
- The cruise flight level is:
  - FL 100, if the distance of the alternate flight plan is less than 100 NM
  - FL 220, if the distance of the alternate flight plan is equal to or more than 100 NM and less than 200 NM
  - FL 310, if the distance of the alternate flight plan is equal to or more than 200 NM.

L1 The flight crew can override the default value.

Note: *1. The FMS automatically synchronizes the ALTN FUEL entry field of the ACTIVE/F-PLN/ALTERNATE page and the ALTN fuel entry field of the ACTIVE/FUEL&LOAD page (Refer to page).*
2. The FMS automatically synchronizes the ALTN FUEL entry field of the SEC1(2)(3)/F-PLN/ALTERNATE page and the ALTN fuel entry field of the SEC1(2)(3)/FUEL&LOAD page (Refer to page).

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 ALTN (FUEL).

Ident.: DSC-22-FMS-20-20-20-20-00003764.0001001 / 22 APR 14

EFOB AT ALTN

Indicates the Estimated Fuel On Board (EFOB) at the alternate airport.

Ident.: DSC-22-FMS-20-20-20-20-00003765.0001001 / 22 APR 14

RETURN BUTTON

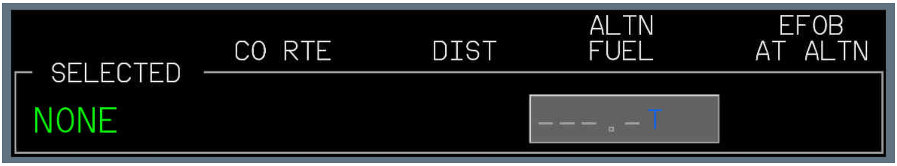
When clicked, displays the F-PLN page (*Refer to page*).

Ident.: DSC-22-FMS-20-20-20-20-00003758.0001001 / 22 APR 14

NO ALTN BUTTON

When clicked, the FMS creates a temporary flight plan without an alternate airport.
The display in the SELECTED area changes accordingly.

No Selected Alternate

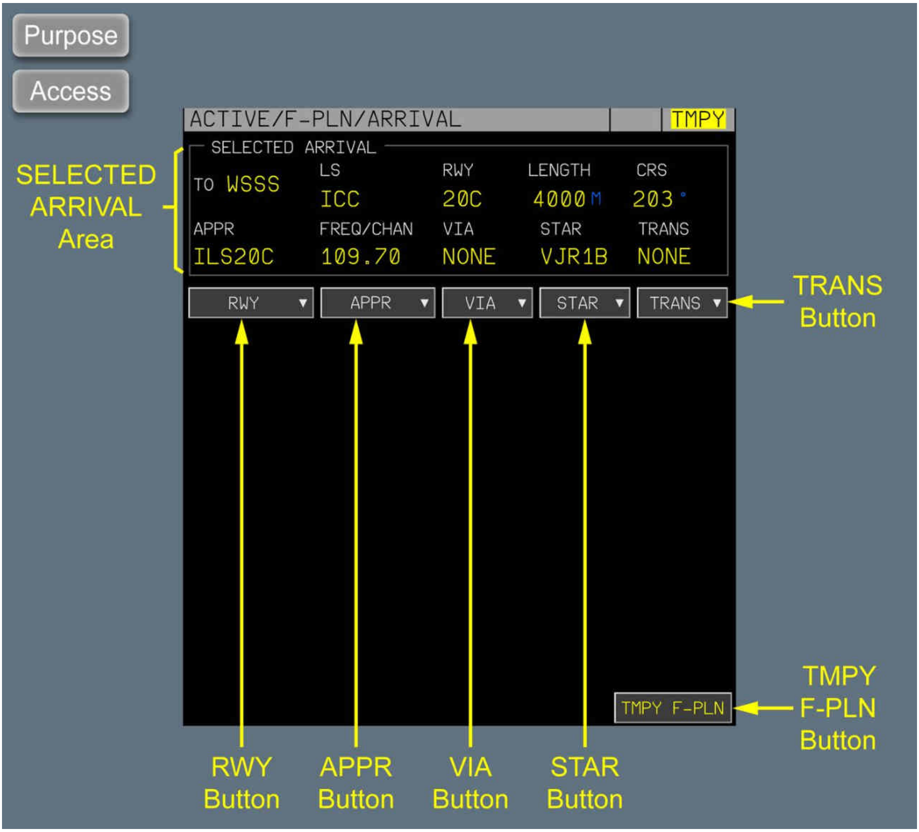


ARRIVAL PAGE

Applicable to: ALL

Ident.: DSC-22-FMS-20-20-20-30-00002702.0001001 / 14 APR 14

ARRIVAL Page


Purpose
Access
ACTIVE/F-PLN/ARRIVAL
TMPY
SELECTED ARRIVAL
SELECTED ARRIVAL Area
RWY ▼
APPR ▼
VIA ▼
STAR ▼
TRANS ▼
TRANS Button
TMPY F-PLN
TMPY F-PLN Button
RWY Button
APPR Button
VIA Button
STAR Button

TO WSSS	LS	RWY	LENGTH	CRS
	ICC	20C	4000 M	203 °
APPR	FREQ/CHAN	VIA	STAR	TRANS
ILS20C	109.70	NONE	VJR1B	NONE

Ident.: DSC-22-FMS-20-20-20-30-00003766.0001001 / 22 APR 14

PURPOSE

The ARRIVAL page enables the flight crew to insert or change the arrival procedure.
The ARRIVAL page is available for the active and secondary flight plans.

LINKS

For information about the ARRIVAL revision, *Refer to DSC-22-FMS-10-40-20 Purpose*.

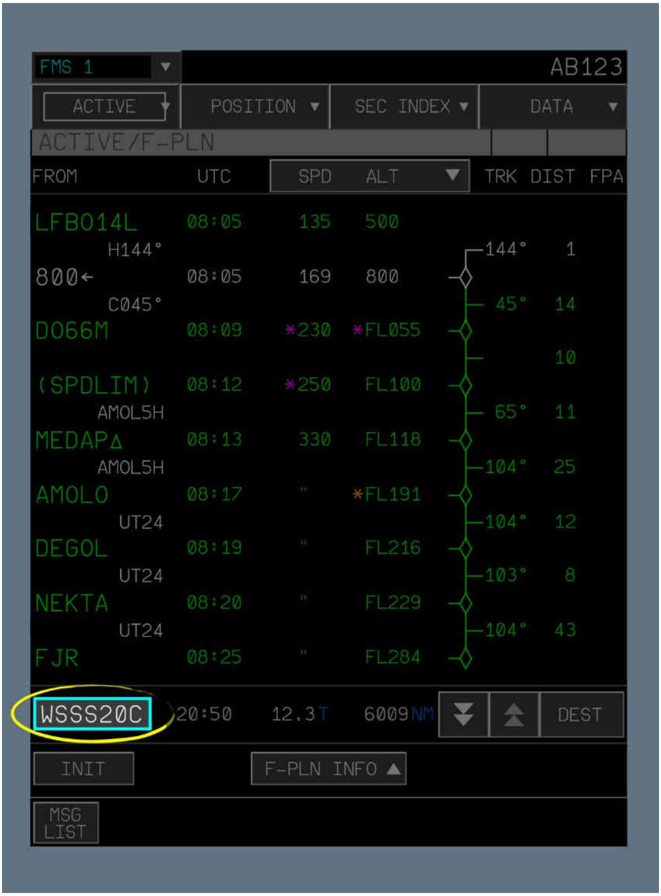
Ident.: DSC-22-FMS-20-20-20-30-00003767.0001001 / 14 APR 14

ACCESS

The flight crew can access the ARRIVAL page via the F-PLN page, by:

- Clicking on the destination airport ident

Destination Airport Ident

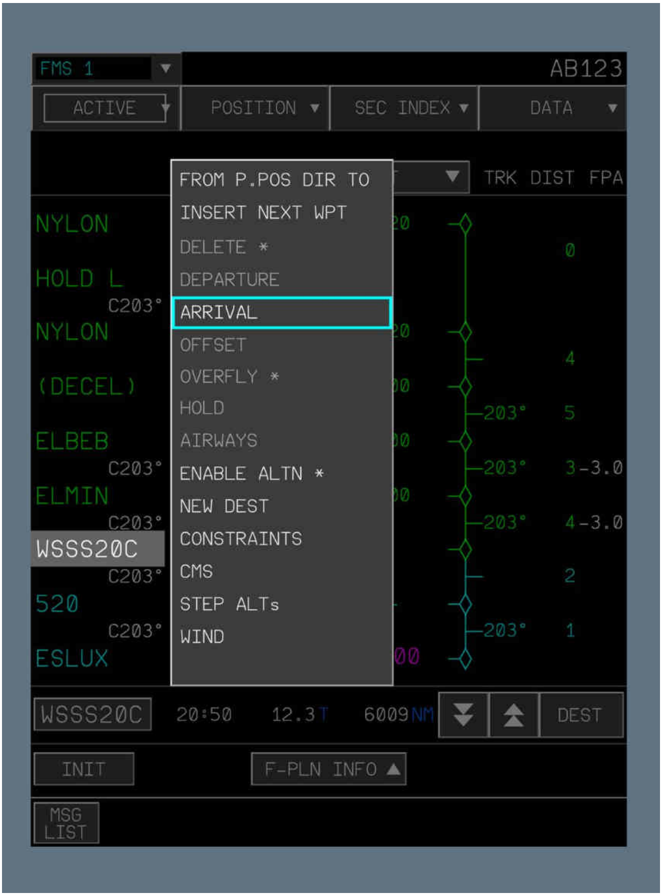


FROM	UTC	SPD	ALT	TRK	DIST	FPA
LFBO14L	08:05	135	500			
H144°				144°	1	
800←	08:05	169	800			
C045°				45°	14	
D066M	08:09	*230	*FL055			
					10	
(SPDLIM)	08:12	*250	FL100			
AMOL5H				65°	11	
MEDAP∆	08:13	330	FL118			
AMOL5H				104°	25	
AMOLO	08:17	"	*FL191			
UT24				104°	12	
DEGOL	08:19	"	FL216			
UT24				103°	8	
NEKTA	08:20	"	FL229			
UT24				104°	43	
FJR	08:25	"	FL284			

WSSS20C 20:50 12.3T 6009NM

- Selecting ARRIVAL in the waypoint revisions menu of the destination(alternate) airport.

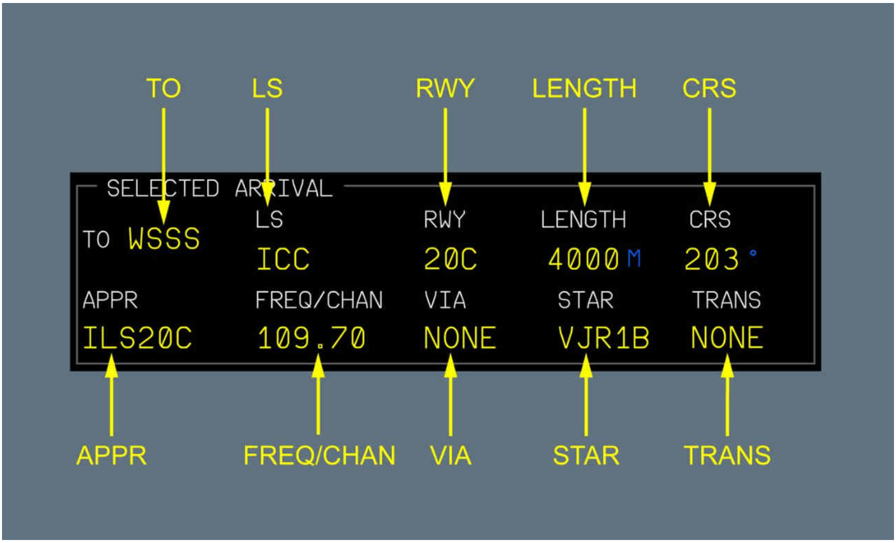
Waypoint Revisions Menu


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
TRK DIST FPA
FROM P.POS DIR TO
INSERT NEXT WPT
DELETE *
DEPARTURE
ARRIVAL
OFFSET
OVERFLY *
HOLD
AIRWAYS
ENABLE ALTN *
NEW DEST
CONSTRAINTS
CMS
STEP ALTs
WIND
NYLON
HOLD L
C203°
NYLON
(DECEL)
ELBEB
C203°
ELMIN
C203°
WSSS20C
C203°
520
C203°
ESLUX
-203° 5
-203° 3 -3.0
-203° 4 -3.0
2
-203° 1
0
4
WSSS20C
20:50
12.3 T
6009 NM
DEST
INIT
F-PLN INFO
MSG LIST

Ident.: DSC-22-FMS-20-20-20-30-00003768.0001001 / 22 APR 14

SELECTED ARRIVAL AREA

SELECTED ARRIVAL Area



SELECTED ARRIVAL

TO WSSS

LS ICC

RWY 20C

LENGTH 4000 M

CRS 203 °

APPR ILS20C

FREQ/CHAN 109.70

VIA NONE

STAR VJR1B

TRANS NONE

This area displays the parameters of the selected arrival procedure.

L2 The information appears in green, if the arrival information is part of the active flight plan. It appears in yellow, if the FMS created a temporary flight plan after the flight crew selected or changed the arrival procedure.

Note: If there is temporary flight plan that was created by a revision other than the ARRIVAL revision, the information is displayed in green.

The information is displayed in white for the secondary flight plans.

L1 All fields, except TO, display dashes, if the flight crew did not make any selection.

TO

Indicates the ident of the:
- Destination airport, if the flight crew displays the ARRIVAL page for the destination flight plan
- Alternate airport, if the flight crew displays the ARRIVAL page for the alternate flight plan.

LS

Indicates the ident of the landing system of the approach that the flight crew selected.

RWY

Indicates the runway of the approach that the flight crew selected.

LENGTH

Indicates the navigation database runway length of the selected arrival runway.

CRS

Indicates the navigation database runway course of the selected arrival runway.

APPR

Indicates the approach that the flight crew selected from the APPR list (*Refer to APPR Button*).

FREQ/CHAN

Indicates the frequency or channel of the landing system of the approach that the flight crew selected.

VIA

Indicates the approach transition (VIA) that the flight crew selected from the VIA list (*Refer to VIA Button*).

STAR

Indicates the STAR that the flight crew selected from the STAR list (*Refer to STAR Button*).

TRANS

Indicates the arrival TRANS that the flight crew selected from the TRANS list (*Refer to TRANS Button*).

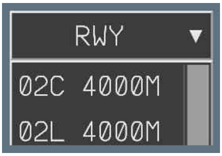
Ident.: DSC-22-FMS-20-20-20-30-00003769.0001001 / 22 APR 14

RWY BUTTON

When clicked, displays the RWY list.

The RWY list displays:
- All of the runways that are compatible with the current destination airport
- The length of each runway.

RWY List



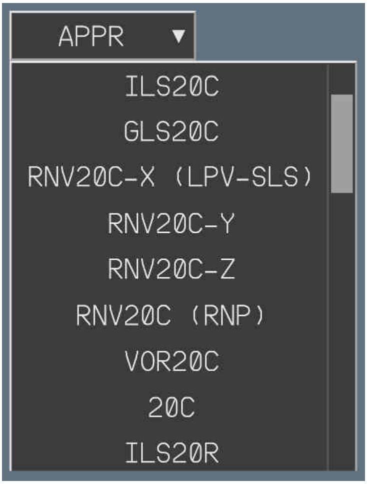
When the flight crew selects a runway, the FMS creates(updates) a temporary flight plan with a default leg of 5 NM on the axis of the selected runway, and completes(updates) the following fields in the SELECTED ARRIVAL area:
- RWY
- LENGTH
- CRS.

Ident.: DSC-22-FMS-20-20-20-30-00003770.0002001 / 14 APR 16

APPR BUTTON

When clicked, displays the APPR list.
The APPR list displays all of the approaches that are compatible with the current destination airport.
The approaches are sorted by runway.

APPR List



The approach types are indicated as follows (The runway 20C is used as an example):

	ILS20C	The approach is an ILS approach.
L2	ILS20C (RNP)	The approach is an ILS approach. The associated missed approach is part of an RNP AR procedure.
L1	GLS20C	The approach is a GLS ◁ approach.
L2	GLS20C (RNP)	The approach is an GLS ◁ approach. The associated missed approach is part of an RNP AR procedure.

L12 RNV20C (LPV-SLS) or RNV20C-X (LPV-SLS)	(The "-X" corresponds to the letter that identifies the approach.) The approach is an RNAV (GNSS) approach with LPV minima. *Note:* *If the associated missed approach is part of an RNP AR procedure, the RNAV (GNSS) approach with LPV minima appears in the APPR list with only the (LPV-SLS) label. There is no (RNP) label.*
L3 IGS20C	The approach is an IGS approach.
L1 LOC20C	The approach is a LOC only approach.
BAC20C	The approach is a LOC B/C approach.
L3 LDA20C	The approach is an LDA approach.
SDF20C	The approach is a SDF approach.
L12 GPS20C or GPS20C-X	(The "-X" corresponds to the letter that identifies the approach.) The approach is an RNAV (GNSS) approach: • With LNAV/VNAV minima , or • With LNAV minima, or • To be flown in visual meteorological conditions.
L12 RNV20C or RNV20C-X	(The "-X" corresponds to the letter that identifies the approach.) The approach is an RNAV (GNSS) approach: • With LNAV/VNAV minima , or • With LNAV minima, or • To be flown in visual meteorological conditions.
L12 RNV20C (RNP)	The approach is an RNAV (RNP) approach. *Note:* *There is also the (RNP) label, if only the associated missed approach is part of an RNP AR procedure, and the approach is not an RNAV (GNSS) approach with LPV minima.*
L1 VOR20C	The approach is a VOR or VOR/DME approach.
L13 NDB20C	The approach is an NDB or NDB/DME approach. If the aircraft does not have an ADF receiver, the NDB approaches are not part of the list.

L12

20C	The approach is a visual approach. When the flight crew selects the runway itself (i.e. 20C), a default leg of 5 NM in the runway axis is created.

When the flight crew selects an approach, the FMS creates(updates) a temporary flight plan, and completes(updates) the following fields in the SELECTED ARRIVAL area:
- APPR
- LS
- FREQ/CHANI
- RWY
- LENGTH
- CRS.

Ident.: DSC-22-FMS-20-20-20-30-00003771.0001001 / 22 APR 14

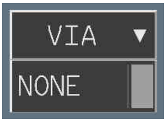
VIA BUTTON

When clicked, displays the VIA list.

L2 *Note:* *The flight crew can displays the VIA list, only if the flight crew previously selected an approach.*

L1 The VIA list displays all of the VIAs that are compatible with the approach and the STAR that the flight crew selected. If the flight crew selected no STAR, the VIA list displays all of the VIAs that are compatible with the approach that the flight crew selected.
The first option in the VIA list is NONE.
If a VIA is part of an RNP AR procedure, the (RNP) label appears next to the VIA ident.

VIA List



L2 *Note:* *The NONE option is automatically selected, if all of the following occur:*
- *The flight crew selects an approach and a STAR*
- *There is no compatible VIA.*

L1 When the flight crew selects a VIA or the NONE option, the FMS creates(updates) a temporary flight plan, and completes(updates) the VIA field in the SELECTED ARRIVAL area.

Ident.: DSC-22-FMS-20-20-20-30-00003772.0001001 / 22 APR 14

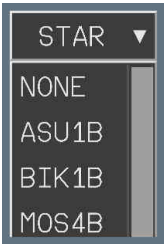
STAR BUTTON

When clicked, displays the STAR list.

L2 *Note:* *The flight crew can display the STAR list, only if the flight crew previously selected an approach.*

L1 The STAR list displays all of the STARs that are compatible with the approach that the flight crew selected.
The first option in the STAR list is NONE.

STAR List



L2 *Note:* *The NONE option is automatically selected, if the flight crew selects an approach and no STAR is available.*

L1 When the flight crew selects a STAR or the NONE option, the FMS creates(updates) a temporary flight plan, and completes(updates) the STAR field in the SELECTED ARRIVAL area.

Ident.: DSC-22-FMS-20-20-20-30-00003773.0001001 / 22 APR 14

TRANS BUTTON

When clicked, displays the TRANS list.

L2 *Note:* *The flight crew can displays the TRANS list, only if a STAR is selected.*

L1 The TRANS list displays all of the TRANS that are compatible with the selected STAR.
The first option in the TRANS list is NONE.

TRANS List

L2 *Note:* *The NONE option is automatically selected, if the flight crew selects a STAR and no TRANS is available.*

L1 When the flight crew selects a TRANS or the NONE option, the FMS creates(updates) a temporary flight plan, and completes(updates) the TRANS field in the SELECTED ARRIVAL area.

Ident.: DSC-22-FMS-20-20-20-30-00003774.0001001 / 22 APR 14

TMPY F-PLN BUTTON

When clicked, displays the ACTIVE/F-PLN page (*Refer to page*).

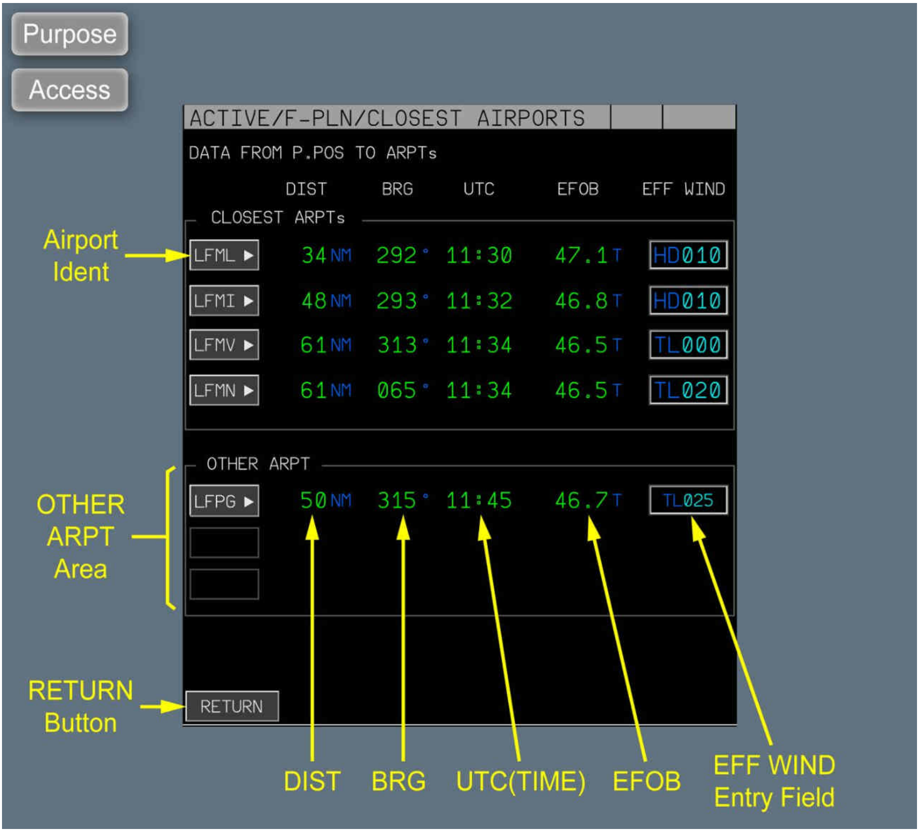
L2 The TMPY F-PLN button is displayed, only if there is a temporary flight plan. If there is no temporary flight plan, the RETURN button is displayed instead of the TMPY F-PLN button. When the flight crew clicks on the RETURN button, the F-PLN page appears.

CLOSEST AIRPORTS PAGE

Applicable to: ALL

Ident.: DSC-22-FMS-20-20-20-40-00002703.0001001 / 14 APR 14

CLOSEST AIRPORTS Page


Purpose
Access
Airport Ident
OTHER ARPT Area
RETURN Button
RETURN
DIST
BRG
UTC(TIME)
EFOB
EFF WIND Entry Field

ACTIVE/F-PLN/CLOSEST AIRPORTS

DATA FROM P.POS TO ARPTs

	DIST	BRG	UTC	EFOB	EFF WIND
CLOSEST ARPTs					
LFML ▶	34 NM	292 °	11:30	47.1 T	HD010
LFMI ▶	48 NM	293 °	11:32	46.8 T	HD010
LFMV ▶	61 NM	313 °	11:34	46.5 T	TL000
LFMN ▶	61 NM	065 °	11:34	46.5 T	TL020
OTHER ARPT					
LFPG ▶	50 NM	315 °	11:45	46.7 T	TL025

Ident.: DSC-22-FMS-20-20-20-40-00003775.0001001 / 22 APR 14

PURPOSE

On the CLOSEST AIRPORTS page, the flight crew can:

- Access the four closest airports and their associated data (i.e. distance, bearing, ETA, EFOB, and effective wind)
  L2 The airports are ranked in increasing order of distance from the current aircraft position
- L1 Display the same data for another desired airport.

The CLOSEST AIRPORTS page is available for the active flight plan only.

LINKS

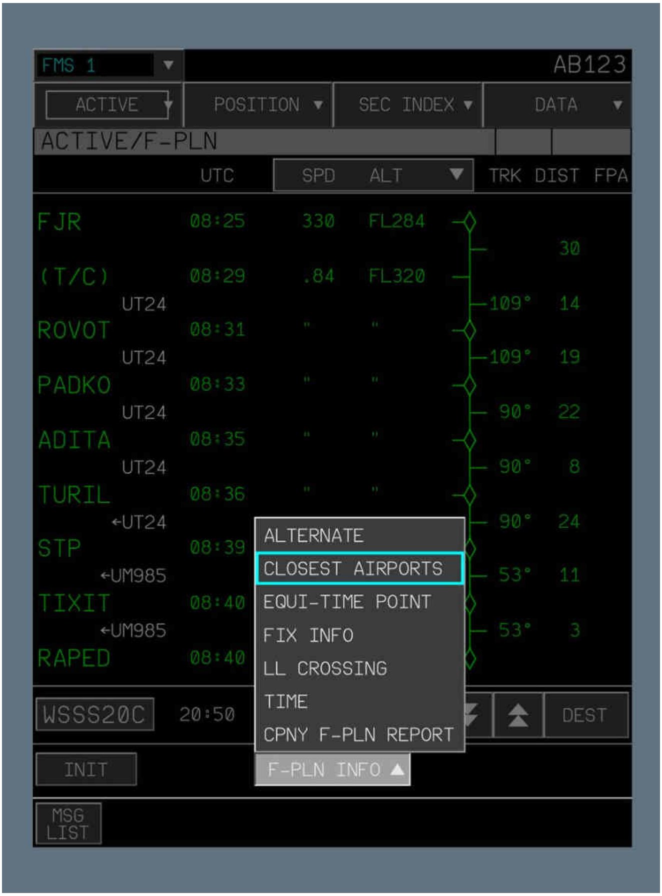
For information about the CLOSEST AIRPORTS function, *Refer to DSC-22-FMS-10-40-40 CLOSEST AIRPORTS Function*.

Ident.: DSC-22-FMS-20-20-20-40-00003776.0001001 / 14 APR 14

ACCESS

The flight crew can access the CLOSEST AIRPORT page via the ACTIVE/F-PLN page, by selecting CLOSEST AIRPORTS in the F-PLN INFO menu.

ACTIVE/F-PLN Page

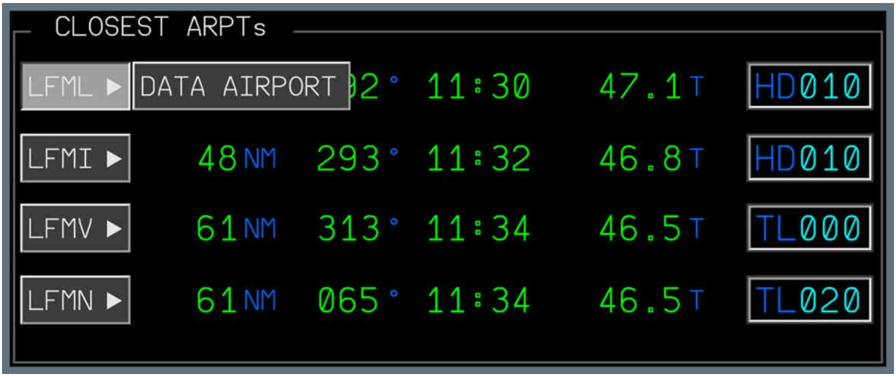

FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN
UTC
SPD
ALT
TRK
DIST
FPA
FJR 08:25 330 FL284
30
(T/C) 08:29 .84 FL320
UT24 109° 14
ROVOT 08:31 " "
UT24 109° 19
PADKO 08:33 " "
UT24 90° 22
ADITA 08:35 " "
UT24 90° 8
TURIL 08:36 " "
←UT24 90° 24
STP 08:39
←UM985 53° 11
TIXIT 08:40
←UM985 53° 3
RAPED 08:40
ALTERNATE
CLOSEST AIRPORTS
EQUI-TIME POINT
FIX INFO
LL CROSSING
TIME
CPNY F-PLN REPORT
WSSS20C
20:50
DEST
INIT
F-PLN INFO
MSG LIST

Ident.: DSC-22-FMS-20-20-20-40-00003778.0001001 / 14 APR 14

AIRPORT IDENT

Indicates the airport ident.
When the flight crew clicks on the airport ident button, the closest airport menu appears.

Closest Airport Menu



CLOSEST ARPTs

LFML ▶	DATA AIRPORT		2 °	11:30	47.1 T	HD010
LFMI ▶		48 NM	293 °	11:32	46.8 T	HD010
LFMV ▶		61 NM	313 °	11:34	46.5 T	TL000
LFMN ▶		61 NM	065 °	11:34	46.5 T	TL020

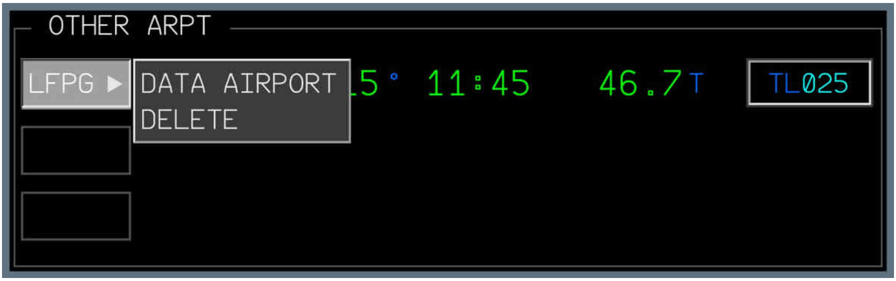
The closest airport menu has one option: DATA AIRPORT. When the flight crew selects DATA AIRPORT, the DATA/AIRPORT page appears.
The DATA/AIRPORT page provides additional information about the airport. For more information, *Refer to DSC-22-FMS-20-20-20 DATA/AIRPORT Page*.

Ident.: DSC-22-FMS-20-20-20-40-00003777.0001001 / 22 APR 14

OTHER ARPT AREA

The flight crew can manually enter up to three airport idents in order to display the associated data (i.e. distance, bearing, ETA, EFOB, and effective wind).
Then, the flight crew can compare this data with the closest airports that are computed by the FMS.
When the flight crew clicks on the airport ident button, the other closest airport menu appears.

Other Closest Airport Menu



OTHER ARPT

LFPG ▶	DATA AIRPORT DELETE	5 °	11:45	46.7 T	TL025

The other closest airport menu has the following options:
- DATA AIRPORT: Displays the DATA/AIRPORT page
  The DATA/AIRPORT page provides additional information about the airport. For more information, *Refer to DSC-22-FMS-20-20-20 DATA/AIRPORT Page*.
- DELETE: Delete the associated airport from the list of the other closest airports.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 AIRPORT (ARPT).

Ident.: DSC-22-FMS-20-20-20-40-00003779.0001001 / 22 APR 14

DIST

Indicates the direct distance between the current aircraft position and the airport.

Ident.: DSC-22-FMS-20-20-20-40-00003780.0001001 / 14 APR 14

BRG

Indicates the bearing from the current aircraft position to the airport.

Note: *The displayed bearing corresponds to the MAG/TRUE selection by the flight crew.*

Ident.: DSC-22-FMS-20-20-20-40-00003781.0001001 / 22 APR 14

UTC(TIME)

Indicates the Estimated Time of Arrival (ETA), in UTC(flight) time, at the airport.
The ETA is computed in the CRZ flight phase only.

L2 *Note:* *The ETA that is displayed on the CLOSEST AIRPORTS page is based on the following:*
- *Current aircraft gross weight*
- *Flight from the current aircraft position to the ground*
- *Great-circle distance and bearing to the airport*
- *Current CRZ FL*
- *Constant ISA DEV that is equal to the current aircraft ISA DEV*
- *Entered or computed effective wind along the bearing*
- *Current FMS speed mode (ECON/LRC).*

L1 The UTC(TIME) label indicates the time reference:
- The UTC label indicates that the time reference is the UTC time
- The TIME label indicates that the time reference is the flight time.

L2 The time reference is defined as follows:

- In the PREFLIGHT flight phase:
  - If there is an entered Estimated Takeoff Time (ETT), the time reference is the UTC time
  - If there is no entered ETT, the time reference is the flight time

  The flight crew enters the ETT on the RTA panel of the VERT REV page (*Refer to page*).
- In flight:
  - If the UTC time is valid, the time reference is the UTC time
  - If the UTC time is not valid, the time reference is the flight time.

Ident.: DSC-22-FMS-20-20-20-40-00003782.0001001 / 22 APR 14

EFOB

Indicates the Estimated Fuel On Board (EFOB) at the airport.
The EFOB is computed in CRZ flight phase only.

L2 *Note:* *The EFOB that is displayed on the CLOSEST AIRPORTS page is based on the following:*

- *Current aircraft gross weight*
- *Flight from the current aircraft position to the ground*
- *Great-circle distance and bearing to the airport*
- *Current CRZ FL*
- *Constant ISA DEV that is equal to the current aircraft ISA DEV*
- *Entered or computed effective wind along the bearing*
- *Current FMS speed mode (ECON/LRC).*

Ident.: DSC-22-FMS-20-20-20-40-00003783.0001001 / 22 APR 14

EFF WIND ENTRY FIELD

Indicates a headwind or tailwind for the associated airport route.
The FMS computes and displays a default wind that is based on the wind data that is entered by the flight crew.
The flight crew can overwrite the default value at any time.
The FMS uses the effective wind to compute the time and EFOB predictions for the airports.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 EFF WIND.

Ident.: DSC-22-FMS-20-20-20-40-00003784.0001001 / 22 APR 14

RETURN BUTTON

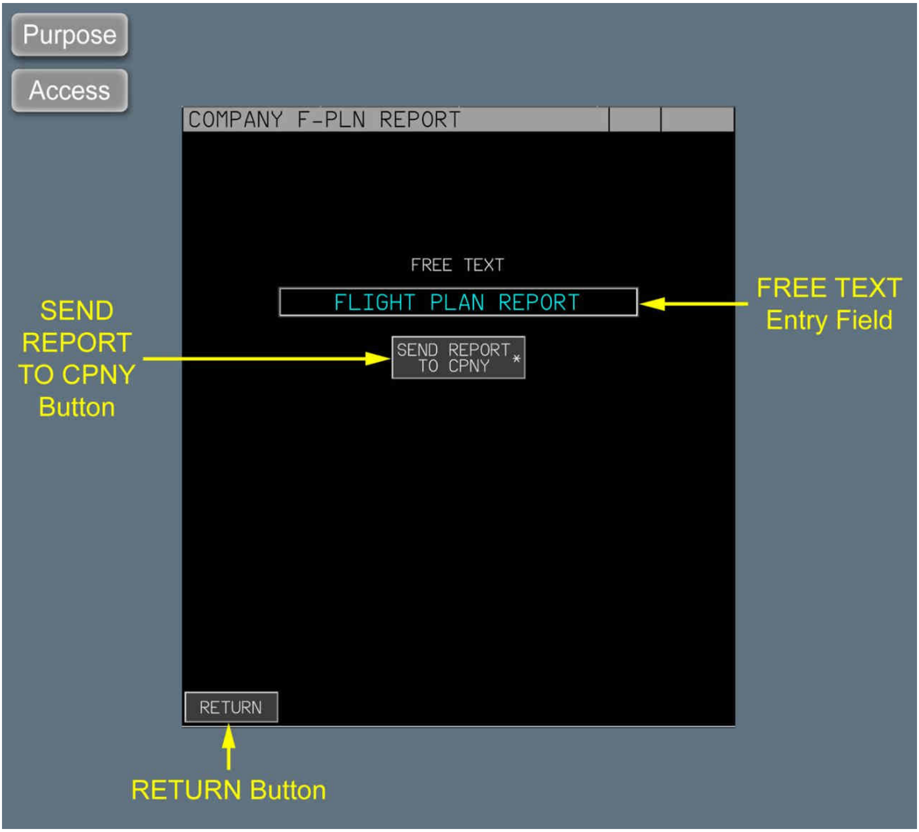
When clicked, displays the ACTIVE/F-PLN page (*Refer to page*).

COMPANY F-PLN REPORT PAGE

Applicable to: ALL

Ident.: DSC-22-FMS-20-20-20-50-00002704.0001001 / 14 APR 14

COMPANY F-PLN REPORT Page


Purpose
Access
COMPANY F-PLN REPORT
FREE TEXT
FLIGHT PLAN REPORT
SEND REPORT TO CPNY *
RETURN
SEND REPORT TO CPNY Button
FREE TEXT Entry Field
RETURN Button

Ident.: DSC-22-FMS-20-20-20-50-00003785.0001001 / 22 APR 14

PURPOSE

On the COMPANY F-PLN REPORT page, the flight crew can send (via ACARS) an active flight plan report to the company ground station.

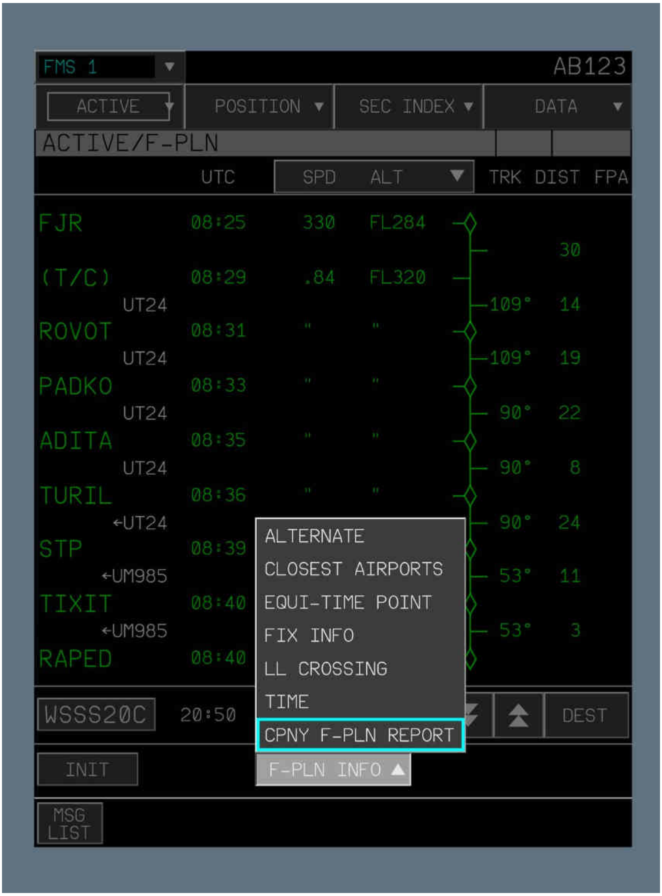
If the free text AMI option is not activated, the COMPANY F-PLN REPORT page is not available. In this case, the flight crew sends the flight plan report by selecting CPNY F-PLN REPORT in the F-PLN INFO menu.
The COMPANY F-PLN REPORT page is available for the active flight plan only.

Ident.: DSC-22-FMS-20-20-20-50-00003786.0001001 / 14 APR 14

ACCESS

The flight crew can access the COMPANY F-PLN REPORT page via the ACTIVE/F-PLN page, by selecting CPNY F-PLN REPORT in the F-PLN INFO menu.

ACTIVE/F-PLN Page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN
ALTERNATE
CLOSEST AIRPORTS
EQUI-TIME POINT
FIX INFO
LL CROSSING
TIME
CPNY F-PLN REPORT
F-PLN INFO
DEST
INIT
MSG LIST

	UTC	SPD	ALT	TRK	DIST	FPA
FJR	08:25	330	FL284			
					30	
(T/C)	08:29	.84	FL320			
UT24				109°	14	
ROVOT	08:31	"	"			
UT24				109°	19	
PADKO	08:33	"	"			
UT24				90°	22	
ADITA	08:35	"	"			
UT24				90°	8	
TURIL	08:36	"	"			
←UT24				90°	24	
STP	08:39					
←UM985				53°	11	
TIXIT	08:40					
←UM985				53°	3	
RAPED	08:40					
WSSS20C	20:50					

Ident.: DSC-22-FMS-20-20-20-50-00003787.0001001 / 22 APR 14

FREE TEXT ENTRY FIELD

The flight crew can enter a free text of up to 24 characters in the entry field. The free text is sent with the flight plan report to the company ground station.

ENTRY FORMAT

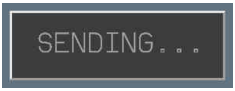
Refer to DSC-22-FMS-20-80 FREE TEXT.

Ident.: DSC-22-FMS-20-20-20-50-00003788.0001001 / 22 APR 14

SENT REPORT TO CPNY BUTTON

When clicked, sends the flight plan report to the company ground station (via ACARS).

L2 During the report transmission to the Avionics Communication Router (ACR), the button label is SENDING... .



Ident.: DSC-22-FMS-20-20-20-50-00003789.0001001 / 22 APR 14

RETURN BUTTON

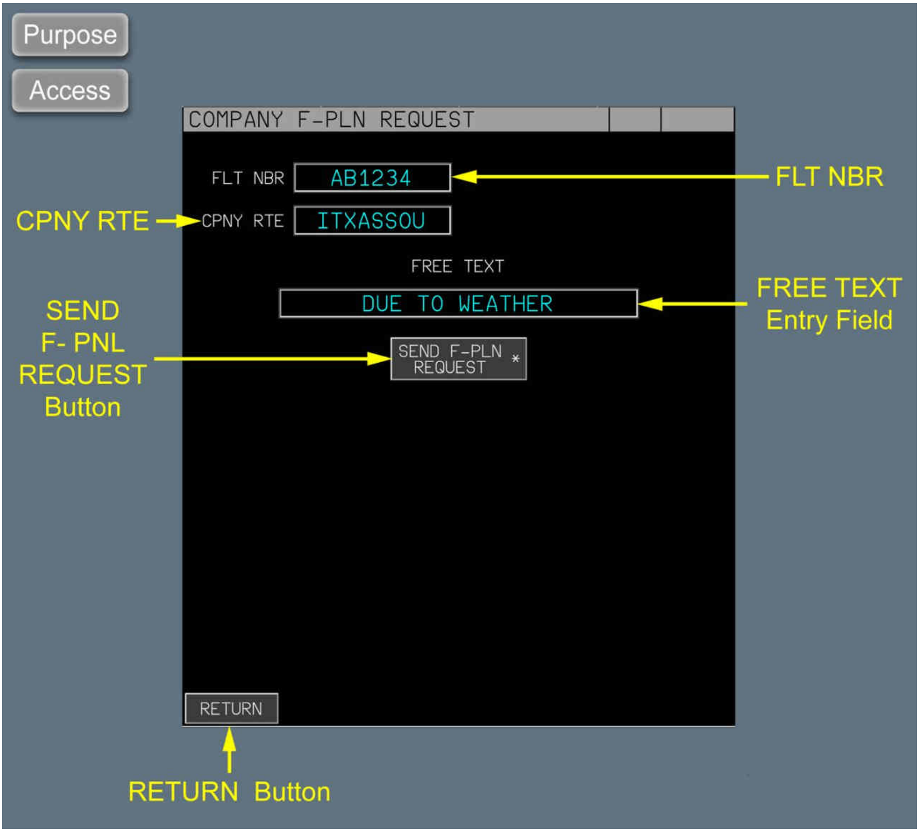
When clicked, displays the ACTIVE/F-PLN page (*Refer to page*).

COMPANY F-PLN REQUEST PAGE

Applicable to: ALL

Ident.: DSC-22-FMS-20-20-20-60-00002705.0001001 / 14 APR 14

COMPANY F-PLN REQUEST Page


Purpose
Access
COMPANY F-PLN REQUEST
FLT NBR
AB1234
CPNY RTE
ITXASSOU
FREE TEXT
DUE TO WEATHER
SEND F-PLN REQUEST *
RETURN
FLT NBR
CPNY RTE
FREE TEXT Entry Field
SEND F- PNL REQUEST Button
RETURN Button

Ident.: DSC-22-FMS-20-20-20-60-00003790.0001001 / 22 APR 14

PURPOSE

On the COMPANY F-PLN REQUEST page, the flight crew can send a flight plan request to the company ground station.
Before engine start, a performance data request is associated with the flight plan request.

L2 The request is always associated with the active or secondary flight plan from which the request is sent.
After engine start, the flight crew can send a flight plan request only from one of the secondary flight plans.

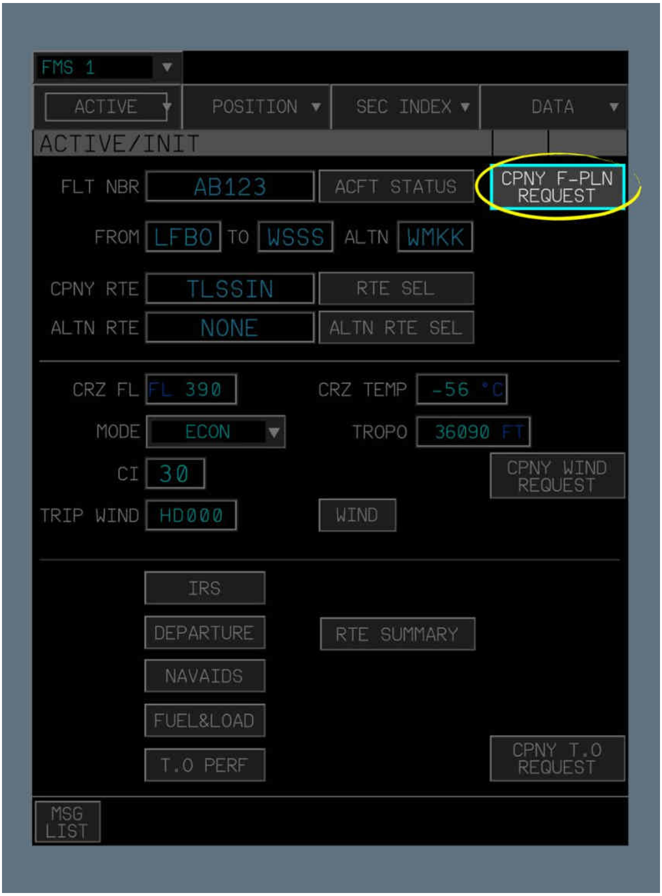
L1 The COMPANY F-PLN REQUEST page is available for the active and secondary flight plans.

Ident.: DSC-22-FMS-20-20-20-60-00003791.0001001 / 14 APR 14

ACCESS

The flight crew can access the COMPANY F-PLN REQUEST page via the INIT page, by clicking on the CPNY F-PLN REQUEST button.

INIT page


FMS 1
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/INIT
ACFT STATUS
CPNY F-PLN REQUEST
RTE SEL
ALTN RTE SEL
CPNY WIND REQUEST
WIND
IRS
DEPARTURE
RTE SUMMARY
NAVAIDS
FUEL&LOAD
T.O PERF
CPNY T.O REQUEST
MSG LIST

FLT NBR AB123

FROM LFBO TO WSSS ALTN WMKK

CPNY RTE TLSSIN

ALTN RTE NONE

CRZ FL FL 390 CRZ TEMP -56 °C

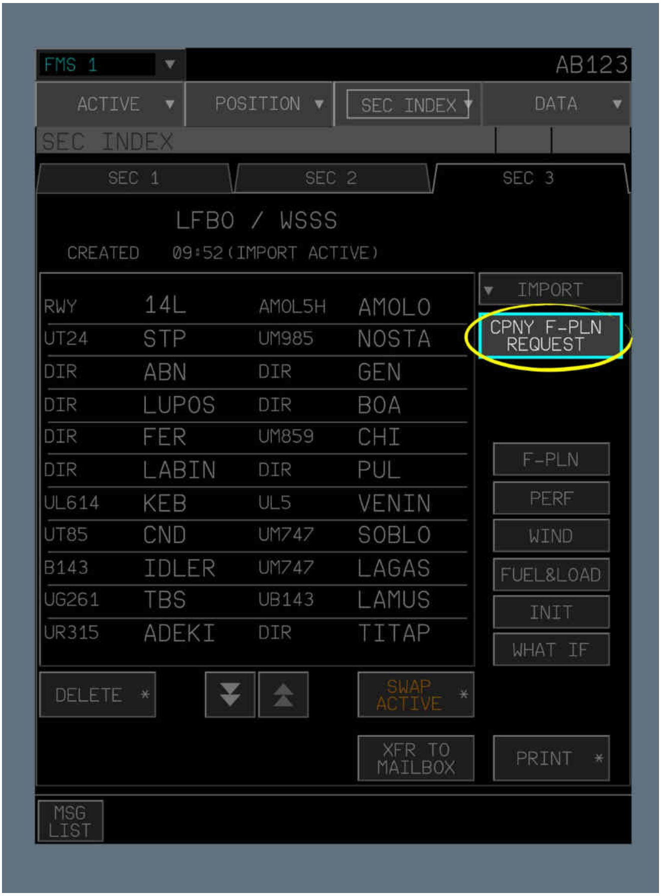
MODE ECON TROPO 36090 FT

CI 30

TRIP WIND HD000

Note: *For secondary flight plans, the flight crew can also access the COMPANY F-PLN REQUEST page via the SEC INDEX page, by clicking on the CPNY F-PLN REQUEST button.*

SEC INDEX Page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
SEC INDEX
SEC 1
SEC 2
SEC 3
IMPORT
CPNY F-PLN REQUEST
F-PLN
PERF
WIND
FUEL&LOAD
INIT
WHAT IF
DELETE *
SWAP ACTIVE *
XFR TO MAILBOX
PRINT *
MSG LIST

LFBO / WSSS

CREATED 09:52(IMPORT ACTIVE)

RWY	14L	AMOL5H	AMOLO
UT24	STP	UM985	NOSTA
DIR	ABN	DIR	GEN
DIR	LUPOS	DIR	BOA
DIR	FER	UM859	CHI
DIR	LABIN	DIR	PUL
UL614	KEB	UL5	VENIN
UT85	CND	UM747	SOBLO
B143	IDLER	UM747	LAGAS
UG261	TBS	UB143	LAMUS
UR315	ADEKI	DIR	TITAP

Ident.: DSC-22-FMS-20-20-20-60-00003792.0001001 / 22 APR 14

FLT NBR

Indicates the flight number of the requested flight plan.

The default value is the flight number of the active(secondary) flight plan, if any. The flight crew can overwrite the default value at any time.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 FLT NBR.

Ident.: DSC-22-FMS-20-20-20-60-00003793.0001001 / 14 APR 14

CPNY RTE

Indicates the company route of the requested flight plan.
If the flight crew performs the F-PLN request from one of the SEC pages, the default value is the company route of the secondary flight plan, if there is one. The flight crew can overwrite the default value at any time.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 CPNY RTE.

Ident.: DSC-22-FMS-20-20-20-60-00003794.0001001 / 22 APR 14

FREE TEXT ENTRY FIELD

The flight crew can enter a free text of up to 24 characters in the entry field. The free text is sent with the flight plan request to the company ground station.
If the free text AMI option is not activated, the FREE TEXT entry field is not available.

ENTRY FORMAT

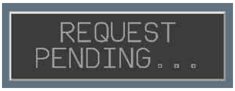
Refer to DSC-22-FMS-20-80 FREE TEXT.

Ident.: DSC-22-FMS-20-20-20-60-00003795.0001001 / 22 APR 14

SEND F-PLN REQUEST BUTTON

When clicked, sends the F-PLN and performance data request to the company ground station (via ACARS).

L2 During the request transmission to the Avionics Communication Router (ACR), the button label is REQUEST PENDING... .



Ident.: DSC-22-FMS-20-20-20-60-00003796.0001001 / 22 APR 14

RETURN BUTTON

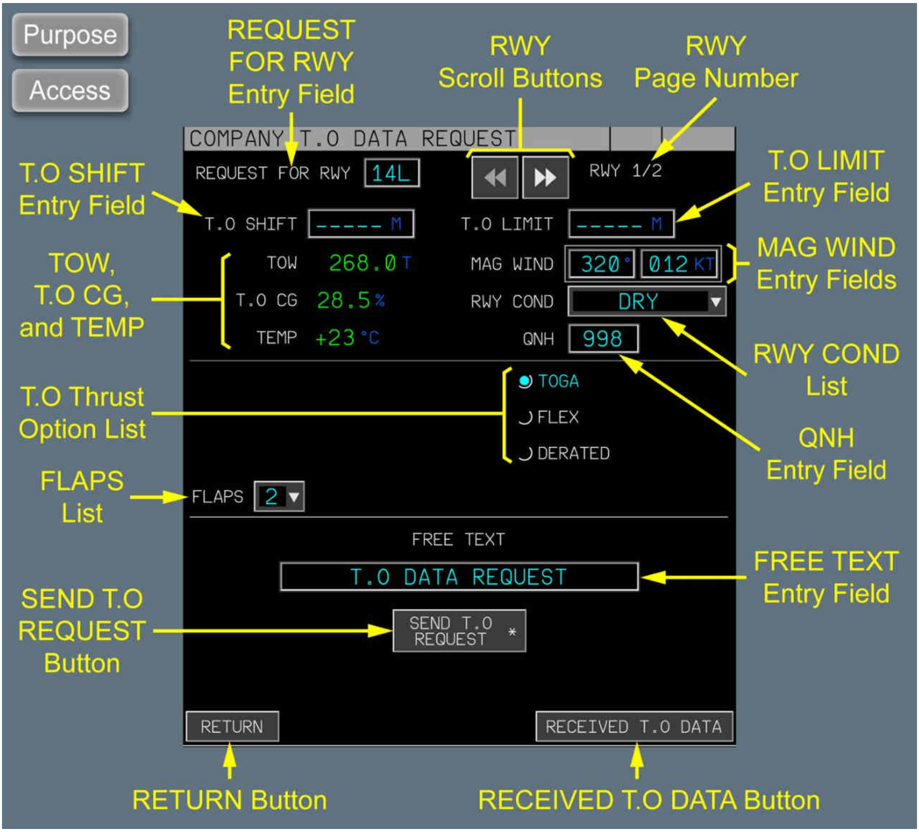
When clicked, displays the page that was displayed before the COMPANY F-PLN REQUEST page.

COMPANY T.O DATA REQUEST PAGE

Applicable to: ALL

Ident.: DSC-22-FMS-20-20-20-70-00002706.0001001 / 14 APR 14

COMPANY T.O DATA REQUEST Page


Purpose
Access
REQUEST FOR RWY Entry Field
RWY Scroll Buttons
RWY Page Number
T.O SHIFT Entry Field
T.O LIMIT Entry Field
TOW, T.O CG, and TEMP
MAG WIND Entry Fields
RWY COND List
QNH Entry Field
T.O Thrust Option List
FLAPS List
FREE TEXT Entry Field
SEND T.O REQUEST Button
RETURN Button
RECEIVED T.O DATA Button
COMPANY T.O DATA REQUEST
REQUEST FOR RWY 14L
RWY 1/2
T.O SHIFT ----- M
T.O LIMIT ----- M
TOW 268.0 T
T.O CG 28.5 %
TEMP +23 °C
MAG WIND 320 ° 012 KT
RWY COND DRY
QNH 998
● TOGA
○ FLEX
○ DERATED
FLAPS 2
FREE TEXT
T.O DATA REQUEST
SEND T.O REQUEST *
RETURN
RECEIVED T.O DATA

Ident.: DSC-22-FMS-20-20-20-70-00003797.0001001 / 22 APR 14

PURPOSE

On the COMPANY T.O DATA REQUEST page, the flight crew can request takeoff data (for two different runways) to the company ground station.
The flight crew may also enter additional takeoff parameters that will be sent with the request, and used for the takeoff data computation on ground.

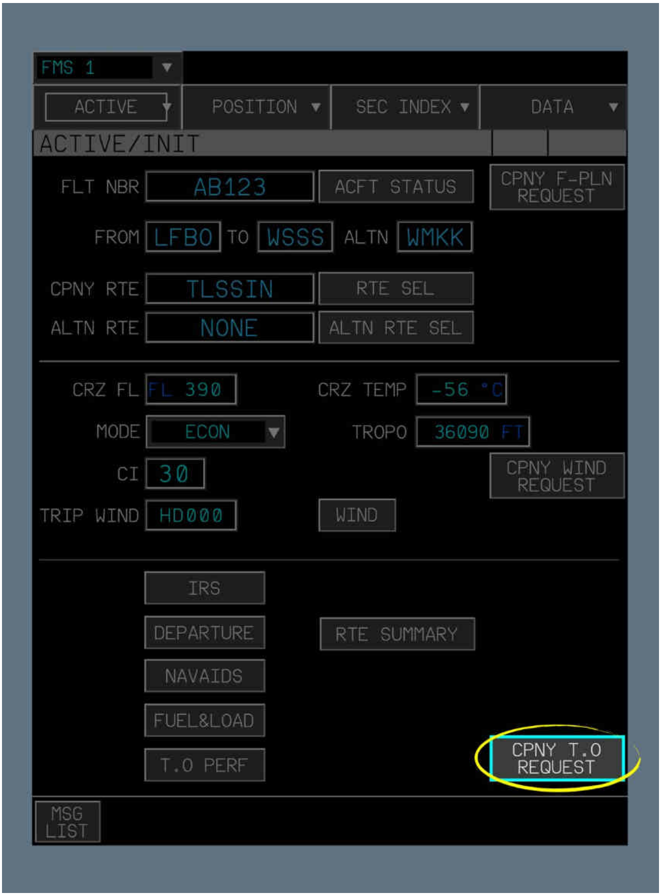
The COMPANY T.O DATA REQUEST page is available for the active flight plan only.

ACCESS

The flight crew can access the COMPANY T.O DATA REQUEST page, via:

- The ACTIVE/INIT page, by clicking on the CPNY T.O REQUEST button

ACTIVE/INIT Page

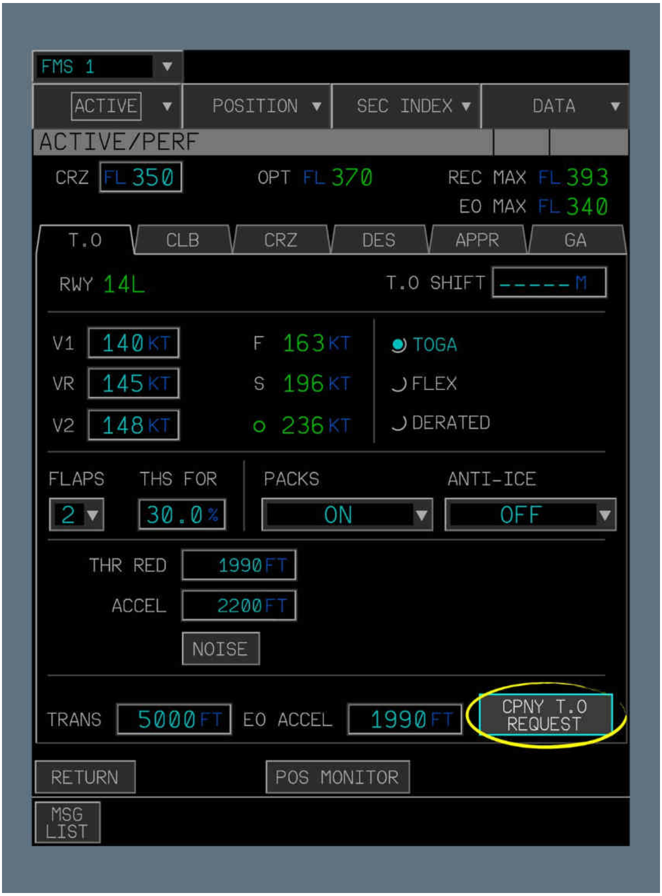


FMS 1
ACTIVE/INIT
FLT NBR AB123
FROM LFBO TO WSSS ALTN WMKK
CPNY RTE TLSSIN
ALTN RTE NONE
CRZ FL FL 390
CRZ TEMP -56 °C
MODE ECON
TROPO 36090 FT
CI 30
TRIP WIND HD000

ACTIVE
POSITION
SEC INDEX
DATA
ACFT STATUS
CPNY F-PLN REQUEST
RTE SEL
ALTN RTE SEL
CPNY WIND REQUEST
WIND
IRS
DEPARTURE
RTE SUMMARY
NAVAIDS
FUEL&LOAD
T.O PERF
CPNY T.O REQUEST
MSG LIST

- The T.O panel of the ACTIVE/PERF page, by clicking on the CPNY T.O REQUEST button

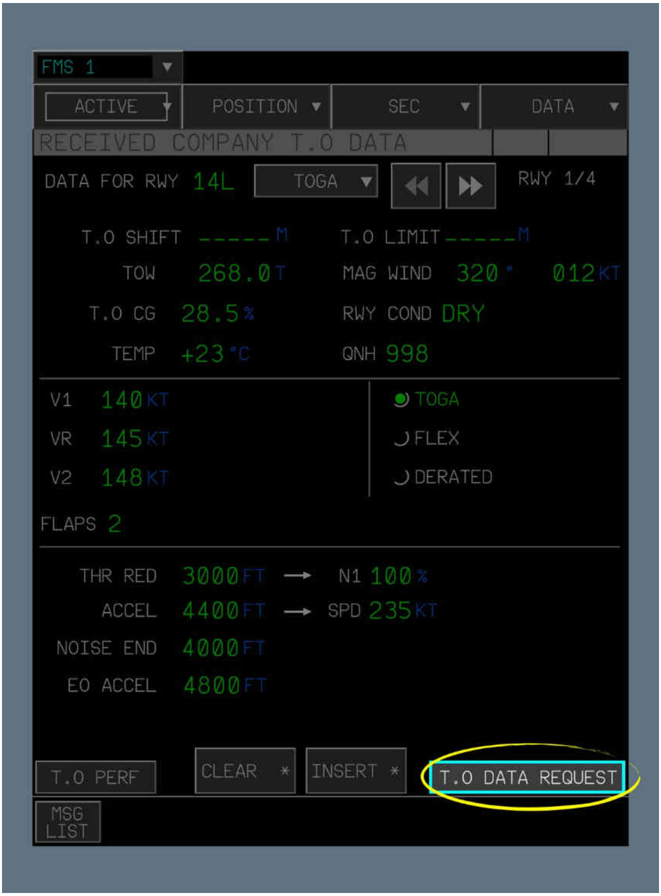
ACTIVE/PERF Page


FMS 1
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/PERF
T.O
CLB
CRZ
DES
APPR
GA
NOISE
CPNY T.O REQUEST
RETURN
POS MONITOR
MSG LIST

CRZ FL 350
OPT FL 370
REC MAX FL 393
EO MAX FL 340
RWY 14L
T.O SHIFT -----M
V1 140KT
VR 145KT
V2 148KT
F 163KT
S 196KT
O 236KT
● TOGA
○ FLEX
○ DERATED
FLAPS 2
THS FOR 30.0%
PACKS ON
ANTI-ICE OFF
THR RED 1990FT
ACCEL 2200FT
TRANS 5000FT
EO ACCEL 1990FT

- The RECEIVED COMPANY T.O DATA page, by clicking on the T.O DATA REQUEST button.

RECEIVED COMPANY T.O DATA Page



RECEIVED COMPANY T.O DATA

DATA FOR RWY 14L TOGA RWY 1/4

T.O SHIFT -----M T.O LIMIT -----M

TOW 268.0T MAG WIND 320° 012KT

T.O CG 28.5% RWY COND DRY

TEMP +23°C QNH 998

V1 140KT ● TOGA

VR 145KT ○ FLEX

V2 148KT ○ DERATED

FLAPS 2

THR RED 3000FT → N1 100%

ACCEL 4400FT → SPD 235KT

NOISE END 4000FT

EO ACCEL 4800FT

Ident.: DSC-22-FMS-20-20-20-70-00003799.0001001 / 17 NOV 17

REQUEST FOR RWY ENTRY FIELD

Indicates the runway for which the takeoff data is requested.
If a departure runway is defined in the active flight plan, the ident of this departure runway is automatically entered in the entry field. The flight crew can overwrite the automatically-selected ident at any time.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 RWY.

Ident.: DSC-22-FMS-20-20-20-70-00003800.0001001 / 22 APR 14

RWY SCROLL BUTTONS

The flight crew uses the RWY scroll buttons to scroll through both requested runway pages.

Ident.: DSC-22-FMS-20-20-20-70-00003801.0001001 / 22 APR 14

RWY PAGE NUMBER

Indicates the rank of the requested runway page.

Ident.: DSC-22-FMS-20-20-20-70-00003808.0001001 / 22 APR 14

T.O SHIFT ENTRY FIELD

Indicates the runway takeoff shift.
The runway takeoff shift is the distance between the runway threshold, and the position at which the flight crew releases the aircraft brakes in order to take off.
The default value is the takeoff shift of the T.O panel on the PERF page. The flight crew can overwrite an automatically-selected takeoff shift at any time.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 T.O SHIFT.

Ident.: DSC-22-FMS-20-20-20-70-00003809.0001001 / 22 APR 14

T.O LIMIT ENTRY FIELD

Indicates the limited runway length for takeoff (i.e. the runway length that is really available for takeoff).

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 T.O LIMIT.

Ident.: DSC-22-FMS-20-20-20-70-00003802.0001001 / 22 APR 14

TOW, T.O CG, AND TEMP

Indicate the aircraft takeoff weight, aircraft takeoff CG, and takeoff temperature.
The takeoff weight is the FMS value that is displayed in the TOW field on the ACTIVE/FUEL&LOAD page (*Refer to page*).
The FQMS provides the takeoff CG.
The takeoff temperature is the current static temperature value, provided by the ADIRS.

Ident.: DSC-22-FMS-20-20-20-70-00003803.0001001 / 22 APR 14

MAG WIND ENTRY FIELDS

Indicate the wind direction and wind speed at takeoff.
The wind direction and wind speed at takeoff are those that are defined at the departure airport on the CLB panel of the WIND page (*Refer to page*). The flight crew can overwrite the default values at any time.

L2 If the airport reference is true north, the wind is the true wind. The label next to the entry fields is TRUE WIND instead of MAG WIND.

L1 ENTRY FORMAT

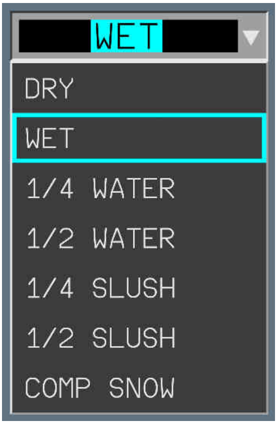
For the entry format of:
- Wind direction, *Refer to DSC-22-FMS-20-80 WIND DIRECTION*
- Wind speed, *Refer to DSC-22-FMS-20-80 WIND SPEED*.

Ident.: DSC-22-FMS-20-20-20-70-00003804.0001001 / 22 APR 14

RWY COND LIST

Indicates the runway condition at takeoff.
The flight crew selects the runway condition from the RWY COND list.

RWY COND List



Ident.: DSC-22-FMS-20-20-20-70-00003805.0001001 / 22 APR 14

QNH ENTRY FIELD

Indicates the selected QNH at takeoff.

The QNH that is selected on the EFIS CP is displayed by default. The flight crew can overwrite the default value at any time.

ENTRY FORMAT

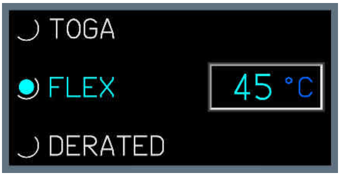
Refer to DSC-22-FMS-20-80 QNH(QFE).

Ident.: DSC-22-FMS-20-20-20-70-00003806.0001001 / 03 JAN 19

T.O THRUST OPTION LIST

To select the desired takeoff thrust, the flight crew selects one of the following options
- TOGA, for TOGA thrust (default setting)
- FLEX, for FLX thrust
  When selected, displays the FLEX entry field. The flight crew enters the FLEX temperature in the FLEX entry field.

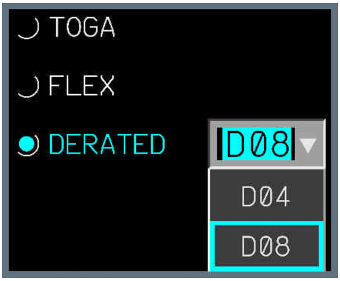
FLEX Entry Field



○ TOGA
● FLEX 45 °C
○ DERATED

- DERATED, for DTO thrust.
  When selected, displays the DERATED list. The flight crew enters the derated thrust level via the keyboard, or by selecting the derated thrust level from the DERATED list.

DERATED List



○ TOGA
○ FLEX
● DERATED D08

ENTRY FORMAT

For the entry format of:
- FLEX temperature, *Refer to DSC-22-FMS-20-80 FLEX*
- Derated thrust level, *Refer to DSC-22-FMS-20-80 DERATED T.O*.

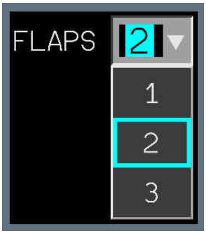
Ident.: DSC-22-FMS-20-20-20-70-00003807.0001001 / 22 APR 14

FLAPS LIST

Indicates the flaps setting for takeoff.
The default setting is the flaps setting of the T.O panel on the PERF page.

The flight crew can overwrite the default value at any time, by:
- Entering the flaps setting via the keyboard, or
- Selecting the flaps setting from the FLAPS list.

FLAPS List



ENTRY FORMAT

Refer to DSC-22-FMS-20-80 FLAPS.

Ident.: DSC-22-FMS-20-20-20-70-00003810.0001001 / 22 APR 14

FREE TEXT ENTRY FIELD

The flight crew can enter a free text of a up to 24 characters in the entry field. The free text is sent with the T.O data request to the company ground station.
If the free text AMI option is not activated, the FREE TEXT entry field is not available.

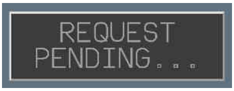
ENTRY FORMAT

Refer to DSC-22-FMS-20-80 FREE TEXT.

Ident.: DSC-22-FMS-20-20-20-70-00003811.0001001 / 22 APR 14

SEND T.O REQUEST BUTTON

When clicked, sends the T.O data request to the company ground station (via ACARS).
L2 During the request transmission to the Avionics Communication Router (ACR), the button label is REQUEST PENDING... .



Ident.: DSC-22-FMS-20-20-20-70-00003813.0001001 / 22 APR 14

RETURN BUTTON

When clicked, displays the page that was displayed before the COMPANY T.O DATA REQUEST page.

Ident.: DSC-22-FMS-20-20-20-70-00003812.0001001 / 22 APR 14

RECEIVED T.O DATA BUTTON

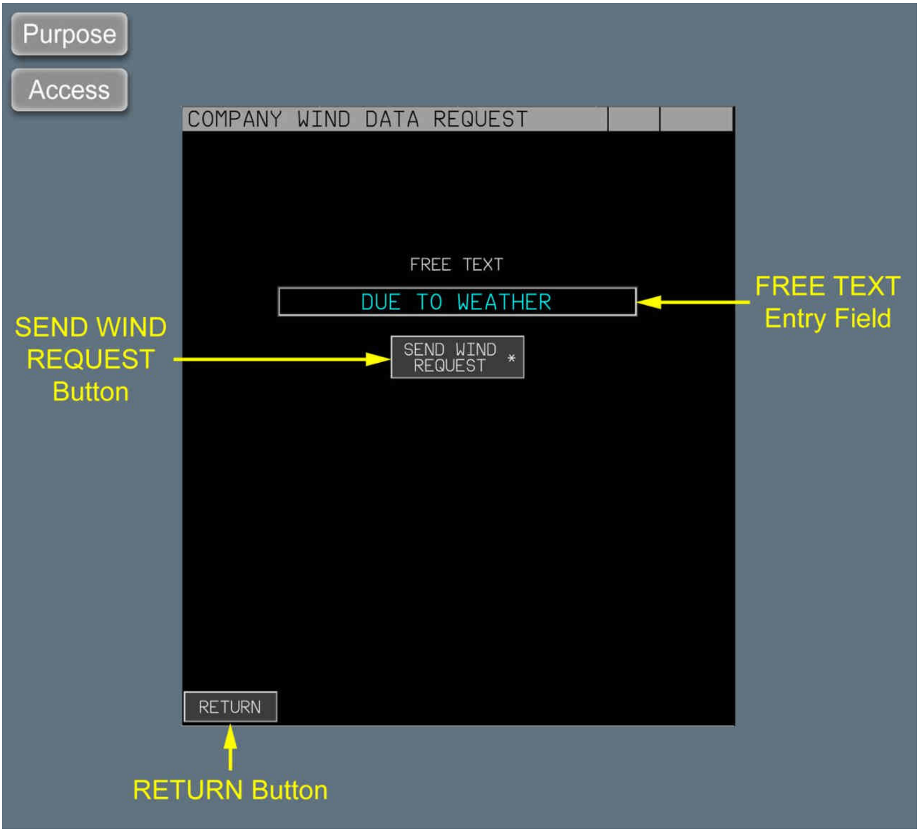
When clicked, displays the RECEIVED COMPANY T.O DATA page (*Refer to page*).

COMPANY WIND DATA REQUEST PAGE

Applicable to: ALL

Ident.: DSC-22-FMS-20-20-20-80-00002707.0001001 / 14 APR 14

COMPANY WIND DATA REQUEST Page


Purpose
Access
COMPANY WIND DATA REQUEST
FREE TEXT
DUE TO WEATHER
SEND WIND REQUEST *
RETURN
FREE TEXT Entry Field
SEND WIND REQUEST Button
RETURN Button

Ident.: DSC-22-FMS-20-20-20-80-00003814.0001001 / 22 APR 14

PURPOSE

On the COMPANY WIND DATA REQUEST page, the flight crew can send a wind request to the company ground station.

L2 The content of the wind request message depends on the flight phase that the aircraft currently flies:

- In PREFLIGHT or T.O flight phase: Request for climb, cruise, descent, and alternate wind data
- In CLB or CRZ flight phase: Request for cruise, descent, and alternate wind data.

L1 When the aircraft is in DES, APPR, or GA flight phase, no wind request is possible.
If the free text AMI option is not activated, the COMPANY WIND DATA REQUEST page is not available. In this case, the flight crew sends the wind request by clicking on the CPNY WIND REQUEST button on the INIT or WIND page.
The COMPANY WIND DATA REQUEST page is available for the active and secondary flight plans.

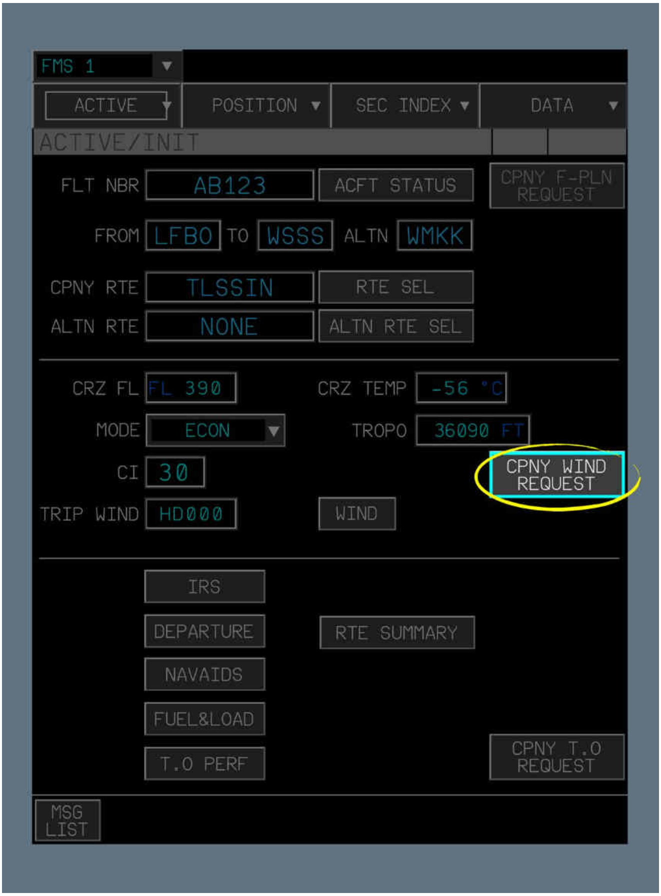
Ident.: DSC-22-FMS-20-20-20-80-00003815.0001001 / 14 APR 14

ACCESS

The flight crew can access the COMPANY WIND DATA REQUEST page, via:

- The INIT page, by clicking on the CPNY WIND REQUEST button

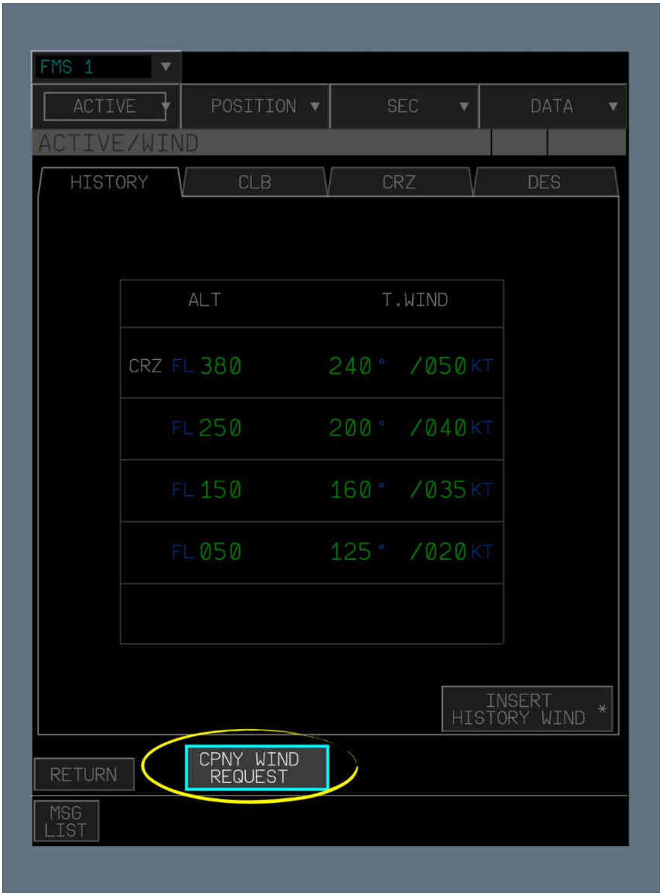
INIT Page


FMS 1
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/INIT
ACFT STATUS
CPNY F-PLN REQUEST
RTE SEL
ALTN RTE SEL
CPNY WIND REQUEST
WIND
IRS
DEPARTURE
NAVAIDS
FUEL&LOAD
T.O PERF
RTE SUMMARY
CPNY T.O REQUEST
MSG LIST

FLT NBR AB123
FROM LFBO TO WSSS ALTN WMKK
CPNY RTE TLSSIN
ALTN RTE NONE
CRZ FL FL 390
CRZ TEMP -56 °C
MODE ECON
TROPO 36090 FT
CI 30
TRIP WIND HD000

- The WIND page, by clicking on the CPNY WIND REQUEST button.

WIND Page


FMS 1
ACTIVE
POSITION
SEC
DATA
ACTIVE/WIND
HISTORY
CLB
CRZ
DES
INSERT HISTORY WIND *
RETURN
CPNY WIND REQUEST
MSG LIST

ALT	T.WIND
CRZ FL 380	240° /050KT
FL 250	200° /040KT
FL 150	160° /035KT
FL 050	125° /020KT

Ident.: DSC-22-FMS-20-20-20-80-00003816.0001001 / 22 APR 14

FREE TEXT ENTRY FIELD

The flight crew can enter a free text of a up to 24 characters in the entry field. The free text is sent with the wind data request to the company ground station.

ENTRY FORMAT

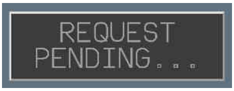
Refer to DSC-22-FMS-20-80 FREE TEXT.

Ident.: DSC-22-FMS-20-20-20-80-00003817.0001001 / 22 APR 14

SEND WIND REQUEST BUTTON

When clicked, sends the wind request to the company ground station (via ACARS).

L2 During the request transmission to the Avionics Communication Router (ACR), the button label is REQUEST PENDING... .



Ident.: DSC-22-FMS-20-20-20-80-00003818.0001001 / 22 APR 14

RETURN BUTTON

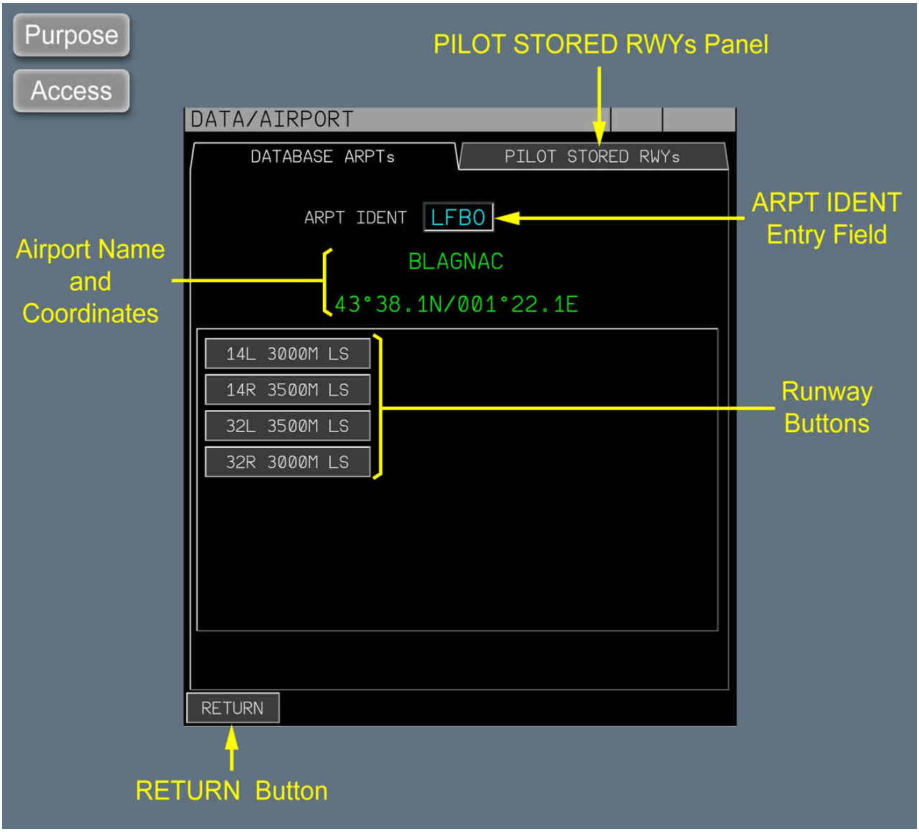
When clicked, displays the page that was displayed before the COMPANY WIND DATA REQUEST page.

DATA/AIRPORT PAGE

Applicable to: ALL

Ident.: DSC-22-FMS-20-20-20-90-00002708.0001001 / 14 APR 14

DATA/AIRPORT Page


Purpose
Access
PILOT STORED RWYs Panel
DATA/AIRPORT
DATABASE ARPTs
PILOT STORED RWYs
ARPT IDENT
LFBO
ARPT IDENT Entry Field
Airport Name and Coordinates
BLAGNAC
43°38.1N/001°22.1E
14L 3000M LS
14R 3500M LS
32L 3500M LS
32R 3000M LS
Runway Buttons
RETURN
RETURN Button

Ident.: DSC-22-FMS-20-20-20-90-00003819.0001001 / 22 APR 14

PURPOSE

On the DATA/AIRPORT page, the flight crew can:
- Display the data for a runway or an airport that is stored in the navigation database or in the pilot-stored elements database
- Create(delete) runways in the pilot-stored elements database.

L2

LINKS

For information about:
- The navigation database, *Refer to DSC-22-FMS-10-20 Navigation Database*
- The pilot-stored elements database, *Refer to DSC-22-FMS-10-20 Pilot-Stored Elements Database*.

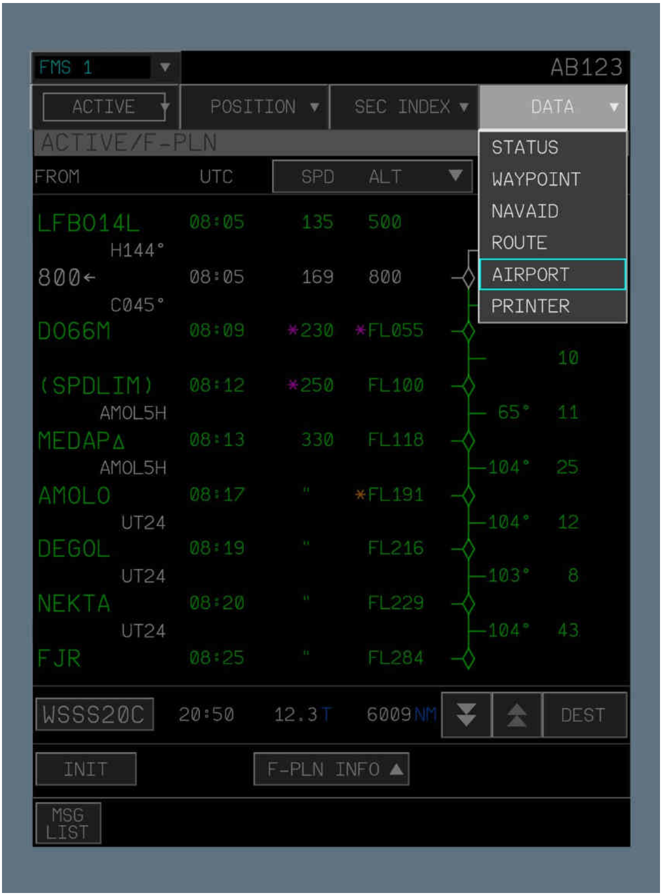
Ident.: DSC-22-FMS-20-20-20-90-00003820.0001001 / 14 APR 14

ACCESS

The flight crew can access the DATA/AIRPORT page via:

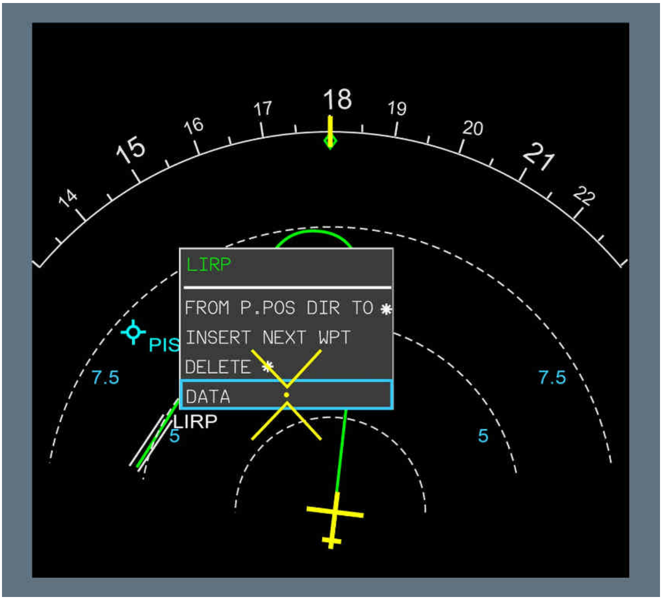
- The general menu bar, by selecting AIRPORT in the DATA menu
  The DATABASE ARPTs panel opens by default.

General Menu Bar


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
STATUS
WAYPOINT
NAVAID
ROUTE
AIRPORT
PRINTER
ACTIVE/F-PLN
FROM UTC SPD ALT
LFBO14L 08:05 135 500
H144°
800← 08:05 169 800
C045°
D066M 08:09 *230 *FL055
10
(SPDLIM) 08:12 *250 FL100
65° 11
AMOL5H
MEDAP∆ 08:13 330 FL118
AMOL5H
104° 25
AMOLO 08:17 " *FL191
104° 12
UT24
DEGOL 08:19 " FL216
103° 8
UT24
NEKTA 08:20 " FL229
104° 43
UT24
FJR 08:25 " FL284
WSSS20C 20:50 12.3T 6009NM
DEST
INIT
F-PLN INFO
MSG LIST

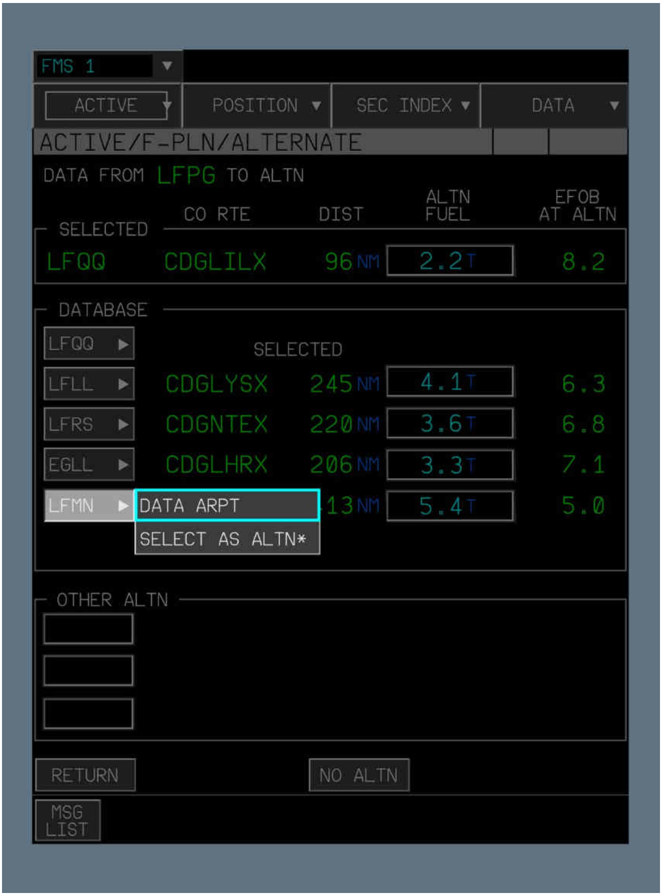
- The interactive ND, by selecting DATA in the menu of any airport
  The DATABASE ARPTs panel opens by default, if the airport is in the navigation database. The PILOT STORED RWYs panel opens by default in all other cases.

Interactive ND


14
15
16
17
18
19
20
21
22
LIRP
FROM P.POS DIR TO ✱
INSERT NEXT WPT
DELETE ✱
DATA
PIS
7.5
7.5
5
5
LIRP

- The ALTERNATE page, by selecting DATA ARPT in the database(other) alternate airport menu The DATABASE ARPTs panel opens by default, if the airport is in the navigation database. The PILOT STORED RWYs panel opens by default in all other cases.

ALTERNATE Page

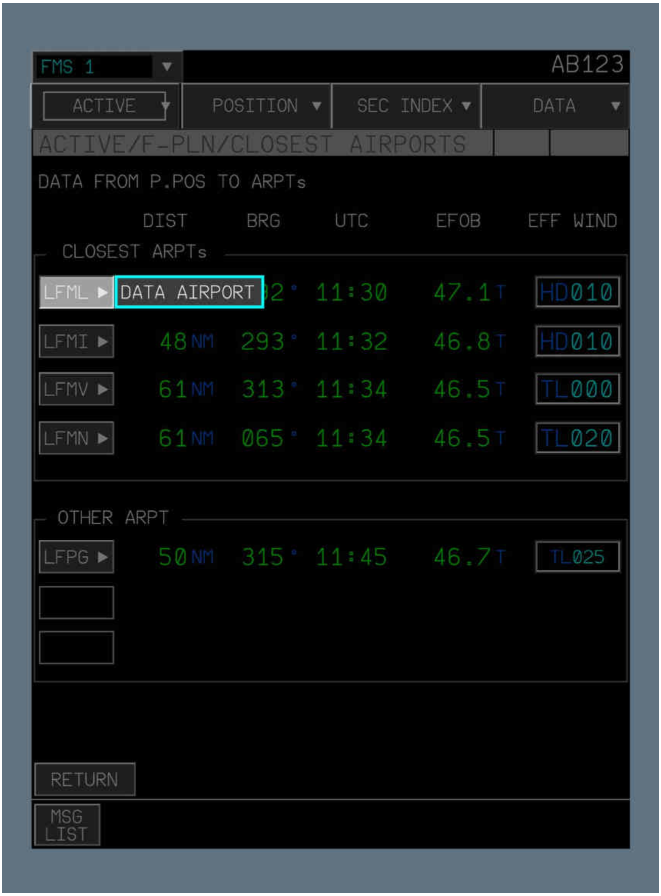

FMS 1
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN/ALTERNATE
SELECTED
DATABASE
DATA ARPT
SELECT AS ALTN*
OTHER ALTN
RETURN
NO ALTN
MSG LIST

DATA FROM LFPG TO ALTN

	CO RTE	DIST	ALTN FUEL	EFOB AT ALTN
SELECTED				
LFQQ	CDGLILX	96 NM	2.2 T	8.2
DATABASE				
LFQQ	SELECTED			
LFLL	CDGLYSX	245 NM	4.1 T	6.3
LFRS	CDGNTEX	220 NM	3.6 T	6.8
EGLL	CDGLHRX	206 NM	3.3 T	7.1
LFMN		13 NM	5.4 T	5.0

- The CLOSEST AIRPORTS page, by selecting DATA AIRPORT in the closest(other closest) airport menu.
  The DATABASE ARPTs panel opens by default, if the airport is in the navigation database. The PILOT STORED RWYs panel opens by default in all other cases.

CLOSEST AIRPORTS Page



ACTIVE/F-PLN/CLOSEST AIRPORTS

DATA FROM P.POS TO ARPTs

	DIST	BRG	UTC	EFOB	EFF WIND
CLOSEST ARPTs					
LFML ▶	DATA AIRPORT	2°	11:30	47.1 T	HD010
LFMI ▶	48 NM	293°	11:32	46.8 T	HD010
LFMV ▶	61 NM	313°	11:34	46.5 T	TL000
LFMN ▶	61 NM	065°	11:34	46.5 T	TL020
OTHER ARPT					
LFPG ▶	50 NM	315°	11:45	46.7 T	TL025

Ident.: DSC-22-FMS-20-20-20-90-00003822.0001001 / 14 APR 14

ARPT IDENT ENTRY FIELD [DATABASE ARPTs]

The flight crew enters the ident of an airport in the entry field.

L2 If the entered airport is a pilot-stored airport, the PILOT STORED RWYs panel opens, and displays the associated airport data.

If the entered airport is neither a navigation database nor a pilot-stored airport, the PILOT STORED RWYs panel opens, and displays the NEW RWY function (*Refer to NEW RWY Function*).

L1 **ENTRY FORMAT**

Refer to DSC-22-FMS-20-80 AIRPORT (ARPT).

Ident.: DSC-22-FMS-20-20-20-90-00003823.0001001 / 14 APR 14

AIRPORT NAME AND COORDINATES

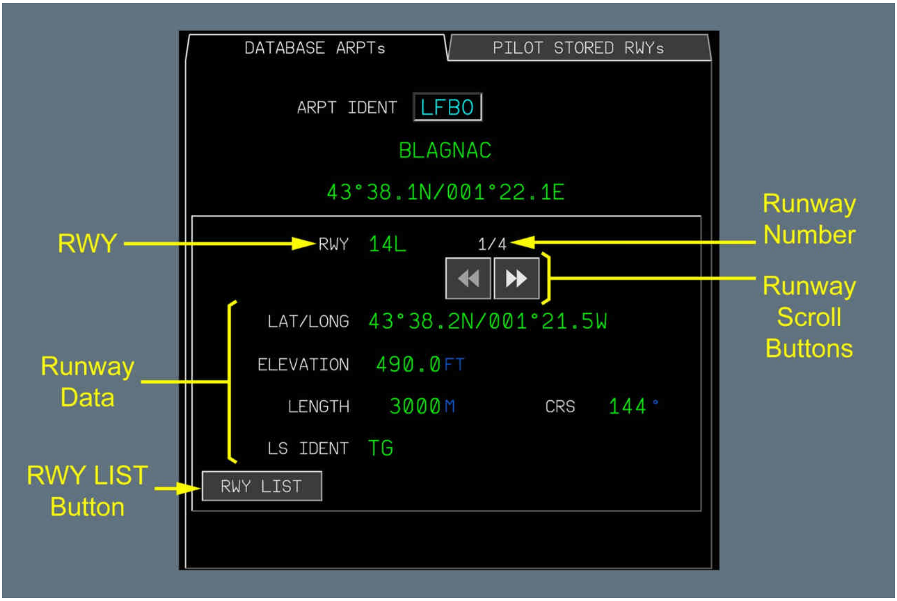
Indicates the name and the latitude/longitude coordinates of the navigation database airport.

Ident.: DSC-22-FMS-20-20-20-90-00003824.0001001 / 22 APR 14

RUNWAY BUTTONS

Indicate all of the runways that are associated with the navigation database airport.
When the flight crew clicks on a runway button, the runway data area appears instead of the runway buttons. The runway data area displays additional data for the associated runway.

Runway Data Area



ARPT IDENT LFBO
BLAGNAC
43°38.1N/001°22.1E
RWY 14L 1/4
LAT/LONG 43°38.2N/001°21.5W
ELEVATION 490.0FT
LENGTH 3000M CRS 144°
LS IDENT TG

RWY

Indicates the ident of the displayed runway.

RUNWAY NUMBER

Indicates the rank of the displayed runway, and the total number of runways that are associated with the selected airport.

RUNWAY SCROLL BUTTONS

The flight crew uses the runway scroll buttons to scroll, one by one, through the runways of the selected airport.

RUNWAY DATA

Indicates:
- The latitude and longitude of the runway threshold
- The runway elevation
- The runway length
- The runway course

L2 The T letter indicates that the course is defined in the true north reference.

L1
- The landing system that is associated with the runway, if there is one.

RWY LIST BUTTON

When clicked, displays the runway buttons.

Ident.: DSC-22-FMS-20-20-20-90-00003827.0001001 / 14 APR 14

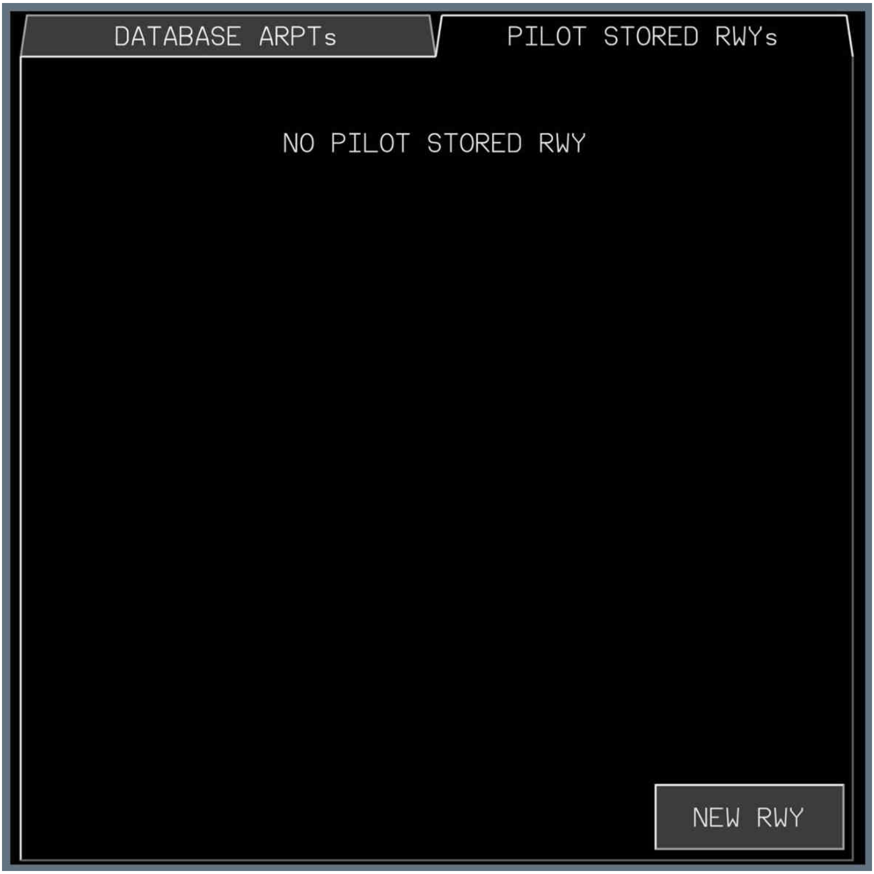
ARPT IDENT LIST

Indicates the ident of the displayed pilot-stored airport.
The flight crew enters the ident of the pilot-stored airport via the keyboard, or by selecting the ident of the pilot-stored airport from the ARPT IDENT list.
The ARPT IDENT list displays all of the airports that are associated with the pilot-stored runways.

NO PILOT-STORED RUNWAY IN THE PILOT-STORED ELEMENTS DATABASE

If there is no pilot-stored runway in the pilot-stored elements database, the PILOT STORED RWYs panel displays the NO PILOT STORED RWY message.

NO PILOT STORED RWY Message



NO PILOT STORED RWY

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 AIRPORT (ARPT).

Ident.: DSC-22-FMS-20-20-20-90-00003828.0001001 / 22 APR 14

RUNWAY NUMBER

Indicates the rank of the displayed pilot-stored runway, and the total number of pilot-stored runways.
The pilot-stored elements database has a maximum of 10 runways.

Ident.: DSC-22-FMS-20-20-20-90-00003829.0001001 / 22 APR 14

RUNWAY SCROLL BUTTONS

The flight crew uses the runway scroll buttons to scroll, one by one, through the pilot-stored runways.

Ident.: DSC-22-FMS-20-20-20-90-00005206.0001001 / 22 APR 14

RWY

Indicates the runway ident of the displayed pilot-stored runway.

Ident.: DSC-22-FMS-20-20-20-90-00003830.0001001 / 22 APR 14

RUNWAY DATA

Indicates:
- The latitude and longitude of the runway threshold
- The runway elevation
- The runway length
- The runway course

L2 The T letter indicates that the course is defined in the true north reference.

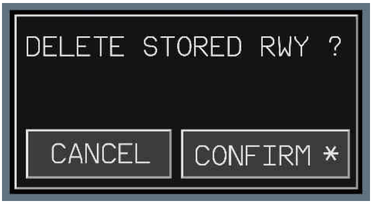
L1
- The landing system that is associated with the runway, if there is one.

Ident.: DSC-22-FMS-20-20-20-90-00003832.0001001 / 22 APR 14

DELETE STORED RWY BUTTON

When clicked, deletes the pilot-stored runway that is currently displayed.
The flight crew must perform a confirmation action.

Confirmation Window



DELETE STORED RWY ?

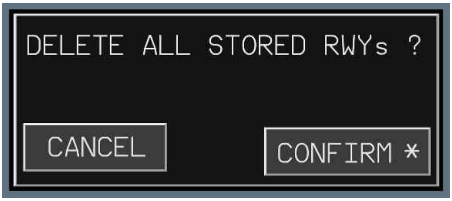
If the pilot-stored runway is still used by the FMS, it is not deleted. The FMS message area displays the F-PLN ELEMENT RETAINED message (*Refer to message*).

Ident.: DSC-22-FMS-20-20-20-90-00003831.0001001 / 22 APR 14

DELETE ALL STORED RWYS BUTTON

When clicked, deletes all pilot-stored runways.
The flight crew must perform a confirmation action.

Confirmation Window



DELETE ALL STORED RWYs ?

If there are pilot-stored runways that are still used by the FMS, they are not deleted. The FMS message area displays the F-PLN ELEMENT RETAINED message (*Refer to message*) .

L2 The Operator can decide (via the AMI file) to automatically delete all pilot-stored elements, when the DONE flight phase becomes active.

Ident.: DSC-22-FMS-20-20-20-90-00003833.0001001 / 22 APR 14

RETURN BUTTON

When clicked, displays the page that was displayed before the DATA/AIRPORT page.

Ident.: DSC-22-FMS-20-20-20-90-00003834.0001001 / 22 APR 14

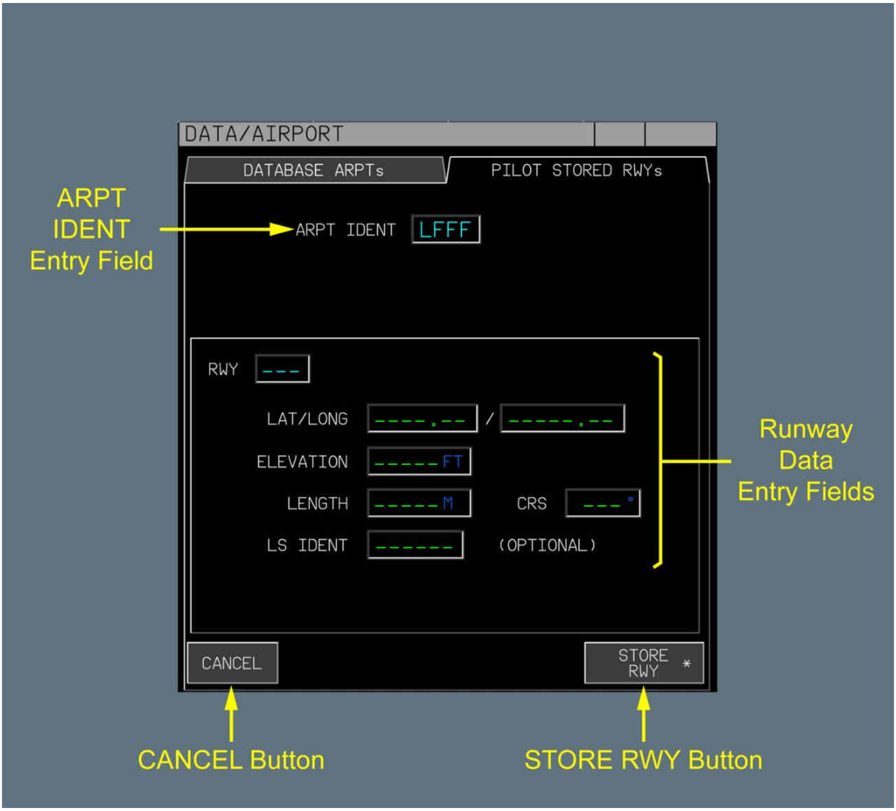
NEW RWY BUTTON

When clicked, displays the NEW RWY function on the PILOT STORED RWYs panel (*Refer to NEW RWY Function*).

Ident.: DSC-22-FMS-20-20-20-90-00003835.0001001 / 22 APR 14

NEW RWY FUNCTION

NEW RWY Function


DATA/AIRPORT
DATABASE ARPTs
PILOT STORED RWYs
ARPT IDENT
LFFF
RWY

LAT/LONG
----.-- / -----.--
ELEVATION
-----FT
LENGTH
-----M
CRS
---°
LS IDENT

(OPTIONAL)
CANCEL
STORE RWY *
ARPT IDENT Entry Field
Runway Data Entry Fields
CANCEL Button
STORE RWY Button

Ident.: DSC-22-FMS-20-20-20-90-00003836.0001001 / 14 APR 14

ARPT IDENT ENTRY FIELD [NEW RWY]

Indicates the ident of the new runway.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 AIRPORT (ARPT).

Ident.: DSC-22-FMS-20-20-20-90-00003837.0001001 / 22 APR 14

RUNWAY DATA ENTRY FIELDS

The flight crew enters:
- The ident of the new runway
- The latitude and longitude of the runway threshold
- The runway elevation
- The runway length
- The runway course, if both latitude and longitude are defined
- The landing system that is associated with the runway, if there is one.

The flight crew must enter all runway data (except the landing system) in order to define a new runway.

ENTRY FORMAT

For the entry format of:
- Runway ident, *Refer to DSC-22-FMS-20-80 RWY*
- Latitude, *Refer to DSC-22-FMS-20-80 LAT*
- Longitude,*Refer to DSC-22-FMS-20-80 LONG*
- Runway elevation, *Refer to DSC-22-FMS-20-80 RWY ELEVATION*
- Runway length, *Refer to DSC-22-FMS-20-80 RWY LENGTH*
- Runway course, *Refer to DSC-22-FMS-20-80 RWY CRS*
- Landing system, *Refer to DSC-22-FMS-20-80 LS IDENT*.

Ident.: DSC-22-FMS-20-20-20-90-00003838.0001001 / 22 APR 14

STORE RWY BUTTON

When clicked, stores the new runway in the pilot-stored elements database.
The pilot-stored elements database is limited to 10 runways.

L2 If the pilot-stored elements database is full, the first-created runway that is not part of the flight plan is deleted. If the FMS uses all of the 10 runways, the runway creation is rejected, and the FMS message area displays the 10 RWYs MAX : ALL IN USE message (*Refer to message*).

L3 If the flight crew accesses the PILOT STORED RWYs panel from the PILOTS STORED NAVAID panel of the DATA/NAVAID page, the STORE RWY+NAVAID button appears instead of the STORE RWY button.

STORE RWY+NAVAID Button

STORE
RWY+NAVAID
*

Ident.: DSC-22-FMS-20-20-20-90-00003839.0001001 / 14 APR 14

CANCEL BUTTON

When clicked, cancels the NEW RWY function.

Ident.: DSC-22-FMS-20-20-20-90-00003825.0001001 / 22 APR 14

RETURN BUTTON

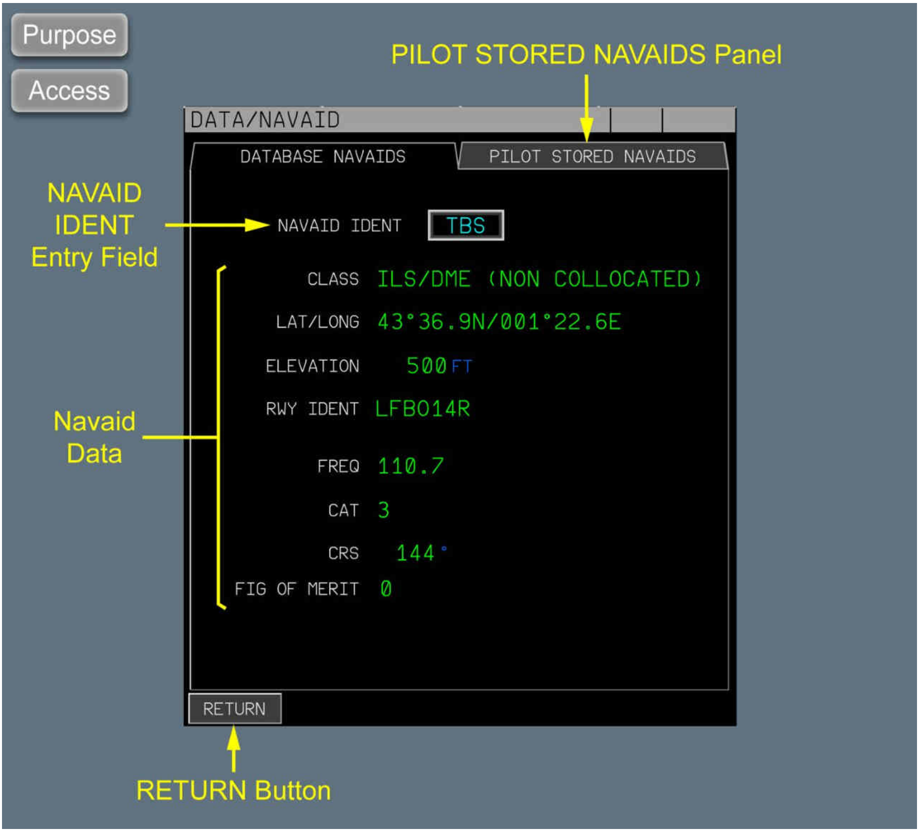
When clicked, displays the page that was displayed before the DATA/AIRPORT page.

DATA/NAVAID PAGE

Applicable to: ALL

Ident.: DSC-22-FMS-20-20-20-100-00002709.0001001 / 14 APR 14

DATA/NAVAID Page


Purpose
Access
PILOT STORED NAVAIDS Panel
NAVAID IDENT Entry Field
Navaid Data
RETURN Button
DATA/NAVAID
DATABASE NAVAIDS
PILOT STORED NAVAIDS
RETURN

NAVAID IDENT TBS

CLASS ILS/DME (NON COLLOCATED)

LAT/LONG 43°36.9N/001°22.6E

ELEVATION 500 FT

RWY IDENT LFBO14R

FREQ 110.7

CAT 3

CRS 144°

FIG OF MERIT 0

Ident.: DSC-22-FMS-20-20-20-100-00003840.0001001 / 22 APR 14

PURPOSE

On the DATA/NAVAID page, the flight crew can:
- Display the data for a navaid that is stored in the navigation database or in the pilot-stored elements database
- Create(delete) navaids in the pilot-stored elements database.

L2

LINKS

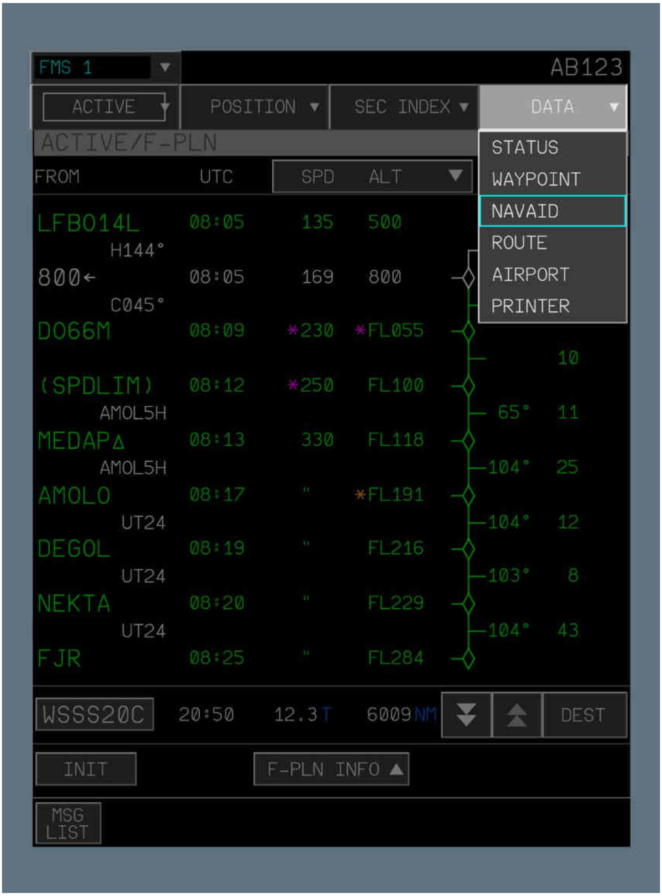
For information about:
- The navigation database, *Refer to DSC-22-FMS-10-20 Navigation Database*
- The pilot-stored elements database, *Refer to DSC-22-FMS-10-20 Pilot-Stored Elements Database*.

ACCESS

The flight crew can access the DATA/NAVAID page via:

- The general menu bar, by selecting NAVAID in the DATA menu
  The DATABASE NAVAIDS panel opens by default.

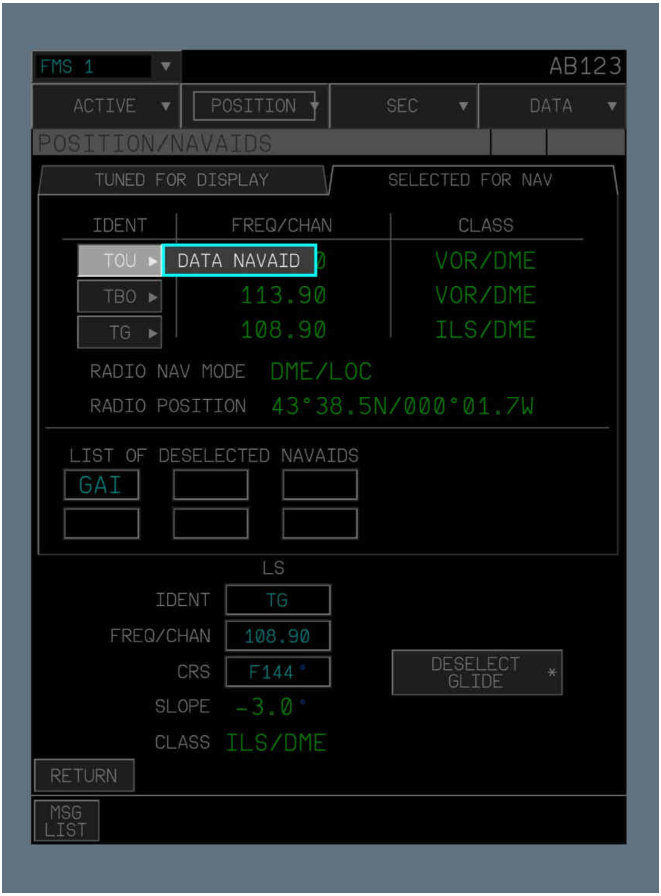
General Menu Bar


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN
STATUS
WAYPOINT
NAVAID
ROUTE
AIRPORT
PRINTER
FROM
UTC
SPD
ALT
LFBO14L
08:05
135
500
H144°
800←
08:05
169
800
C045°
D066M
08:09
*230
*FL055
10
(SPDLIM)
08:12
*250
FL100
AMOL5H
65°
11
MEDAP
08:13
330
FL118
AMOL5H
104°
25
AMOLO
08:17
"
*FL191
UT24
104°
12
DEGOL
08:19
"
FL216
UT24
103°
8
NEKTA
08:20
"
FL229
UT24
104°
43
FJR
08:25
"
FL284
WSSS20C
20:50
12.3T
6009NM
DEST
INIT
F-PLN INFO
MSG
LIST

- The POSITION/NAVAIDS page, by selecting DATA NAVAID in the navaid menu of the SELECTED FOR NAV panel.

The DATABASE NAVAIDS panel opens by default, if the navaid is in the navigation database. The PILOT STORED NAVAIDS panel opens by default in all other cases.

POSITION/NAVAIDS Page


FMS 1
AB123
ACTIVE
POSITION
SEC
DATA
POSITION/NAVAIDS
TUNED FOR DISPLAY
SELECTED FOR NAV
DATA NAVAID
LIST OF DESELECTED NAVAIDS
DESELECT GLIDE *
RETURN
MSG LIST

IDENT	FREQ/CHAN	CLASS
TOU	0	VOR/DME
TBO	113.90	VOR/DME
TG	108.90	ILS/DME

RADIO NAV MODE DME/LOC
RADIO POSITION 43°38.5N/000°01.7W

LIST OF DESELECTED NAVAIDS
GAI

LS
IDENT TG
FREQ/CHAN 108.90
CRS F144°
SLOPE -3.0°
CLASS ILS/DME

Ident.: DSC-22-FMS-20-20-20-100-00003843.0001001 / 22 APR 14

NAVAID IDENT ENTRY FIELD [DATABASE NAVAIDS]

The flight crew enters the ident of a navaid in the entry field.

L2 If the entered navaid is a pilot-stored navaid, the PILOT STORED NAVAIDS panel opens, and displays the associated data.

If the entered navaid is neither a navigation database nor a pilot-stored navaid, the PILOT STORED NAVAIDS panel opens, and displays the NEW NAVAID function (*Refer to NEW NAVAID Function*).

L1 ENTRY FORMAT

Refer to DSC-22-FMS-20-80 NAVAID IDENT.

Ident.: DSC-22-FMS-20-20-20-100-00003844.0002001 / 14 APR 16

NAVAID DATA [DATABASE NAVAIDS]

Indicates:

- The class

L2 The class can be one of the following:

- VOR
- DME
- LOC
- ILS
- GLS ◁✳
- NDB
- ILS/DME
- VOR/DME.

L1 - The latitude/longitude coordinates
- The elevation

L2 This data is not displayed for VOR and NDB.

L1 - The ident of the runway that is associated with the navaid

L2 This data is displayed only for landing systems.

L1 - The magnetic declination

L2 This data is displayed only for VOR and VOR/DME.

L1 - The frequency
- The approach category

L2 The category can be 1, 2, or 3.

L1 - The figure of merit that indicates the maximum tuning distance of the navaid

L2 The figure of merit can be one of the following:
- 0 (40 NM)
- 1 (70 NM)
- 2 (130 NM)
- 3 (250 NM).

L1 - The course.
L2 This data is displayed only for the landing systems.
The T letter indicates that the course is defined in the true north reference.

Ident.: DSC-22-FMS-20-20-20-100-00003847.0001001 / 22 APR 14

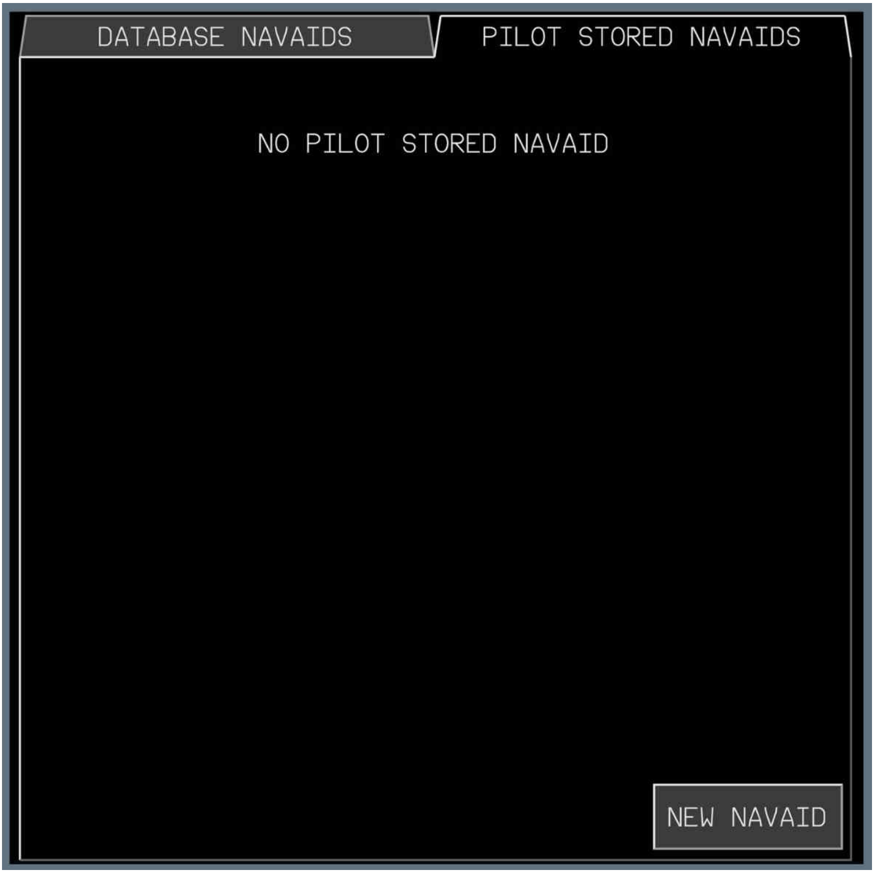
NAVAID IDENT LIST

Indicates the ident of the displayed pilot-stored navaid.
The flight crew enters the ident of the pilot-stored navaid via the keyboard, or by selecting the ident of the pilot-stored navaid from the NAVAID IDENT list.
The NAVAID IDENT list displays all pilot-stored navaids.
L2 If the entered navaid is neither a navigation database nor a pilot-stored navaid, the NEW NAVAID function is displayed (*Refer to NEW NAVAID Function*).

L1 **NO PILOT-STORED NAVAID IN THE PILOT-STORED ELEMENTS DATABASE**

If there is no pilot-stored navaid in the pilot-stored elements database, the PILOT STORED NAVAIDS panel displays the NO PILOT STORED NAVAID message.

NO PILOT STORED NAVAID Message



NO PILOT STORED NAVAID

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 NAVAID IDENT.

Ident.: DSC-22-FMS-20-20-20-100-00003848.0001001 / 22 APR 14

NAVAID NUMBER

Indicates the rank of the displayed pilot-stored navaid, and the total number of pilot-stored navaids.
The pilot-stored elements database has a maximum of 20 navaids.

Ident.: DSC-22-FMS-20-20-20-100-00003849.0001001 / 22 APR 14

NAVAID SCROLL BUTTONS

The flight crew uses the navaid scroll buttons to scroll, one by one, through the pilot-stored navaids.

Ident.: DSC-22-FMS-20-20-20-100-00003850.0002001 / 14 APR 16

NAVAID DATA [PILOT STORED NAVAIDS]

Indicates:

- The class

L2 The class can be one of the following:
  - VOR
  - DME
  - LOC
  - ILS
  - GLS ◁✳
  - NDB
  - ILS/DME
  - VOR/DME.

L1 - The latitude/longitude coordinates
- The elevation

L2 This data is not displayed for VOR and NDB.

L1 - The ident of the runway that is associated with the navaid

L2 This data is displayed only for landing systems.

L1 - The magnetic declination

L2 This data is displayed only for VOR and VOR/DME.

L1 - The frequency
- The approach category

L2 The category can be 1, 2, or 3.

L1 - The figure of merit that indicates the maximum tuning distance of the navaid

L2 The figure of merit can be one of the following:
  - 0 (40 NM)
  - 1 (70 NM)
  - 2 (130 NM)
  - 3 (250 NM).

L1 - The course.

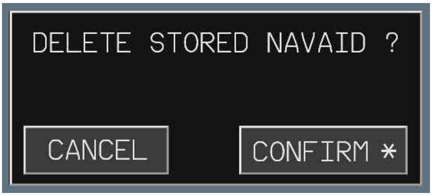
L2 This data is displayed only for the landing systems.
The T letter indicates that the course is defined in the true north reference.

Ident.: DSC-22-FMS-20-20-20-100-00003852.0001001 / 22 APR 14

DELETE STORED NAVAID BUTTON

When clicked, deletes the pilot-stored navaid that is currently displayed.
The flight crew must perform a confirmation action.

Confirmation Window



DELETE STORED NAVAID ?

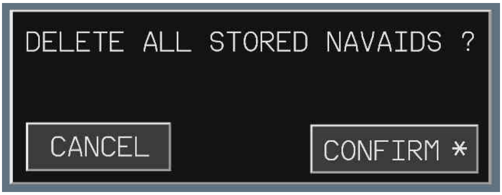
If the pilot-stored navaid is still used by the FMS, it is not deleted. The FMS message area displays the F-PLN ELEMENT RETAINED message (*Refer to message*).

Ident.: DSC-22-FMS-20-20-20-100-00003851.0001001 / 22 APR 14

DELETE ALL STORED NAVAIDS BUTTON

When clicked, deletes all pilot-stored navaids.
The flight crew must perform a confirmation action.

Confirmation Window



DELETE ALL STORED NAVAIDS ?

If there are pilot-stored navaids that are still used by the FMS, they are not deleted. The FMS message area displays the F-PLN ELEMENT RETAINED message (*Refer to message*).

L2 The Operator can decide (via the AMI file) to automatically delete all pilot-stored elements, when the DONE flight phase becomes active.

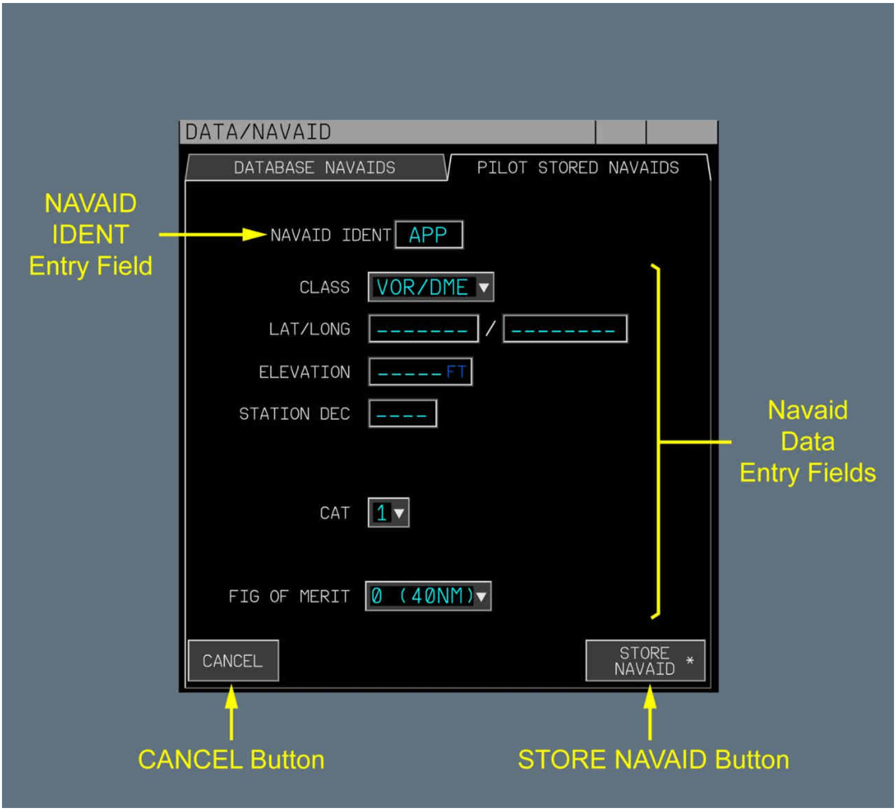
Ident.: DSC-22-FMS-20-20-20-100-00003854.0001001 / 22 APR 14

NEW NAVAID BUTTON

When clicked, displays the NEW NAVAID function on the PILOT STORED NAVAIDS panel (*Refer to NEW NAVAID Function*).

Ident.: DSC-22-FMS-20-20-20-100-00003855.0001001 / 22 APR 14

NEW NAVAID FUNCTION



DATA/NAVAID
DATABASE NAVAIDS
PILOT STORED NAVAIDS

NAVAID IDENT APP

CLASS VOR/DME

LAT/LONG -------- / ---------

ELEVATION ----- FT

STATION DEC ----

CAT 1

FIG OF MERIT 0 (40NM)

CANCEL
STORE NAVAID *
NAVAID IDENT Entry Field
Navaid Data Entry Fields
CANCEL Button
STORE NAVAID Button

NEW NAVAID Function

Ident.: DSC-22-FMS-20-20-20-100-00003856.0001001 / 22 APR 14

NAVAID IDENT ENTRY FIELD [NEW NAVAID]

Indicates the ident of the new navaid.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 NAVAID IDENT.

Ident.: DSC-22-FMS-20-20-20-100-00003857.0002001 / 14 APR 16

NAVAID DATA ENTRY FIELDS

The flight crew enters:

- The class of the navaid, by using the CLASS list

L2 The class of the navaid can be one of the following:

- VOR
- DME
- VOR/DME
- LOC
- ILS
- GLS ◁
- NDB.

L1 - The latitude/longitude coordinates

- The elevation

L2 The ELEVATION entry field is not displayed for VOR and NDB.

L1 - The ident of the runway that is associated with the navaid

L2 The RWY IDENT entry field is displayed only for the landing systems.
If the entered runway ident is associated with neither a navigation database nor a pilot-stored airport, the PILOT STORED RWYs panel opens, and displays the NEW RWY function. For more information, *Refer to DSC-22-FMS-20-20-20 NEW RWY Function*.

L1 - The magnetic declination

L2 The STATION DEC entry field is displayed only for VOR and VOR/DME.
The T letter indicates that the navaid is defined in the true north reference.

L1 - The frequency or channel

- The approach category

L2 The category can be 1, 2 or 3.

L1 - The figure of merit that indicates the maximum tuning distance of the navaid

L2 The figure of merit can be one of the following:

- 0 (40 NM)
- 1 (70 NM)
- 2 (130 NM)
- 3 (250 NM).

L1 - The course.

L2 The CRS entry field is displayed only for the landing systems.
The T letter indicates that the course is defined in the true north reference.

L1 **ENTRY FORMAT**

For the entry format of:
- Latitude, *Refer to DSC-22-FMS-20-80 LAT*
- Longitude, *Refer to DSC-22-FMS-20-80 LONG*
- Elevation, *Refer to DSC-22-FMS-20-80 NAVAID ELEVATION*
- Runway ident, *Refer to DSC-22-FMS-20-80 RWY IDENT*
- Magnetic declination, *Refer to DSC-22-FMS-20-80 STATION DECLINATION (STATION DEC)*
- ILS frequency, *Refer to DSC-22-FMS-20-80 FREQUENCY (ILS)*
- GLS ◁✳ channel, *Refer to DSC-22-FMS-20-80 CHANNEL (GLS)*
- VOR/DME frequency, *Refer to DSC-22-FMS-20-80 FREQUENCY (VOR/DME)*
- Course, *Refer to DSC-22-FMS-20-80 NAVAID CRS*
- Bearing, *Refer to DSC-22-FMS-20-80 BRG*.

Ident.: DSC-22-FMS-20-20-20-100-00003858.0001001 / 22 APR 14

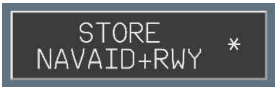
STORE NAVAID BUTTON

When clicked, stores the new navaid in the pilot-stored elements database.
The pilot-stored elements database is limited to 20 navaids.

L2 If the pilot-stored elements database is full, the first-created navaid that is not part of the flight plan is deleted. If the FMS uses all of the 20 navaids, the navaid creation is rejected, and the FMS message area displays the 20 NAVAIDS MAX : ALL IN USE message (*Refer to message*).

L3 If the flight crew accesses the PILOT STORED NAVAIDS panel from the PILOT STORED RWYs panel of the DATA/AIRPORT page, the STORE NAVAID+RWY button appears instead of the STORE NAVAID button.

STORE NAVAID+RWY Button



Ident.: DSC-22-FMS-20-20-20-100-00003859.0001001 / 14 APR 14

CANCEL BUTTON

When clicked, cancels the NEW NAVAID function.

Ident.: DSC-22-FMS-20-20-20-100-00003845.0001001 / 22 APR 14

RETURN BUTTON

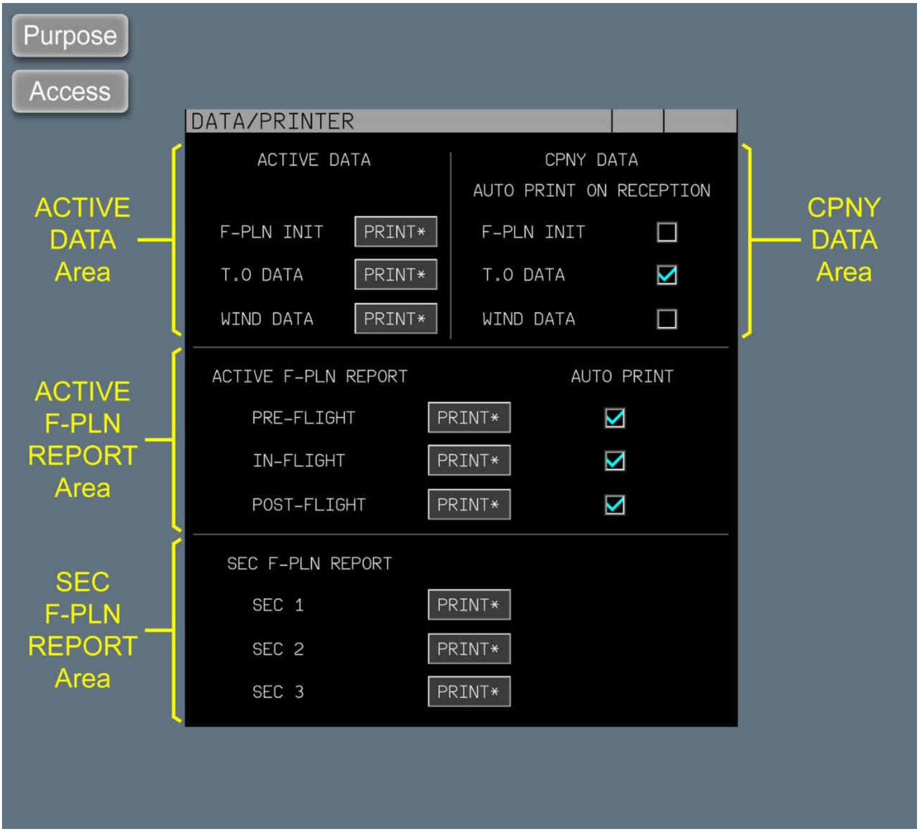
When clicked, displays the page that was displayed before the DATA/NAVAID page.

DATA/PRINTER PAGE

Applicable to: ALL

Ident.: DSC-22-FMS-20-20-20-110-00002710.0001001 / 14 APR 14

DATA/PRINTER Page


Purpose
Access
ACTIVE DATA Area
CPNY DATA Area
ACTIVE F-PLN REPORT Area
SEC F-PLN REPORT Area

DATA/PRINTER

ACTIVE DATA		CPNY DATA AUTO PRINT ON RECEPTION	
F-PLN INIT	PRINT*	F-PLN INIT	☐
T.O DATA	PRINT*	T.O DATA	☑
WIND DATA	PRINT*	WIND DATA	☐

ACTIVE F-PLN REPORT		AUTO PRINT
PRE-FLIGHT	PRINT*	☑
IN-FLIGHT	PRINT*	☑
POST-FLIGHT	PRINT*	☑

SEC F-PLN REPORT	
SEC 1	PRINT*
SEC 2	PRINT*
SEC 3	PRINT*

Ident.: DSC-22-FMS-20-20-20-110-00003860.0001001 / 22 APR 14

PURPOSE

Via the DATA/PRINTER page, the flight crew can:

- Manually print:
  - The flight plan data for the active flight plan
  - The flight plan reports for the active and secondary flight plans
- Select the AUTO PRINT option to automatically print:
  - The data received via datalink with the company ground station
  - The flight plan reports for the active flight plan.

LINKS

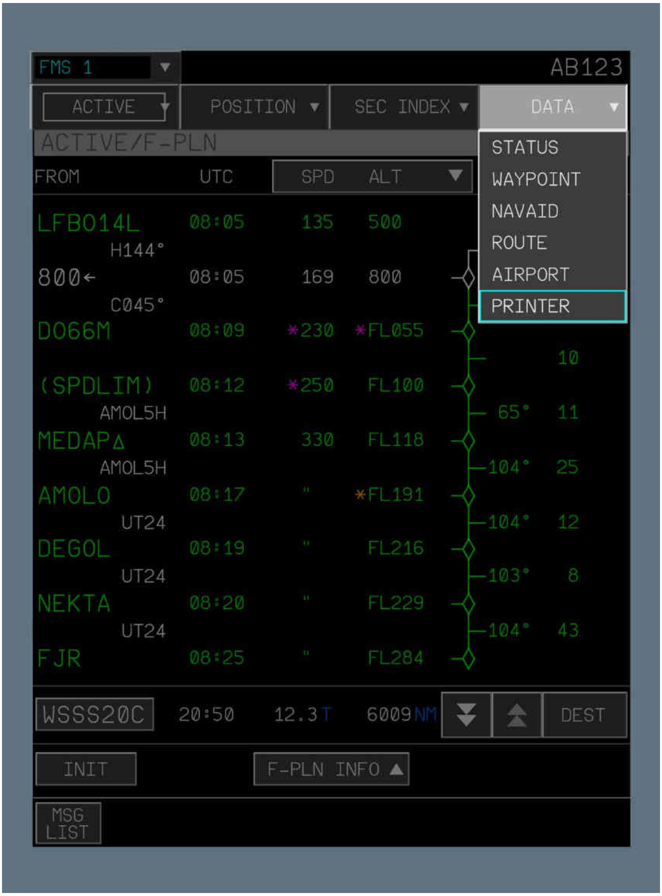
For information about the print function, *Refer to DSC-22-FMS-10-90 Print Function*.

Ident.: DSC-22-FMS-20-20-20-110-00003861.0001001 / 14 APR 14

ACCESS

The flight crew can access the DATA/PRINTER page via the general menu bar, by selecting PRINTER in the DATA menu.

General Menu Bar


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
STATUS
WAYPOINT
NAVAID
ROUTE
AIRPORT
PRINTER
ACTIVE/F-PLN

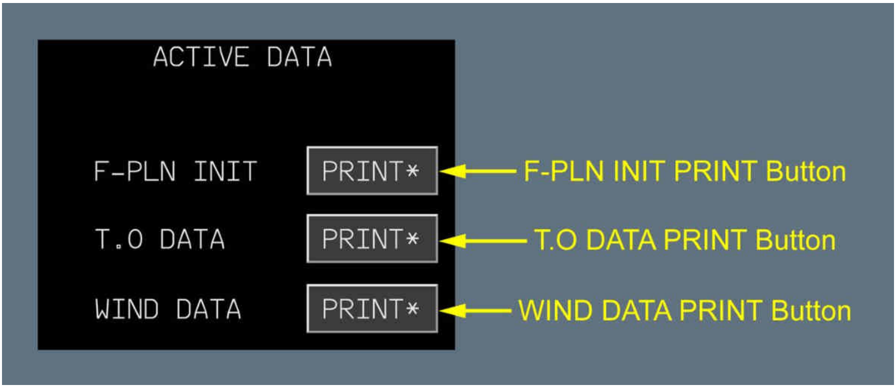
FROM	UTC	SPD	ALT		
LFBO14L	08:05	135	500		
H144°					
800←	08:05	169	800		
C045°					
D066M	08:09	*230	*FL055		
					10
(SPDLIM)	08:12	*250	FL100		
AMOL5H				65°	11
MEDAPΔ	08:13	330	FL118		
AMOL5H				104°	25
AMOLO	08:17	"	*FL191		
UT24				104°	12
DEGOL	08:19	"	FL216		
UT24				103°	8
NEKTA	08:20	"	FL229		
UT24				104°	43
FJR	08:25	"	FL284		

WSSS20C 20:50 12.3T 6009NM

DEST
INIT
F-PLN INFO
MSG LIST

ACTIVE DATA AREA

ACTIVE DATA Area


ACTIVE DATA
F-PLN INIT
PRINT*
T.O DATA
PRINT*
WIND DATA
PRINT*
F-PLN INIT PRINT Button
T.O DATA PRINT Button
WIND DATA PRINT Button

F-PLN INIT PRINT BUTTON

When clicked, prints the initialization data of the flight plan.

T.O DATA PRINT BUTTON

When clicked, prints the takeoff data.

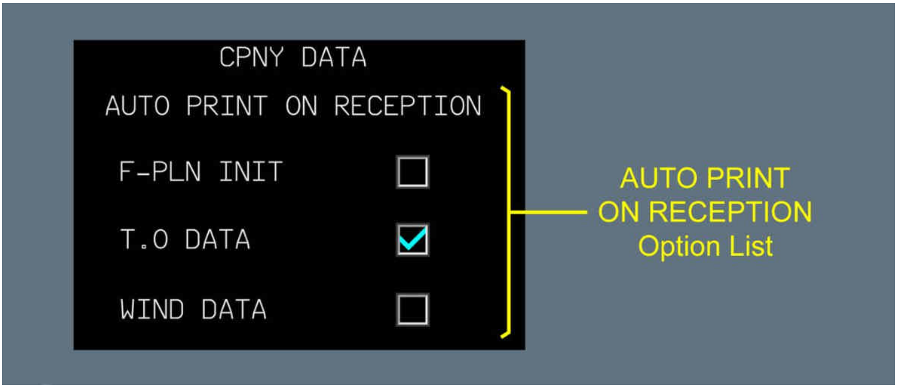
WIND DATA PRINT BUTTON

When clicked, prints the wind data.

Ident.: DSC-22-FMS-20-20-20-110-00003863.0001001 / 14 APR 14

CPNY DATA AREA

CPNY DATA Area



CPNY DATA

AUTO PRINT ON RECEPTION

F-PLN INIT ☐

T.O DATA ☑

WIND DATA ☐

AUTO PRINT ON RECEPTION OPTION LIST

The flight crew selects(deselects) the:

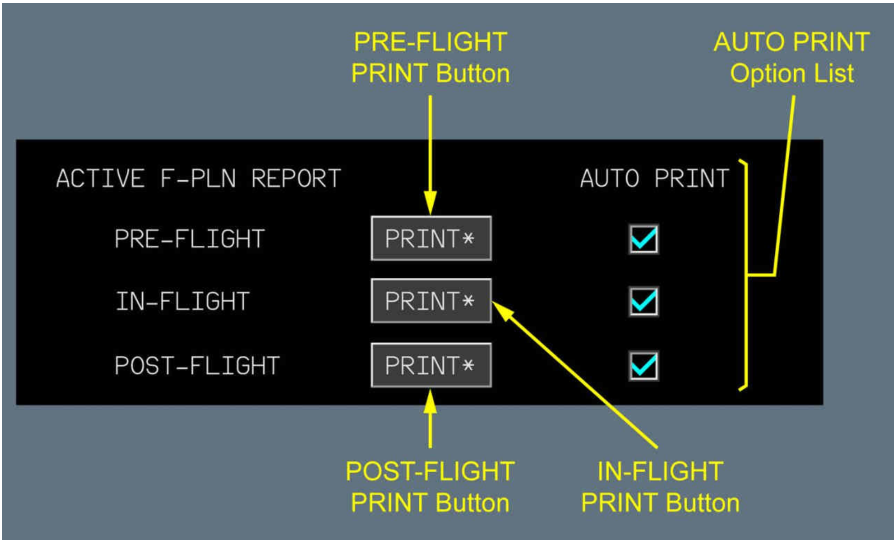
- F-PLN INIT option to activate(deactivate) the automatic print of the initialization data of the flight plan
  The automatic print occurs, when the FMS receives the initialization data of the flight plan.
- T.O DATA option to activate(deactivate) the automatic print of the takeoff data
  The automatic print occurs, when the FMS receives the takeoff data.
- WIND DATA option to activate(deactivate) the automatic print of the wind data.
  The automatic print occurs, when the FMS receives the wind data.

L2 Some options may be selected by default, as defined in the AMI file.

Ident.: DSC-22-FMS-20-20-20-110-00003864.0001001 / 14 APR 14

ACTIVE F-PLN REPORT AREA

ACTIVE F-PLN REPORT Area


PRE-FLIGHT
PRINT Button
AUTO PRINT
Option List
ACTIVE F-PLN REPORT
AUTO PRINT
PRE-FLIGHT
PRINT*
☑
IN-FLIGHT
PRINT*
☑
POST-FLIGHT
PRINT*
☑
POST-FLIGHT
PRINT Button
IN-FLIGHT
PRINT Button

PRE-FLIGHT PRINT BUTTON

When clicked, prints the preflight report.

L2 The preflight report can be printed, only when the following two conditions are achieved:
- The FMS flight phase is PREFLIGHT
- The flight plan data is entered.

L1 IN-FLIGHT PRINT BUTTON

When clicked, prints the in-flight report for the active flight plan.

L2 The in-flight report can be printed, only when the FMS flight phase is either T.O, CLB, CRZ, DES, APPR, GA, or DONE (before all engine shut down).

L1 POST-FLIGHT PRINT BUTTON

When clicked, prints the postflight report for the active flight plan.
The postflight report can be printed, only after all engines are shut down.

AUTO PRINT OPTION LIST

The flight crew selects(deselects) the:

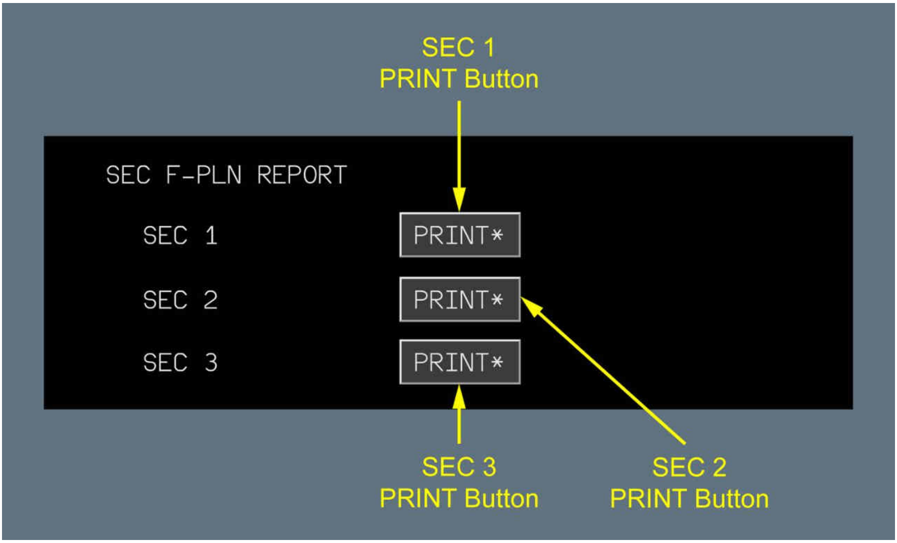
- PRE-FLIGHT option to activate(deactivate) the automatic print of the preflight report
  When the PRE-FLIGHT option is selected, the preflight report is automatically printed at engine start.
- IN-FLIGHT option to activate(deactivate) the automatic print of the in-flight report
  When the IN-FLIGHT AUTO PRINT option is selected, the in-flight report is automatically printed when the T.O flight phase becomes active.
- POST-FLIGHT option to activate(deactivate) the automatic print of the postflight report.
  When the POST-FLIGHT option selected, the postflight report is automatically printed at engine shutdown.

L2 Some option(s) may be selected by default, as defined in the AMI file.

Ident.: DSC-22-FMS-20-20-20-110-00003865.0001001 / 22 APR 14

SEC F-PLN REPORT AREA

SEC F-PLN REPORT Area



SEC 1(2)(3) PRINT BUTTON

When clicked, prints the SEC 1(2)(3) flight-plan report.
The SEC 1(2)(3) flight-plan report may be either a preflight or in-flight report.

L2 If the flight crew used a copy of the active flight plan to create the SEC 1(2)(3) flight plan, and if the active flight leg of the SEC 1(2)(3) flight plan is identical to the active flight leg of the active flight plan:
- A preflight report is available during the PREFLIGHT flight phase
- An in-flight report is available in flight, except during the DONE flight phase.

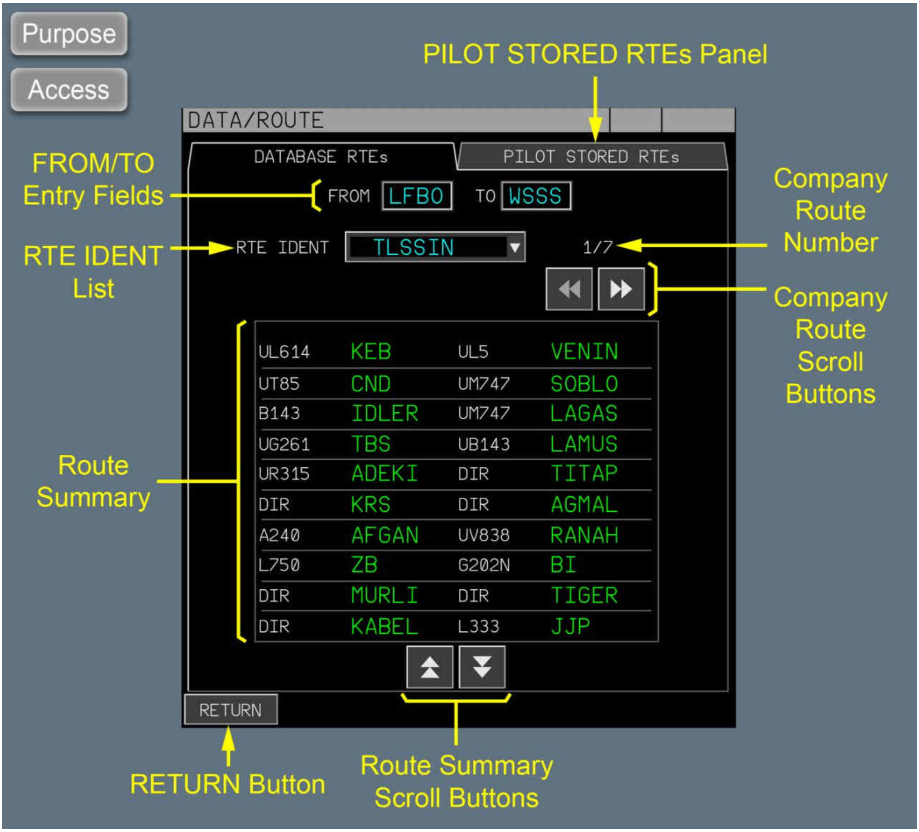
In all other cases, the SEC 1(2)(3) flight-plan report is a preflight report.

DATA/ROUTE PAGE

Applicable to: ALL

Ident.: DSC-22-FMS-20-20-20-120-00002711.0001001 / 14 APR 14

DATA/ROUTE Page


Purpose
Access
PILOT STORED RTEs Panel
DATA/ROUTE
DATABASE RTEs
PILOT STORED RTEs
FROM/TO Entry Fields
FROM LFBO
TO WSSS
RTE IDENT List
RTE IDENT
TLSSIN
1/7
Company Route Number
Company Route Scroll Buttons
Route Summary
RETURN
RETURN Button
Route Summary Scroll Buttons

UL614	KEB	UL5	VENIN
UT85	CND	UM747	SOBLO
B143	IDLER	UM747	LAGAS
UG261	TBS	UB143	LAMUS
UR315	ADEKI	DIR	TITAP
DIR	KRS	DIR	AGMAL
A240	AFGAN	UV838	RANAH
L750	ZB	G202N	BI
DIR	MURLI	DIR	TIGER
DIR	KABEL	L333	JJP

Ident.: DSC-22-FMS-20-20-20-120-00003866.0001001 / 22 APR 14

PURPOSE

On the DATA/ROUTE page, the flight crew can:
- Display the data for a company route that is stored in the navigation database or in the pilot-stored elements database
- Create(delete) company routes in the pilot-stored elements database.

L2 LINKS

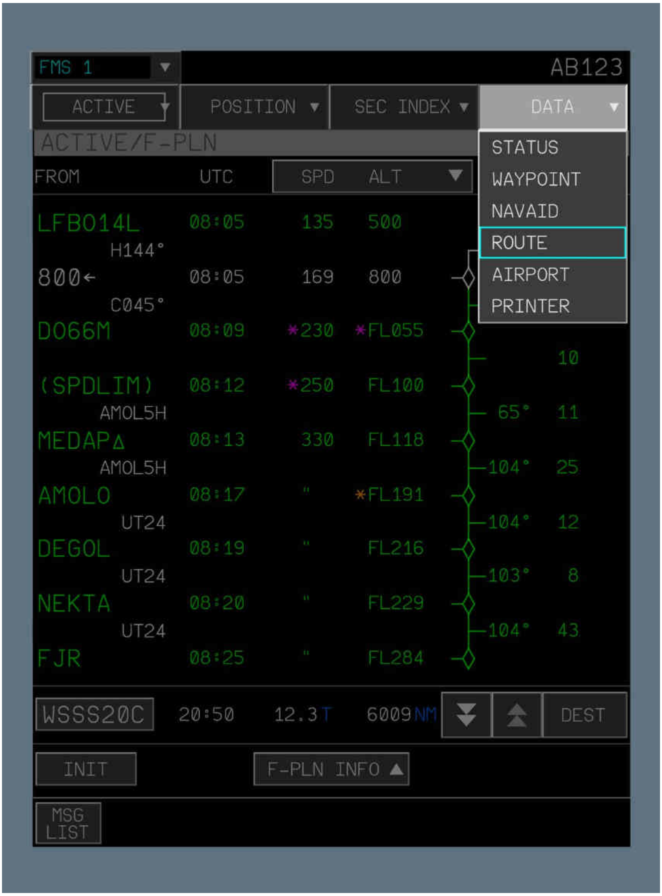
For information about:
- The navigation database, *Refer to DSC-22-FMS-10-20 Navigation Database*
- The pilot-stored elements database, *Refer to DSC-22-FMS-10-20 Pilot-Stored Elements Database*.

ACCESS

The flight crew can access the DATA/ROUTE page via:

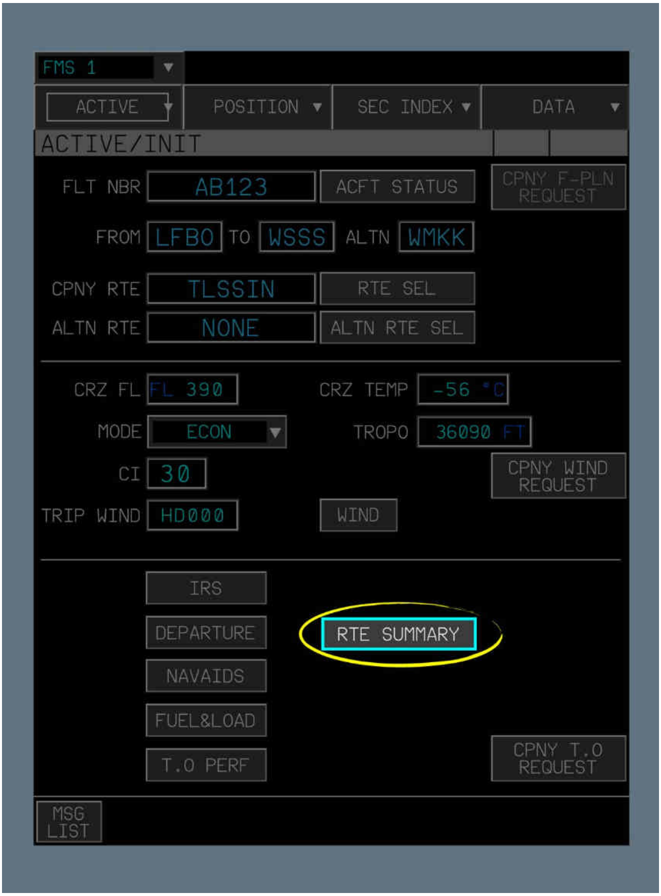
- The general menu bar, by selecting ROUTE in the DATA menu
  The DATABASE RTEs panel opens by default.

General Menu Bar


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
STATUS
WAYPOINT
NAVAID
ROUTE
AIRPORT
PRINTER
ACTIVE/F-PLN
FROM
UTC
SPD
ALT
LFBO14L 08:05 135 500
H144°
800← 08:05 169 800
C045°
D066M 08:09 *230 *FL055
10
(SPDLIM) 08:12 *250 FL100
AMOL5H
65° 11
MEDAPΔ 08:13 330 FL118
AMOL5H
104° 25
AMOLO 08:17 " *FL191
UT24
104° 12
DEGOL 08:19 " FL216
UT24
103° 8
NEKTA 08:20 " FL229
UT24
104° 43
FJR 08:25 " FL284
WSSS20C
20:50
12.3T
6009NM
DEST
INIT
F-PLN INFO
MSG LIST

- The ACTIVE/INIT page, by clicking on the RTE SUMMARY button.
  The PILOT STORED RTEs panel opens by default, and the active flight plan is automatically copied as a new company route.

ACTIVE/INIT Page


FMS 1
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/INIT
ACFT STATUS
CPNY F-PLN REQUEST
RTE SEL
ALTN RTE SEL
CPNY WIND REQUEST
WIND
IRS
DEPARTURE
RTE SUMMARY
NAVAIDS
FUEL&LOAD
T.O PERF
CPNY T.O REQUEST
MSG LIST

FLT NBR AB123

FROM LFBO TO WSSS ALTN WMKK

CPNY RTE TLSSIN

ALTN RTE NONE

CRZ FL FL 390

CRZ TEMP -56 °C

MODE ECON

TROPO 36090 FT

CI 30

TRIP WIND HD000

Ident.: DSC-22-FMS-20-20-20-120-00003869.0001001 / 22 APR 14

FROM/TO ENTRY FIELDS

The flight crew enters the idents of the FROM/TO city-pair (i.e. departure airport and destination airport) in the entry fields.

L2 If the entered airport is neither a navigation database nor a pilot-stored airport, the FMS message area displays the NOT IN DATABASE message is displayed (*Refer to message*).

If the entered airport is a pilot-stored airport, the FMS message area displays the NOT ALLOWED DATABASE ARPTS ONLY (*Refer to message*).

L1 **ENTRY FORMAT**

Refer to DSC-22-FMS-20-80 AIRPORT (ARPT).

Ident.: DSC-22-FMS-20-20-20-120-00003870.0001001 / 22 APR 14

RTE IDENT LIST [DATABASE RTEs]

Indicates the company route ident.
The flight crew enters the company route ident via the keyboard, or by selecting the company route ident from the RTE IDENT list.
The RTE IDENT list displays all of the navigation database routes that are associated with the entered FROM/TO city-pair.

L2 If the entered route is neither a navigation database nor a pilot-stored route, the FMS message area displays the NOT IN DATABASE message (*Refer to message*).
If the entered route is a pilot-stored route, the PILOT STORED RTEs panel opens, and displays the associated data.

L1 **ENTRY FORMAT**

Refer to DSC-22-FMS-20-80 CPNY RTE.

Ident.: DSC-22-FMS-20-20-20-120-00003871.0001001 / 14 APR 14

COMPANY ROUTE NUMBER [DATABASE RTEs]

Indicates the rank of the displayed company route, and the total number of navigation database company routes that are associated with the FROM/TO city-pair.

Ident.: DSC-22-FMS-20-20-20-120-00003872.0001001 / 14 APR 14

COMPANY ROUTE SCROLL BUTTONS [DATABASE RTEs]

The flight crew uses the company route scroll buttons to scroll, one by one, through the navigation database company routes that are associated with the FROM/TO city-pair.

Ident.: DSC-22-FMS-20-20-20-120-00003873.0001001 / 22 APR 14

ROUTE SUMMARY [DATABASE RTEs]

Indicates the route summary of the selected navigation-database company route.
The flight crew must read the summary from left to right, and from top to bottom.
Company route waypoints are displayed in large green font. Airways and procedures are displayed in small white font.

Note:
1. *A VIA or a direct flight leg is indicated by DIR.*
2. *A runway is indicated by RWY.*
3. *When the company route has an approach procedure, only the first waypoint and the name of the procedure are displayed in the route summary.*

Ident.: DSC-22-FMS-20-20-20-120-00003874.0001001 / 22 APR 14

ROUTE SUMMARY SCROLL BUTTONS [DATABASE RTEs]

The flight crew uses the route summary scroll down(up) button to move, page by page, downward(upward) through the route summary.

Ident.: DSC-22-FMS-20-20-20-120-00003876.0001001 / 22 APR 14

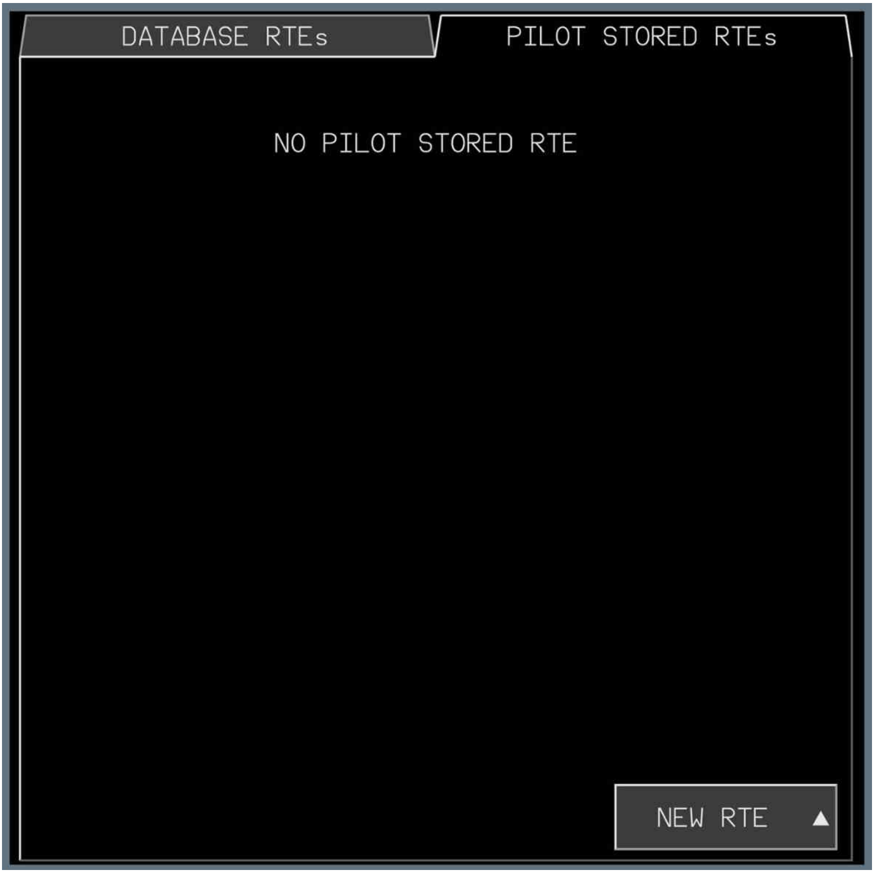
RTE IDENT LIST [PILOT STORED RTEs]

Indicates the ident of the displayed pilot-stored company route.
The flight crew enters the ident of the pilot-stored company route via the keyboard, or by selecting the ident of the pilot-stored company route from the RTE IDENT list.
The RTE IDENT list displays all of the pilot-stored company routes.

NO PILOT-STORED ROUTE IN THE PILOT-STORED ELEMENTS DATABASE

If there is no pilot-stored company route in the pilot-stored elements database, the PILOT STORED RTEs panel displays the NO PILOT STORED RTE message.

NO PILOT STORED RTE Message



NO PILOT STORED RTE

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 CPNY RTE.

Ident.: DSC-22-FMS-20-20-20-120-00003877.0001001 / 22 APR 14

FROM/TO [PILOT STORED RTEs]

Indicates the idents of the FROM/TO city-pair (i.e. departure airport and destination airport) that are associated with the displayed pilot-stored company route.

Ident.: DSC-22-FMS-20-20-20-120-00003878.0001001 / 14 APR 14

COMPANY ROUTE NUMBER [PILOT STORED RTEs]

Indicates the rank of the displayed pilot-stored company route, and the total number of pilot-stored company routes that are associated with the FROM/TO city-pair.
The pilot-stored elements database has a maximum of 5 company routes.

Ident.: DSC-22-FMS-20-20-20-120-00003879.0001001 / 14 APR 14

COMPANY ROUTE SCROLL BUTTONS [PILOT STORED RTEs]

The flight crew uses the company route scroll buttons to scroll, one by one, through the pilot-stored company routes that are associated with the FROM/TO city-pair.

Ident.: DSC-22-FMS-20-20-20-120-00003880.0001001 / 22 APR 14

ROUTE SUMMARY [PILOT STORED RTEs]

Indicates the route summary of the selected pilot-stored company route.
The flight crew must read the summary from left to right, and from top to bottom.
Company route waypoints are displayed in large green font. Airways and procedures are displayed in small white font.

Note: *1. A VIA or a direct flight leg is indicated by DIR.*
2. A runway is indicated by RWY.
3. When the company route has an approach procedure, only the first waypoint and the name of the procedure are displayed in the route summary.

Ident.: DSC-22-FMS-20-20-20-120-00003881.0001001 / 22 APR 14

ROUTE SUMMARY SCROLL BUTTONS [PILOT STORED RTEs]

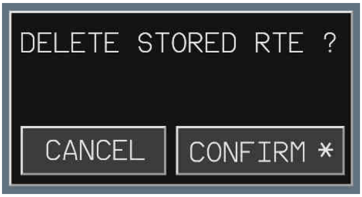
The flight crew uses the route summary scroll down(up) button to move, page by page, downward(upward) through the route summary.

Ident.: DSC-22-FMS-20-20-20-120-00003883.0001001 / 02 OCT 14

DELETE STORED RTE BUTTON

When clicked, deletes the pilot-stored company route that is currently displayed.
The flight crew must perform a confirmation action.

Confirmation Window



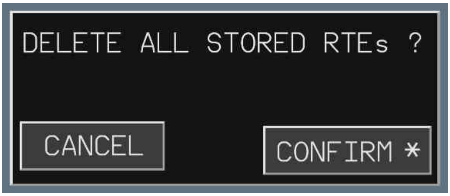
If the pilot-stored company route is still used by the FMS, it is not deleted. The FMS message area displays the F-PLN ELEMENT RETAINED message (*Refer to message*).

Ident.: DSC-22-FMS-20-20-20-120-00003882.0001001 / 22 APR 14

DELETE ALL STORED RTES BUTTON

When clicked, deletes all pilot-stored company routes.
The flight crew must perform a confirmation action.

Confirmation Window



If there are pilot-stored company routes that are still used by the FMS, they are not deleted. The FMS message area displays the F-PLN ELEMENT RETAINED message (*Refer to message*).

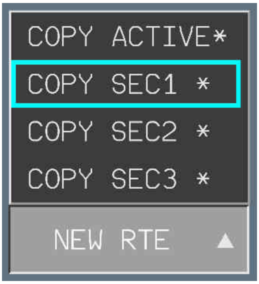
L2 The Operator can decide (via the AMI file) to automatically delete all pilot-stored elements, when the DONE flight phase becomes active.

Ident.: DSC-22-FMS-20-20-20-120-00003884.0001001 / 03 SEP 14

NEW RTE BUTTON

When clicked, opens the NEW RTE menu.

NEW RTE Menu



With the options of this menu, the flight crew can store a copy of the active or any secondary flight plan in the pilot-stored elements database.

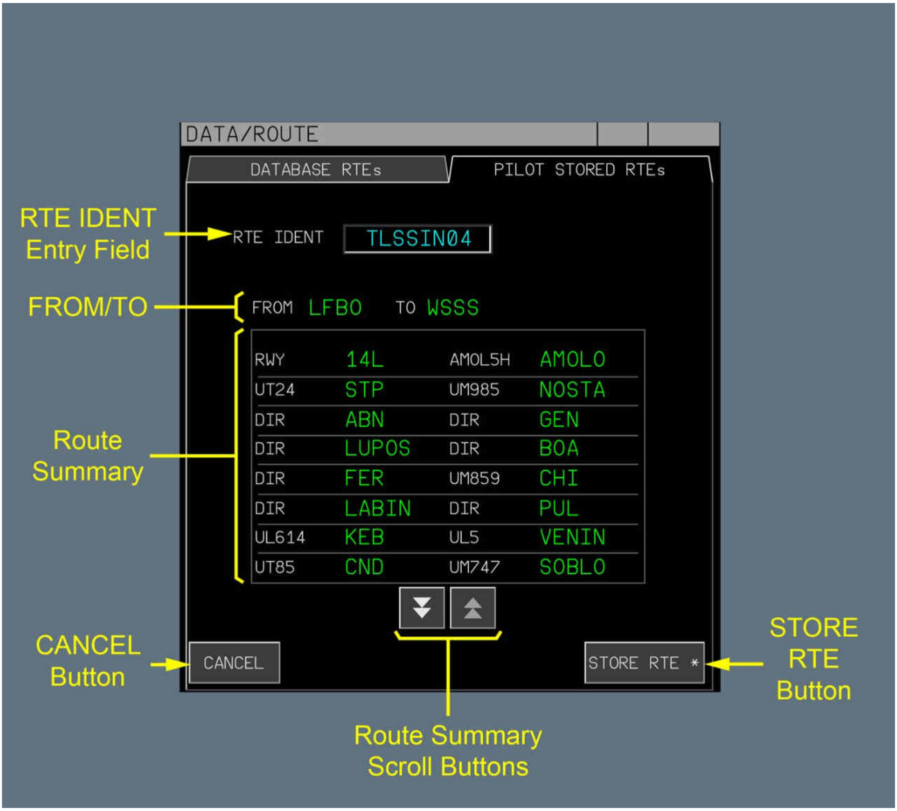
L2 The flight crew can store a copy of the active flight plan only in the PREFLIGHT flight phase.
The copy of the active or any secondary flight plan does not include the LRC FMS speed mode, if selected.

L1 When the flight crew selects an option, the NEW RTE function appears on the PILOT STORED RTEs panel: The summary of the route that is associated with the copy of the flight plan is displayed, and this route can be stored in the pilot-stored elements database. For more information, *Refer to NEW RTE Function*.

Ident.: DSC-22-FMS-20-20-20-120-00003885.0001001 / 22 APR 14

NEW RTE FUNCTION

NEW RTE Function


DATA/ROUTE
DATABASE RTEs
PILOT STORED RTEs
RTE IDENT Entry Field
FROM/TO
Route Summary
CANCEL Button
STORE RTE Button
Route Summary Scroll Buttons
CANCEL
STORE RTE *

RTE IDENT TLSSIN04

FROM LFBO TO WSSS

RWY	14L	AMOL5H	AMOLO
UT24	STP	UM985	NOSTA
DIR	ABN	DIR	GEN
DIR	LUPOS	DIR	BOA
DIR	FER	UM859	CHI
DIR	LABIN	DIR	PUL
UL614	KEB	UL5	VENIN
UT85	CND	UM747	SOBLO

Ident.: DSC-22-FMS-20-20-20-120-00003886.0001001 / 22 APR 14

RTE IDENT ENTRY FIELD

Indicates the ident of the new company route.

L2 If the entered route ident is already in the navigation database or in the pilot-stored elements database, the FMS message area displays the RTE IDENT ALREADY USED message (*Refer to message*).

L1

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 CPNY RTE.

Ident.: DSC-22-FMS-20-20-20-120-00003887.0001001 / 22 APR 14

FROM/TO [NEW RTE]

Indicates the idents of the FROM/TO city-pair (i.e. departure airport and destination airport) that are associated with the new pilot-stored company route.

Ident.: DSC-22-FMS-20-20-20-120-00003888.0001001 / 22 APR 14

ROUTE SUMMARY [NEW RTE]

Indicates the route summary of the flight plan copy.
The flight crew must read the summary from left to right, and from top to bottom.
Company route waypoints are displayed in large green font. Airways and procedures are displayed in small white font.

Note: *1. A VIA or a direct flight leg is indicated by DIR.*
2. A runway is indicated by RWY.
3. When the company route has an approach procedure, only the first waypoint and the name of the procedure are displayed in the route summary.

Ident.: DSC-22-FMS-20-20-20-120-00003889.0001001 / 22 APR 14

ROUTE SUMMARY SCROLL BUTTONS [NEW RTE]

The flight crew uses the route summary scroll down(up) button to move, page by page, downward(upward) through the route summary.

Ident.: DSC-22-FMS-20-20-20-120-00003890.0001001 / 22 APR 14

STORE RTE BUTTON

When clicked, stores the new company route in the pilot-stored elements database.
The pilot-stored routes database is limited to 5 company routes.
L2 If the pilot-stored elements database is full, the route creation is rejected, and the FMS message area displays the PILOT RTEs LIST FULL message (*Refer to message*).
Each stored company route has a maximum size of 30 flight plan elements. When the route is longer, only the first 30 elements are stored, and the FMS message area displays the SOME REVISIONS NOT STORED message (*Refer to message*).

Ident.: DSC-22-FMS-20-20-20-120-00003891.0001001 / 14 APR 14

CANCEL BUTTON

When clicked, cancels the NEW RTE function.

Ident.: DSC-22-FMS-20-20-20-120-00003892.0001001 / 22 APR 14

RETURN BUTTON

When clicked, displays the ACTIVE/INIT page (*Refer to page*).

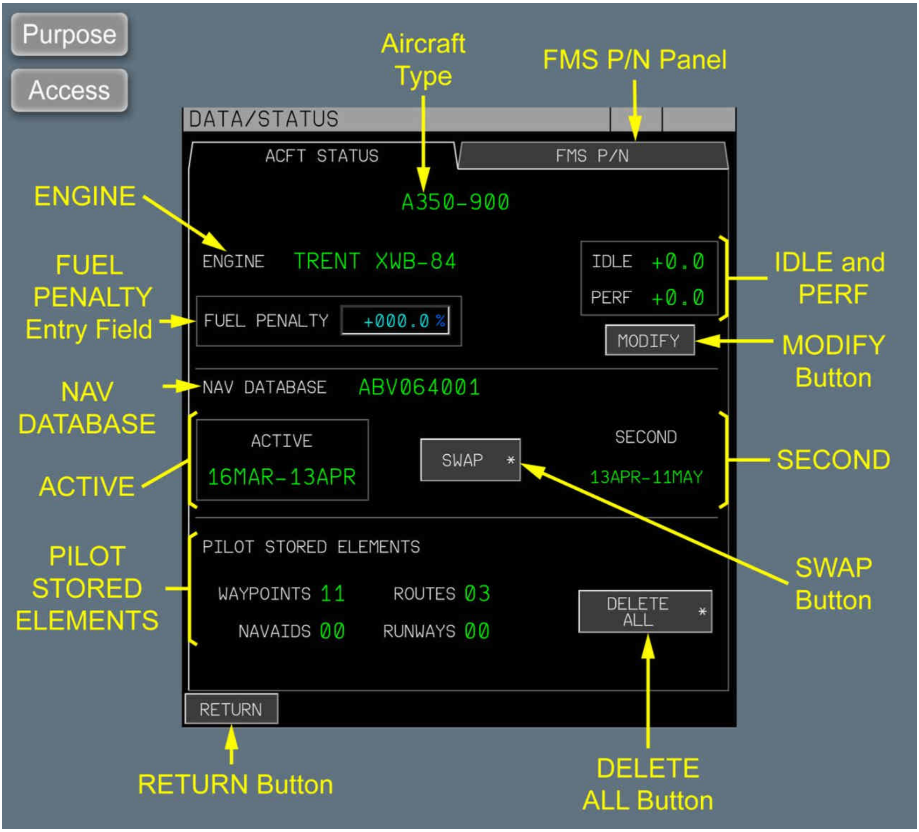
L2 The RETURN button appears, only if the flight crew accesses the DATA/ROUTE page via the ACTIVE/INIT page.

DATA/STATUS PAGE

Applicable to: ALL

Ident.: DSC-22-FMS-20-20-20-130-00002712.0001001 / 01 SEP 16

DATA/STATUS Page


Purpose
Access
Aircraft Type
FMS P/N Panel
ENGINE
FUEL PENALTY Entry Field
NAV DATABASE
ACTIVE
PILOT STORED ELEMENTS
IDLE and PERF
MODIFY Button
SECOND
SWAP Button
RETURN Button
DELETE ALL Button
DATA/STATUS
ACFT STATUS
FMS P/N
MODIFY
SWAP *
DELETE ALL *
RETURN

A350-900

ENGINE TRENT XWB-84

IDLE +0.0

PERF +0.0

FUEL PENALTY +000.0 %

NAV DATABASE ABV064001

ACTIVE 16MAR-13APR

SECOND 13APR-11MAY

PILOT STORED ELEMENTS

WAYPOINTS 11 ROUTES 03

NAVAIDS 00 RUNWAYS 00

Ident.: DSC-22-FMS-20-20-20-130-00003893.0001001 / 22 APR 14

PURPOSE

On the ACFT STATUS panel of the STATUS page, the flight crew can:

- Check the aircraft type and the engine type
- Check the validity of the navigation database
- Change the navigation database
- Check the number of pilot-stored elements
- Delete the pilot-stored elements
- Change the FUEL PENALTY factor
- Change the PERF and IDLE factors.

L2

L1

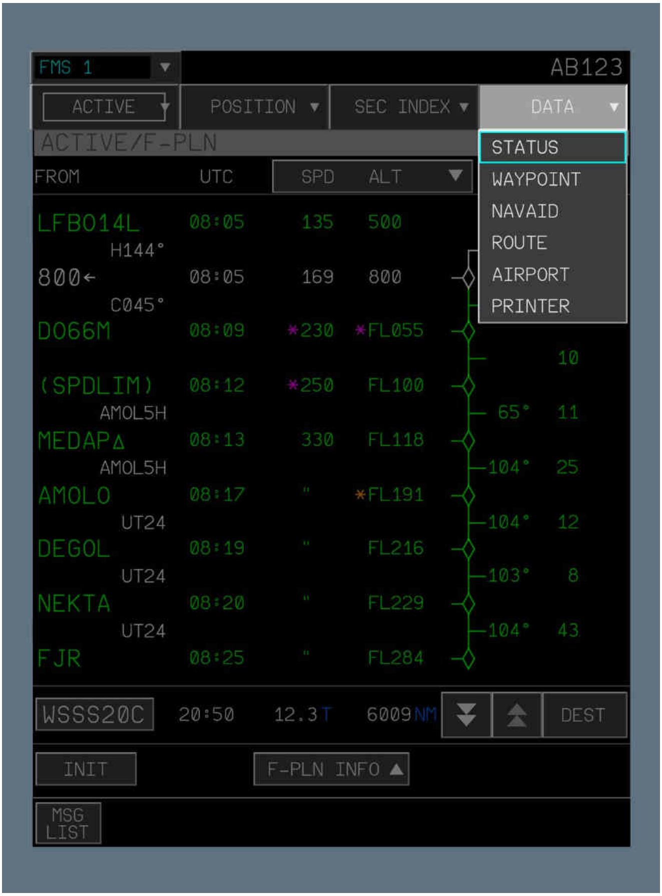
On the FMS P/N panel of the STATUS page, the flight crew can display the part numbers of the FMS software, the FMC databases, and the configuration files.

ACCESS

The flight crew can access the STATUS page via:

- The general menu bar, by selecting STATUS in the DATA menu

General Menu Bar

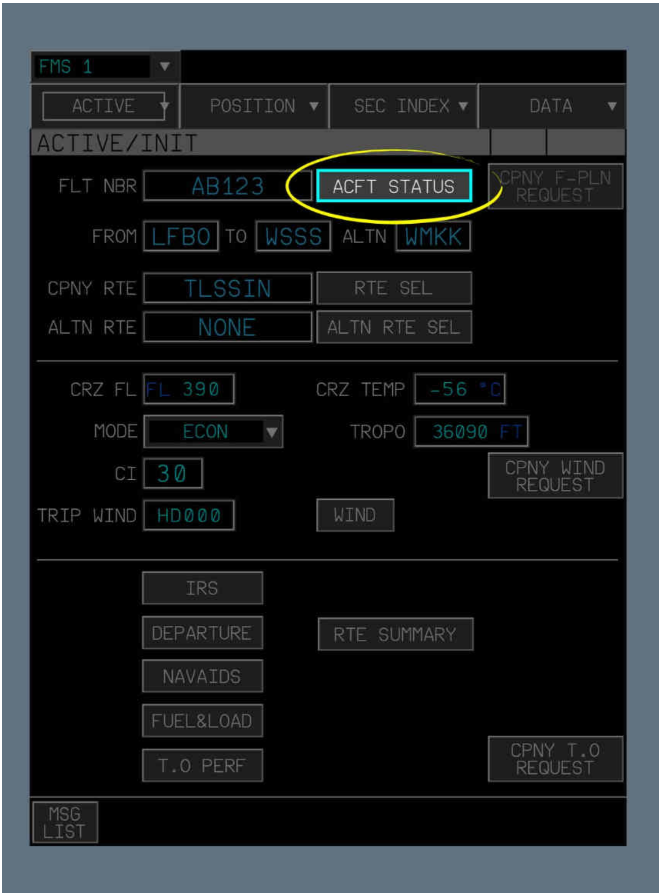

FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
STATUS
WAYPOINT
NAVAID
ROUTE
AIRPORT
PRINTER
ACTIVE/F-PLN
INIT
F-PLN INFO
DEST
MSG LIST

FROM	UTC	SPD	ALT		
LFBO14L	08:05	135	500		
H144°					
800←	08:05	169	800		
C045°					
D066M	08:09	*230	*FL055		
					10
(SPDLIM)	08:12	*250	FL100		
AMOL5H				65°	11
MEDAPΔ	08:13	330	FL118		
AMOL5H				104°	25
AMOLO	08:17	"	*FL191		
UT24				104°	12
DEGOL	08:19	"	FL216		
UT24				103°	8
NEKTA	08:20	"	FL229		
UT24				104°	43
FJR	08:25	"	FL284		

WSSS20C 20:50 12.3T 6009NM

- The ACTIVE/INIT page, by clicking on the ACFT STATUS button.

ACTIVE/INIT Page


FMS 1
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/INIT
ACFT STATUS
CPNY F-PLN REQUEST
RTE SEL
ALTN RTE SEL
CPNY WIND REQUEST
WIND
IRS
DEPARTURE
NAVAIDS
FUEL&LOAD
T.O PERF
RTE SUMMARY
CPNY T.O REQUEST
MSG LIST

FLT NBR AB123
FROM LFBO TO WSSS ALTN WMKK
CPNY RTE TLSSIN
ALTN RTE NONE
CRZ FL FL 390
CRZ TEMP -56 °C
MODE ECON
TROPO 36090 FT
CI 30
TRIP WIND HD000

L2 The ACFT STATUS panel of the STATUS page is automatically displayed:
- At FMS power-up
- After an automatic FMS reconfiguration, or FMC reset, before engine start
- When the DONE flight phase becomes active.

The FMS P/N panel of the STATUS page is automatically displayed, when:

- There is a power transient for more than 5 s, or
- The FMCs reset, because the part number of one FMC is not compatible with the part number of the other FMCs.

Ident.: DSC-22-FMS-20-20-20-130-00003895.0001001 / 14 APR 14

AIRCRAFT TYPE

Indicates the type of aircraft.

L2 The performance database contains the aircraft type.
For more information about the performance database, *Refer to DSC-22-FMS-10-20 Performance Database*.

Ident.: DSC-22-FMS-20-20-20-130-00003896.0001001 / 22 APR 14

ENGINE

Indicates the type of engine that the FMS uses to compute the aircraft performance.

L2 The performance database contains the engine type.
For more information about the performance database, *Refer to DSC-22-FMS-10-20 Performance Database*.

Ident.: DSC-22-FMS-20-20-20-130-00005205.0001001 / 25 AUG 14

FUEL PENALTY ENTRY FIELD

Indicates the FUEL PENALTY factor.
The FUEL PENALTY factor is a correction factor that the FMS uses to compute the aircraft performance and the flight plan predictions.
The FUEL PENALTY factor is a correction factor of the fuel flow.
The flight crew should consider the use of the FUEL PENALTY factor, if one or more system failures affect fuel consumption.

L2 The default value of the FUEL PENALTY factor is +000.0 %. The FUEL PENALTY entry field resets to this default value when the DONE flight phase becomes active.

L1 The flight crew can change the FUEL PENALTY factor at any time.

L2 For additional information, *Refer to FCTM/PR-AEP-FUEL Fuel Penalty*.

L1 ENTRY FORMAT

Refer to DSC-22-FMS-20-80 FUEL PENALTY (FACTOR).

Ident.: DSC-22-FMS-20-20-20-130-00003897.0001001 / 22 APR 14

IDLE AND PERF

Indicate the IDLE and PERF factors.

The IDLE factor and the PERF factor are correction factors that the FMS uses to compute the aircraft performance and the flight plan predictions.
The IDLE factor is a correction factor of the idle engine rating.
The PERF factor is a correction factor of the fuel flow.

The IDLE factor and the PERF factor are updated at the discretion of the Operator, as necessary:
- The Operator should define and apply the IDLE factor, if the computation of the path for the descent and the approach needs to be modified
- The Operator should define and apply the PERF factor, if there is any degradation in aerodynamic performance or engine performance.

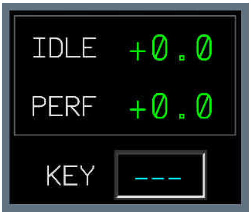
L2 The Operator can define a default value for both factors in the AMI file.
L1 The IDLE and PERF factors can be automatically changed via datalink with the company ground station. The flight crew can also manually change these factors via the MODIFY button (*Refer to MODIFY button*).

Ident.: DSC-22-FMS-20-20-20-130-00003898.0001001 / 22 APR 14

MODIFY BUTTON

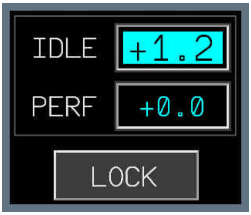
When clicked, removes the MODIFY button, and displays the KEY entry field. Then, the flight crew can enter the key code which is "ARM" by default.
L2 It is possible to modify the default code on airline request (the applicable code is then coded in the AMI file).

KEY Entry Field



IDLE +0.0
PERF +0.0
KEY ---

L1 After the flight crew enters the correct key code, the IDLE and PERF entry fields, and the LOCK button are displayed.



IDLE and PERF Entry Fields, and LOCK Button

The flight crew can now change the IDLE and PERF factors. The flight crew can lock the entered values. To lock the entered values, the flight crew clicks on the LOCK button.

ENTRY FORMAT

For the entry format of:
- the IDLE factor, *Refer to DSC-22-FMS-20-80 IDLE (FACTOR)*
- the PERF factor, *Refer to DSC-22-FMS-20-80 PERF (FACTOR)*.

Ident.: DSC-22-FMS-20-20-20-130-00003899.0001001 / 22 APR 14

NAV DATABASE

Indicates the part number of the active navigation database.

Ident.: DSC-22-FMS-20-20-20-130-00003900.0001001 / 14 APR 14

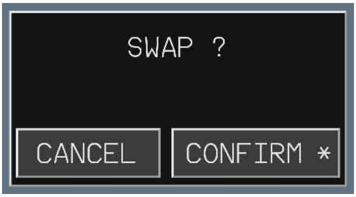
ACTIVE

Indicates the validity period of the active navigation database.

Ident.: DSC-22-FMS-20-20-20-130-00003901.0001001 / 22 APR 14

SWAP BUTTON

When clicked, the second navigation database becomes the active navigation database, and vice versa.
The flight crew must perform a confirmation action.



CONFIRM/CANCEL Window

CAUTION	The change of the databases erases the active and secondary flight plans, and the pilot-stored elements. The flight crew must never change databases in flight.

Ident.: DSC-22-FMS-20-20-20-130-00003902.0001001 / 22 APR 14

SECOND

Indicates the validity period of the second navigation database.

Ident.: DSC-22-FMS-20-20-20-130-00003903.0001001 / 22 APR 14

PILOT STORED ELEMENTS

Indicates the number of pilot-stored waypoints, routes, navaids, and runways.

L2 The Operator can decide (via the AMI file) to automatically delete all pilot-stored elements, when the DONE flight phase becomes active.

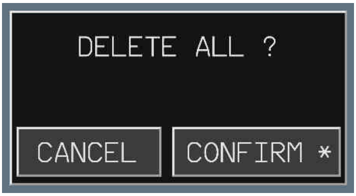
L1 All pilot-stored elements are automatically deleted, when one of the following occurs:
- A new navigation database is loaded
- The active navigation database becomes the second navigation database, and vice versa.

Ident.: DSC-22-FMS-20-20-20-130-00003904.0001001 / 22 APR 14

DELETE ALL BUTTON

When clicked, deletes all pilot stored waypoints, routes, navaids, and runways.
The flight crew must perform a confirmation action.

Confirmation Window



DELETE ALL ?

If there are pilot-stored elements that are still used by the FMS, they are not deleted. The FMS message displays the F-PLN ELEMENT RETAINED message (*Refer to DSC-22-FMS-20-90 F-PLN ELEMENT RETAINED*).

L2 The Operator can decide (via the AMI file) to automatically delete all pilot-stored elements, when the DONE flight phase becomes active.

Ident.: DSC-22-FMS-20-20-20-130-00003905.0001001 / 01 SEP 16

ELEMENT LIST

The flight crew selects from the list the database element for which they want to display the part numbers.

The ELEMENT list has the following options:

- FMS SOFTWARE: Displays the part number of the FMS software for each FMC
- NAV DATABASE: Displays the part number of the navigation database for each FMC

L2 For information about the navigation database, *Refer to DSC-22-FMS-10-20 Navigation Database*.

L1
- FMS AIRLINE CONFIG: Displays the part number of the AMI file for each FMC

L3 For more information about the AMI file, *Refer to DSC-22-FMS-10-20 Airline Modifiable Information (AMI) File*.

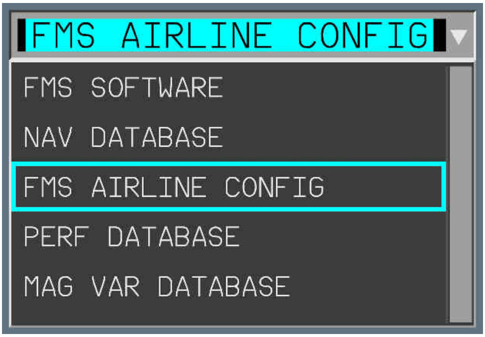
L1
- PERF DATABASE: Displays the part number of the performance database for each FMC

L2 For more information about the performance database, *Refer to DSC-22-FMS-10-20 Performance Database*.

L1
- MAG VAR DATABASE: Displays the part number of the magnetic variation database for each FMC.

L2 For more information about the magnetic variation database, *Refer to DSC-22-FMS-10-20 Magnetic Variation Database*.

ELEMENT List


FMS AIRLINE CONFIG
FMS SOFTWARE
NAV DATABASE
FMS AIRLINE CONFIG
PERF DATABASE
MAG VAR DATABASE

L1 The part numbers appear below the ELEMENT list (*Refer to Database Element Part Numbers*).

Ident.: DSC-22-FMS-20-20-20-130-00005203.0001001 / 22 APR 14

DATABASE ELEMENT NUMBER

Indicates the rank of the selected database element, and the total number of the database elements of the ELEMENT list.

Ident.: DSC-22-FMS-20-20-20-130-00003906.0001001 / 22 APR 14

DATABASE ELEMENT SCROLL BUTTONS

The flight crew uses the database element scroll buttons to scroll, one by one, through the database elements of the ELEMENT list. The associated part numbers are displayed accordingly.

Note: *The wheel of the KCCU has the same function as the scroll buttons: Scrolling down(up) the wheel displays the next(previous) database element and its associated part numbers.*

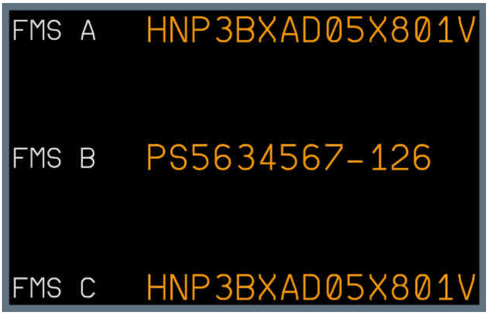
Ident.: DSC-22-FMS-20-20-20-130-00003907.0001001 / 22 APR 14

FMS A, FMS B, AND FMS C

Indicate, for each FMC (FMC-A, FMC-B, and FMC-C), the part number of the database element that is selected in the ELEMENT list.

L2 The part numbers are all displayed in amber, if there are at least two different numbers for a same database.

Different Part Numbers



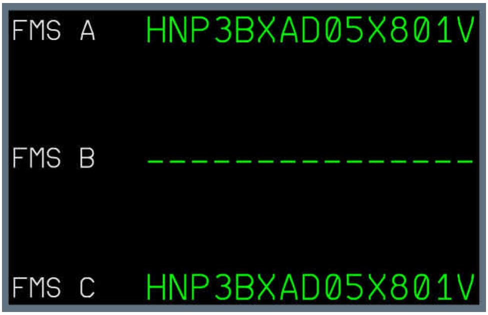
FMS A HNP3BXAD05X801V

FMS B PS5634567-126

FMS C HNP3BXAD05X801V

If an FMC is not available or not connected to the FMC that controls the MFD on which the DATA/STATUS page is displayed, dashes appear instead of the associated part number.

Part Number Not Available



FMS A HNP3BXAD05X801V

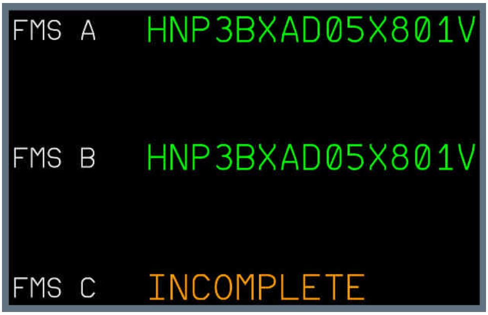
FMS B ----------------

FMS C HNP3BXAD05X801V

The following database elements are mandatory: FMS SOFTWARE, NAV DATABASE, FMS OPTIONS CONFIG, PERF DATABASE, and MAG VAR DATABASE. They must be loaded in the FMCs.

If there is no part number for a mandatory database, INCOMPLETE appears instead of the part number.

INCOMPLETE



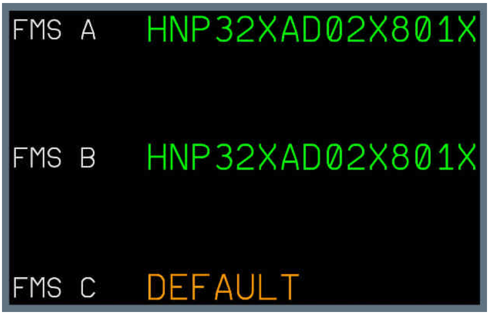
FMS A HNP3BXAD05X801V

FMS B HNP3BXAD05X801V

FMS C INCOMPLETE

FMS AIRLINE CONFIG is not a mandatory database element. If there is no part number for this database element, DEFAULT appears instead of the part number.

DEFAULT



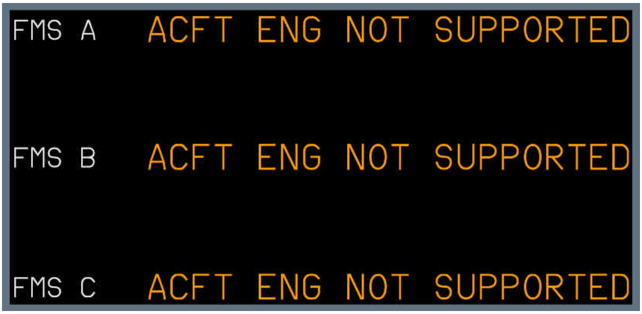
FMS A HNP32XAD02X801X

FMS B HNP32XAD02X801X

FMS C DEFAULT

If the flight crew selects PERF DATABASE in the ELEMENT list, and there is no performance model that is associated with the applicable aircraft and engine type, ACFT ENGINE NOT SUPPORTED appears instead of the part number.

ACFT ENG NOT SUPPORTED


FMS A ACFT ENG NOT SUPPORTED

FMS B ACFT ENG NOT SUPPORTED

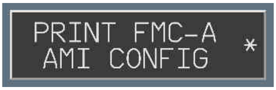
FMS C ACFT ENG NOT SUPPORTED

Ident.: DSC-22-FMS-20-20-20-130-00003908.0001001 / 01 SEP 16

PRINT FMC-A(B)(C) AMI CONFIG BUTTON

If the flight crew selects FMS AIRLINE CONFIG from the ELEMENT list, they can use the PRINT FMC-A(B)(C) AMI CONFIG button to print the content of the AMI file of the FMC that controls the MFD on which the DATA/STATUS page is displayed.

PRINT FMC-A(B)(C) AMI CONFIG Button



In this case, the button label:
- PRINT FMC-A AMI CONFIG, if the FMC-A controls the MFD on which the DATA/STATUS page is displayed
- PRINT FMC-B AMI CONFIG, if the FMC-B controls the MFD on which the DATA/STATUS page is displayed
- PRINT FMC-C AMI CONFIG, if the FMC-C controls the MFD on which the DATA/STATUS page is displayed.

Ident.: DSC-22-FMS-20-20-20-130-00003909.0001001 / 22 APR 14

PRINT ALL P/N BUTTON

When clicked, prints the FM P/N STATUS report.

Ident.: DSC-22-FMS-20-20-20-130-00003910.0001001 / 22 APR 14

RETURN BUTTON

When clicked, displays the ACTIVE/INIT page (*Refer to page*).

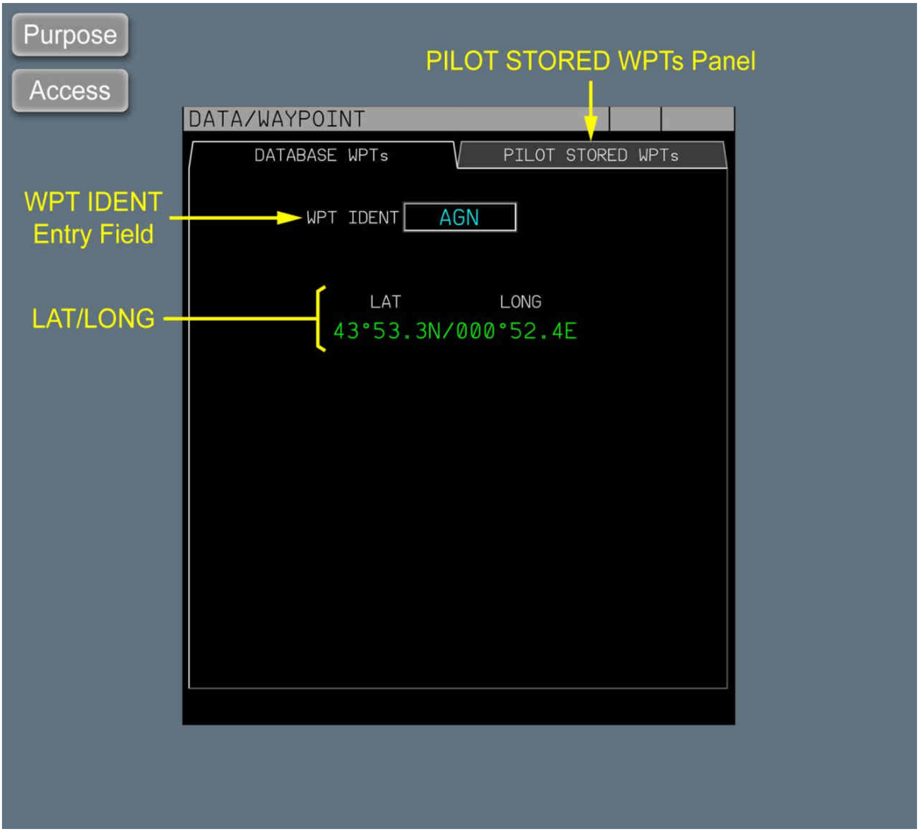
L2 The RETURN button appears, only if the flight crew accesses the DATA/STATUS page via the ACTIVE/INIT page.

DATA/WAYPOINT PAGE

Applicable to: ALL

Ident.: DSC-22-FMS-20-20-20-140-00002713.0001001 / 22 APR 14

DATA/WAYPOINT Page


Purpose
Access
PILOT STORED WPTs Panel
DATA/WAYPOINT
DATABASE WPTs
PILOT STORED WPTs
WPT IDENT Entry Field
WPT IDENT
AGN
LAT/LONG
LAT
LONG
43°53.3N/000°52.4E

Ident.: DSC-22-FMS-20-20-20-140-00003911.0001001 / 22 APR 14

PURPOSE

On the DATA/WAYPOINT page, the flight crew can:
- Display the data for a waypoint, a navaid, a runway, or an airport that is stored in the navigation database or in the pilot-stored elements database
- Create(delete) waypoints in the pilot-stored elements database.

L2

LINKS

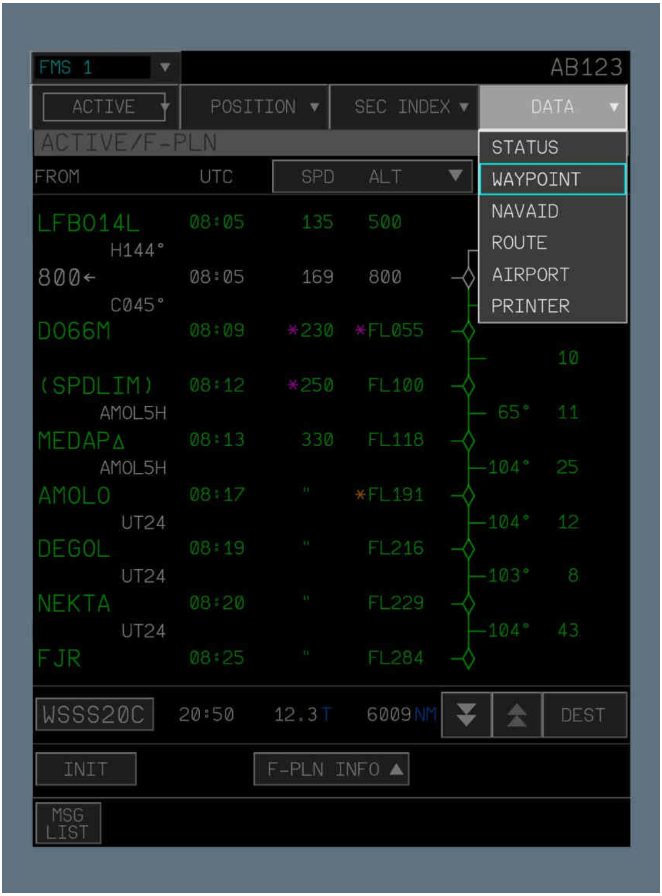
For information about:
- The navigation database, *Refer to DSC-22-FMS-10-20 Navigation Database*
- The pilot-stored elements database, *Refer to DSC-22-FMS-10-20 Pilot-Stored Elements Database*.

Ident.: DSC-22-FMS-20-20-20-140-00003912.0001001 / 14 APR 14

ACCESS

The flight crew can access the DATA/WAYPOINT page via the general menu bar, by selecting WAYPOINT in the DATA menu.
The DATABASE WPTs panel opens by default.

General Menu Bar


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
STATUS
WAYPOINT
NAVAID
ROUTE
AIRPORT
PRINTER
ACTIVE/F-PLN
WSSS20C
20:50
12.3T
6009NM
DEST
INIT
F-PLN INFO
MSG LIST

FROM	UTC	SPD	ALT		
LFBO14L	08:05	135	500		
H144°					
800←	08:05	169	800		
C045°					
D066M	08:09	*230	*FL055		
					10
(SPDLIM)	08:12	*250	FL100		
AMOL5H				65°	11
MEDAPΔ	08:13	330	FL118		
AMOL5H				104°	25
AMOLO	08:17	"	*FL191		
UT24				104°	12
DEGOL	08:19	"	FL216		
UT24				103°	8
NEKTA	08:20	"	FL229		
UT24				104°	43
FJR	08:25	"	FL284		

Ident.: DSC-22-FMS-20-20-20-140-00003914.0001001 / 22 APR 14

WPT IDENT ENTRY FIELD [DATABASE WPTs]

The flight crew enters the ident of a waypoint(navaid)(runway)(airport) in the entry field.
L2 If the entered ident is the ident of a pilot-stored waypoint(navaid)(runway)(airport), the PILOT STORED WPTs panel opens, and displays the associated data.
If the entered ident is the ident of neither a navigation database nor a pilot-stored waypoint(navaid)(runway)(airport), the PILOT STORED WPTs panel opens, and displays the NEW WPT function (*Refer to NEW WPT Function*).

L1 ENTRY FORMAT

For the entry format of:
- Waypoint, *Refer to DSC-22-FMS-20-80 WAYPOINT*
- Navaid, *Refer to DSC-22-FMS-20-80 NAVAID IDENT*
- Airport, *Refer to DSC-22-FMS-20-80 AIRPORT (ARPT)*
- Runway, *Refer to DSC-22-FMS-20-80 RWY IDENT*.

Ident.: DSC-22-FMS-20-20-20-140-00003915.0001001 / 22 APR 14

LAT/LONG

Indicates the latitude and longitude coordinates of the navigation database waypoint(navaid)(runway)(airport).

Ident.: DSC-22-FMS-20-20-20-140-00003917.0001001 / 22 APR 14

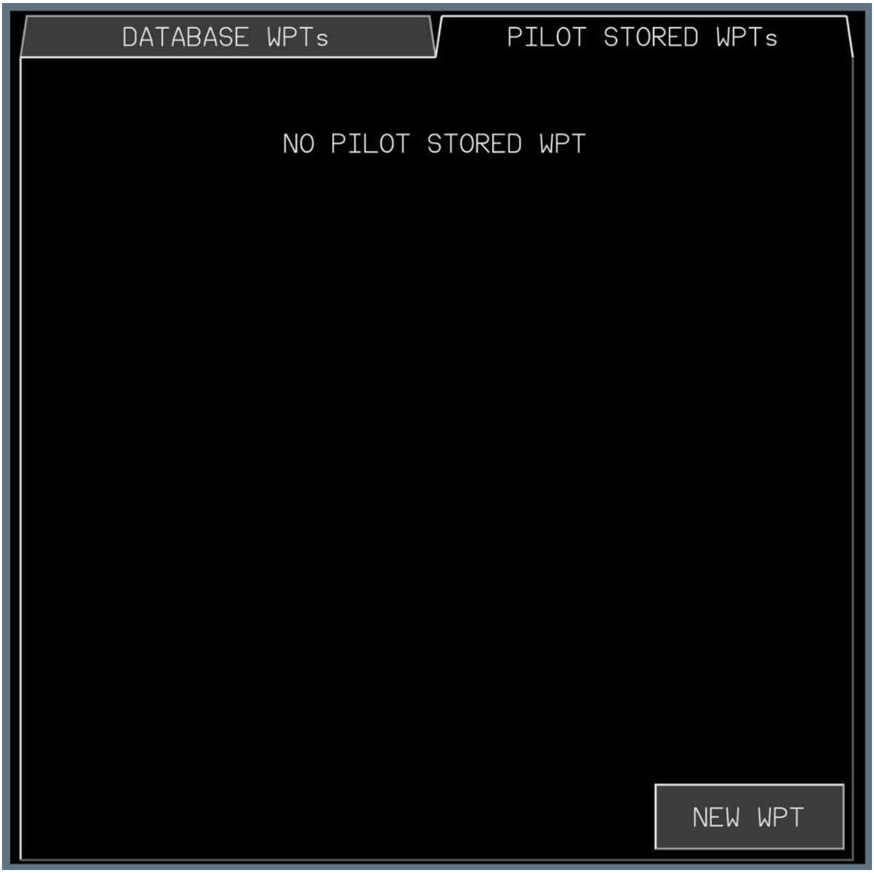
WPT IDENT LIST

Indicates the ident of the displayed pilot-stored waypoint.
The flight crew enters the ident of the pilot-stored waypoint via the keyboard, or by selecting the ident of the pilot-stored waypoint from the WPT IDENT list.
The WPT IDENT list displays all of the pilot-stored waypoints.
L2 If the entered waypoint is neither a navigation database nor a pilot-stored waypoint, the PILOT STORED WPTs panel opens, and displays the NEW WPT function (*Refer to NEW WPT Function*).

L1 NO PILOT-STORED WAYPOINT IN THE PILOT-STORED ELEMENTS DATABASE

If there is no pilot-stored waypoint in the pilot-stored elements database, the PILOT STORED WPTs panel displays the NO PILOT STORED WPT message.

NO PILOT STORED WPT Message



NO PILOT STORED WPT

ENTRY FORMAT

For the entry format of:
- Waypoint, *Refer to DSC-22-FMS-20-80 WAYPOINT*
- Navaid, *Refer to DSC-22-FMS-20-80 NAVAID IDENT*
- Airport, *Refer to DSC-22-FMS-20-80 AIRPORT (ARPT)*
- Runway, *Refer to DSC-22-FMS-20-80 RWY IDENT*.

Ident.: DSC-22-FMS-20-20-20-140-00003918.0001001 / 22 APR 14

WAYPOINT SCROLL BUTTONS

The flight crew uses the waypoint scroll buttons to scroll, one by one, through the pilot-stored waypoints.

Ident.: DSC-22-FMS-20-20-20-140-00003919.0001001 / 22 APR 14

WAYPOINT NUMBER

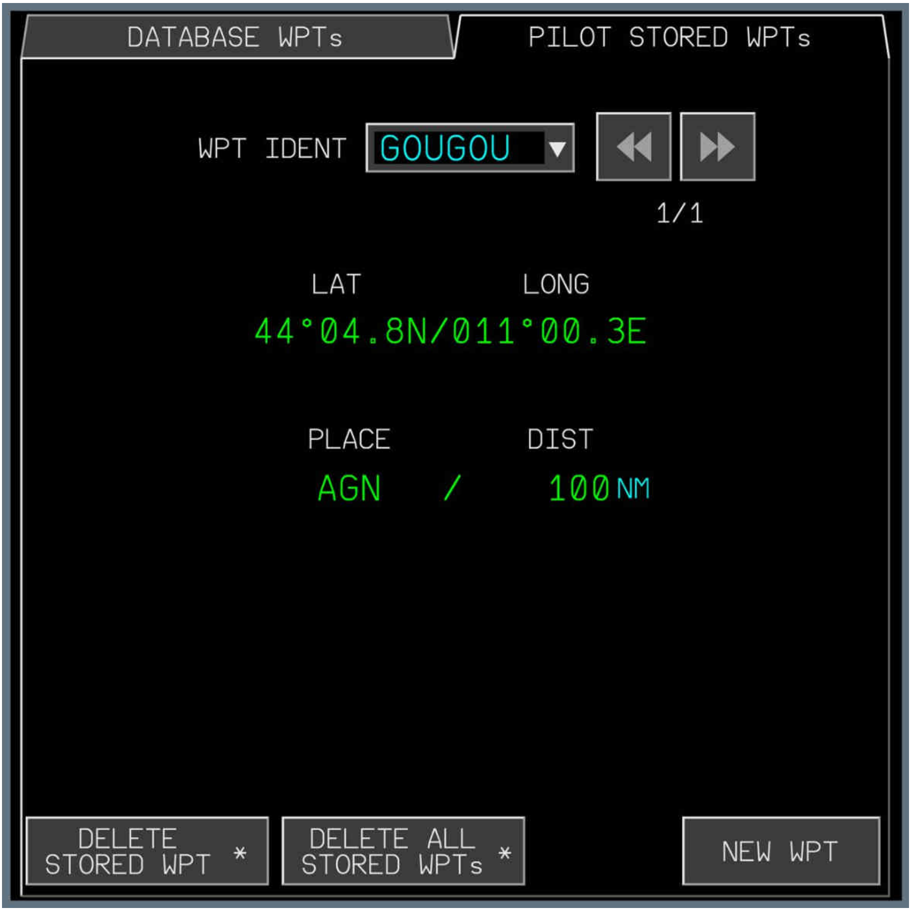
Indicates the rank of the displayed pilot-stored waypoint, and the total number of pilot-stored waypoints.
The pilot-stored waypoints database has a maximum of 99 waypoints.

WAYPOINT POSITION DATA

Indicates the position data of the pilot-stored waypoint:

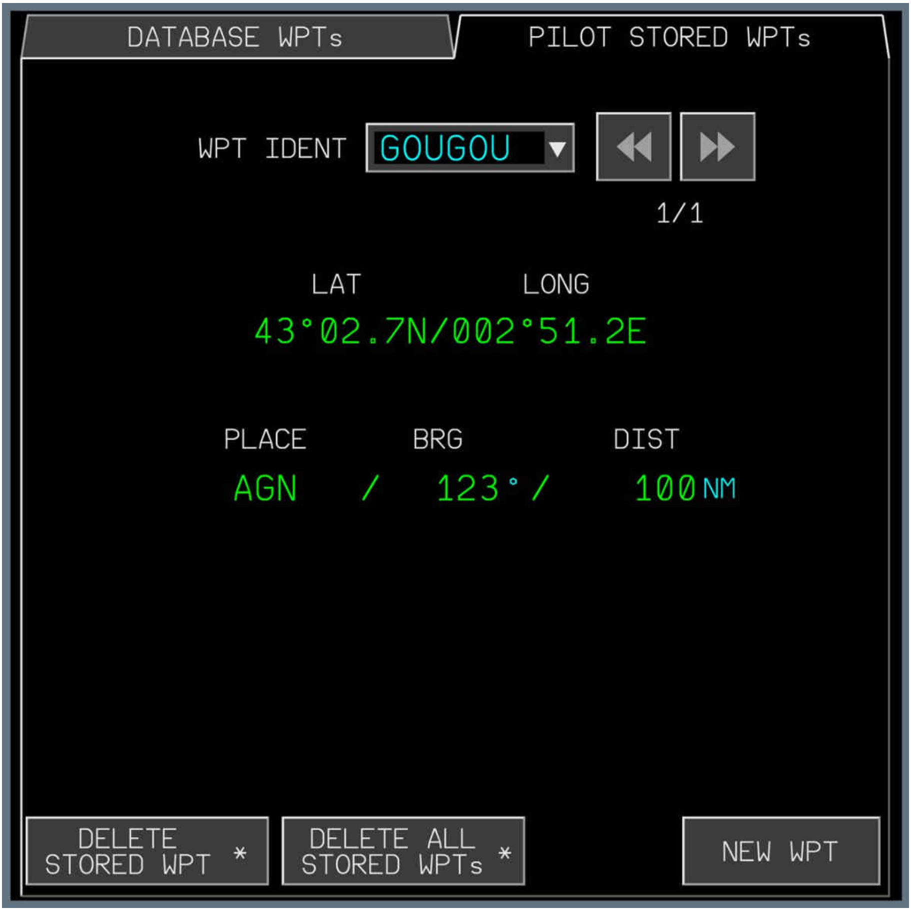
- Place/distance waypoint:

Place/Distance Waypoint


DATABASE WPTs
PILOT STORED WPTs
WPT IDENT
GOUGOU
1/1
LAT
LONG
44°04.8N/011°00.3E
PLACE
DIST
AGN / 100NM
DELETE STORED WPT *
DELETE ALL STORED WPTs *
NEW WPT

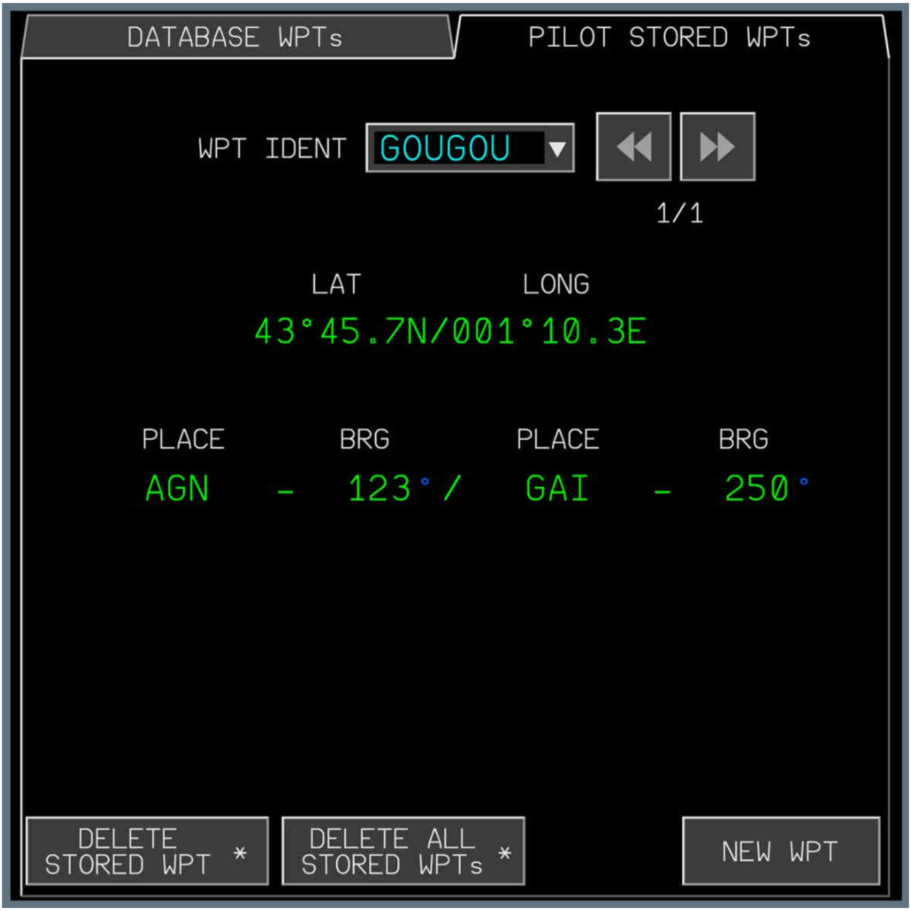
- Place/bearing/distance waypoint:

Place/Bearing/Distance Waypoint


DATABASE WPTs
PILOT STORED WPTs
WPT IDENT
GOUGOU
1/1
LAT
LONG
43°02.7N/002°51.2E
PLACE
BRG
DIST
AGN / 123° / 100NM
DELETE STORED WPT *
DELETE ALL STORED WPTs *
NEW WPT

- Place-bearing/place-bearing waypoint:

Place-Bearing/Place-Bearing Waypoint

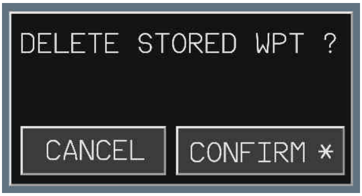

DATABASE WPTs
PILOT STORED WPTs
WPT IDENT
GOUGOU
1/1
LAT
LONG
43°45.7N/001°10.3E
PLACE
BRG
PLACE
BRG
AGN - 123° / GAI - 250°
DELETE STORED WPT *
DELETE ALL STORED WPTs *
NEW WPT

Ident.: DSC-22-FMS-20-20-20-140-00003921.0001001 / 22 APR 14

DELETE STORED WPT BUTTON

When clicked, deletes the pilot-stored waypoint that is currently displayed.
The flight crew must perform a confirmation action.

Confirmation Window



DELETE STORED WPT ?

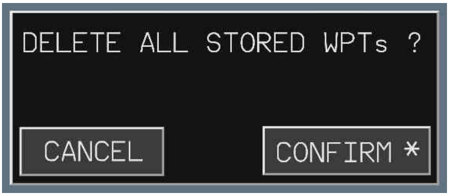
If the pilot-stored waypoint is still used by the FMS, it is not deleted. The FMS message area displays the F-PLN ELEMENT RETAINED message (*Refer to message*).

Ident.: DSC-22-FMS-20-20-20-140-00003922.0001001 / 22 APR 14

DELETE ALL STORED WPTs BUTTON

When clicked, deletes all pilot-stored waypoints.
The flight crew must perform a confirmation action.

Confirmation Window



DELETE ALL STORED WPTs ?

If there are pilot-stored waypoints that are still used by the FMS, they are not deleted. The FMS message area displays the F-PLN ELEMENT RETAINED message (*Refer to message*).

L2 The Operator can decide (via the AMI file) to automatically delete all pilot-stored elements, when the DONE flight phase becomes active.

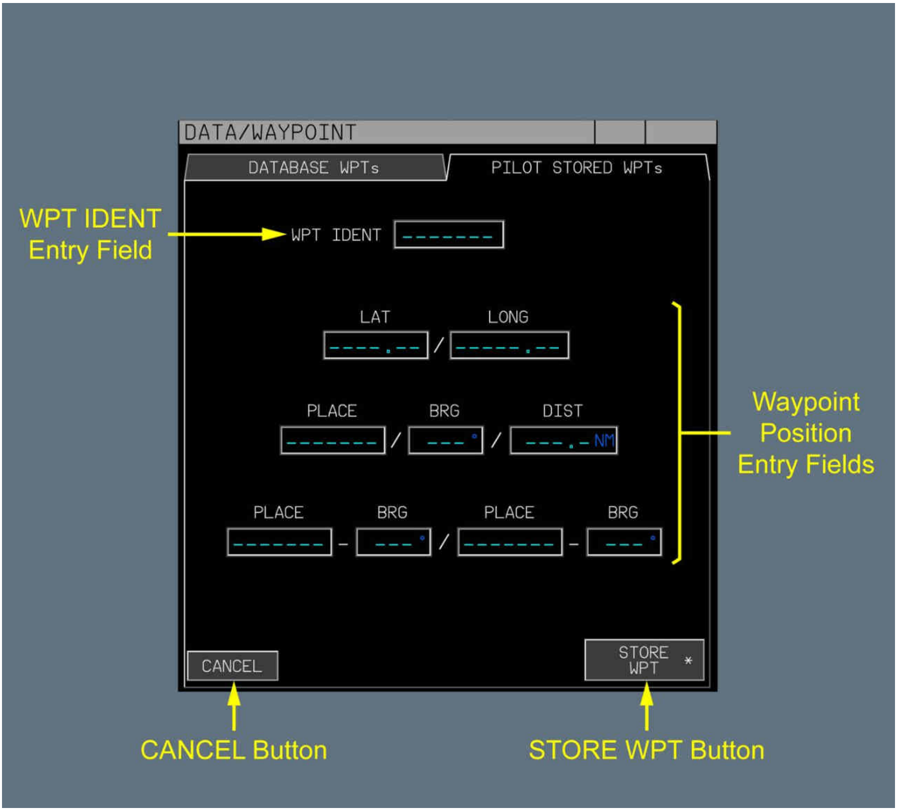
Ident.: DSC-22-FMS-20-20-20-140-00003923.0001001 / 22 APR 14

NEW WPT BUTTON

When clicked, displays the NEW WPT function on the PILOT STORED WPTs panel (*Refer to NEW WPT Function*).

Ident.: DSC-22-FMS-20-20-20-140-00003924.0001001 / 22 APR 14

NEW WPT FUNCTION


DATA/WAYPOINT
DATABASE WPTs
PILOT STORED WPTs
WPT IDENT

LAT
LONG
----.--
-----.--
PLACE
BRG
DIST
NM
PLACE
BRG
PLACE
BRG
CANCEL
STORE WPT
*
WPT IDENT Entry Field
Waypoint Position Entry Fields
CANCEL Button
STORE WPT Button

NEW WPT Function

Ident.: DSC-22-FMS-20-20-20-140-00003925.0001001 / 22 APR 14

WPT IDENT ENTRY FIELD [NEW WPT]

Indicates the ident of the new waypoint.

ENTRY FORMAT

For the entry format of:

- Waypoint, *Refer to DSC-22-FMS-20-80 WAYPOINT*
- Navaid, *Refer to DSC-22-FMS-20-80 NAVAID IDENT*

- Airport, *Refer to DSC-22-FMS-20-80 AIRPORT (ARPT)*
- Runway, *Refer to DSC-22-FMS-20-80 RWY IDENT*.

Ident.: DSC-22-FMS-20-20-20-140-00003926.0001001 / 22 APR 14

WAYPOINT POSITION ENTRY FIELDS

The flight crew can create a waypoint by entering either:
- A latitude and longitude, or
- A place/bearing/distance, or
- A place-bearing/place-bearing.

ENTRY FORMAT

For the entry format of:
- Latitude, *Refer to DSC-22-FMS-20-80 LAT*
- Longitude, *Refer to DSC-22-FMS-20-80 LONG*
- Place, *Refer to DSC-22-FMS-20-80 PLACE*
- Bearing, *Refer to DSC-22-FMS-20-80 BRG*
- Distance, *Refer to DSC-22-FMS-20-80 DIST*.

Ident.: DSC-22-FMS-20-20-20-140-00003927.0001001 / 22 APR 14

STORE WPT BUTTON

When clicked, stores the new waypoint in the pilot-stored elements database.
The pilot-stored elements database is limited to 99 waypoints.

L2 If the pilot-stored waypoints database is full, the first-created waypoint that is not part of the flight plan is deleted. If the FMS uses all of the 99 waypoints, the waypoint creation is rejected, and the FMS message area displays the 99 WPTs MAX : ALL IN USE message is displayed (*Refer to message*).

Ident.: DSC-22-FMS-20-20-20-140-00003928.0001001 / 14 APR 14

CANCEL BUTTON

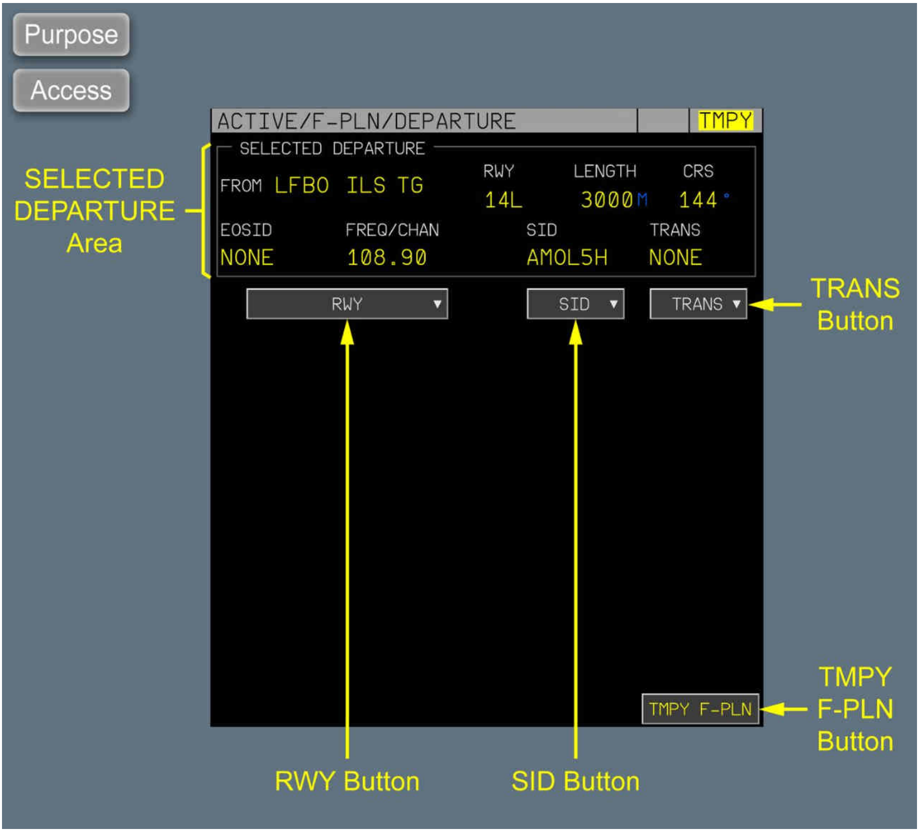
When clicked, cancels the NEW WPT function.

DEPARTURE PAGE

Applicable to: ALL

Ident.: DSC-22-FMS-20-20-20-150-00002714.0001001 / 22 APR 14

DEPARTURE Page



ACTIVE/F-PLN/DEPARTURE TMPY

SELECTED DEPARTURE
FROM LFBO ILS TG
RWY 14L
LENGTH 3000M
CRS 144°
EOSID NONE
FREQ/CHAN 108.90
SID AMOL5H
TRANS NONE

Purpose
Access
SELECTED DEPARTURE Area
RWY ▾
SID ▾
TRANS ▾
TRANS Button
TMPY F-PLN
TMPY F-PLN Button
RWY Button
SID Button

Ident.: DSC-22-FMS-20-20-20-150-00003929.0001001 / 22 APR 14

PURPOSE

The DEPARTURE page enables the flight crew to insert or change the departure procedure.
The DEPARTURE page is available for the active and secondary flight plans.

LINKS

For information about the DEPARTURE revision, *Refer to DSC-22-FMS-10-40-20 Purpose*.

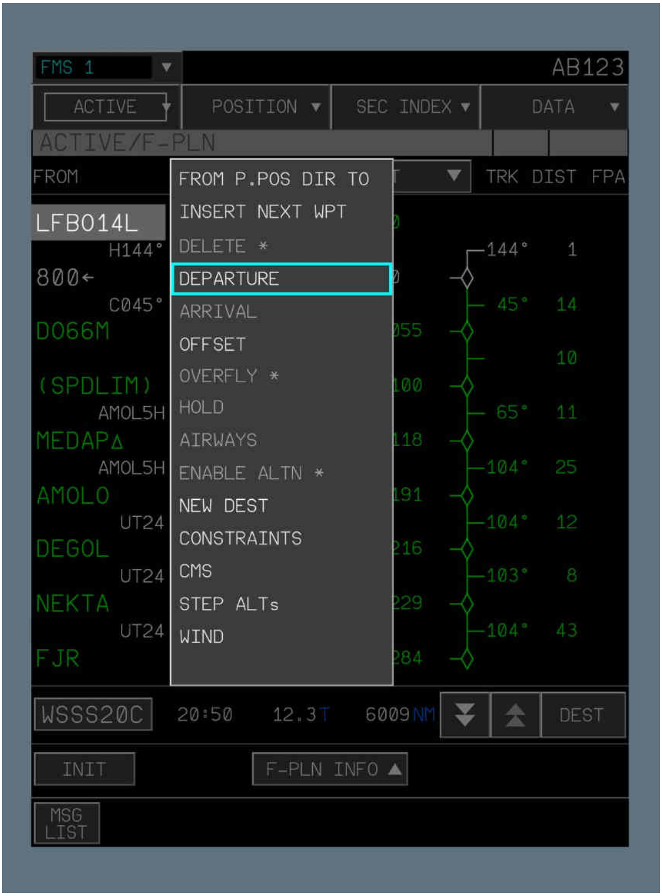
Ident.: DSC-22-FMS-20-20-20-150-00003930.0001001 / 14 APR 14

ACCESS

The flight crew can access the DEPARTURE page, via:

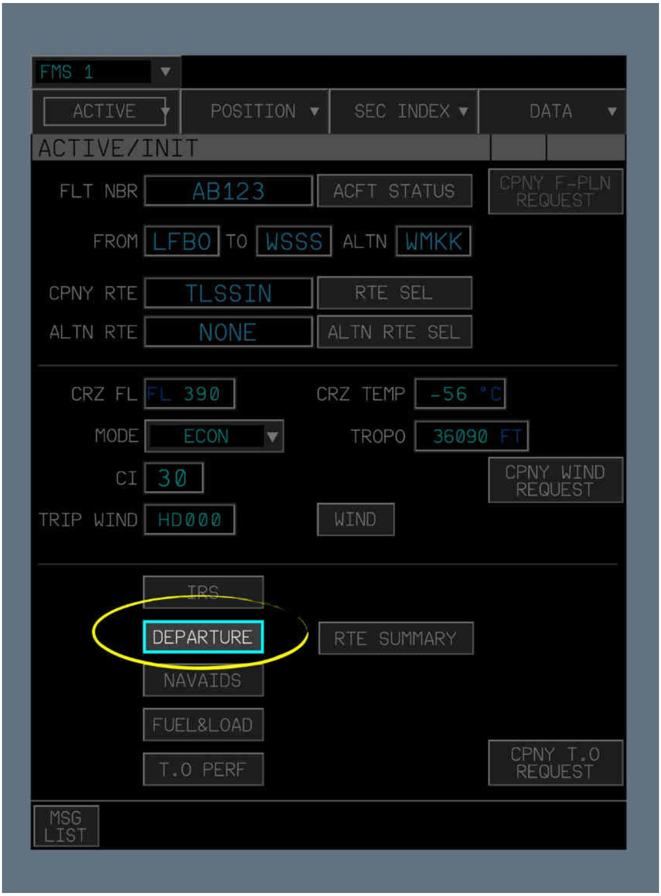
- The F-PLN page, by selecting the DEPARTURE revision in the waypoint revisions menu of the:
  - Departure airport
  - Destination airport, if there is an alternate flight plan

F-PLN Page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN
FROM
TRK DIST FPA
LFBO14L
H144°
800←
C045°
D066M
(SPDLIM)
AMOL5H
MEDAPA
AMOL5H
AMOLO
UT24
DEGOL
UT24
NEKTA
UT24
FJR
FROM P.POS DIR TO
INSERT NEXT WPT
DELETE *
DEPARTURE
ARRIVAL
OFFSET
OVERFLY *
HOLD
AIRWAYS
ENABLE ALTN *
NEW DEST
CONSTRAINTS
CMS
STEP ALTs
WIND
144° 1
45° 14
10
65° 11
104° 25
104° 12
103° 8
104° 43
WSSS20C
20:50
12.3T
6009NM
DEST
INIT
F-PLN INFO
MSG LIST

- The ACTIVE/INIT page, by clicking on the DEPARTURE button.

ACTIVE/INIT Page

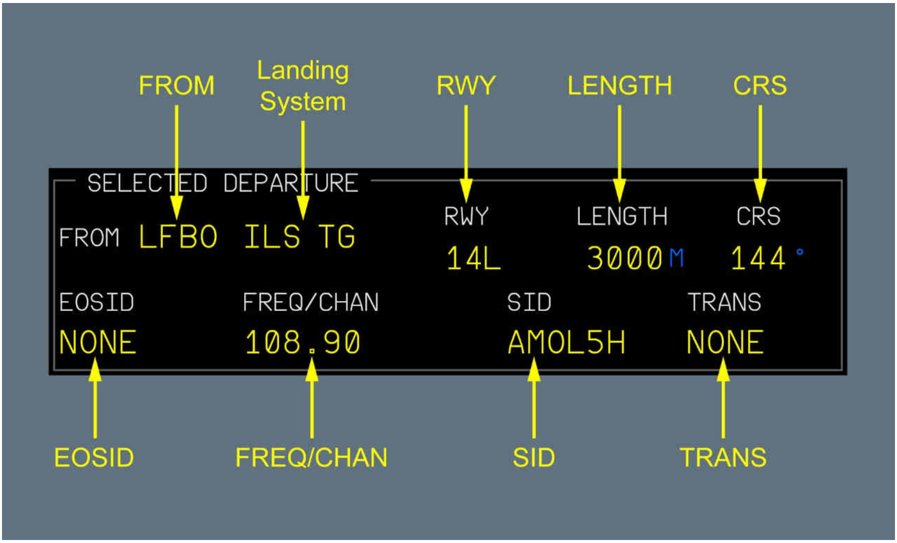


FMS 1
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/INIT
FLT NBR
AB123
ACFT STATUS
CPNY F-PLN REQUEST
FROM
LFBO
TO
WSSS
ALTN
WMKK
CPNY RTE
TLSSIN
RTE SEL
ALTN RTE
NONE
ALTN RTE SEL
CRZ FL
FL 390
CRZ TEMP
-56 °C
MODE
ECON
TROPO
36090 FT
CI
30
CPNY WIND REQUEST
TRIP WIND
HD000
WIND
IRS
DEPARTURE
RTE SUMMARY
NAVAIDS
FUEL&LOAD
T.O PERF
CPNY T.O REQUEST
MSG LIST

Ident.: DSC-22-FMS-20-20-20-150-00003931.0001001 / 22 APR 14

SELECTED DEPARTURE AREA

SELECTED DEPARTURE Area



SELECTED DEPARTURE
FROM LFBO ILS TG
RWY 14L
LENGTH 3000M
CRS 144°
EOSID NONE
FREQ/CHAN 108.90
SID AMOL5H
TRANS NONE

This area displays the selected departure procedure parameters.

L2 The information appears in green, if the departure information is part of the active flight plan. It appears in yellow, if the flight crew created a temporary flight plan, by selecting or changing the departure procedure.

Note: *If there is a temporary flight plan that was created by a revision other than the DEPARTURE revision, the information is displayed in green.*

The information is displayed in white for the secondary flight plans.

L1 All fields, except FROM, display dashes, if the flight crew did not make any selection.

FROM

Indicates the ident of the:
- Departure airport, if the flight crew displays the DEPARTURE page for the destination flight plan
- Destination airport, if the flight crew displays the DEPARTURE page for the alternate flight plan.

LANDING SYSTEM

Indicates the type and ident of the landing system of the selected departure runway.

RWY

Indicates the selected departure runway.

LENGTH

Indicates the navigation database runway length of the selected departure runway.

CRS

Indicates the navigation database runway course of the selected departure runway.

EOSID

Indicates the EOSID that is associated with the selected departure runway.
NONE is displayed, if there is no EOSID in the navigation database for the selected departure runway.

FREQ/CHAN

Indicates the frequency or channel of the landing system of the selected departure runway.

SID

Indicates the SID that the flight crew selected from the SID list (*Refer to SID Button*).

TRANS

Indicates the departure TRANS that the flight crew selected from the TRANS list (*Refer to TRANS Button*).

Ident.: DSC-22-FMS-20-20-20-150-00003932.0001001 / 22 APR 14

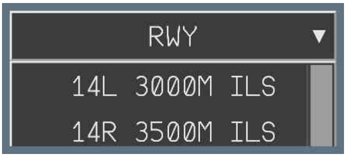
RWY BUTTON

When clicked, displays the RWY list.

The RWY list displays all of the runways that are compatible with the:
- Departure airport, if the flight crew displays the DEPARTURE page for the destination flight plan
- Destination airport, if the flight crew displays the DEPARTURE page for the alternate flight plan.

For each runway, the RWY list displays:
- The length of the runway
- The landing system that is associated with the runway.

RWY List



RWY ▼

14L 3000M ILS

14R 3500M ILS

When the flight crew selects a runway, the FMS creates(updates) a temporary flight plan, and completes(updates) the following fields in the SELECTED DEPARTURE area:
- RWY
- LENGTH
- CRS
- EOSID
- Landing system
- FREQ/CHAN.

Ident.: DSC-22-FMS-20-20-20-150-00003933.0001001 / 22 APR 14

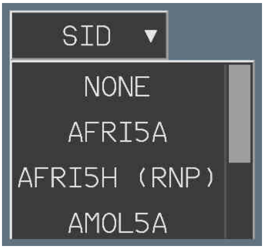
SID BUTTON

When clicked, displays the SID list.

L2 *Note: The flight crew can display the SID list, only if a departure runway is selected.*

L1 The SID list displays all of the SIDs that are compatible with the selected departure runway.
The first option of the SID list is NONE.
If a SID is part of an RNP AR procedure, the (RNP) label appears next to the SID ident.

SID List



SID ▼

NONE

AFRI5A

AFRI5H (RNP)

AMOL5A

L2 *Note: The NONE option is automatically selected, when the flight crew selects a departure runway and there is no compatible SID.*
When the flight crew selects NONE, or when there is no compatible SID, a default leg, up to 1 500 ft on the runway axis, is created.

L1 When the flight crew selects a SID or the NONE option, the FMS creates(updates) a temporary flight plan, and completes(updates) the SID field in the SELECTED DEPARTURE area.

Ident.: DSC-22-FMS-20-20-20-150-00003934.0001001 / 22 APR 14

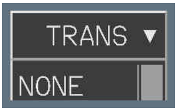
TRANS BUTTON

When clicked, displays the TRANS list.

L2 *Note: The flight crew can display the TRANS list, only if a departure runway and a SID are selected.*

L1 The TRANS list displays all of the TRANS that are compatible with the selected departure runway and SID.
The first option in the TRANS list is NONE.
If a TRANS is part of an RNP AR procedure, the (RNP) label appears next to the TRANS ident.

TRANS List



L2 *Note: The NONE option is automatically selected, when all of the following occur:*
- *The flight crew selects a departure runway and a SID*
- *There is no compatible TRANS.*

L1 When the flight crew selects a TRANS or the NONE option, the FMS creates(updates) a temporary flight plan, and completes(updates) the TRANS field in the SELECTED DEPARTURE area.

Ident.: DSC-22-FMS-20-20-20-150-00003935.0001001 / 22 APR 14

TMPY F-PLN BUTTON

When clicked, displays the ACTIVE/F-PLN page (*Refer to page*).

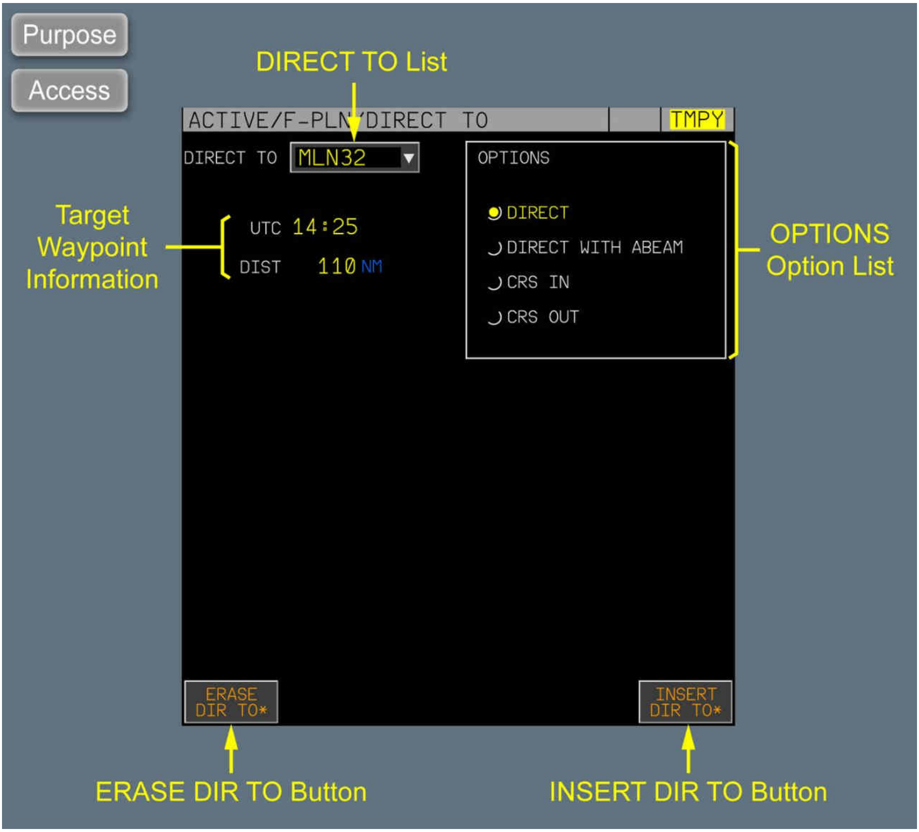
L2 The TMPY F-PLN button is displayed, only if there is a temporary flight plan. If there is no temporary flight plan, the RETURN button is displayed instead of the TMPY F-PLN button. When the flight crew clicks on the RETURN button, the F-PLN page appears.

DIRECT TO PAGE

Applicable to: ALL

Ident.: DSC-22-FMS-20-20-20-160-00002715.0001001 / 22 APR 14

DIRECT TO Page


Purpose
Access
DIRECT TO List
ACTIVE/F-PLN/DIRECT TO
TMPY
DIRECT TO
MLN32
OPTIONS
DIRECT
DIRECT WITH ABEAM
CRS IN
CRS OUT
Target Waypoint Information
UTC 14:25
DIST 110 NM
OPTIONS Option List
ERASE DIR TO*
INSERT DIR TO*
ERASE DIR TO Button
INSERT DIR TO Button

Ident.: DSC-22-FMS-20-20-20-160-00003936.0001001 / 22 APR 14

PURPOSE

The DIRECT TO page enables the flight crew to insert:
- A direct flight leg (DIRECT)
- A direct flight leg with abeam waypoints (DIRECT WITH ABEAM)

- A direct flight leg to intersect an inbound course (CRS IN)
- A direct flight leg to intersect an outbound course (CRS OUT).

The DIRECT TO page is available for the active flight plan only.

LINKS

For information about the DIR TO revision, *Refer to DSC-22-FMS-10-40-20 Purpose*.

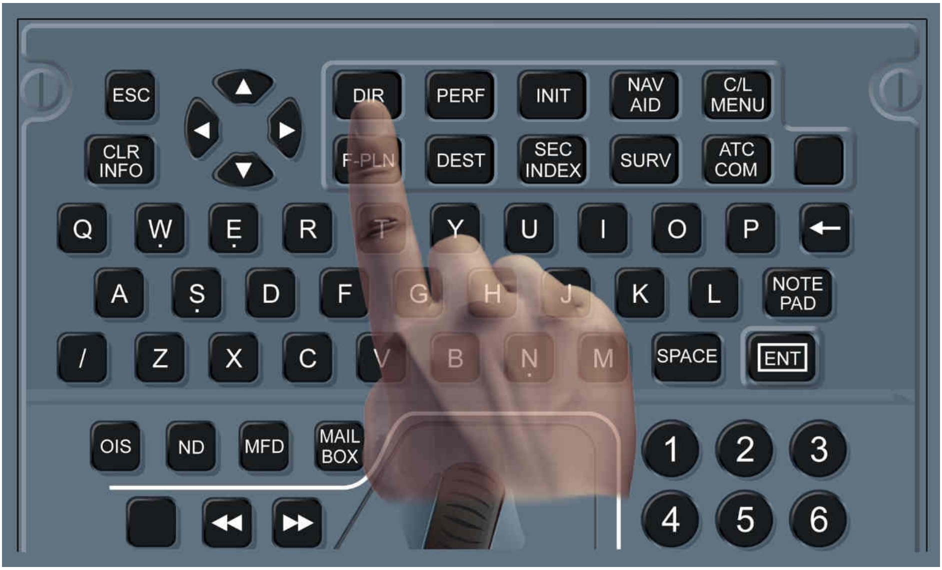
Ident.: DSC-22-FMS-20-20-20-160-00003937.0001001 / 14 APR 14

ACCESS

The flight crew can access the DIRECT TO page via:

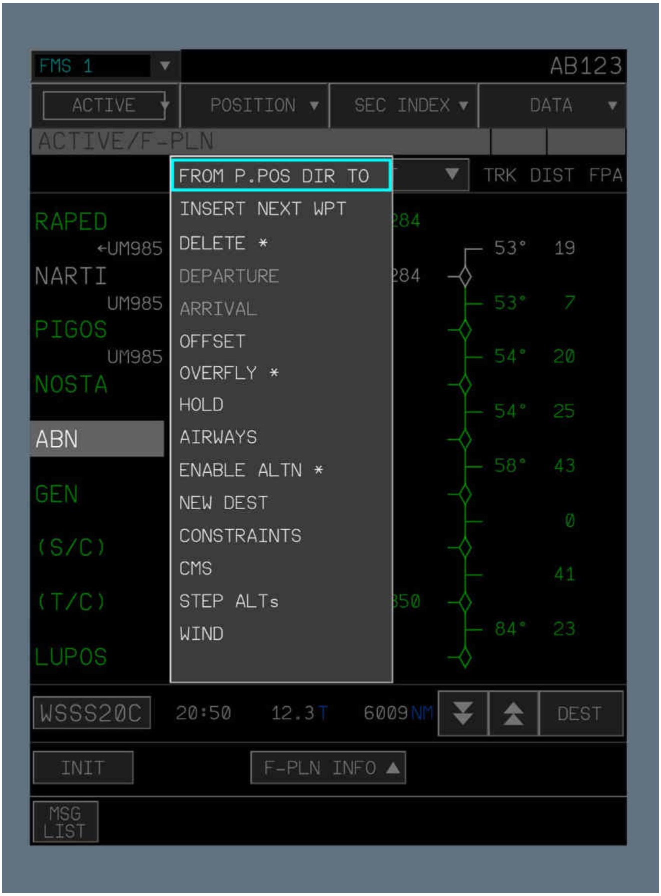
- The KCCU, by pressing the DIR key

KCCU


ESC
CLR INFO
DIR
PERF
INIT
NAV AID
C/L MENU
F-PLN
DEST
SEC INDEX
SURV
ATC COM
Q
W
E
R
T
Y
U
I
O
P
A
S
D
F
G
H
J
K
L
NOTE PAD
/
Z
X
C
V
B
N
M
SPACE
ENT
OIS
ND
MFD
MAIL BOX
1
2
3
4
5
6

- The ACTIVE/F-PLN page, by selecting FROM P.POS DIR TO in the waypoint revisions menu that is associated with the target waypoint.

ACTIVE/F-PLN Page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN
FROM P.POS DIR TO
INSERT NEXT WPT
DELETE *
DEPARTURE
ARRIVAL
OFFSET
OVERFLY *
HOLD
AIRWAYS
ENABLE ALTN *
NEW DEST
CONSTRAINTS
CMS
STEP ALTs
WIND
TRK DIST FPA
RAPED
←UM985
NARTI
UM985
PIGOS
UM985
NOSTA
ABN
GEN
(S/C)
(T/C)
LUPOS
53° 19
53° 7
54° 20
54° 25
58° 43
0
41
84° 23
WSSS20C
20:50
12.3T
6009NM
DEST
INIT
F-PLN INFO
MSG LIST

L2 The flight crew cannot access the DIRECT TO page, when:

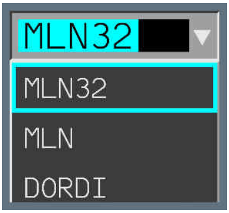
- A temporary flight plan that is not created by a DIR TO is on standby
  The FMS message area displays the INSERT OR ERASE TMPY F-PLN FIRST message (*Refer to message*).
- The aircraft position is not valid.
  The FMS message area displays the ACFT POSITION NOT VALID message (*Refer to message*).

Ident.: DSC-22-FMS-20-20-20-160-00003938.0001001 / 22 APR 14

DIRECT TO LIST

Indicates the target waypoint of the DIR TO.
The flight crew enters the target waypoint via the keyboard, or by selecting the target waypoint from the DIRECT TO list.
The DIRECT TO list displays all of the flight plan waypoints between the FROM waypoint and the destination airport.

DIRECT TO List



The target waypoint can be one of the following:
- A waypoint, navaid, airport, or runway of the navigation database or pilot-stored elements database
- A latitude/longitude waypoint
- A place/bearing/distance waypoint
- A place-bearing/place-bearing waypoint.

If the flight crew inserts a target waypoint that is a latitude/longitude, place/bearing/distance, or place-bearing/place-bearing waypoint, the FMS stores this waypoint in the pilot-stored elements database.

L2 For more information about the pilot-stored elements database, *Refer to DSC-22-FMS-10-20 Pilot-Stored Elements Database*.

L1 The revised waypoint is automatically selected as the target waypoint, if the flight crew accesses the DIRECT TO page via the waypoint revisions menu.

ENTRY FORMAT

For the entry format of:
- Waypoint, *Refer to DSC-22-FMS-20-80 WAYPOINT*
- Navaid, *Refer to DSC-22-FMS-20-80 NAVAID IDENT*
- Airport, *Refer to DSC-22-FMS-20-80 AIRPORT (ARPT)*
- Runway, *Refer to DSC-22-FMS-20-80 RWY IDENT*
- Latitude/longitude waypoint, *Refer to DSC-22-FMS-20-80 LAT/LONG*

- Place/bearing/distance waypoint, *Refer to DSC-22-FMS-20-80 PLACE/BEARING/DISTANCE (PBD)*
- Place-bearing/place-bearing waypoint, *Refer to DSC-22-FMS-20-80 PLACE-BEARING/PLACE-BEARING (PB/PB)*.

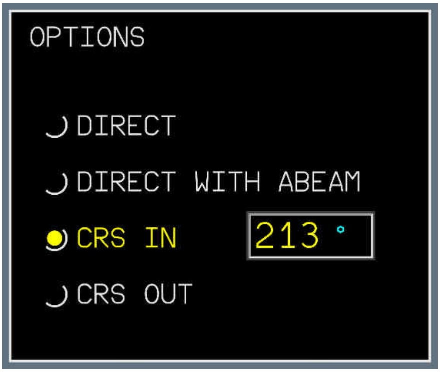
Ident.: DSC-22-FMS-20-20-20-160-00003939.0001001 / 22 APR 14

OPTIONS OPTION LIST

The flight crew selects the desired option of the DIR TO, by selecting one of the following options:
- DIRECT
- DIRECT WITH ABEAM

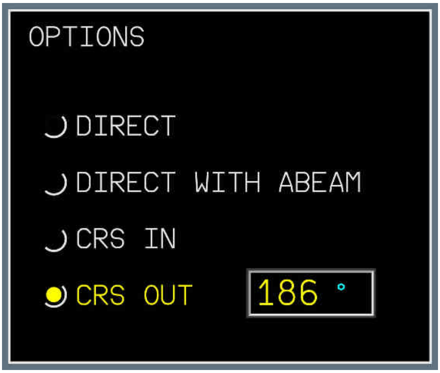
- CRS IN
  When selected, displays the CRS IN entry field. The flight crew enters the inbound course in the CRS IN entry field.
  If the target waypoint of the DIR TO is a flight plan waypoint, the CRS IN entry field displays a default value for the inbound course. The default value is the course from the flight plan waypoint that is before the target waypoint to the target waypoint.
  The flight crew can overwrite the default value.
  If the flight crew clears the manually-entered value, the default value reappears.

CRS IN Entry Field



- CRS OUT.
  When selected, displays the CRS OUT entry field. The flight crew enters the outbound course in the CRS OUT entry field.
  If the target waypoint of the DIR TO is a flight plan waypoint, the CRS OUT entry field displays a default value for the outbound course. The default value is the course from the target waypoint to the flight plan waypoint that is after the target waypoint.
  The flight crew can overwrite the default value.
  If the flight crew clears the manually-entered value, the default value reappears.

CRS OUT Entry Field



L2 The default-selected option of the OPTIONS option list is DIRECT or DIRECT WITH ABEAM, depending on the selection of the Operator via the AMI file.

L3 For information about the AMI file, *Refer to DSC-22-FMS-10-20 Airline Modifiable Information (AMI) File*.

L1 **ENTRY FORMAT**

Refer to DSC-22-FMS-20-80 CRS IN(OUT).

Ident.: DSC-22-FMS-20-20-20-160-00003940.0001001 / 22 APR 14

TARGET WAYPOINT INFORMATION

Indicates:
- The Estimated Time of Arrival (ETA), in UTC time, at the target waypoint
- The distance between the current position of the aircraft and the target waypoint.

Ident.: DSC-22-FMS-20-20-20-160-00003941.0001001 / 22 APR 14

INSERT DIR TO BUTTON

When clicked, inserts the temporary flight plan, and displays the ACTIVE/F-PLN page (*Refer to page*).

Ident.: DSC-22-FMS-20-20-20-160-00003942.0001001 / 22 APR 14

ERASE DIR TO BUTTON

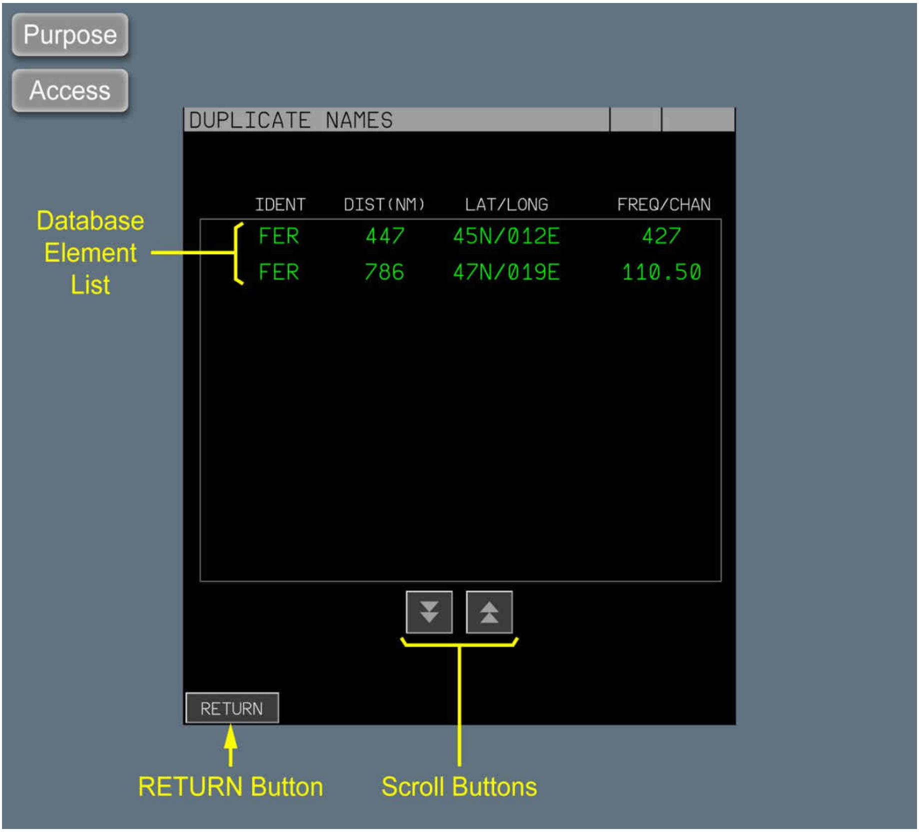
When clicked, deletes the temporary flight plan, and displays the ACTIVE/F-PLN page (*Refer to page*).

DUPLICATE NAMES PAGE

Applicable to: ALL

Ident.: DSC-22-FMS-20-20-20-170-00002716.0001001 / 22 APR 14

DUPLICATE NAMES Page



DUPLICATE NAMES

IDENT	DIST(NM)	LAT/LONG	FREQ/CHAN
FER	447	45N/012E	427
FER	786	47N/019E	110.50

Purpose
Access
Database Element List
RETURN
RETURN Button
Scroll Buttons

Ident.: DSC-22-FMS-20-20-20-170-00005612.0001001 / 22 APR 14

PURPOSE

On the DUPLICATE NAMES page, the flight crew can select the desired database element (waypoint, airport, runway, or navaid), when elements of the navigation and pilot-stored elements databases have the same ident.

Ident.: DSC-22-FMS-20-20-20-170-00003943.0001001 / 14 APR 14

ACCESS

The DUPLICATE NAMES page automatically appears, when all of the following occur:
- The flight crew enters the ident of a database element in an entry field of an FMS page
- Two or more database elements have the same ident.

Ident.: DSC-22-FMS-20-20-20-170-00003944.0001001 / 22 APR 14

DATABASE ELEMENT LIST

Indicates all of the database elements that have the same ident.

For each database element, indicates:
- The ident
- The direct distance from the aircraft
- The latitude and longitude
- The frequency, if the database element is a navaid.

The rank of a database element in the list depends on the direct distance from the present position to the database element: The first-listed database element is the nearest.

Ident.: DSC-22-FMS-20-20-20-170-00003945.0001001 / 22 APR 14

SCROLL BUTTONS

The flight crew uses the scroll down(up) button to move, page by page, downward(upward) through the database element list.

Ident.: DSC-22-FMS-20-20-20-170-00003946.0001001 / 22 APR 14

RETURN BUTTON

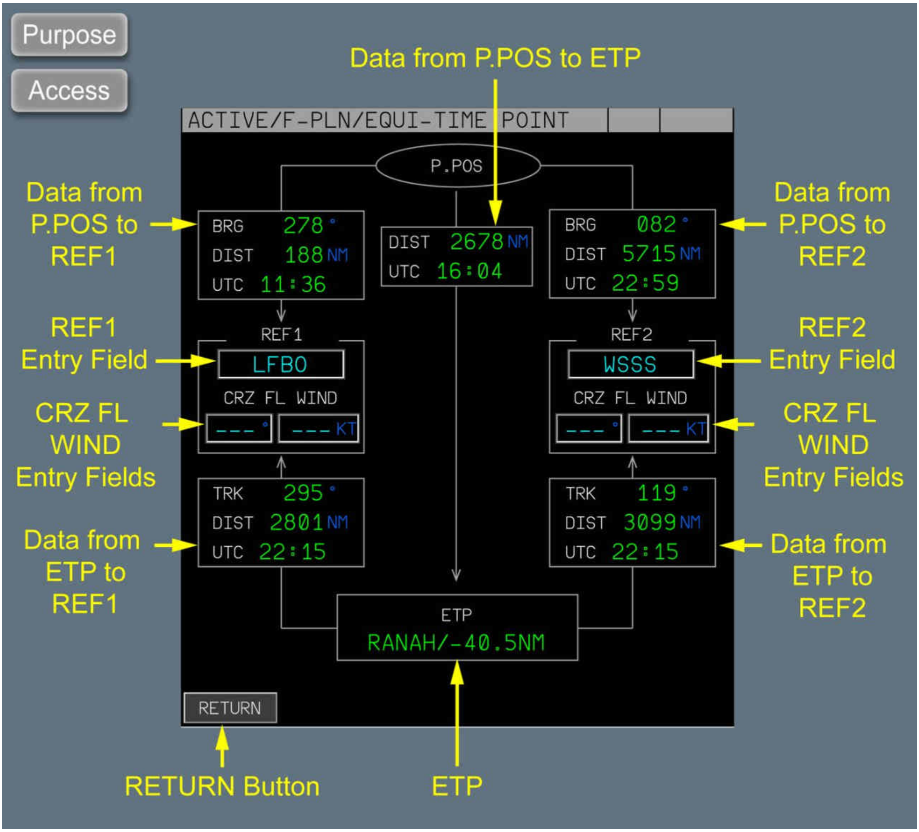
When clicked, displays the page that was displayed before the DUPLICATE NAMES page.

EQUI-TIME POINT PAGE

Applicable to: ALL

Ident.: DSC-22-FMS-20-20-20-180-00002717.0001001 / 22 APR 14

EQUI-TIME POINT Page



ACTIVE/F-PLN/EQUI-TIME POINT

P.POS

BRG 278°
DIST 188 NM
UTC 11:36

DIST 2678 NM
UTC 16:04

BRG 082°
DIST 5715 NM
UTC 22:59

REF1
LFBO
CRZ FL WIND
---° ---KT

REF2
WSSS
CRZ FL WIND
---° ---KT

TRK 295°
DIST 2801 NM
UTC 22:15

TRK 119°
DIST 3099 NM
UTC 22:15

ETP
RANAH/-40.5NM

RETURN

Data from P.POS to ETP

Data from P.POS to REF1

Data from P.POS to REF2

REF1 Entry Field

REF2 Entry Field

CRZ FL WIND Entry Fields

CRZ FL WIND Entry Fields

Data from ETP to REF1

Data from ETP to REF2

RETURN Button

ETP

Ident.: DSC-22-FMS-20-20-20-180-00003947.0001001 / 22 APR 14

PURPOSE

On the EQUI-TIME POINT page, the flight crew enters the necessary data that the FMS uses to compute the Equi-Time Point (ETP) between two reference points. The ETP is the pseudo waypoint of the flight plan from which the time to reach the first reference point (REF 1) is the same as the time to reach the second reference point (REF 2).

By default, the FMS computes the ETP between the departure airport (REF1) and the destination airport (REF2).
The EQUI-TIME POINT page displays the results of the ETP computation.

L2 *Note:* *To compute the ETP, the FMS takes into account the FMS speed mode (ECON/LRC), the speed/Mach control, and the entered wind at the reference points.*

L1 The EQUI-TIME POINT page is available for the active flight plan only.

LINKS

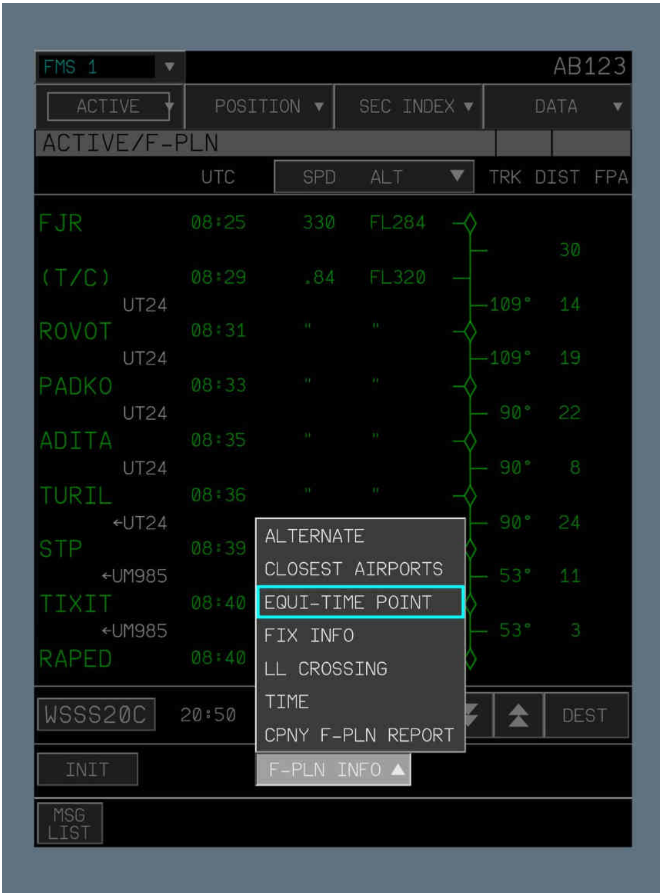
For information about the ETP function, *Refer to DSC-22-FMS-10-40-40 Equi-Time Point (ETP) Function*.

Ident.: DSC-22-FMS-20-20-20-180-00003948.0001001 / 14 APR 14

ACCESS

The flight crew can access the EQUI-TIME POINT page via the ACTIVE/F-PLN page, by selecting EQUI-TIME POINT in the F-PLN INFO menu.

ACTIVE/F-PLN Page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN

	UTC	SPD	ALT	TRK	DIST	FPA
FJR	08:25	330	FL284			
					30	
(T/C)	08:29	.84	FL320			
UT24				109°	14	
ROVOT	08:31	"	"			
UT24				109°	19	
PADKO	08:33	"	"			
UT24				90°	22	
ADITA	08:35	"	"			
UT24				90°	8	
TURIL	08:36	"	"			
←UT24				90°	24	
STP	08:39					
←UM985				53°	11	
TIXIT	08:40					
←UM985				53°	3	
RAPED	08:40					

ALTERNATE
CLOSEST AIRPORTS
EQUI-TIME POINT
FIX INFO
LL CROSSING
TIME
CPNY F-PLN REPORT
WSSS20C
20:50
DEST
INIT
F-PLN INFO
MSG LIST

Ident.: DSC-22-FMS-20-20-20-180-00003949.0001001 / 14 APR 14

DATA FROM P.POS TO REF1(2)

Indicates:

- The bearing between the aircraft present position and REF1(2)
  L2 The T letter indicates that the bearing is defined in the true north reference.
- L1 The direct distance between the aircraft present position and REF1(2)
- The Estimated Time of Arrival (ETA), in UTC(flight) time, at REF1(2).
  The computation of the ETA is based on a direct trajectory from the aircraft present position to REF1(2).

  The UTC(TIME) label indicates the time reference:
  - The UTC label indicates that the time reference is the UTC time
  - The TIME label indicates that the time reference is the flight time.

L2 The time reference is defined as follows:
  - In the PREFLIGHT flight phase:
    - ■ If there is an entered Estimated Takeoff Time (ETT), the time reference is the UTC time
    - ■ If there is no entered ETT, the time reference is the flight time

    The flight crew enters the ETT on the RTA panel of the VERT REV page (*Refer to page*).
  - In flight:
    - ■ If the UTC time is valid, the time reference is the UTC time
    - ■ If the UTC time is not valid, the time reference is the flight time.

Ident.: DSC-22-FMS-20-20-20-180-00003950.0001001 / 22 APR 14

REF1(2) ENTRY FIELD

Indicates the ident of the reference point.
The reference point can be a waypoint, an airport, a navaid, or a runway.
The default REF1 is the departure airport. The default REF2 is the destination airport. The flight crew can overwrite the default value at any time.
L2 If the entered REF1(2) ident is already selected in the REF2(1) entry field, the FMS message area displays the NOT ALLOWED message (*Refer to message*).

L1 ENTRY FORMAT

For the entry format of:
- Waypoint, *Refer to DSC-22-FMS-20-80 WAYPOINT*
- Navaid, *Refer to DSC-22-FMS-20-80 NAVAID IDENT*
- Airport, *Refer to DSC-22-FMS-20-80 AIRPORT (ARPT)*
- Runway, *Refer to DSC-22-FMS-20-80 RWY IDENT*.

Ident.: DSC-22-FMS-20-20-20-180-00003951.0001001 / 14 APR 14

CRZ FL WIND ENTRY FIELDS

The flight crew enters the wind direction and wind speed for the cruise flight level at the reference point.

ENTRY FIELD

For the entry format of:

- Wind direction, *Refer to DSC-22-FMS-20-80 WIND DIRECTION*
- Wind speed, *Refer to DSC-22-FMS-20-80 WIND SPEED*.

Ident.: DSC-22-FMS-20-20-20-180-00003952.0001001 / 14 APR 14

DATA FROM ETP TO REF1(2)

Indicates:

- The track from the ETP to REF1(2)
  L2 The T letter indicates that the track is defined in the true north reference.
- L1 The direct distance between the ETP and REF1(2)
- The Estimated Time of Arrival (ETA), in UTC(flight) time, at REF1(2).
  The computation of the ETA is based on an overfly of the ETP, and a direct trajectory from the ETP to REF1(2).

  The UTC(TIME) label indicates the time reference:
  - The UTC label indicates that the time reference is the UTC time
  - The TIME label indicates that the time reference is the flight time.

  L2 The time reference is defined as follows:
  - In the PREFLIGHT flight phase:
    - If there is an entered Estimated Takeoff Time (ETT), the time reference is the UTC time
    - If there is no entered ETT, the time reference is the flight time

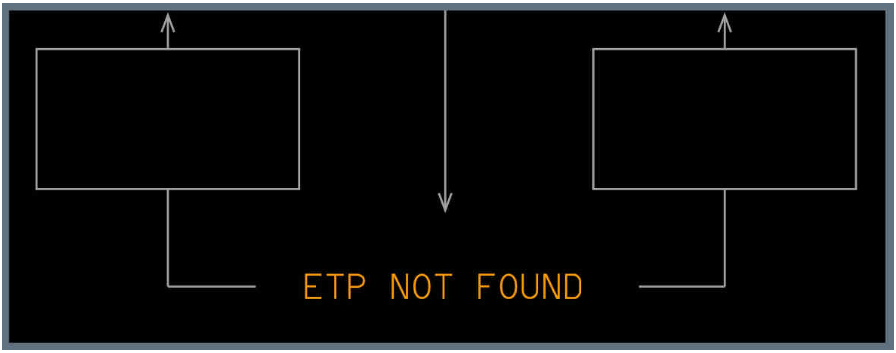
    The flight crew enters the ETT on the RTA panel of the VERT REV page (*Refer to page*).
  - In flight:
    - If the UTC time is valid, the time reference is the UTC time
    - If the UTC time is not valid, the time reference is the flight time.

Ident.: DSC-22-FMS-20-20-20-180-00003953.0001001 / 22 APR 14

ETP

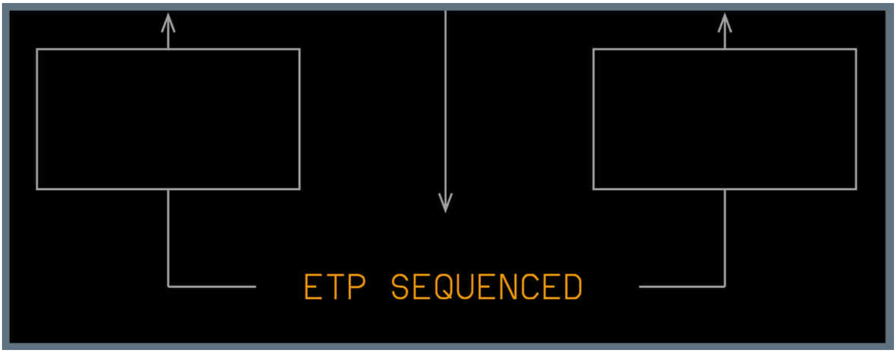
Indicates the equi-time point.
The ETP is a place/distance waypoint. The place reference is the waypoint that follows the ETP.
If the FMS cannot compute any ETP, the ETP NOT FOUND label appears instead of the ETP.

ETP NOT FOUND Label



When the ETP is sequenced, the ETP SEQUENCED label appears instead of the ETP.

ETP SEQUENCED Label



Ident.: DSC-22-FMS-20-20-20-180-00003954.0001001 / 14 APR 14

DATA FROM P.POS TO ETP

Indicates:
- The distance along the flight plan between the aircraft present position and the ETP
- The Estimated Time of Arrival (ETA), in UTC(flight) time, at the ETP.
  The computation of the ETA is based on a trajectory along the flight plan from the aircraft present position to the ETP.

  The UTC(TIME) label indicates the time reference:
  - The UTC label indicates that the time reference is the UTC time
  - The TIME label indicates that the time reference is the flight time.

L2 The time reference is defined as follows:
- In the PREFLIGHT flight phase:
  - ■ If there is an entered Estimated Takeoff Time (ETT), the time reference is the UTC time
  - ■ If there is no entered ETT, the time reference is the flight time

  The flight crew enters the ETT on the RTA panel of the VERT REV page (*Refer to page*).
- In flight:
  - ■ If the UTC time is valid, the time reference is the UTC time
  - ■ If the UTC time is not valid, the time reference is the flight time.

Ident.: DSC-22-FMS-20-20-20-180-00003955.0001001 / 22 APR 14

RETURN BUTTON

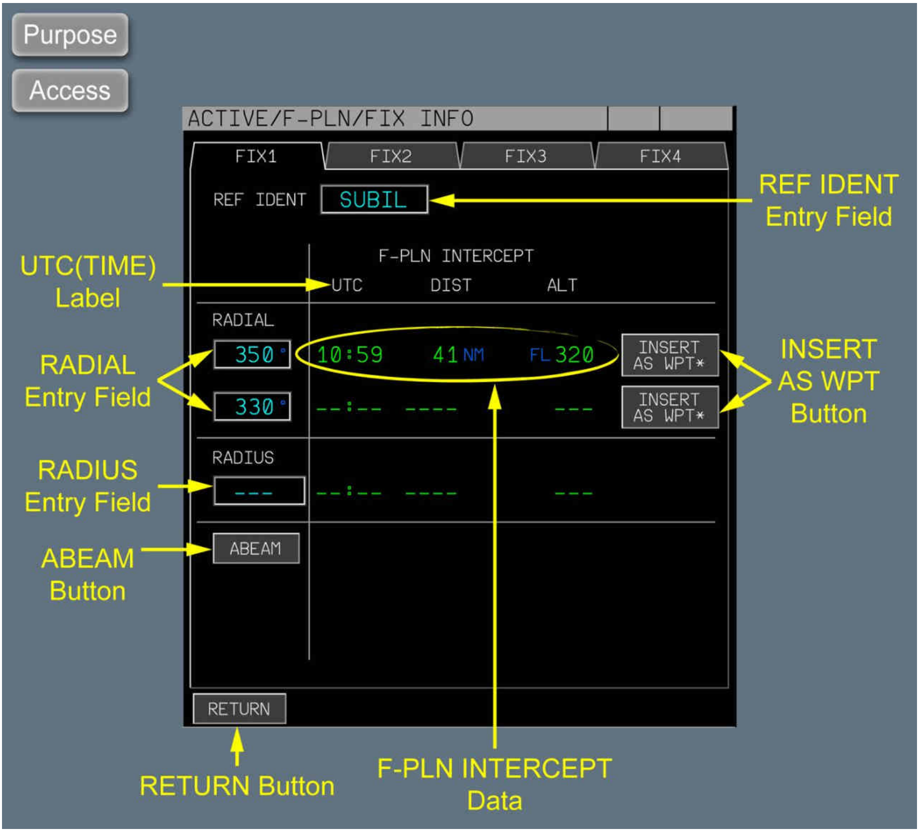
When clicked, displays the ACTIVE/F-PLN page (*Refer to page*).

FIX INFO PAGE

Applicable to: ALL

Ident.: DSC-22-FMS-20-20-20-190-00002718.0001001 / 22 APR 14

FIX INFO Page


Purpose
Access
ACTIVE/F-PLN/FIX INFO
FIX1
FIX2
FIX3
FIX4
REF IDENT
SUBIL
F-PLN INTERCEPT
UTC
DIST
ALT
RADIAL
350°
10:59
41 NM
FL 320
INSERT AS WPT*
330°
--:--

INSERT AS WPT*
RADIUS

--:--

ABEAM
RETURN
REF IDENT Entry Field
UTC(TIME) Label
RADIAL Entry Field
INSERT AS WPT Button
RADIUS Entry Field
ABEAM Button
RETURN Button
F-PLN INTERCEPT Data

Ident.: DSC-22-FMS-20-20-20-190-00003956.0001001 / 22 APR 14

PURPOSE

On the FIX1(2)(3)(4) panel of the FIX INFO page, the flight crew can:

- Define a reference fix for display on the ND
- For this reference fix:
  - Define two radials from the reference fix
    The ND displays these radials.
  - Define a circle with the reference fix as center
    The ND displays this circle.
  - Compute the abeam line from the reference fix on the flight plan
    The ND displays this abeam line.
- Insert in the flight plan the intersection points between the flight plan and the:
  - Defined radial(s)
  - Defined circle
  - Computed abeam line.

The FIX INFO page is available for the active flight plan only.

LINKS

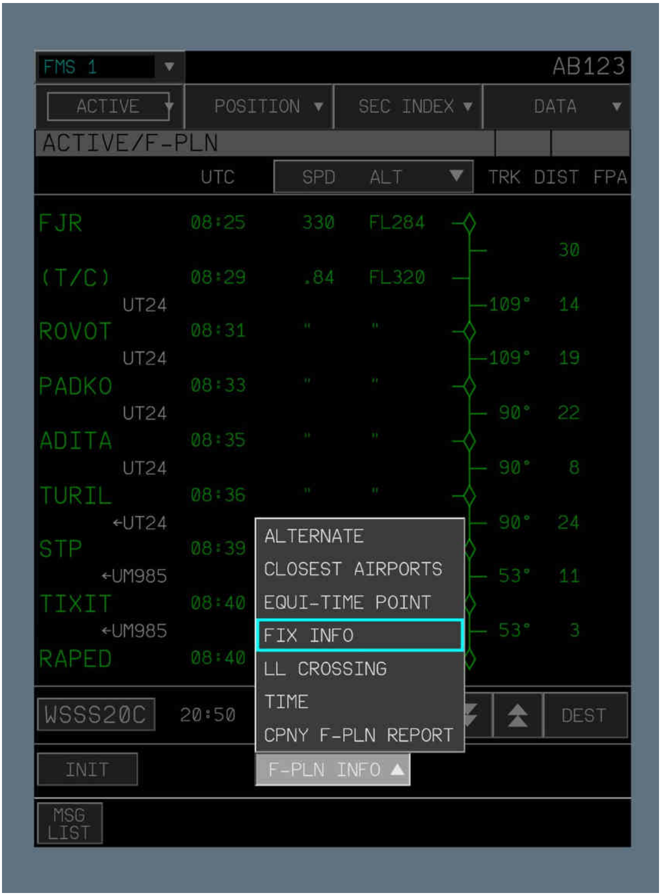
For information about the FIX INFO revision, *Refer to DSC-22-FMS-10-40-20 Purpose*

Ident.: DSC-22-FMS-20-20-20-190-00003957.0001001 / 14 APR 14

ACCESS

The flight crew can access the FIX INFO page via the ACTIVE/F-PLN page, by selecting FIX INFO in the F-PLN INFO menu.

ACTIVE/F-PLN Page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN
ALTERNATE
CLOSEST AIRPORTS
EQUI-TIME POINT
FIX INFO
LL CROSSING
TIME
CPNY F-PLN REPORT
DEST
INIT
F-PLN INFO
MSG LIST

	UTC	SPD	ALT	TRK	DIST	FPA
FJR	08:25	330	FL284			
					30	
(T/C)	08:29	.84	FL320			
UT24				109°	14	
ROVOT	08:31	"	"			
UT24				109°	19	
PADKO	08:33	"	"			
UT24				90°	22	
ADITA	08:35	"	"			
UT24				90°	8	
TURIL	08:36	"	"			
←UT24				90°	24	
STP	08:39					
←UM985				53°	11	
TIXIT	08:40					
←UM985				53°	3	
RAPED	08:40					
WSSS20C	20:50					

Ident.: DSC-22-FMS-20-20-20-190-00003958.0001001 / 22 APR 14

REF IDENT ENTRY FIELD

The flight crew enters the reference fix ident in the entry field.

The reference fix ident can be one of the following elements of the navigation database or pilot-stored elements database:

- Waypoint
- Navaid

- Airport
- Runway.

L2 For more information about:
- The navigation database, *Refer to DSC-22-FMS-10-20 Navigation Database*
- The pilot-stored elements database, *Refer to DSC-22-FMS-10-20 Pilot-Stored Elements Database*.

L1 ENTRY FORMAT

For the entry format of:
- Waypoint, *Refer to DSC-22-FMS-20-80 WAYPOINT*
- Navaid,*Refer to DSC-22-FMS-20-80 NAVAID IDENT*
- Airport, *Refer to DSC-22-FMS-20-80 AIRPORT (ARPT)*
- Runway, *Refer to DSC-22-FMS-20-80 RWY*.

Ident.: DSC-22-FMS-20-20-20-190-00003959.0001001 / 22 APR 14

UTC(TIME) LABEL

Indicates the time reference:
- The UTC label indicates that the time reference is the UTC time
- The TIME label indicates that the time reference is the flight time.

L2 The time reference is defined as follows:
- In the PREFLIGHT flight phase:
  - If there is an entered Estimated Takeoff Time (ETT), the time reference is the UTC time
  - If there is no entered ETT, the time reference is the flight time

  The flight crew enters the ETT on the RTA panel of the VERT REV page (*Refer to page*).
- In flight:
  - If the UTC time is valid, the time reference is the UTC time
  - If the UTC time is not valid, the time reference is the flight time.

Ident.: DSC-22-FMS-20-20-20-190-00003960.0001001 / 22 APR 14

RADIAL ENTRY FIELD

The flight crew enters a radial of the reference fix in the entry field.

After the flight crew enters a radial:
- The data that is related to the intersection point between the radial and the flight plan appears on the line next to the RADIUS entry field (*Refer to F-PLN INTERCEPT Data*)
  If there is no intersection point, dashes are displayed.
- The INSERT AS WPT button appears next to the F-PLN INTERCEPT data (*Refer to INSERT AS WPT Button*).

Note: When the intersection is inserted as a waypoint in the active flight plan, the radial and intersection data are no longer displayed on the page.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 RADIAL.

Ident.: DSC-22-FMS-20-20-20-190-00003961.0001001 / 22 APR 14

F-PLN INTERCEPT DATA

This line indicates for each computed intersection point:
- The ETA, in UTC(flight) time, at the intersection point
- The estimated distance along the flight plan between the aircraft present position and the intersection point
- The estimated flight level at the intersection point.

Ident.: DSC-22-FMS-20-20-20-190-00003962.0001001 / 22 APR 14

INSERT AS WPT BUTTON

When clicked, inserts in the flight plan a waypoint at the intersection between the defined radial, radius, or abeam line, and the flight plan.

Ident.: DSC-22-FMS-20-20-20-190-00003963.0001001 / 22 APR 14

RADIUS ENTRY FIELD

The flight crew enters a circle radius from the reference fix in the entry field.

After the flight crew enters a circle radius:
- The data that is related to the intersection point between the circle and the flight plan appears on the line next to the RADIUS entry field (*Refer to F-PLN INTERCEPT Data*)
  If there is no intersection point, dashes are displayed.
- The INSERT AS WPT button appears next to the F-PLN INTERCEPT data (*Refer to INSERT AS WPT Button*).

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 RADIUS.

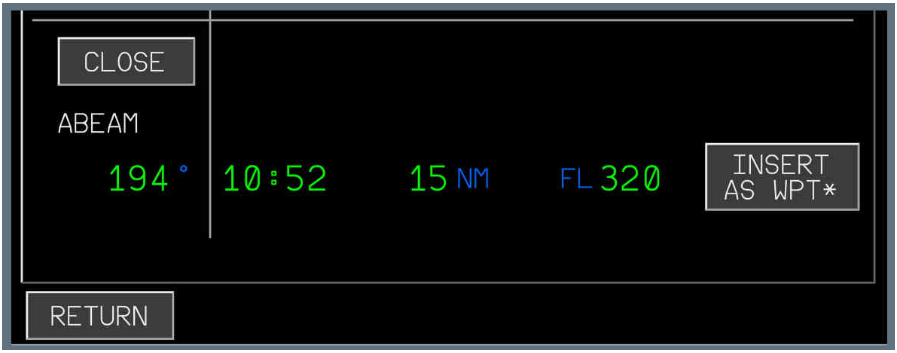
Ident.: DSC-22-FMS-20-20-20-190-00003964.0001001 / 14 APR 14

ABEAM BUTTON

When clicked:
- The FMS computes and displays the abeam radial and the associated F-PLN INTERCEPT data (*Refer to F-PLN INTERCEPT Data*)
- The INSERT AS WPT button appears next to the F-PLN INTERCEPT data (*Refer to INSERT AS WPT Button*)
- The CLOSE button appears instead of the ABEAM button.

When the flight crew clicks on the CLOSE button, the abeam data on the FIX INFO page and on the ND are removed.

Abeam Data



Ident.: DSC-22-FMS-20-20-20-190-00003965.0001001 / 22 APR 14

RETURN BUTTON

When clicked, displays the ACTIVE/F-PLN page (*Refer to page*).

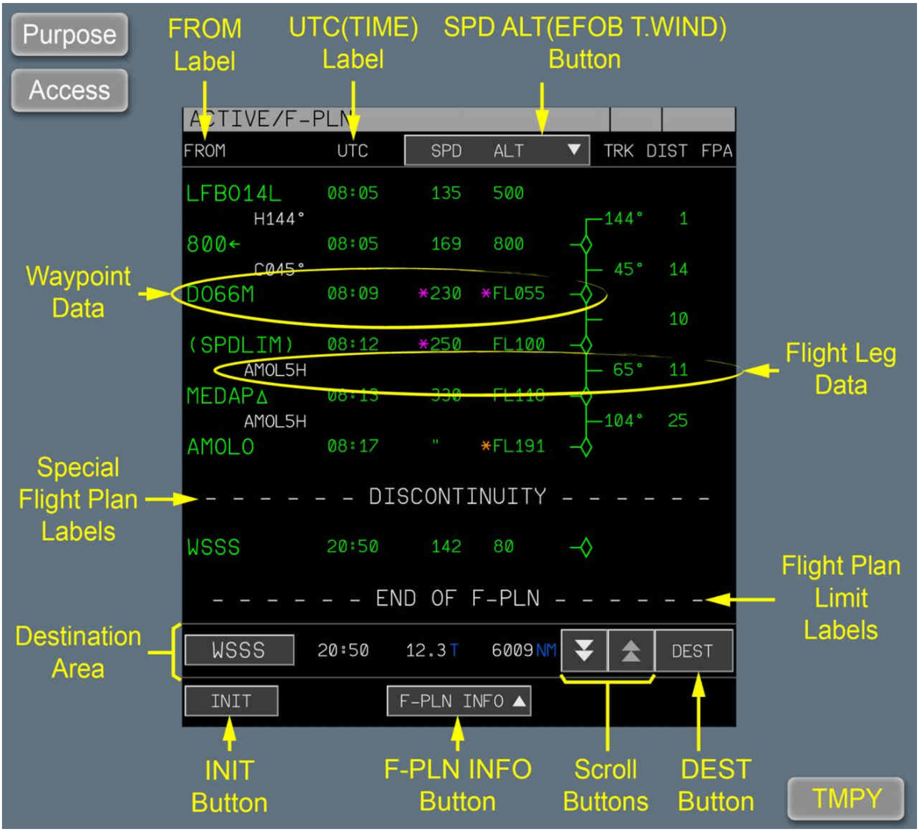
L2 The RETURN button is displayed, only if there is no temporary flight plan on standby. If there is a temporary flight plan, the TMPY F-PLN button is displayed instead of the RETURN button. When the flight crew clicked on the TMPY F-PLN button, the ACTIVE/F-PLN page appears.

F-PLN PAGE

Applicable to: ALL

Ident.: DSC-22-FMS-20-20-20-200-00002719.0001001 / 22 APR 14

F-PLN Page


Purpose
Access
FROM Label
UTC(TIME) Label
SPD ALT(EFOB T.WIND) Button
ACTIVE/F-PLN
FROM
UTC
SPD ALT
TRK DIST FPA
LFBO14L 08:05 135 500
H144°
144° 1
800← 08:05 169 800
C045°
45° 14
D066M 08:09 *230 *FL055
10
(SPDLIM) 08:12 *250 FL100
AMOL5H
65° 11
MEDAPΔ 08:13 330 FL110
AMOL5H
104° 25
AMOLO 08:17 " *FL191
- - - - - - DISCONTINUITY - - - - - -
WSSS 20:50 142 80
- - - - - - END OF F-PLN - - - - - -
WSSS 20:50 12.3T 6009NM
DEST
INIT
F-PLN INFO ▲
Waypoint Data
Flight Leg Data
Special Flight Plan Labels
Flight Plan Limit Labels
Destination Area
INIT Button
F-PLN INFO Button
Scroll Buttons
DEST Button
TMPY

Ident.: DSC-22-FMS-20-20-20-200-00003966.0001001 / 22 APR 14

PURPOSE

The F-PLN page displays textual data that is related to the lateral and vertical flight plans. This data includes:

- All flight plan waypoints and flight legs
- Time, speed, altitude, fuel, and wind predictions for each waypoint

- Track and distance between waypoints
- Flight path angle for approach waypoints
- Flight leg RNP, if any.

The F-PLN page also provides access to all lateral and vertical revisions.
The F-PLN page is available for the active and secondary flight plans.

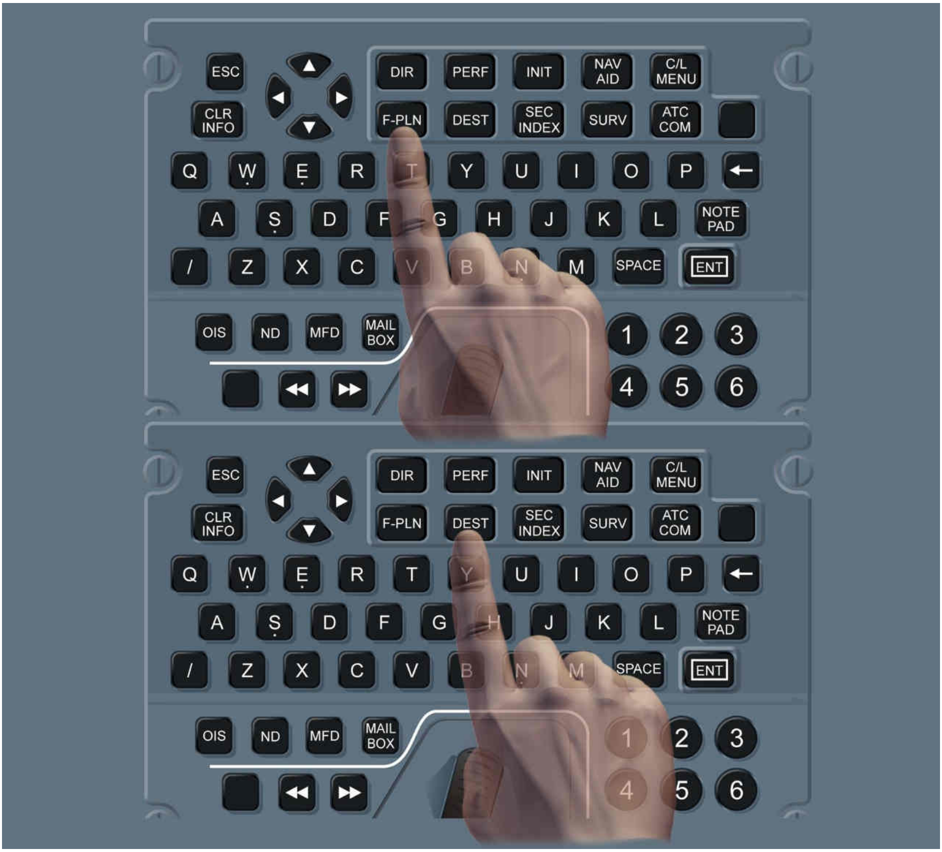
Ident.: DSC-22-FMS-20-20-20-200-00003967.0001001 / 14 APR 14

ACCESS

The flight crew can access:

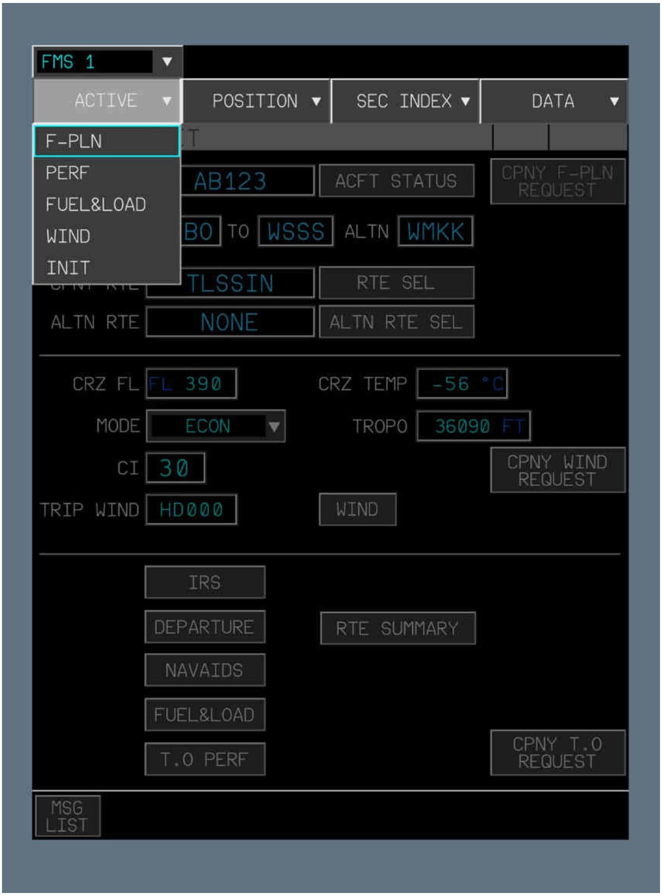
- The ACTIVE/F-PLN page via:
  - The KCCU, by pressing the F-PLN or DEST key
    When the flight crew presses the F-PLN key, the first page of the flight plan (FROM waypoint on the first line) appears.
    When the flight crew presses the DEST key, the last page of the destination flight plan (destination airport on the last line) appears.

KCCU


ESC
CLR INFO
DIR
PERF
INIT
NAV AID
C/L MENU
F-PLN
DEST
SEC INDEX
SURV
ATC COM
NOTE PAD
SPACE
ENT
OIS
ND
MFD
MAIL BOX

  - The general menu bar, by selecting F-PLN in the ACTIVE menu

General Menu Bar


FMS 1
ACTIVE
POSITION
SEC INDEX
DATA
F-PLN
PERF
FUEL&LOAD
WIND
INIT
ACFT STATUS
CPNY F-PLN REQUEST
RTE SEL
ALTN RTE SEL
CPNY WIND REQUEST
WIND
IRS
DEPARTURE
NAVAIDS
FUEL&LOAD
T.O PERF
RTE SUMMARY
CPNY T.O REQUEST
MSG LIST

AB123

BO TO WSSS ALTN WMKK

TLSSIN

ALTN RTE NONE

CRZ FL FL 390

CRZ TEMP -56 °C

MODE ECON

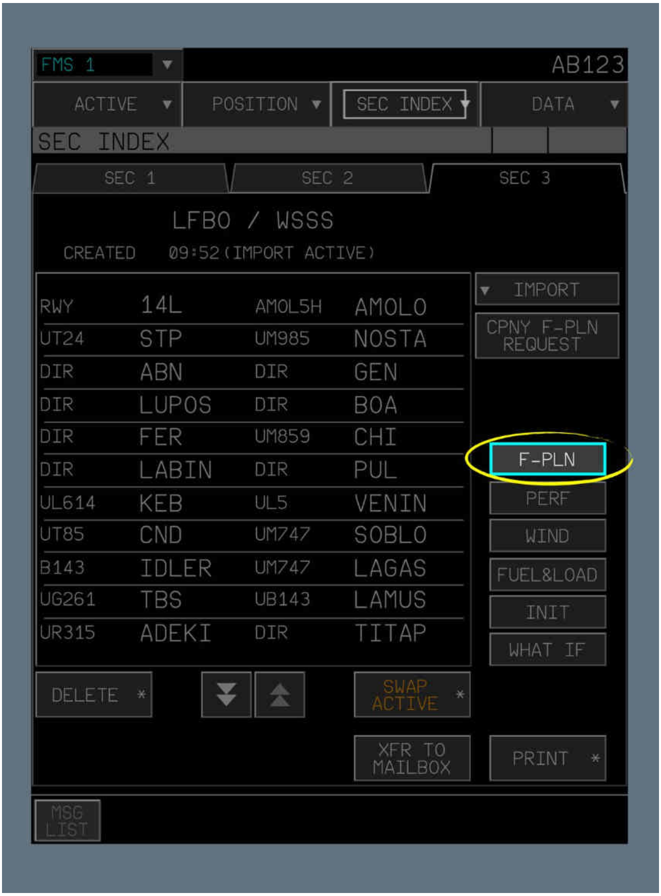
TROPO 36090 FT

CI 30

TRIP WIND HD000

- The SEC/F-PLN page via the SEC INDEX page, by clicking on the F-PLN button.

SEC INDEX Page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
SEC INDEX
SEC 1
SEC 2
SEC 3
IMPORT
CPNY F-PLN REQUEST
F-PLN
PERF
WIND
FUEL&LOAD
INIT
WHAT IF
DELETE *
SWAP ACTIVE *
XFR TO MAILBOX
PRINT *
MSG LIST

LFBO / WSSS

CREATED 09:52(IMPORT ACTIVE)

RWY	14L	AMOL5H	AMOLO
UT24	STP	UM985	NOSTA
DIR	ABN	DIR	GEN
DIR	LUPOS	DIR	BOA
DIR	FER	UM859	CHI
DIR	LABIN	DIR	PUL
UL614	KEB	UL5	VENIN
UT85	CND	UM747	SOBLO
B143	IDLER	UM747	LAGAS
UG261	TBS	UB143	LAMUS
UR315	ADEKI	DIR	TITAP

Ident.: DSC-22-FMS-20-20-20-200-00003968.0001001 / 22 APR 14

FROM LABEL

Indicates that the first line of the F-PLN page is the FROM waypoint.
The FROM label disappears, when the first line of the F-PLN page displays a waypoint that is not the FROM waypoint.

Ident.: DSC-22-FMS-20-20-20-200-00003969.0001001 / 22 APR 14

UTC(TIME) LABEL

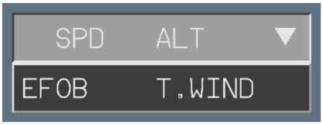
Indicates the time reference:
- The UTC label indicates that the time reference is the UTC time
- The TIME label indicates that the time reference is the flight time.

L2 The time reference is defined as follows:
- In the PREFLIGHT flight phase:
  - If there is an entered Estimated Takeoff Time (ETT), the time reference is the UTC time
  - If there is no entered ETT, the time reference is the flight time

  The flight crew enters the ETT on the RTA panel of the VERT REV page (*Refer to page*).
- In flight:
  - If the UTC time is valid, the time reference is the UTC time
  - If the UTC time is not valid, the time reference is the flight time.

Ident.: DSC-22-FMS-20-20-20-200-00003971.0001001 / 22 APR 14

SPD ALT(EFOB T.WIND) BUTTON

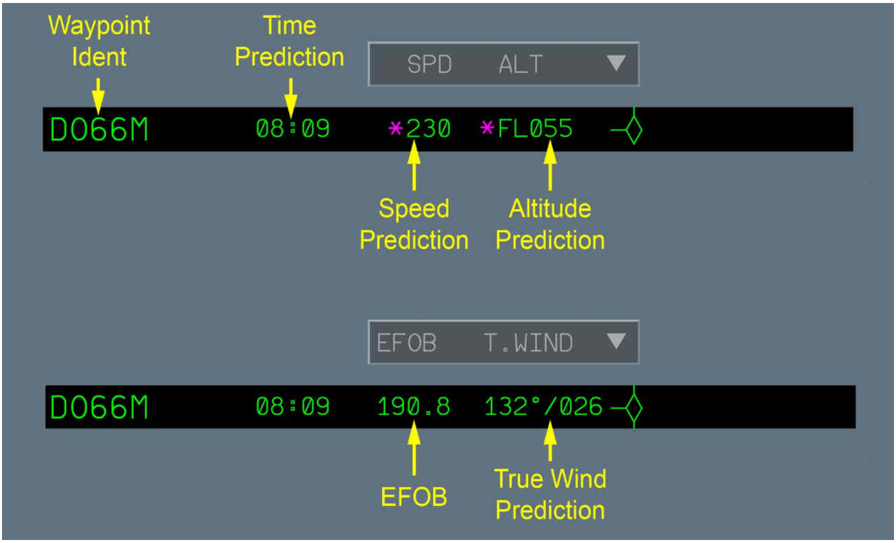


The flight crew uses this button to display either the speed and altitude predictions, or the EFOB and true wind prediction.

Ident.: DSC-22-FMS-20-20-20-200-00003973.0001001 / 28 MAY 14

WAYPOINT DATA

Waypoint Data


Waypoint Ident
Time Prediction
SPD ALT
D066M 08:09 *230 *FL055
Speed Prediction
Altitude Prediction
EFOB T.WIND
D066M 08:09 190.8 132°/026
EFOB
True Wind Prediction

Indicates for each waypoint of the flight plan:
- The waypoint ident
- The time prediction
- The speed prediction
- The altitude prediction
- The Estimated Fuel On Board (EFOB)
- The true wind prediction.

For information about flight plan predictions, *Refer to DSC-22-FMS-10-40-70 Introduction*.
The F-PLN page displays a maximum of 9 waypoint data lines.
If a temporary flight plan is on standby, only 8 waypoint data lines are displayed.

COLORS

On the ACTIVE/F-PLN page, the waypoint data is displayed in:
- White, for the TO waypoint
- Green, for the waypoints of the destination flight plan
- Blue, for the waypoints of the missed approach and the alternate flight plan.

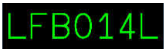
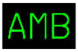
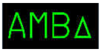
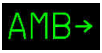
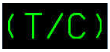
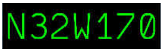
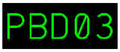
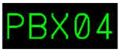
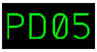
When a temporary flight plan is on standby, all waypoint data is displayed in yellow.

On the SEC/F-PLN page, the waypoint data of all waypoints is displayed in white.

Ident.: DSC-22-FMS-20-20-20-200-00003974.0001001 / 28 MAY 14

WAYPOINT IDENT

Indicates the ident of the flight plan waypoints and airports.

LFBO14L	A navigation database airport is indicated by its four-character ICAO code, followed by the selected runway, if any.
AMB	A navigation database waypoint is indicated by its ident (maximum of 7 characters).
AMB∆	A triangle next to the waypoint ident indicates that the aircraft will overfly the waypoint.
AMB→	A left or right arrow next to the waypoint ident indicates the turn direction of a procedure turn (that is stored in the navigation database).
(T/C)	A pseudo waypoint is displayed between parentheses. For more information about pseudo waypoints, *Refer to DSC-22-FMS-10-40-10 Pseudo Waypoints*.
L2 N32W170	A latitude/longitude waypoint is displayed in the XDDYDDD format: - The "X" is either “N” for north, or “S” for south - The "DD" corresponds to the two-degree characters of the latitude - The "Y" is either “E” for east, or “W” for west - The "DDD" corresponds to the three-degree characters of the longitude. For example, N32W170 corresponds to N32°45.5W170°23.3.
PBD03	A place/bearing/distance waypoint is displayed in the PBDNN format. The "NN" is a number from 01 to 20, that defines the chronological position in the list of the flight-crew created waypoints (e.g. AMB/320/5 is identified with the PBD03 ident, when this waypoint is the third flight-crew created waypoint).
PBX04	A place-bearing/place-bearing waypoint is displayed in the PBXNN format. The "NN" is a number from 01 to 20, that defines the chronological position in the list of the flight-crew-created waypoints (e.g. AMB–320/DVL–180 is identified with the PBX04 ident, when this waypoint is the fourth flight-crew-created waypoint).
PD05	A place/distance waypoint is displayed in the PDNN format. The "NN" is a number from 01 to 20, that defines the chronological position in list of the flight-crew-created waypoints (e.g. AMB/10 is identified with the PD05 ident, when this waypoint is the 5th flight-crew-created waypoint).

N42	A latitude crossing waypoint is displayed in the XNN format: - The "X" is either "N" for north, or "S" for south - The "NN" corresponds to the degrees of latitude.
E080	A longitude crossing waypoint is displayed in the YNNN format: - The Y is either "E" for east, or "W" for west - The "NNN" corresponds to the degrees of longitude.
BIS230	A radial intersection waypoint is displayed in the XXXNNN format. The "XXX" corresponds to the first- three characters of the reference fix, and the "NNN" corresponds to the radial.
D70BIS	A circle intersection waypoint is displayed in the DNNNXXX format. The "NNN" corresponds to the radius of the circle, and the "XXX" corresponds to the first-three characters of the reference fix.
ABBISBI	An abeam intersection waypoint is displayed in the ABXXXXX format. The "XXXXX" corresponds to the the first-5 characters of the reference fix.
15000	An altitude waypoint is displayed in the NNNNN format. The "NNNNN" corresponds to the altitude of the end of the flight leg.
T-P	Indicates a turning point. A turning point is inserted in the temporary flight plan, as the FROM waypoint, when a DIR TO or holding pattern at the present position is on standby. The turning point becomes a fix waypoint with the latitude/longitude of the position where the temporary flight plan is inserted.
IN-BND	An IN-BND waypoint is inserted in the temporary flight plan, as the FROM waypoint, when a DIR TO - CRS IN is on standby. The IN-BND waypoint becomes a fix waypoint with the latitude/longitude of the position where the temporary flight plan is inserted.
OUT-BND	An OUT-BND waypoint is inserted in the temporary flight plan, as the FROM waypoint, when a DIR TO - CRS OUT is on standby. The OUT-BND waypoint becomes a fix waypoint with the latitude/longitude of the position where the temporary flight plan is inserted.
PPOS	Indicates the aircraft present position. PPOS is displayed, as the FROM waypoint, when the aircraft is in a discontinuity.
INTCPT	Indicates the point at which the aircraft will intersect the FMS lateral flight plan.
MANUAL	Indicates a manual flight leg. The flight crew must manually ends the flight leg. (e.g. DIR TO).

L1 WAYPOINT REVISIONS

The waypoint ident is interactive: When clicked, opens the waypoint revisions menu (*Refer to Waypoint Revisions Menu*).

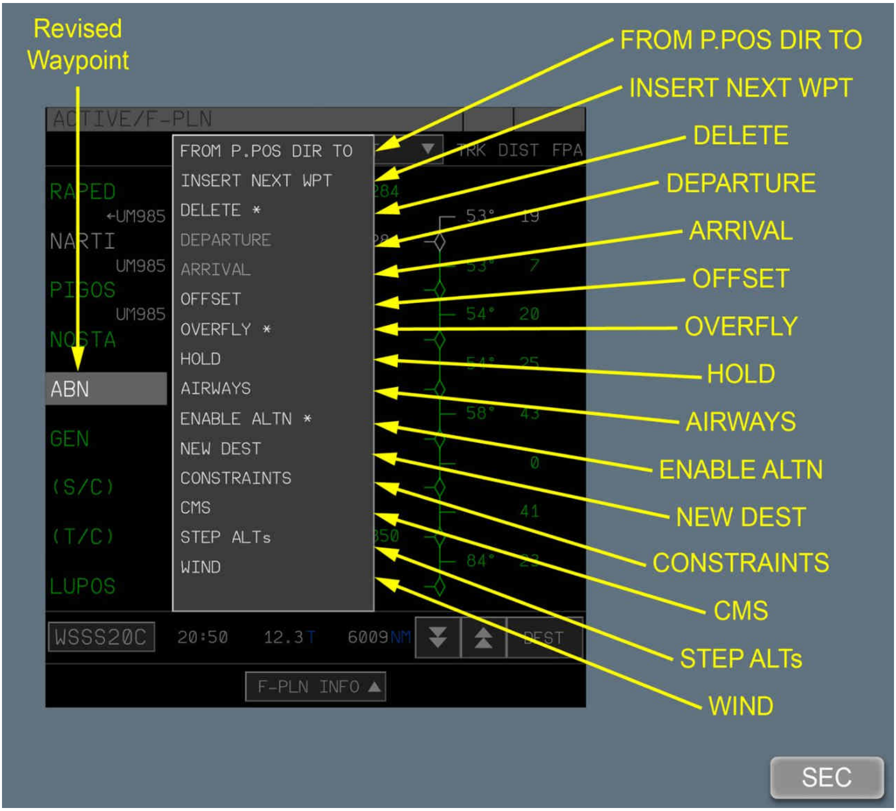
Ident.: DSC-22-FMS-20-20-20-200-00003975.0001001 / 22 APR 14

WAYPOINT REVISIONS MENU

The waypoint revisions menu provides access to the lateral and vertical revisions.
The waypoint revisions menu on the ACTIVE/F-PLN page is different from the waypoint revisions menu on the SEC/F-PLN page.

Note: *The star (*) next to the revision label indicates that the revision does not require the display of a specific page or window, before the revision is applied. When the flight crew selects a revision with no star, the MFD displays a page or window that is associated with the selected revision.*

Waypoint Revisions Menu


Revised Waypoint
ACTIVE/F-PLN
RAPED
←UM985
NARTI
UM985
PIGOS
UM985
NOSTA
ABN
GEN
(S/C)
(T/C)
LUPOS
FROM P.POS DIR TO
INSERT NEXT WPT
DELETE *
DEPARTURE
ARRIVAL
OFFSET
OVERFLY *
HOLD
AIRWAYS
ENABLE ALTN *
NEW DEST
CONSTRAINTS
CMS
STEP ALTs
WIND
TRK DIST FPA
WSSS20C
20:50
12.3T
6009NM
DEST
F-PLN INFO ▲
FROM P.POS DIR TO
INSERT NEXT WPT
DELETE
DEPARTURE
ARRIVAL
OFFSET
OVERFLY
HOLD
AIRWAYS
ENABLE ALTN
NEW DEST
CONSTRAINTS
CMS
STEP ALTs
WIND
SEC

FROM P.POS DIR TO

When selected:

- Displays the DIRECT TO page (*Refer to page*)
- Creates a temporary flight plan with a direct flight leg to the revised waypoint.

The FROM P.POS DIR TO revision is not available in the waypoint revisions menu of the SEC/F-PLN page.
For information about the DIR TO revision, *Refer to DSC-22-FMS-10-40-20 Purpose*.

INSERT NEXT WPT

When selected, opens the INSERT NEXT WPT window (*Refer to INSERT NEXT WPT Window*).

For information about the INSERT NEXT WPT revision, *Refer to DSC-22-FMS-10-40-20 Purpose*.

DELETE

When selected:
- Deletes the revised waypoint
- Creates or updates the temporary flight plan.

For information about the DELETE revision, *Refer to DSC-22-FMS-10-40-20 Purpose*.

DEPARTURE

When selected, displays the DEPARTURE page (*Refer to page*).
For information about the DEPARTURE revision, *Refer to DSC-22-FMS-10-40-20 Purpose*.

ARRIVAL

When selected, displays the ARRIVAL page (*Refer to page*).
For information about the ARRIVAL revision, *Refer to DSC-22-FMS-10-40-20 Purpose*.

OFFSET

When selected, displays the OFFSET page (*Refer to page*).
For information about the OFFSET revision, *Refer to DSC-22-FMS-10-40-20 Purpose*.

OVERFLY

When selected:
- Defines an overfly on the revised waypoint
- Creates or updates the temporary flight plan.

When there is an overfly on the revised waypoint, the waypoint revisions menu displays DELETE OVERFLY *. When selected, removes the overfly from the revised waypoint, and creates or updates the temporary flight plan.
For information about the OVERFLY revision, *Refer to DSC-22-FMS-10-40-20 Purpose*.

HOLD

When selected, displays the HOLD page (*Refer to page*).
For information about the HOLD revision, *Refer to DSC-22-FMS-10-40-20 Purpose*.

AIRWAYS

When selected, displays the AIRWAYS page (*Refer to page*).
For information about the AIRWAYS revision, *Refer to DSC-22-FMS-10-40-20 Purpose*.

ENABLE ALTN

When selected:
- Activates the alternate flight plan
- Creates or updates the temporary flight plan.

For information about the ENABLE ALTN revision, *Refer to DSC-22-FMS-10-40-20 Purpose*.

NEW DEST

When selected, displays the NEW DEST window (*Refer to NEW DEST Window*).
For information about the NEW DEST revision, *Refer to DSC-22-FMS-10-40-20 Purpose*.

CONSTRAINTS

When selected, displays the ALT panel of the VERT REV page (*Refer to page*).
For information about the ALT CSTR revision, *Refer to DSC-22-FMS-10-40-30 Purpose*.

CMS

When selected, displays the CMS panel of the VERT REV page (*Refer to page*).
For information about the CMS revision, *Refer to DSC-22-FMS-10-40-30 Purpose*.

STEP ALTs

When selected, displays the STEP ALTs panel of the VERT REV page (*Refer to page*).
For information about the STEP ALTs revision, *Refer to DSC-22-FMS-10-40-30 Purpose*.

WIND

When selected:
- If the revised waypoint is a climb waypoint, displays the CLB panel of the WIND page (*Refer to page*)
- If the revised waypoint is a cruise waypoint, displays the CRZ panel of the WIND page (*Refer to page*)
- If the revised waypoint is a descent waypoint, displays the DES panel of the WIND page (*Refer to page*).

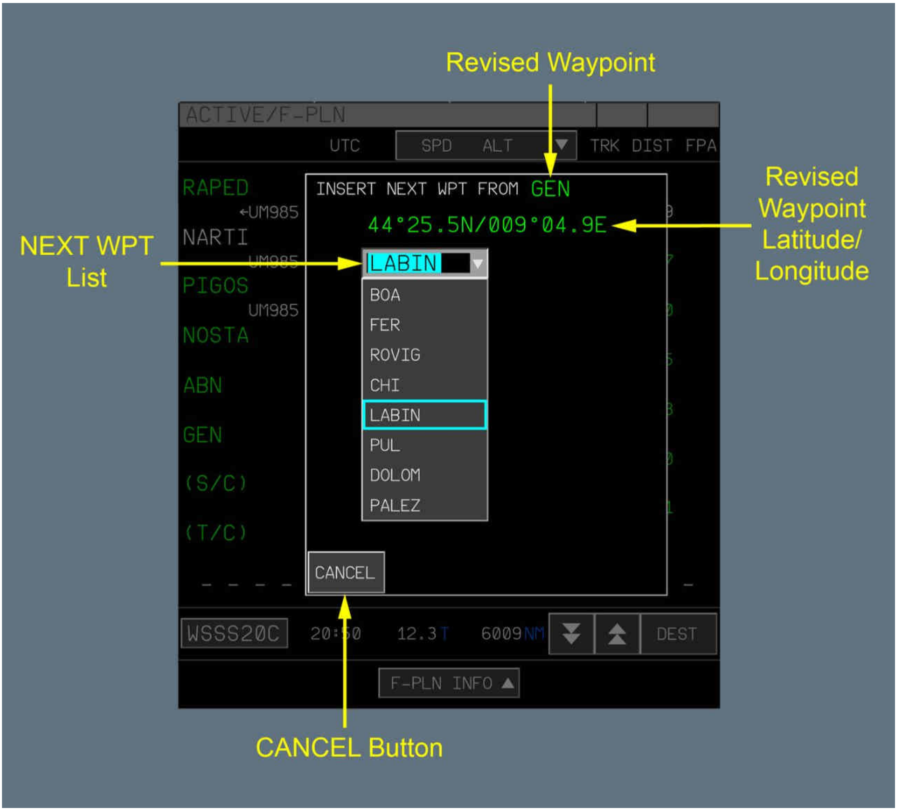
For information about the WIND revision, *Refer to DSC-22-FMS-10-40-30 Purpose*.

WHAT IF

When selected, displays the WHAT IF page (*Refer to page*).
The WHAT IF revision is not available in the waypoint revisions menu of the ACTIVE/F-PLN page.
For information about the WHAT IF function, *Refer to DSC-22-FMS-10-40-40 WHAT IF Function*.

Ident.: DSC-22-FMS-20-20-20-200-00003996.0001001 / 22 APR 14

INSERT NEXT WPT WINDOW


Revised Waypoint
ACTIVE/F-PLN
UTC
SPD
ALT
TRK
DIST
FPA
RAPED
←UM985
NARTI
UM985
PIGOS
UM985
NOSTA
ABN
GEN
(S/C)
(T/C)
INSERT NEXT WPT FROM GEN
44°25.5N/009°04.9E
LABIN
BOA
FER
ROVIG
CHI
LABIN
PUL
DOLOM
PALEZ
CANCEL
Revised Waypoint Latitude/ Longitude
NEXT WPT List
WSSS20C
20:50
12.3T
6009NM
DEST
F-PLN INFO
CANCEL Button

INSERT NEXT WPT Window

REVISED WAYPOINT

The revised waypoint is the waypoint from which the flight crew selected the INSERT NEXT WPT revision.

REVISED WAYPOINT LATITUDE/LONGITUDE

Indicates the latitude and longitude of the revised waypoint.

NEXT WPT LIST

Indicates the next waypoint.

The flight crew enters the next waypoint via the keyboard, or by selecting the next waypoint from the NEXT WPT list.
The NEXT WPT list displays all of the flight plan waypoints between the revised waypoint and the destination airport.

L2 If the revised waypoint is a missed approach waypoint, the last waypoint of the list is the last waypoint of the missed approach.
If the revised waypoint is a part of the alternate flight plan, the last waypoint of the list is the last waypoint of the alternate flight plan.

L1 The next waypoint can be one of the following:
- A waypoint of the navigation database or pilot-stored elements database
- A latitude/longitude waypoint
- A place/bearing/distance waypoint
- A place-bearing/place-bearing waypoint
- A place/distance waypoint.

If the flight crew inserts a next waypoint that is a latitude/longitude, place/bearing/distance, place-bearing/place-bearing, or place/distance waypoint, the FMS stores this waypoint in the pilot-stored elements database.

L2 For more information about the pilot-stored elements database, *Refer to DSC-22-FMS-10-20 Pilot-Stored Elements Database*.

L1 Entry Format

For the entry format of:
- Waypoint, *Refer to DSC-22-FMS-20-80 WAYPOINT*
- Latitude/longitude waypoint, *Refer to DSC-22-FMS-20-80 LAT/LONG*
- Place/bearing/distance waypoint, *Refer to DSC-22-FMS-20-80 PLACE/BEARING/DISTANCE (PBD)*
- Place-bearing/place-bearing waypoint, *Refer to DSC-22-FMS-20-80 PLACE-BEARING/PLACE-BEARING (PB/PB)*
- Place/distance waypoint, *Refer to DSC-22-FMS-20-80 PLACE/DISTANCE (PD)* .

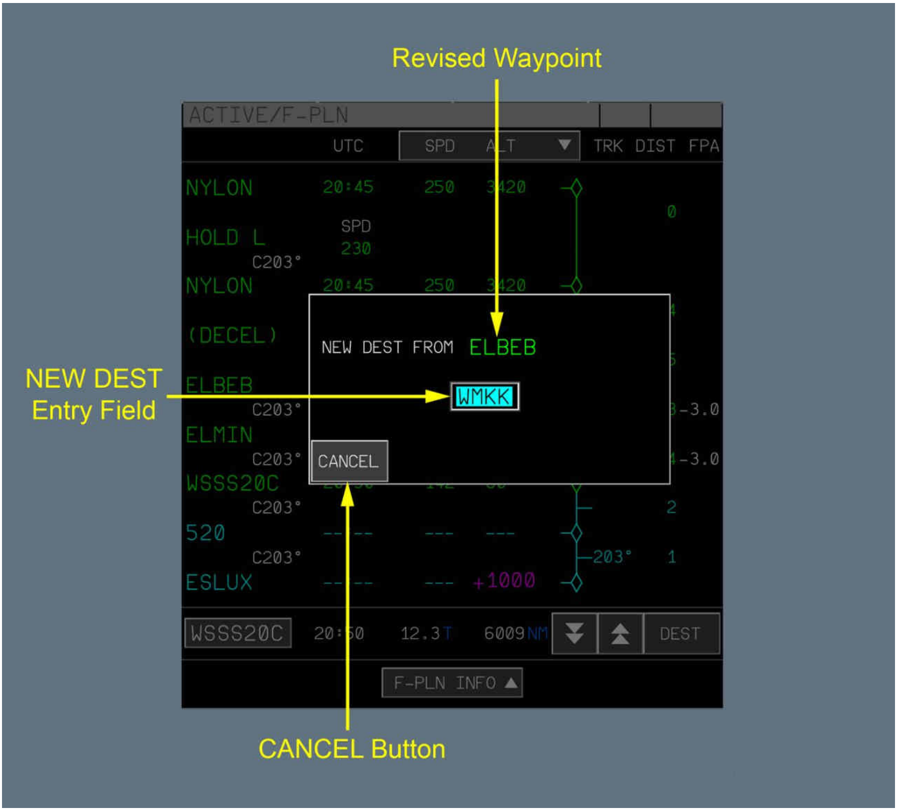
Note: *The flight crew can enter a place/distance waypoint, relative to the revised waypoint, by entering:*
- *The plus or minus sign, and the distance value (the sign is mandatory) (e.g. +15), or*
- *A slash, the plus or minus sign, and the distance value (the plus sign is not mandatory, if the slash is used) (e.g. /15).*

CANCEL BUTTON

When clicked, closes the INSERT NEXT WPT window without inserting any waypoint.

NEW DEST WINDOW

NEW DEST Window


Revised Waypoint
ACTIVE/F-PLN
UTC
SPD
ALT
TRK
DIST
FPA
NYLON
20:45
250
3420
HOLD L
SPD
230
C203°
NYLON
(DECEL)
ELBEB
ELMIN
WSSS20C
520
ESLUX
+1000
NEW DEST FROM ELBEB
WMKK
CANCEL
NEW DEST
Entry Field
WSSS20C
20:50
12.3T
6009NM
DEST
F-PLN INFO
CANCEL Button

REVISED WAYPOINT

The revised waypoint is the waypoint from which the flight crew selected the NEW DEST revision.

NEW DEST ENTRY FIELD

The flight crew enters the four-character ICAO code of the new destination airport in the entry field.

Entry Format

Refer to DSC-22-FMS-20-80 AIRPORT (ARPT).

CANCEL BUTTON

When clicked, closes the NEW DEST window without inserting a new destination.

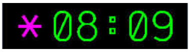
Ident.: DSC-22-FMS-20-20-20-200-00003976.0001001 / 22 APR 14

TIME PREDICTION

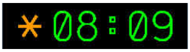
Indicates the Estimated Time of Arrival (ETA), in UTC(flight) time, at the waypoint.

TIME CONSTRAINT

The time prediction is interactive: When clicked, displays the RTA panel of the VERT REV page (*Refer to page*).
On the RTA panel of the VERT REV page, the flight crew can check, add, or change a time constraint on the revised waypoint.
If there is a time constraint at a waypoint, a star is displayed to the left of the time prediction.

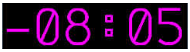


The star appears in magenta, if the time constraint is respected.



The star appears in amber, if the time constraint is missed.

L2



If there is a time constraint on a waypoint and time predictions are not available, the time constraint value is displayed in large magenta font.
A plus(minus) sign appears before the constraint value for an AT OR AFTER(AT OR BEFORE) constraint.

L1 For information about time constraint (RTA) revision, *Refer to DSC-22-FMS-10-40-30 Purpose*.

FROM WAYPOINT

In flight, the time prediction of the FROM waypoint displays the time at which the FROM waypoint was sequenced.
In preflight, the time prediction of the FROM waypoint displays the ETT in magenta. If there is no ETT , the time prediction displays 00:00.
When clicked, opens the RTA panel of the VERT REV page (*Refer to DSC-22-FMS-20-20-20 VERT REV Page*).
On the RTA panel of the VERT REV page, the flight crew can change the ETT, if necessary.
If the ETT is exceeded, the UTC time appears in green instead of the ETT.

Ident.: DSC-22-FMS-20-20-20-200-00003977.0001001 / 22 APR 14

SPEED PREDICTION

Indicates the predicted speed(Mach) at the waypoint.

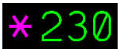
A ditto mark (") appears instead of the value, if the predicted speed(Mach) value is the same as the predicted speed(Mach) value at the previous waypoint.

SPEED CONSTRAINT/CMS

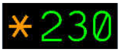
The speed prediction is interactive. When clicked, opens:

- The SPD panel of the VERT REV page (*Refer to DSC-22-FMS-20-20-20 VERT REV Page*), when the speed prediction is related to a climb, descent, or approach waypoint
- The CMS panel of the VERT REV page (*Refer to DSC-22-FMS-20-20-20 VERT REV Page*), when the speed prediction is related to a cruise waypoint.

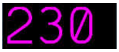
If there is a speed constraint at a waypoint, or if the waypoint is part of a CMS, a star is displayed to the left of the speed prediction.



The star appears in magenta, if the speed constraint is respected.



The star appears in amber, if the speed constraint is missed.



If there is a speed constraint at a waypoint and the speed predictions are not available, the speed constraint value is displayed in large magenta font.

For information about:

- The SPD CSTR revision, *Refer to DSC-22-FMS-10-40-30 Purpose*
- The SPD LIMIT revision, *Refer to DSC-22-FMS-10-40-30 Purpose*
- The CMS revision, *Refer to DSC-22-FMS-10-40-30 Purpose*.

FROM WAYPOINT

In preflight, the speed prediction of the FROM waypoint displays V1.

Ident.: DSC-22-FMS-20-20-20-200-00003978.0001001 / 14 APR 14

ALTITUDE PREDICTION

Indicates the predicted altitude at the waypoint.

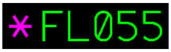
A ditto mark (") appears instead of the value, if the predicted altitude value is the same as the predicted altitude value at the previous waypoint.

ALTITUDE CONSTRAINT/STEP ALT s

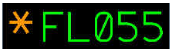
The altitude prediction is interactive. When clicked, opens:

- The ALT panel of the VERT REV page (*Refer to DSC-22-FMS-20-20-20 VERT REV Page*), when the altitude prediction is related to a climb, descent, or approach waypoint
- The STEP ALTs panel of the VERT REV page (*Refer to DSC-22-FMS-20-20-20 VERT REV Page*), when the altitude prediction is related to a cruise waypoint.

If there is an altitude constraint at a waypoint, a star is displayed to the left of the altitude prediction.

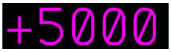

*FL055

The star appears in magenta, if the altitude constraint is respected.


*FL055

The star appears in amber, if the altitude constraint is missed.

L2


+5000

If there is an altitude constraint at a waypoint and the altitude predictions are not available, the altitude constraint value (or WINDOW) is displayed in large magenta font. A plus(minus) sign appears before the constraint value for an AT OR ABOVE(AT OR BELOW) constraint.

L1 For information about:

- The ALT CSTR revision, *Refer to DSC-22-FMS-10-40-30 Purpose*
- The STEP ALTs revision,*Refer to DSC-22-FMS-10-40-30 Purpose*.

FROM WAYPOINT

In flight, the altitude prediction of the FROM waypoint displays the altitude of the aircraft at which the FROM waypoint was sequenced.

Ident.: DSC-22-FMS-20-20-20-200-00003979.0001001 / 22 APR 14

EFOB

Indicates the Estimated Fuel On Board (EFOB) at the waypoint.

L2 A ditto mark (") appears instead of the value, if the EFOB value is the same as the EFOB value at the previous waypoint.

L1

FROM WAYPOINT

In flight, the EFOB of the FROM waypoint displays the fuel quantity that was on board, when the FROM waypoint was sequenced.

Ident.: DSC-22-FMS-20-20-20-200-00003980.0001001 / 22 APR 14

TRUE WIND PREDICTION

Indicates the predicted true wind (direction and speed) at the waypoint.

Note: *The F-PLN page displays the true wind prediction that is not corrected with the measured wind. However, the FMS uses the corrected wind to compute the other flight plan predictions (e.g. time, altitude, fuel, etc.).*

L2 A ditto mark (") appears instead of the direction(speed) value, if the predicted direction(speed) value is the same as the predicted direction(speed) value at the previous waypoint.

L1

TRIP WIND

If the flight crew only entered a trip wind, the trip wind is displayed as the wind prediction for each flight plan waypoint, in the HD/NNN or TL/NNN format .

WIND ENTRY

The true wind prediction is interactive. When clicked, opens:

- The CLB panel of the VERT REV page (*Refer to DSC-22-FMS-20-20-20 VERT REV Page*), when the true wind prediction is related to a climb waypoint
- The CRZ panel of the VERT REV page (*Refer to DSC-22-FMS-20-20-20 VERT REV Page*), when the true wind prediction is related to a cruise waypoint
- The DES panel of the VERT REV page (*Refer to DSC-22-FMS-20-20-20 VERT REV Page*), when the true wind prediction is related to a descent waypoint.

For more information about the WIND revisions, *Refer to DSC-22-FMS-10-40-30 Purpose*.

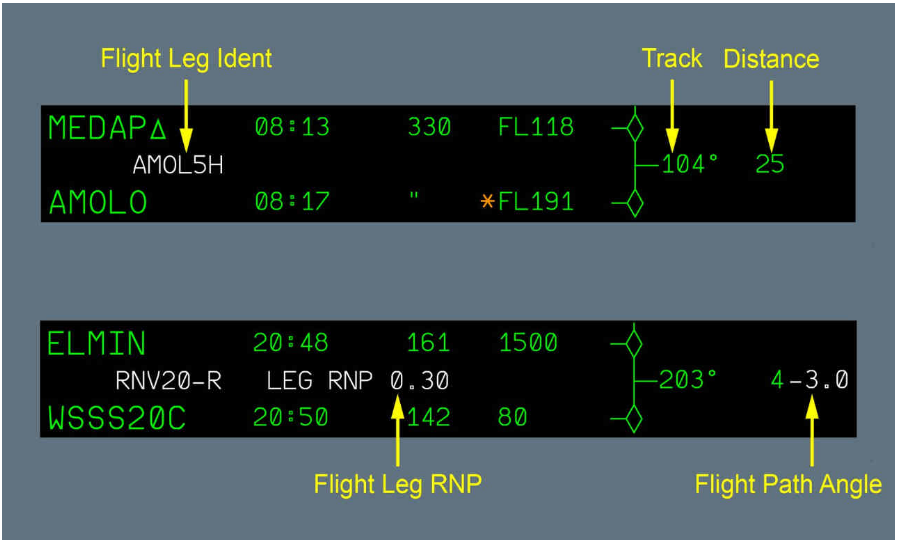
FROM WAYPOINT

The true wind prediction of the FROM waypoint displays the trip wind or the predicted wind.

Ident.: DSC-22-FMS-20-20-20-200-00003982.0001001 / 22 APR 14

FLIGHT LEG DATA

Flight Leg Data


Flight Leg Ident
Track
Distance
MEDAPA∆ 08:13 330 FL118
AMOL5H
104° 25
AMOLO 08:17 " *FL191
ELMIN 20:48 161 1500
RNV20-R LEG RNP 0.30
203° 4 -3.0
WSSS20C 20:50 142 80
Flight Leg RNP
Flight Path Angle

Indicates for each flight leg:

- The leg ident
- The distance between two waypoints
- The flight leg track
- The flight leg RNP (if the RNP value is stored in the navigation database)
- The flight path angle (only for flight legs of the arrival procedure).

The F-PLN page displays a maximum of 8 flight-leg data lines.
If a temporary flight plan is on standby, only 7 flight-leg data lines are displayed.

COLORS

On the ACTIVE/F-PLN page:

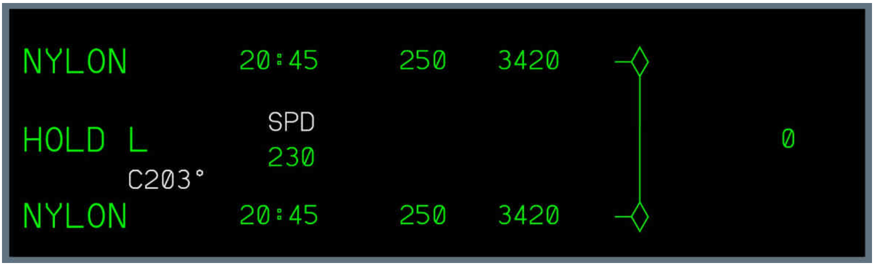
- The flight leg ident, the flight path angle, and the flight leg RNP are displayed in white
- The other leg data is displayed in:
  - White, for the active flight leg
  - Green, for the flight legs of the destination flight plan
  - Blue, for the flight legs of the missed approach and the alternate flight plan.

When a temporary flight plan is on standby, all flight leg data is displayed in yellow.
On the SEC/F-PLN page, the flight leg data is displayed in white.

FLIGHT LEG OF A HOLDING PATTERN

A flight leg of a holding pattern is displayed on one entire line between the holding entry fix and the holding exit fix.

Flight Leg of a Holding Pattern



For information about the specific display for the different type of holding pattern, *Refer to DSC-22-FMS-10-40-20 Controls and Indicators*.

Ident.: DSC-22-FMS-20-20-20-200-00003983.0001001 / 22 APR 14

FLIGHT LEG IDENT

Indicates the ident of the flight leg.

AFRI5A	A flight leg that is a part of a departure(arrival) procedure has the name of the departure(arrival) procedure.
UT210	A flight leg that is a part of an airway has the name of the airway.
←UT210	An offset flight leg is indicated with a left or right arrow next to the flight leg ident. The arrow indicates the offset side.
L2 C144°T	A course flight leg is displayed in the CNNN° format. The "NNN" corresponds to the course. The T letter appears after the degree symbol, if the course is defined in the true north reference.
H144°T	A heading flight leg is displayed in the HNNN° format. The "NNN" corresponds to the heading. The T letter appears after the degree symbol, if the heading is defined in the true north reference.
22 TOU	An arc flight leg is displayed in the NN XXX format. The "NN" corresponds to the arc distance, and the "XXX" corresponds to the navaid ident.
22 ARC	A radius flight leg is displayed in the NN ARC format. The "NN" corresponds to the arc distance.
FIN144°T	A flight leg with a manual or altitude termination point is displayed in the XXXNNN format. The "XXX" corresponds to the first three characters of the waypoint ident, and the "NNN" corresponds to the outbound course. The T letter appears after the outbound course, if the outbound course is defined in the true north reference.
PROC L	A procedure turn is displayed in the PROC X format. The "X" is “L” for left, or “R” for right, depending on the turn direction.

Ident.: DSC-22-FMS-20-20-20-200-00003984.0001001 / 22 APR 14

TRACK

Indicates the track between two waypoints.
The track is magnetic or true, depending on the TRUE/MAG setting of the AFS CP.

104°	Magnetic track.
104°T	True track.

ACTIVE FLIGHT LEG

In flight, the track of the active flight leg displays the direct bearing between the aircraft present position and the TO waypoint.

Ident.: DSC-22-FMS-20-20-20-200-00003985.0001001 / 22 APR 14

DISTANCE

Indicates the distance between two waypoints.

ACTIVE FLIGHT LEG

In flight, the distance of the active flight leg displays the distance between the aircraft present position and the TO waypoint.

Ident.: DSC-22-FMS-20-20-20-200-00003994.0001001 / 20 OCT 14

FLIGHT LEG RNP

Indicates the RNP that is associated with the flight leg.
The displayed RNP is the RNP value that is stored in the navigation database.
The flight crew can change the RNP value that is associated with the flight leg, via the POSITION/MONITOR page (*Refer to DSC-22-FMS-20-20-20 POSITION/MONITOR Page*).
However, even if manually changed, the displayed value on the F-PLN page remains the value that is stored in the navigation database.
If there are several RNP values that are associated with the same flight leg, the F-PLN page displays the lower RNP value.

L2 A ditto mark (") appears instead of the FLIGHT LEG RNP label and the associated value, if the RNP value is the same as the RNP that is associated with the previous flight leg.

L1 For more information about the RNP, *Refer to DSC-34-NAV-20-10-60 Position Accuracy and Navigation Accuracy*.

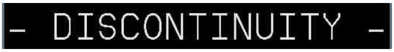
Ident.: DSC-22-FMS-20-20-20-200-00003986.0001001 / 22 APR 14

FLIGHT PATH ANGLE

Indicates the Flight Path Angle (FPA) that is associated with a flight leg of the arrival procedure. The displayed FPA is the FPA value that is stored in the navigation database. The flight crew cannot change this value.

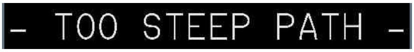
Ident.: DSC-22-FMS-20-20-20-200-00003981.0001001 / 20 OCT 14

SPECIAL FLIGHT PLAN LABELS

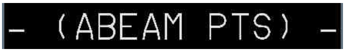

- DISCONTINUITY -

Indicates a flight plan discontinuity.
For information about flight plan discontinuity, *Refer to DSC-22-FMS-10-40-10 Flight Legs*.

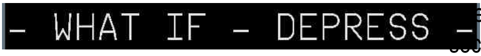
When clicked, opens the waypoint revisions menu (*Refer to Waypoint Revisions Menu*) from which the flight crew can select the following revisions:
- INSERT NEXT WPT
- DELETE
- OFFSET
- ENABLE ALTN
- NEW DEST.


- TOO STEEP PATH -

Indicates the start of a path, in the vertical descent profile, that is too steep.
When clicked, opens the waypoint revisions menu (*Refer to Waypoint Revisions Menu*) from which the flight crew can select only the INSERT NEXT WPT revision.

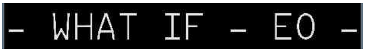

- (ABEAM PTS) -

The (ABEAM PTS) label appears in the temporary flight plan, when a DIR TO - DIRECT WITH ABEAM is on standby. When the temporary flight plan is inserted, the (ABEAM PTS) label is removed, and the fix abeam waypoints are displayed.


- WHAT IF - DEPRESS -

e WHAT IF - DEPRESS label appears in a secondary flight plan, when:
- This secondary flight plan contains a WHAT IF scenario
- The WHAT IF scenario is simulated depressurization.

The WHAT IF - DEPRESS label appears below the waypoint from which depressurization is simulated.



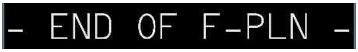
- WHAT IF - EO -

The WHAT IF - EO label appears in a secondary flight plan, when:
- This secondary flight plan contains a WHAT IF scenario
- The WHAT IF scenario is a simulated engine-out.

The WHAT IF - EO label appears below the waypoint from which the engine-out is simulated.

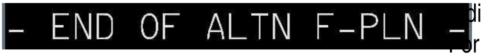
Ident.: DSC-22-FMS-20-20-20-200-00003972.0001001 / 22 APR 14

FLIGHT PLAN LIMIT LABELS



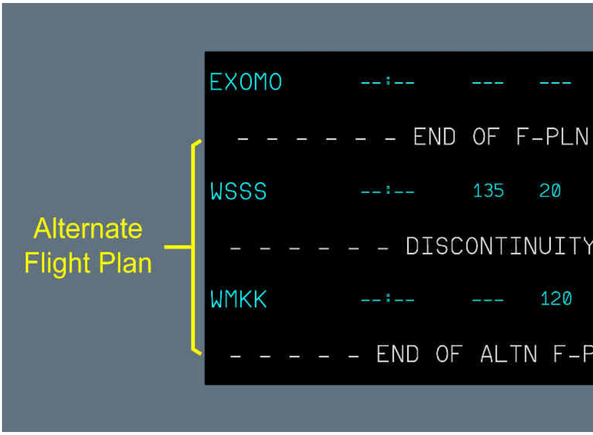
- END OF F-PLN -

Indicates the end of the destination flight plan. For information about the destination flight plan, *Refer to DSC-22-FMS-10-40-10 Destination Flight Plan*.



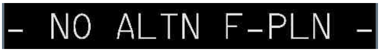
- END OF ALTN F-PLN -

dicates the end of the alternate flight plan. r information about the alternate flight plan, *Refer to DSC-22-FMS-10-40-10 Alternate Flight Plan*.

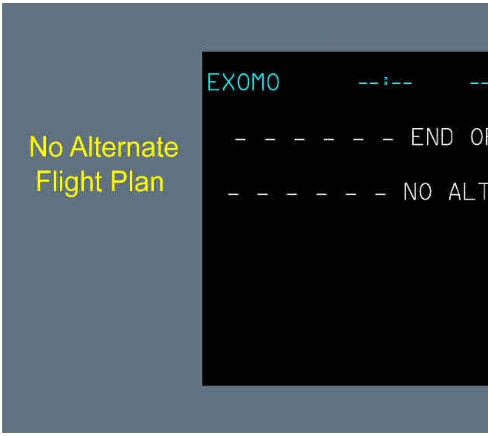


```
EXOMO      --:--    ---   ---
  - - - - - - END OF F-PLN
WSSS       --:--    135   20
  - - - - - - DISCONTINUITY
WMKK       --:--    ---   120
  - - - - - END OF ALTN F-P
```

Alternate Flight Plan


- NO ALTN F-PLN -

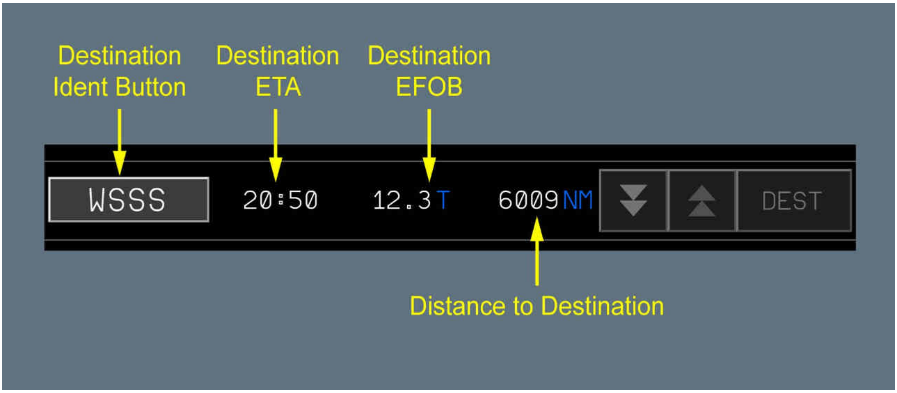
Indicates that there is no alternate flight plan.


No Alternate Flight Plan
EXOMO
--:--
--
- - - - - - END OF
- - - - - - NO ALT

Ident.: DSC-22-FMS-20-20-20-200-00003970.0001001 / 22 APR 14

DESTINATION AREA

Destination Area


Destination Ident Button
Destination ETA
Destination EFOB
WSSS
20:50
12.3T
6009NM
DEST
Distance to Destination

Indicates:
- The destination ident
- The destination ETA
- The destination EFOB
- The distance to destination.

Ident.: DSC-22-FMS-20-20-20-200-00003987.0001001 / 22 APR 14

DESTINATION IDENT BUTTON

The button label indicates the ident of the destination airport, followed by the selected runway, if any.
When clicked, displays the ARRIVAL page (*Refer to page*).

Ident.: DSC-22-FMS-20-20-20-200-00003988.0001001 / 22 APR 14

DESTINATION ETA

Indicates the Estimated Time of Arrival (ETA), in UTC(flight) time, at the destination airport.

Ident.: DSC-22-FMS-20-20-20-200-00003989.0001001 / 22 APR 14

DESTINATION EFOB

Indicates the Estimated Fuel On Board (EFOB) at the destination airport.
The EFOB at the destination airport appears in amber, if its value is below the minimum fuel at destination that is displayed on the FUEL&LOAD page (*Refer to page*). In addition to the amber EFOB, if the active flight phase is CRZ, DES, APPR, or GA, the FMS message area displays the DEST EFOB BELOW MIN message (*Refer to message*).

Ident.: DSC-22-FMS-20-20-20-200-00003990.0001001 / 22 APR 14

DISTANCE TO DESTINATION

The distance to destination is the sum of:
- The direct distance to the TO waypoint
- The distance along the flight plan from the TO waypoint to the destination airport.

L2 If a there is discontinuity in the flight plan, the FMS considers that the aircraft will fly a direct flight leg between the waypoints that define the discontinuity.

Ident.: DSC-22-FMS-20-20-20-200-00003992.0001001 / 22 APR 14

INIT BUTTON

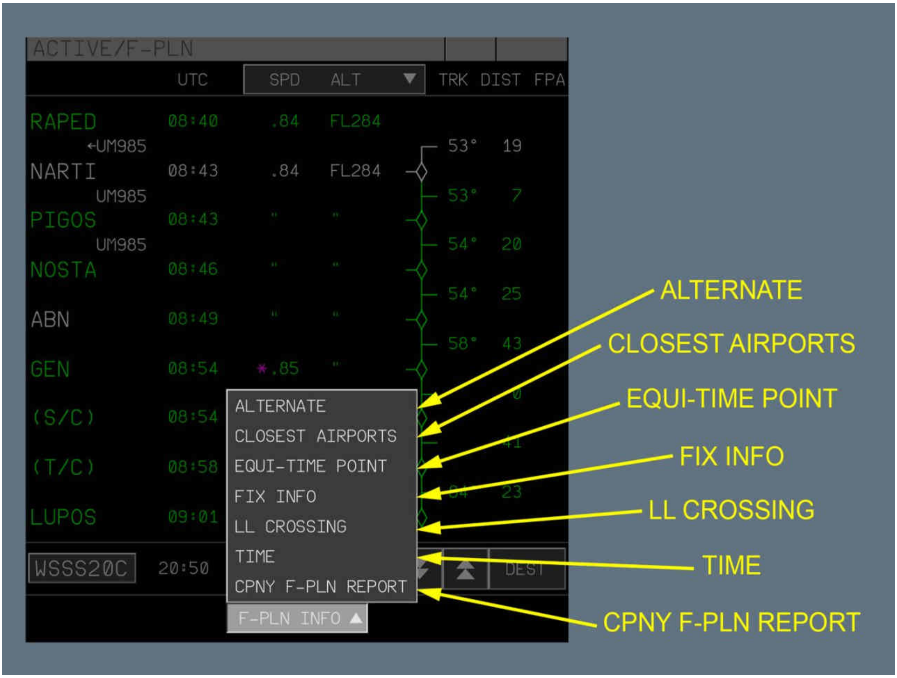
When clicked, displays the INIT page (*Refer to page*).
L2 The INIT button is displayed only during the PREFLIGHT flight phase.

Ident.: DSC-22-FMS-20-20-20-200-00003993.0001001 / 22 APR 14

F-PLN INFO BUTTON

When clicked, opens the F-PLN INFO menu.

F-PLN INFO Menu


ACTIVE/F-PLN
UTC
SPD ALT
TRK DIST FPA
RAPED 08:40 .84 FL284
←UM985 53° 19
NARTI 08:43 .84 FL284
UM985 53° 7
PIGOS 08:43
UM985 54° 20
NOSTA 08:46
54° 25
ABN 08:49
58° 43
GEN 08:54 *.85
(S/C) 08:54
(T/C) 08:58
LUPOS 09:01
WSSS20C 20:50
DEST
ALTERNATE
CLOSEST AIRPORTS
EQUI-TIME POINT
FIX INFO
LL CROSSING
TIME
CPNY F-PLN REPORT
F-PLN INFO ▲
ALTERNATE
CLOSEST AIRPORTS
EQUI-TIME POINT
FIX INFO
LL CROSSING
TIME
CPNY F-PLN REPORT

ALTERNATE

When selected, displays the ALTERNATE page (*Refer to page*).
For information about the ALTERNATE revision, *Refer to DSC-22-FMS-10-40-20 Purpose*.

CLOSEST AIRPORTS

When selected, displays the CLOSEST AIRPORTS page (*Refer to page*).
For information about the CLOSEST AIRPORTS function, *Refer to DSC-22-FMS-10-40-40 CLOSEST AIRPORTS Function*.

EQUI-TIME POINT

When selected, displays the EQUI-TIME POINT page (*Refer to page*).
For information about the ETP function, *Refer to DSC-22-FMS-10-40-40 Equi-Time Point (ETP) Function*.

FIX INFO

When selected, displays the FIX INFO page (*Refer to page*).

For information about the FIX INFO revision, *Refer to DSC-22-FMS-10-40-20 Purpose*.

LL CROSSING

When selected, displays the LL XING page (*Refer to page*).
For information about the LL CROSSING revision, *Refer to DSC-22-FMS-10-40-20 Purpose*.

TIME

When selected, displays the POSITION/TIME page (*Refer to page*).
For information about the TIME function, *Refer to DSC-22-FMS-10-80 Time Function*.

CPNY F-PLN REPORT

When selected, sends via ACARS an active flight plan report to the company ground station.
If the free text AMI option is activated, selecting CPNY F-PLN REPORT displays the COMPANY F-PLN REPORT page (*Refer to page*).
For information about flight reports, *Refer to DSC-22-FMS-10-40-80 Flight Reports*.

Ident.: DSC-22-FMS-20-20-20-200-00003991.0001001 / 22 APR 14

SCROLL BUTTONS

The flight crew uses the scroll down(up) button to move, page by page, downward(upward) through the flight plan.

L2 The flight crew can move, line by line, through the flight plan by using:
- The KCCU wheel, or
- The arrow keys of the KCCU keyboard.

For more information about the KCCU, *Refer to DSC-22-FMS-20-30 KCCU Controls for the FMS*.
The scroll-down(up) always stops at the last(first) flight plan waypoint.

Ident.: DSC-22-FMS-20-20-20-200-00003997.0001001 / 22 APR 14

DEST BUTTON

When clicked, displays the last page of the destination flight plan, with the destination airport on the last line.

L2 *Note:* *In order to display the first page of the active flight plan, the flight crew can:*
- *Press the F-PLN key of the KCCU, or*
- *Select F-PLN in the ACTIVE menu of the general menu bar.*

Ident.: DSC-22-FMS-20-20-20-200-00003998.0001001 / 22 APR 14

INSERT TMPY BUTTON

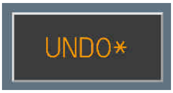
When clicked, inserts the temporary flight plan.

Ident.: DSC-22-FMS-20-20-20-200-00003999.0001001 / 22 APR 14

ERASE TMPY BUTTON

When clicked, erases the temporary flight plan.
When there is a temporary flight plan with multiple revisions, the button label is UNDO. When clicked, erases the last revision from the temporary flight plan.

UNDO Button



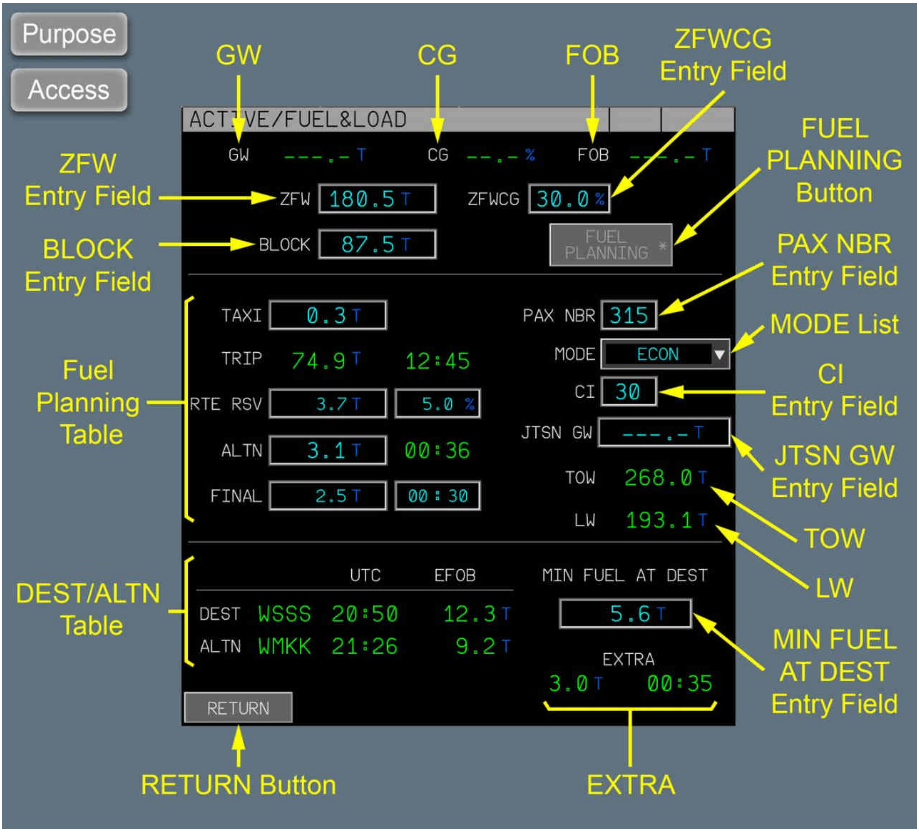
Note: *The flight crew can only UNDO the last flight plan revision. After the flight crew clicks one time on the UNDO button, the button label is ERASE TMPY.*

FUEL&LOAD PAGE

Applicable to: ALL

Ident.: DSC-22-FMS-20-20-20-210-00002720.0002001 / 22 APR 14

FUEL&LOAD Page


Purpose
Access
GW
CG
FOB
ZFWCG Entry Field
FUEL PLANNING Button
ZFW Entry Field
BLOCK Entry Field
PAX NBR Entry Field
MODE List
Fuel Planning Table
CI Entry Field
JTSN GW Entry Field
TOW
LW
DEST/ALTN Table
MIN FUEL AT DEST Entry Field
RETURN Button
EXTRA

ACTIVE/FUEL&LOAD

GW ---.- T CG --.- % FOB ---.- T

ZFW 180.5 T ZFWCG 30.0 %

BLOCK 87.5 T FUEL PLANNING *

TAXI 0.3 T PAX NBR 315

TRIP 74.9 T 12:45 MODE ECON

RTE RSV 3.7 T 5.0 % CI 30

ALTN 3.1 T 00:36 JTSN GW ---.- T

FINAL 2.5 T 00:30 TOW 268.0 T

LW 193.1 T

		UTC	EFOB
DEST	WSSS	20:50	12.3 T
ALTN	WMKK	21:26	9.2 T

MIN FUEL AT DEST 5.6 T

EXTRA 3.0 T 00:35

RETURN

Ident.: DSC-22-FMS-20-20-20-210-00004000.0001001 / 22 APR 14

PURPOSE

The FUEL&LOAD page enables the flight crew to enter and display:

- Enter and display the aircraft load data
- Enter and display the fuel planning.

The FUEL&LOAD page is available for the active and secondary flight plans.

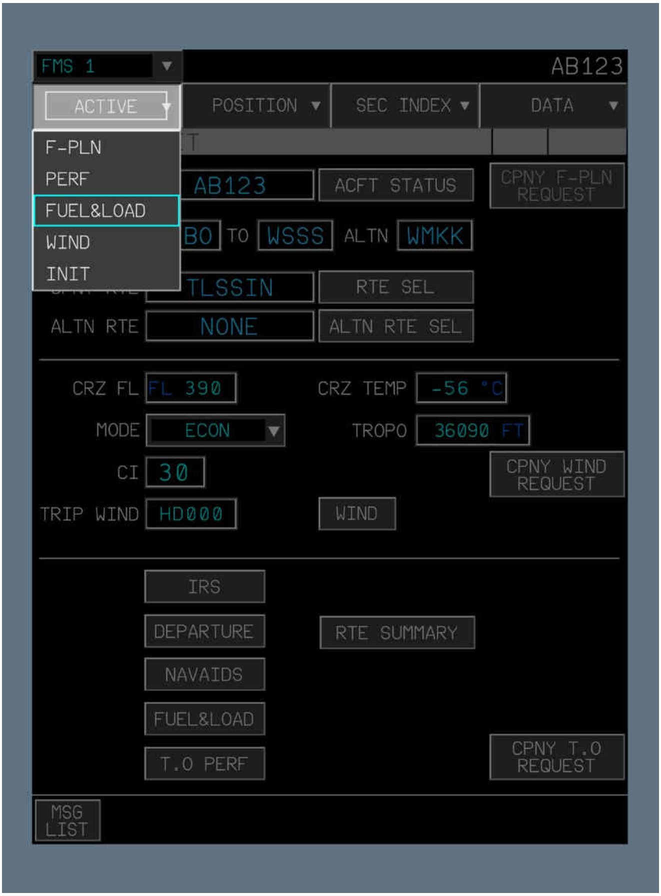
Ident.: DSC-22-FMS-20-20-20-210-00004001.0001001 / 14 APR 14

ACCESS

The flight crew can access:

- The ACTIVE/FUEL&LOAD page via:
  - The general menu bar, by selecting FUEL&LOAD in the ACTIVE menu

General Menu Bar

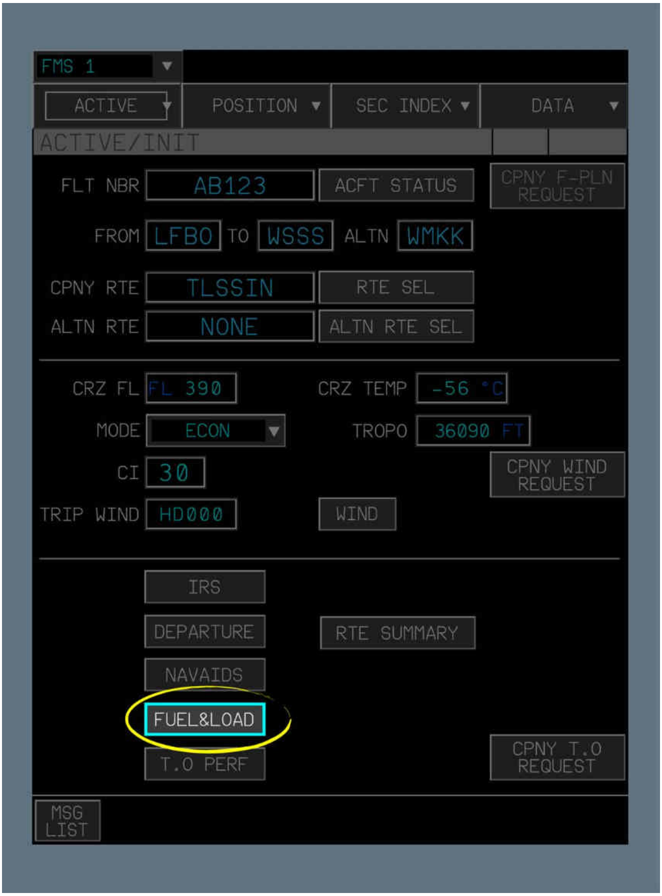


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
F-PLN
PERF
FUEL&LOAD
WIND
INIT
ACFT STATUS
CPNY F-PLN REQUEST
RTE SEL
ALTN RTE SEL
CPNY WIND REQUEST
WIND
IRS
DEPARTURE
NAVAIDS
FUEL&LOAD
T.O PERF
RTE SUMMARY
CPNY T.O REQUEST
MSG LIST

AB123
BO TO WSSS ALTN WMKK
TLSSIN
ALTN RTE NONE
CRZ FL FL 390
CRZ TEMP -56 °C
MODE ECON
TROPO 36090 FT
CI 30
TRIP WIND HD000

  - The ACTIVE/INIT page, by clicking on the FUEL&LOAD button

ACTIVE/INIT Page


FMS 1
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/INIT
ACFT STATUS
CPNY F-PLN REQUEST
RTE SEL
ALTN RTE SEL
CPNY WIND REQUEST
WIND
IRS
DEPARTURE
RTE SUMMARY
NAVAIDS
FUEL&LOAD
T.O PERF
CPNY T.O REQUEST
MSG LIST

FLT NBR AB123

FROM LFBO TO WSSS ALTN WMKK

CPNY RTE TLSSIN

ALTN RTE NONE

CRZ FL FL 390

CRZ TEMP -56 °C

MODE ECON

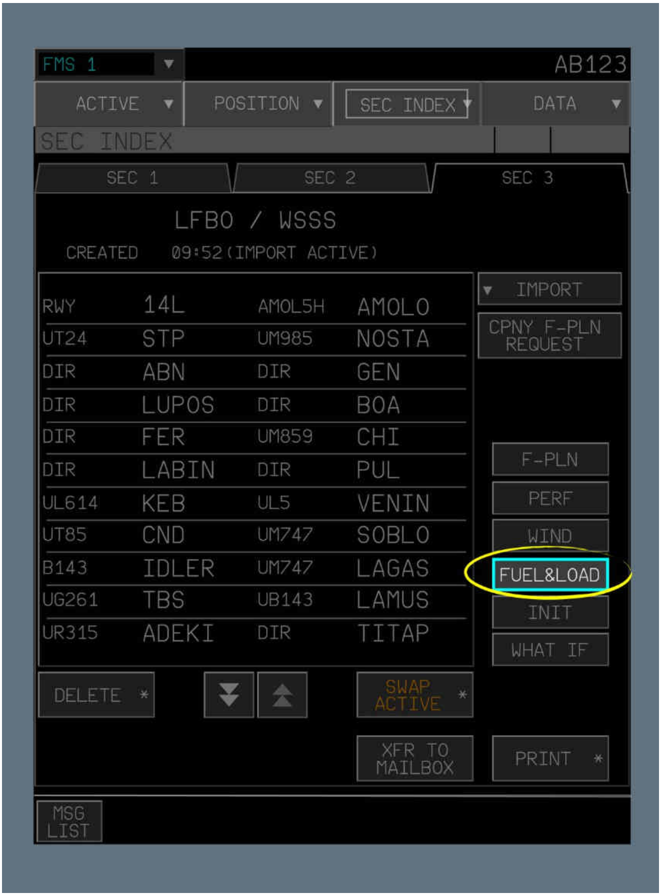
TROPO 36090 FT

CI 30

TRIP WIND HD000

- The SEC/FUEL&LOAD page via the SEC INDEX page, by clicking on the FUEL&LOAD button.

SEC INDEX Page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
SEC INDEX
SEC 1
SEC 2
SEC 3
IMPORT
CPNY F-PLN REQUEST
F-PLN
PERF
WIND
FUEL&LOAD
INIT
WHAT IF
DELETE *
SWAP ACTIVE *
XFR TO MAILBOX
PRINT *
MSG LIST

LFBO / WSSS

CREATED 09:52(IMPORT ACTIVE)

RWY	14L	AMOL5H	AMOLO
UT24	STP	UM985	NOSTA
DIR	ABN	DIR	GEN
DIR	LUPOS	DIR	BOA
DIR	FER	UM859	CHI
DIR	LABIN	DIR	PUL
UL614	KEB	UL5	VENIN
UT85	CND	UM747	SOBLO
B143	IDLER	UM747	LAGAS
UG261	TBS	UB143	LAMUS
UR315	ADEKI	DIR	TITAP

Ident.: DSC-22-FMS-20-20-20-210-00004002.0001001 / 22 APR 14

GW

Indicates the aircraft Gross Weight (GW).
The GW value is displayed only after engine start.
The FQMS provides the GW.

L2 If the FQMS cannot provide the GW, the FMS computes and displays the GW, based on the entered ZFW and on:
- The current FOB that is provided by the FQMS, if available, or
- The FOB that is stored by the FQMS just after engine start, and the current fuel used that is provided by the FADECs and the APU (when the APU is ON).

Ident.: DSC-22-FMS-20-20-20-210-00004003.0001001 / 14 APR 14

CG

Indicates the aircraft Center of Gravity (CG).
The CG value is displayed only after engine start.
The FQMS provides the CG.
L2 If the FQMS is failed, the WBBC provides the CG.

Ident.: DSC-22-FMS-20-20-20-210-00004004.0001001 / 22 APR 14

FOB

Indicates the quantity of Fuel On Board (FOB).
The FOB value is displayed only after engine start.
The FQMS provides the FOB.

L2 After engine start, if the FQMS is no longer able to provide the FOB, the FMS computes and displays the FOB, based on all of the following:
- The FOB that was stored by the FQMS just after engine start
- The current fuel used that is provided by the FADECs and the APU (when the APU is ON).

Ident.: DSC-22-FMS-20-20-20-210-00004005.0001001 / 22 APR 14

ZFW ENTRY FIELD

Indicates the aircraft Zero Fuel Weight (ZFW).
The ZFW entry field must not be empty.
The flight crew must enter the ZFW value.
L2 The FQMS uses this value to compute the aircraft gross weight.
The flight crew cannot clear the entry field.

L1 *Note:* *The FMS rejects the entered ZFW value and displays the* ENTRY OUT OF RANGE *message (Refer to message), if the flight crew enters a ZFW value that exceeds the acceptable range, as defined in the performance database.*

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 ZFW.

Ident.: DSC-22-FMS-20-20-20-210-00004006.0001001 / 22 APR 14

ZFWCG ENTRY FIELD

Indicates the aircraft Zero Fuel Weight Center of Gravity (ZFWCG).
The ZFWCG entry field must not be empty.
The flight crew must enter the ZFWCG value.
L2 The FQMS uses this value to compute the aircraft CG.
The flight crew cannot clear the entry field.

L1 **ENTRY FORMAT**

Refer to DSC-22-FMS-20-80 ZFWCG.

Ident.: DSC-22-FMS-20-20-20-210-00004007.0001001 / 22 APR 14

FUEL PLANNING BUTTON

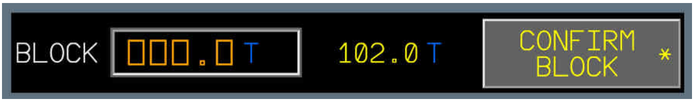
When clicked, initiates the fuel planning computation.
The fuel planning function first computes the trip fuel in accordance with the entered flight plan.
Then, the fuel planning function uses the trip fuel value, with the default or flight-crew-entered values for the taxi fuel, the route reserve fuel, and the minimum fuel at destination, to compute the minimum block fuel.
BLOCK = TAXI + TRIP + RTE RSV + MIN FUEL AT DEST
L2 If the flight crew did not manually enter a value in the MIN FUEL AT DEST entry field, the FMS uses the default or flight-crew-entered values of the ALTN and FINAL entry fields to compute the value of the minimum fuel at destination. In this case:
MIN FUEL AT DEST = ALTN + FINAL

L1 *Note:* *The fuel planning computation is based on the assumption that the extra fuel is equal to zero.*

L2 The fuel planning function is available, when all of the following apply:
- The engines are off
- The flight crew defined a flight plan and entered a cruise flight level
- The flight crew entered the ZFW and ZFWCG
- The flight crew did not enter any block fuel.

L1 The TRIP, ALTN, RTE RSV, and FINAL fuel (and time predictions) are automatically entered in the fuel planning table (*Refer to Fuel Planning Table*).
The FMS-computed block fuel is displayed in yellow next to the BLOCK entry field.

FMS-Computed Block Fuel



The flight crew can confirm the FMS-computed block fuel, by clicking on the CONFIRM BLOCK button.
After the flight crew confirms the FMS-computed block fuel, the value automatically appears in the BLOCK entry field.

Note: *The FMS-computed block fuel automatically disappears, when the flight crew manually enters a value in the BLOCK entry field.*

Ident.: DSC-22-FMS-20-20-20-210-00004008.0001001 / 07 MAY 18

BLOCK ENTRY FIELD

Indicates the block fuel.
The BLOCK entry field must not be empty.

The block fuel value is:
- Manually entered by the flight crew, or
- Automatically entered, when the flight crew confirms the FMS-computed block fuel.

L2 For aircraft equipped with the REFUEL pb-sw , the FQMS uses the BLOCK fuel value as a target for refueling (*Refer to PRO-NOR-SUP-SUP-FUEL Automatic Refueling*).

L1 The BLOCK entry field disappears after engine start.

L2 Before engine start, the FMS uses the block fuel value to compute the fuel predictions. After engine start, the FMS uses the FOB, provided by the FQMS.

L1 ENTRY FORMAT

Refer to DSC-22-FMS-20-80 BLOCK (FUEL).

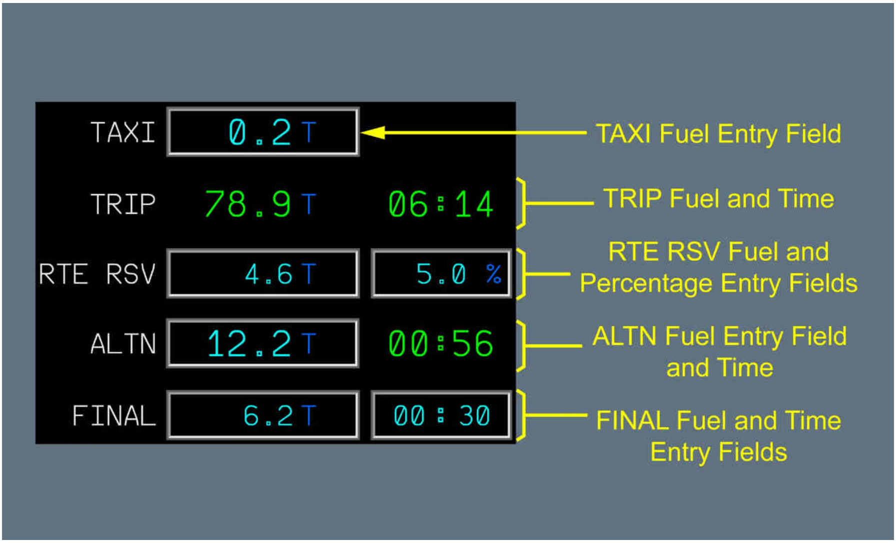
Ident.: DSC-22-FMS-20-20-20-210-00004009.0001001 / 03 JAN 20

FUEL PLANNING TABLE

The fuel planning table provides the results of the fuel planning computation.
The fuel planning computation is performed after a value is entered in the BLOCK entry field, or after clicking on the FUEL PLANNING button (in this last case, the minimum block fuel is computed for an extra fuel equal to zero).

L2 The fuel planning table is updated, when one of the following occurs:
- Any value in the fuel planning table is changed
- A lateral or vertical revision is performed
- L3 The FMS speed mode (ECON/LRC) is changed
- The CI that is associated with the ECON mode is changed
- The maximum cabin rate is changed
- The cruise temperature, SAT, or tropopause altitude is changed
- A preselected speed is entered or changed.

Fuel Planning Table


TAXI
0.2T
TRIP
78.9T
06:14
RTE RSV
4.6T
5.0 %
ALTN
12.2T
00:56
FINAL
6.2T
00:30
TAXI Fuel Entry Field
TRIP Fuel and Time
RTE RSV Fuel and Percentage Entry Fields
ALTN Fuel Entry Field and Time
FINAL Fuel and Time Entry Fields

L1

TAXI FUEL ENTRY FIELD

Indicates the taxi fuel.
The taxi fuel is the fuel quantity necessary for taxi.
The default value for the taxi fuel is defined in the company fuel policy of the AMI file. The flight crew can override the default value.

L2 At takeoff, the TAXI fuel entry field displays dashes, and can no longer be changed.

L1 Entry Format

Refer to DSC-22-FMS-20-80 TAXI (FUEL).

TRIP FUEL AND TIME

Indicates the trip fuel and the trip time.
The trip fuel(time) is the fuel quantity(time) that is necessary for the trip from takeoff at the departure airport (or from the P.POS in flight) to landing at the destination airport.

RTE RSV FUEL AND PERCENTAGE ENTRY FIELDS

Indicates the route reserve fuel and the route reserve percentage.

The method to compute the route reserve and the default value are defined in the company fuel policy of the AMI file. The route reserve is a percentage of either:
- The trip fuel, or
- The trip fuel plus the alternate fuel.

The flight crew can override the default value.

L2 At takeoff, the RTE RSV fuel entry field is set to 0. The route reserve fuel is included in the extra fuel.

L1 Entry Format

For the entry format of:
- Route reserve fuel, *Refer to DSC-22-FMS-20-80 RTE RSV (FUEL)*
- Route reserve percentage, *Refer to DSC-22-FMS-20-80 RTE RSV (%)*.

ALTN FUEL ENTRY FIELD AND TIME

Indicates the alternate fuel and the alternate time.

The alternate fuel(time) is the fuel quantity(time) that is necessary for all of the following:
- The flight between the destination airport and the alternate airport
- The approach and landing at the alternate airport.

The FMS computes the default value.

L2 The computation of the default value is based on the following assumptions:
- The FMS speed mode (ECON/LRC) is LRC (in order to optimize the fuel consumption)
- The cruise flight level is:
  - FL 100, if the distance of the alternate flight plan is less than 100 NM
  - FL 220, if the distance of the alternate flight plan is equal to or more than 100 NM and less than 200 NM
  - FL 310, if the distance of the alternate flight plan is equal to or more than 200 NM.

L1 The flight crew can override the default value.

Note: *1. The FMS automatically synchronizes the ALTN fuel entry field of the ACTIVE/FUEL&LOAD page and the ALTN FUEL entry field of the ACTIVE/F-PLN/ALTERNATE page (Refer to page).*
2. The FMS automatically synchronizes the ALTN fuel entry field of the SEC1(2)(3)/FUEL&LOAD page and the ALTN FUEL entry field of the SEC1(2)(3)/F-PLN/ALTERNATE page (Refer to page).

Entry Format

Refer to DSC-22-FMS-20-80 ALTN (FUEL).

FINAL FUEL AND TIME ENTRY FIELDS

Indicates the final fuel and final time.
The final fuel(time) is the fuel quantity(time) that is necessary for a holding pattern that the aircraft can fly at either the destination airport or the alternate airport.

L2 The company fuel policy of the AMI file defines the parameters that the FMS uses to compute the final fuel(time) and the default values.

L1 The flight crew can override the default values.

L3 For the final reserve fuel computation the system assumes a 30 min holding pattern at 1 500 ft AGL, with the aircraft in CONF 1 at maximum endurance speed (racetrack pattern, altitude and selected airport can by modified through the "airline fuel policy" section of the AMI).

L1 Entry Format

For the entry format of:
- Final fuel, *Refer to DSC-22-FMS-20-80 FINAL (FUEL)*
- Final time, *Refer to DSC-22-FMS-20-80 FINAL (TIME)*.

Ident.: DSC-22-FMS-20-20-20-210-00004012.0001001 / 22 APR 14

PAX NBR ENTRY FIELD

Indicates the number of passengers.
The PAX entry field must not be empty.
The flight crew must enter the PAX number.

L2 The air conditioning system uses the PAX number.

L1 **ENTRY FORMAT**

Refer to DSC-22-FMS-20-80 PAX NBR.

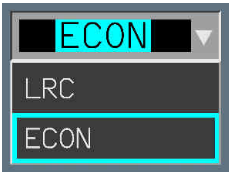
Ident.: DSC-22-FMS-20-20-20-210-00005201.0001001 / 02 APR 15

MODE LIST

Indicates the FMS speed mode.
The flight crew selects the FMS speed mode from the MODE list.

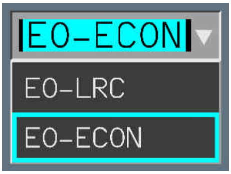
The MODE list has the following options:
- LRC: The FMS computes the optimum speed/Mach that corresponds to the Long Range Cruise (LRC)
  In LRC mode, the optimum speed/Mach is referred to as the LRC speed.
- ECON: The FMS computes the optimum speed/Mach based on the CI value that is entered in the CI entry field.
  In ECON mode, the optimum speed/Mach is referred to as the ECON speed.

MODE List



If the EO mode is active, the MODE list has the following options:
- EO-LRC: The FMS computes the optimum speed/Mach that corresponds to the Long Range Cruise (LRC)
  In EO-LRC mode, the FMS takes the engine failure into account to compute the optimum speed/Mach. The optimum speed/Mach is referred to as the EO-LRC speed.
- EO-ECON: The FMS computes the optimum speed/Mach based on the CI value that is entered in the CI entry field.
  In EO-ECON mode, the FMS takes the engine failure into account to compute the optimum speed/Mach. The optimum speed/Mach is referred to as the EO-ECON speed.

MODE List in EO Mode



Note: *1. The FMS automatically synchronizes all of the following:*
- *The MODE list of the ACTIVE/FUEL&LOAD page*
- *The MODE list of the ACTIVE/INIT page (Refer to page)*
- *The MODE list of the CLB, CRZ, and DES panels of the ACTIVE/PERF page (Refer to page).*

2. The FMS automatically synchronizes all of the following:
- *The MODE list of the SEC1(2)(3)/FUEL&LOAD page*
- *The MODE list of the SEC1(2)(3)/INIT page (Refer to page)*
- *The MODE list of the CLB, CRZ, and DES panels of the SEC1(2)(3)/PERF page (Refer to page).*

For more information about the FMS speed mode, *Refer to DSC-22-FMS-10-50-20 FMS Speed Mode (ECON/LRC)*.

DEFAULT SELECTION

At power-up and during the PREFLIGHT flight phase, the default FMS speed mode is ECON with no CI value. Then, if the flight crew does not enter a CI value before the flight crew enters the ZFW value or before engine start, the FMS automatically:
- Selects the LRC mode
- Sets the CI value to 0.

LIMITATIONS

The flight crew cannot change the FMS speed mode, when the DES, APPR, GA, or DONE flight phase is active.

Ident.: DSC-22-FMS-20-20-20-210-00004013.0001001 / 30 APR 14

CI ENTRY FIELD

Indicates the Cost Index (CI).
The CI entry field must not be empty.

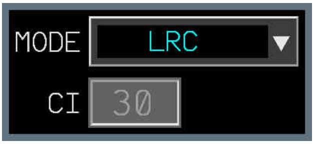
The CI value is:
- Manually entered by the flight crew, or
- Automatically entered, if one of the following occurs:
  - The flight crew enters a company route in the CPNY RTE entry field, and a CI is associated with the entered company route
  - A received company or ATC flight plan is inserted, and a CI is associated with the route of the received flight plan.

Note: *1. The FMS automatically synchronizes all of the following:*
- *The CI entry field of the ACTIVE/FUEL&LOAD page*
- *The CI entry field of the ACTIVE/INIT page (Refer to page)*
- *The CI entry field of the CLB, CRZ, and DES panels of the ACTIVE/PERF page (Refer to page).*

2. The FMS automatically synchronizes all of the following:
- *The CI entry field of the SEC1(2)(3)/FUEL&LOAD page*
- *The CI entry field of the SEC1(2)(3)/INIT page (Refer to page)*
- *The CI entry field of the CLB, CRZ, and DES panels of the SEC1(2)(3)/PERF page (Refer to page).*

If the FMS speed mode is LRC, the CI entry field still displays the CI value that is associated with the ECON mode, but the flight crew cannot change the CI value.

CI Entry Field in LRC Mode

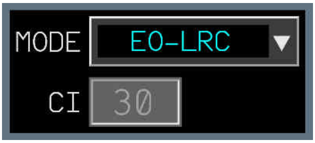


MODE LRC

CI 30

If the FMS speed mode is EO-LRC, the CI entry field still displays the CI value that is associated with the EO-ECON mode, but the flight crew cannot change the CI value.

CI Entry Field in EO-LRC Mode



MODE EO-LRC

CI 30

For more information about the CI, *Refer to DSC-22-FMS-10-50-20 FMS Speed Mode (ECON/LRC)*.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 COST INDEX (CI).

DEFAULT VALUE

At power-up and during the PREFLIGHT flight phase, the default FMS speed mode is ECON with no CI value. Then, if the flight crew does not enter a CI value before the flight crew enters the ZFW value or before engine start, the FMS automatically:
- Selects the LRC mode
- Sets the CI value to 0.

LIMITATIONS

The CI cannot be changed, when the DES, APPR, or GA flight phase is active.

Ident.: DSC-22-FMS-20-20-20-210-00013686.0001001 / 14 APR 16

JTSN GW ENTRY FIELD ⩤

Indicates the Jettison Gross Weight (JTSN GW).
The flight crew enters the JTSN GW. The entered JTSN GW corresponds to the aircraft GW that the flight crew wants to obtain after fuel jettison.
The FQMS uses the entered JTSN GW to automatically stop the fuel jettison, when the aircraft GW reaches the entered JTSN GW.
For more information about fuel jettison, *Refer to DSC-28-40 Fuel Jettison (If Installed)*.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 JTSN GW

Ident.: DSC-22-FMS-20-20-20-210-00004010.0001001 / 22 APR 14

TOW

Indicates the Takeoff Weight (TOW).

- **Before engine start:**
  TOW = ZFW + block fuel - taxi fuel
- **After engine start:**
  TOW = GW - taxi fuel
- L2 **In flight:**
  TOW = GW

Ident.: DSC-22-FMS-20-20-20-210-00004011.0001001 / 22 APR 14

LW

Indicates the Landing Weight (LW).

- **Before engine start:**
  LW = TOW - trip fuel
- **After engine start:**
  LW = GW - trip fuel - taxi fuel
- **In flight:**
  LW = GW - trip fuel

DEST/ALTN TABLE

The DEST/ALTN table provides:

- The Estimated Time of Arrival (ETA), in UTC(flight) time, at the destination and alternate airports

  The UTC(TIME) label indicates the time reference:
  - The UTC label indicates that the time reference is the UTC time
  - The TIME label indicates that the time reference is the flight time.

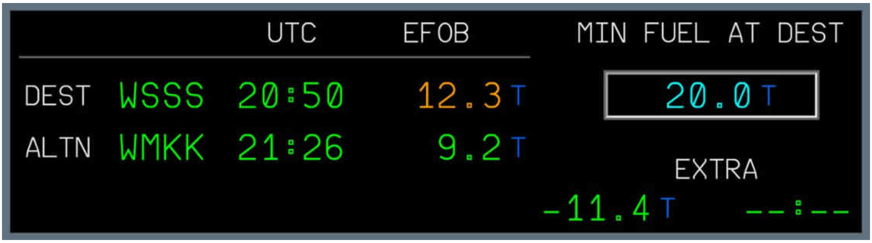
  L2 The time reference is defined as follows:
  - In the PREFLIGHT flight phase:
    - ■ If there is an entered Estimated Takeoff Time (ETT), the time reference is the UTC time
    - ■ If there is no entered ETT, the time reference is the flight time

    The flight crew enters the ETT on the RTA panel of the VERT REV page (*Refer to page*).
  - In flight:
    - ■ If the UTC time is valid, the time reference is the UTC time
    - ■ If the UTC time is not valid, the time reference is the flight time.

- L1 The Estimated Fuel on Board (EFOB) at the destination and alternate airports.
  The EFOB at the destination airport is displayed in amber, if its value is below the minimum fuel at destination. In addition to the amber EFOB, if the active flight phase is CRZ, DES, APPR, or GA, the FMS message area displays the DEST EFOB BELOW MIN message (*Refer to message*).

  In addition to the amber EFOB:
  - If the active flight phase is CRZ, DES, APPR, or GA, the FMS message area displays the DEST EFOB BELOW MIN message (*Refer to message*)
  - During preflight and cruise, the WD displays the DEST EFOB memo.

EFOB at DEST Less than MIN FUEL AT DEST



Note: On the SEC/FUEL&LOAD page, the EFOB at the destination airport is always displayed in white (even if its value is below the minimum fuel at destination).

Ident.: DSC-22-FMS-20-20-20-210-00004015.0001001 / 22 APR 14

MIN FUEL AT DEST ENTRY FIELD

Indicates the minimum fuel at destination.
The minimum fuel at destination is the minimum fuel quantity at the destination airport.

The minimum fuel at destination can be either:
- Manually entered by the flight crew, or
- Computed by the FMS, if the flight crew did not enter any MIN FUEL AT DEST value. In this case:
  MIN FUEL AT DEST = ALTN + FINAL

If the flight crew manually enters a MIN FUEL AT DEST value and this value is below ALTN + FINAL, the FMS message area displays the CHECK MIN FUEL AT DEST message (*Refer to message*).
If the flight crew tries to clear the MIN FUEL AT DEST entry field without entering any value, the FMS message area displays the NOT ALLOWED message (*Refer to message*).

Ident.: DSC-22-FMS-20-20-20-210-00005200.0001001 / 22 APR 14

EXTRA

Indicates the extra fuel and the extra time.
The extra fuel(time) is the fuel quantity(time) that will remain after landing at the destination airport, minus the minimum fuel at destination.
In the PREFLIGHT flight phase, the extra fuel is computed as follows:
EXTRA = BLOCK (or FOB, after engine start) - TAXI - TRIP - MIN FUEL AT DEST - RTE RSV
In flight, the EXTRA fuel is:
EXTRA = FOB - TRIP - MIN FUEL AT DEST
At takeoff, the FMS sets the route reserve to 0, and includes the route reserve fuel in the extra fuel.

Ident.: DSC-22-FMS-20-20-20-210-00004017.0001001 / 22 APR 14

RETURN BUTTON

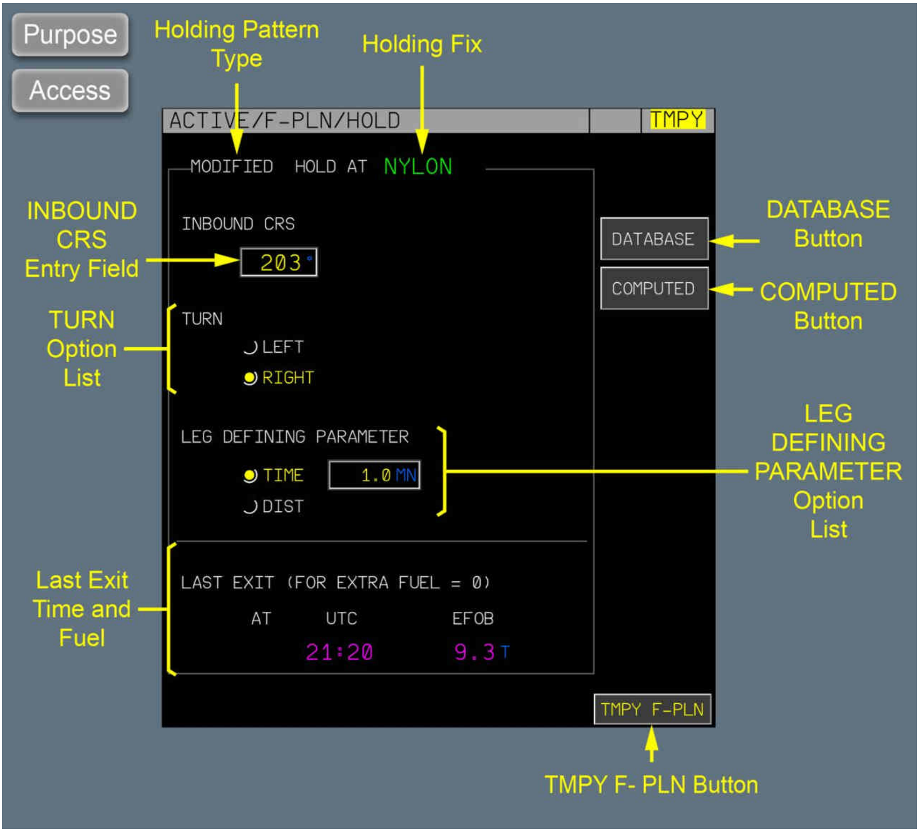
When clicked, displays the ACTIVE/INIT page (*Refer to page*).
L2 The RETURN button appears, only if the flight crew accesses the FUEL&LOAD page via the ACTIVE/INIT page.

HOLD PAGE

Applicable to: ALL

Ident.: DSC-22-FMS-20-20-20-220-00002721.0001001 / 22 APR 14

HOLD Page


Purpose
Access
Holding Pattern Type
Holding Fix
INBOUND CRS Entry Field
TURN Option List
Last Exit Time and Fuel
DATABASE Button
COMPUTED Button
LEG DEFINING PARAMETER Option List
TMPY F- PLN Button
DATABASE
COMPUTED
TMPY F-PLN

ACTIVE/F-PLN/HOLD TMPY

MODIFIED HOLD AT NYLON

INBOUND CRS
203°

TURN
○ LEFT
● RIGHT

LEG DEFINING PARAMETER
● TIME 1.0 MN
○ DIST

LAST EXIT (FOR EXTRA FUEL = 0)
AT UTC 21:20
EFOB 9.3 T

Ident.: DSC-22-FMS-20-20-20-220-00004018.0001001 / 22 APR 14

PURPOSE

On the HOLD page, the flight crew can:

- Check the parameters of a holding pattern that is defined at the revised waypoint, or
- Define a holding pattern (with a manual termination) at the revised waypoint.

  The flight crew inserts:
  - A holding pattern, stored in the navigation database
  - A holding pattern, computed by the FMS
  - A holding pattern, defined by the flight crew.

The revised waypoint of the flight plan is referred to as the holding fix. The holding fix is the start and end waypoint of the holding pattern.
The HOLD page is available for the active and secondary flight plans.

LINKS

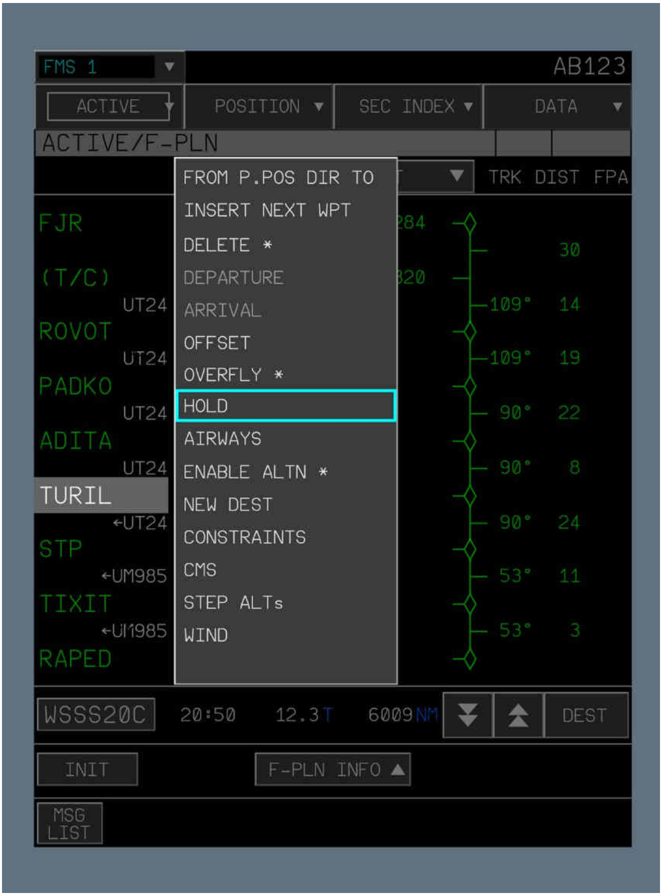
For information about the HOLD revision, *Refer to DSC-22-FMS-10-40-20 Purpose*.

Ident.: DSC-22-FMS-20-20-20-220-00004019.0001001 / 14 APR 14

ACCESS

The flight crew can access the HOLD page via the F-PLN page, by selecting HOLD in the waypoint revisions menu.

F-PLN Page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN
TRK DIST FPA
FJR
(T/C)
UT24
ROVOT
UT24
PADKO
UT24
ADITA
UT24
TURIL
←UT24
STP
←UM985
TIXIT
←UI1985
RAPED
FROM P.POS DIR TO
INSERT NEXT WPT
DELETE *
DEPARTURE
ARRIVAL
OFFSET
OVERFLY *
HOLD
AIRWAYS
ENABLE ALTN *
NEW DEST
CONSTRAINTS
CMS
STEP ALTs
WIND
284
320
30
109° 14
109° 19
90° 22
90° 8
90° 24
53° 11
53° 3
WSSS20C
20:50
12.3T
6009NM
DEST
INIT
F-PLN INFO
MSG LIST

Ident.: DSC-22-FMS-20-20-20-220-00004020.0001001 / 22 APR 14

HOLDING PATTERN TYPE

Indicates the type of the holding pattern:

- DATABASE:
  The holding pattern is stored in the navigation database. To select a database holding pattern that is associated with the revised waypoint, the flight crew clicks on the DATABASE button (*Refer to DATABASE Button*).
- COMPUTED:
  The FMS computes the holding pattern. To select a computed holding pattern, the flight crew selects clicks on the COMPUTED button (*Refer to COMPUTED Button*).
- MODIFIED:
  The flight crew creates the holding pattern. To create the holding pattern, the flight crew enters the parameters in the entry fields.
  As soon as the flight crew changes a parameter of a database or computed holding pattern, the holding pattern becomes a modified holding pattern.
- There is no type label, when:
  - There is no holding pattern associated with the revised waypoint, or
  - The holding pattern is inserted with a departure or arrival procedure, or with a flight plan uplink.

Ident.: DSC-22-FMS-20-20-20-220-00004021.0001001 / 22 APR 14

HOLDING FIX

Indicates the start and end waypoint of the holding pattern.
The holding fix is the flight plan waypoint from which the flight crew selected the HOLD revision.

Ident.: DSC-22-FMS-20-20-20-220-00004022.0001001 / 22 APR 14

INBOUND CRS ENTRY FIELD

Indicates the inbound course of the holding pattern.
The inbound course is automatically entered, if the flight crew selects a database or computed holding pattern.
The flight crew can always manually change the automatically-entered value.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 INBOUND CRS.

Ident.: DSC-22-FMS-20-20-20-220-00004023.0001001 / 22 APR 14

TURN OPTION LIST

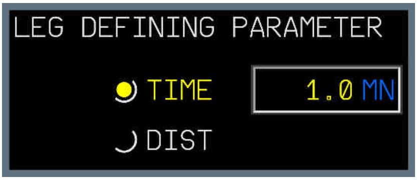
To select the turn side of the holding pattern, the flight crew selects one of the following options:
- LEFT
- RIGHT.

Ident.: DSC-22-FMS-20-20-20-220-00004024.0001001 / 22 APR 14

LEG DEFINING PARAMETER OPTION LIST

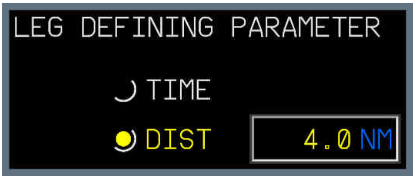
To select the parameter that defines the flight leg size, the flight crew selects one of the following options:
- TIME: A time defines the flight leg size
  When selected, displays the TIME entry field. The flight crew enters the time value in the TIME entry field.

TIME Entry Field


LEG DEFINING PARAMETER
● TIME 1.0 MN
○ DIST

- DIST: A distance defines the flight leg size.
  When selected, displays the DIST entry field. The flight crew enters the distance value in the DIST entry field.

DIST Entry Field


LEG DEFINING PARAMETER
○ TIME
● DIST 4.0 NM

The parameter of the flight leg is automatically selected, and the associated value is automatically entered, if the flight crew selects a database or computed holding pattern.
The flight crew can always manually change the automatically-selected parameter and the associated automatically-entered value.

ENTRY FORMAT

For the entry format of:
- The time that defines the flight leg size, *Refer to DSC-22-FMS-20-80 HOLD TIME*
- The distance that defines the flight leg size, *Refer to DSC-22-FMS-20-80 HOLD DIST*.

Ident.: DSC-22-FMS-20-20-20-220-00004025.0001001 / 22 APR 14

LAST EXIT TIME AND FUEL

Indicates the estimated UTC(flight) time and the estimated quantity of remaining fuel at which the aircraft must exit the holding pattern, in order to comply with the fuel policy.

The UTC(TIME) label indicates the time reference:
- The UTC label indicates that the time reference is the UTC time
- The TIME label indicates that the time reference is the flight time.

L2 The time reference is defined as follows:
- In the PREFLIGHT flight phase:
  - If there is an entered Estimated Takeoff Time (ETT), the time reference is the UTC time
  - If there is no entered ETT, the time reference is the flight time

  The flight crew enters the ETT on the RTA panel of the VERT REV page (*Refer to page*).
- In flight:
  - If the UTC time is valid, the time reference is the UTC time
  - If the UTC time is not valid, the time reference is the flight time.

L1 The fuel policy considers an extra fuel that is equal to 0 at landing at the destination airport.

Ident.: DSC-22-FMS-20-20-20-220-00004026.0001001 / 22 APR 14

DATABASE BUTTON

When clicked, displays the database holding pattern that is associated with the revised waypoint, and updates the temporary flight plan with this holding pattern.
If there is no database holding pattern for the revised waypoint, the DATABASE button is not available.

Ident.: DSC-22-FMS-20-20-20-220-00004027.0001001 / 14 APR 14

COMPUTED BUTTON

When clicked, computes and displays the holding pattern that is associated with the revised waypoint, and updates the temporary flight plan with this holding pattern.

L2 The computed holding pattern has the following parameters:

- Inbound course:
  - The track of the flight leg that is before the holding fix, or
  - The aircraft bearing, if the holding fix is P.POS
- Turn side: Right
- Leg size:
  - 1 min, if the predicted aircraft altitude at the holding pattern is below or equal to 14 000 ft , or
  - 1.5 min, if the predicted aircraft altitude at the holding pattern is above 14 000 ft.

Ident.: DSC-22-FMS-20-20-20-220-00004028.0001001 / 22 APR 14

TMPY F-PLN BUTTON

When clicked, displays the ACTIVE/F-PLN page (*Refer to page*).

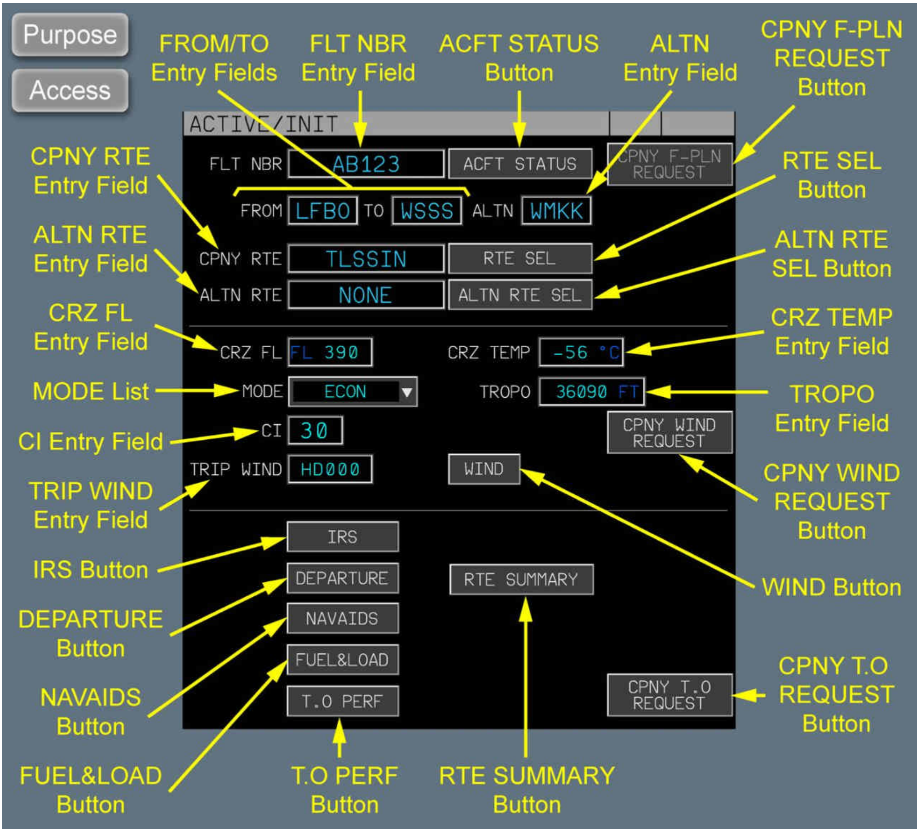
L2 The TMPY F-PLN button is displayed, only if there is a temporary flight plan. If there is no temporary flight plan, the RETURN button is displayed instead of the TMPY F-PLN button. When the flight crew clicks on the RETURN button, the F-PLN page appears.

INIT PAGE

Applicable to: ALL

Ident.: DSC-22-FMS-20-20-20-230-00002722.0001001 / 22 APR 14

INIT Page



FLT NBR AB123
FROM LFBO TO WSSS ALTN WMKK
CPNY RTE TLSSIN
ALTN RTE NONE
CRZ FL FL 390
CRZ TEMP -56 °C
MODE ECON
TROPO 36090 FT
CI 30
TRIP WIND HD000

Purpose
Access
ACTIVE/INIT
FROM/TO Entry Fields
FLT NBR Entry Field
ACFT STATUS Button
ALTN Entry Field
CPNY F-PLN REQUEST Button
CPNY RTE Entry Field
RTE SEL Button
ALTN RTE Entry Field
ALTN RTE SEL Button
CRZ FL Entry Field
CRZ TEMP Entry Field
MODE List
TROPO Entry Field
CI Entry Field
CPNY WIND REQUEST Button
TRIP WIND Entry Field
IRS Button
WIND Button
DEPARTURE Button
CPNY T.O REQUEST Button
NAVAIDS Button
FUEL&LOAD Button
T.O PERF Button
RTE SUMMARY Button
ACFT STATUS
CPNY F-PLN REQUEST
RTE SEL
ALTN RTE SEL
CPNY WIND REQUEST
WIND
IRS
DEPARTURE
NAVAIDS
FUEL&LOAD
T.O PERF
RTE SUMMARY
CPNY T.O REQUEST

Ident.: DSC-22-FMS-20-20-20-230-00004029.0001001 / 22 APR 14

PURPOSE

The INIT page enables the flight crew to:

- Initialize the flight plan
- Access the pages that enable the flight crew to request the following data from the company ground station:
  - Flight plan data
  - Wind data
  - Takeoff data.

  When the data is received, the INIT page enables the flight crew to
  - Insert the received flight-plan data
  - Access the pages that display the received wind data and the received takeoff data.

The INIT page also guides the flight crew through the FMS initialization via specific buttons on the lower part of the page: IRS button, DEPARTURE button, NAVAIDS button, FUEL&LOAD button, and T.O PERF button.
The INIT page is available for the active and secondary flight plans.
The SEC/INIT page does not display the IRS button, the DEPARTURE button, the NAVAIDS button, the FUEL&LOAD button, and the T.O PERF button.

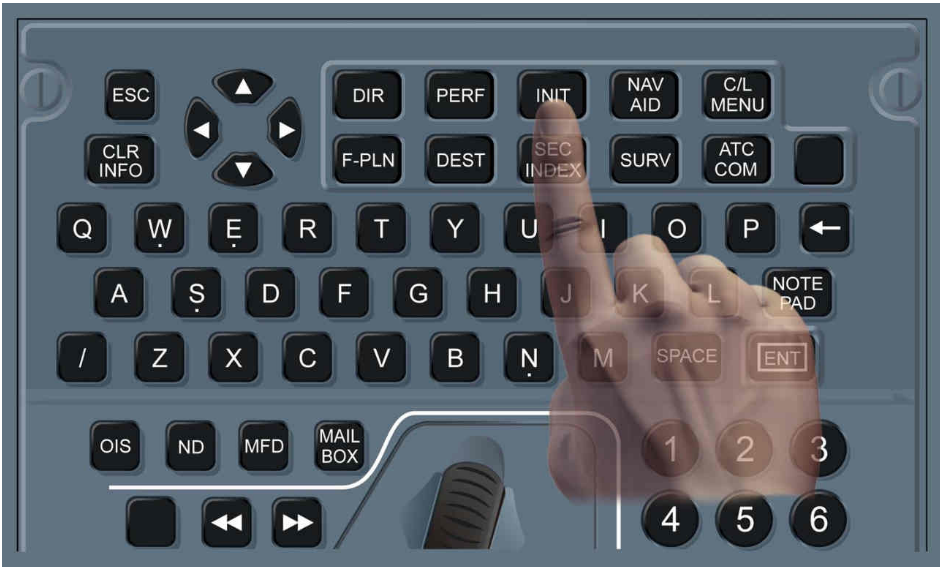
Ident.: DSC-22-FMS-20-20-20-230-00004030.0001001 / 14 APR 14

ACCESS

The flight crew can access:

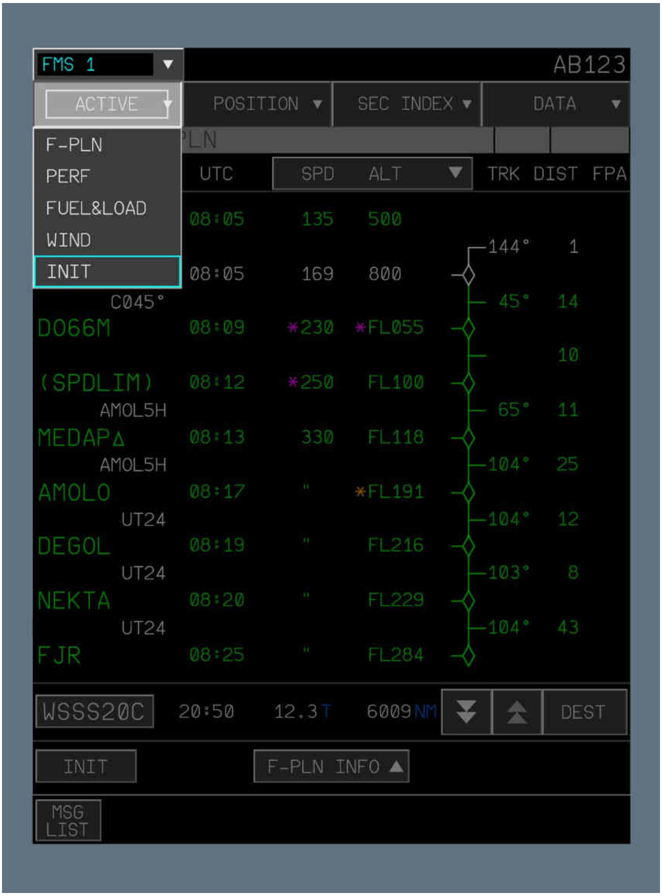
- The ACTIVE/INIT page via:
  - The KCCU, by pressing the INIT key

KCCU


ESC
CLR INFO
DIR
PERF
INIT
NAV AID
C/L MENU
F-PLN
DEST
SEC INDEX
SURV
ATC COM
Q W E R T Y U I O P
A S D F G H J K L
NOTE PAD
/ Z X C V B N M
SPACE
ENT
OIS
ND
MFD
MAIL BOX
1 2 3 4 5 6

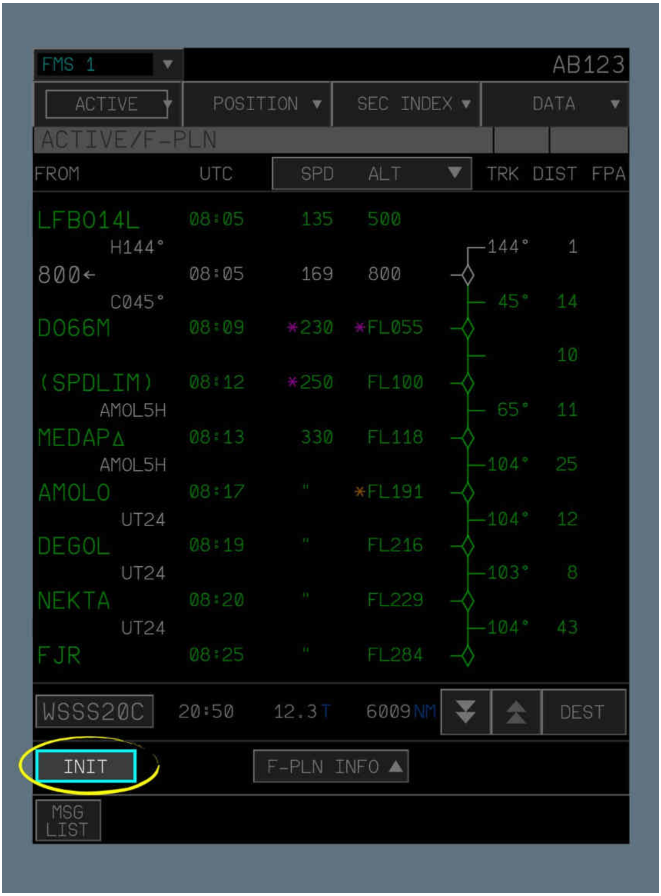
  - The general menu bar, by selecting INIT in the ACTIVE menu

General Menu Bar


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
F-PLN
PERF
FUEL&LOAD
WIND
INIT
UTC
SPD
ALT
TRK
DIST
FPA
WSSS20C
20:50
12.3T
6009NM
DEST
INIT
F-PLN INFO
MSG LIST

- The ACTIVE/F-PLN page, by clicking on the INIT button
  The access by clicking on the INIT button is possible, only during the PREFLIGHT flight phase.

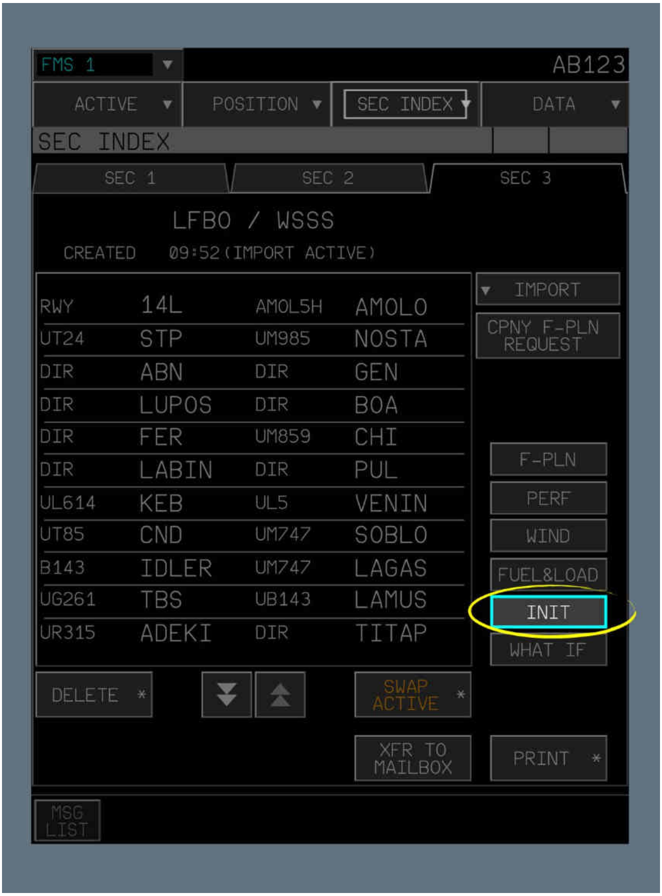
ACTIVE/F-PLN Page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN
WSSS20C
20:50
12.3T
6009NM
DEST
INIT
F-PLN INFO
MSG LIST

FROM	UTC	SPD	ALT	TRK	DIST	FPA
LFBO14L	08:05	135	500			
H144°				144°	1	
800←	08:05	169	800			
C045°				45°	14	
D066M	08:09	*230	*FL055			
					10	
(SPDLIM)	08:12	*250	FL100			
AMOL5H				65°	11	
MEDAPΔ	08:13	330	FL118			
AMOL5H				104°	25	
AMOLO	08:17	"	*FL191			
UT24				104°	12	
DEGOL	08:19	"	FL216			
UT24				103°	8	
NEKTA	08:20	"	FL229			
UT24				104°	43	
FJR	08:25	"	FL284			

- The SEC/INIT page via the SEC INDEX page, by clicking on the INIT button.
  In this case, the RETURN button is displayed at the bottom of the SEC/INIT page. When the flight crew clicks on the RETURN button, the SEC INDEX page appears.

SEC INDEX Page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
SEC INDEX
SEC 1
SEC 2
SEC 3
IMPORT
CPNY F-PLN REQUEST
F-PLN
PERF
WIND
FUEL&LOAD
INIT
WHAT IF
DELETE *
SWAP ACTIVE *
XFR TO MAILBOX
PRINT *
MSG LIST

LFBO / WSSS

CREATED 09:52(IMPORT ACTIVE)

RWY	14L	AMOL5H	AMOLO
UT24	STP	UM985	NOSTA
DIR	ABN	DIR	GEN
DIR	LUPOS	DIR	BOA
DIR	FER	UM859	CHI
DIR	LABIN	DIR	PUL
UL614	KEB	UL5	VENIN
UT85	CND	UM747	SOBLO
B143	IDLER	UM747	LAGAS
UG261	TBS	UB143	LAMUS
UR315	ADEKI	DIR	TITAP

Ident.: DSC-22-FMS-20-20-20-230-00004031.0001001 / 22 APR 14

FLT NBR ENTRY FIELD

Indicates the flight number.
The FLT NBR entry field must not be empty.

The flight number is:
- Manually entered by the flight crew, or
- Automatically entered, if a received company flight plan is inserted.

L2 The entered flight number appears in the upper right corner of the MFD, even when the MFD does not display an FMS page.
The FMS sends the flight number to the ATC system for use in the ATC downlink messages.

L1 **ENTRY FORMAT**

Refer to DSC-22-FMS-20-80 FLT NBR.

Ident.: DSC-22-FMS-20-20-20-230-00004032.0001001 / 14 APR 14

ACFT STATUS BUTTON

When clicked, displays the ACFT STATUS panel of the DATA/STATUS page (*Refer to page*).

Ident.: DSC-22-FMS-20-20-20-230-00004033.0001001 / 22 APR 14

FROM/TO ENTRY FIELDS

Indicate the idents of the FROM/TO city-pair (i.e. departure airport and destination airport).
The FROM/TO entry fields must not be empty.

The idents of the FROM/TO city-pair are either:
- Manually entered by the flight crew, or
- Automatically entered, when one of the following occurs:
  - The flight crew enters a company route in the CPNY RTE entry field
  - A received company or ATC flight plan is inserted.

After the flight crew manually enters a FROM/TO city-pair, the ROUTE SELECTION page appears, if there is at least one company route that is associated with the entered FROM/TO city-pair.
For information about the ROUTE SELECTION page, *Refer to DSC-22-FMS-20-20-20 ROUTE SELECTION Page*.

CAUTION	Entering the FROM/TO city-pair creates a new flight plan, and deletes the current flight plan, if any.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 AIRPORT (ARPT).

L12

Note: *If the format is correct but the entered airport is not in the navigation database, the PILOT STORED RWYs panel of the DATA/AIRPORT page appears. Via the PILOT STORED RWYs panel, the flight crew can add the entered airport to the pilots-stored elements database.*
For more information about the DATA/AIRPORT page, Refer to DSC-22-FMS-20-20-20 DATA/AIRPORT Page.
For information about the pilot-stored elements database, Refer to DSC-22-FMS-10-20 Pilot-Stored Elements Database.

L2

LIMITATIONS

The flight crew cannot enter the FROM/TO city-pair on the ACTIVE/INIT page, when:
- The aircraft is not in the PREFLIGHT flight phase, or
- There is a temporary flight plan.

The flight crew cannot clear the FROM/TO entry fields.

Ident.: DSC-22-FMS-20-20-20-230-00004035.0001001 / 14 APR 14

ALTN ENTRY FIELD

Indicates the ident of the alternate airport.
The ALTN entry field must not be empty.

The ident of the alternate airport is:
- Manually entered by the flight crew, or
- Automatically entered, when one of the following occurs:
  - The flight crew enters a company route in the CPNY RTE entry field, and an alternate airport is associated with the entered company route
  - A received company or ATC flight plan is inserted, and an alternate airport is associated with the route of the received flight plan.

After the flight crew manually enters an alternate airport, the ROUTE SELECTION page appears, if there is at least one company route that is associated with the entered alternate and destination airports.
The alternate airport can also be selected via the ALTERNATE page (Refer to page).

Note: *1. The FMS automatically synchronizes the ALTN entry field of the ACTIVE/INIT page and the SELECTED area of the ACTIVE/ALTERNATE page (Refer to page).*
2. The FMS automatically synchronizes the ALTN entry field of the SEC1(2)(3)/INIT page and the SELECTED area of the SEC1(2)(3)/ALTERNATE page (Refer to page).

CAUTION	After an alternate airport is entered, the FMS creates a new alternate flight plan, and deletes the current alternate flight plan, if any.

The ALTN entry field displays the alternate airport that is associated with the defined destination airport. If the defined destination airport has no associated alternate airport, the ALTN entry field displays NONE.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 ALTN.

L12

Note: *If the format is correct but the entered airport is not in the navigation database, the PILOT STORED RWYs panel of the DATA/AIRPORT page appears. Via the PILOT STORED RWYs panel, the flight crew can add the entered airport to the pilots-stored elements database.*
For more information about the DATA/AIRPORT page, Refer to DSC-22-FMS-20-20-20 DATA/AIRPORT Page.
For information about the pilot-stored elements database, Refer to DSC-22-FMS-10-20 Pilot-Stored Elements Database.

Ident.: DSC-22-FMS-20-20-20-230-00004036.0001001 / 14 APR 14

CPNY RTE ENTRY FIELD

Indicates the company route.
The company route is mandatory, if there is no defined FROM/TO city-pair.

The company route is:
- Manually entered by the flight crew, or
- Automatically entered, when the flight crew selects a company route on the ROUTE SELECTION page (*Refer to page*).

CAUTION	Entering the company route creates a new flight plan, and deletes the current flight plan, if any.

If a FROM/TO city-pair is defined and no company route is selected, the CPNY RTE entry field displays NONE.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 CPNY RTE.

L2

LIMITATIONS

The flight crew cannot enter the company route on the ACTIVE/INIT page, when:
- The aircraft is not in the PREFLIGHT flight phase, or
- There is a temporary flight plan.

The flight crew cannot clear the CPNY RTE entry field.

Ident.: DSC-22-FMS-20-20-20-230-00004037.0001001 / 14 APR 14

ALTN RTE ENTRY FIELD

Indicates the company alternate route.

The company alternate route is:
- Manually entered by the flight crew, or
- Automatically entered, when the flight crew selects an company alternate route on the ROUTE SELECTION page (*Refer to page*).

The company alternate route can also be selected via the ALTERNATE page (*Refer to page*).

Note: *1. The FMS automatically synchronizes the ALTN RTE entry field of the ACTIVE/INIT page and the SELECTED area of the ACTIVE/ALTERNATE page (Refer to page).*
2. The FMS automatically synchronizes the ALTN RTE entry field of the SEC1(2)(3)/INIT page and the SELECTED area of the SEC1(2)(3)/ALTERNATE page (Refer to page).

CAUTION	After a company alternate route is entered, the FMS creates a new alternate flight plan, and deletes the current alternate flight plan, if any.

If a destination airport is defined and no company alternate route is selected, the ALTN RTE entry field displays NONE.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 ALTN RTE.

L2

LIMITATIONS

The flight crew cannot enter the company alternate route on the ACTIVE/INIT page, when:
- No destination airport is defined, or
- There is a temporary flight plan.

The flight crew cannot clear the ALTN RTE entry field.

Ident.: DSC-22-FMS-20-20-20-230-00004038.0001001 / 22 APR 14

RTE SEL BUTTON

When clicked, displays the ROUTE SELECTION page (*Refer to page*).

Ident.: DSC-22-FMS-20-20-20-230-00004039.0001001 / 14 APR 14

ALTN RTE SEL BUTTON

When clicked, displays the ROUTE SELECTION page (*Refer to page*).

Ident.: DSC-22-FMS-20-20-20-230-00004040.0001001 / 14 APR 14

CRZ FL ENTRY FIELD

Indicates the cruise flight level.

The CRZ FL entry field must not be empty.

The cruise flight level is:
- Manually entered by the flight crew, or
- Automatically entered, when one of the following occurs:
  - The flight crew enters a company route in the CPNY RTE entry field, and a cruise flight level is associated with the entered company route
  - A received company or ATC flight plan is inserted, and a cruise flight level is associated with the route of the inserted flight plan.

Note: *1. The FMS automatically synchronizes the CRZ FL entry field of the ACTIVE/INIT page and the CRZ entry field of the ACTIVE/PERF page (Refer to page).*
2. The FMS automatically synchronizes the CRZ FL entry field of the SEC1(2)(3)/INIT page and the CRZ entry field of the SEC1(2)(3)/PERF page (Refer to page).

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 CRZ FL.

AUTOMATIC UPDATE

L2 If no cruise FL is defined and the T.O flight phase becomes active, the cruise flight level is automatically set to the highest of the following two values:
- The AFS CP altitude
- The highest climb altitude constraint in the destination flight plan.

L1 If the flight crew sets the AFS CP selected altitude above the cruise flight level , the cruise flight level is set to the AFS CP selected altitude.
If the flight crew enters a cruise flight level that is below the AFS CP selected altitude, the entry is rejected, and the cruise flight level is set to the AFS CP selected altitude.
The CRZ FL entry field displays dashes, when the DES or APPR flight phase becomes active.

L2 **LIMITATIONS**

The flight crew cannot enter the cruise flight level on the ACTIVE/INIT page, when no FROM/TO city-pair is defined.
The flight crew cannot clear the CRZ FL entry field.

Ident.: DSC-22-FMS-20-20-20-230-00004041.0001001 / 14 APR 14

CRZ TEMP ENTRY FIELD

Indicates the cruise temperature.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 CRZ TEMP.

DEFAULT VALUE

When a cruise flight level is entered, or if the CRZ TEMP entry field is cleared, the cruise temperature is set to the ISA temperature.

AUTOMATIC UPDATE

The FMS automatically updates the cruise temperature, if the cruise flight level changes.

L2

LIMITATIONS

The flight crew can not enter the cruise temperature on the ACTIVE/INIT page, when no cruise flight level is defined.

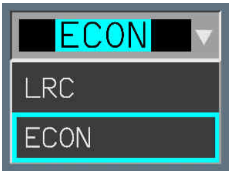
Ident.: DSC-22-FMS-20-20-20-230-00004053.0001001 / 02 OCT 14

MODE LIST

Indicates the FMS speed mode.
The flight crew selects the FMS speed mode from the MODE list.

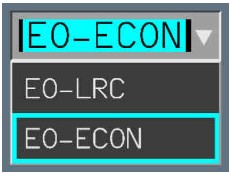
The MODE list has the following options:
- LRC: The FMS computes the optimum speed/Mach that corresponds to the Long Range Cruise (LRC)
  In LRC mode, the optimum speed/Mach is referred to as the LRC speed.
- ECON: The FMS computes the optimum speed/Mach based on the CI value that is entered in the CI entry field.
  In ECON mode, the optimum speed/Mach is referred to as the ECON speed.

MODE List



If the EO mode is active, the MODE list has the following options:
- EO-LRC: The FMS computes the optimum speed/Mach that corresponds to the Long Range Cruise (LRC)
  In EO-LRC mode, the FMS takes the engine failure into account to compute the optimum speed/Mach. The optimum speed/Mach is referred to as the EO-LRC speed.
- EO-ECON: The FMS computes the optimum speed/Mach based on the CI value that is entered in the CI entry field.
  In EO-ECON mode, the FMS takes the engine failure into account to compute the optimum speed/Mach. The optimum speed/Mach is referred to as the EO-ECON speed.

MODE List in EO Mode



Note: *1. The FMS automatically synchronizes all of the following:*
- *The MODE list of the ACTIVE/INIT page*
- *The MODE list of the ACTIVE/FUEL&LOAD page (Refer to page)*
- *The MODE list of the CLB, CRZ, and DES panels of the ACTIVE/PERF page (Refer to page).*

2. The FMS automatically synchronizes all of the following:
- *The MODE list of the SEC1(2)(3)/INIT page*
- *The MODE list of the SEC1(2)(3)/FUEL&LOAD page (Refer to page)*
- *The MODE list of the CLB, CRZ, and DES panels of the SEC1(2)(3)/PERF page (Refer to page).*

For more information about the FMS speed mode, *Refer to DSC-22-FMS-10-50-20 FMS Speed Mode (ECON/LRC)*.

DEFAULT SELECTION

At power-up and during the PREFLIGHT flight phase, the default FMS speed mode is ECON with no CI value. Then, if the flight crew does not enter a CI value before the flight crew enters the ZFW value or before engine start, the FMS automatically:
- Selects the LRC mode
- Sets the CI value to 0.

LIMITATIONS

The flight crew cannot change the FMS speed mode, when the DES, APPR, GA, or DONE flight phase is active.

Ident.: DSC-22-FMS-20-20-20-230-00004042.0001001 / 30 APR 14

CI ENTRY FIELD

Indicates the Cost Index (CI).
The CI entry field must not be empty.

The CI value is:

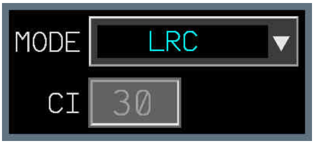
- Manually entered by the flight crew, or
- Automatically entered, if one of the following occurs:
  - The flight crew enters a company route in the CPNY RTE entry field, and a CI is associated with the entered company route
  - A received company or ATC flight plan is inserted, and a CI is associated with the route of the received flight plan.

Note: *1. The FMS automatically synchronizes all of the following:*
- *The CI entry field of the ACTIVE/INIT page*
- *The CI entry field of the ACTIVE/FUEL&LOAD page (Refer to page)*
- *The CI entry field of the CLB, CRZ, and DES panels of the ACTIVE/PERF page (Refer to page).*

2. The FMS automatically synchronizes all of the following:
- *The CI entry field of the SEC1(2)(3)/INIT page*
- *The CI entry field of the SEC1(2)(3)/FUEL&LOAD page (Refer to page)*
- *The CI entry field of the CLB, CRZ, and DES panels of the SEC1(2)(3)/PERF page (Refer to page).*

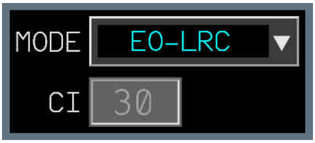
If the FMS speed mode is LRC, the CI entry field still displays the CI value that is associated with the ECON mode, but the flight crew cannot change the CI value.

CI Entry Field in LRC Mode



If the FMS speed mode is EO-LRC, the CI entry field still displays the CI value that is associated with the EO-ECON mode, but the flight crew cannot change the CI value.

CI Entry Field in EO-LRC Mode



For more information about the CI, *Refer to DSC-22-FMS-10-50-20 FMS Speed Mode (ECON/LRC)*.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 COST INDEX (CI).

DEFAULT VALUE

At power-up and during the PREFLIGHT flight phase, the default FMS speed mode is ECON with no CI value. Then, if the flight crew does not enter a CI value before the flight crew enters the ZFW value or before engine start, the FMS automatically:
- Selects the LRC mode
- Sets the CI value to 0.

LIMITATIONS

The CI cannot be changed, when the DES, APPR, or GA flight phase is active.

Ident.: DSC-22-FMS-20-20-20-230-00004043.0001001 / 22 APR 14

TROPO ENTRY FIELD

Indicates the tropopause altitude.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 TROPO.

DEFAULT VALUE

The default tropopause altitude is 36 090 ft.

Ident.: DSC-22-FMS-20-20-20-230-00004044.0001001 / 22 APR 14

TRIP WIND ENTRY FIELD

Indicates the trip wind.

L2 The trip wind is the average effective wind for the trip from the departure airport to the destination airport.

L1 The flight crew manually enters the trip wind.
When the flight crew enters any of the climb, cruise, or descent winds on the WIND page, the FMS does no longer use the trip wind value. In this case, the TRIP WIND entry field displays dashes, and the flight crew cannot enter a value in the TRIP WIND entry field.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 TRIP WIND

DEFAULT VALUE

The default value of the trip wind is HD000.

L2 **LIMITATIONS**

The flight crew cannot enter the trip wind, when no FROM/TO city-pair is defined.

Ident.: DSC-22-FMS-20-20-20-230-00004045.0001001 / 22 APR 14

WIND BUTTON

When clicked, displays the WIND page (*Refer to page*).

Ident.: DSC-22-FMS-20-20-20-230-00004046.0001001 / 22 APR 14

IRS BUTTON

When clicked, displays the POSITION/IRS page (*Refer to page*).

Ident.: DSC-22-FMS-20-20-20-230-00004047.0001001 / 22 APR 14

DEPARTURE BUTTON

When clicked, displays the DEPARTURE page (*Refer to page*).

The DEPARTURE button is available, only when all of the following apply:
- The active flight phase is PREFLIGHT
- A departure airport is defined.

Ident.: DSC-22-FMS-20-20-20-230-00004049.0001001 / 22 APR 14

NAVAIDS BUTTON

When clicked, displays the POSITION/NAVAIDS page (*Refer to page*).

Ident.: DSC-22-FMS-20-20-20-230-00004050.0001001 / 22 APR 14

FUEL&LOAD BUTTON

When clicked, displays the FUEL&LOAD page (*Refer to page*).

Ident.: DSC-22-FMS-20-20-20-230-00004051.0001001 / 22 APR 14

T.O PERF BUTTON

When clicked, displays the T.O panel of the PERF page (*Refer to page*).

Ident.: DSC-22-FMS-20-20-20-230-00004048.0001001 / 22 APR 14

RTE SUMMARY BUTTON

When clicked, displays the DATA/ROUTE page (*Refer to page*).

Ident.: DSC-22-FMS-20-20-20-230-00004052.0001001 / 14 APR 14

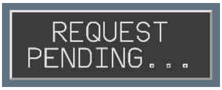
CPNY F-PLN REQUEST BUTTON

When clicked, displays the COMPANY F-PLN REQUEST page (*Refer to page*).

L2 The CPNY F-PLN REQUEST button is available, only when all of the following apply:
- Before engine start
- No active flight plan is defined
- No request for a secondary flight plan is in progress.

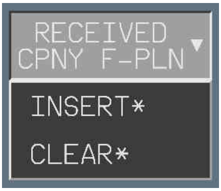
L1 When a request for an active flight plan is in progress, the button label is REQUEST PENDING... . When clicked, still displays the COMPANY F-PLN REQUEST page.

REQUEST PENDING...



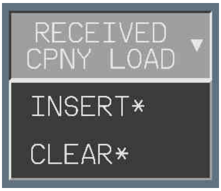
When an active company flight plan is received, the button label is RECEIVED CPNY F-PLN . When clicked, opens a menu that enables the flight crew to insert or clear the received company flight plan.

RECEIVED CPNY F-PLN



When the received company message contains only the flight plan load data, and not the flight plan itself, the button label is RECEIVED CPNY LOAD. When clicked, opens a menu that enables the flight crew to insert or clear the received company load data.

RECEIVED CPNY LOAD



Ident.: DSC-22-FMS-20-20-20-230-00004054.0001001 / 14 APR 14

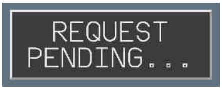
CPNY WIND REQUEST BUTTON

When clicked:

- If the free text AMI option is not activated, sends a company wind request to the company ground station (via ACARS)
- If the free text AMI option is activated, displays the COMPANY WIND DATA REQUEST page (*Refer to page*).
  On the COMPANY WIND DATA REQUEST page, the flight crew can enter free text that will be sent with the wind request.

When a request for an active wind is in progress, the button label is REQUEST PENDING... . When clicked, still displays the COMPANY WIND DATA REQUEST page.

REQUEST PENDING...



Ident.: DSC-22-FMS-20-20-20-230-00004056.0001001 / 14 APR 14

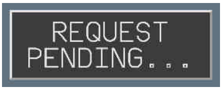
CPNY T.O REQUEST BUTTON

When clicked, displays the COMPANY T.O DATA REQUEST page (*Refer to page*).

L2 The CPNY T.O REQUEST button is available, only when the flight phase is PREFLIGHT or DONE.

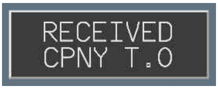
L1 When a request for active takeoff data is in progress, the button label is REQUEST PENDING... . When clicked, still displays the COMPANY T.O DATA REQUEST page.

REQUEST PENDING...



When the active company takeoff data is received, the button label is RECEIVED CPNY T.O. When clicked, displays the RECEIVED CPNY T.O DATA page (*Refer to page*).

RECEIVED CPNY T.O

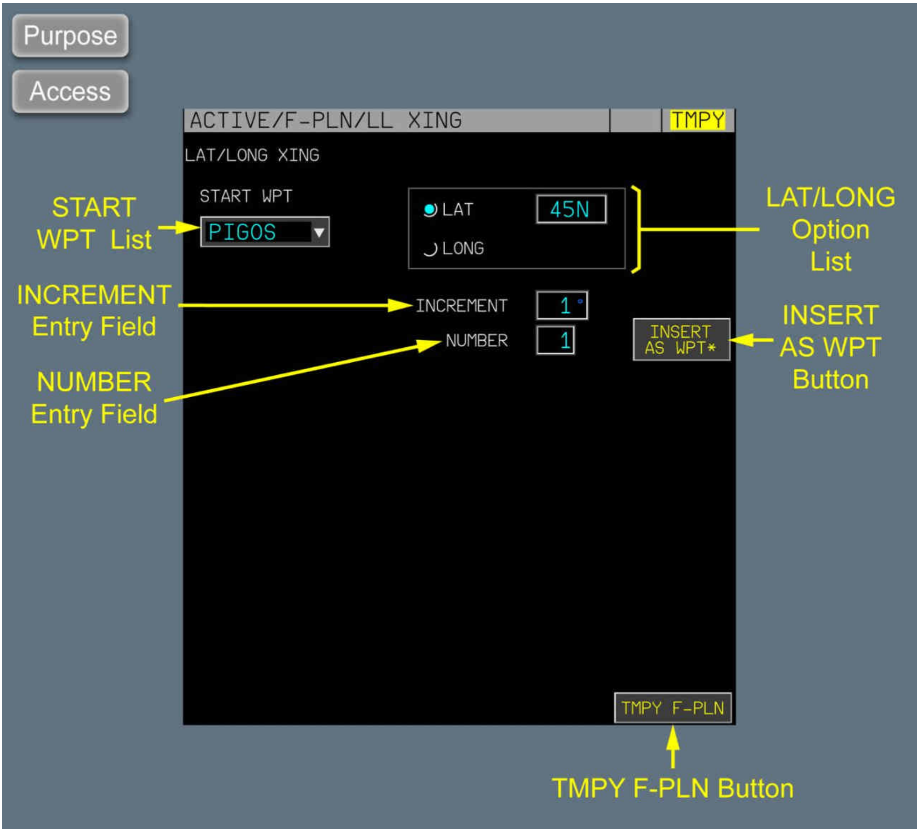


LL XING PAGE

Applicable to: ALL

Ident.: DSC-22-FMS-20-20-20-240-00002724.0001001 / 22 APR 14

LL XING Page


Purpose
Access
ACTIVE/F-PLN/LL XING
TMPY
LAT/LONG XING
START WPT
PIGOS
● LAT 45N
○ LONG
INCREMENT 1°
NUMBER 1
INSERT AS WPT*
TMPY F-PLN
START WPT List
INCREMENT Entry Field
NUMBER Entry Field
LAT/LONG Option List
INSERT AS WPT Button
TMPY F-PLN Button

Ident.: DSC-22-FMS-20-20-20-240-00004061.0001001 / 22 APR 14

PURPOSE

On the LL XING page, the flight crew can create latitude/longitude crossing points, and insert them as waypoints in the flight plan.
The LL XING page is available for the active and secondary flight plans.

LINKS

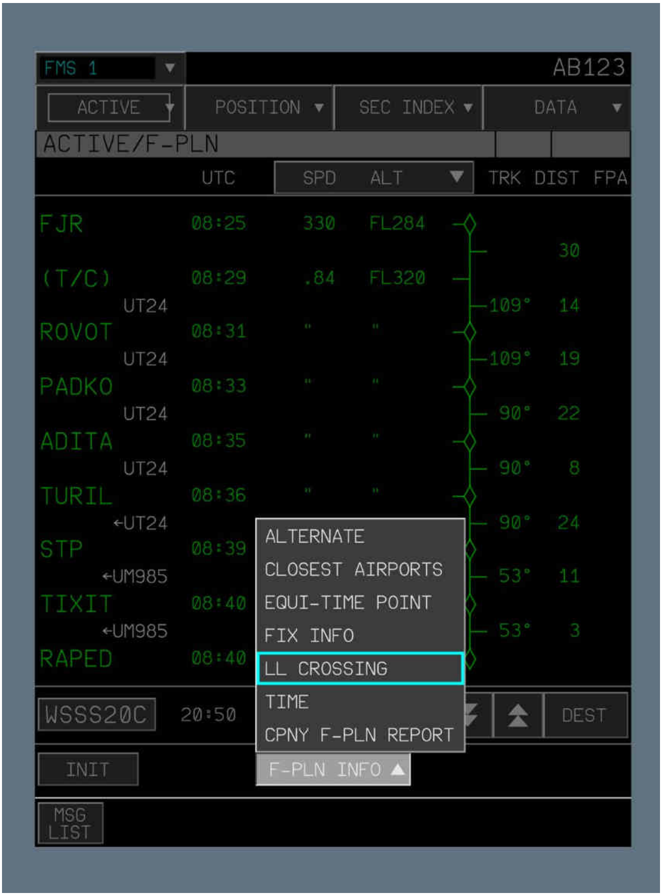
For information about the LL CROSSING revision, *Refer to DSC-22-FMS-10-40-20 Purpose*.

Ident.: DSC-22-FMS-20-20-20-240-00004062.0001001 / 14 APR 14

ACCESS

The flight crew can access the LL XING page via the F-PLN page, by selecting LL CROSSING in the F-PLN INFO menu.

F-PLN Page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN
UTC
SPD
ALT
TRK
DIST
FPA
FJR 08:25 330 FL284
30
(T/C) 08:29 .84 FL320
UT24
109° 14
ROVOT 08:31 " "
UT24
109° 19
PADKO 08:33 " "
UT24
90° 22
ADITA 08:35 " "
UT24
90° 8
TURIL 08:36 " "
←UT24
90° 24
STP 08:39
←UM985
53° 11
TIXIT 08:40
←UM985
53° 3
RAPED 08:40
ALTERNATE
CLOSEST AIRPORTS
EQUI-TIME POINT
FIX INFO
LL CROSSING
TIME
CPNY F-PLN REPORT
F-PLN INFO
WSSS20C
20:50
DEST
INIT
MSG LIST

Ident.: DSC-22-FMS-20-20-20-240-00004063.0001001 / 22 APR 14

START WPT LIST

Indicates the first waypoint along the flight plan that the FMS uses to compute the series of latitude/longitude crossing points.
The flight crew enters the start waypoint via the keyboard, or by selecting the start waypoint from the START WPT list.

The start waypoint can be defined between the origin and:
- The last en-route waypoint (excluded), or
- The waypoint that is associated with the first descent constraint in the destination flight plan (excluded).

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 WAYPOINT.

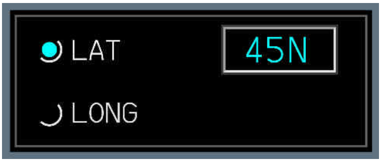
Ident.: DSC-22-FMS-20-20-20-240-00004064.0001001 / 22 APR 14

LAT/LONG OPTION LIST

The flight crew selects the parameter that defines the crossing points, by selecting one of the following options:

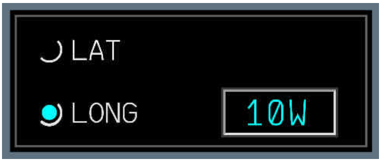
- LAT: Each crossing point is an intersection with a latitude
  LAT is the default-selected option.
  When selected, displays the LAT entry field.
  The LAT entry field indicates the origin latitude value.
  The default value of the origin latitude is the rounded latitude of the flight plan waypoint that follows the first waypoint of the START WPT list. If the FMS does not find a latitude that corresponds to this flight plan waypoint, the default value is the rounded latitude of the first waypoint of the START WPT list.
  The flight crew can overwrite the default value.
  If the flight crew clears the default value or the manually-entered value, the LAT entry field disappears, and the LAT option is deselected.

LAT Entry Field



- LONG: Each crossing point is an intersection with a longitude.
  When selected, displays the LONG entry field.
  The LONG entry field indicates the origin longitude value.
  The default value of the origin longitude is the rounded longitude of the flight plan waypoint that follows the first waypoint of the START WPT list. If the FMS does not find a longitude that corresponds to this flight plan waypoint, the default value is the rounded longitude of the first waypoint of the START WPT list.
  The flight crew can overwrite the default value.
  If the flight crew clears the default value or the manually-entered value, the LONG entry field disappears, and the LONG option is deselected.

LONG Entry Field



ENTRY FORMAT

For the entry format of:
- Origin latitude, *Refer to DSC-22-FMS-20-80 LAT (LL XING)*
- Origin longitude, *Refer to DSC-22-FMS-20-80 LONG (LL XING)*.

Ident.: DSC-22-FMS-20-20-20-240-00004065.0001001 / 22 APR 14

INCREMENT ENTRY FIELD

The flight crew enters the increment between the crossing latitudes(longitudes).
The default value is 1.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 INCREMENT.

Ident.: DSC-22-FMS-20-20-20-240-00004066.0001001 / 22 APR 14

NUMBER ENTRY FIELD

The flight crew enters the maximum desired number of intersections.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 NUMBER.

Ident.: DSC-22-FMS-20-20-20-240-00004067.0001001 / 22 APR 14

INSERT AS WPT BUTTON

When clicked, inserts the intersections as waypoints in the temporary flight plan.

Ident.: DSC-22-FMS-20-20-20-240-00004071.0001001 / 22 APR 14

TMPY F-PLN BUTTON

When clicked, displays the ACTIVE/F-PLN page (*Refer to page*).

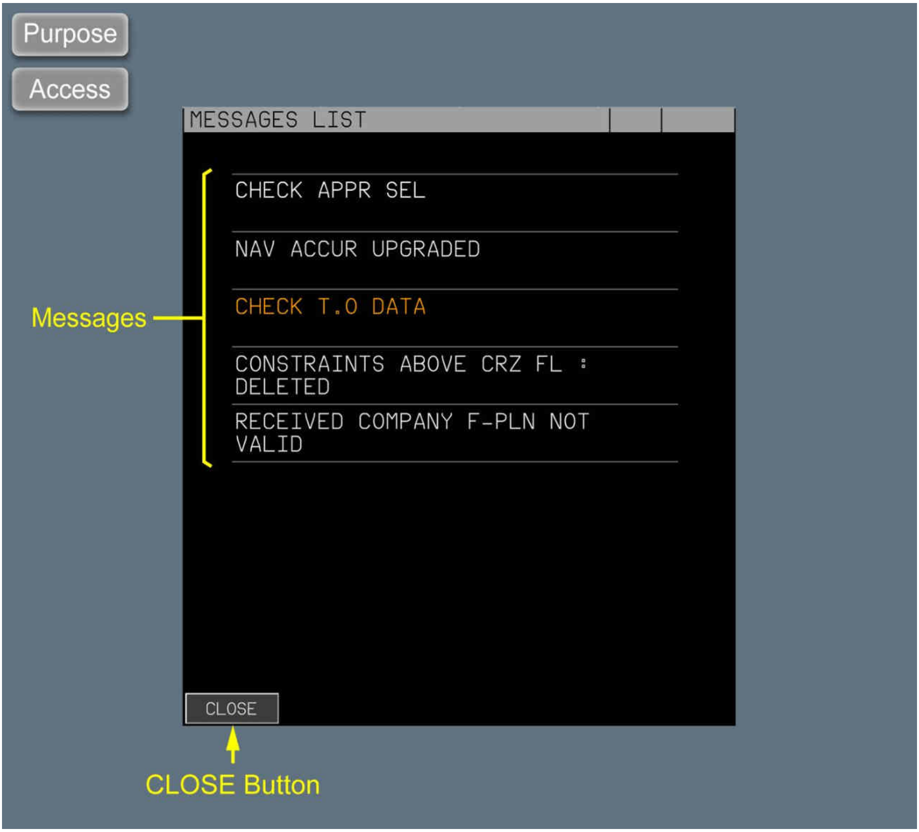
L2 The TMPY F-PLN button is displayed, only if there is a temporary flight plan. If there is no temporary flight plan, the RETURN button is displayed instead of the TMPY F-PLN button. When the flight crew clicks on the RETURN button, the F-PLN page appears.

MESSAGES LIST PAGE

Applicable to: ALL

Ident.: DSC-22-FMS-20-20-20-250-00002723.0001001 / 22 APR 14

MESSAGES LIST Page



CHECK APPR SEL

NAV ACCUR UPGRADED

CHECK T.O DATA

CONSTRAINTS ABOVE CRZ FL : DELETED

RECEIVED COMPANY F-PLN NOT VALID

Ident.: DSC-22-FMS-20-20-20-250-00004057.0001001 / 22 APR 14

PURPOSE

The MESSAGES LIST page enables the flight crew to display the list of type II messages that appeared in the FMS message area.

LINKS

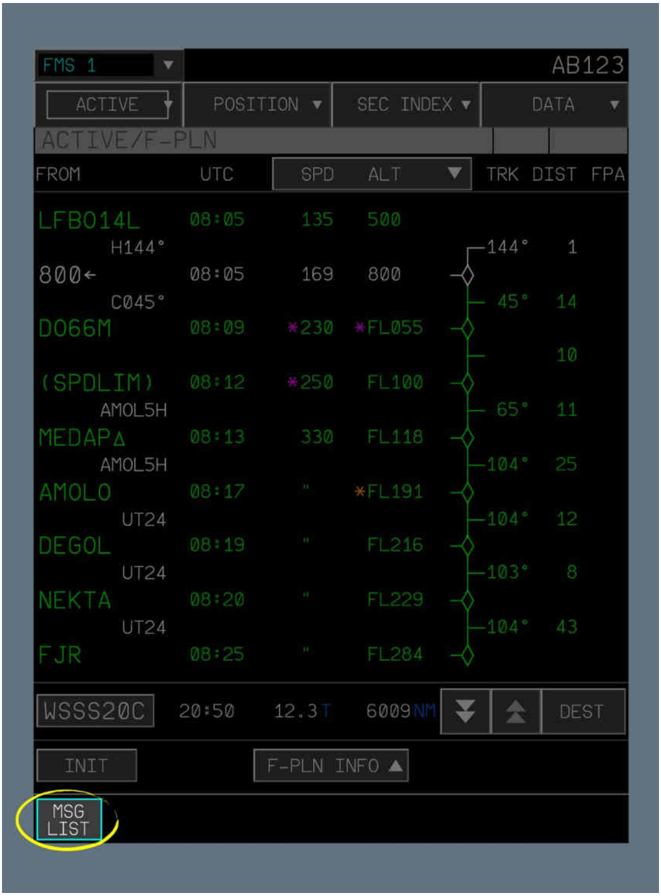
For information about the FMS messages, *Refer to DSC-22-FMS-20-90 General*.

Ident.: DSC-22-FMS-20-20-20-250-00004058.0001001 / 14 APR 14

ACCESS

The flight crew can access the MESSAGES LIST page by clicking on the MSG LIST button of the FMS message area.

MSG LIST Button


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN
INIT
F-PLN INFO
DEST
MSG LIST

FROM	UTC	SPD	ALT	TRK	DIST	FPA
LFBO14L	08:05	135	500			
H144°				144°	1	
800←	08:05	169	800			
C045°				45°	14	
D066M	08:09	*230	*FL055			
					10	
(SPDLIM)	08:12	*250	FL100			
AMOL5H				65°	11	
MEDAPΔ	08:13	330	FL118			
AMOL5H				104°	25	
AMOLO	08:17	"	*FL191			
UT24				104°	12	
DEGOL	08:19	"	FL216			
UT24				103°	8	
NEKTA	08:20	"	FL229			
UT24				104°	43	
FJR	08:25	"	FL284			

WSSS20C 20:50 12.3T 6009NM

The MSG LIST button appears, only when there is no displayed messages in the FMS message area.

Ident.: DSC-22-FMS-20-20-20-250-00004059.0001001 / 22 APR 14

MESSAGES

Indicates the list of type II messages. The first-listed message is the last message that was displayed in the FMS message area.
A message is automatically removed from the list, as soon as the display conditions of the message no longer apply.
The list has a maximum of 5 messages.

Ident.: DSC-22-FMS-20-20-20-250-00004060.0001001 / 14 APR 14

CLOSE BUTTON

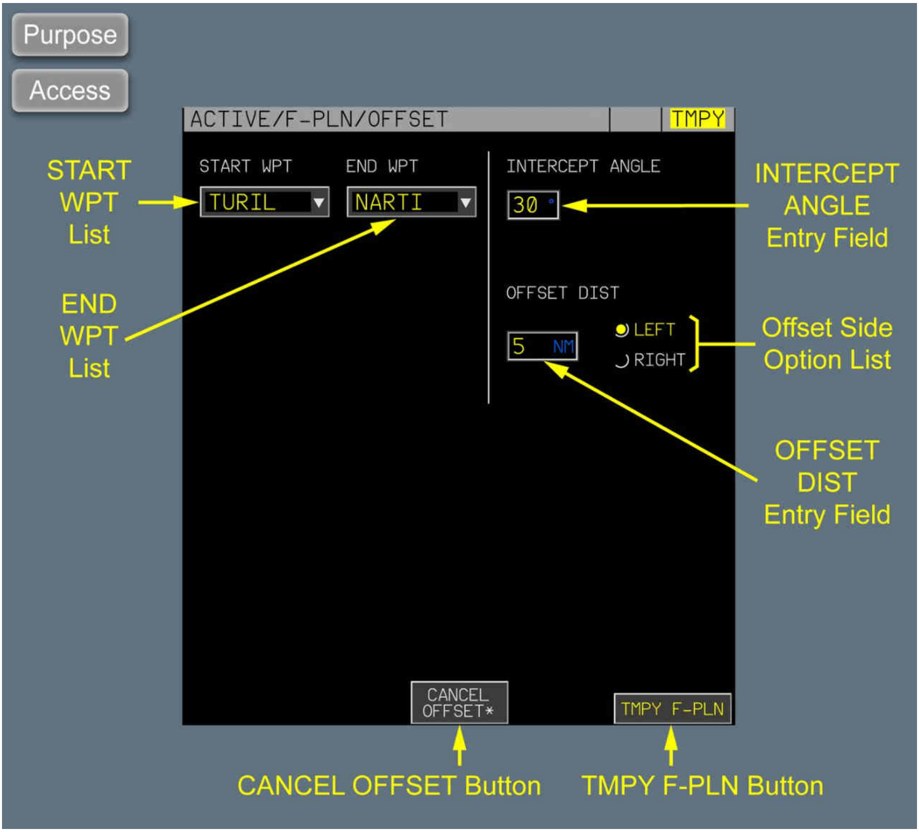
When clicked, displays the page that was displayed before the MESSAGES LIST page.

OFFSET PAGE

Applicable to: ALL

Ident.: DSC-22-FMS-20-20-20-260-00002725.0001001 / 22 APR 14

OFFSET Page


Purpose
Access
ACTIVE/F-PLN/OFFSET
TMPY
START WPT
END WPT
TURIL
NARTI
INTERCEPT ANGLE
30 °
OFFSET DIST
5 NM
● LEFT
○ RIGHT
CANCEL OFFSET*
TMPY F-PLN
START WPT List
END WPT List
INTERCEPT ANGLE Entry Field
Offset Side Option List
OFFSET DIST Entry Field
CANCEL OFFSET Button
TMPY F-PLN Button

Ident.: DSC-22-FMS-20-20-20-260-00004073.0001001 / 22 APR 14

PURPOSE

The OFFSET page enables the flight crew to insert, change, or delete an offset.
The OFFSET page is available for the active and secondary flight plans.

LINKS

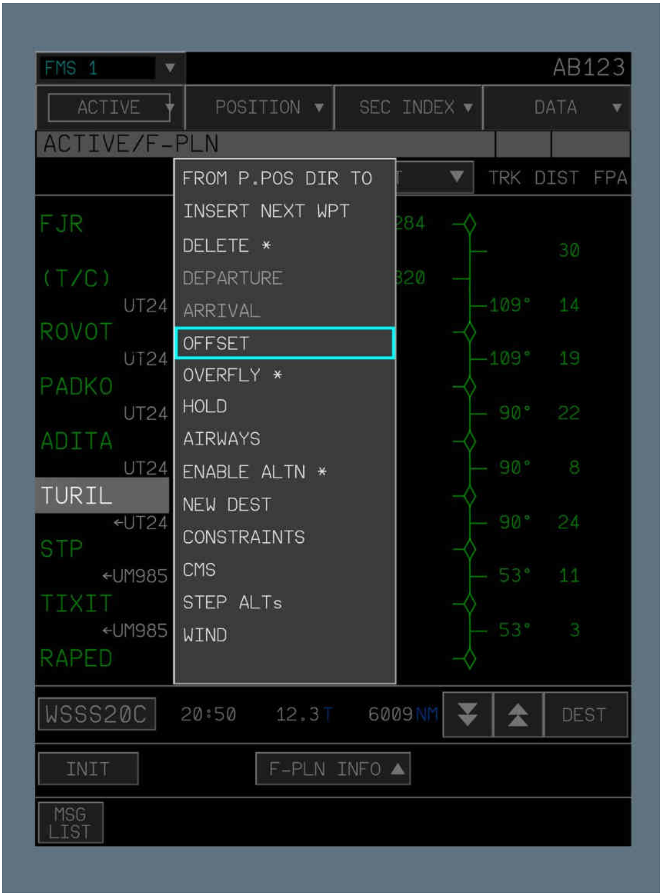
For information about the OFFSET revision, *Refer to DSC-22-FMS-10-40-20 Purpose*.

Ident.: DSC-22-FMS-20-20-20-260-00004074.0001001 / 14 APR 14

ACCESS

The flight crew can access the OFFSET page via the F-PLN page, by selecting OFFSET in the waypoint revisions menu.

F-PLN Page

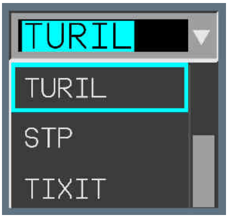

FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN
TRK DIST FPA
FROM P.POS DIR TO
INSERT NEXT WPT
DELETE *
DEPARTURE
ARRIVAL
OFFSET
OVERFLY *
HOLD
AIRWAYS
ENABLE ALTN *
NEW DEST
CONSTRAINTS
CMS
STEP ALTs
WIND
FJR
(T/C)
UT24
ROVOT
UT24
PADKO
UT24
ADITA
UT24
TURIL
←UT24
STP
←UM985
TIXIT
←UM985
RAPED
284
320
30
109° 14
109° 19
90° 22
90° 8
90° 24
53° 11
53° 3
WSSS20C
20:50
12.3T
6009NM
DEST
INIT
F-PLN INFO
MSG LIST

Ident.: DSC-22-FMS-20-20-20-260-00004075.0001001 / 22 APR 14

START WPT LIST

Indicates the offset start waypoint.
The flight crew enters the offset start waypoint via the keyboard, or by selecting the offset start waypoint from the START WPT list.
The START WPT list displays all flight plan waypoints from the aircraft present position to the destination airport.
Some flight plan waypoints cannot be part of the offset segment (e.g. a holding fix). These waypoints are not displayed in the START WPT list.

Start Waypoint List



The default start waypoint is:
- The revised waypoint, if there is no offset segment in the flight plan

  Note: *1. If the revised waypoint is the FROM waypoint, the default start waypoint is P.POS.*
  2. If the revised waypoint cannot be part of an offset segment (e.g. a holding fix), the default start waypoint is the first valid flight plan waypoint down-path the revised waypoint.

- The start waypoint of the offset segment, if there is an offset segment in the flight plan
- P.POS, if the aircraft currently flies the offset segment.
  In this case, the flight crew cannot change the start waypoint.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 WAYPOINT.

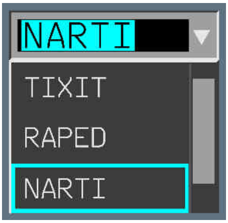
Ident.: DSC-22-FMS-20-20-20-260-00004076.0001001 / 22 APR 14

END WPT LIST

Indicates the offset end waypoint.
The flight crew enters the offset end waypoint via the keyboard, or by selecting offset end waypoint from END WPT the list.
The END WPT list displays all flight plan waypoints from the selected start waypoint to the destination airport.

Some flight plan waypoints cannot be part of the offset segment (e.g. a holding fix). The END WPT list displays only the flight plan waypoints between the selected start waypoint and the first not valid waypoint.

END WPT List



The default end waypoint is:
- The last waypoint of the flight plan before the destination airport, or the last waypoint before the first not-valid waypoint, if there is no offset segment in the flight plan
- The end waypoint of the offset segment, if there is an offset segment in the flight plan.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 WAYPOINT.

Ident.: DSC-22-FMS-20-20-20-260-00004077.0001001 / 22 APR 14

OFFSET DIST ENTRY FIELD

Indicates the lateral offset distance.
The flight crew can enter the offset side (L or R) with the offset distance (e.g. 15L or L15).
After validation of the entry, the OFFSET DIST entry field displays only the offset distance, and the offset side option list (*Refer to Offset Side Option List*) is automatically updated.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 OFFSET DIST.

Ident.: DSC-22-FMS-20-20-20-260-00004078.0001001 / 22 APR 14

OFFSET SIDE OPTION LIST

The flight crew selects the offset side, by selecting one of the following options:
- LEFT
- RIGHT.

Ident.: DSC-22-FMS-20-20-20-260-00004079.0001001 / 22 APR 14

INTERCEPT ANGLE ENTRY FIELD

Indicates the angle between the original flight plan and the transition trajectory from the original flight plan to the offset path (or vice versa).
The default intercept angle is 30 °. The Operator can change this default value via the AMI file.
The flight crew can overwrite the default value.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 INTERCEPT ANGLE.

Ident.: DSC-22-FMS-20-20-20-260-00004080.0001001 / 14 APR 14

CANCEL OFFSET BUTTON

When clicked, cancels the offset segment in the temporary flight plan, and displays the F-PLN page (*Refer to page*).
L2 The flight crew can also cancel the offset segment by entering 0 in the OFFSET DIST entry field (*Refer to OFFSET DIST Entry Field*).

Ident.: DSC-22-FMS-20-20-20-260-00004081.0001001 / 22 APR 14

TMPY F-PLN BUTTON

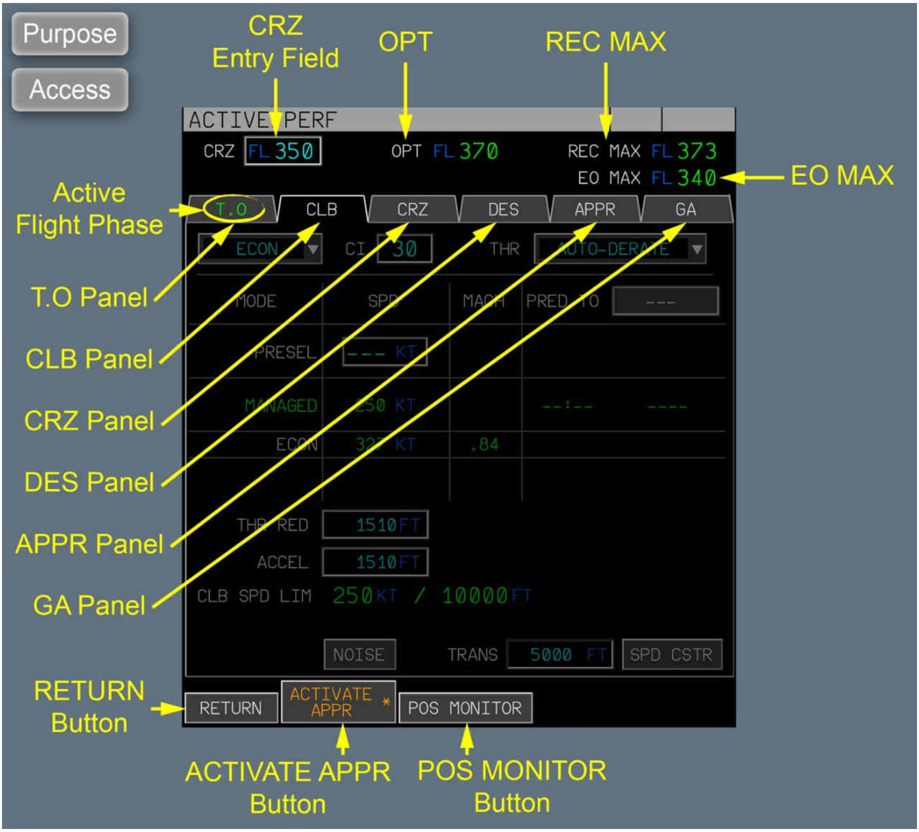
When clicked, displays the ACTIVE/F-PLN page (*Refer to page*).
L2 The TMPY F-PLN button is displayed, only if there is a temporary flight plan. If there is no temporary flight plan, the RETURN button is displayed instead of the TMPY F-PLN button. When the flight crew clicks on the RETURN button, the F-PLN page appears.

PERF PAGE

Applicable to: ALL

Ident.: DSC-22-FMS-20-20-20-270-00002726.0001001 / 22 APR 14

PERF Page


Purpose
Access
CRZ
Entry Field
OPT
REC MAX
EO MAX
Active
Flight Phase
T.O Panel
CLB Panel
CRZ Panel
DES Panel
APPR Panel
GA Panel
RETURN
Button
ACTIVATE APPR
Button
POS MONITOR
Button
ACTIVE/PERF
T.O
CLB
CRZ
DES
APPR
GA
RETURN
ACTIVATE APPR *
POS MONITOR
NOISE
SPD CSTR

CRZ FL 350
OPT FL 370
REC MAX FL 373
EO MAX FL 340
ECON
CI 30
THR AUTO-DERATE
MODE SPD MACH PRED TO ---
PRESEL --- KT
MANAGED 250 KT --:-- ----
ECON 327 KT .84
THR RED 1510FT
ACCEL 1510FT
CLB SPD LIM 250KT / 10000FT
TRANS 5000 FT

Ident.: DSC-22-FMS-20-20-20-270-00004082.0001001 / 22 APR 14

PURPOSE

On the PERF page, the flight crew can:
- Change the cruise flight level
- Display the optimum flight level, the recommended maximum flight level, and the engine-out maximum flight level

- Display, change, or complete the performance data for the following FMS flight phases: T.O, CLB, CRZ, DES, APPR, and GA
- Change the FMS speed mode (ECON/LRC)
- Change the cost index that is associated with the ECON mode
- Activate the APPR phase
- Clear the Engine-Out (EO) mode.

The PERF page is available for the active and secondary flight plans.

LINKS

For information about the:
- Performance computation, *Refer to DSC-22-FMS-10-50-10 Overview*
- EO mode, *Refer to DSC-22-FMS-10-60 General*.

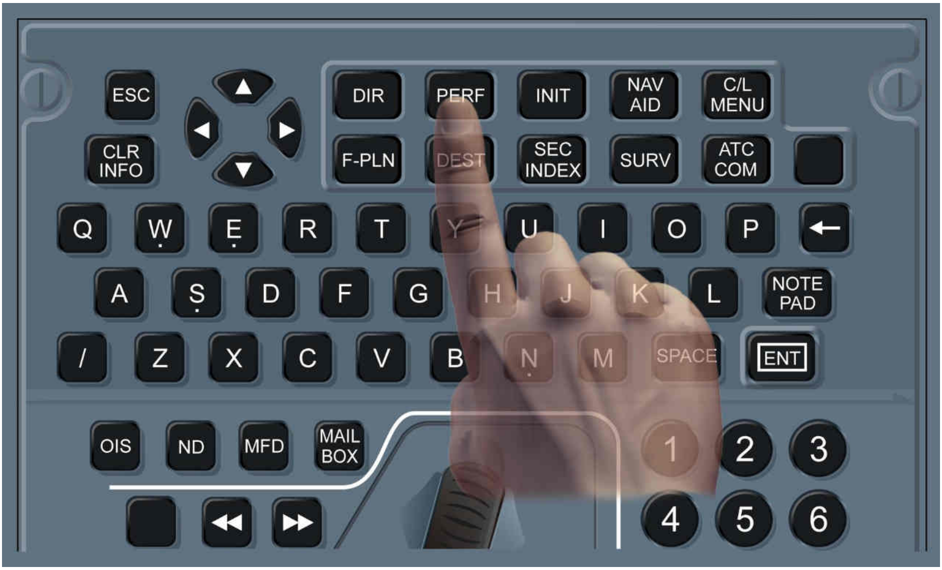
Ident.: DSC-22-FMS-20-20-20-270-00004083.0001001 / 14 APR 14

ACCESS

The flight crew can access:

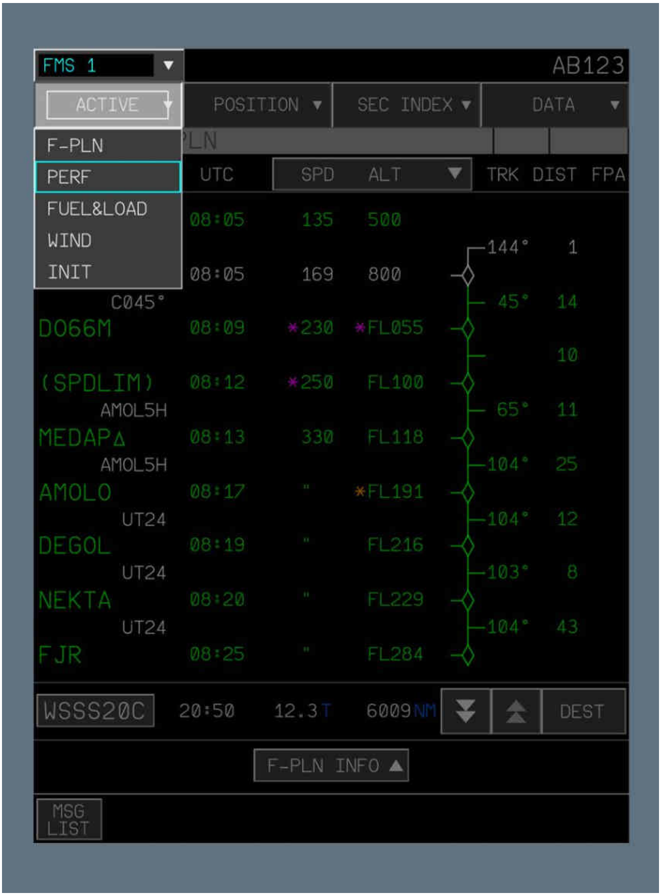
- The ACTIVE/PERF page via:
  - The KCCU, by pressing the PERF key
    The panel (T.O, CLB, CRZ, DES, APPR, or GA panel) that opens by default is the panel that corresponds to the active flight phase.

KCCU


ESC
CLR INFO
DIR
PERF
INIT
NAV AID
C/L MENU
F-PLN
DEST
SEC INDEX
SURV
ATC COM
Q W E R T Y U I O P
A S D F G H J K L
NOTE PAD
/ Z X C V B N M
SPACE
ENT
OIS
ND
MFD
MAIL BOX
1 2 3
4 5 6

- The general menu bar, by selecting PERF in the ACTIVE menu
  The panel (T.O, CLB, CRZ, DES, APPR, or GA panel) that opens by default is the panel that corresponds to the active flight phase.

General Menu Bar

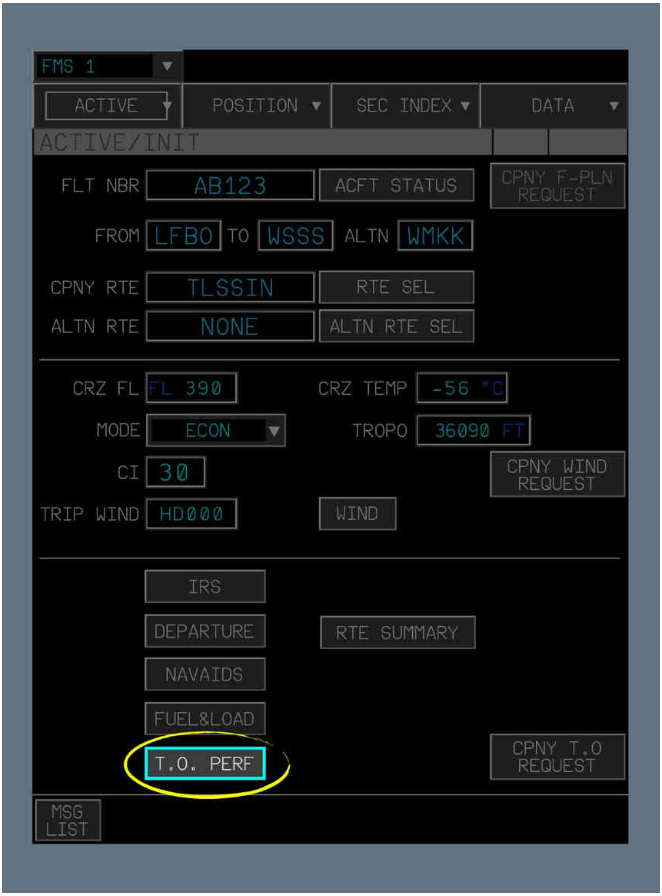

FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
F-PLN
PERF
FUEL&LOAD
WIND
INIT
DEST
F-PLN INFO
MSG LIST

```
          UTC    SPD   ALT       TRK  DIST FPA
          08:05  135   500
                                 144°   1
          08:05  169   800
                                  45°  14
     C045°
D066M     08:09  *230  *FL055
                                       10
(SPDLIM)  08:12  *250  FL100
                                  65°  11
    AMOL5H
MEDAPΔ    08:13  330   FL118
                                 104°  25
    AMOL5H
AMOLO     08:17  "     *FL191
                                 104°  12
      UT24
DEGOL     08:19  "     FL216
                                 103°   8
      UT24
NEKTA     08:20  "     FL229
                                 104°  43
      UT24
FJR       08:25  "     FL284

WSSS20C   20:50  12.3T  6009NM
```

- The ACTIVE/INIT page, by clicking on the T.O PERF button
  The T.O panel opens by default.

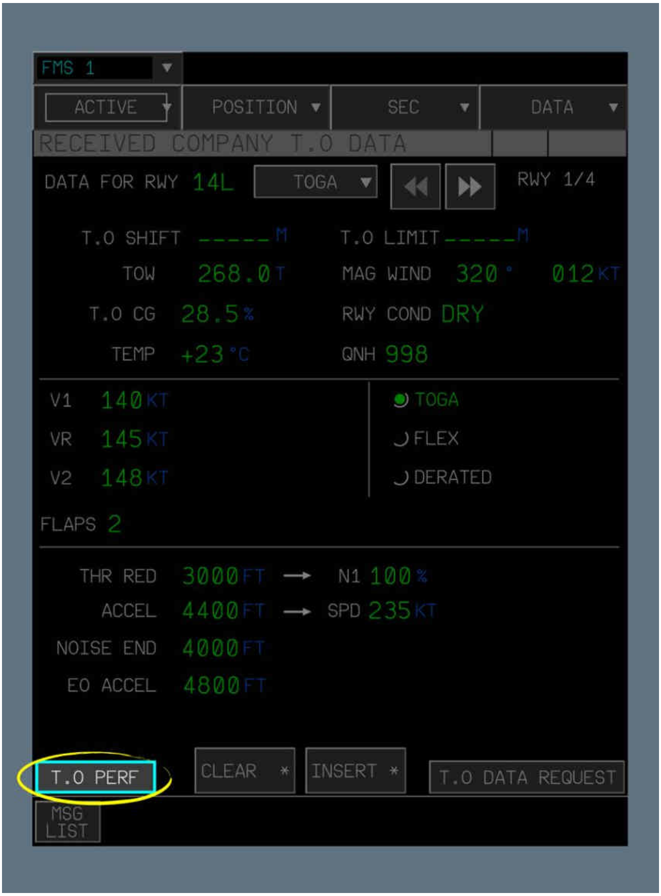
ACTIVE/INIT Page


FMS 1
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/INIT
ACFT STATUS
CPNY F-PLN REQUEST
RTE SEL
ALTN RTE SEL
CPNY WIND REQUEST
WIND
IRS
DEPARTURE
RTE SUMMARY
NAVAIDS
FUEL&LOAD
T.O. PERF
CPNY T.O REQUEST
MSG LIST

FLT NBR AB123
FROM LFBO TO WSSS ALTN WMKK
CPNY RTE TLSSIN
ALTN RTE NONE
CRZ FL FL 390
CRZ TEMP -56 °C
MODE ECON
TROPO 36090 FT
CI 30
TRIP WIND HD000

- The RECEIVED COMPANY T.O DATA page, by clicking on the T.O PERF button
  The T.O panel opens by default.

RECEIVED COMPANY T.O DATA Page


FMS 1
ACTIVE
POSITION
SEC
DATA
RECEIVED COMPANY T.O DATA
TOGA
T.O PERF
CLEAR *
INSERT *
T.O DATA REQUEST
MSG LIST

DATA FOR RWY 14L
RWY 1/4

T.O SHIFT ----- M
T.O LIMIT ----- M
TOW 268.0 T
MAG WIND 320 ° 012 KT
T.O CG 28.5 %
RWY COND DRY
TEMP +23 °C
QNH 998

V1 140 KT
VR 145 KT
V2 148 KT

● TOGA
○ FLEX
○ DERATED

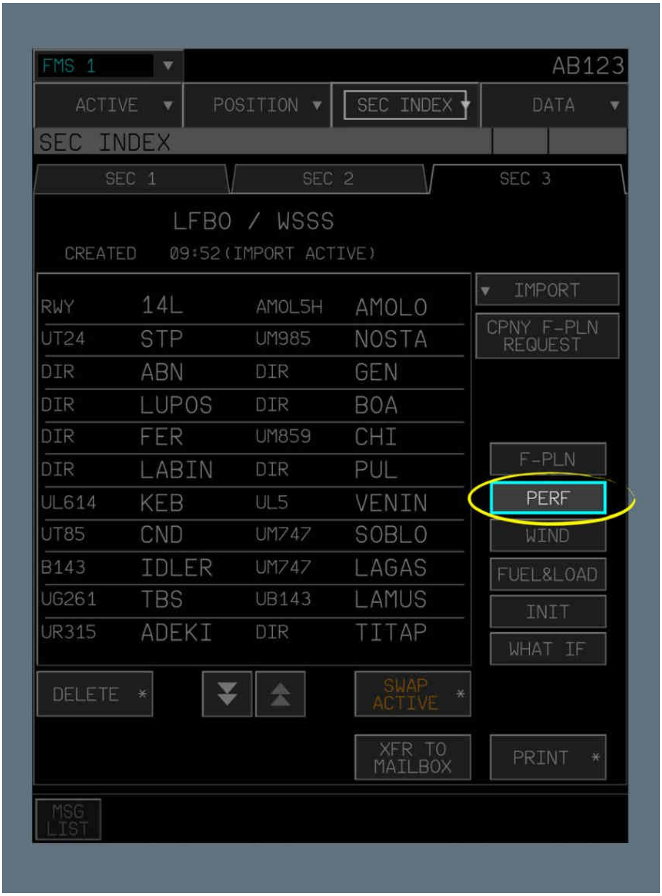
FLAPS 2

THR RED 3000 FT → N1 100 %
ACCEL 4400 FT → SPD 235 KT
NOISE END 4000 FT
EO ACCEL 4800 FT

- The SEC/PERF page, by clicking on the PERF button.

  By default, the FMS opens the T.O, CLB, CRZ, DES, APPR, or GA panel, based on:
  - The method from which the flight crew created the secondary flight plan
  - The active flight leg
  - The active flight phase.

SEC INDEX Page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
SEC INDEX
SEC 1
SEC 2
SEC 3
IMPORT
CPNY F-PLN REQUEST
F-PLN
PERF
WIND
FUEL&LOAD
INIT
WHAT IF
DELETE *
SWAP ACTIVE *
XFR TO MAILBOX
PRINT *
MSG LIST

LFBO / WSSS

CREATED 09:52(IMPORT ACTIVE)

RWY	14L	AMOL5H	AMOLO
UT24	STP	UM985	NOSTA
DIR	ABN	DIR	GEN
DIR	LUPOS	DIR	BOA
DIR	FER	UM859	CHI
DIR	LABIN	DIR	PUL
UL614	KEB	UL5	VENIN
UT85	CND	UM747	SOBLO
B143	IDLER	UM747	LAGAS
UG261	TBS	UB143	LAMUS
UR315	ADEKI	DIR	TITAP

Ident.: DSC-22-FMS-20-20-20-270-00004084.0001001 / 14 APR 14

CRZ ENTRY FIELD

Indicates the cruise flight level.

Note: *1. The FMS automatically synchronizes the CRZ entry field of the ACTIVE/PERF page and the CRZ FL entry field of the ACTIVE/INIT page (Refer to DSC-22-FMS-20-20-20 INIT Page).*
2. The FMS automatically synchronizes the CRZ entry field of the SEC1(2)(3)/PERF page and the CRZ FL entry field of the SEC1(2)(3)/INIT page (Refer to DSC-22-FMS-20-20-20 INIT Page).

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 CRZ FL.

AUTOMATIC UPDATE

L2 If no cruise FL is defined and the T.O flight phase becomes active, the cruise flight level is automatically set to the highest of the following two values:
- The AFS CP altitude
- The highest climb altitude constraint in the destination flight plan.

L1 If the flight crew sets the AFS CP selected altitude above the cruise flight level , the cruise flight level is set to the AFS CP selected altitude.
If the flight crew enters a cruise flight level that is below the AFS CP selected altitude, the entry is rejected, and the cruise flight level is set to the AFS CP selected altitude.
The CRZ entry field displays dashes, when the DES or APPR flight phase becomes active.

Ident.: DSC-22-FMS-20-20-20-270-00004085.0001001 / 22 APR 14
Impacted by TDU: 00024902 OPT

OPT

Indicates the current Optimum Flight Level (OPT FL)
For information about the computation of the OPT FL, *Refer to DSC-22-FMS-10-50-50 Optimum Flight Level (OPT FL)*.

L2 Dashes appear instead of the value:
- In DES and APPR flight phases, or
- In engine-out situation.

Ident.: TDU / DSC-22-FMS-20-20-20-270-00024902.0001001 / 03 JUL 20
Impacted DU: 00004085 OPT

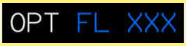
1 ## OPT

Indicates the current Optimum Flight Level (OPT FL)
For information about the computation of the OPT FL, *Refer to DSC-22-FMS-10-50-50 Optimum Flight Level (OPT FL)*.

L2 Dashes appear instead of the value:
- In DES and APPR flight phases, or
- In engine-out situation.

L3 The computation of OPT FL and the computation of REC MAX FL are independent. Therefore, the OPT FL may be slightly above the REC MAX FL in some conditions.

L1



OPT FL XXX

Appears instead of the value when both of the following conditions occur:
- The OPT FL is limited by the maximum certified altitude (*Refer to LIM-AG-OPS Environmental Envelope*)
- The REC MAX FL is also limited by the maximum certified altitude.

Ident.: DSC-22-FMS-20-20-20-270-00004166.0001001 / 22 APR 14

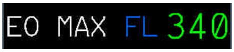
REC MAX

Indicates the current Recommended Maximum Flight Level (REC MAX FL).
For information about the computation of the REC MAX FL, *Refer to DSC-22-FMS-10-50-50 Recommended Maximum Flight Level (REC MAX FL)*.

Ident.: DSC-22-FMS-20-20-20-270-00004086.0001001 / 22 APR 14

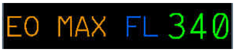
EO MAX

Indicates the current LRC Engine-Out Maximum Flight Level (LRC EO MAX FL).
The color of the EO MAX label depends on the engine state.



EO MAX FL 340

Both engines are operative.



EO MAX FL 340

One engine is failed.

For information about the computation of the LRC EO MAX FL, *Refer to DSC-22-FMS-10-60 LRC Engine-Out Maximum Flight Level (LRC EO MAX FL)*.

Note: *The LRC EO MAX FL is not displayed on the SEC/PERF page.*

Ident.: DSC-22-FMS-20-20-20-270-00004091.0001001 / 14 APR 14

ACTIVE FLIGHT PHASE

The label of the panel tab is displayed in green, when the corresponding flight phase is active.
For more information about the FMS flight phases, *Refer to DSC-22-FMS-10-50-30 Overview*.

Ident.: DSC-22-FMS-20-20-20-270-00004087.0001001 / 22 APR 14

RETURN BUTTON

When clicked, displays the INIT page (*Refer to page*).

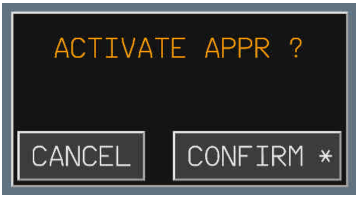
L2 The RETURN button appears, only if the flight crew accesses the PERF page via the ACTIVE/INIT page.

Ident.: DSC-22-FMS-20-20-20-270-00004089.0001001 / 14 APR 14

ACTIVATE APPR BUTTON

When clicked, activates the APPR flight phase.
The flight crew must perform a confirmation action.

Confirmation Window



ACTIVATE APPR ?

The flight crew can activate the APPR flight phase by using the ACTIVATE APPR button during the CLB, CRZ, DES, and GA flight phases.
In the other flight phases, the ACTIVATE APPR button is not displayed.

Ident.: DSC-22-FMS-20-20-20-270-00004088.0001001 / 22 APR 14

POS MONITOR BUTTON

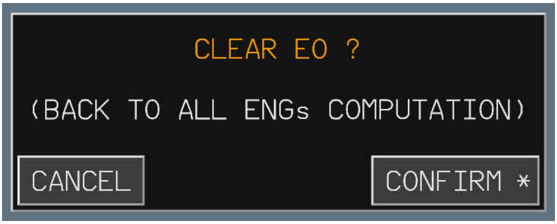
When clicked, displays the POSITION/MONITOR page (*Refer to page*).

Ident.: DSC-22-FMS-20-20-20-270-00004090.0001001 / 14 APR 14

CLEAR EO BUTTON

When clicked, deactivates the EO mode of the FMS.
The flight crew must perform a confirmation action.

Confirmation Window



CLEAR EO ?

(BACK TO ALL ENGs COMPUTATION)

Ident.: DSC-22-FMS-20-20-20-270-00004093.0001001 / 22 APR 14

RWY

Indicates the takeoff runway of the flight plan.

Ident.: DSC-22-FMS-20-20-20-270-00004099.0001001 / 22 APR 14

T.O SHIFT ENTRY FIELD

Indicates the runway takeoff shift.
The runway takeoff shift is the distance between the runway threshold, and the position at which the flight crew releases the aircraft brakes in order to take off.
If the navigation mode is not IRS/GNSS, the aircraft position is updated (at takeoff) as follows: The aircraft position is the position of the runway threshold plus the entered takeoff shift.

L2 The takeoff shift value is automatically entered, if the flight crew inserts received company takeoff data via the RECEIVED COMPANY T.O DATA page (*Refer to page*).

L1 ENTRY FORMAT

Refer to DSC-22-FMS-20-80 T.O SHIFT.

Ident.: DSC-22-FMS-20-20-20-270-00004094.0001001 / 13 JAN 15

V1, VR, AND V2 ENTRY FIELDS

Indicate the takeoff speeds: V1, VR, and V2.

For the definition of:
- V1, *Refer to DSC-22-27-10-20 V1*
- VR,*Refer to DSC-22-27-10-20 VR*
- V2, *Refer to DSC-22-27-10-20 V2*.

The V1, V2, and VR entry fields must not be empty.
The flight crew manually enters the takeoff speed values.

Note: *1. If the flight crew does not enter one or more of the takeoff speed values, the ECAM triggers the T.O SPEEDS NOT INSERTED alert, when:*
- *The flight crew presses the T.O CONFIG pb of the ECP, or*
- *The engines are set to takeoff power.*

2. If the flight crew does not enter V2, the SRS mode will not be available at takeoff.

L2 The takeoff speed values are automatically entered, if the flight crew inserts received company takeoff data via the RECEIVED COMPANY T.O DATA page (*Refer to page*).

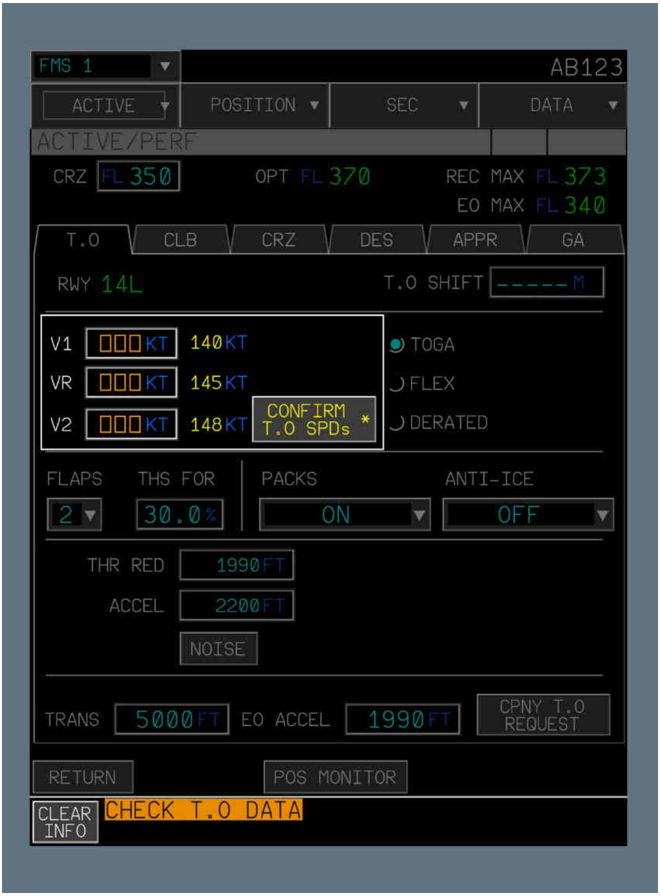
L1 The FMS message area displays the V1/VR/V2 DISAGREE message (*Refer to message*), if the inserted V1, VR, and V2 do not satisfy the condition V1 ≤ VR ≤ V2.

The FMS message area displays the T.O SPEED TOO LOW CHECK TOW & T.O DATA message (*Refer to message*), if the inserted V1, VR, and V2 do not satisfy the regulatory requirements for the minimum speeds (VMCG, VMCA, VMU, and VS1G).

If the flight crew already entered the takeoff speeds, and then changes the takeoff runway, the takeoff speeds need to be confirmed again, or changed if necessary:

- The FMS message area displays the CHECK T.O DATA message (*Refer to message*) to alert the flight crew
- The old takeoff speeds are displayed in yellow next to the entry fields. The flight crew can accept these speeds by clicking on the CONFIRM T.O SPDs button. If the takeoff speeds changed, the flight crew enters the new values in the entry fields.

CONFIRM T.O SPDs



FMS 1 ▼ AB123

ACTIVE ▼ | POSITION ▼ | SEC ▼ | DATA ▼

ACTIVE/PERF

CRZ FL 350   OPT FL 370   REC MAX FL 373
EO MAX FL 340

T.O | CLB | CRZ | DES | APPR | GA

RWY 14L   T.O SHIFT -----M

V1 □□□KT 140KT
VR □□□KT 145KT
V2 □□□KT 148KT

CONFIRM T.O SPDs *

● TOGA
○ FLEX
○ DERATED

FLAPS 2 ▼   THS FOR 30.0%   PACKS ON ▼   ANTI-ICE OFF ▼

THR RED 1990FT
ACCEL 2200FT
NOISE

TRANS 5000FT   EO ACCEL 1990FT   CPNY T.O REQUEST

RETURN   POS MONITOR

CLEAR INFO   CHECK T.O DATA

L2 The old takeoff speeds are not cleared, but the CHECK T.O DATA message (*Refer to message*) is displayed, if one of the following occurs:

- The flight crew already entered the takeoff speeds, and then changes the flaps setting or takeoff shift
- The flight crew activates a secondary flight plan (in preflight).

L1 ENTRY FORMAT

For the entry format of:

- V1, *Refer to DSC-22-FMS-20-80 V1*
- VR, *Refer to DSC-22-FMS-20-80 VR*
- V2, *Refer to DSC-22-FMS-20-80 V2*.

Ident.: DSC-22-FMS-20-20-20-270-00004095.0001001 / 22 APR 14

F, S, AND GDOT [T.O]

Indicate the following operating speeds for takeoff: F, S, and GDOT.

Note: *The FMS uses estimated weight and CG to compute the operating speeds that are displayed on the T.O panel of the PERF page. The PRIMs use the current weight and CG to compute the operating speeds that are displayed on the PFD. Therefore, the operating speeds that are displayed on the PFD may be different from the operating speeds that are displayed on the T.O panel of the PERF page.*

For more information about the operating speeds that the FMS computes for takeoff, *Refer to DSC-22-FMS-10-50-30 T.O*.

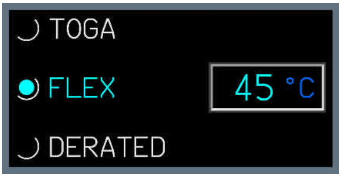
Ident.: DSC-22-FMS-20-20-20-270-00004096.0001001 / 03 OCT 14

T.O THRUST OPTION LIST

To select the desired takeoff thrust, the flight crew selects one of the following options:

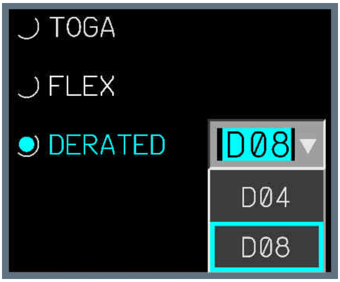
- TOGA, for TOGA thrust
- FLEX, for FLX thrust
  When selected, displays the FLEX entry field. The flight crew enters the FLEX temperature in the FLEX entry field.

FLEX Entry Field



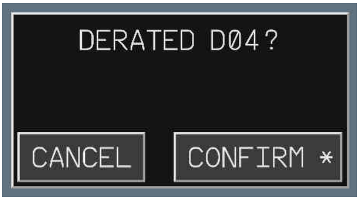
- DERATED, for DTO thrust.
  When selected, displays the DERATED list. The list can have a maximum of 9 derated thrust levels. The number of available thrust levels depends on the engine type.
  The flight crew enters the derated thrust level via the keyboard, or by selecting the derated thrust level from the DERATED list.

DERATED Entry Field



The flight crew must perform a confirmation action.

Confirmation Window



L2 The takeoff thrust is automatically selected, if the flight crew inserts received company takeoff data via the RECEIVED T.O COMPANY DATA page (*Refer to page*).

L1 **ENTRY FORMAT**

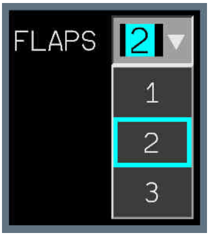
For the entry format of:
- FLEX temperature, *Refer to DSC-22-FMS-20-80 FLEX*
- Derated thrust level, *Refer to DSC-22-FMS-20-80 DERATED T.O*.

Ident.: DSC-22-FMS-20-20-20-270-00004097.0001001 / 22 APR 14

FLAPS LIST

Indicates the flaps setting for takeoff.
The flight crew enters the flaps setting via the keyboard, or by selecting the flaps setting from the FLAPS list.

FLAPS List



L2 The flaps setting is automatically entered, if the flight crew inserts received company takeoff data via the RECEIVED T.O COMPANY DATA page (*Refer to page*).

L1 The ECAM triggers the F/CTL T.O FLAPS/FMS DISAGREE alert (*Refer to procedure*), if all of the following occur:
- The current position of the FLAPS lever differs from the value that is entered in the entry field of the FLAPS list on the T.O panel of the PERF page
- The flight crew presses the T.O CONFIG pb of the ECP.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 FLAPS.

Ident.: DSC-22-FMS-20-20-20-270-00004098.0001001 / 22 APR 14

THS FOR ENTRY FIELD

Indicates the aircraft takeoff CG.
The THS FOR entry field must not be empty.
In the THS FOR entry field, the flight crew enters the CG value that the loadsheet indicates.
The FMS sends this value of the aircraft takeoff CG to the FWS for the takeoff trim check. If the takeoff trim check fails, the ECAM triggers the F/CTL PITCH TRIM/FMS/CG DISAGREE alert (*Refer to procedure*).

L2 The value of the aircraft takeoff CG is cleared and the THS FOR entry field displays amber boxes, if the flight crew inserts received company takeoff data via the RECEIVED T.O COMPANY DATA page (*Refer to page*). The flight crew needs to enter the value of the aircraft takeoff CG again.

L1 ENTRY FORMAT

Refer to DSC-22-FMS-20-80 THS.

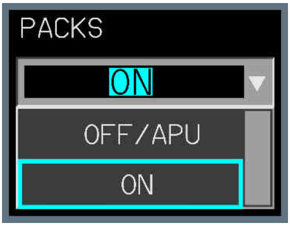
Ident.: DSC-22-FMS-20-20-20-270-00004438.0001001 / 22 APR 14

PACKS LIST

Indicates the pack setting for takeoff.
The flight crew selects the desired pack setting from the PACKS list.

The PACKS list has the following options:
- OFF/APU : The packs are off, or the APU bleed supplies the packs
- ON: The packs are on, and the engine bleed supplies the packs.

PACKS List



After engine start, if the flight crew modifies the pack setting via the PACKS list on the T.O panel of the PERF page, the FMS message area displays the CHECK T.O DATA message (*Refer to message*).

L2 The pack setting on the T.O panel of the PERF page is not used by the FMS to compute the flight plan predictions.

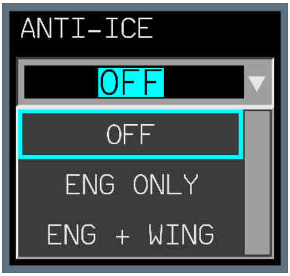
Ident.: DSC-22-FMS-20-20-20-270-00003623.0001001 / 14 APR 14

ANTI-ICE LIST

Indicates the anti-ice setting for takeoff.
The flight crew selects the desired anti-ice setting from the ANTI-ICE list.

The ANTI-ICE list has the following options:
- OFF : The anti-ice system is off
- ENG ONLY: Only the engine anti-ice is on
- ENG + WING: Both engine and wing anti-ice are on.

ANTI-ICE List



After engine start, if the flight crew modifies the anti-ice setting via the ANTI-ICE list on the T.O panel of the PERF page, the FMS message area displays the CHECK T.O DATA message (*Refer to message*).

L2 The anti-ice setting on the T.O panel of the PERF page is not used by:
- The FMS to compute the flight plan predictions
- The XCHECK WITH AVNCS function to crosscheck the setting of the packs with the OIS takeoff performance application.

Ident.: DSC-22-FMS-20-20-20-270-00004100.0001001 / 22 APR 14

THR RED ENTRY FIELD [T.O/CLB]

Indicates the thrust reduction altitude.
The thrust reduction altitude is the altitude at which the flight crew should reduce the thrust from TOGA, FLX, or DTO, to CLB or DCLB.

Note: 1. *The FMS automatically synchronizes the THR RED entry field of the T.O panel of the ACTIVE/PERF page, and the THR RED entry field of the CLB panel ACTIVE/PERF page.*
2. *The FMS automatically synchronizes the THR RED entry field of the T.O panel of the SEC1(2)(3)/PERF page, and the THR RED entry field of the CLB panel of the SEC1(2)(3)/PERF page.*

DEFAULT VALUE

The default value for the thrust reduction altitude is:
- The value that is associated with the departure airport, and that is stored in the navigation database, or
- The value that is the sum of:
  - The departure airport elevation (stored in the navigation database)
  - The thrust reduction height (defined by the Operator in the AMI file). The default value for the thrust reduction height is 1 500 ft.

The flight crew can always overwrite the default value.

L2 The thrust reduction altitude is automatically entered, if the flight crew inserts received company takeoff data via the RECEIVED COMPANY T.O DATA page (*Refer to page*).

AUTOMATIC UPDATE

The FMS considers that the aircraft levels off below the thrust reduction altitude, if all of the following occur:
- The flight crew enters an AT or AT OR BELOW altitude constraint at a waypoint
- This waypoint is a waypoint that is in the T.O or CLB flight phase
- The altitude of this waypoint is below the thrust reduction altitude.

As a result, the altitude of the constraint automatically becomes the new thrust reduction altitude. In this case, the FMS message area displays the NEW THR RED ALT : HHHHH message (*Refer to message*).
During the T.O flight phase, if the flight crew sets the AFS CP selected altitude below the thrust reduction altitude, the AFS CP selected altitude becomes the new thrust reduction altitude.

L1 ENTRY FORMAT

Refer to DSC-22-FMS-20-80 THR RED (ALTITUDE).

Ident.: DSC-22-FMS-20-20-20-270-00004101.0001001 / 14 APR 14

ACCEL ENTRY FIELD [T.O/CLB]

Indicates the acceleration altitude.

The acceleration altitude is the altitude at which the aircraft accelerates toward:
- The initial climb speed, or
- The NOISE speed, if a noise procedure is entered, or
- The preselected speed, if the flight crew entered a speed in the PRESEL entry field on the CLB panel of the PERF page.

At the acceleration altitude, the CLB flight phase becomes active.

Note: *1. The FMS automatically synchronizes the ACCEL entry field of the T.O panel of the ACTIVE/PERF page, and the ACCEL entry field of the CLB panel ACTIVE/PERF page.*
2. The FMS automatically synchronizes the ACCEL entry field of the T.O panel of the SEC1(2)(3)/PERF page, and the ACCEL entry field of the CLB panel of the SEC1(2)(3)/PERF page.

DEFAULT VALUE

The default value for the acceleration altitude is:
- The value that is associated with the departure airport, and that is stored in the navigation database, or
- The value that is the sum of:
  - The departure airport elevation (stored in the navigation database)
  - The acceleration height (defined by the Operator in the AMI file).
    The default value for the acceleration height is 1 500 ft.

The flight crew can always overwrite the default value.
L2 The acceleration altitude is automatically entered, if the flight crew inserts received company takeoff data via the RECEIVED COMPANY T.O DATA page (*Refer to page*).

AUTOMATIC UPDATE

The FMS considers that the aircraft levels off below the acceleration altitude, if all of the following occur:
- The flight crew enters an AT or AT OR BELOW altitude constraint at a waypoint
- This waypoint is a waypoint that is in the T.O or CLB flight phase
- The altitude of this waypoint is below the acceleration altitude.

As a result, the altitude of the constraint becomes the new acceleration altitude. In this case, the FMS message area displays the NEW ACC ALT ALT : HHHHH message (*Refer to message*).
During the T.O flight phase, if the flight crew sets the AFS CP selected altitude below the acceleration altitude, the AFS CP selected altitude becomes the new acceleration altitude.

L1 ENTRY FORMAT

Refer to DSC-22-FMS-20-80 ACCEL ALT.

Ident.: DSC-22-FMS-20-20-20-270-00004103.0001001 / 22 APR 14

NOISE BUTTON

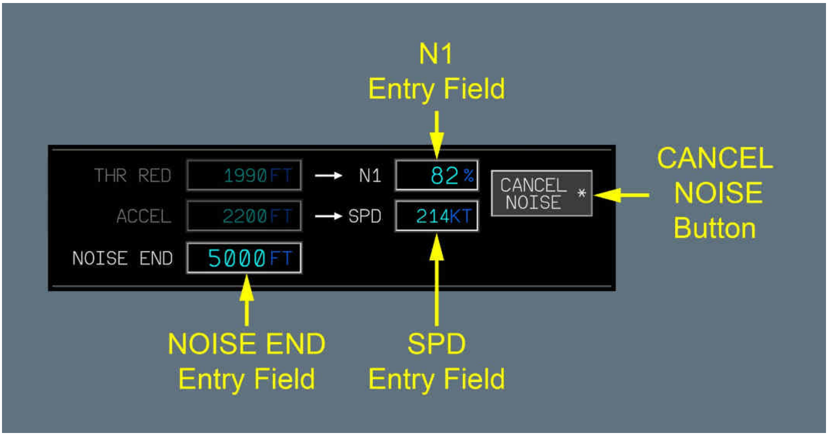
When clicked, displays the NOISE parameters (*Refer to NOISE Parameters*).

Ident.: DSC-22-FMS-20-20-20-270-00004104.0001001 / 22 APR 14

NOISE PARAMETERS

The FMS uses the NOISE parameters to compute the vertical profile of a NOISE procedure.

NOISE Parameters



THR RED 1990FT → N1 82%
ACCEL 2200FT → SPD 214KT
NOISE END 5000FT

NOISE END ENTRY FIELD

Indicates the NOISE END altitude.
The NOISE END altitude is the altitude at which the noise restrictions no longer apply. Below the NOISE END altitude, a speed restriction and a thrust restriction may apply.
L2 The NOISE END altitude is automatically entered, if the flight crew inserts received company takeoff data via the RECEIVED COMPANY T.O DATA page (*Refer to page*).
L1 For more information about the NOISE END altitude, *Refer to DSC-22-FMS-10-50-60 NOISE Parameters*.

Entry Format

Refer to DSC-22-FMS-20-80 NOISE END (ALTITUDE).

N1 ENTRY FIELD

Indicates the NOISE thrust.
The NOISE thrust is the thrust target (in percentage of N1) that the A/THR applies between the thrust reduction altitude and the NOISE END altitude.

If the flight crew does not enter the NOISE thrust, the CLB thrust will apply.

L2 The NOISE thrust is automatically entered, if the flight crew inserts received company takeoff data via the RECEIVED COMPANY T.O DATA page (*Refer to page*).

L1 For more information about the NOISE thrust, *Refer to DSC-22-FMS-10-50-60 NOISE Parameters*.

Entry Format

Refer to DSC-22-FMS-20-80 N1 (NOISE).

SPD ENTRY FIELD

Indicates the NOISE speed.
The NOISE speed is the managed speed target that applies between the acceleration altitude and the end of the thrust ramp.
When the flight crew enters a NOISE END altitude, the default value of the NOISE speed is automatically entered in the SPD entry field.
The flight crew can always overwrite the default value.

L2 The NOISE speed is automatically entered, if the flight crew inserts received company takeoff data via the RECEIVED COMPANY T.O DATA page (*Refer to page*).

L1 For more information about the NOISE speed, *Refer to DSC-22-FMS-10-50-60 NOISE Parameters*.

Entry Format

Refer to DSC-22-FMS-20-80 SPD.

CANCEL NOISE BUTTON

When clicked, cancels the NOISE procedure.

Ident.: DSC-22-FMS-20-20-20-270-00005611.0001001 / 22 APR 14

TRANS ENTRY FIELD [T.O/CLB]

Indicates the climb transition altitude.

Note: *1. The FMS automatically synchronizes the TRANS entry field of the T.O panel of the ACTIVE/PERF page, and the TRANS entry field of the CLB panel ACTIVE/PERF page.*
2. The FMS automatically synchronizes the TRANS entry field of the T.O panel of the SEC1(2)(3)/PERF page, and the TRANS entry field of the CLB panel of the SEC1(2)(3)/PERF page.

DEFAULT VALUE

The default value is the transition altitude that is associated with the departure procedure of the departure airport, and that is stored in the navigation database. If there is no stored transition altitude in the navigation database, the TRANS entry field displays dashes.
The flight crew can always overwrite the default value.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 TRANS (ALTITUDE).

Ident.: DSC-22-FMS-20-20-20-270-00004102.0001001 / 22 APR 14

EO ACCEL ENTRY FIELD [T.O]

Indicates the engine-out acceleration altitude.
The engine-out acceleration altitude is only a reminder. There is no specific system behavior that is associated with this altitude.

DEFAULT VALUE

The default value for the engine-out acceleration altitude is:

- The value that is associated with the departure airport, and that is stored in the navigation database, or
- The value that is the sum of:
  - The departure airport elevation (stored in the navigation database)
  - The engine-out acceleration height (defined by the Operator in the AMI file).
    The default value of the engine-out acceleration height is 1 500 ft.

The flight crew can always overwrite the default value.

L2 The engine-out acceleration altitude is automatically entered, if the flight crew inserts received company takeoff data via the RECEIVED COMPANY T.O DATA page (*Refer to page*).

L1 ENTRY FORMAT

Refer to DSC-22-FMS-20-80 EO ACCEL (ALTITUDE).

Ident.: DSC-22-FMS-20-20-20-270-00004105.0001001 / 14 APR 14

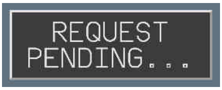
CPNY T.O REQUEST BUTTON

When clicked, displays the COMPANY T.O DATA REQUEST page (*Refer to page*).

L2 The CPNY T.O REQUEST button is available, only when the flight phase is PREFLIGHT or DONE.

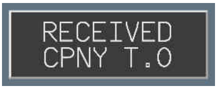
L1 When a request for active takeoff data is in progress, the button label is REQUEST PENDING... . When clicked, still displays the COMPANY T.O DATA REQUEST page.

REQUEST PENDING...



When the active company takeoff data is received, the button label is RECEIVED CPNY T.O. When clicked, displays the RECEIVED CPNY T.O DATA page (*Refer to page*).

RECEIVED CPNY T.O



Ident.: DSC-22-FMS-20-20-20-270-00004397.0001001 / 02 OCT 14

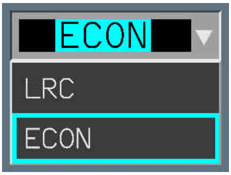
MODE LIST

Indicates the FMS speed mode.
The flight crew selects the FMS speed mode from the MODE list.

The MODE list has the following options:

- LRC: The FMS computes the optimum speed/Mach that corresponds to the Long Range Cruise (LRC)
  In LRC mode, the optimum speed/Mach is referred to as the LRC speed.
- ECON: The FMS computes the optimum speed/Mach based on the CI value that is entered in the CI entry field.
  In ECON mode, the optimum speed/Mach is referred to as the ECON speed.

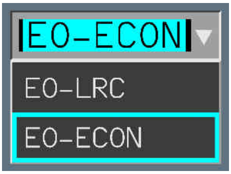
MODE List



If the EO mode is active, the MODE list has the following options:

- EO-LRC: The FMS computes the optimum speed/Mach that corresponds to the Long Range Cruise (LRC)
  In EO-LRC mode, the FMS takes the engine failure into account to compute the optimum speed/Mach. The optimum speed/Mach is referred to as the EO-LRC speed.
- EO-ECON: The FMS computes the optimum speed/Mach based on the CI value that is entered in the CI entry field.
  In EO-ECON mode, the FMS takes the engine failure into account to compute the optimum speed/Mach. The optimum speed/Mach is referred to as the EO-ECON speed.

MODE List in EO Mode



Note: *1. The FMS automatically synchronizes all of the following:*
- *The MODE list of the CLB, CRZ, and DES panels of the ACTIVE/PERF page*
- *The MODE list of the ACTIVE/FUEL&LOAD page (Refer to page)*
- *The MODE list of the ACTIVE/INIT page (Refer to page).*

2. The FMS automatically synchronizes all of the following:
- *The MODE list of the CLB, CRZ, and DES panels of the SEC1(2)(3)/PERF page*
- *The MODE list of the SEC1(2)(3)/FUEL&LOAD page (Refer to page)*
- *The MODE list of the SEC1(2)(3)/INIT page (Refer to page).*

For more information about the FMS speed mode, *Refer to DSC-22-FMS-10-50-20 FMS Speed Mode (ECON/LRC)*.

DEFAULT SELECTION

At power-up and during the PREFLIGHT flight phase, the default FMS speed mode is ECON with no CI value. Then, if the flight crew does not enter a CI value before the flight crew enters the ZFW value or before engine start, the FMS automatically:
- Selects the LRC mode
- Sets the CI value to 0.

LIMITATIONS

The flight crew cannot change the FMS speed mode, when the DES, APPR, GA, or DONE flight phase is active.

CI ENTRY FIELD

Indicates the Cost Index (CI).
The CI entry field must not be empty.

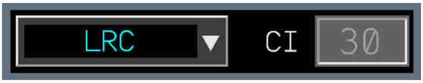
The CI value is:
- Manually entered by the flight crew, or
- Automatically entered, if one of the following occurs:
  - The flight crew enters a company route in the CPNY RTE entry field, and a CI is associated with the entered company route
  - A received company or ATC flight plan is inserted, and a CI is associated with the route of the received flight plan.

Note: *1. The FMS automatically synchronizes all of the following:*
- *The CI entry field of the CLB, CRZ, and DES panels of the ACTIVE/PERF page*
- *The CI entry field of the ACTIVE/FUEL&LOAD page (Refer to page)*
- *The CI entry field of the ACTIVE/INIT page (Refer to page).*

2. The FMS automatically synchronizes all of the following:
- *The CI entry field of the CLB, CRZ, and DES panels of the SEC1(2)(3)/PERF page*
- *The CI entry field of the SEC1(2)(3)/FUEL&LOAD page (Refer to page)*
- *The CI entry field of the SEC1(2)(3)/INIT page (Refer to page).*

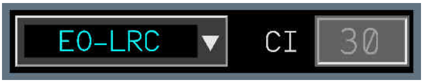
If the FMS speed mode is LRC, the CI entry field still displays the CI value that is associated with the ECON mode, but the flight crew cannot change the CI value.

CI Entry Field in LRC Mode



If the FMS speed mode is EO-LRC, the CI entry field still displays the CI value that is associated with the EO-ECON mode, but the flight crew cannot change the CI value.

CI Entry Field in EO-LRC Mode



ENTRY FORMAT

Refer to DSC-22-FMS-20-80 COST INDEX (CI).

DEFAULT VALUE

At power-up and during the PREFLIGHT flight phase, the default FMS speed mode is ECON with no CI value. Then, if the flight crew does not enter a CI value before the flight crew enters the ZFW value or before engine start, the FMS automatically:
- Selects the LRC mode
- Sets the CI value to 0.

LIMITATIONS

The CI cannot be changed, when the DES, APPR, or GA flight phase is active.

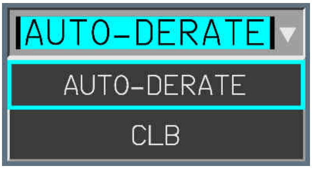
Ident.: DSC-22-FMS-20-20-20-270-00004108.0001001 / 04 DEC 14

THR LIST

Indicates the climb thrust.
The flight crew selects the climb thrust from the THR list.

The THR list has the following options:
- AUTO-DERATE: The climb thrust is an auto-derated thrust.
  The FMS automatically computes the appropriate reduced level of the climb thrust.
  L2 For more information about auto-derated thrust, *Refer to DSC-22-FMS-10-50-40 Auto-Derated Thrust during Climb*.
- L1 CLB: The climb thrust is the maximum climb thrust.

THR List



The AUTO-DERATE option is automatically selected by default.

Ident.: DSC-22-FMS-20-20-20-270-00000330.0001001 / 22 APR 14

SPEED MODE TABLE [BEFORE CLB]

Before the CLB flight phase becomes active, the speed mode table displays the following speed modes.

Note: *The speed mode that will be set, when the CLB flight phase becomes active, is displayed in green font.*

PRESEL

The flight crew uses the PRESEL entry field to preset a selected speed target for the CLB flight phase.

After a speed entry, the FMS computes:
- The corresponding preselected Mach
- The time and distance predictions that are associated with the preselected speed.
  The time prediction corresponds to the UTC time at which the aircraft will reach the prediction reference.
  The distance prediction corresponds to the distance between the aircraft present position and the prediction reference.
  The prediction reference is displayed in the PRED TO entry field.

After the flight crew presets a selected speed, all of the following occur, when the CLB flight phase becomes active (provided that the managed speed/Mach control is engaged):
- The selected speed/Mach control automatically engages
- The preselected speed is the climb speed target for the Flight Guidance (FG).

Note: The preselected speed has priority over the NOISE speed.

The flight crew can always cancel the preselection by clearing the PRESEL entry field.

Entry Format

Refer to DSC-22-FMS-20-80 SPD.

MANAGED

Indicates:
- The managed climb speed
- The time and distance predictions that are associated with the managed climb speed.
  The time prediction corresponds to the UTC time at which the aircraft will reach the prediction reference.
  The distance prediction corresponds to the distance between the aircraft present position and the prediction reference.
  The prediction reference is displayed in the PRED TO entry field.

When the CLB flight phase becomes active, this managed climb speed is the climb speed target for the FG, if all of the following apply:
- There is no preselected speed
- The managed speed/Mach control is engaged.

ECON(LRC)

Indicates the predicted ECON(LRC) climb speed/Mach.
The ECON speed/Mach is the FMS-computed speed/Mach that is based on the cost index.

The LRC speed/Mach is the FMS-computed speed/Mach that corresponds to the long range cruise.
For more information about the computation of the ECON/LRC climb speed/Mach, *Refer to DSC-22-FMS-10-50-30 CLB*.

Note: 1. *The speed mode table displays the ECON mode line, only if all of the following apply:*
- *The FMS speed mode is ECON*
- *The managed climb speed/Mach is different from the ECON climb speed/Mach.*

2. *The speed mode table displays the LRC mode line, only if all of the following apply:*
- *The FMS speed mode is LRC*
- *The managed climb speed/Mach is different from the LRC climb speed/Mach.*

Ident.: DSC-22-FMS-20-20-20-270-00004109.0001001 / 22 APR 14

SPEED MODE TABLE [IN CLB]

In the CLB flight phase, the first line of the speed mode table displays the active speed mode: Selected or managed.
If the selected speed/Mach control is engaged, the second line of the speed mode table displays the managed climb speed/Mach.
In specific cases, the speed mode table also displays the ECON(LRC)(RTA) climb speed/Mach on an assigned line.

SELECTED

Indicates:
- The selected AFS CP speed/Mach
- The time and distance predictions that are associated with the selected AFS CP speed/Mach. The time prediction corresponds to the UTC time at which the aircraft will reach the prediction reference.
  The distance prediction corresponds to the distance between the aircraft present position and the prediction reference.
  The prediction reference is displayed in the PRED TO entry field.

MANAGED

Indicates:
- The managed climb speed/Mach
- The time and distance predictions that are associated with the managed climb speed/Mach.
  The time prediction corresponds to the UTC time at which the aircraft will reach the prediction reference.
  The distance prediction corresponds to the distance between the aircraft present position and the prediction reference.
  The prediction reference is displayed in the PRED TO entry field.

This managed climb speed/Mach is the climb speed/Mach target for the FG, if the flight crew engages the managed speed/Mach control.

If there is no speed restriction, the speed mode table displays the ECON or LRC label, as follows:
- The ECON label indicates that the managed climb speed/Mach is the ECON speed/Mach
  The managed climb speed/Mach is the ECON speed/Mach, if the FMS speed mode is ECON.
  The ECON speed/Mach is the FMS-computed speed/Mach that is based on the cost index.
- The LRC label indicates that the managed climb speed/Mach is the LRC speed/Mach.
  The managed climb speed/Mach is the LRC speed/Mach, if the FMS speed mode is LRC.
  The LRC speed/Mach is the FMS-computed speed/Mach that corresponds to the long range cruise.

For information about the computation of the ECON/LRC climb speed/Mach, *Refer to DSC-22-FMS-10-50-30 CLB*.

If there is a speed restriction, the speed mode table displays a specific label that indicates the type of speed restriction that is currently applicable. The speed restriction label can be one of the following:
- NOISE SPD: The managed speed is the NOISE speed
  For more information about the NOISE speed, *Refer to DSC-22-FMS-10-50-60 NOISE Parameters*.
- SPD CSTR: The managed speed is the speed constraint
- SPD LIM: The managed speed is the climb speed limit
- HOLD SPD: The managed speed is the holding speed
- PROC SPD: The managed speed is the ICAO holding speed limit of a holding procedure
- RTA: The managed speed/Mach is the FMS-computed speed/Mach that is based on a time constraint (RTA).

The information that is related to the applicable speed restriction appears below the speed table (*Refer to Speed Restriction*).

ECON(LRC)(RTA)

Indicates the predicted ECON(LRC)(RTA) climb speed/Mach.
The ECON speed/Mach is the FMS-computed speed/Mach that is based on the cost index.
The LRC speed/Mach is the FMS-computed speed/Mach that corresponds to the long range cruise.
The RTA speed/Mach is the FMS-computed speed/Mach that is based on a time constraint (RTA).

For information about:
- The computation of the ECON/LRC climb speed/Mach, *Refer to DSC-22-FMS-10-50-30 CLB*
- The time constraint revision, *Refer to DSC-22-FMS-10-40-30 Purpose*.

Note: *1. The speed mode table displays the ECON mode line, only if all of the following apply:*
  - *The FMS speed mode is ECON*
  - *The managed climb speed/Mach is different from the ECON climb speed/Mach.*

2. The speed mode table displays the LRC mode line, only if all of the following apply:
  - *The FMS speed mode is LRC*
  - *The managed climb speed/Mach is different from the LRC climb speed/Mach.*

3. The speed mode table displays the RTA mode line, only if the managed climb speed/Mach is different from the RTA climb speed/Mach.

Ident.: DSC-22-FMS-20-20-20-270-00004112.0001001 / 22 APR 14

SPEED MODE TABLE [EO IN CLB]

If the EO mode is active during the CLB flight phase, the first line of the speed mode table displays the active speed mode: Selected or managed.
If the selected speed/Mach control is engaged, the second line of the speed mode table displays the managed engine-out climb speed.

SELECTED

Indicates:
- The selected AFS CP speed/Mach
- The time and distance predictions that are associated with the selected AFS CP speed/Mach.
  The time prediction corresponds to the UTC time at which the aircraft will reach the prediction reference.
  The distance prediction corresponds to the distance between the aircraft present position and the prediction reference.
  The prediction reference is displayed in the PRED TO entry field.

MANAGED

Indicates:
- The managed engine-out climb speed
- The time and distance predictions that are associated with the managed engine-out climb speed.
  The time prediction corresponds to the UTC time at which the aircraft will reach the prediction reference.
  The distance prediction corresponds to the distance between the aircraft present position and the prediction reference.
  The prediction reference is displayed in the PRED TO entry field.

This managed engine-out climb speed is the climb speed target for the FG, if the flight crew engages the managed speed/Mach control.

The speed mode table displays a specific label that indicates the managed speed type. This specific label can be one of the following:
- EO-GDOT: The managed speed is the EO-GDOT speed
  The EO-GDOT speed is the managed speed target, when the aircraft climbs or descends.
- EO-LRC: The managed speed is the EO-LRC speed

  The EO-LRC speed is the managed speed target, when all of the following apply:
  - The aircraft is in level flight
  - The FMS speed mode is EO-LRC.
- EO-ECON: The managed speed is the EO-ECON speed.

  The EO-ECON speed is the managed speed target, when all of the following apply:
  - The aircraft is in level flight
  - The FMS speed mode is EO-ECON.

For information about the EO mode in the CLB flight phase, *Refer to DSC-22-FMS-10-60 Engine-Out during the CLB Flight Phase*.

Ident.: DSC-22-FMS-20-20-20-270-00004117.0001001 / 22 APR 14

PRED TO ENTRY FIELD [CLB]

Indicates the prediction reference altitude.
The FMS uses this altitude to compute the time and distance predictions that are associated with the selected and managed speed modes of the speed mode table.
In the PREFLIGHT flight phase, the PRED TO entry field displays dashes by default.
When the T.O flight phase becomes active, the PRED TO entry field displays the AFS CP selected altitude by default.
The flight crew can always overwrite the default value.

L2

AUTOMATIC UPDATE

If the flight crew changes the AFS CP selected altitude to a value that is above the aircraft altitude, the prediction reference altitude is set to the AFS CP selected altitude. This update occurs, only if the flight crew did not enter any prediction reference altitude.
If the aircraft is below the AFS CP selected altitude and the aircraft reaches an altitude that is above the prediction reference altitude, the prediction reference altitude is set to the AFS CP selected altitude.

L3 If the aircraft is above the AFS CP selected altitude and above the prediction reference altitude, the PRED TO entry field displays dashes.

L1

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 PRED TO (ALTITUDE).

Ident.: DSC-22-FMS-20-20-20-270-00004118.0001001 / 22 APR 14

SPEED RESTRICTION [BEFORE CLB]

Indicates:
- The type of speed restriction, if any, that applies to the managed climb speed
- The information that is related to the speed restriction.

Before the CLB flight phase, the speed restriction can be a climb speed limit. In this case, the information that is related to the speed restriction is the speed limit and the end altitude.
For information about the SPD LIMIT revision, *Refer to DSC-22-FMS-10-40-30 Purpose*.

Ident.: DSC-22-FMS-20-20-20-270-00004110.0001001 / 02 OCT 14

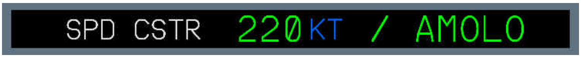
SPEED RESTRICTION [IN CLB]

Indicates:
- The type of speed restriction, if any, that applies to the managed climb speed
- The information that is related to the speed restriction.

The speed restriction can be one of the following:

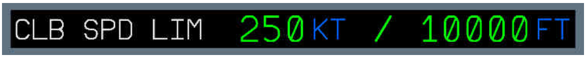
- SPD CSTR: Indicates the speed constraint and the end waypoint
  For information about the SPD CSTR revision, *Refer to DSC-22-FMS-10-40-30 Purpose*.

SPD CSTR


SPD CSTR 220KT / AMOLO

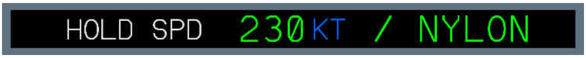
- CLB SPD LIM: Indicates the climb speed limit and the end altitude
  For information about the SPD LIMIT revision, *Refer to DSC-22-FMS-10-40-30 Purpose*.

CLB SPD LIM


CLB SPD LIM 250KT / 10000FT

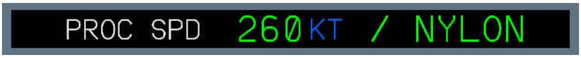
- HOLD SPD: Indicates the holding speed and the holding exit fix
  For information about the HOLD revision, *Refer to DSC-22-FMS-10-40-20 Purpose*.

HOLD SPD


HOLD SPD 230KT / NYLON

- PROC SPD: Indicates the ICAO holding speed limit and the holding entry/exit fix.
  For information about the HOLD revision, *Refer to DSC-22-FMS-10-40-20 Purpose*.

PROC SPD


PROC SPD 260KT / NYLON

Ident.: DSC-22-FMS-20-20-20-270-00004120.0001001 / 22 APR 14

SPD CSTR BUTTON

When clicked, displays the SPD panel of the VERT REV page (*Refer to page*).
On the SPD panel of the VERT REV page, the flight crew can display, create, or delete a speed constraint or a speed limit.

Ident.: DSC-22-FMS-20-20-20-270-00004111.0001001 / 22 APR 14

TRANS

Indicates the climb transition altitude.

Ident.: DSC-22-FMS-20-20-20-270-00004113.0001001 / 03 JUL 14

SPEED MODE TABLE [BEFORE CRZ]

Before the CRZ flight phase becomes active, the speed mode table displays the following speed modes.

Note: *The speed mode that will be set, when the CRZ flight phase becomes active, is displayed in green font.*

PRESEL

The flight crew uses the PRESEL entry fields to preset a selected speed or Mach target for the CRZ flight phase.
After a speed(Mach) entry, the FMS computes the time and distance predictions that are associated with the preselected speed(Mach).
The time prediction corresponds to the UTC time at which the aircraft will reach the T/D.
The distance prediction corresponds to the distance between the aircraft present position and the T/D.

After the flight crew presets a selected speed(Mach), all of the following occur, when the CRZ flight phase becomes active (provided that the managed speed/Mach control is engaged):
- The selected speed/Mach control automatically engages
- The preselected speed(Mach) is the cruise speed(Mach) target for the FG.

The flight crew can always cancel the preselection by clearing the PRESEL entry fields.

ENTRY FORMAT

For the entry format of:
- Speed, *Refer to DSC-22-FMS-20-80 SPD*
- Mach, *Refer to DSC-22-FMS-20-80 MACH*.

MANAGED

Indicates:
- The managed cruise speed/Mach
- The time and distance predictions that are associated with the managed cruise speed/Mach.
  The time prediction corresponds to the UTC time at which the aircraft will reach the prediction reference.
  The distance prediction corresponds to the distance between the aircraft present position and the prediction reference.
  The prediction reference is displayed in the header line of the speed mode table.

When the CRZ flight phase becomes active, this managed cruise speed/Mach is the cruise speed/Mach target for the FG, if all of the following apply:
- There is no preselected speed
- The managed speed/Mach control is engaged.

ECON

Indicates the predicted ECON cruise speed/Mach.
The ECON speed/Mach is the FMS-computed speed/Mach that is based on the cost index.

For information about the computation of the ECON cruise speed/Mach, *Refer to DSC-22-FMS-10-50-30 CRZ*.

Note: *The speed mode table displays the ECON mode line, only if all of the following apply:*
- *The FMS speed mode is ECON*
- *The managed cruise speed/Mach is different from the ECON cruise speed/Mach.*

LRC

Indicates the predicted LRC speed/Mach.
The LRC speed/Mach is the FMS-computed speed/Mach that corresponds to the long range cruise.
For information about the computation of the LRC speed/Mach, *Refer to DSC-22-FMS-10-50-30 CRZ*.

Note: *The speed mode table displays the LRC mode line, only if the FMS speed mode is ECON.*

MAX TURB

Indicates the predicted MAX TURB speed/Mach.
The MAX TURB speed/Mach is the maximum speed/Mach to safely fly in a turbulent atmosphere.
For information about the computation of the MAX TURB speed/Mach, *Refer to DSC-22-FMS-10-50-30 CRZ*.
L2 For information on the procedure during severe turbulence in cruise, *Refer to PRO-ABN-MISC [ABN] MISC SEVERE TURBULENCE IN CRUISE*.

Ident.: DSC-22-FMS-20-20-20-270-00004114.0001001 / 03 JUL 14

SPEED MODE TABLE [IN CRZ]

In the CRZ flight phase, the first line of the speed mode table displays the active speed mode: Selected or managed.
If the selected speed/Mach control is engaged, the second line of the speed mode table displays the managed cruise speed/Mach.

In specific cases, the speed mode table also displays the following speeds on assigned lines:
- The ECON(RTA) cruise speed/Mach
- The LRC speed/Mach.

The speed mode table displays the MAX TURB speed/Mach on an assigned line.

SELECTED

Indicates:
- The selected AFS CP speed/Mach
- The time and distance predictions that are associated with the selected AFS CP speed/Mach.
  The time prediction corresponds to the UTC time at which the aircraft will reach the prediction reference.
  The distance prediction corresponds to the distance between the aircraft present position and the prediction reference.
  The prediction reference is displayed in the header line of the speed mode table.

MANAGED

Indicates:
- The managed cruise speed/Mach
- The time and distance predictions that are associated with the managed cruise speed/Mach.
  The time prediction corresponds to the UTC time at which the aircraft will reach the prediction reference.
  The distance prediction corresponds to the distance between the aircraft present position and the prediction reference.
  The prediction reference is displayed in the header line of the speed mode table.

This managed cruise speed/Mach is the cruise speed/Mach target for the FG, if the flight crew engages the managed speed/Mach control.

If there is no speed restriction, the speed mode table displays the ECON or LRC label, as follows:
- The ECON label indicates that the managed cruise speed/Mach is the ECON speed/Mach
  The managed cruise speed/Mach is the ECON speed/Mach, if the FMS speed mode is ECON.
  The ECON speed/Mach is the FMS-computed speed/Mach that is based on the cost index.
- The LRC label indicates that the managed cruise speed/Mach is the LRC speed/Mach.
  The managed cruise speed/Mach is the LRC speed/Mach, if the FMS speed mode is LRC.
  The LRC speed/Mach is the FMS-computed speed/Mach that corresponds to the long range cruise.

For more information about the computation of the ECON/LRC cruise speed/Mach, *Refer to DSC-22-FMS-10-50-30 CRZ*.

If there is a speed restriction, the speed mode table displays a specific label that indicates the type of speed restriction that is currently applicable. The speed restriction label can be one of the following:
- SPD LIM: The managed speed is the climb speed limit
- CMS: The managed speed/Mach is a constant Mach

- HOLD SPD: The managed speed is the holding speed
- PROC SPD: The managed speed is the ICAO holding speed limit of a holding procedure.

The information that is related to the applicable speed restriction appears below the speed table (*Refer to Speed Restriction*).

ECON(RTA)

Indicates the predicted ECON(RTA) cruise speed/Mach.
The ECON speed/Mach is the FMS-computed speed/Mach that is based on the cost index.
The RTA speed/Mach is the FMS-computed speed/Mach that is based on a time constraint (RTA).

For information about:
- The computation of the ECON cruise speed/Mach, *Refer to DSC-22-FMS-10-50-30 CRZ*
- The time constraint revision, *Refer to DSC-22-FMS-10-40-30 Purpose*.

Note: 1. *The speed mode table displays the ECON mode line, only if all of the following apply:*
  - *The FMS speed mode is ECON*
  - *The managed cruise speed/Mach is different from the ECON cruise speed/Mach.*

2. *The speed mode table displays the RTA mode line, only if the managed cruise speed/Mach is different from the RTA cruise speed/Mach.*

LRC

Indicates the predicted LRC speed/Mach.
The LRC speed/Mach is the FMS-computed speed/Mach that corresponds to the long range cruise.
For information about the computation of the LRC speed/Mach, *Refer to DSC-22-FMS-10-50-30 CRZ*.

Note: *The speed mode table displays the LRC mode line, only if the FMS speed mode is ECON.*

MAX TURB

Indicates the predicted MAX TURB speed/Mach.
The MAX TURB speed/Mach is the maximum speed/Mach to safely fly in a turbulent atmosphere.
For information about the computation of the MAX TURB speed/Mach, *Refer to DSC-22-FMS-10-50-30 CRZ*.
L2 For information on the procedure during severe turbulence in cruise, *Refer to PRO-ABN-MISC [ABN] MISC SEVERE TURBULENCE IN CRUISE*.

Ident.: DSC-22-FMS-20-20-20-270-00004116.0001001 / 03 JUL 14

SPEED MODE TABLE [EO IN CRZ]

If the EO mode is active during the CRZ flight phase, the first line of the speed mode table displays the active speed mode: Selected or managed.
If the selected speed/Mach control is engaged, the second line of the speed mode table displays the managed engine-out cruise speed.

SELECTED

Indicates:
- The selected AFS CP speed/Mach
- The time and distance predictions that are associated with the selected AFS CP speed/Mach.
  The time prediction corresponds to the UTC time at which the aircraft will reach the prediction reference.
  The distance prediction corresponds to the distance between the aircraft present position and the prediction reference.
  The prediction reference is displayed in the header line of the speed mode table.

MANAGED

Indicates:
- The managed engine-out cruise speed
- The time and distance predictions that are associated with the managed engine-out cruise speed.
  The time prediction corresponds to the UTC time at which the aircraft will reach the prediction reference.
  The distance prediction corresponds to the distance between the aircraft present position and the prediction reference.
  The prediction reference is displayed in the header line of the speed mode table.

This managed engine-out cruise speed is the cruise speed target for the FG, if the flight crew engages the managed speed/Mach control.

The speed mode table displays a specific label that indicates the managed speed type. This specific label can be one of the following:

- EO-GDOT: The managed speed is the EO-GDOT speed
  The EO-GDOT speed is the managed speed target, when the aircraft climbs or descends.
- EO-LRC: The managed speed is the EO-LRC speed

  The EO-LRC speed is the managed speed target, when all of the following apply:
  - The aircraft is in level flight
  - The FMS speed mode is EO-LRC.
- EO-ECON: The managed speed is the EO-ECON speed.

  The EO-ECON speed is the managed speed target, when all of the following apply:
  - The aircraft is in level flight
  - The FMS speed mode is EO-ECON.

For information about the EO mode in the CRZ flight phase, *Refer to DSC-22-FMS-10-60 Engine-Out during the CRZ Flight Phase*.

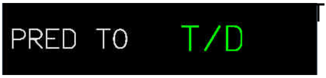
MAX TURB

Indicates the predicted MAX TURB speed/Mach.
The MAX TURB speed/Mach is the maximum speed/Mach to safely fly in a turbulent atmosphere.
For information about the computation of the MAX TURB speed/Mach, *Refer to DSC-22-FMS-10-50-30 CRZ*.
L2 For information on the procedure during severe turbulence in cruise, *Refer to PRO-ABN-MISC [ABN] MISC SEVERE TURBULENCE IN CRUISE*.

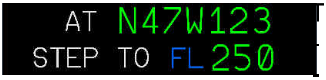
Ident.: DSC-22-FMS-20-20-20-270-00004125.0001001 / 22 APR 14

PREDICTION REFERENCE

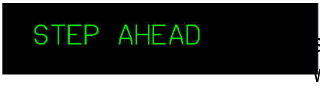
Indicates the prediction reference.
The FMS uses this prediction reference to compute the time and distance predictions that are associated with the selected and managed speed modes of the speed mode table.
The prediction reference can be one of the following:


PRED TO T/D

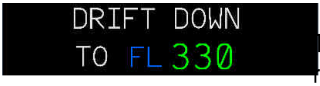
The prediction reference is the Top of Descent (T/D).


AT N47W123
STEP TO FL250

The prediction reference is the starting point of:
- The next step climb, or
- The next step descent.


STEP AHEAD

ndicates that the aircraft is at less than 20 NM from the step starting waypoint. The prediction reference is the step starting waypoint.


DRIFT DOWN
TO FL 330

ndicates the drift-down altitude.
The prediction reference is the point at which the aircraft will reach the drift-down altitude.

Note: *The DRIFT DOWN prediction reference is displayed, only when all of the following apply:*
- *The EO mode is active*
- *The aircraft is above the drift-down altitude.*

For information about the drift-down altitude, *Refer to DSC-22-FMS-10-60 Drift-Down Altitude*.

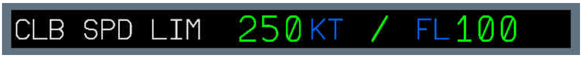
Ident.: DSC-22-FMS-20-20-20-270-00004115.0001001 / 02 APR 15

SPEED RESTRICTION [IN CRZ]

Indicates:
- The type of speed restriction, if any, that applies to the managed cruise speed
- The information that is related to the speed restriction.

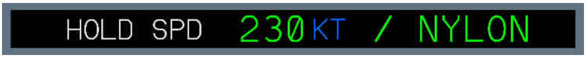
The speed restriction can be one of the following:
- CLB SPD LIM: Indicates the climb speed limit and the end altitude
  For information about the SPD LIMIT revision, *Refer to DSC-22-FMS-10-40-30 Purpose*.

CLB SPD LIM


CLB SPD LIM 250KT / FL100

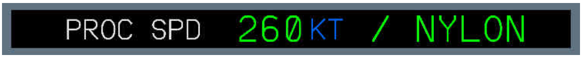
- HOLD SPD: Indicates the holding speed and the holding exit fix
  For information about the HOLD revision, *Refer to DSC-22-FMS-10-40-20 Purpose*.

HOLD SPD


HOLD SPD 230KT / NYLON

- PROC SPD: Indicates the ICAO holding speed limit and the holding entry/exit fix.
  For information about the HOLD revision, *Refer to DSC-22-FMS-10-40-20 Purpose*.

PROC SPD


PROC SPD 260KT / NYLON

Ident.: DSC-22-FMS-20-20-20-270-00004134.0001001 / 22 APR 14

DEST

Indicates:
- The ident of the destination airport
- The Estimated Time of Arrival (ETA), in UTC(flight) time, at the destination airport

L2 The time reference is defined as follows:

- In the PREFLIGHT flight phase:
  - ■ If there is an entered Estimated Takeoff Time (ETT), the time reference is the UTC time
  - ■ If there is no entered ETT, the time reference is the flight time

  The flight crew enters the ETT on the RTA panel of the VERT REV page (*Refer to page*).
- In flight:
  - ■ If the UTC time is valid, the time reference is the UTC time
  - ■ If the UTC time is not valid, the time reference is the flight time.

L1
- The Estimated Fuel on Board (EFOB) at the destination airport.
  The EFOB at the destination airport appears in amber, if its value is below the minimum fuel at destination that is displayed on the FUEL&LOAD page (*Refer to page*). In addition to the amber EFOB, if the active flight phase is CRZ, DES, APPR, or GA, the FMS message area displays the DEST EFOB BELOW MIN message (*Refer to message*).

Note: *On the SEC/PERF page, the EFOB at the destination airport is always displayed in white (even if its value is below the minimum fuel at destination).*

Ident.: DSC-22-FMS-20-20-20-270-00004135.0001001 / 14 APR 14

CMS BUTTON

When clicked, displays the CMS panel of the VERT REV page (*Refer to page*).
On the CMS panel of the VERT REV page, the flight crew can display, create, or delete a Constant Mach Segment (CMS).

Ident.: DSC-22-FMS-20-20-20-270-00004136.0001001 / 22 APR 14

STEP ALTs BUTTON

When clicked, displays the STEP ALTs panel of the VERT REV page (*Refer to page*).
On the STEP ALTs panel of the VERT REV page, the flight crew can display, create, or delete step altitudes.

Ident.: DSC-22-FMS-20-20-20-270-00004139.0002001 / 01 SEP 16

DES CABIN RATE ENTRY FIELD

Indicates the maximum descent cabin rate.

The maximum descent cabin rate is the maximum of the following two values:
- The average descent rate of the cabin
  The FMS computes the average descent rate of the cabin, based on the difference between the pressure at the cruise flight level and the pressure at destination.
- The maximum descent rate of the cabin.
  The maximum descent rate is 270 ft/min by default. The flight crew can overwrite the default value in the DES CABIN RATE entry field.

Note: *To define the maximum of the two values, the FMS uses the absolute values (without the minus sign).*

A value that the FMS computes is displayed in small font. A value that the flight crew enters is displayed in large font.
The FMS computes the T/D in order to respect the maximum descent cabin rate.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 DES CABIN RATE.

Ident.: DSC-22-FMS-20-20-20-270-00004119.0001001 / 22 APR 14

SPEED MODE TABLE [BEFORE DES]

Before the DES flight phase becomes active, the flight crew can enter the managed speed/Mach target for the DES flight phase in the applicable entry fields.

The default value for the managed speed/Mach target is:
- The ECON descent speed/Mach, if the FMS speed mode is ECON
- The LRC descent speed/Mach, if the FMS speed mode is LRC
- The RTA speed/Mach, if there is a time constraint in the flight plan.

The flight crew can always set the ECON(LRC)(RTA) speed/Mach again, by clearing of the entry fields.
The FMS computes the time and distance predictions that are associated with the entered managed speed/Mach.
The time prediction corresponds to the UTC time at which the aircraft will reach the prediction reference.
The distance prediction corresponds to the distance between the aircraft present position and the prediction reference.
The prediction reference is displayed in the PRED TO entry field
When the DES flight phase becomes active while the managed speed/Mach control is engaged, the speed/Mach that was entered in the entry fields is the descent speed/Mach target for the FG.

ENTRY FORMAT

For the entry format of:
- Speed, *Refer to DSC-22-FMS-20-80 SPD*
- Mach, *Refer to DSC-22-FMS-20-80 MACH*.

Ident.: DSC-22-FMS-20-20-20-270-00004124.0001001 / 22 APR 14

SPEED MODE TABLE [IN DES]

In the DES flight phase, the first line of the speed mode table displays the active speed mode: Selected or managed.
If the selected speed/Mach control is engaged, the second line of the speed mode table displays the managed descent speed/Mach.
In specific cases, the speed mode table also displays the ECON(LRC) descent speed/Mach on an assigned line.

SELECTED

Indicates:
- The selected AFS CP speed/Mach
- The time and distance predictions that are associated with the selected AFS CP speed/Mach.
  The time prediction corresponds to the UTC time at which the aircraft will reach the prediction reference.
  The distance prediction corresponds to the distance between the aircraft present position and the prediction reference.
  The prediction reference is displayed in the PRED TO entry field.

MANAGED

Indicates:
- The managed descent speed/Mach
- The time and distance predictions that are associated with the managed descent speed/Mach.
  The time prediction corresponds to the UTC time at which the aircraft will reach the prediction reference.
  The distance prediction corresponds to the distance between the aircraft present position and the prediction reference.
  The prediction reference is displayed in the PRED TO entry field.

This managed descent speed/Mach is the descent speed/Mach target for the FG, if the flight crew engages the managed speed/Mach control.

If there is no speed restriction, the speed mode table displays the ECON or LRC label, as follows:

- The ECON label indicates that the managed descent speed/Mach is the ECON speed/Mach
  The managed descent speed/Mach is the ECON speed/Mach, if the FMS speed mode is ECON.
  The ECON speed/Mach is the FMS-computed speed/Mach that is based on the cost index.
- The LRC label indicates that the managed descent speed/Mach is the LRC speed/Mach.
  The managed descent speed/Mach is the LRC speed/Mach, if the FMS speed mode is LRC.
  The LRC speed/Mach is the FMS-computed speed/Mach that corresponds to the long range cruise.

For information about the computation of the ECON/LRC descent speed/Mach, *Refer to DSC-22-FMS-10-50-30 DES*.

If there is a speed restriction, the speed mode table displays a specific label that indicates the type of speed restriction that is currently applicable. The speed restriction label can be one of the following:

- SPD LIM: The managed speed is the descent speed limit
- SPD CSTR: The managed speed is the speed constraint
- HOLD SPD: The managed speed is the holding speed
- PROC SPD: The managed speed is the ICAO holding speed limit of a holding procedure
- RTA: The managed speed/Mach is the FMS-computed speed/Mach that is based on a time constraint (RTA).

The information that is related to the applicable speed restriction appears below the speed table (*Refer to Speed Restriction*).

ECON(LRC)

Indicates the predicted ECON(LRC) descent speed/Mach.
The ECON speed/Mach is the FMS-computed speed/Mach that is based on the cost index.
The LRC speed/Mach is the FMS-computed speed/Mach that corresponds to the long range cruise.
For information about the computation of the ECON/LRC descent speed/Mach, *Refer to DSC-22-FMS-10-50-30 DES*.

Note: *1. The speed mode table displays the ECON mode line, only if all of the following apply:*
- *The FMS speed mode is ECON*
- *The managed descent speed/Mach is different from the ECON descent speed/Mach.*

2. The speed mode table displays the LRC mode line, only if all of the following apply:
- *The FMS speed mode is LRC*
- *The managed descent speed/Mach is different from the LRC descent speed/Mach.*

Ident.: DSC-22-FMS-20-20-20-270-00004140.0001001 / 22 APR 14

PRED TO ENTRY FIELD (DES)

Indicates the prediction reference altitude.
The FMS uses this altitude to compute the time and distance predictions that are associated with the selected and managed speed modes of the speed mode table.
The PRED TO entry field is available, only when the DES flight phase is active.

L2 **AUTOMATIC UPDATE**

If the flight crew changes the AFS CP selected altitude to a value that is below the aircraft altitude, the prediction reference altitude is set to the AFS CP selected altitude. This update occurs, only if the flight crew did not enter any prediction reference altitude.
If the aircraft is above the AFS CP selected altitude and the aircraft reaches an altitude that is below the prediction reference altitude, the prediction reference altitude is set to the AFS CP selected altitude.

L3 If the aircraft is below the AFS CP selected altitude and below the prediction reference altitude, the PRED TO entry field displays dashes.

L1 **ENTRY FORMAT**

Refer to DSC-22-FMS-20-80 PRED TO (ALTITUDE).

Ident.: DSC-22-FMS-20-20-20-270-00004146.0001001 / 02 OCT 14

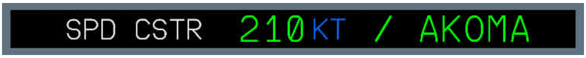
SPEED RESTRICTION [IN DES]

Indicates:
- The type of speed restriction, if any, that applies to the managed descent speed
- The information that is related to the speed restriction.

The speed restriction can be one of the following:

- SPD CSTR: Indicates the speed constraint and the end waypoint
  For information about the SPD CSTR revision, *Refer to DSC-22-FMS-10-40-30 Purpose*.

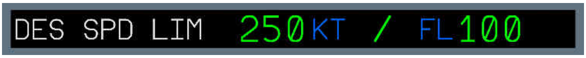
SPD CSTR



SPD CSTR 210KT / AKOMA

- DES SPD LIM: Indicates the descent speed limit and the end altitude
  For information about the SPD LIMIT revision, *Refer to DSC-22-FMS-10-40-30 Purpose*.

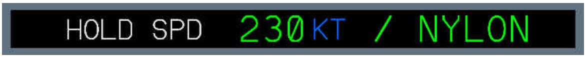
DES SPD LIM



DES SPD LIM 250KT / FL100

- HOLD SPD: Indicates the holding speed and the holding exit fix
  For information about the HOLD revision, *Refer to DSC-22-FMS-10-40-20 Purpose*.

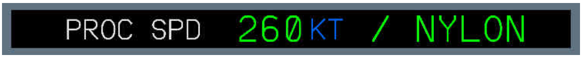
HOLD SPD



HOLD SPD 230KT / NYLON

- PROC SPD: Indicates the ICAO holding speed limit and the holding entry/exit fix.
  For information about the HOLD revision, *Refer to DSC-22-FMS-10-40-20 Purpose*.

PROC SPD



PROC SPD 260KT / NYLON

Ident.: DSC-22-FMS-20-20-20-270-00004147.0001001 / 22 APR 14

TRANS ENTRY FIELD [DES/APPR]

Indicates the descent transition flight level.

Note: 1. *The FMS automatically synchronizes the TRANS entry field of the DES panel of the ACTIVE/PERF page and the TRANS entry field of the APPR panel ACTIVE/PERF page.*
2. *The FMS automatically synchronizes the TRANS entry field of the DES panel of the SEC1(2)(3)/PERF page and the TRANS entry field of the APPR panel of the SEC1(2)(3)/PERF page.*

DEFAULT VALUE

The default value is the transition flight level that is associated with the arrival procedure of the destination airport, and that is stored in the navigation database. If there is no stored transition flight level in the navigation database, the TRANS entry field displays dashes.
The flight crew can always overwrite the default value.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 TRANS (FLIGHT LEVEL).

Ident.: DSC-22-FMS-20-20-20-270-00004148.0001001 / 22 APR 14

VERT DEV

Indicates the vertical deviation in feet.
The FMS computes the vertical deviation. The vertical deviation is the difference between the current altitude of the aircraft and the FMS vertical profile.

Note: *The PFD displays a symbol that is related to the vertical deviation. For more information, Refer to DSC-22-FMS-20-40 Vertical Deviation.*

Ident.: DSC-22-FMS-20-20-20-270-00004152.0001001 / 14 APR 14

APPR

Indicates the ident of the approach procedure.
The flight crew can check, select, or change the approach procedure on the ARRIVAL page (*Refer to page*).

Ident.: DSC-22-FMS-20-20-20-270-00004153.0001001 / 22 APR 14

DESTINATION IDENT

Indicates the ident of the destination airport.

Ident.: DSC-22-FMS-20-20-20-270-00004154.0001001 / 22 APR 14

LW

Indicates the Landing Weight (LW).

- **Before engine start:**
  LW = TOW - trip fuel
- **After engine start:**
  LW = GW - trip fuel - taxi fuel
- **In flight:**
  LW = GW - trip fuel

Ident.: DSC-22-FMS-20-20-20-270-00004155.0001001 / 22 APR 14

WIND DATA

The flight crew enters in the MAG WIND entry fields the wind direction and the wind speed of the magnetic surface wind at the destination airport.

L2 If the airport reference is true north, the wind is the true wind. The label next to the entry fields is TRUE WIND instead of MAG WIND.

L1 *Note:* *1. The FMS automatically synchronizes all of the following:*
- *The MAG WIND entry fields of the DES panel of the ACTIVE/PERF page*
- *The surface wind in the T.WIND entry fields of the DES panel of the ACTIVE/WIND page (Refer to page).*

2. The FMS automatically synchronizes all of the following:
- *The MAG WIND entry fields of the DES panel of the SEC1(2)(3)/PERF page*
- *The surface wind in the T.WIND entry fields of the DES panel of the SEC1(2)(3)/WIND page (Refer to page).*

3. In order to synchronize the entry fields, if the north reference is not the same on the PERF page and on the WIND page, the FMS uses the magnetic variation at the destination airport to change true wind from magnetic wind, and vice versa.

When there is a valid surface wind, the FMS computes the headwind and crosswind components, and displays the computed values below the MAG WIND entry fields.

ENTRY FORMAT

For the entry format of:
- Wind direction, *Refer to DSC-22-FMS-20-80 WIND DIRECTION*
- Wind speed, *Refer to DSC-22-FMS-20-80 WIND SPEED*.

Ident.: DSC-22-FMS-20-20-20-270-00004157.0001001 / 22 APR 14

OAT ENTRY FIELD

Indicates the Outside Air Temperature (OAT).

The FMS uses this OAT to:
- Perform a more precise computation of the descent profile
- Correct the computation of the FLS beam in the case of cold weather.
  For more information about the computation of the FLS beam in the case of cold weather, *Refer to DSC-22-FMS-10-30-40 Cold Weather Correction of the FLS Vertical Deviation*.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 OAT.

Ident.: DSC-22-FMS-20-20-20-270-00004158.0001001 / 22 APR 14

QNH ENTRY FIELD

Indicates the QNH at destination.

The FMS uses this QNH to:

- Compute the descent profile
- Compute the FLS beam.
  For more information about the use of the QNH to compute the FLS beam, , *Refer to DSC-22-FMS-10-30-40 Baro-Correction of the FLS Vertical Deviation*.

The pressurization system also uses this QNH, in order to automatically control the cabin pressurization. Therefore, a QNH entry that is not correct may result in a cabin pressurization profile that is not correct.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 QNH(QFE).

Ident.: DSC-22-FMS-20-20-20-270-00004159.0001001 / 14 APR 14

BARO/RADIO ENTRY FIELDS

In the BARO or RADIO entry field, the flight crew enters the required minimum altitude that is applicable to the approach procedure.
The FMS considers an entry in the BARO entry field as barometric altitude (i.e. an AMSL altitude). For example, the flight crew enters the minimum descent altitude of a GNSS (RNAV) approach with LNAV minima in the BARO entry field.
The FMS considers an entry in the RADIO entry field as a radio altitude (i.e. a height). For example, the flight crew enters the decision height of an ILS CAT II approach in the RADIO entry field.

ENTRY FORMAT

For the entry format of:

- Barometric altitude, *Refer to DSC-22-FMS-20-80 BARO (ALTITUDE)*
- Radio altitude, *Refer to DSC-22-FMS-20-80 RADIO (ALTITUDE)*.

Ident.: DSC-22-FMS-20-20-20-270-00004160.0001001 / 22 APR 14

GDOT, S, F, AND VREF

Indicate the following speeds for approach: GDOT , S, F, and VREF.

Note: *The FMS uses estimated weight and CG to compute the operating speeds that are displayed on the APPR panel of the PERF page. The PRIMs use the current weight and CG to compute the operating speeds that are displayed on the PFD. Therefore, the operating speeds that are displayed on the PFD may be different from the operating speeds that are displayed on the APPR panel of the PERF page.*

For more information about the reference and operating speeds that the FMS computes for approach, *Refer to DSC-22-FMS-10-50-30 APPR*.

Ident.: DSC-22-FMS-20-20-20-270-00004161.0001001 / 22 APR 14

LANDING CONFIGURATION AND VLS

The flight crew selects the landing configuration:
- CONF3, or
- FULL.
  FULL is selected by default.

The FMS computes the VLS that is associated with the selected landing configuration, and displays the computed value below the landing configuration option list.

Note: *The FMS uses the selected landing configuration, estimated weight and CG, and the destination airport elevation to compute the VLS that is displayed on the APPR panel of the PERF page. The PRIMs use the current weight, CG, flaps configuration, and altitude to compute the VLS that is displayed on the PFD. Therefore, the VLS that is displayed on the PFD may be different from the VLS that is displayed on the APPR panel of the PERF page.*

For more information about the VLS that the FMS computes for approach, *Refer to DSC-22-FMS-10-50-30 APPR*.

Ident.: DSC-22-FMS-20-20-20-270-00004162.0001001 / 22 APR 14

VAPP ENTRY FIELD

Indicates the final approach speed: VAPP.
The FMS computes the VAPP.
For information on how the FMS computes the VAPP, *Refer to DSC-22-FMS-10-50-30 APPR*.
The VAPP that the FMS computes is displayed in small font.
The flight crew can always overwrite the value that the FMS computes. The value that the flight crew enters is displayed in large font.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 VAPP.

Ident.: DSC-22-FMS-20-20-20-270-00004167.0001001 / 22 APR 14

F, S, AND GDOT [GA]

Indicate the following operating speeds for go-around: F, S, and GDOT.

Note: *The FMS uses estimated weight and CG to compute the operating speeds that are displayed on the GA panel of the PERF page. The PRIMs use the current weight and CG to compute the operating speeds that are displayed on the PFD. Therefore, the operating speeds that are displayed on the PFD may be different from the operating speeds that are displayed on the GA panel of the PERF page.*

For more information about the operating speeds that the FMS computes for go-around, *Refer to DSC-22-FMS-10-50-30 GA*.

Ident.: DSC-22-FMS-20-20-20-270-00004168.0001001 / 22 APR 14

THR RED ENTRY FIELD [GA]

Indicates the thrust reduction altitude.
The thrust reduction altitude is the altitude at which the flight crew should reduce the thrust from TOGA to CL.

DEFAULT VALUE

The default value for the thrust reduction altitude is:

- The value that is associated with the destination airport, and that is stored in the navigation database, or
- The value that is the sum of:
  - The destination airport elevation (stored in the navigation database)
  - The thrust reduction height (defined by the Operator in the AMI file).
    The default value of the thrust reduction height is 1 500 ft.

The flight crew can always overwrite the default value.

L2 AUTOMATIC UPDATE

The FMS considers that the aircraft levels off below the thrust reduction altitude, if all of the following occur:

- The flight crew enters an AT or AT OR BELOW altitude constraint at a waypoint
- This waypoint is a waypoint that is in the CLB flight phase
- The altitude of this waypoint is below the thrust reduction altitude.

As a result, the altitude of the constraint automatically becomes the new thrust reduction altitude. In this case, the FMS message area displays the NEW THR RED ALT : HHHHH message (*Refer to message*).
In flight, if the flight crew sets the AFS CP selected altitude below the thrust reduction altitude, the AFS CP selected altitude becomes the new thrust reduction altitude.

L1 ENTRY FORMAT

Refer to DSC-22-FMS-20-80 THR RED (ALTITUDE).

Ident.: DSC-22-FMS-20-20-20-270-00004169.0001001 / 14 APR 14

ACCEL ENTRY FIELD [GA]

Indicates the acceleration altitude.
The acceleration altitude is the altitude at which the aircraft accelerates toward the initial climb speed.

At the acceleration altitude, the CLB flight phase becomes active.

DEFAULT VALUE

The default value for the acceleration altitude is:

- The value that is associated with the destination airport, and that is stored in the navigation database, or
- The value that is the sum of:
  - The destination airport elevation (stored in the navigation database)
  - The acceleration height (defined by the Operator in the AMI file).
    The default value of the acceleration height is 1 500 ft.

The flight crew can always overwrite the default value.

L2 AUTOMATIC UPDATE

The FMS considers that the aircraft levels off below the acceleration altitude, if all of the following occur:

- The flight crew enters an AT or AT OR BELOW altitude constraint at a waypoint
- This waypoint is a waypoint that is in the CLB flight phase
- The altitude of this waypoint is below the acceleration altitude.

As a result, the altitude of the constraint becomes the new acceleration altitude. In this case, the FMS message area displays the NEW ACC ALT ALT : HHHHH message (*Refer to message*).
In flight, if the flight crew sets the AFS CP selected altitude below the acceleration altitude, the AFS CP selected altitude becomes the new acceleration altitude.

L1 DEFAULT VALUE

Refer to DSC-22-FMS-20-80 ACCEL ALT.

Ident.: DSC-22-FMS-20-20-20-270-00004170.0001001 / 22 APR 14

EO ACCEL ENTRY FIELD [GA]

Indicates the engine-out acceleration altitude.
The engine-out acceleration altitude is only a reminder. There is no specific system behavior that is associated with this altitude.

DEFAULT VALUE

The default value for the engine-out acceleration altitude is:

- The value that is associated with the destination airport, and that is stored in the navigation database, or
- The value that is the sum of:
  - The destination airport elevation (stored in the navigation database)
  - The engine-out acceleration height (defined by the Operator in the AMI file).
    The default value of the engine-out acceleration height is 1 500 ft.

The flight crew can always overwrite the default value.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 EO ACCEL (ALTITUDE).

Ident.: DSC-22-FMS-20-20-20-270-00004171.0001001 / 22 APR 14

TRANS ENTRY FIELD [GA]

Indicates the climb transition altitude.

DEFAULT VALUE

The default value is the transition altitude that is associated with the departure procedures of the destination airport, and that is stored in the navigation database. If there is no stored transition altitude in the navigation database, the TRANS entry field displays dashes.
The flight crew can always overwrite the default value.

ENTRY FORMAT

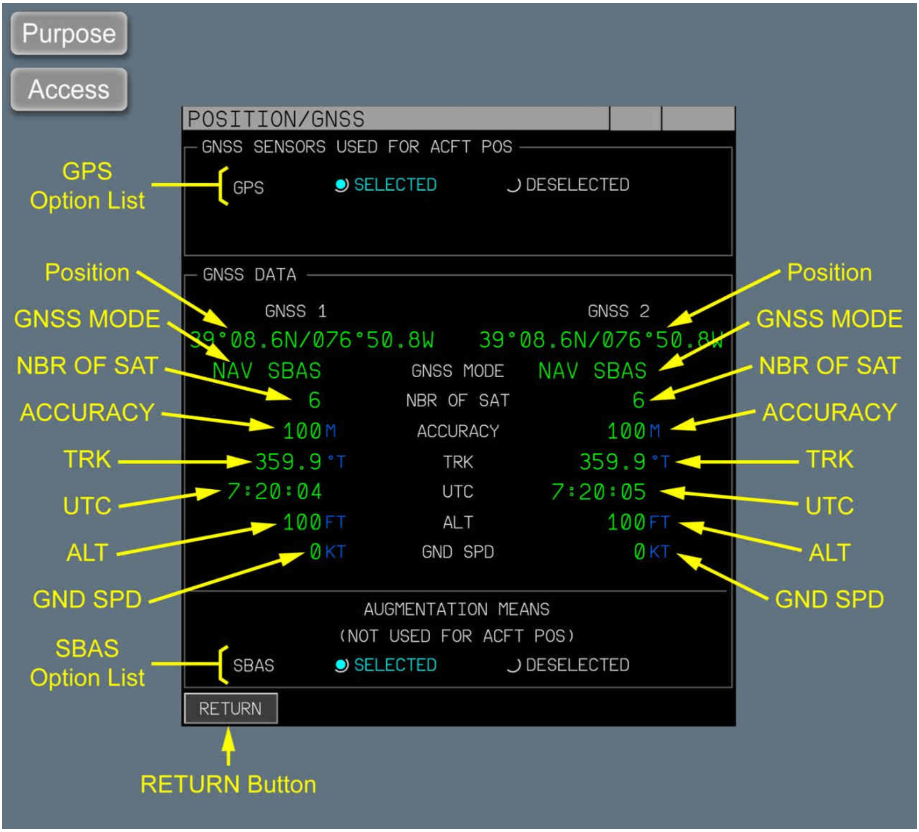
Refer to DSC-22-FMS-20-80 TRANS (ALTITUDE).

POSITION/GNSS PAGE

Applicable to: ALL

Ident.: DSC-22-FMS-20-20-20-280-00002727.0002001 / 22 APR 14

POSITION/GNSS Page


Purpose
Access
GPS Option List
Position
GNSS MODE
NBR OF SAT
ACCURACY
TRK
UTC
ALT
GND SPD
SBAS Option List
RETURN Button

POSITION/GNSS

GNSS SENSORS USED FOR ACFT POS

GPS ● SELECTED ○ DESELECTED

GNSS DATA

GNSS 1		GNSS 2
39°08.6N/076°50.8W		39°08.6N/076°50.8W
NAV SBAS	GNSS MODE	NAV SBAS
6	NBR OF SAT	6
100M	ACCURACY	100M
359.9°T	TRK	359.9°T
7:20:04	UTC	7:20:05
100FT	ALT	100FT
0KT	GND SPD	0KT

AUGMENTATION MEANS
(NOT USED FOR ACFT POS)

SBAS ● SELECTED ○ DESELECTED

RETURN

Ident.: DSC-22-FMS-20-20-20-280-00004172.0001001 / 22 APR 14

PURPOSE

The POSITION/GNSS page:

- Displays the GNSS 1 and GNSS 2 data
  The ADIRS receives the GNSS data from the MMR, and sends this data to the FMS.
- Enables the flight crew to deselect the GPS for the computation of the aircraft position.
  The FMS sent the GPS selection status to the ADIRS. The ADIRS computes the aircraft position.

LINKS

For more information about:

- The MMR, *Refer to DSC-34-NAV-10 General*
- The GPS, *Refer to DSC-34-NAV-40 General*
- The computation of the aircraft position, *Refer to DSC-34-NAV-20-10-60 Position Computation*.

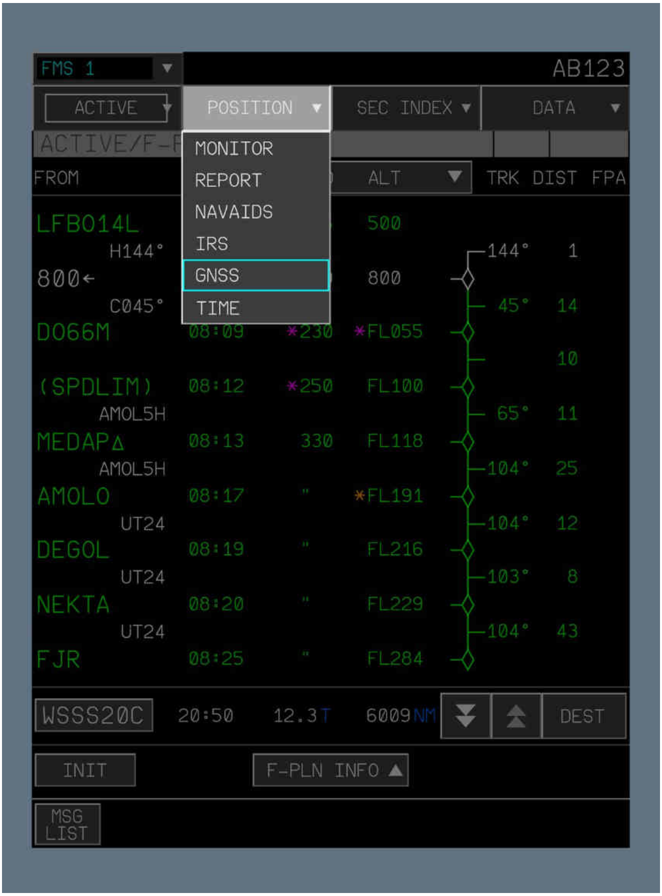
Ident.: DSC-22-FMS-20-20-20-280-00004173.0001001 / 14 APR 14

ACCESS

The flight crew can access the POSITION/GNSS page via:

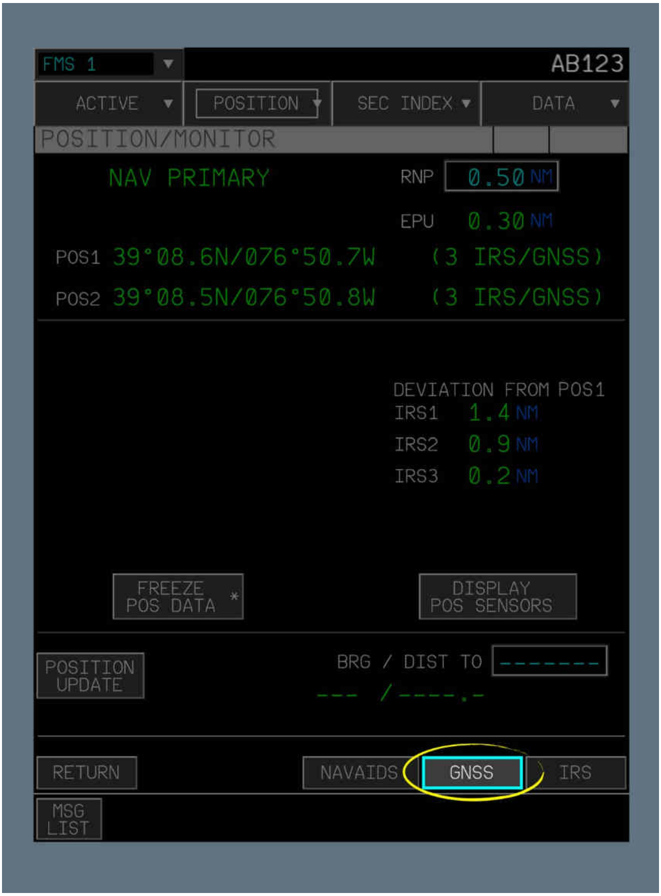
- The general menu bar, by selecting GNSS in the POSITION menu

General Menu Bar


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-P
MONITOR
REPORT
NAVAIDS
IRS
GNSS
TIME
FROM
ALT
TRK DIST FPA
LFBO14L 500
H144°
144° 1
800← 800
C045°
45° 14
D066M 08:09 *230 *FL055
10
(SPDLIM) 08:12 *250 FL100
AMOL5H
65° 11
MEDAPΔ 08:13 330 FL118
AMOL5H
104° 25
AMOLO 08:17 " *FL191
UT24
104° 12
DEGOL 08:19 " FL216
UT24
103° 8
NEKTA 08:20 " FL229
UT24
104° 43
FJR 08:25 " FL284
WSSS20C 20:50 12.3T 6009NM
DEST
INIT
F-PLN INFO
MSG LIST

- The POSITION/MONITOR page, by clicking on the GNSS button.

POSITION/MONITOR Page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
POSITION/MONITOR
FREEZE POS DATA
DISPLAY POS SENSORS
POSITION UPDATE
RETURN
NAVAIDS
GNSS
IRS
MSG LIST

NAV PRIMARY

RNP 0.50 NM

EPU 0.30 NM

POS1 39°08.6N/076°50.7W (3 IRS/GNSS)

POS2 39°08.5N/076°50.8W (3 IRS/GNSS)

DEVIATION FROM POS1

IRS1 1.4 NM

IRS2 0.9 NM

IRS3 0.2 NM

BRG / DIST TO --------

--- /----.-

Ident.: DSC-22-FMS-20-20-20-280-00004246.0002001 / 14 APR 16

GPS OPTION LIST

The flight crew selects or deselects the GPS source for the aircraft position computation, by selecting one of the following options:

- SELECTED: The GPS source is selected for the aircraft position computation
  L2 When the DONE flight phase becomes active, the SELECTED option is automatically selected.
- L1 DESELECTED: The GPS source is deselected for the aircraft position computation.

L2 If the GPS source is deselected:

- The FMS message area displays the GPS DESELECTED message (*Refer to message*), when:
  - The aircraft is at 80 NM from the top of descent, or
  - The APPR flight phase becomes active.
- The DESELECTED option of the SBAS ◁ option list is automatically selected, and the SELECTED option of the SBAS ◁ option list is no longer available (*Refer to SBAS Option List*). As a result, the SBAS ◁ is deselected, and cannot be reselected.

Ident.: DSC-22-FMS-20-20-20-280-00004174.0001001 / 22 APR 14

POSITION

Indicates the GNSS 1(2) position latitude/longitude.

Ident.: DSC-22-FMS-20-20-20-280-00004175.0001001 / 22 NOV 17

GNSS MODE

Indicates the GNSS 1(2) mode.

The GNSS mode can be:

- INIT
- ACQ
- SBAS ◁ NAV
- NAV
- TEST
- FAULT
- ALTAID
- DIRSPDAID.

L3 For information about the GNSS modes, *Refer to DSC-34-NAV-40 GNSS Modes*.

Ident.: DSC-22-FMS-20-20-20-280-00004176.0001001 / 22 APR 14

NBR OF SAT

Indicates the number of satellites that are available for GNSS 1(2).

Ident.: DSC-22-FMS-20-20-20-280-00004177.0001001 / 14 APR 14

ACCURACY

Indicates the horizontal figure of merit of GNSS 1(2).

Ident.: DSC-22-FMS-20-20-20-280-00004178.0001001 / 22 APR 14

TRK

Indicates the GNSS 1(2) true track.

Ident.: DSC-22-FMS-20-20-20-280-00004179.0001001 / 22 APR 14

UTC

Indicates the GNSS 1(2) UTC time.

Ident.: DSC-22-FMS-20-20-20-280-00004180.0001001 / 14 APR 14

ALT

Indicates the GNSS 1(2) altitude.

Ident.: DSC-22-FMS-20-20-20-280-00004181.0001001 / 22 APR 14

GND SPD

Indicates the GNSS 1(2) ground speed.

Ident.: DSC-22-FMS-20-20-20-280-00013772.0001001 / 14 APR 16

SBAS ◁ OPTION LIST

The flight crew selects or deselects the SBAS for the aircraft guidance, by selecting one of the following options:

- SELECTED: The SBAS is selected for the aircraft guidance
  L2 The SELECTED option is automatically deselected, and is no longer available, if the flight crew deselects the GPS source via the GPS option list (*Refer to GPS Option List*).
- L1 DESELECTED: The SBAS is deselected for the aircraft guidance.
  L2 If the SBAS is deselected, the SLS function is not available. In this case, if the flight crew selects an RNAV (GNSS) approach with LPV minima, the FMS message area displays the SLS NOT AVAIL: SBAS DESELECTED FOR FLS: DESELECT SLS ON NAVAIDS message (*Refer to message*).

Ident.: DSC-22-FMS-20-20-20-280-00004182.0001001 / 22 APR 14

RETURN BUTTON

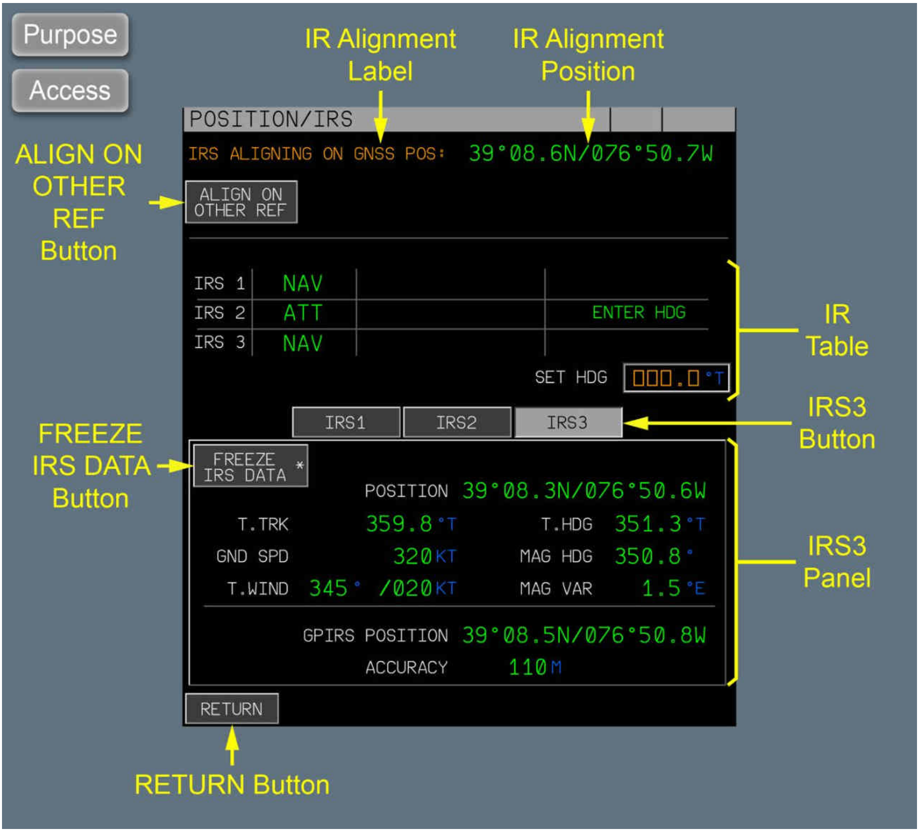
When clicked, displays the POSITION/MONITOR page (*Refer to page*).
L2 The RETURN button appears, only if the flight crew accesses the POSITION/GNSS page via the POSITION/MONITOR page.

POSITION/IRS PAGE

Applicable to: ALL

Ident.: DSC-22-FMS-20-20-20-290-00002728.0001001 / 22 APR 14

POSITION/IRS Page


Purpose
Access
IR Alignment Label
IR Alignment Position
ALIGN ON OTHER REF Button
IR Table
IRS3 Button
FREEZE IRS DATA Button
IRS3 Panel
RETURN Button
ALIGN ON OTHER REF
IRS1
IRS2
IRS3
FREEZE IRS DATA *
RETURN

POSITION/IRS

IRS ALIGNING ON GNSS POS: 39°08.6N/076°50.7W

IRS 1 NAV
IRS 2 ATT ENTER HDG
IRS 3 NAV

SET HDG □□□.□ °T

POSITION 39°08.3N/076°50.6W
T.TRK 359.8 °T T.HDG 351.3 °T
GND SPD 320 KT MAG HDG 350.8 °
T.WIND 345 ° /020 KT MAG VAR 1.5 °E

GPIRS POSITION 39°08.5N/076°50.8W
ACCURACY 110 M

Ident.: DSC-22-FMS-20-20-20-290-00004183.0001001 / 22 APR 14

PURPOSE

On the POSITION/IRS page, the flight crew can:
- Define and monitor the reference position for the IR alignment
- Monitor the IR 1(2)(3) mode and status
- Monitor the IR 1(2)(3) deviation

- Enter the heading, when one or more IRs are in ATT mode
- Monitor the IR 1(2)(3) drift, when the DONE flight phase is active
- Monitor the IR 1(2)(3) data.

LINKS

For information about:

- The ADIRS, *Refer to DSC-34-NAV-20-10-10 Overview*
- The IR part of the ADIRS, *Refer to DSC-34-NAV-20-10-40 General*.

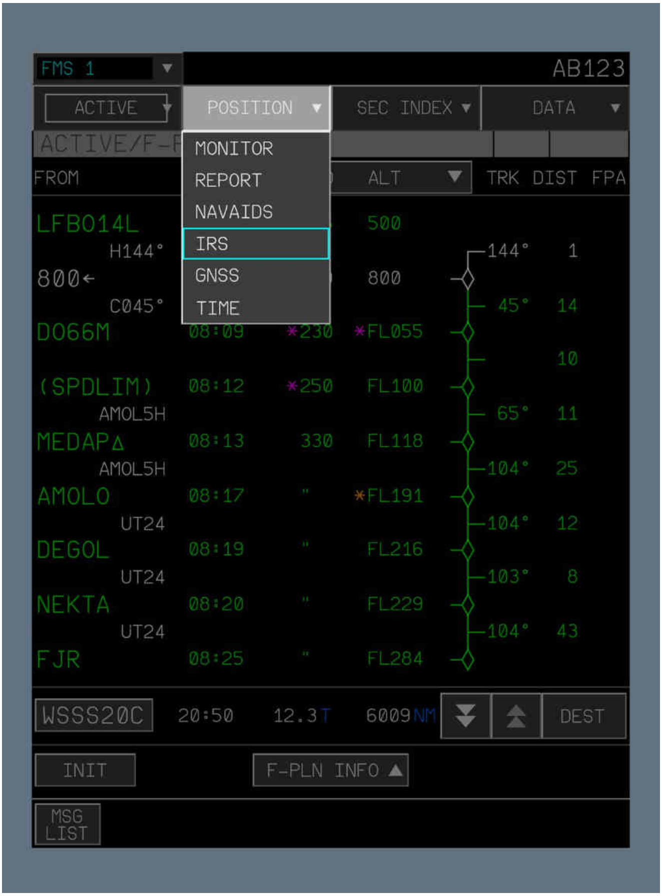
Ident.: DSC-22-FMS-20-20-20-290-00004184.0001001 / 14 APR 14

ACCESS

The flight crew can access the POSITION/IRS page via:

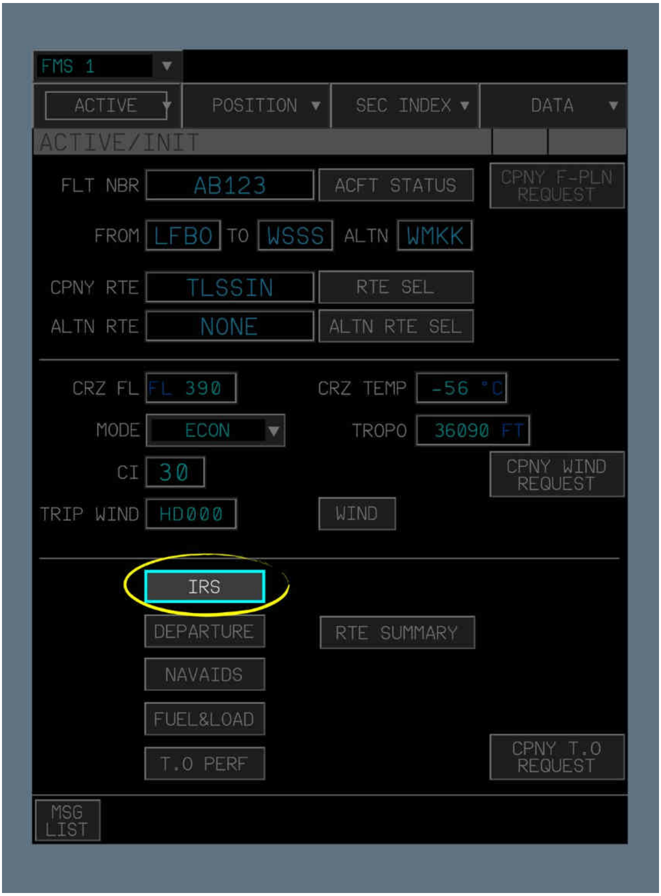
- The general menu bar, by selecting IRS in the POSITION menu

General Menu Bar


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
MONITOR
REPORT
NAVAIDS
IRS
GNSS
TIME
ACTIVE/F-P
FROM
ALT
TRK DIST FPA
LFBO14L
H144°
800←
C045°
DO66M
(SPDLIM)
AMOL5H
MEDAP
AMOLO
UT24
DEGOL
NEKTA
FJR
WSSS20C
20:50
12.3T
6009NM
DEST
INIT
F-PLN INFO
MSG LIST

- The ACTIVE/INIT page, by clicking on the IRS button

ACTIVE/INIT Page


ACTIVE
POSITION
SEC INDEX
DATA
ACFT STATUS
CPNY F-PLN REQUEST
RTE SEL
ALTN RTE SEL
CPNY WIND REQUEST
WIND
IRS
DEPARTURE
RTE SUMMARY
NAVAIDS
FUEL&LOAD
T.O PERF
CPNY T.O REQUEST
MSG LIST

FMS 1

ACTIVE/INIT

FLT NBR AB123

FROM LFBO TO WSSS ALTN WMKK

CPNY RTE TLSSIN

ALTN RTE NONE

CRZ FL FL 390

CRZ TEMP -56 °C

MODE ECON

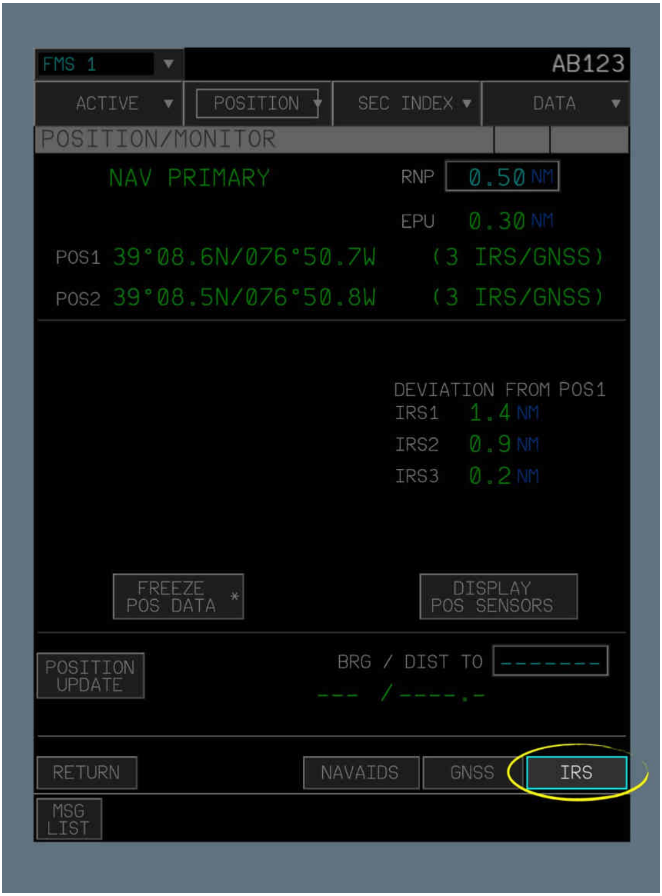
TROPO 36090 FT

CI 30

TRIP WIND HD000

- The POSITION/MONITOR page, by clicking on the IRS button.

POSITION/MONITOR Page



FMS 1 ▼ AB123

ACTIVE ▼ | POSITION ▼ | SEC INDEX ▼ | DATA ▼

POSITION/MONITOR

NAV PRIMARY

RNP 0.50 NM

EPU 0.30 NM

POS1 39°08.6N/076°50.7W (3 IRS/GNSS)

POS2 39°08.5N/076°50.8W (3 IRS/GNSS)

DEVIATION FROM POS1

IRS1 1.4 NM

IRS2 0.9 NM

IRS3 0.2 NM

FREEZE POS DATA *
DISPLAY POS SENSORS
POSITION UPDATE

BRG / DIST TO --------

--- /----.-

RETURN
NAVAIDS
GNSS
IRS
MSG LIST

Ident.: DSC-22-FMS-20-20-20-290-00004185.0001001 / 22 APR 14

IR ALIGNMENT POSITION

Indicates the latitude/longitude of the IR alignment position.
The ADIRS sends this position to the FMS, at the IR alignment.

L2 Dashes appear instead of the latitude/longitude, if one of the following occurs:
- The IRs are not aligned
- The FMCs power up after the IR alignment: The FMS does not have the IR alignment position, because the FMS was not available when the IR alignment position was sent
- Both active FMCs simultaneously reset after the IR alignment: The FMS does not keep the IR alignment position in its memory.

Note: *If only one active FMC powers up (or resets) after the IR alignment, the affected FMC will recover the IR alignment position during the synchronization with the not affected FMC.*

Ident.: DSC-22-FMS-20-20-20-290-00004186.0001001 / 22 APR 14

IR ALIGNMENT LABEL

Indicates the alignment status of the IRs.
The IR alignment label can be one of the following:

IRS ALIGNING ON GNSS POS:	The IR alignment is in progress, and the reference position for the IRs alignment is the GNSS position.
IRS ALIGNED ON GNSS POS:	The IRs are aligned on the GNSS position.
IRS ALIGNING ON REF POS:	The IR alignment is in progress, and the reference position for the IR alignment is a position that is different from the GNSS position. The flight crew defines this reference position via the ALIGN ON OTHER REF function, that appears by clicking on the ALIGN ON OTHER REF button (*Refer to ALIGN ON OTHER REF Button*).
IRS ALIGNED ON REF POS:	The IRs are aligned on a reference position that is different from the GNSS position. The flight crew defines this reference position via the ALIGN ON OTHER REF function, that appears by clicking on the ALIGN ON OTHER REF button (*Refer to ALIGN ON OTHER REF Button*).

Ident.: DSC-22-FMS-20-20-20-290-00004187.0001001 / 14 APR 14

ALIGN ON OTHER REF BUTTON

When clicked, displays the ALIGN ON OTHER REF function (*Refer to ALIGN ON OTHER REF Function*).

L2 The flight crew can define the other reference position only in PREFLIGHT or DONE flight phase.

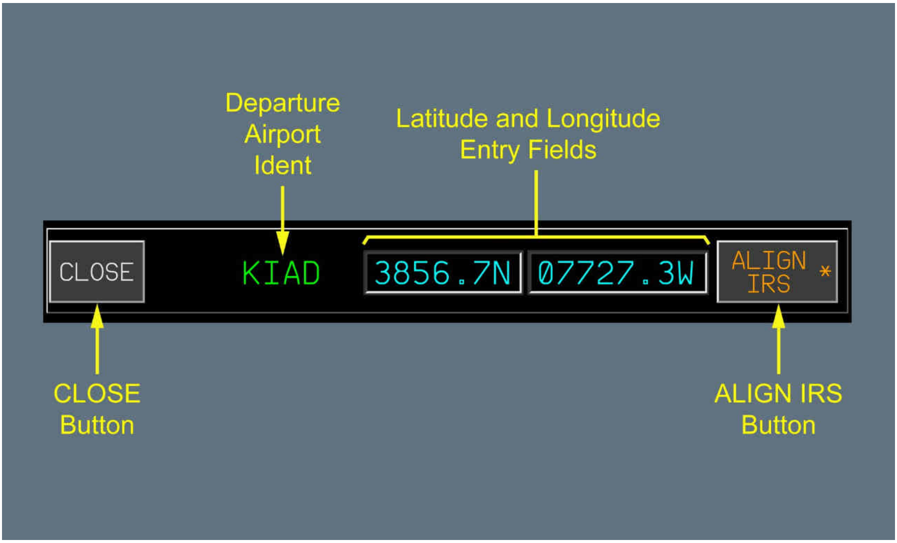
Ident.: DSC-22-FMS-20-20-20-290-00004188.0001001 / 14 APR 14

ALIGN ON OTHER REF FUNCTION

The ALIGN ON OTHER REF function enables the flight crew to define a reference position for the IR alignment.

L2 The flight crew uses the ALIGN ON OTHER REF function to define a reference position that is different from the GNSS position.

ALIGN ON OTHER REF Function


Departure
Airport
Ident
Latitude and Longitude
Entry Fields
CLOSE
KIAD
3856.7N
07727.3W
ALIGN
IRS
*
CLOSE
Button
ALIGN IRS
Button

Ident.: DSC-22-FMS-20-20-20-290-00004189.0001001 / 14 APR 14

CLOSE BUTTON

When clicked, closes the ALIGN ON OTHER REF function.

Ident.: DSC-22-FMS-20-20-20-290-00004190.0001001 / 22 APR 14

DEPARTURE AIRPORT IDENT

Indicates the ident of the departure airport.

L2 The ident of the departure airport is displayed, only when the values in the latitude and longitude entry fields are the latitude and longitude of the reference point of the departure airport .

Ident.: DSC-22-FMS-20-20-20-290-00004191.0001001 / 22 APR 14

LATITUDE AND LONGITUDE ENTRY FIELDS

The flight crew enters the latitude and longitude of the new reference position in the entry fields. The default position is the departure airport of the active flight plan, if the departure airport is entered.

ENTRY FORMAT

For the entry format of:
- Latitude, *Refer to DSC-22-FMS-20-80 LAT*
- Longitude, *Refer to DSC-22-FMS-20-80 LONG*.

Ident.: DSC-22-FMS-20-20-20-290-00004192.0001001 / 14 APR 14

ALIGN IRS BUTTON

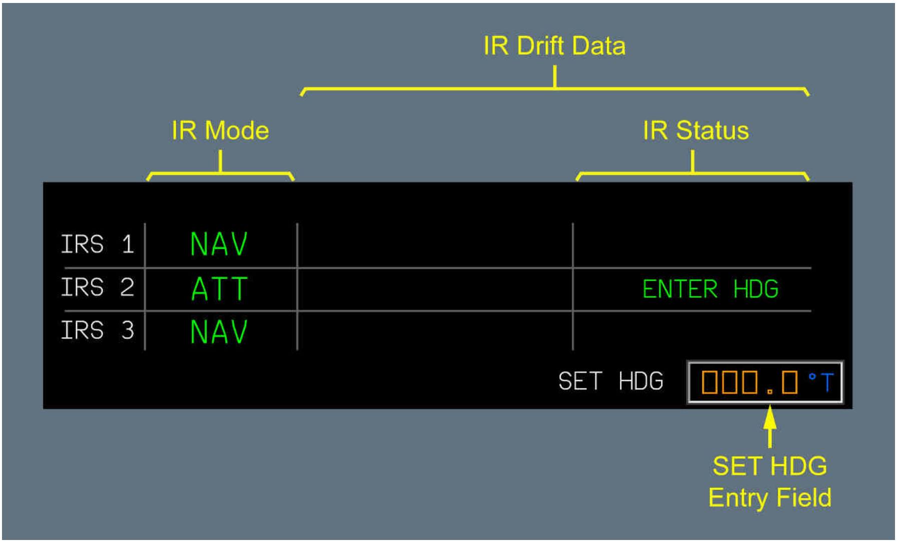
When clicked, sends the new reference position to the ADIRS, for IR alignment.

Ident.: DSC-22-FMS-20-20-20-290-00004193.0001001 / 22 APR 14

IR TABLE

For each IR, the IR table displays:
- In the first column: The IR identification
- In the second column: The IR mode
- In the fourth column: The IR status
- In the third and fourth columns (when the DONE flight phase is active): The IR drift data.

IR Table


IR Drift Data
IR Mode
IR Status
SET HDG
Entry Field

IRS 1	NAV		
IRS 2	ATT		ENTER HDG
IRS 3	NAV		

SET HDG □□□.□°T

Ident.: DSC-22-FMS-20-20-20-290-00004194.0001001 / 22 APR 14

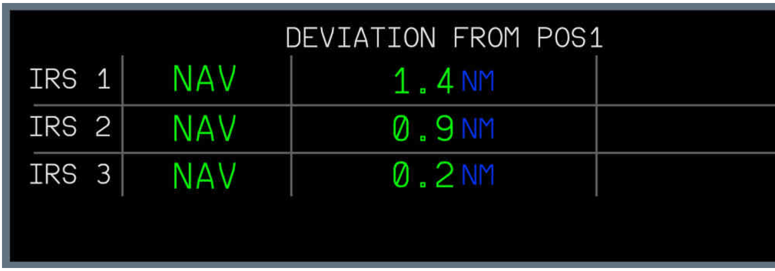
IR MODE

The second column of the IR table displays the IR mode.
The IR mode is one of the following:

NAV

The IR is in NAV mode. The NAV mode is the normal mode.

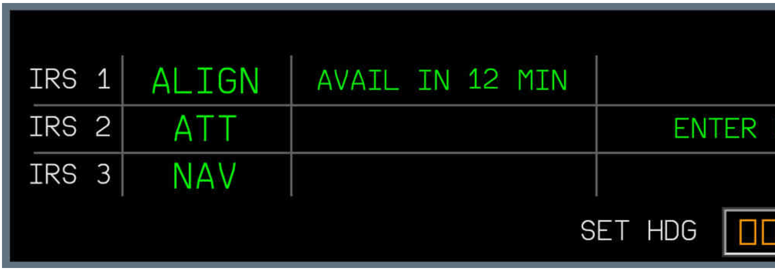
When the three IRs are in NAV mode and the DONE flight phase is not active, the second column of the IR table displays the IR deviation from the aircraft position:
- On the MFD of the Captain, the IR table displays the deviation from POS 1
- On the MFD of the First Officer, the IR table displays the deviation from POS 2.



		DEVIATION FROM POS1
IRS 1	NAV	1.4 NM
IRS 2	NAV	0.9 NM
IRS 3	NAV	0.2 NM

ALIGN

The IR waits for an alignment reference position, or the IR alignment is in progress.
When the IR alignment is in progress, the second column of the table displays the estimated time to complete the IR alignment.



IRS 1	ALIGN	AVAIL IN 12 MIN	
IRS 2	ATT		ENTER
IRS 3	NAV		

SET HDG □□

ATT

The IR is in ATT mode.
When one of the three IR is in ATT mode, the IR status is ENTER HDG, and the SET HDG entry field is displayed below the IR table (*Refer to SET HDG Entry Field*).

INVALID

The IR is not valid.

Ident.: DSC-22-FMS-20-20-20-290-00004196.0001001 / 30 APR 14

IR STATUS

The fourth column of the IR table displays the IR status:

- There is no display, when the status is normal
- IR FAULT
- DELAYED MAINT
- ENTER P.POS
- SELECT ATT
- EXCESS MOTION
- SWITCH ADR
- CHECK C/B
- ENTER HDG
  When the IR status is ENTER HDG, the SET HDG entry field is displayed below the IR table (*Refer to SET HDG Entry Field*).
- REENTER P.POS
- SYS BELOW -15°.

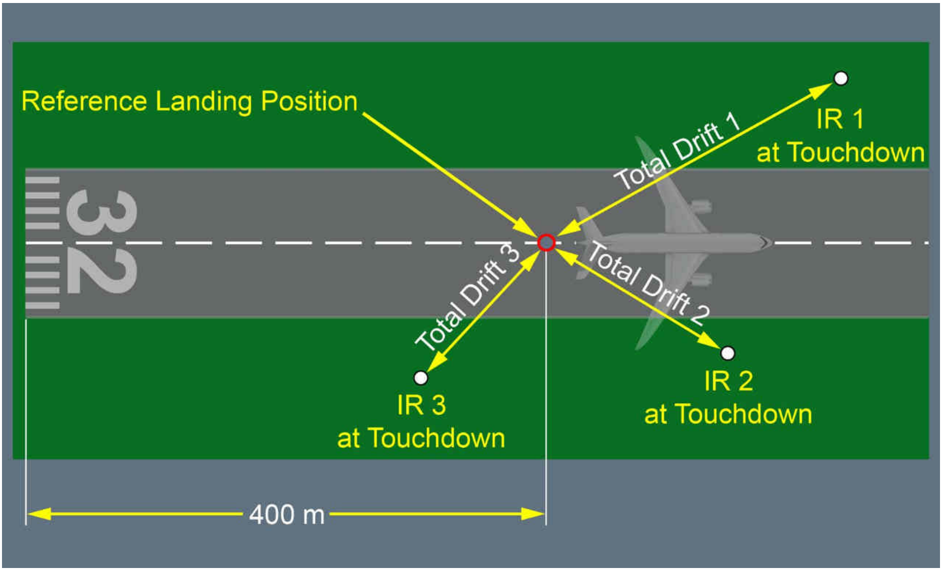
IR DRIFT DATA

When the DONE flight phase is active, the IR table displays:

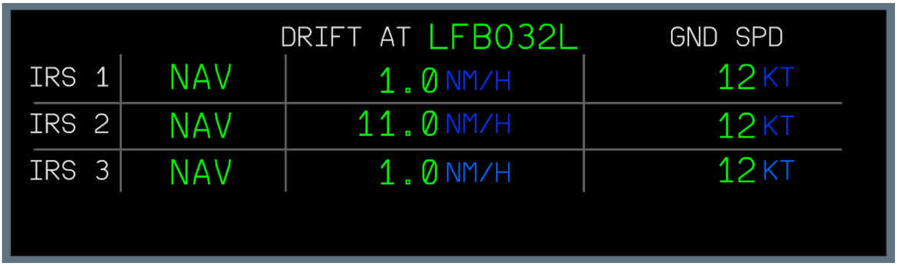
- In the third column: The average drift of the IR

L2 At the end of the flight, each FMC computes an average drift for each IR position.
Average drift = Total drift / Time since last alignment.
The total drift is the difference between the IR position at landing and the reference landing position. The reference landing position is the position of the destination runway threshold, plus a shift of 400 m on the runway axis.

Total Drift


Reference Landing Position
Total Drift 1
IR 1
at Touchdown
32
Total Drift 3
Total Drift 2
IR 3
at Touchdown
IR 2
at Touchdown
400 m

L1 - In the fourth column: The current ground speed.



		DRIFT AT LFB032L	GND SPD
IRS 1	NAV	1.0 NM/H	12 KT
IRS 2	NAV	11.0 NM/H	12 KT
IRS 3	NAV	1.0 NM/H	12 KT

IR Drift Data

Ident.: DSC-22-FMS-20-20-20-290-00004197.0001001 / 22 APR 14

SET HDG ENTRY FIELD

The flight crew enters the heading in the entry field.
The entered heading initializes the IR in ATT mode.
The SET HDG entry field is displayed, only if one or more IRs are in ATT mode.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 HEADING (SET HDG).

Ident.: DSC-22-FMS-20-20-20-290-00004198.0001001 / 22 APR 14

IRS1(2)(3) BUTTON

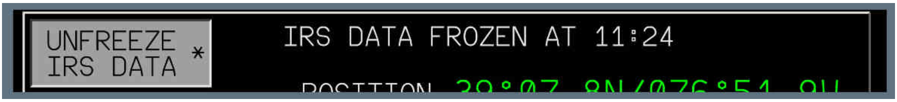
When clicked, displays the IRS1(2)(3) panel (*Refer to IRS1(2)(3) Panel*).
When clicked again, removes the IRS1(2)(3) panel from display.

Ident.: DSC-22-FMS-20-20-20-290-00004199.0001001 / 22 APR 14

FREEZE IRS DATA BUTTON

When clicked, freezes the display of all IR data on the IRS1, IRS2, and IRS3 panels.

After the flight crew clicks on the FREEZE IRS DATA button:
- The IRS DATA FROZEN AT HH:MM label appears next to the FREEZE IRS DATA button
  The "HH:MM" corresponds to the UTC(flight) time at which the IR data was frozen.
- The label of the FREEZE IRS DATA button becomes UNFREEZE IRS DATA.
  When clicked, the IR data is no longer frozen.



IRS DATA FROZEN AT 11:24

UNFREEZE IRS DATA Button

Ident.: DSC-22-FMS-20-20-20-290-00004200.0001001 / 28 APR 17

IRS1(2)(3) PANEL

Displays the following IR 1(2)(3) data:

- Position latitude/longitude
- True track
- Ground speed
- True wind
- True heading
- Magnetic heading
  Dashes appear instead of the magnetic heading, when the aircraft is at extreme latitudes.
- Magnetic variation
  The magnetic variation is the difference between the IR true heading and the IR magnetic heading.
- GPIRS position
- GPIRS position accuracy
  L2 The GPIRS position accuracy is the horizontal figure of merit of the GPIRS position.

When the IR 1(2)(3) is in ATT mode:

- The following data of the IRS1(2)(3) panel is not available:
  - Position latitude/longitude
    Dashes appear instead of the position latitude/longitude.
  - True track
    Dashes appear instead of the true tack.
- The magnetic variation is equal to 0
  Therefore, the magnetic heading is equal to the true heading.
- The other data of the IRS1(2)(3) panel is available, as long as the GPS is valid.

Ident.: DSC-22-FMS-20-20-20-290-00004201.0001001 / 22 APR 14

RETURN BUTTON

When clicked, displays:

- The ACTIVE/INIT page (*Refer to page*), if the ACTIVE/INIT page is the page that was displayed before the POSITION/IRS page
- The POSITION/MONITOR page (*Refer to page*), if the POSITION/MONITOR page is the page that was displayed before the POSITION/IRS page.

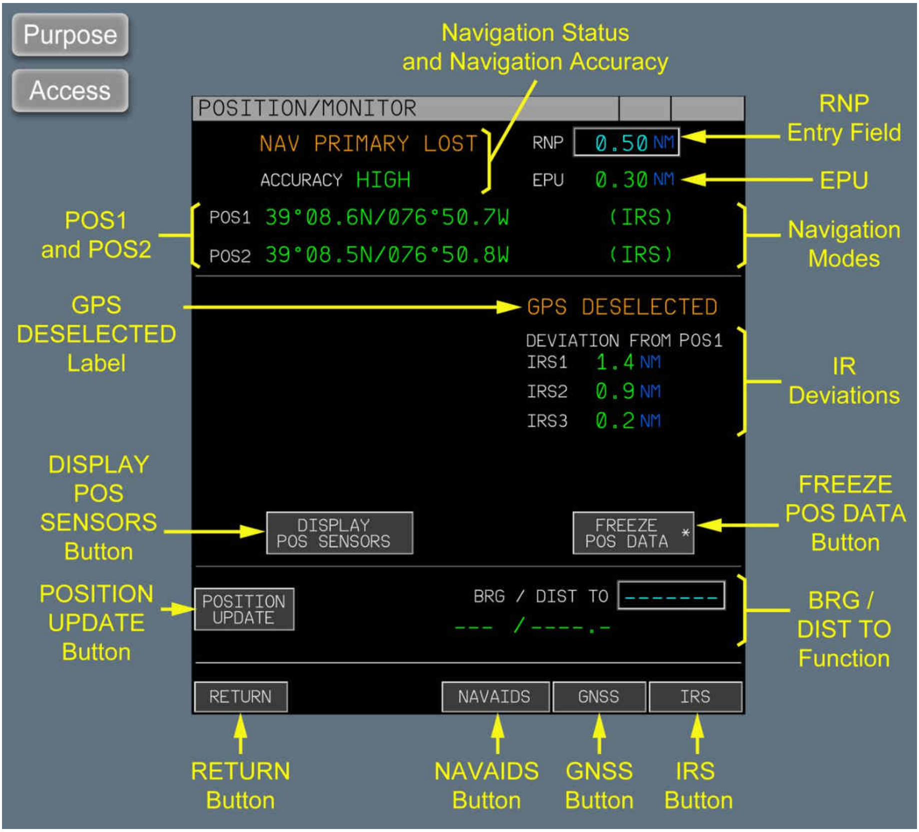
L2 The RETURN button appears, only if the flight crew accesses the POSITION/IRS page via the ACTIVE/INIT page or POSITION/MONITOR page.

POSITION/MONITOR PAGE

Applicable to: ALL

Ident.: DSC-22-FMS-20-20-20-300-00002729.0001001 / 22 APR 14

POSITION/MONITOR Page


Purpose
Access
Navigation Status
and Navigation Accuracy
POSITION/MONITOR
NAV PRIMARY LOST
ACCURACY HIGH
RNP 0.50 NM
EPU 0.30 NM
RNP
Entry Field
EPU
POS1
and POS2
POS1 39°08.6N/076°50.7W (IRS)
POS2 39°08.5N/076°50.8W (IRS)
Navigation
Modes
GPS
DESELECTED
Label
GPS DESELECTED
DEVIATION FROM POS1
IRS1 1.4 NM
IRS2 0.9 NM
IRS3 0.2 NM
IR
Deviations
DISPLAY
POS
SENSORS
Button
DISPLAY
POS SENSORS
FREEZE
POS DATA *
FREEZE
POS DATA
Button
POSITION
UPDATE
Button
POSITION
UPDATE
BRG / DIST TO --------
--- /----.-
BRG /
DIST TO
Function
RETURN
NAVAIDS
GNSS
IRS
RETURN
Button
NAVAIDS
Button
GNSS
Button
IRS
Button

Ident.: DSC-22-FMS-20-20-20-300-00004202.0001001 / 22 APR 14

PURPOSE

On the POSITION/MONITOR page, the flight crew can:
- Monitor the navigation accuracy
- Monitor the aircraft, GNSS, IR, and radio positions

- Manually update the aircraft position
- Compute the bearing and distance from the present position of the aircraft to a specific location (e.g. a waypoint, navaid, or runway).

Via the POSITION/MONITOR page, the flight crew can access:
- The POSITION/NAVAIDS page, for more information about the radio position
- The POSITION/GNSS page, for more information about the GNSS positions
- The POSITION/IRS page, for more information about the IR positions.

LINKS

For information about:
- Navigation accuracy, the RNP, and the EPU, *Refer to DSC-34-NAV-20-10-60 Position Accuracy and Navigation Accuracy*
- The aircraft, GNSS, IR, and radio positions, *Refer to DSC-34-NAV-20-10-60 Position Computation*
- The navigation modes, *Refer to DSC-34-NAV-20-10-60 Navigation Modes*.

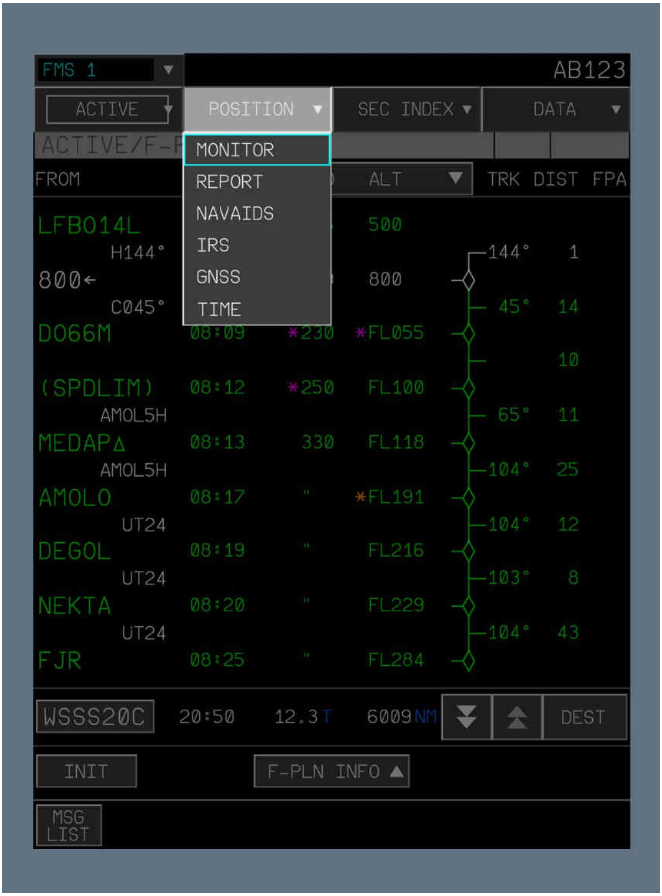
Ident.: DSC-22-FMS-20-20-20-300-00004203.0001001 / 14 APR 14

ACCESS

The flight crew can access the POSITION/MONITOR page via:

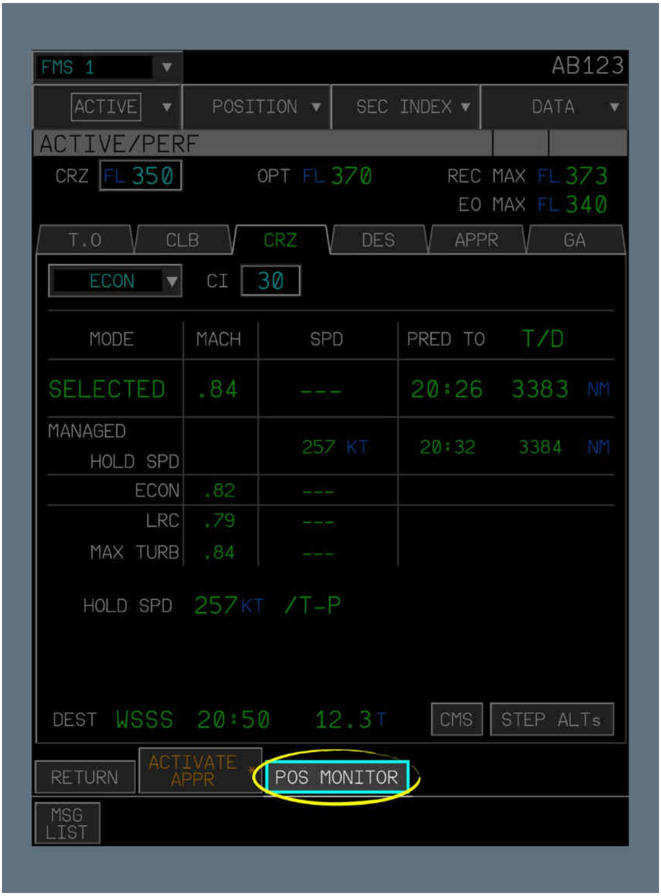
- The general menu bar, by selecting MONITOR in the POSITION menu

General Menu Bar


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
MONITOR
REPORT
NAVAIDS
IRS
GNSS
TIME
ACTIVE/F-P
FROM
ALT
TRK DIST FPA
LFBO14L
500
H144°
144° 1
800←
800
C045°
45° 14
D066M
08:09
*230
*FL055
10
(SPDLIM)
08:12
*250
FL100
AMOL5H
65° 11
MEDAPΔ
08:13
330
FL118
AMOL5H
104° 25
AMOLO
08:17
"
*FL191
UT24
104° 12
DEGOL
08:19
"
FL216
UT24
103° 8
NEKTA
08:20
"
FL229
UT24
104° 43
FJR
08:25
"
FL284
WSSS20C
20:50
12.3T
6009NM
DEST
INIT
F-PLN INFO
MSG LIST

- The ACTIVE/PERF page, by clicking on the POS MONITOR button.

ACTIVE/PERF Page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/PERF
CRZ FL 350
OPT FL 370
REC MAX FL 373
EO MAX FL 340
T.O
CLB
CRZ
DES
APPR
GA
ECON
CI 30
MODE
MACH
SPD
PRED TO T/D
SELECTED .84 --- 20:26 3383 NM
MANAGED HOLD SPD 257 KT 20:32 3384 NM
ECON .82 ---
LRC .79 ---
MAX TURB .84 ---
HOLD SPD 257KT /T-P
DEST WSSS 20:50 12.3T
CMS
STEP ALTs
RETURN
ACTIVATE APPR
POS MONITOR
MSG LIST

Ident.: DSC-22-FMS-20-20-20-300-00004205.0001001 / 22 APR 14

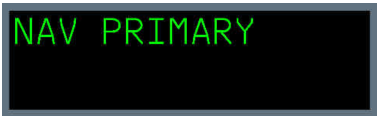
NAVIGATION STATUS AND NAVIGATION ACCURACY

Indicate the navigation status and the navigation accuracy.

The navigation status can be one of the following:

- NAV PRIMARY
  When the navigation status is NAV PRIMARY, the navigation accuracy does not appear.

NAV PRIMARY

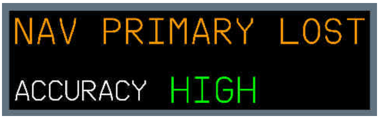


NAV PRIMARY

- NAV PRIMARY LOST.
  When the navigation status is NAV PRIMARY LOST, the navigation accuracy appears below the NAV PRIMARY LOST label.

  The navigation accuracy can be either:
  - HIGH, or

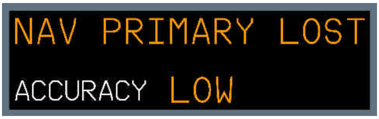
NAV PRIMARY LOST - HIGH



NAV PRIMARY LOST
ACCURACY HIGH

  - LOW.

NAV PRIMARY LOST - LOW



NAV PRIMARY LOST
ACCURACY LOW

Ident.: DSC-22-FMS-20-20-20-300-00004207.0001001 / 22 APR 14

RNP ENTRY FIELD

Indicates the Required Navigation Performance (RNP).
There is a default RNP value that depends on the flight area. The default value is displayed in small font.
The flight crew can always overwrite the default value. The RNP value that the flight crew enters is displayed in large font.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 RNP.

Ident.: DSC-22-FMS-20-20-20-300-00004206.0001001 / 22 APR 14

EPU

Indicates the Estimated Position Uncertainty (EPU).

Ident.: DSC-22-FMS-20-20-20-300-00004208.0001001 / 22 APR 14

POS1 AND POS2

Indicate the latitude/longitude of POS 1 and POS 2:
- POS 1 is the aircraft position that FMS 1 uses
- POS 2 is the aircraft position that FMS 2 uses.

The ADIRS computes the aircraft position, and sends the aircraft position to the FMS.
L2 ADIRU 1 computes POS 1, and sends POS 1 to FMS 1.
ADIRU 2 computes POS 2, and sends POS 2 to FMS 2.

Ident.: DSC-22-FMS-20-20-20-300-00004209.0001001 / 22 APR 14

NAVIGATION MODES

Indicate:
- The navigation mode that is used to compute POS 1
- The navigation mode that is used to compute POS 2.

The navigation mode can be one of the following:
- IRS/GPS
- IRS/DME/DME
- IRS/VOR/DME
- IRS/LOC
- IRS/DME/LOC
- IRS/VOR/LOC
- IRS.

Ident.: DSC-22-FMS-20-20-20-300-00004212.0001001 / 24 APR 14

GPS DESELECTED LABEL

Indicates that the GPS source is not selected for the aircraft position computation.
The GPS DESELECTED label appears, if the flight crew deselected the GPS source via the GPS option list on the POSITION/GNSS page (*Refer to page*).

Ident.: DSC-22-FMS-20-20-20-300-00004213.0001001 / 22 APR 14

IR DEVIATIONS

Indicate the deviation of IR 1, IR 2 and IR 3 from the aircraft position:

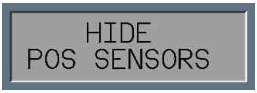
- Deviation from POS 1 on the MFD of the Captain
- Deviation from POS 2 on the MFD of the First Officer.

Ident.: DSC-22-FMS-20-20-20-300-00004211.0001001 / 22 APR 14

DISPLAY POS SENSORS BUTTON

When clicked, displays the GNSS, IR, and radio positions (*Refer to GNSS, IRS, and Radio Positions*).
The label of the DISPLAY POS SENSORS button becomes HIDE POS SENSORS, as soon as the GNSS, IR, and radio positions appear.

HIDE POS SENSORS Button



When clicked, removes the GNSS, IR, and radio positions from display.

Ident.: DSC-22-FMS-20-20-20-300-00004214.0001001 / 22 APR 14

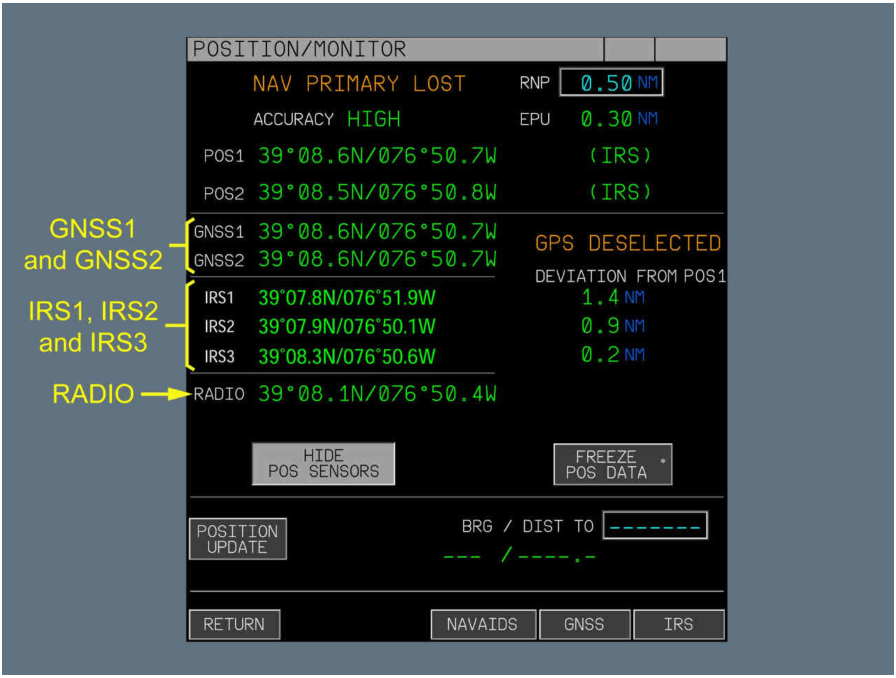
GNSS, IR, AND RADIO POSITIONS

By default, the GNSS, IR, and radio positions are not displayed on the POSITION/MONITOR page.

The GNSS, IR, and radio positions appears on the POSITION/MONITOR page:

- If the flight crew clicks on the DISPLAY POS SENSORS button (*Refer to DISPLAY POS SENSORS*), or
- After the flight crew clicks on the FREEZE POS DATA button (*Refer to FREEZE POS DATA Button*).

GNSS, IR, and Radio Positions


POSITION/MONITOR

NAV PRIMARY LOST RNP 0.50 NM

ACCURACY HIGH EPU 0.30 NM

POS1 39°08.6N/076°50.7W (IRS)

POS2 39°08.5N/076°50.8W (IRS)

GNSS1 39°08.6N/076°50.7W

GNSS2 39°08.6N/076°50.7W

GPS DESELECTED

DEVIATION FROM POS1

IRS1 39°07.8N/076°51.9W 1.4 NM

IRS2 39°07.9N/076°50.1W 0.9 NM

IRS3 39°08.3N/076°50.6W 0.2 NM

RADIO 39°08.1N/076°50.4W

BRG / DIST TO --------

--- /----.-

GNSS1 and GNSS2
IRS1, IRS2 and IRS3
RADIO
HIDE POS SENSORS
FREEZE POS DATA *
POSITION UPDATE
RETURN
NAVAIDS
GNSS
IRS

Ident.: DSC-22-FMS-20-20-20-300-00004216.0001001 / 22 APR 14

GNSS1 AND GNSS2

Indicate:
- The latitude/longitude of the GNSS 1 position
- The latitude/longitude of the GNSS 2 position.

The MMR sends the GNSS positions to the FMS, via the ADIRS.

Ident.: DSC-22-FMS-20-20-20-300-00004215.0001001 / 22 APR 14

IRS1, IRS2, AND IRS3

Indicate:
- The latitude/longitude of the IR 1 position
- The latitude/longitude of the IR 2 position
- The latitude/longitude of the IR 3 position.

The ADIRS sends the IR positions to the FMS.

Ident.: DSC-22-FMS-20-20-20-300-00004210.0001001 / 22 APR 14

RADIO

Indicates the latitude/longitude of the radio position that is computed by the onside FMS.

Ident.: DSC-22-FMS-20-20-20-300-00004217.0001001 / 22 APR 14

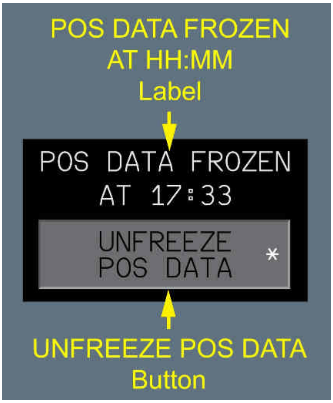
FREEZE POS DATA BUTTON

When clicked, freezes the display of all position data on the onside POSITION/MONITOR page.

After the flight crew clicks on the FREEZE POS DATA button:
- The GNSS, IR, and radio positions automatically appear on the POSITION/MONITOR page, if the flight crew did not previously display this data via the DISPLAY POS SENSORS button (*Refer to DISPLAY POS SENSORS Button*)
- The POS DATA FROZEN AT HH:MM label appears above the FREEZE POS DATA button The "HH:MM" corresponds to the UTC(flight) time at which all of the position data was frozen.
- The label of the FREEZE POS DATA button becomes UNFREEZE POS DATA.

When clicked:
- The position data is no longer frozen
- The GNSS, IR, and radio positions are automatically removed from display, if this data was not displayed before the flight crew clicks on the FREEZE POS DATA button.

Frozen Position Data



Note: *The position data is automatically no longer frozen, if one of the following occurs:*
- *The flight crew manually removes the GNSS, IR, and radio positions from display via the HIDE POS SENSORS button (Refer to DISPLAY POS SENSORS Button)*
- *The flight crew displays another FMS page.*

Ident.: DSC-22-FMS-20-20-20-300-00004218.0001001 / 22 APR 14

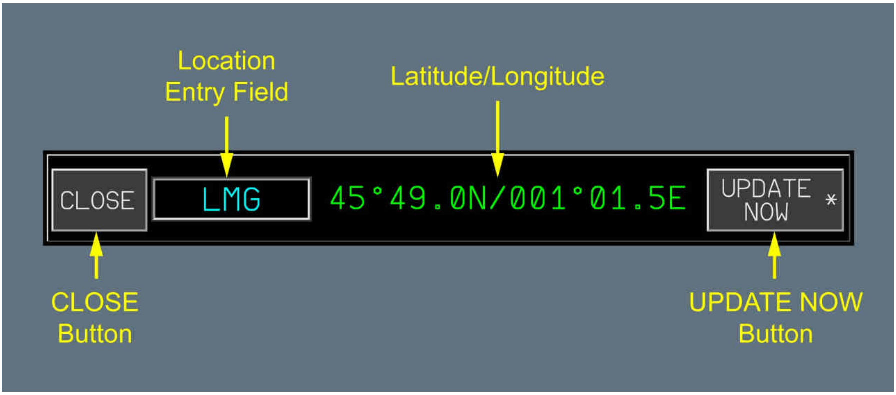
POSITION UPDATE BUTTON

When clicked, displays the POSITION UPDATE function (*Refer to POSITION UPDATE Function*). The POSITION UPDATE button is available, only when the navigation mode is not IRS/GNSS (*Refer to Navigation Modes*).

Ident.: DSC-22-FMS-20-20-20-300-00004219.0001001 / 22 APR 14

POSITION UPDATE FUNCTION

POSITION UPDATE Function



Note: The POSITION UPDATE function automatically closes, if the navigation mode becomes IRS/GNSS (Refer to Navigation Modes).

CLOSE BUTTON

When clicked, closes the POSITION UPDATE function.

LOCATION ENTRY FIELD

The flight crew enters the location at which the position update will be performed.

The location can be:
- One of the following elements of the navigation database or pilot-stored elements database:
  - Waypoint
  - Navaid
  - Airport
  - Runway
- A latitude/longitude

- A place/bearing/distance
- A place-bearing/place-bearing.

After the flight crew enters a valid latitude/longitude, place/bearing/distance, or place-bearing/place-bearing, the entry field displays ENTRY.

Entry Format

For the entry format of:
- Waypoint, *Refer to DSC-22-FMS-20-80 WAYPOINT*
- Navaid, *Refer to DSC-22-FMS-20-80 AIRPORT (ARPT)*
- Airport, *Refer to DSC-22-FMS-20-80 NAVAID IDENT*
- Runway, *Refer to DSC-22-FMS-20-80 RWY IDENT*
- Latitude/longitude, *Refer to DSC-22-FMS-20-80 LAT/LONG*
- Place/bearing/distance, *Refer to DSC-22-FMS-20-80 PLACE/BEARING/DISTANCE (PBD)*
- Place-bearing/place-bearing, *Refer to DSC-22-FMS-20-80 PLACE-BEARING/PLACE-BEARING (PB/PB)*.

LATITUDE/LONGITUDE

Indicates the latitude/longitude of the location at which the position update will be performed.

UPDATE NOW BUTTON

When clicked, updates the aircraft position with the position of the location that was entered in the location entry field (See Location Entry Field).
The flight crew clicks on the UPDATE NOW button, when the aircraft overflies this location.

Ident.: DSC-22-FMS-20-20-20-300-00004220.0001001 / 14 APR 14

BRG / DIST TO FUNCTION

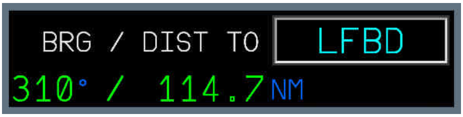
The flight crew enters a location in the BRG / DIST TO entry field in order to compute the bearing and the distance from the aircraft present position to the entered location.

The location can be:
- One of the following elements of the navigation database or pilot-stored elements database:
  - Waypoint
  - Navaid
  - Airport
  - Runway.
- A latitude/longitude
- A place/bearing/distance
- A place-bearing/place-bearing.

After the flight crew enters a valid latitude/longitude, place/bearing/distance, or place-bearing/place-bearing, the BRG / DIST TO entry field displays ENTRY.

The FMS displays the result of the computation just below the BRG / DIST TO entry field.

BRG / DIST TO Function



BRG / DIST TO LFBD
310° / 114.7 NM

ENTRY FORMAT

For the entry format of:
- Waypoint, *Refer to DSC-22-FMS-20-80 WAYPOINT*
- Navaid, *Refer to DSC-22-FMS-20-80 AIRPORT (ARPT)*
- Airport, *Refer to DSC-22-FMS-20-80 NAVAID IDENT*
- Runway, *Refer to DSC-22-FMS-20-80 RWY IDENT*
- Latitude/longitude, *Refer to DSC-22-FMS-20-80 LAT/LONG*
- Place/bearing/distance, *Refer to DSC-22-FMS-20-80 PLACE/BEARING/DISTANCE (PBD)*
- Place-bearing/place-bearing, *Refer to DSC-22-FMS-20-80 PLACE-BEARING/PLACE-BEARING (PB/PB)*.

Ident.: DSC-22-FMS-20-20-20-300-00004221.0001001 / 22 APR 14

RETURN BUTTON

When clicked, displays the ACTIVE/PERF page (*Refer to page*).

L2 The RETURN button appears, only if the flight crew accesses the POSITION/MONITOR page via the ACTIVE/PERF page.

Ident.: DSC-22-FMS-20-20-20-300-00004222.0001001 / 22 APR 14

NAVAIDS BUTTON

When clicked, displays the POSITION/NAVAIDS page (*Refer to page*).

Ident.: DSC-22-FMS-20-20-20-300-00004223.0001001 / 22 APR 14

GNSS BUTTON

When clicked, displays the POSITION/ GNSS page (*Refer to page*).

Ident.: DSC-22-FMS-20-20-20-300-00004224.0001001 / 22 APR 14

IRS BUTTON

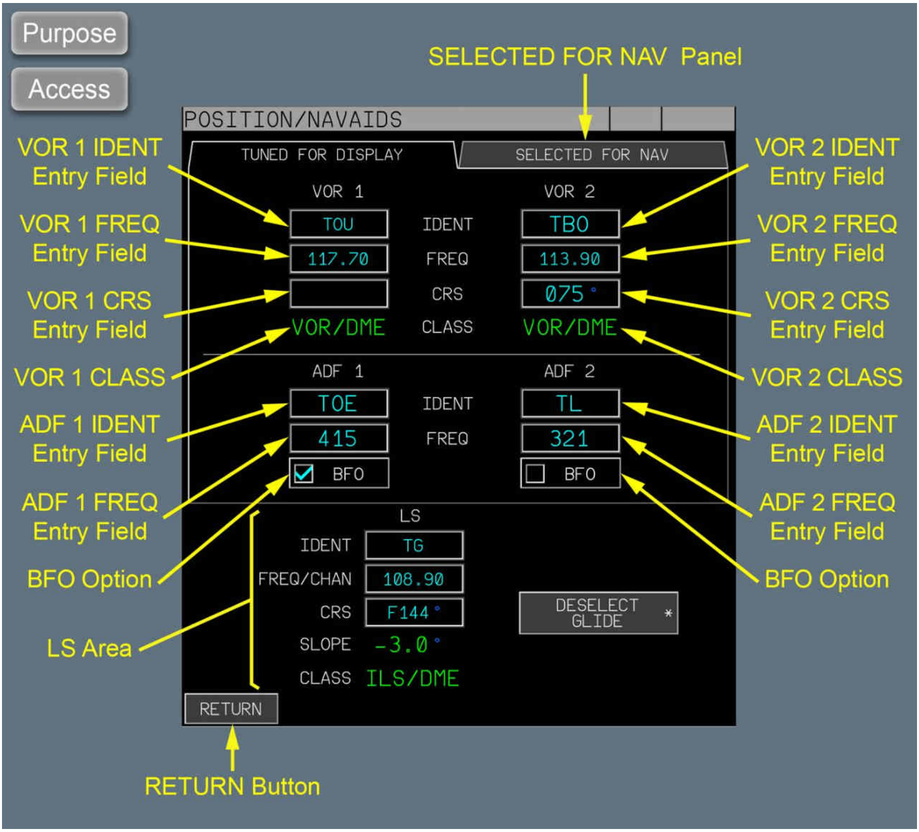
When clicked, displays the POSITION/IRS page (*Refer to page*).

POSITION/NAVAIDS PAGE

Applicable to: ALL

Ident.: DSC-22-FMS-20-20-20-310-00002730.0004001 / 22 APR 14

POSITION/NAVAIDS Page


Purpose
Access
SELECTED FOR NAV Panel
VOR 1 IDENT Entry Field
VOR 1 FREQ Entry Field
VOR 1 CRS Entry Field
VOR 1 CLASS
ADF 1 IDENT Entry Field
ADF 1 FREQ Entry Field
BFO Option
LS Area
VOR 2 IDENT Entry Field
VOR 2 FREQ Entry Field
VOR 2 CRS Entry Field
VOR 2 CLASS
ADF 2 IDENT Entry Field
ADF 2 FREQ Entry Field
BFO Option
RETURN Button
POSITION/NAVAIDS
TUNED FOR DISPLAY
SELECTED FOR NAV
DESELECT GLIDE *
RETURN

VOR 1		VOR 2
TOU	IDENT	TBO
117.70	FREQ	113.90
	CRS	075°
VOR/DME	CLASS	VOR/DME

ADF 1		ADF 2
TOE	IDENT	TL
415	FREQ	321
☑ BFO		☐ BFO

LS	
IDENT	TG
FREQ/CHAN	108.90
CRS	F144°
SLOPE	-3.0°
CLASS	ILS/DME

Ident.: DSC-22-FMS-20-20-20-310-00004225.0001001 / 14 APR 16

PURPOSE

On the TUNED FOR DISPLAY panel of the POSITION/NAVAIDS page, the flight crew can tune the VORs ◁ and the ADFs ◁ in order to display the VOR ◁ and ADF ◁ data on the ND.

On the SELECTED FOR NAV panel of the POSITION/NAVAIDS page, the flight crew can:
- Check the navaids that are automatically tuned to compute the radio position
- Check the radio position and the radio navigation mode
- Deselect a navaid.

On the lower part of the POSITION/NAVAIDS page, the flight crew can tune the landing system.

Note: *When the STBY RAD NAV mode of the RMP is active, all entry fields on the POSITION/NAVAIDS page are automatically cleared, and the flight crew cannot enter any data.*

LINKS

For information about:
- Radio navigation tuning, *Refer to DSC-22-FMS-10-30-20 Description*
- The radio position, *Refer to DSC-34-NAV-20-10-60 Position Computation*.

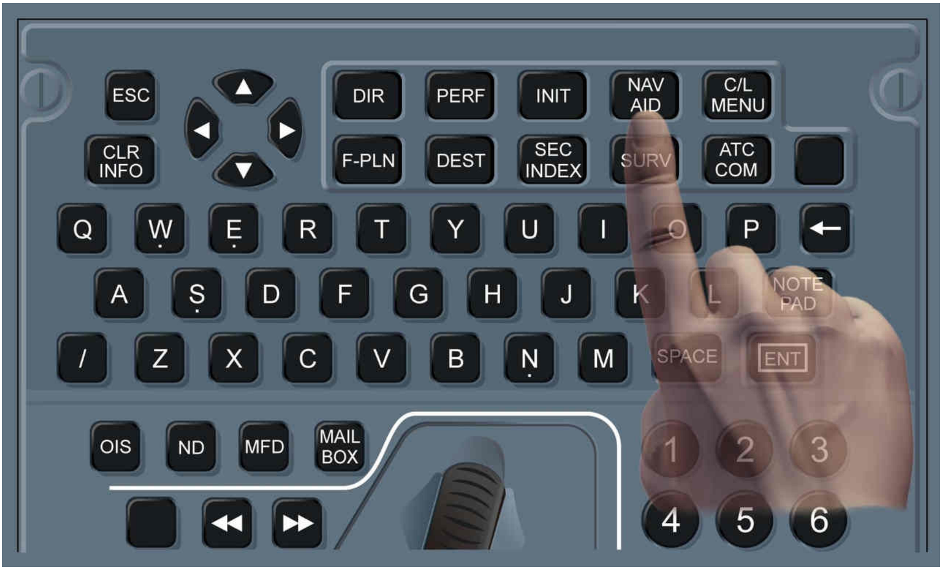
Ident.: DSC-22-FMS-20-20-20-310-00004226.0001001 / 14 APR 14

ACCESS

The flight crew can access the POSITION/NAVAIDS page via:

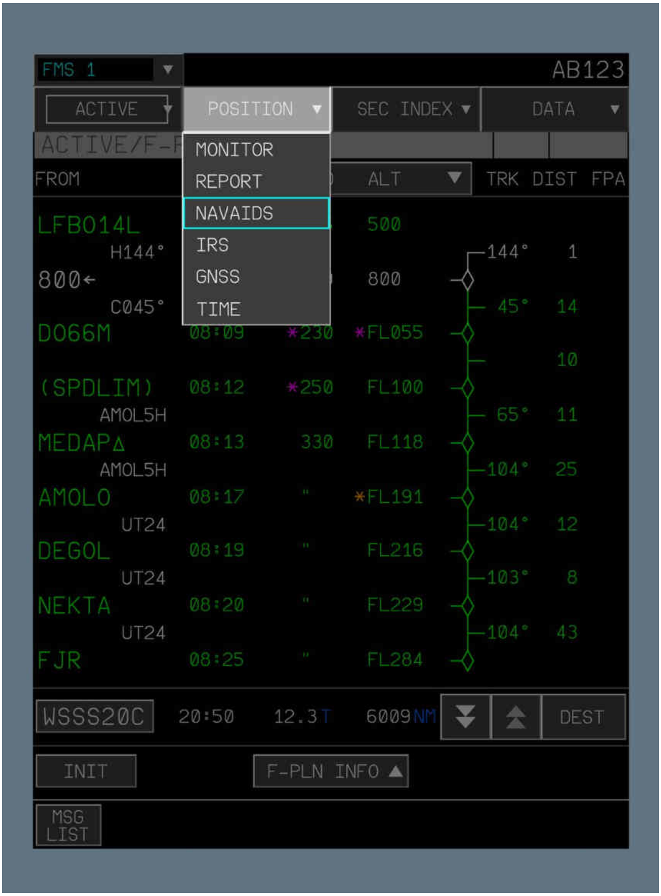
- The KCCU, by pressing the NAVAID key
  The TUNED FOR DISPLAY panel opens by default.

KCCU


ESC
CLR INFO
DIR
PERF
INIT
NAV AID
C/L MENU
F-PLN
DEST
SEC INDEX
SURV
ATC COM
Q W E R T Y U I O P
A S D F G H J K L
NOTE PAD
/ Z X C V B N M
SPACE
ENT
OIS
ND
MFD
MAIL BOX
1 2 3
4 5 6

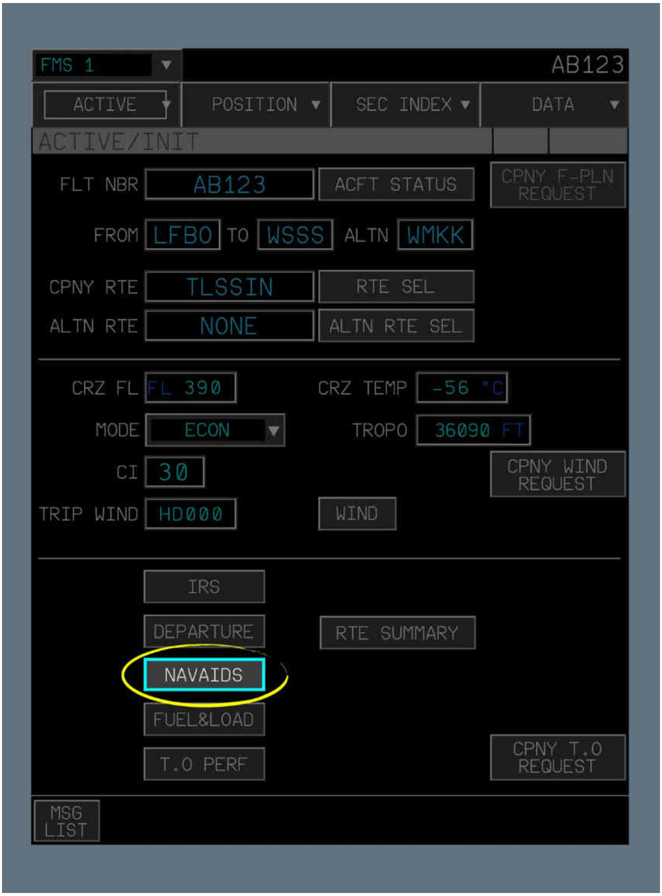
- The general menu bar, by selecting NAVAIDS in the POSITION menu
  The TUNED FOR DISPLAY panel opens by default.

General Menu Bar


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-P
MONITOR
REPORT
NAVAIDS
IRS
GNSS
TIME
FROM
ALT
TRK
DIST
FPA
LFBO14L
500
H144°
144°
1
800←
800
C045°
45°
14
D066M
08:09
*230
*FL055
10
(SPDLIM)
08:12
*250
FL100
AMOL5H
65°
11
MEDAP∆
08:13
330
FL118
AMOL5H
104°
25
AMOLO
08:17
"
*FL191
UT24
104°
12
DEGOL
08:19
"
FL216
UT24
103°
8
NEKTA
08:20
"
FL229
UT24
104°
43
FJR
08:25
"
FL284
WSSS20C
20:50
12.3T
6009NM
DEST
INIT
F-PLN INFO
MSG LIST

- The ACTIVE/INIT page, by clicking on the NAVAIDS button
  The TUNED FOR DISPLAY panel opens by default.

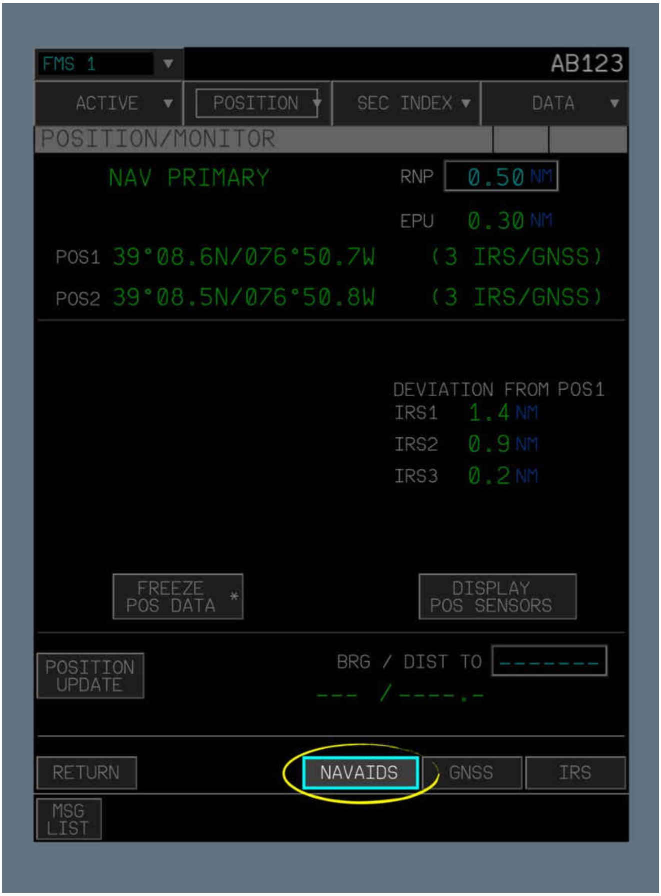
ACTIVE/INIT Page


ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/INIT
ACFT STATUS
CPNY F-PLN REQUEST
RTE SEL
ALTN RTE SEL
CPNY WIND REQUEST
WIND
IRS
DEPARTURE
RTE SUMMARY
NAVAIDS
FUEL&LOAD
T.O PERF
CPNY T.O REQUEST
MSG LIST

FMS 1
AB123
FLT NBR AB123
FROM LFBO TO WSSS ALTN WMKK
CPNY RTE TLSSIN
ALTN RTE NONE
CRZ FL FL 390
CRZ TEMP -56 °C
MODE ECON
TROPO 36090 FT
CI 30
TRIP WIND HD000

- The POSITION/MONITOR page, by clicking on the NAVAIDS button.
  The SELECTED FOR NAV panel opens by default.

POSITION/MONITOR Page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
POSITION/MONITOR
FREEZE POS DATA *
DISPLAY POS SENSORS
POSITION UPDATE
RETURN
NAVAIDS
GNSS
IRS
MSG LIST

NAV PRIMARY

RNP 0.50 NM

EPU 0.30 NM

POS1 39°08.6N/076°50.7W (3 IRS/GNSS)

POS2 39°08.5N/076°50.8W (3 IRS/GNSS)

DEVIATION FROM POS1
IRS1 1.4 NM
IRS2 0.9 NM
IRS3 0.2 NM

BRG / DIST TO --------
--- /----.-

Ident.: DSC-22-FMS-20-20-20-310-00004227.0002001 / 14 APR 16

VOR 1(2) IDENT ENTRY FIELD

Indicates the ident of the VOR 1(2) that is tuned for display on the ND.
In normal operation, FMS 1 tunes VOR 1, and FMS 2 tunes VOR 2 ◁ .
The ident of a VOR that the FMS automatically selects is displayed in small font.
The flight crew can always overwrite the ident of a VOR that the FMS automatically selected. The ident of a VOR that the flight crew enters is displayed in large font.

Note: *If the flight crew enters the ident of a navaid that was deselected, the FMS message area displays the XXX IS DESELECTED message (Refer to message).*

To revert to automatic VOR 1(2) selection, the flight crew clears the VOR 1(2) IDENT entry field.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 NAVAID IDENT.

L12

Note: *If the format is correct but the entered navaid is not in the navigation database, the PILOT STORED NAVAIDS panel of the DATA/NAVAID page appears. Via the PILOT STORED NAVAIDS panel, the flight crew can add the entered navaid to the pilot-stored elements database.*
For more information about the DATA/NAVAID page, Refer to DSC-22-FMS-20-20-20 DATA/NAVAID Page.
For information about the pilot-stored elements database, Refer to DSC-22-FMS-10-20 Pilot-Stored Elements Database.

Ident.: DSC-22-FMS-20-20-20-310-00004228.0002001 / 14 APR 16

VOR 1(2) FREQ ENTRY FIELD

Indicates the frequency of the VOR 1(2) that is tuned for display on the ND.
In normal operation, FMS 1 tunes VOR 1, and FMS 2 tunes VOR 2 ◁* .
The VOR 1(2) frequency is automatically entered, when the VOR 1(2) ident is entered in the VOR IDENT 1(2) entry field.
A frequency that the FMS automatically selects is displayed in small font.
The flight crew can always overwrite the frequency that the FMS automatically selected. A frequency that the flight crew enters is displayed in large font.

Note: *The flight crew should use the VOR ident instead of the VOR frequency to manually tune a navaid, unless the navaid is not in the database.*
If the flight crew manually enters a frequency in the VOR 1(2) FREQ entry field, the VOR IDENT 1(2) entry field is automatically cleared.

To revert to automatic VOR 1(2) selection, the flight crew clears the VOR FREQ 1(2) entry field.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 VOR FREQ.

Ident.: DSC-22-FMS-20-20-20-310-00004229.0002001 / 22 APR 14

VOR 1(2) CRS ENTRY FIELD

Indicates the course of the VOR 1(2) that is tuned for display on the ND.

The flight crew can enter a course, only if the navaid that is entered in the VOR IDENT 1(2) entry field is a VOR, VOR/DME, or VORTAC.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 VOR CRS.

Ident.: DSC-22-FMS-20-20-20-310-00004230.0002001 / 22 APR 14

VOR 1(2) CLASS

Indicates the class of the navaid that is entered in the VOR IDENT 1(2) entry field.

The class can be one of the following:
- VOR
- DME
- TACAN
- VOR/DME
- VORTAC.

Ident.: DSC-22-FMS-20-20-20-310-00004231.0002001 / 14 APR 16

ADF 1(2) IDENT ENTRY FIELD

Indicates the ident of the NDB 1(2) that is tuned for display on the ND.
In normal operation, FMS 1 tunes ADF 1, and FMS 2 tunes ADF 2.
The ident of an NDB that the FMS automatically selects is displayed in small font.
The flight crew can always overwrite an NDB that the FMS automatically selected. The ident of an NDB that the flight crew enters is displayed in large font.
To revert to automatic NDB 1(2) selection, the flight crew clears the ADF IDENT 1(2) entry field.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 NAVAID IDENT.

L12

Note: *If the format is correct but the entered navaid is not in the navigation database, the PILOT STORED NAVAIDS panel of the DATA/NAVAID page appears. Via the PILOT STORED NAVAIDS panel, the flight crew can add the entered navaid to the pilot-stored elements database.*
For more information about the DATA/NAVAID page, Refer to DSC-22-FMS-20-20-20 DATA/NAVAID Page.
For information about the pilot-stored elements database, Refer to DSC-22-FMS-10-20 Pilot-Stored Elements Database.

Ident.: DSC-22-FMS-20-20-20-310-00004232.0002001 / 14 APR 16

ADF 1(2) FREQ ENTRY FIELD ◁

Indicates the frequency of the NDB 1(2) that is tuned for display on the ND.
In normal operation, FMS 1 tunes ADF 1, and FMS 2 tunes ADF 2.
The NDB 1(2) frequency is automatically entered, when the NDB 1(2) ident is entered in the ADF 1(2) IDENT entry field.
A frequency that the FMS automatically selects is displayed in small font.
The flight crew can always overwrite the frequency that the FMS automatically selected. A frequency that the flight crew enters is displayed in large font.

Note: *The flight crew should use the NDB ident instead of the NDB frequency to manually tune a navaid, unless the navaid is not in the database.*
If the flight crew manually enters a frequency in the ADF 1(2) FREQ entry field, the ADF IDENT 1(2) entry field is automatically cleared.

To revert to automatic NDB 1(2) selection, the flight crew clears the ADF FREQ 1(2) entry field.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 ADF FREQ.

Ident.: DSC-22-FMS-20-20-20-310-00004233.0001001 / 14 APR 16

BFO ◁

The flight crew selects(deselects) the BFO option to activate(deactivate) the Beat Frequency Oscillator (BFO).
By default, the BFO option is deselected.

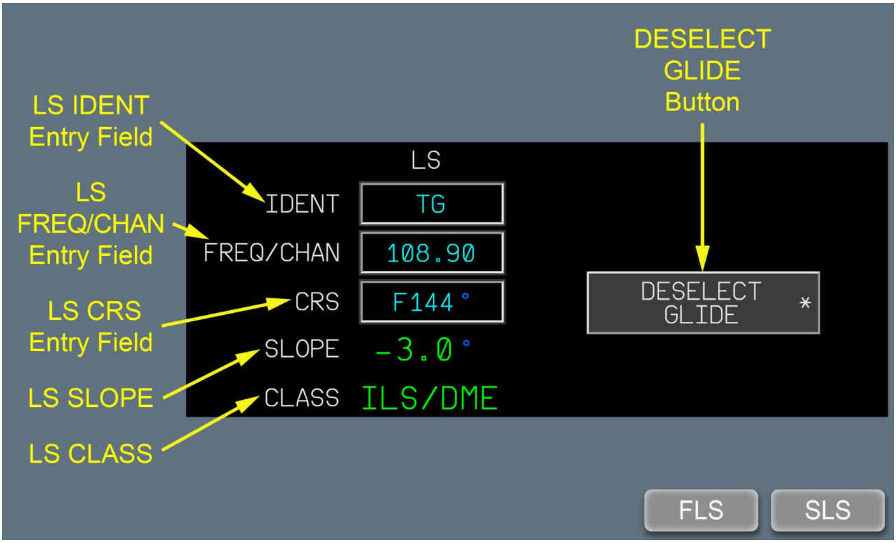
Ident.: DSC-22-FMS-20-20-20-310-00004204.0002001 / 14 APR 16

LS AREA

The layout of the LS area depends on the type of the approach, that the flight crew selected, with which the tuned landing system is associated.

In addition, the LS area displays specific buttons and labels, if the approach that the flight crew selected is:
- An ILS approach
- An approach that can be flown with the FLS function
- An approach that can be flown with the SLS ◁ function.

LS Area



LS

IDENT TG

FREQ/CHAN 108.90

CRS F144°

SLOPE -3.0°

CLASS ILS/DME

Ident.: DSC-22-FMS-20-20-20-310-00004234.0002001 / 14 APR 16

LS IDENT ENTRY FIELD

Indicates the ident of the tuned landing system.

The ident of the tuned landing system is automatically entered, when the flight crew selects an approach, and this approach is:

- An ILS approach, or
- A GLS ◁ approach, or
- An approach that can be flown with the SLS ◁ function.

When the approach that the flight crew selected is an approach that can be flown with the FLS function, the LS IDENT entry field is empty.

L2 *Note:* *If the flight crew deselects the glide slope for an ILS approach, the approach can be flown with the LOC/FLS function. In this case, the LS IDENT entry field is not empty, and still indicates the ident of the tuned ILS.*

L1 The ident of a landing system that the FMS automatically selects is displayed in small font. The flight crew can always overwrite a landing system that the FMS automatically selected. The landing system ident that the flight crew enters is displayed in large font.

Note:
1. *If the flight crew enters the ident of a landing system that was deselected, the FMS message area displays the XXX IS DESELECTED message (Refer to message).*
2. *If the flight crew manually tunes a landing system that disagrees with the selected runway in the flight plan, the FMS message area displays the RUNWAY / LS DISAGREE message (Refer to message).*
3. *If the flight crew manually tunes a landing system that does not correspond to the approach that the flight crew selected in the flight plan, the FMS message area displays the CHECK APPR SEL message (Refer to message).*
4. *If the flight crew manually enters a landing system ident that corresponds to an approach that can be flown with the SLS ◁ function, the MFD displays the PILOT STORED NAVAIDS panel of the DATA/NAVAID page (Refer to page).*

L2 The ident of the tuned landing system is also automatically entered, when the frequency of the landing system, that is associated with the flight plan arrival (or departure) procedure, is entered in the LS FREQ/CHAN entry field.
To revert to the automatic selection of the landing system, the flight crew clears the LS IDENT entry field.

L1 ENTRY FORMAT

Refer to DSC-22-FMS-20-80 LS IDENT.

L12

Note: *If the format is correct but the entered landing system is not in the navigation database, the PILOT STORED NAVAIDS panel of the DATA/NAVAID page appears.*
Via the PILOT STORED NAVAIDS panel, the flight crew can add the entered landing system to the pilot-stored elements database.
For more information about the DATA/NAVAID page, Refer to DSC-22-FMS-20-20-20 DATA/NAVAID Page.
For information about the pilot-stored elements database, Refer to DSC-22-FMS-10-20 Pilot-Stored Elements Database.

Ident.: DSC-22-FMS-20-20-20-310-00004235.0002001 / 14 APR 16

LS FREQ/CHAN ENTRY FIELD

Indicates the frequency(channel) of the tuned landing system.
The frequency(channel) of the tuned landing system is automatically entered, when the ident of the landing system is entered in the LS IDENT entry field.
When the approach that the flight crew selected is an approach that can be flown with the FLS function, the LS FREQ/CHAN entry field is empty.

L2 *Note:* *If the flight crew deselects the glide slope for an ILS approach, the approach can be flown with the LOC/FLS function. In this case, the LS FREQ/CHAN entry field is not empty, and still indicates the frequency of the tuned ILS.*

L1 A frequency(channel) that the FMS automatically selects is displayed in small font.
The flight crew can overwrite a frequency(channel) that the FMS automatically selected. A frequency(channel) that the flight crew enters is displayed in large font.

Note: *1. The flight crew should use the ident of the landing system instead of the frequency(channel) of the landing system to manually tune the landing system, unless the landing system is not in the database.*
If the flight crew manually enters a frequency(channel) in the LS FREQ/CHAN entry field, and if this frequency(channel) is associated with a landing system that is in the navigation database, the ident of the tuned landing system is automatically entered in the LS IDENT entry field.
2. If the flight crew manually enters a landing system channel that corresponds to an approach that can be flown with the SLS ◁ function, the FMS message area displays the SLS MANUAL TUNING NOT ALLOWED message (Refer to message).

To revert to the automatic selection of the landing system, the flight crew clears the LS FREQ/CHAN entry field.

ENTRY FORMAT

For the entry format of:
- The landing system frequency, *Refer to DSC-22-FMS-20-80 LS FREQ*
- The GLS ◁ channel, *Refer to DSC-22-FMS-20-80 CHANNEL (GLS)*.

Ident.: DSC-22-FMS-20-20-20-310-00004236.0001001 / 22 APR 14

LS CRS ENTRY FIELD

Indicates the course of the tuned landing system.
The course of the tuned landing system may be automatically entered, when the landing system is tuned.
When the approach that the flight crew selected is an approach that can be flown with the FLS function, the LS CRS entry field is empty.

L2 *Note:* *If the flight crew deselects the glide slope for an ILS approach, the approach can be flown with the LOC/FLS function. In this case, the LS CRS entry field is not empty, and still indicates the course of the tuned ILS.*

L1 A course that the FMS automatically selects is displayed in small font.
The flight crew can always overwrite a course that the FMS automatically selects. A course that the flight crew enters is displayed in large font.

To revert to automatic course selection, the flight crew clears the LS CRS entry field.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 LS CRS.

Ident.: DSC-22-FMS-20-20-20-310-00013892.0001001 / 22 APR 14

LS CRS

Indicates the course of the tuned landing system.

Ident.: DSC-22-FMS-20-20-20-310-00004237.0001001 / 22 APR 14

LS SLOPE

Indicates the slope of the tuned landing system.

L2 LS SLOPE is displayed, only if there is a slope that is associated with the tuned landing system.

Ident.: DSC-22-FMS-20-20-20-310-00004238.0002001 / 14 APR 16

LS CLASS

Indicates the class of the tuned landing system.

The class can be one of the following:
- ILS
- ILS/DME
- ILS/TACAN
- GLS ◁
- SLS ◁ .

L2 LS CLASS is displayed, only if there is a class that corresponds to the tuned landing system.

Ident.: DSC-22-FMS-20-20-20-310-00004239.0001001 / 03 AUG 16

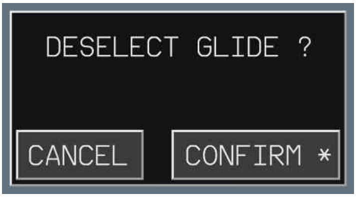
DESELECT GLIDE BUTTON

The DESELECT GLIDE button is displayed, only if all of the following apply:
- The approach that the flight crew selected is an ILS approach
- The tuned landing system is the ILS that is associated with the approach that the flight crew selected.

L2 In addition, the following options must be selected by the operator to enable the display of the DESELECT GLIDE button:
- The FLS option
  The activation of the FLS option enables the use of the FLS function.
- The MIX LOC/VNAV option.
  The activation of the MIX LOC/VNAV option enables the use of the LOC/FLS function.

L1 When clicked, deselects the use of the glide slope data during the ILS approach.

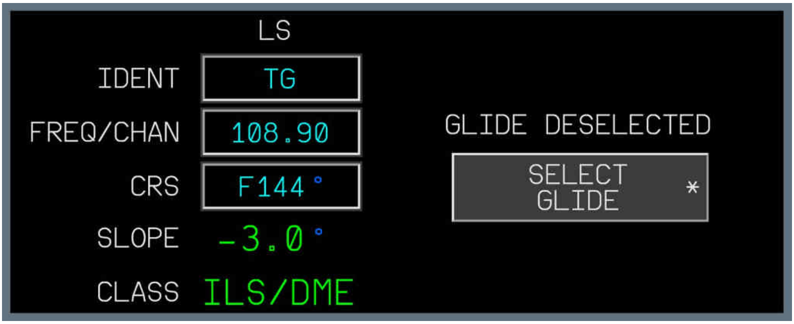
The flight crew must perform a confirmation action.



Confirmation Window

The partial loss or the maintenance of the ILS ground station may require the flight crew to deselect the glide slope data.
When the flight crew deselects the glide slope data, the approach can be flown in LOC/F-G/S guidance modes.

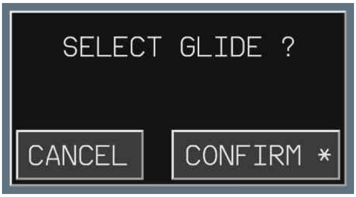
After the flight crew clicks on the DESELECT GLIDE button:
- The label of the DESELECT GLIDE button becomes SELECT GLIDE
- The GLIDE DESELECTED label appears above the SELECT GLIDE button, when:
  - The LOC mode is armed, or
  - The LOC*, LOC, or LAND mode is engaged.


LS
IDENT TG
FREQ/CHAN 108.90
CRS F144 °
SLOPE -3.0 °
CLASS ILS/DME

GLIDE DESELECTED Label

When the flight crew clicks on the SELECT GLIDE button, the glide slope data is reselected.
The flight crew must perform a confirmation action.

Confirmation Window



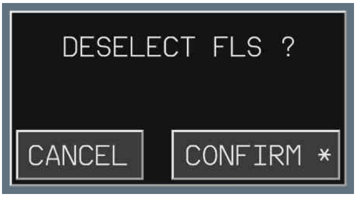
Ident.: DSC-22-FMS-20-20-20-310-00013794.0001001 / 22 APR 14

DESELECT FLS BUTTON

The DESELECT FLS button is displayed, only if all of the following apply:
- The approach that the flight crew selected is an approach that can be flown with the FLS function
- The tuned landing system is the FLS.

When clicked, deselects the use of the FLS function to fly the approach.
The flight crew must perform a confirmation action.

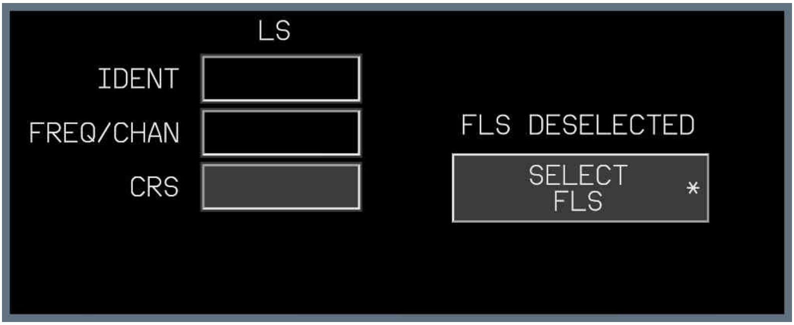
Confirmation Window



When the flight crew deselects the FLS function, the approach can be flown in NAV/APP-DES guidance modes.

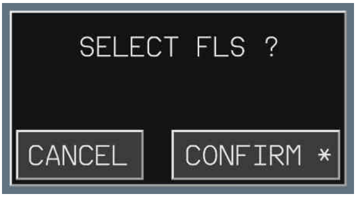
After the flight crew clicks on the DESELECT FLS button:
- The label of the DESELECT FLS button becomes SELECT FLS
- The FLS DESELECTED label appears above the SELECT FLS button.

FLS DESELECTED Label


LS
IDENT
FREQ/CHAN
CRS
FLS DESELECTED
SELECT FLS *

When the flight crew clicks on the SELECT FLS button, the FLS function is reselected. The flight crew must perform a confirmation action.

Confirmation Window

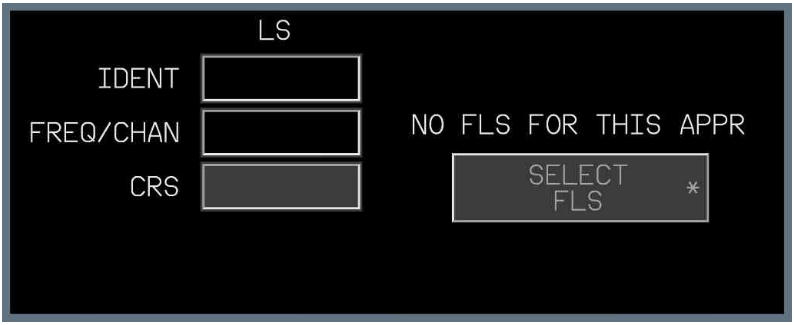

SELECT FLS ?
CANCEL
CONFIRM *

L2 *Note:* *The SELECT FLS button is displayed instead of the DESELECT FLS button, but is not available, if one of the following occurs:*

- *The approach that the flight crew selected is an approach that can be flown with the FLS function, and the FLS function is not available*
- *The approach that the flight crew selected is an RNAV (RNP) approach.*

In both above-listed cases, the approach cannot be flown in F-LOC/F-G/S guidance modes. The NO FLS FOR THIS APPR label appears above the SELECT FLS button, as a reminder. The approach can be flown in NAV/APP-DES guidance modes.

NO FLS FOR THIS APPR Label



In addition, if the approach that the flight crew selected is an approach that can be flown with the FLS function and the FLS function is not available, the FMS message area displays the NO FLS FOR THIS APPR message (Refer to message).

Ident.: DSC-22-FMS-20-20-20-310-00013795.0001001 / 14 APR 16

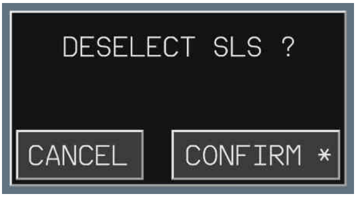
DESELECT SLS ◁ BUTTON

The DESELECT SLS button is displayed, only if all of the following apply:

- The approach that the flight crew selected is an RNAV (GNSS) approach with LPV minima
- The tuned landing system is the SLS.

When clicked, deselects the use of the SLS function to fly the approach.
The flight crew must perform a confirmation action.

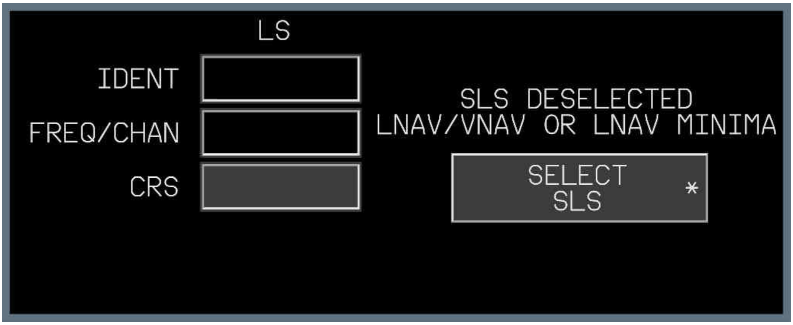
Confirmation Window


DESELECT SLS ?
CANCEL
CONFIRM *

When the flight crew deselects the SLS function, the approach can be flown with the FLS function (i.e. in F-LOC/F-G/S guidance modes).

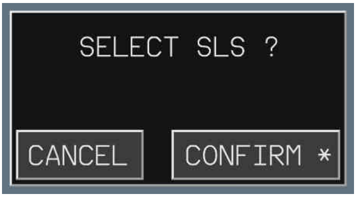
After the flight crew clicks on the DESELECT SLS button:
- The label of the DESELECT SLS button becomes SELECT SLS
- The SLS DESELECTED LNAV/VNAV OR LNAV MINIMA label appears above the SELECT SLS button.

SLS DESELECTED Label


LS
IDENT
FREQ/CHAN
CRS
SLS DESELECTED
LNAV/VNAV OR LNAV MINIMA
SELECT SLS *

When the flight crew clicks on the SELECT SLS button, the SLS function is reselected.
The flight crew must perform a confirmation action.

Confirmation Window

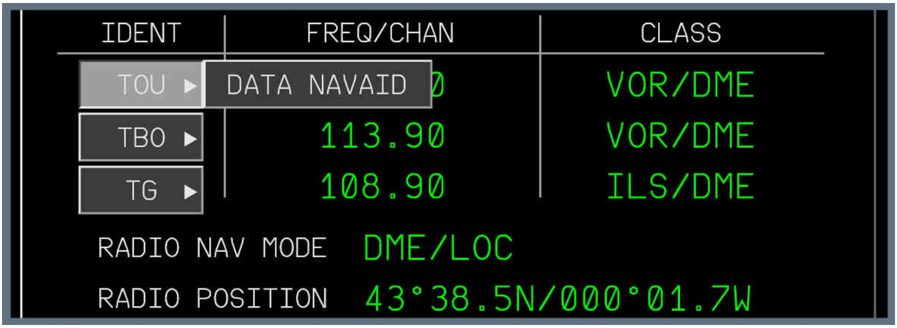

SELECT SLS ?
CANCEL
CONFIRM *

Ident.: DSC-22-FMS-20-20-20-310-00004240.0001001 / 22 APR 14

IDENT

Indicates the idents of the navaids that are used for the radio position computation.
When the flight crew clicks on a navaid ident button, the navaid ident menu appears.

Navaid Ident Menu



IDENT	FREQ/CHAN	CLASS
TOU ▶ DATA NAVAID	0	VOR/DME
TBO ▶	113.90	VOR/DME
TG ▶	108.90	ILS/DME

RADIO NAV MODE DME/LOC

RADIO POSITION 43°38.5N/000°01.7W

The navaid ident menu has one option: DATA NAVAID. When selected, opens the DATABASE NAVAIDS panel of DATA/NAVAID page (*Refer to page*).

Note: *If a landing system is defined, the landing system is displayed in the third row of the table, even if the landing system is not used for the radio position computation.*

Ident.: DSC-22-FMS-20-20-20-310-00004241.0001001 / 22 APR 14

FREQ/CHAN

Indicates the frequency of the navaids that are automatically tuned for the radio position computation.

Ident.: DSC-22-FMS-20-20-20-310-00004242.0001001 / 14 APR 14

CLASS

Indicates the class of the navaids that are used for the radio position computation.

The class can be one of the following:
- VOR/DME
- VORTAC
- DME
- TACAN
- ILS
- ILS/DME
- ILS/TACAN.

Ident.: DSC-22-FMS-20-20-20-310-00004243.0001001 / 22 APR 14

RADIO NAV MODE

Indicates the radio navigation mode. The radio navigation mode indicates the combination of navaid types that are used to compute the radio position.

The radio navigation mode can be one of the following:
- DME/DME
- VOR/DME
- DME/LOC
  The DME/LOC mode corresponds to the following combination: DME/DME and LOC.
- VOR/LOC
  The VOR/LOC mode corresponds to the following combination: VOR/DME and LOC.
- LOC.

Ident.: DSC-22-FMS-20-20-20-310-00004244.0001001 / 22 APR 14

RADIO POSITION

Indicates latitude/longitude of the radio position.

Ident.: DSC-22-FMS-20-20-20-310-00004245.0001001 / 22 APR 14

LIST OF DESELECTED NAVAIDS

Indicates the list of the deselected navaids.
The flight crew deselects a navaid by entering the navaid ident in one of the 6 entry fields.
When deselected, the navaid can no longer be tuned for radio position computation or for display on the ND.

A navaid is reselected:
- Manually, by clearing the corresponding entry field
- Automatically, when one of the following occurs:
  - The DONE or PREFLIGHT flight phase becomes active
  - The navigation database changes.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 NAVAID IDENT.

Ident.: DSC-22-FMS-20-20-20-310-00004247.0001001 / 22 APR 14

RETURN BUTTON

When clicked, displays:
- The ACTIVE/INIT page (*Refer to page*), if the ACTIVE/INIT page is the page that was displayed before the POSITION/NAVAIDS page
- The POSITION/MONITOR page (*Refer to page*), if the POSITION/MONITOR page is the page that was displayed before the POSITION/INAVAIDS page.

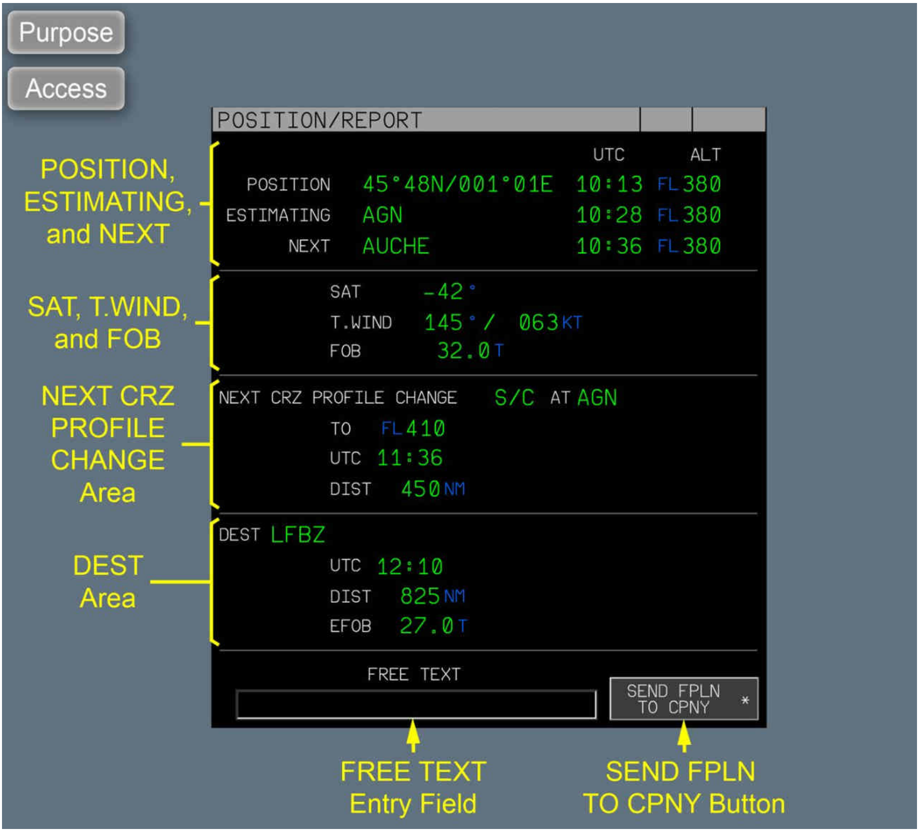
L2 The RETURN button only appears if the flight crew accesses the POSITION/NAVAIDS page via the ACTIVE/INIT page or POSITION/MONITOR page.

POSITION/REPORT PAGE

Applicable to: ALL

Ident.: DSC-22-FMS-20-20-20-320-00002731.0001001 / 22 APR 14

POSITION/REPORT Page



```
POSITION/REPORT
                                        UTC      ALT
   POSITION   45°48N/001°01E           10:13   FL380
 ESTIMATING   AGN                      10:28   FL380
       NEXT   AUCHE                    10:36   FL380

           SAT      -42°
           T.WIND   145°/  063KT
           FOB        32.0T

NEXT CRZ PROFILE CHANGE    S/C  AT AGN
           TO     FL410
           UTC   11:36
           DIST    450NM

DEST LFBZ
           UTC   12:10
           DIST    825NM
           EFOB   27.0T

               FREE TEXT
                                       SEND FPLN
                                        TO CPNY  *
```

Purpose
Access
POSITION, ESTIMATING, and NEXT
SAT, T.WIND, and FOB
NEXT CRZ PROFILE CHANGE Area
DEST Area
FREE TEXT Entry Field
SEND FPLN TO CPNY Button

Ident.: DSC-22-FMS-20-20-20-320-00004248.0001001 / 22 APR 14

PURPOSE

The POSITION/REPORT page enables the flight crew to check and send the position report.

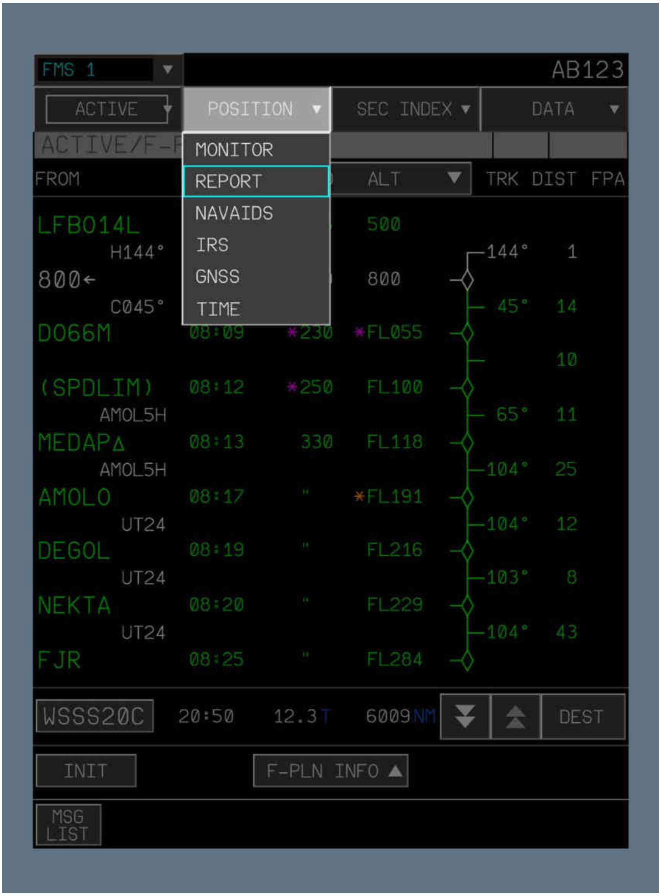
The position report contains recorded and predicted data that is related to:
- The last sequenced waypoint
- The TO waypoint
- The NEXT waypoint
- The next cruise vertical profile change
- The destination airport.

Ident.: DSC-22-FMS-20-20-20-320-00004249.0001001 / 14 APR 14

ACCESS

The flight crew can access the POSITION/REPORT page via the general menu bar, by selecting REPORT in the POSITION menu.

General Menu Bar


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-P
MONITOR
REPORT
NAVAIDS
IRS
GNSS
TIME
FROM
ALT
TRK DIST FPA
LFBO14L 500
H144° 144° 1
800← 800
C045° 45° 14
D066M 08:09 *230 *FL055
10
(SPDLIM) 08:12 *250 FL100
AMOL5H 65° 11
MEDAPΔ 08:13 330 FL118
AMOL5H 104° 25
AMOLO 08:17 " *FL191
UT24 104° 12
DEGOL 08:19 " FL216
UT24 103° 8
NEKTA 08:20 " FL229
UT24 104° 43
FJR 08:25 " FL284
WSSS20C 20:50 12.3T 6009NM
DEST
INIT
F-PLN INFO
MSG LIST

Ident.: DSC-22-FMS-20-20-20-320-00004250.0001001 / 22 APR 14

POSITION, ESTIMATING, AND NEXT

Display the following data:

- POSITION: Displays the UTC(flight) time and altitude that were recorded at the last sequenced reported-waypoint

L2 The last sequenced reported-waypoint is the last navigation database waypoint, or last PBD waypoint, or last LAT/LONG waypoint, that was sequenced.

L1
- ESTIMATING: Displays the UTC(flight) time of arrival and altitude that are predicted for the first next reported-waypoint that will be sequenced

L2 The first next reported-waypoint is a navigation database waypoint, or a PBD waypoint, or a LAT/LONG waypoint.

L1
- NEXT: Displays the UTC(flight) time of arrival and altitude that are predicted for the second next reported-waypoint that will be sequenced.

L2 The second next reported-waypoint is a navigation database waypoint, or a PBD waypoint, or a LAT/LONG waypoint.

L1 The UTC(TIME) label indicates the time reference:

- The UTC label indicates that the time reference is the UTC time
- The TIME label indicates that the time reference is the flight time.

L2 The time reference is defined as follows:

- In the PREFLIGHT flight phase:
  - If there is an entered Estimated Takeoff Time (ETT), the time reference is the UTC time
  - If there is no entered ETT, the time reference is the flight time

  The flight crew enters the ETT on the RTA panel of the VERT REV page (*Refer to page*).
- In flight:
  - If the UTC time is valid, the time reference is the UTC time
  - If the UTC time is not valid, the time reference is the flight time.

Note: *Only navigation database waypoints, PBD waypoints, and LAT/LONG waypoints are reported. Therefore:*

- *The last sequenced reported-waypoint will not be identical to the FROM waypoint of the flight plan, if the FROM waypoint is not a navigation database waypoint, a PBD waypoint, or a LAT/LONG waypoint*
- *The first next reported-waypoint will not be identical to the TO waypoint of the flight plan, if the TO waypoint is not a navigation database waypoint, a PBD waypoint, or a LAT/LONG waypoint*
- *The second next reported-waypoint will not be identical to the NEXT waypoint of the flight plan, if the NEXT waypoint is not a navigation database waypoint, a PBD waypoint, or a LAT/LONG waypoint.*

Ident.: DSC-22-FMS-20-20-20-320-00004251.0001001 / 22 APR 14

SAT, T.WIND, AND FOB

Display the following data that was recorded at the last sequenced waypoint:

- Static Air Temperature (SAT)
- True Wind (T.WIND) direction and speed
- Fuel On Board (FOB).
  The FQMS provides the FOB.

Ident.: DSC-22-FMS-20-20-20-320-00004252.0001001 / 22 APR 14

NEXT CRZ PROFILE CHANGE AREA

When the CRUISE flight phase is active and there is a predicted profile change, displays the following data for the next vertical profile change:

- The type of vertical change

  The type can be one of the following:
  - Start of Climb (S/C)
  - Start of Descent (S/D)
  - Top of Descent (T/D).
- The start waypoint
- The target altitude (or current altitude)
- The predicted time of arrival, in UTC(flight) time, at the start waypoint

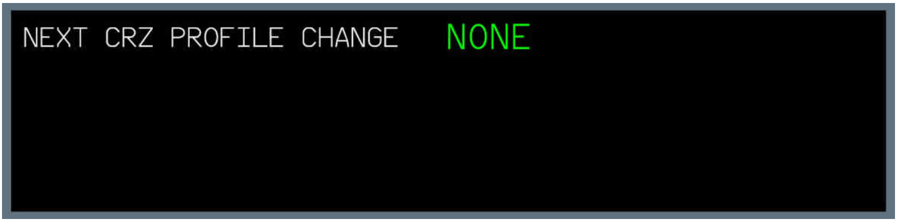
  The UTC(TIME) label indicates the time reference:
  - The UTC label indicates that the time reference is the UTC time
  - The TIME label indicates that the time reference is the flight time.

  L2 The time reference is defined as follows:
  - In the PREFLIGHT flight phase:
    - ■ If there is an entered Estimated Takeoff Time (ETT), the time reference is the UTC time
    - ■ If there is no entered ETT, the time reference is the flight time

    The flight crew enters the ETT on the RTA panel of the VERT REV page (*Refer to page*).
  - In flight:
    - ■ If the UTC time is valid, the time reference is the UTC time
    - ■ If the UTC time is not valid, the time reference is the flight time.
- L1 The distance to the start waypoint, along the flight plan.

When the active flight phase is not CRUISE, or when there is no predicted profile change, the NONE label is displayed instead of the data.

NONE Label



NEXT CRZ PROFILE CHANGE NONE

Ident.: DSC-22-FMS-20-20-20-320-00004253.0001001 / 22 APR 14

DEST AREA

Displays the following data for the destination airport:

- The predicted time of arrival, in UTC(flight) time, at the destination airport

  The UTC(TIME) label indicates the time reference:
  - The UTC label indicates that the time reference is the UTC time
  - The TIME label indicates that the time reference is the flight time.

  L2 The time reference is defined as follows:
  - In the PREFLIGHT flight phase:
    - ■ If there is an entered Estimated Takeoff Time (ETT), the time reference is the UTC time
    - ■ If there is no entered ETT, the time reference is the flight time

    The flight crew enters the ETT on the RTA panel of the VERT REV page (*Refer to page*).
  - In flight:
    - ■ If the UTC time is valid, the time reference is the UTC time
    - ■ If the UTC time is not valid, the time reference is the flight time.
- L1 The distance, along the flight plan, to the destination airport
- The Estimated Fuel On Board (EFOB) at the destination airport.

Ident.: DSC-22-FMS-20-20-20-320-00004254.0001001 / 22 APR 14

FREE TEXT ENTRY FIELD

The flight crew can enter a free text of up to 24 characters in the entry field. The free text is sent with the position report to the company ground station.
If the free text AMI option is not activated, the FREE TEXT entry field is not displayed.

ENTRY FORMAT

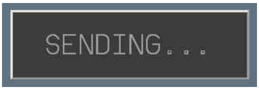
Refer to DSC-22-FMS-20-80 FREE TEXT.

Ident.: DSC-22-FMS-20-20-20-320-00004255.0001001 / 22 APR 14

SEND FPLN TO CPNY BUTTON

When clicked, sends the position report to the company ground station (via ACARS).

L2 During the transmission of the position report to the Avionics Communication Router (ACR), the button label is SENDING... .

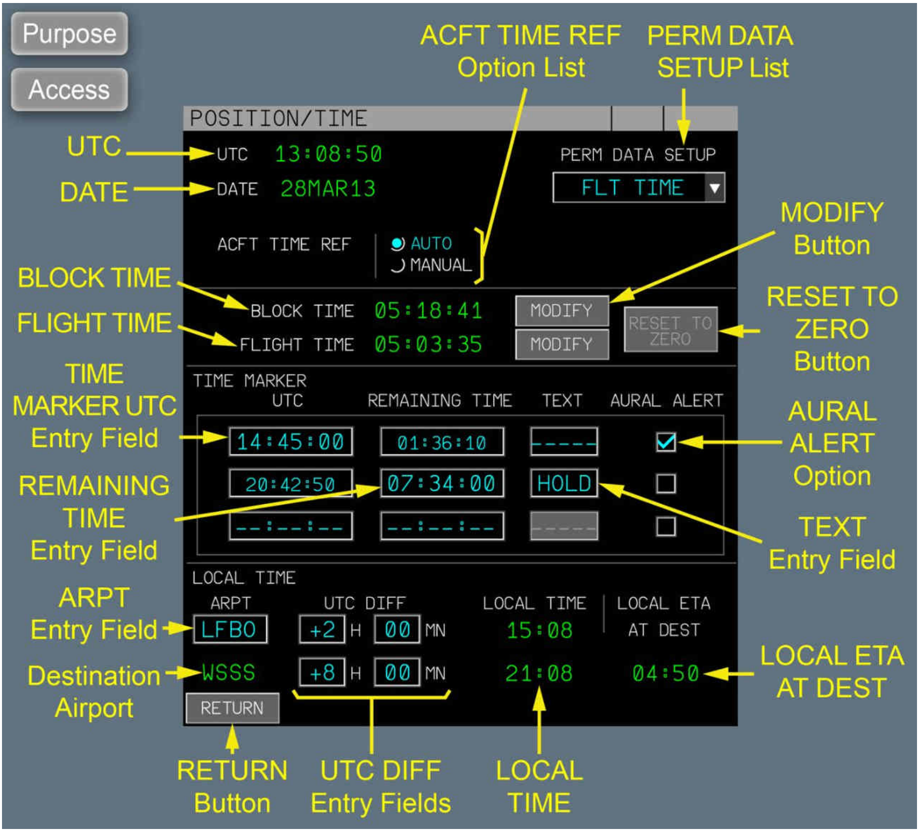


POSITION/TIME PAGE

Applicable to: ALL

Ident.: DSC-22-FMS-20-20-20-330-00009748.0001001 / 22 APR 14

POSITION/TIME Page


Purpose
Access
ACFT TIME REF Option List
PERM DATA SETUP List
UTC
DATE
MODIFY Button
BLOCK TIME
FLIGHT TIME
RESET TO ZERO Button
TIME MARKER UTC Entry Field
AURAL ALERT Option
REMAINING TIME Entry Field
TEXT Entry Field
ARPT Entry Field
Destination Airport
LOCAL ETA AT DEST
RETURN Button
UTC DIFF Entry Fields
LOCAL TIME

POSITION/TIME

UTC 13:08:50

DATE 28MAR13

PERM DATA SETUP: FLT TIME ▼

ACFT TIME REF ● AUTO ○ MANUAL

BLOCK TIME 05:18:41 MODIFY

FLIGHT TIME 05:03:35 MODIFY

RESET TO ZERO

TIME MARKER

UTC	REMAINING TIME	TEXT	AURAL ALERT
14:45:00	01:36:10	-----	☑
20:42:50	07:34:00	HOLD	☐
--:--:--	--:--:--	-----	☐

LOCAL TIME

ARPT	UTC DIFF	LOCAL TIME	LOCAL ETA AT DEST
LFBO	+2 H 00 MN	15:08	
WSSS	+8 H 00 MN	21:08	04:50

RETURN

Ident.: DSC-22-FMS-20-20-20-330-00013513.0001001 / 22 APR 14

PURPOSE

On the POSITION/TIME page, the flight crew can:

- Display and set the aircraft time reference (date and UTC time)
- Select the optional time data that the flight crew want to display on the permanent data

- Define up to three time markers
- Display local time data for up to two airports.

The POSITION/TIME page is available for the active flight plan only.

LINKS

For information about:

- The time function of the FMS, *Refer to DSC-22-FMS-10-80 Time Function*
- The time function of the ADIRS, *Refer to DSC-34-NAV-20-10-70 Time Function*
- The permanent data, *Refer to DSC-31-CDS-60-10-80 Permanent Data*.

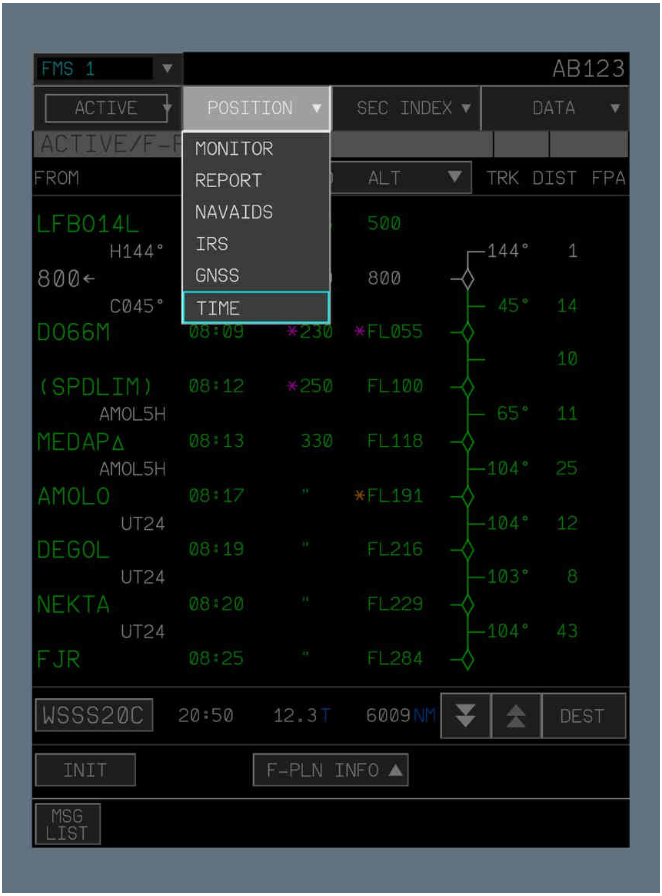
Ident.: DSC-22-FMS-20-20-20-330-00013515.0001001 / 14 APR 14

ACCESS

The flight crew can access the POSITION/TIME page via:

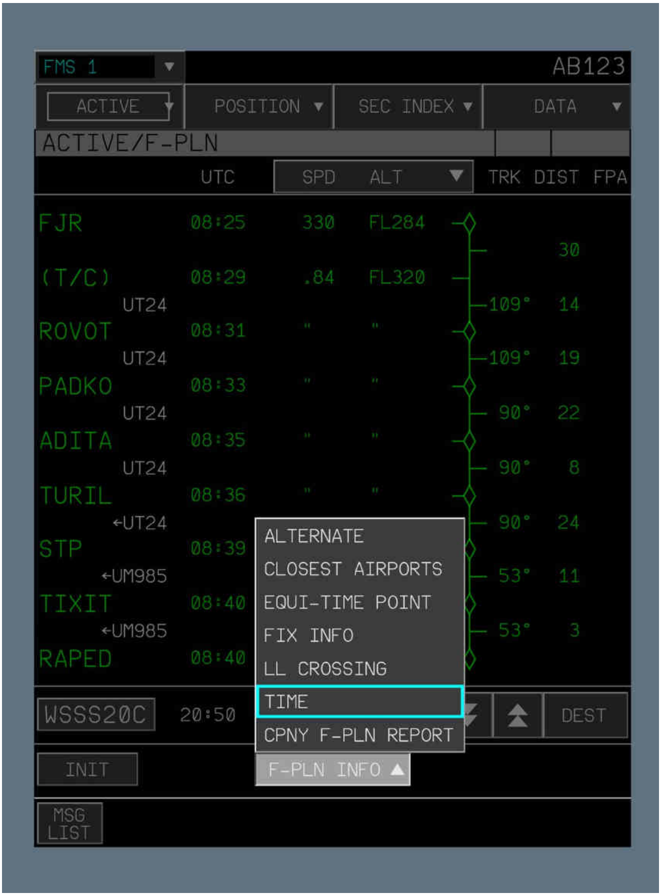
- The general menu bar, by selecting TIME in the POSITION menu

General Menu Bar


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-P
MONITOR
REPORT
NAVAIDS
IRS
GNSS
TIME
FROM
ALT
TRK DIST FPA
LFBO14L
500
H144°
144° 1
800←
800
C045°
45° 14
D066M
08:09
*230
*FL055
10
(SPDLIM)
08:12
*250
FL100
AMOL5H
65° 11
MEDAPΔ
08:13
330
FL118
AMOL5H
104° 25
AMOLO
08:17
"
*FL191
UT24
104° 12
DEGOL
08:19
"
FL216
UT24
103° 8
NEKTA
08:20
"
FL229
UT24
104° 43
FJR
08:25
"
FL284
WSSS20C
20:50
12.3T
6009NM
DEST
INIT
F-PLN INFO
MSG LIST

- The ACTIVE/F-PLN page, by selecting TIME in the F-PLN INFO menu.

ACTIVE/F-PLN Page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN
ALTERNATE
CLOSEST AIRPORTS
EQUI-TIME POINT
FIX INFO
LL CROSSING
TIME
CPNY F-PLN REPORT
F-PLN INFO
INIT
MSG LIST

	UTC	SPD	ALT	TRK	DIST	FPA
FJR	08:25	330	FL284			
					30	
(T/C)	08:29	.84	FL320			
UT24				109°	14	
ROVOT	08:31	"	"			
UT24				109°	19	
PADKO	08:33	"	"			
UT24				90°	22	
ADITA	08:35	"	"			
UT24				90°	8	
TURIL	08:36	"	"			
←UT24				90°	24	
STP	08:39					
←UM985				53°	11	
TIXIT	08:40					
←UM985				53°	3	
RAPED	08:40					

WSSS20C 20:50 DEST

Ident.: DSC-22-FMS-20-20-20-330-00013516.0001001 / 22 APR 14

UTC

Indicates the UTC time.
The UTC time is also displayed on the permanent data.
The ADIRS provides the UTC time.

The flight crew can manually set the UTC time. In order to manually set the UTC time, the flight crew displays the UTC entry field, via the selection of the MANUAL option in the ACFT TIME REF option list (*Refer to ACFT TIME REF Option List*).

Ident.: DSC-22-FMS-20-20-20-330-00013517.0001001 / 22 APR 14

DATE

Indicates the date.
The date can also be displayed on the permanent data, depending on the option that is selected in the PERM DATA SETUP list (*Refer to PERM DATA SETUP List*).
The ADIRS provides the date.
The flight crew can manually set the date. In order to manually set the date, the flight crew displays the DATE entry field, via the selection of the MANUAL option in the ACFT TIME REF option list (*Refer to ACFT TIME REF Option List*).

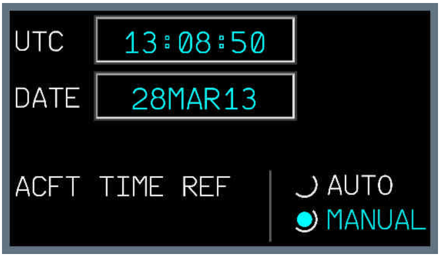
Ident.: DSC-22-FMS-20-20-20-330-00013518.0001001 / 14 APR 14

ACFT TIME REF OPTION LIST

The flight crew uses the ACFT TIME REF option list to select the aircraft time reference.

The ACFT TIME REF option list has the following options:
- AUTO: The ADIRS provides the aircraft time reference (date and UTC time)
  The AUTO option is automatically selected by default.
- MANUAL: The flight crew manually sets the aircraft time reference (date and UTC time).
  When selected, displays the UTC and DATE entry fields.

UTC and DATE Entry Fields



UTC 13:08:50
DATE 28MAR13
ACFT TIME REF
○ AUTO
● MANUAL

In the UTC(DATE) entry field, the data is displayed:
- In small blue font, when this data results from the ADIRS computation
- In large blue font, when the flight crew manually enters this data.
  As soon as the ADIRS uses the manually-entered value to initialize the computation of the time(date), the UTC(DATE) entry field displays the data in small blue font again.

L2 When the ADIRS is not available, the ACFT TIME REF option list disappears, and the flight crew cannot manually set the aircraft time reference.

L1 ENTRY FORMAT

For the entry format of:
- UTC time, *Refer to DSC-22-FMS-20-80 UTC*
- Date, *Refer to DSC-22-FMS-20-80 DATE*.

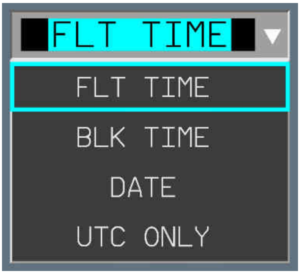
Ident.: DSC-22-FMS-20-20-20-330-00013519.0001001 / 22 APR 14

PERM DATA SETUP LIST

Indicates the optional time data that is displayed on the permanent data.
The flight crew selects the optional time data from the PERM DATA SETUP list.

The PERM DATA SETUP list has the following options:
- FLT TIME: The permanent data displays the flight time, in addition to the UTC time
- BLK TIME: The permanent data displays the block time, in addition to the UTC time
- DATE: The permanent data displays the date, in addition to the UTC time
- UTC ONLY: The permanent data displays the UTC time, and no optional time data.

PERM DATA SETUP List



L2 The option of the PERM DATA SETUP list that is automatically selected by default can be FLT TIME, BLK TIME, or DATE. The Operator uses the AMI file to define the option that is automatically selected by default.
L3 For information about the AMI file, *Refer to DSC-22-FMS-10-20 Airline Modifiable Information (AMI) File*.

Ident.: DSC-22-FMS-20-20-20-330-00013520.0001001 / 14 APR 14

BLOCK TIME

Indicates the block time.
The block time can also be displayed on the permanent data, depending on the option that is selected in the PERM DATA SETUP list (*Refer to PERM DATA SETUP List*).

The FMS computes the block time.
The flight crew can modify the parameters that the FMS uses to compute the block time. In order to modify the parameters, the flight crew clicks on the corresponding MODIFY button (*Refer to MODIFY Button*).

Ident.: DSC-22-FMS-20-20-20-330-00013521.0001001 / 22 APR 14

FLIGHT TIME

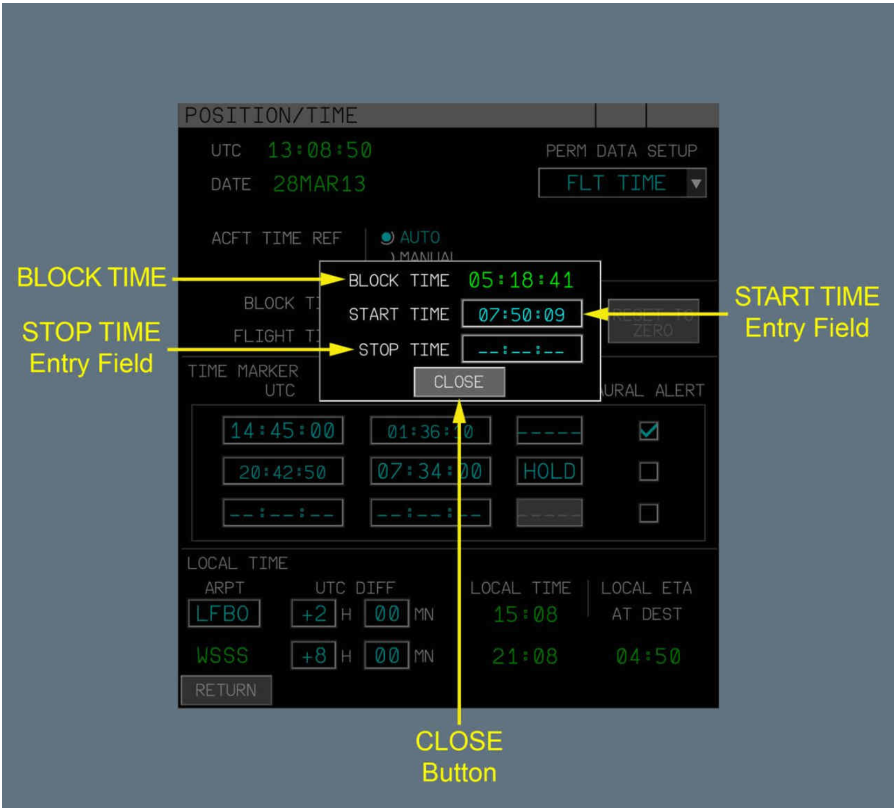
Indicates the flight time.
The flight time can also be displayed on the permanent data, depending on the option that is selected in the PERM DATA SETUP list (*Refer to PERM DATA SETUP List*).
The FMS computes the flight time.
The flight crew can modify the parameters that the FMS uses to compute the flight time. In order to modify the parameters, the flight crew clicks on the corresponding MODIFY button (*Refer to MODIFY Button*).

Ident.: DSC-22-FMS-20-20-20-330-00013523.0001001 / 22 APR 14

MODIFY BUTTON

Displays:
- The BLOCK TIME modification window (*Refer to BLOCK TIME Modification Window*), if the flight crew clicks on the MODIFY button that is next to the block time
- The FLIGHT TIME modification window (*Refer to FLIGHT TIME Modification Window*), if the flight crew clicks on the MODIFY button that is next to the flight time.

BLOCK TIME MODIFICATION WINDOW


POSITION/TIME
PERM DATA SETUP
FLT TIME ▼
RESET TO ZERO
CLOSE
RETURN
BLOCK TIME
STOP TIME
Entry Field
START TIME
Entry Field
CLOSE
Button

UTC 13:08:50
DATE 28MAR13

ACFT TIME REF ● AUTO ○ MANUAL

BLOCK TIME 05:18:41
START TIME 07:50:09
STOP TIME --:--:--

TIME MARKER UTC			AURAL ALERT
14:45:00	01:36:10	-----	☑
20:42:50	07:34:00	HOLD	☐
--:--:--	--:--:--	-----	☐

LOCAL TIME

ARPT	UTC DIFF	LOCAL TIME	LOCAL ETA AT DEST
LFBO	+2 H 00 MN	15:08	
WSSS	+8 H 00 MN	21:08	04:50

BLOCK TIME Modification Window

BLOCK TIME

Indicates the block time.

The FMS computes the block time as follows:
- If there is a start time in the START TIME entry field, but no stop time in the STOP TIME entry field (i.e. the STOP TIME entry field displays dashes), the block time corresponds to the elapsed time between the start time and the current UTC time
- If there is a start time in the START TIME entry field and a stop time in the STOP TIME entry field, the block time corresponds to the elapsed time between the start time and the stop time.

START TIME ENTRY FIELD

Indicates the start time that the FMS uses to compute the block time.
The start time is the UTC time at which the block time begins.
The FMS automatically defines the start time. The start time that the FMS automatically defines is displayed in small blue font.
The flight crew can overwrite the value that the FMS automatically defines. The value that the flight crew enters is displayed in large blue font.
If the flight crew clears the manually-entered value, the value that the FMS automatically defines reappears.

Entry Format

Refer to DSC-22-FMS-20-80 START TIME.

STOP TIME ENTRY FIELD

Indicates the stop time that the FMS uses to compute the block time.
The stop time is the UTC time at which the block time ends.
The FMS automatically defines the stop time. The stop time that the FMS automatically defines is displayed in small blue font.
The flight crew can overwrite the value that the FMS automatically defines. The value that the flight crew enters is displayed in large blue font.
If the flight crew clears the manually-entered value, the value that the FMS automatically defines reappears.

L2 The STOP TIME entry field is not available, if there is no start time in the START TIME entry field (i.e. if the START TIME entry field displays dashes).

L1 Entry Format

Refer to DSC-22-FMS-20-80 STOP TIME.

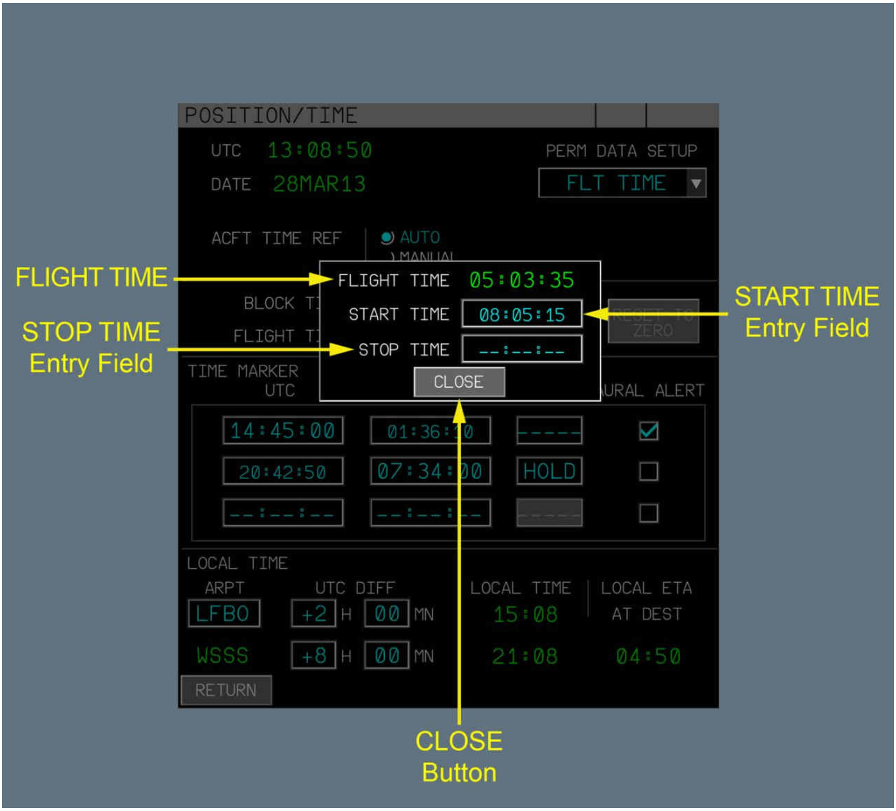
CLOSE BUTTON

When clicked, saves the values that are entered in the START TIME and STOP TIME entry fields, and closes the BLOCK TIME modification window.

Ident.: DSC-22-FMS-20-20-20-330-00013538.0001001 / 22 APR 14

FLIGHT TIME MODIFICATION WINDOW

FLIGHT TIME Modification Window



POSITION/TIME

UTC 13:08:50

DATE 28MAR13

PERM DATA SETUP: FLT TIME

ACFT TIME REF: ● AUTO ○ MANUAL

FLIGHT TIME 05:03:35

START TIME 08:05:15

STOP TIME --:--:--

TIME MARKER UTC			AURAL ALERT
14:45:00	01:36:10	-----	☑
20:42:50	07:34:00	HOLD	☐
--:--:--	--:--:--	-----	☐

LOCAL TIME

ARPT	UTC DIFF	LOCAL TIME	LOCAL ETA AT DEST
LFBO	+2 H 00 MN	15:08	
WSSS	+8 H 00 MN	21:08	04:50

FLIGHT TIME
STOP TIME Entry Field
START TIME Entry Field
CLOSE Button
BLOCK TI
FLIGHT TI
RESET TO ZERO
CLOSE
RETURN

FLIGHT TIME

Indicates the flight time.

The FMS computes the flight time as follows:
- If there is a start time in the START TIME entry field, but no stop time in the STOP TIME entry field (i.e. the STOP TIME entry field displays dashes), the flight time corresponds to the elapsed time between the start time and the current UTC time
- If there is a start time in the START TIME entry field and a stop time in the STOP TIME entry field, the flight time corresponds to the elapsed time between the start time and the stop time.

START TIME ENTRY FIELD

Indicates the start time that the FMS uses to compute the flight time.
The start time is the UTC time at which the flight time begins.
The FMS automatically defines the start time. The start time that the FMS automatically defines is displayed in small blue font.
The flight crew can overwrite the value that the FMS automatically defines. The value that the flight crew enters is displayed in large blue font.
If the flight crew clears the manually-entered value, the value that the FMS automatically defines reappears.

Entry Format

Refer to DSC-22-FMS-20-80 START TIME.

STOP TIME ENTRY FIELD

Indicates the stop time that the FMS uses to compute the flight time.
The stop time is the UTC time at which the flight time ends.
The FMS automatically defines the stop time. The stop time that the FMS automatically defines is displayed in small blue font.
The flight crew can overwrite the value that the FMS automatically defines. The value that the flight crew enters is displayed in large blue font.
If the flight crew clears the manually-entered value, the value that the FMS automatically defines reappears.

L2 The STOP TIME entry field is not available, if there is no start time in the START TIME entry field (i.e. if the START TIME entry field displays dashes).

L1 Entry Format

Refer to DSC-22-FMS-20-80 STOP TIME.

CLOSE BUTTON

When clicked, saves the values that are entered in the START TIME and STOP TIME entry fields, and closes the FLIGHT TIME modification window.

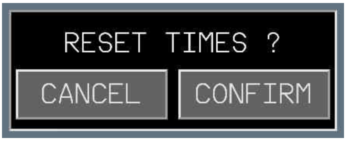
Ident.: DSC-22-FMS-20-20-20-330-00013525.0001001 / 22 APR 14

RESET TO ZERO BUTTON

When clicked:
- Sets the block time to 00:00:00
- Sets the flight time to 00:00:00.

The flight crew must perform a confirmation action.

Confirmation Window



The RESET TO ZERO button is only available during the PREFLIGHT and DONE flight phases.

Ident.: DSC-22-FMS-20-20-20-330-00013526.0001001 / 22 APR 14

TIME MARKER UTC ENTRY FIELD

In the TIME MARKER UTC entry field, the flight crew enters the UTC time that defines the time marker.
The upper part of the ND displays the pseudo waypoint that corresponds to the time marker.
If the flight crew defines the time marker with the REMAINING TIME entry field (*Refer to REMAINING TIME Entry Field*), the UTC time that defines the time marker is automatically entered.
The manually-entered value is displayed in large blue font, and the automatically-entered value is displayed in small blue font.

ENTRY FIELD

Refer to DSC-22-FMS-20-80 TIME MARKER UTC.

Ident.: DSC-22-FMS-20-20-20-330-00013528.0001001 / 22 APR 14

REMAINING TIME ENTRY FIELD

The flight crew enters the remaining time in the REMAINING TIME entry field.
The remaining time corresponds to the remaining time between the current UTC time and the UTC time that defines the time marker.
The upper part of the ND displays the pseudo waypoint that corresponds to the time marker.
If the flight crew defines the time marker with the TIME MARKER UTC entry field (*Refer to TIME MARKER UTC Entry Field*), the remaining time is automatically entered.
The manually-entered value is displayed in large blue font, and the automatically-entered value is displayed in small blue font.

ENTRY FIELD

Refer to DSC-22-FMS-20-80 REMAINING TIME.

Ident.: DSC-22-FMS-20-20-20-330-00013529.0001001 / 22 APR 14

TEXT ENTRY FIELD

The flight crew can enter text in order to identify the time marker.
This text is not mandatory for definition of the time marker, and is displayed only on the POSITION/TIME page.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 TEXT.

Ident.: DSC-22-FMS-20-20-20-330-00013530.0001001 / 14 APR 14

AURAL ALERT OPTION

The flight crew selects the AURAL ALERT option, if they want the "Time Marker" audio indicator to sound.
The "Time Marker" audio indicator sounds, when the remaining time between the current UTC time and the UTC time that defines the time marker is equal to 30 s.

Time Marker (Sound and Synthetic Voice)

Ident.: DSC-22-FMS-20-20-20-330-00013531.0001001 / 14 APR 14

ARPT ENTRY FIELD

The flight crew enters the ident of the airport for which they want to display the local time.
By default, the ARPT entry field displays the ident of the departure airport of the active flight plan.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 AIRPORT (ARPT).

Ident.: DSC-22-FMS-20-20-20-330-00013532.0001001 / 22 APR 14

DESTINATION AIRPORT

Indicates the destination airport of the active flight plan.

Ident.: DSC-22-FMS-20-20-20-330-00013533.0001001 / 22 APR 14

UTC DIFF ENTRY FIELDS

In the UTC DIFF H and UTC DIFF MN entry fields, the flight crew enters the time difference between the UTC time and the airport local time.
The FMS uses this time difference to compute the airport local time.

When the flight crew enters a value in the UTC DIFF H entry field, the UTC DIFF MN entry field is automatically set to 00. The flight crew can modify this automatic entry in the UTC DIFF MN entry field.
When the flight crew enters a value in the UTC DIFF MN entry field and the UTC DIFF H entry field displays dashes, the UTC DIFF H is automatically set to 00. The flight crew can modify this automatic entry in the UTC DIFF HH entry field.

L2 If the value entered in the UTC DIFF H entry field is different from 00, the flight crew cannot enter a negative value in the UTC DIFF MN entry field.
If the flight crew enters a valid negative value in the UTC DIFF MN entry field, the minus sign automatically applies to the UTC DIFF HH entry field (e.g. if the flight crew enters -30 in the UTC DIFF MN entry field, the UTC DIFF HH entry field displays -00 and the UTC DIFF MN displays 30).

L1 ENTRY FORMAT

For the entry format of:
- Hours, *Refer to DSC-22-FMS-20-80 UTC DIFF (HOURS)*
- Minutes, *Refer to DSC-22-FMS-20-80 UTC DIFF (MINUTES)*.

Ident.: DSC-22-FMS-20-20-20-330-00013534.0001001 / 22 APR 14

LOCAL TIME

Indicates the local time at the corresponding airport.

The FMS computes the local time, based on:
- The UTC time
- The values that are entered in the UTC DIFF entry fields.

LOCAL TIME = UTC + UTC DIFF

Ident.: DSC-22-FMS-20-20-20-330-00013535.0001001 / 22 APR 14

LOCAL ETA AT DEST

Indicates the Estimated Time of Arrival (ETA), in local time, at the destination airport.

The FMS computes the ETA in local time, based on:
- The ETA that is defined in UTC time
- The values that are entered in the UTC DIFF entry fields.

LOCAL ETA AT DEST = UTC ETA + UTC DIFF
The FMS cannot compute the local time for the ETA, if the flight crew does not enter the time difference in the UTC DIFF entry fields. In this case, dashes appear instead of the local time.

Ident.: DSC-22-FMS-20-20-20-330-00013536.0001001 / 22 APR 14

RETURN BUTTON

When clicked, displays the ACTIVE/F-PLN page (*Refer to page*).

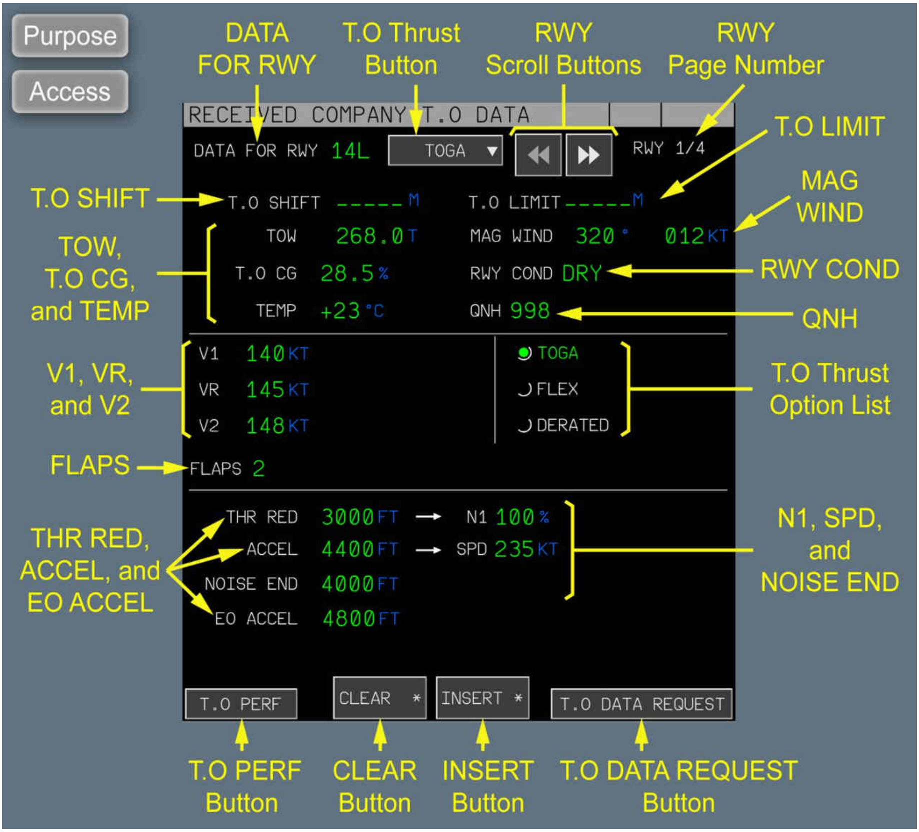
L2 The RETURN button appears, only if the flight crew accesses the POSITION/TIME page via the ACTIVE/F-PLN page.

RECEIVED COMPANY T.O DATA PAGE

Applicable to: ALL

Ident.: DSC-22-FMS-20-20-20-340-00002732.0001001 / 22 APR 14

RECEIVED COMPANY T.O DATA Page



RECEIVED COMPANY T.O DATA

DATA FOR RWY 14L TOGA RWY 1/4

T.O SHIFT -----M T.O LIMIT -----M

TOW 268.0T MAG WIND 320° 012KT

T.O CG 28.5% RWY COND DRY

TEMP +23°C QNH 998

V1 140KT

VR 145KT

V2 148KT

● TOGA

○ FLEX

○ DERATED

FLAPS 2

THR RED 3000FT → N1 100%

ACCEL 4400FT → SPD 235KT

NOISE END 4000FT

EO ACCEL 4800FT

Purpose
Access
DATA FOR RWY
T.O Thrust Button
RWY Scroll Buttons
RWY Page Number
T.O LIMIT
MAG WIND
RWY COND
QNH
T.O Thrust Option List
N1, SPD, and NOISE END
T.O SHIFT
TOW, T.O CG, and TEMP
V1, VR, and V2
FLAPS
THR RED, ACCEL, and EO ACCEL
T.O PERF
CLEAR *
INSERT *
T.O DATA REQUEST
T.O PERF Button
CLEAR Button
INSERT Button
T.O DATA REQUEST Button

Ident.: DSC-22-FMS-20-20-20-340-00004256.0001001 / 22 APR 14

PURPOSE

On the RECEIVED COMPANY T.O DATA page, the flight crew can:
- Check the received company takeoff data
- Insert the received takeoff data in the flight plan.

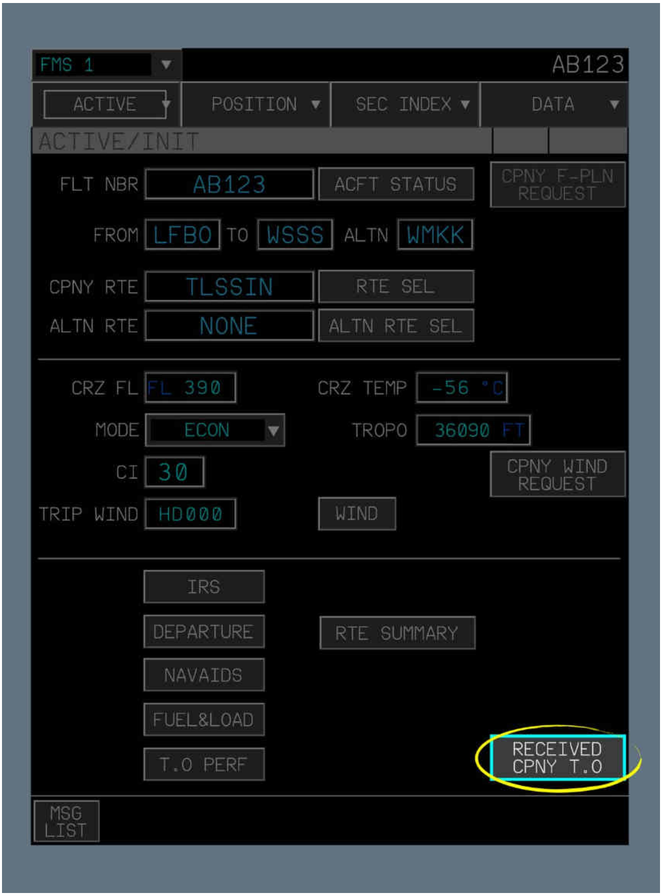
The flight crew can display takeoff data for up to four runways, and for two different takeoff thrust settings per runway.
The RECEIVED COMPANY T.O DATA page is available for the active flight plan only.

ACCESS

The flight crew can access the RECEIVED COMPANY T.O DATA page via:

- The ACTIVE/INIT page, by clicking on the RECEIVED CPNY T.O button

ACTIVE/INIT Page

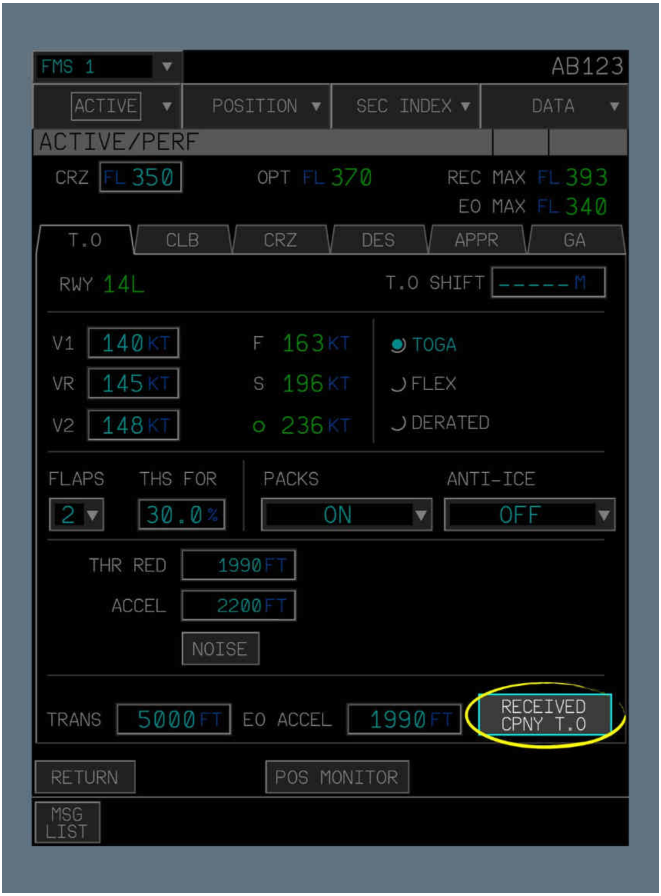


FLT NBR AB123
FROM LFBO TO WSSS ALTN WMKK
CPNY RTE TLSSIN
ALTN RTE NONE
CRZ FL FL 390
CRZ TEMP -56 °C
MODE ECON
TROPO 36090 FT
CI 30
TRIP WIND HD000

FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/INIT
ACFT STATUS
CPNY F-PLN REQUEST
RTE SEL
ALTN RTE SEL
CPNY WIND REQUEST
WIND
IRS
DEPARTURE
NAVAIDS
FUEL&LOAD
T.O PERF
RTE SUMMARY
RECEIVED CPNY T.O
MSG LIST

- The T.O panel on the ACTIVE/PERF page, by clicking on the RECEIVED CPNY T.O button

ACTIVE/PERF Page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/PERF
T.O
CLB
CRZ
DES
APPR
GA
NOISE
RECEIVED CPNY T.O
RETURN
POS MONITOR
MSG LIST

CRZ FL 350
OPT FL 370
REC MAX FL 393
EO MAX FL 340

RWY 14L
T.O SHIFT -----M

V1 140KT
VR 145KT
V2 148KT

F 163KT
S 196KT
o 236KT

● TOGA
○ FLEX
○ DERATED

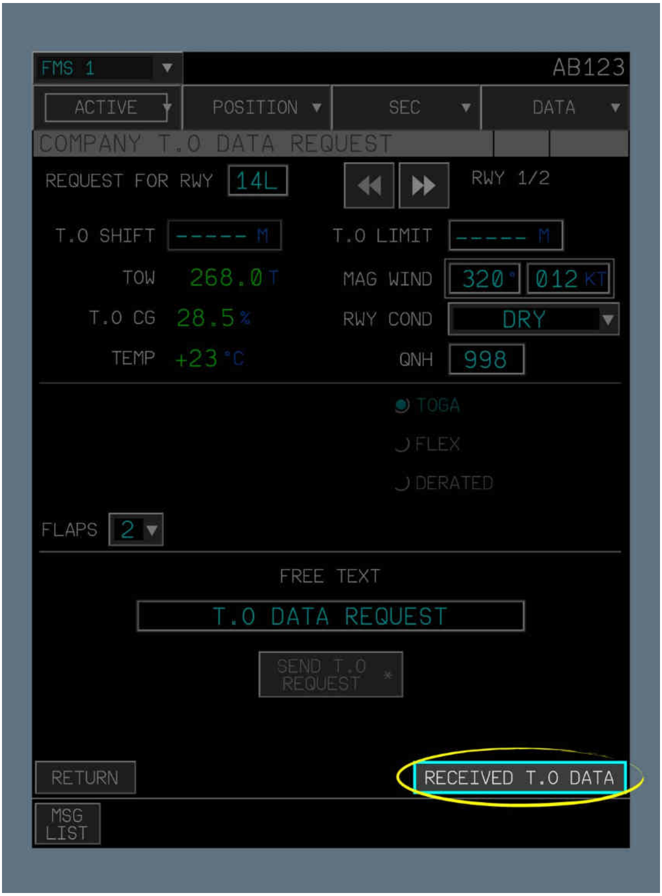
FLAPS 2
THS FOR 30.0%
PACKS ON
ANTI-ICE OFF

THR RED 1990FT
ACCEL 2200FT

TRANS 5000FT
EO ACCEL 1990FT

- The COMPANY T.O DATA REQUEST page, by clicking on the RECEIVED T.O DATA button.

COMPANY T.O DATA REQUEST page


FMS 1
AB123
ACTIVE
POSITION
SEC
DATA
COMPANY T.O DATA REQUEST
RWY 1/2
FREE TEXT
SEND T.O REQUEST
RETURN
RECEIVED T.O DATA
MSG LIST

REQUEST FOR RWY 14L

T.O SHIFT ----- M

T.O LIMIT ----- M

TOW 268.0 T

MAG WIND 320° 012 KT

T.O CG 28.5 %

RWY COND DRY

TEMP +23 °C

QNH 998

● TOGA

○ FLEX

○ DERATED

FLAPS 2

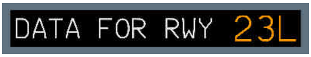
T.O DATA REQUEST

Ident.: DSC-22-FMS-20-20-20-340-00004258.0001001 / 14 APR 14

DATA FOR RWY

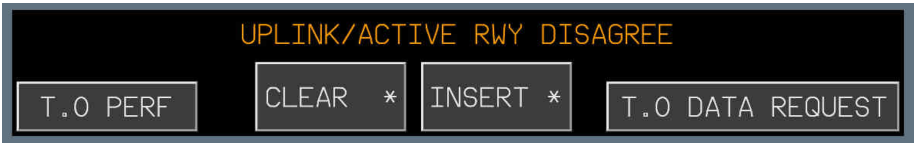
Indicates the runway that is associated with the displayed takeoff data.

Note: *If the received runway is different from the runway that is selected in the active flight plan:*
- *The runway ident appears in amber*



- *The UPLINK/ACTIVE RWY DISAGREE label appears at the bottom of the RECEIVED COMPANY T.O DATA page.*

UPLINK/ACTIVE RWY DISAGREE Label

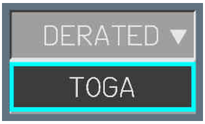


Ident.: DSC-22-FMS-20-20-20-340-00004259.0001001 / 22 APR 14

T.O THRUST BUTTON

The label of the T.O thrust button indicates the thrust setting that is associated with the displayed takeoff data.
When the flight crew clicks on the T.O thrust button, the T.O thrust menu appears.

T.O Thrust Menu



The T.O thrust menu has the following options:
- TOGA: Displays the takeoff data that corresponds to the TOGA thrust
- DERATED(FLEX): Displays the takeoff data that corresponds to the DTO(FLX) thrust.

Ident.: DSC-22-FMS-20-20-20-340-00004260.0001001 / 22 APR 14

RWY SCROLL BUTTONS

The flight crew uses the RWY scroll buttons to scroll, one by one, through the four runway pages.

Ident.: DSC-22-FMS-20-20-20-340-00004261.0001001 / 22 APR 14

RWY PAGE NUMBER

Indicates the rank of the displayed runway page, and the total number of runway pages.

Ident.: DSC-22-FMS-20-20-20-340-00004269.0001001 / 22 APR 14

T.O SHIFT

Indicates the runway takeoff shift.
The runway takeoff shift is the distance between the runway threshold, and the position at which the flight crew releases the aircraft brakes in order to take off.

Ident.: DSC-22-FMS-20-20-20-340-00004262.0001001 / 09 MAR 16

TOW, T.O CG, AND TEMP

Indicate:

- The aircraft weight and CG that are associated with the takeoff data
- The outside temperature that is associated with the takeoff runway, when the TOGA thrust setting is selected.
  When the flight crew selects a FLX or a DTO thrust, green dashes are displayed instead of the temperature value.

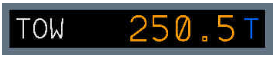
L12

Note: *The FMS crosschecks the received takeoff weight with the FMS takeoff weight.*

If the received takeoff weight is outside an acceptable margin:

- *The takeoff weight value appears in amber*

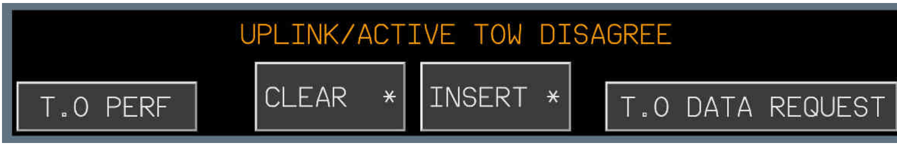
Amber TOW



TOW 250.5 T

- *If the received runway is the same as the runway that is selected in the active flight plan, the UPLINK/ACTIVE TOW DISAGREE label appears at the bottom of the RECEIVED COMPANY T.O DATA page.*

UPLINK/ACTIVE TOW DISAGREE Label



UPLINK/ACTIVE TOW DISAGREE

The received takeoff weight is within an acceptable margin, if the received takeoff weight is not more than 1 t (2.2 klb) below or 3 t (6.6 klb) above the FMS takeoff weight.

Ident.: DSC-22-FMS-20-20-20-340-00004270.0001001 / 22 APR 14

T.O LIMIT

Indicates the limited runway length for takeoff (i.e. the runway length that is really available for takeoff).

Ident.: DSC-22-FMS-20-20-20-340-00004263.0001001 / 22 APR 14

MAG WIND

Indicates the wind direction and wind speed that are associated with the takeoff runway.
L2 If the airport reference is true north, the wind is the true wind. The label is TRUE WIND instead of MAG WIND.

Ident.: DSC-22-FMS-20-20-20-340-00004264.0001001 / 22 APR 14

RWY COND

Indicates the takeoff runway condition.

Ident.: DSC-22-FMS-20-20-20-340-00004265.0001001 / 22 APR 14

QNH

Indicates the QNH that is associated with the takeoff runway.

Ident.: DSC-22-FMS-20-20-20-340-00004267.0001001 / 22 APR 14

V1, VR, AND V2

Indicates the takeoff speeds (V1, VR, and V2) that are associated with the takeoff runway.

Ident.: DSC-22-FMS-20-20-20-340-00004268.0001001 / 22 APR 14

FLAPS

Indicates the flaps setting that is associated with the takeoff runway.

Ident.: DSC-22-FMS-20-20-20-340-00004266.0001001 / 02 OCT 14

T.O THRUST OPTION LIST

Indicates the takeoff thrust setting that is associated with the displayed takeoff data.
The flight crew can display the takeoff data for two different takeoff thrust settings per runway.

To select the takeoff thrust setting, the flight crew selects one of the following options:
- TOGA, for TOGA thrust
- FLEX, for FLX thrust
- DERATED, for DTO thrust.

Ident.: DSC-22-FMS-20-20-20-340-00004271.0001001 / 22 APR 14

THR RED, ACCEL, AND EO ACCEL

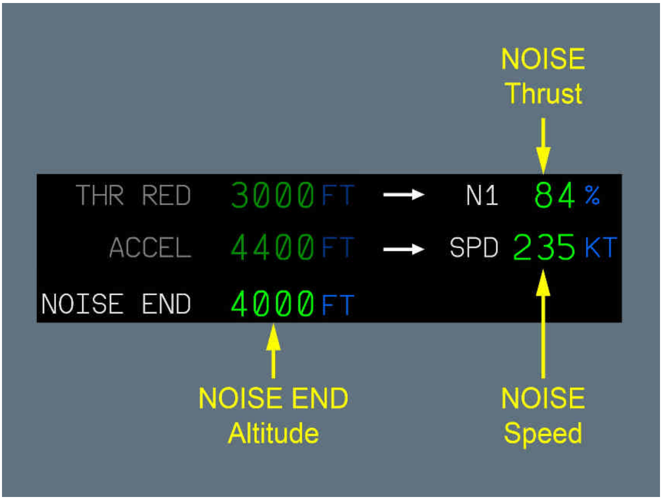
Indicate for the takeoff runway:
- The thrust reduction altitude
- The acceleration altitude with all operative engines
- The acceleration altitude in engine-out situation.

Ident.: DSC-22-FMS-20-20-20-340-00004272.0001001 / 22 APR 14

N1, SPD, AND NOISE END

Indicate the parameters for the NOISE procedure that is associated with the takeoff runway:
- The NOISE thrust
- The NOISE speed
- The NOISE END altitude.

N1, SPD, and NOISE END



When the flight crew inserts the received takeoff data in the flight plan, these parameters are used to automatically enter the NOISE parameters in the NOISE parameters entry fields (i.e. N1, SPD, and NOISE END entry fields) on the T.O and CLB panels of the PERF page (*Refer to page*).

Ident.: DSC-22-FMS-20-20-20-340-00004274.0001001 / 22 APR 14

T.O PERF BUTTON

When clicked, displays the T.O panel of the ACTIVE/PERF page (*Refer to page*).

Ident.: DSC-22-FMS-20-20-20-340-00004276.0001001 / 14 APR 14

CLEAR BUTTON

When clicked, deletes the received takeoff data that is associated with all takeoff runways.

Ident.: DSC-22-FMS-20-20-20-340-00004275.0001001 / 22 APR 14

INSERT BUTTON

When clicked:

- Inserts the following takeoff data in the active flight plan:
  - Takeoff speeds (V1, VR, V2)
  - Flaps setting
  - Takeoff thrust setting
  - Takeoff runway shift
  - Thrust reduction altitude, acceleration altitude with all operative engines, and acceleration altitude in engine-out situation
  - NOISE parameters.
- Displays the T.O panel of the ACTIVE/PERF page.
  The T.O panel now displays the inserted takeoff data.

L2 The takeoff data cannot be inserted, when:

- The received runway is different from the active runway, or
- The received takeoff weight differs from the takeoff weight on the FUEL&LOAD page (*Refer to TOW, T.O CG, and TEMP*), or
- One of the following received takeoff data is not defined:
  - Takeoff speeds (V1, VR, V2)
  - Takeoff runway
  - TOW
  - T.O CG
  - Takeoff wind
  - Runway condition
  - QNH
  - Temperature.

Ident.: DSC-22-FMS-20-20-20-340-00004273.0001001 / 22 APR 14

T.O DATA REQUEST BUTTON

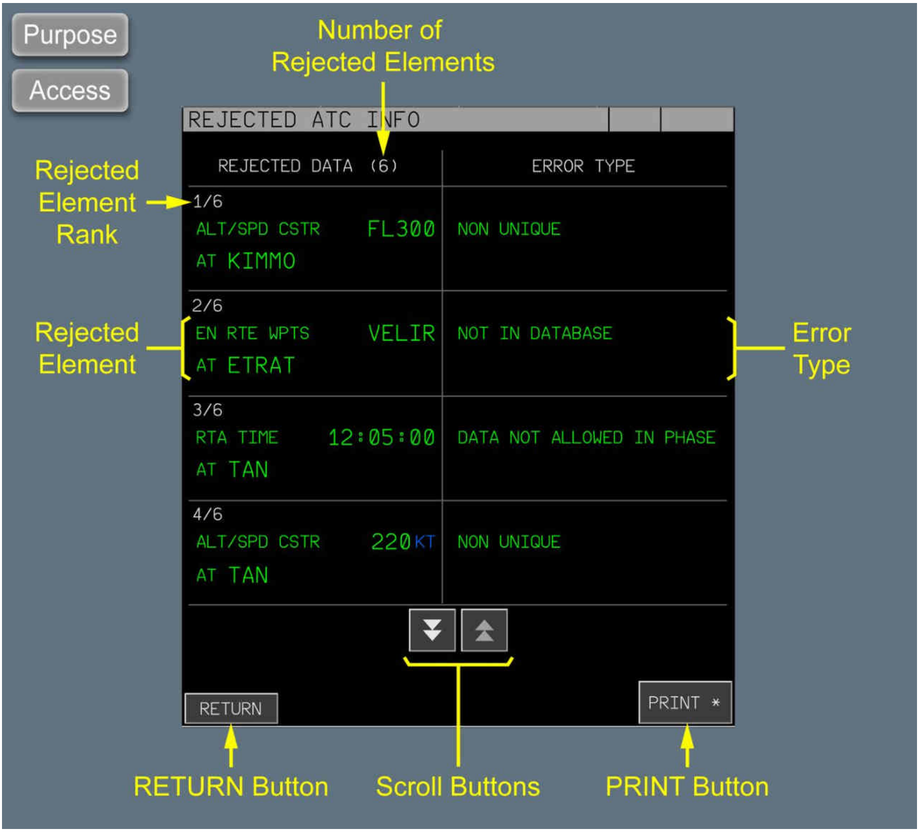
When clicked, displays the COMPANY T.O DATA REQUEST page (*Refer to page*).

REJECTED ATC INFO PAGE

Applicable to: ALL

Ident.: DSC-22-FMS-20-20-20-350-00002733.0001001 / 22 APR 14

REJECTED ATC INFO Page


Purpose
Access
Number of Rejected Elements
Rejected Element Rank
Rejected Element
Error Type
RETURN Button
Scroll Buttons
PRINT Button

REJECTED ATC INFO

REJECTED DATA (6)		ERROR TYPE
1/6		
ALT/SPD CSTR	FL300	NON UNIQUE
AT KIMMO		
2/6		
EN RTE WPTS	VELIR	NOT IN DATABASE
AT ETRAT		
3/6		
RTA TIME	12:05:00	DATA NOT ALLOWED IN PHASE
AT TAN		
4/6		
ALT/SPD CSTR	220KT	NON UNIQUE
AT TAN		

RETURN
PRINT *

Ident.: DSC-22-FMS-20-20-20-350-00004277.0001001 / 22 APR 14

PURPOSE

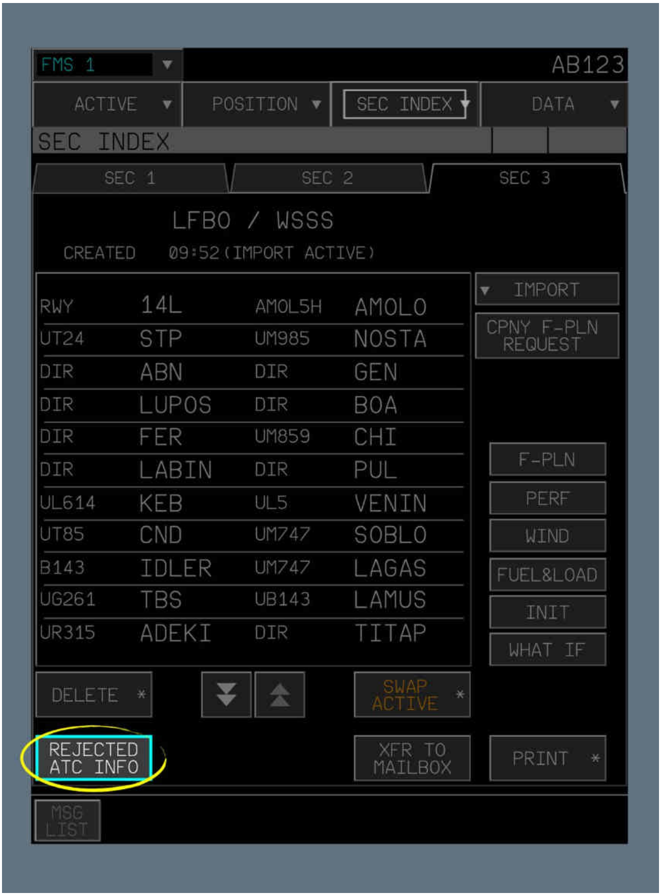
On the REJECTED ATC INFO page, the flight crew can check the rejected elements of the ATC flight plan that is inserted in SEC 3.
The REJECTED ATC INFO page is available for the third secondary flight plan (SEC 3) only.

Ident.: DSC-22-FMS-20-20-20-350-00004278.0001001 / 14 APR 14

ACCESS

The flight crew can access the REJECTED ATC INFO page via the SEC 3 panel of the SEC INDEX page, by clicking on the REJECTED ATC INFO button.

SEC INDEX page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
SEC INDEX
SEC 1
SEC 2
SEC 3
IMPORT
CPNY F-PLN REQUEST
F-PLN
PERF
WIND
FUEL&LOAD
INIT
WHAT IF
DELETE *
SWAP ACTIVE *
REJECTED ATC INFO
XFR TO MAILBOX
PRINT *
MSG LIST

LFBO / WSSS

CREATED 09:52(IMPORT ACTIVE)

RWY	14L	AMOL5H	AMOLO
UT24	STP	UM985	NOSTA
DIR	ABN	DIR	GEN
DIR	LUPOS	DIR	BOA
DIR	FER	UM859	CHI
DIR	LABIN	DIR	PUL
UL614	KEB	UL5	VENIN
UT85	CND	UM747	SOBLO
B143	IDLER	UM747	LAGAS
UG261	TBS	UB143	LAMUS
UR315	ADEKI	DIR	TITAP

Ident.: DSC-22-FMS-20-20-20-350-00004279.0001001 / 22 APR 14

NUMBER OF REJECTED ELEMENTS

Indicates the number of rejected elements.

Ident.: DSC-22-FMS-20-20-20-350-00004280.0001001 / 22 APR 14

REJECTED ELEMENT RANK

Indicates the rank of the rejected element.

Ident.: DSC-22-FMS-20-20-20-350-00004281.0001001 / 22 APR 14

REJECTED ELEMENT

Indicates the description of the rejected element.

Ident.: DSC-22-FMS-20-20-20-350-00004282.0001001 / 22 APR 14

ERROR TYPE

Indicates the error type (i.e. the reason for which the element is rejected).

Ident.: DSC-22-FMS-20-20-20-350-00004283.0001001 / 22 APR 14

SCROLL BUTTONS

The flight crew uses the scroll down(up) button to move, page by page, downward(upward) through the rejected data.

Ident.: DSC-22-FMS-20-20-20-350-00004284.0001001 / 22 APR 14

PRINT BUTTON

When clicked, prints the third secondary flight plan (SEC 3) and the associated rejected elements.

Ident.: DSC-22-FMS-20-20-20-350-00004285.0001001 / 22 APR 14

RETURN BUTTON

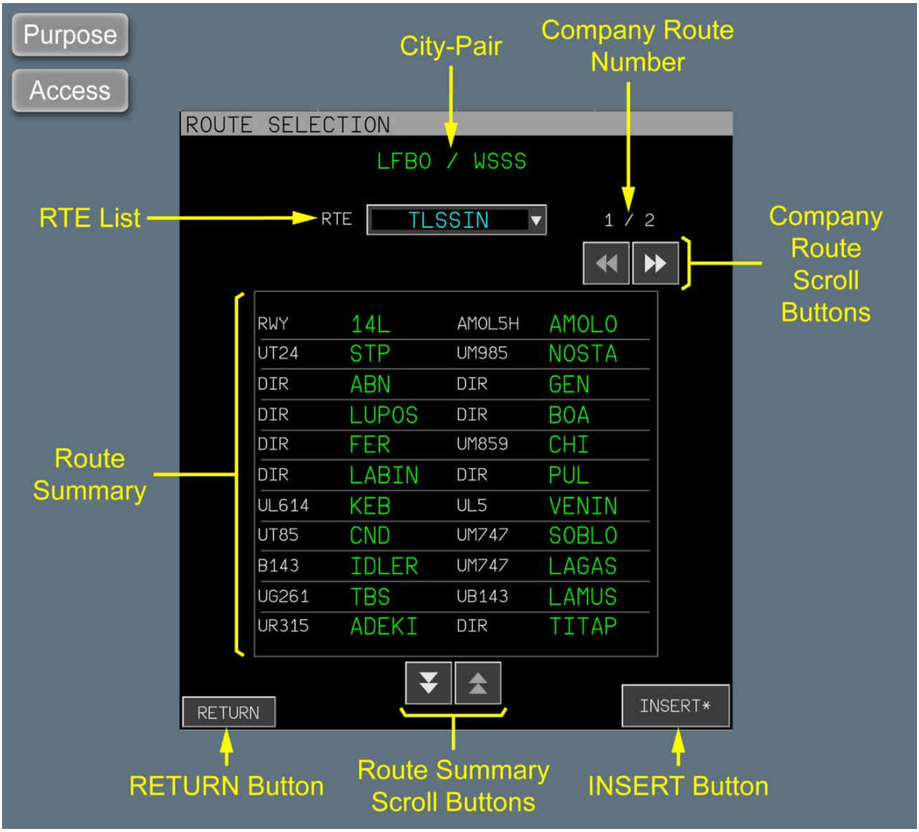
When clicked, displays the SEC 3 panel of the SEC INDEX page (*Refer to page*).

ROUTE SELECTION PAGE

Applicable to: ALL

Ident.: DSC-22-FMS-20-20-20-360-00002734.0001001 / 22 APR 14

ROUTE SELECTION Page



Purpose
Access
City-Pair
Company Route Number
RTE List
Company Route Scroll Buttons
Route Summary
RETURN Button
Route Summary Scroll Buttons
INSERT Button
RETURN
INSERT*

ROUTE SELECTION

LFBO / WSSS

RTE TLSSIN

1 / 2

RWY	14L	AMOL5H	AMOLO
UT24	STP	UM985	NOSTA
DIR	ABN	DIR	GEN
DIR	LUPOS	DIR	BOA
DIR	FER	UM859	CHI
DIR	LABIN	DIR	PUL
UL614	KEB	UL5	VENIN
UT85	CND	UM747	SOBLO
B143	IDLER	UM747	LAGAS
UG261	TBS	UB143	LAMUS
UR315	ADEKI	DIR	TITAP

Ident.: DSC-22-FMS-20-20-20-360-00004286.0001001 / 22 APR 14

PURPOSE

On the ROUTE SELECTION page, the flight crew can:

- Display the summary of all company routes(company alternate routes) for a defined FROM/TO(TO/ALTN) city-pair
- Select a company route(company alternate route), and insert this route in the flight plan.

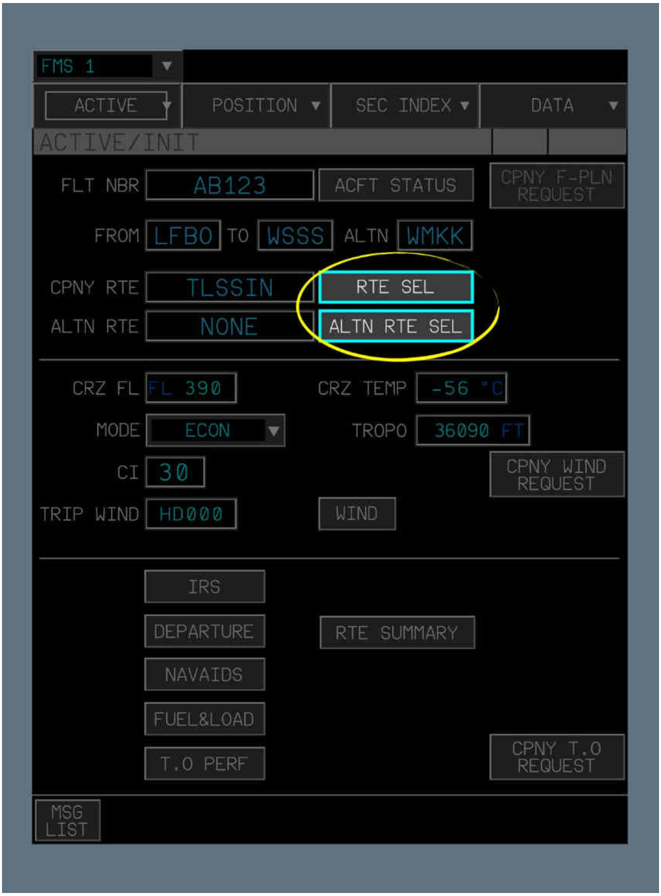
The ROUTE SELECTION page is available for the active and secondary flight plans.

ACCESS

The flight crew can access the ROUTE SELECTION page via:

- The INIT page, by:
  - Clicking on the RTE SEL button or ALTN RTE SEL button

RTE SEL and ALTN RTE SEL Buttons


FMS 1
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/INIT
ACFT STATUS
CPNY F-PLN REQUEST
RTE SEL
ALTN RTE SEL
CPNY WIND REQUEST
WIND
IRS
DEPARTURE
NAVAIDS
FUEL&LOAD
T.O PERF
RTE SUMMARY
CPNY T.O REQUEST
MSG LIST

FLT NBR AB123

FROM LFBO TO WSSS ALTN WMKK

CPNY RTE TLSSIN

ALTN RTE NONE

CRZ FL FL 390

CRZ TEMP -56 °C

MODE ECON

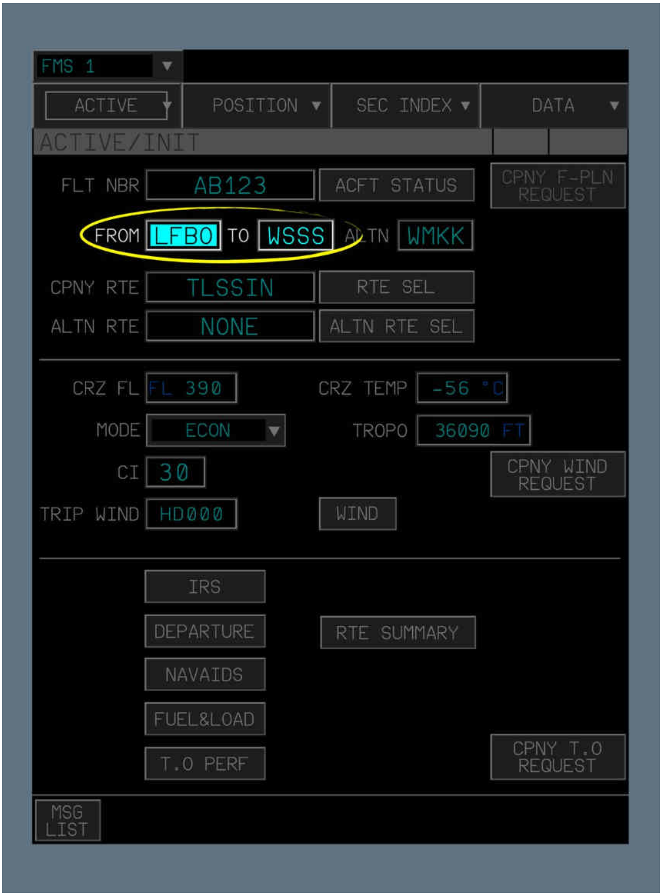
TROPO 36090 FT

CI 30

TRIP WIND HD000

  - Entering a FROM/TO city-pair in the FROM/TO entry fields
    The ROUTE SELECTION page is automatically displayed, when there is at least one company route for the FROM/TO city-pair.

FROM/TO Entry Fields


ACTIVE
POSITION
SEC INDEX
DATA
ACFT STATUS
CPNY F-PLN REQUEST
RTE SEL
ALTN RTE SEL
CPNY WIND REQUEST
WIND
IRS
DEPARTURE
RTE SUMMARY
NAVAIDS
FUEL&LOAD
T.O PERF
CPNY T.O REQUEST
MSG LIST

FMS 1

ACTIVE/INIT

FLT NBR AB123

FROM LFBO TO WSSS ALTN WMKK

CPNY RTE TLSSIN

ALTN RTE NONE

CRZ FL FL 390

CRZ TEMP -56 °C

MODE ECON

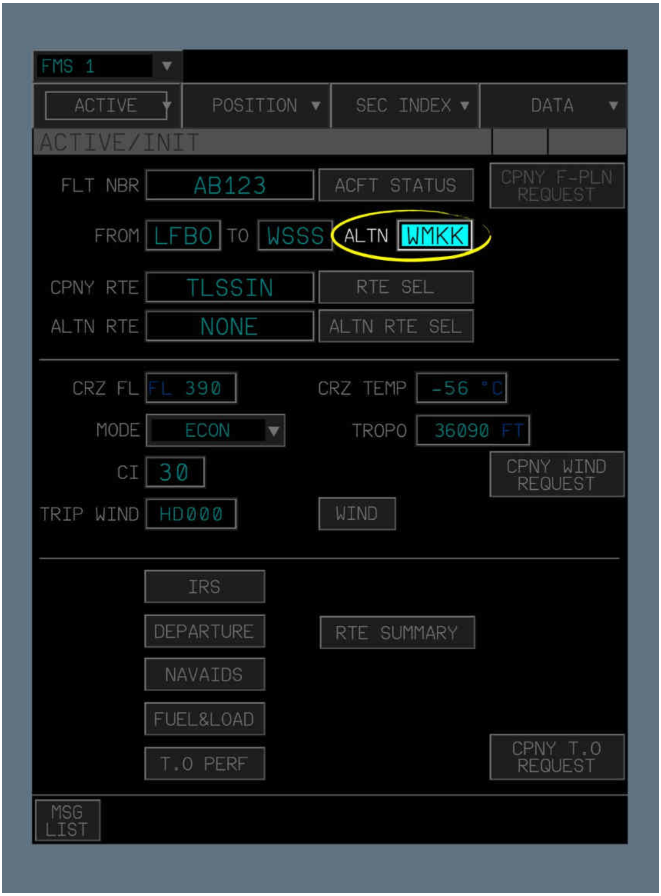
TROPO 36090 FT

CI 30

TRIP WIND HD000

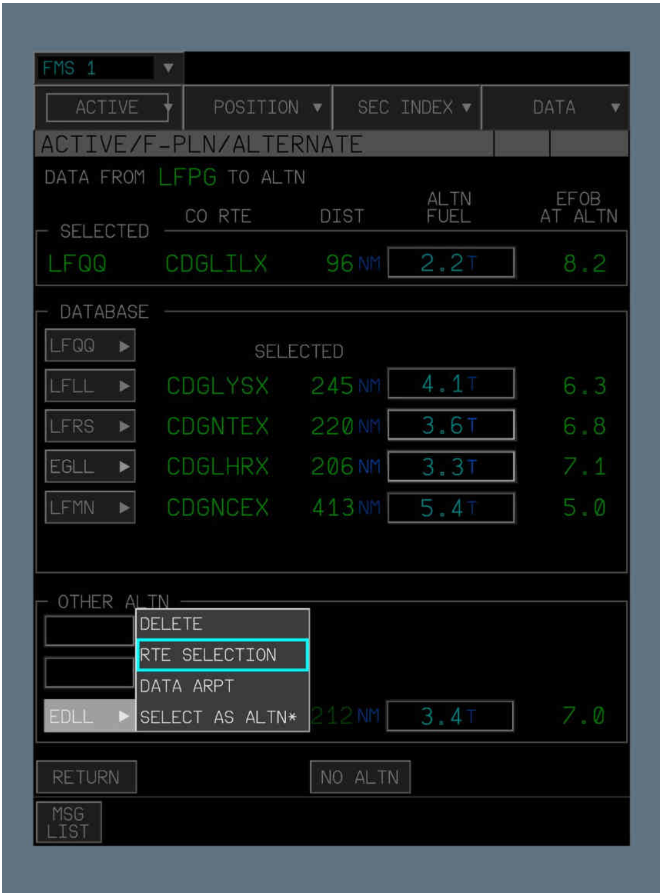
- Changing the alternate airport in the ALTN entry field
  The ROUTE SELECTION page is automatically displayed, when there is at least one company route for the TO/ALTN city-pair.

ALTN Entry Field


FMS 1
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/INIT
FLT NBR
AB123
ACFT STATUS
CPNY F-PLN REQUEST
FROM
LFBO
TO
WSSS
ALTN
WMKK
CPNY RTE
TLSSIN
RTE SEL
ALTN RTE
NONE
ALTN RTE SEL
CRZ FL
FL 390
CRZ TEMP
-56 °C
MODE
ECON
TROPO
36090 FT
CI
30
CPNY WIND REQUEST
TRIP WIND
HD000
WIND
IRS
DEPARTURE
RTE SUMMARY
NAVAIDS
FUEL&LOAD
T.O PERF
CPNY T.O REQUEST
MSG LIST

- The ALTERNATE page, by:
  - Selecting the RTE SELECTION option of the other alternate airport menu

Other Alternate Airport Menu


FMS 1
ACTIVE
POSITION
SEC INDEX
DATA
DELETE
RTE SELECTION
DATA ARPT
SELECT AS ALTN*
RETURN
NO ALTN
MSG LIST

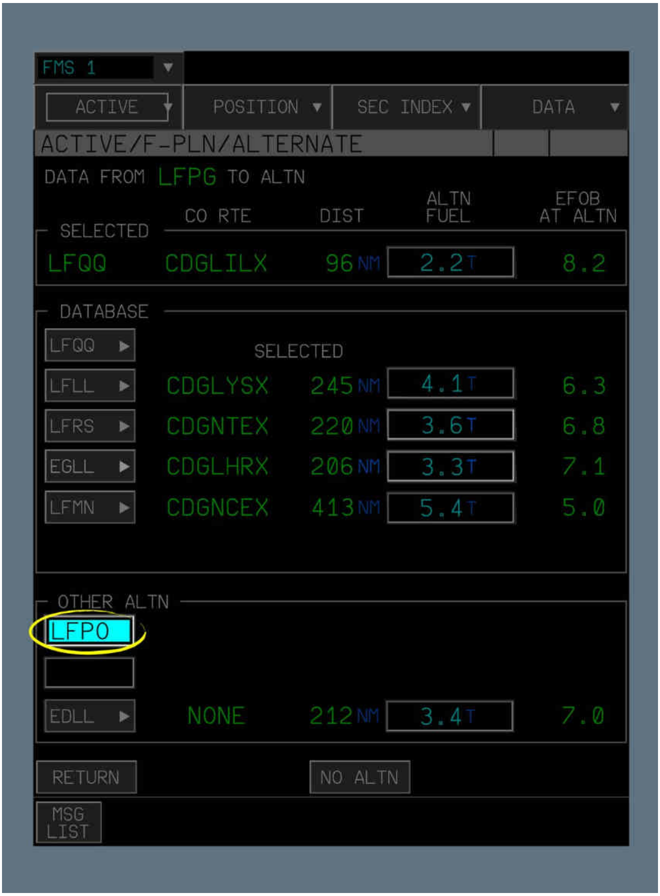
ACTIVE/F-PLN/ALTERNATE

DATA FROM LFPG TO ALTN

	CO RTE	DIST	ALTN FUEL	EFOB AT ALTN
SELECTED				
LFQQ	CDGLILX	96 NM	2.2 T	8.2
DATABASE				
LFQQ	SELECTED			
LFLL	CDGLYSX	245 NM	4.1 T	6.3
LFRS	CDGNTEX	220 NM	3.6 T	6.8
EGLL	CDGLHRX	206 NM	3.3 T	7.1
LFMN	CDGNCEX	413 NM	5.4 T	5.0
OTHER ALTN				
EDLL		212 NM	3.4 T	7.0

- Entering an airport in the OTHER ALTN entry field.
  The ROUTE SELECTION page is automatically displayed, when there is at least one company alternate route for the TO/ALTN city-pair.

OTHER ALTN Entry Field



ACTIVE/F-PLN/ALTERNATE

DATA FROM LFPG TO ALTN

	CO RTE	DIST	ALTN FUEL	EFOB AT ALTN
SELECTED				
LFQQ	CDGLILX	96 NM	2.2 T	8.2
DATABASE				
LFQQ	SELECTED			
LFLL	CDGLYSX	245 NM	4.1 T	6.3
LFRS	CDGNTEX	220 NM	3.6 T	6.8
EGLL	CDGLHRX	206 NM	3.3 T	7.1
LFMN	CDGNCEX	413 NM	5.4 T	5.0
OTHER ALTN				
LFPO				
EDLL	NONE	212 NM	3.4 T	7.0

Ident.: DSC-22-FMS-20-20-20-360-00004288.0001001 / 14 APR 14

CITY-PAIR

Indicates the ICAO idents of:
- The FROM/TO city-pair (i.e. departure airport and destination airport), or
- The TO/ALTN city-pair (i.e. destination airport and alternate airport).

Ident.: DSC-22-FMS-20-20-20-360-00004290.0001001 / 22 APR 14

RTE LIST

Indicates the ident of the displayed company route(company alternate route).

The flight crew selects the company route(company alternate route) to be displayed, by:
- Selecting the ident of the company route(company alternate route) from the RTE list, or
- Using the company route scroll buttons.

The RTE list displays all of the company routes(company alternate routes) that are in the navigation and pilot-stored elements databases, and that are associated with the defined FROM/TO(TO/ALTN) city-pair.

Ident.: DSC-22-FMS-20-20-20-360-00004289.0001001 / 14 APR 14

COMPANY ROUTE NUMBER

Indicates the rank of the displayed company route(company alternate route), and the total number of company routes(company alternate routes) that are associated with the FROM/TO(TO/ALTN) city-pair.

Ident.: DSC-22-FMS-20-20-20-360-00004291.0001001 / 14 APR 14

COMPANY ROUTE SCROLL BUTTONS

The flight crew uses the company route scroll buttons to scroll, one by one, through the company routes(company alternate routes) that are associated with the FROM/TO(TO/ALTN) city-pair.
The flight crew can also scroll through the company routes(company alternate routes) with the wheel of the KCCU.

Ident.: DSC-22-FMS-20-20-20-360-00004292.0001001 / 22 APR 14

ROUTE SUMMARY

Indicates the route summary of the selected company route(company alternate route).
The flight crew must read the summary from left to right, and from top to bottom.
Company route waypoints are displayed in large green font. Airways and procedures are displayed in small white font.

Note: *1. A VIA or a direct flight leg is indicated by DIR.*
2. A runway is indicated by RWY.
3. When the company route has an approach procedure, only the first waypoint and the name of the procedure are displayed in the route summary.

Ident.: DSC-22-FMS-20-20-20-360-00004293.0001001 / 22 APR 14

RETURN BUTTON

When clicked, displays the page that was displayed before the ROUTE SELECTION page.

Ident.: DSC-22-FMS-20-20-20-360-00004295.0001001 / 22 APR 14

ROUTE SUMMARY SCROLL BUTTONS

The flight crew uses the route summary scroll down(up) button to move, page by page, downward(upward) through the route summary.

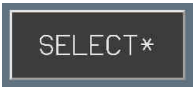
Ident.: DSC-22-FMS-20-20-20-360-00004294.0001001 / 22 APR 14

INSERT BUTTON

When clicked:
- Inserts the selected company route(company alternate route)
- Displays the INIT page (*Refer to page*).

L2 If the flight crew accesses the ROUTE SELECTION page via the ALTERNATE page, the button label is SELECT.

SELECT button



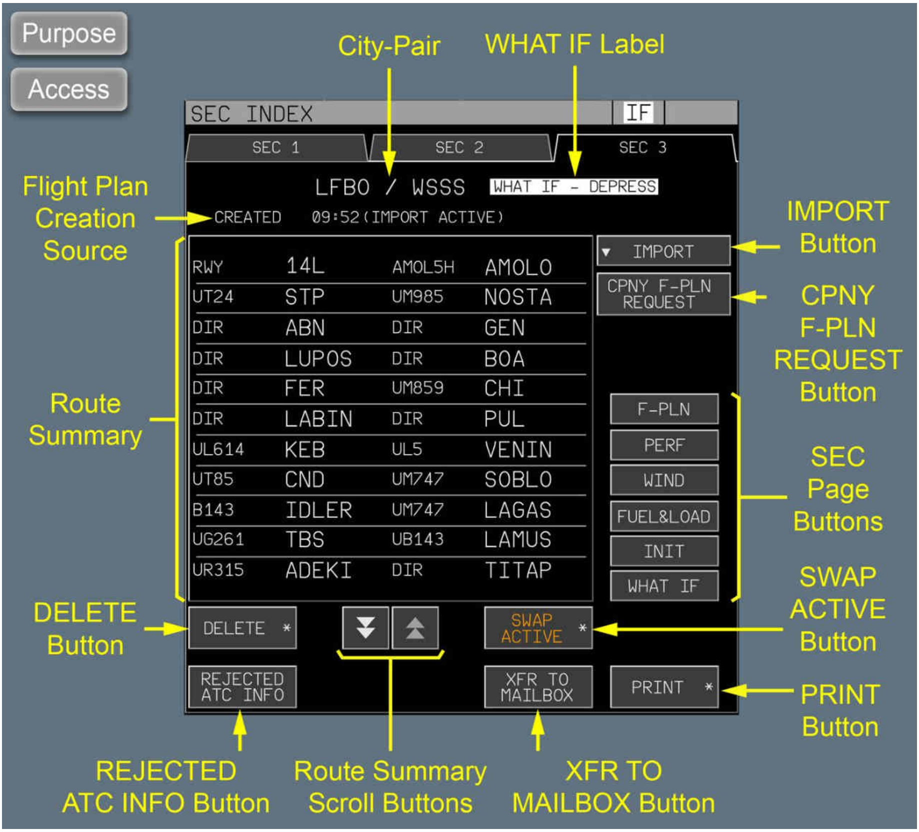
When clicked:
- Selects the company route(company alternate route)
- Displays the ALTERNATE page (*Refer to page*).

SEC INDEX PAGE

Applicable to: ALL

Ident.: DSC-22-FMS-20-20-20-370-00002735.0001001 / 22 APR 14

SEC INDEX Page


Purpose
Access
City-Pair
WHAT IF Label
SEC INDEX
IF
SEC 1
SEC 2
SEC 3
Flight Plan Creation Source
IMPORT Button
CPNY F-PLN REQUEST Button
Route Summary
SEC Page Buttons
DELETE Button
SWAP ACTIVE Button
PRINT Button
REJECTED ATC INFO Button
Route Summary Scroll Buttons
XFR TO MAILBOX Button
IMPORT
CPNY F-PLN REQUEST
F-PLN
PERF
WIND
FUEL&LOAD
INIT
WHAT IF
DELETE *
SWAP ACTIVE *
REJECTED ATC INFO
XFR TO MAILBOX
PRINT *

LFBO / WSSS WHAT IF - DEPRESS

CREATED 09:52(IMPORT ACTIVE)

RWY	14L	AMOL5H	AMOLO
UT24	STP	UM985	NOSTA
DIR	ABN	DIR	GEN
DIR	LUPOS	DIR	BOA
DIR	FER	UM859	CHI
DIR	LABIN	DIR	PUL
UL614	KEB	UL5	VENIN
UT85	CND	UM747	SOBLO
B143	IDLER	UM747	LAGAS
UG261	TBS	UB143	LAMUS
UR315	ADEKI	DIR	TITAP

Ident.: DSC-22-FMS-20-20-20-370-00004296.0001001 / 22 APR 14

PURPOSE

On the SEC INDEX page, the flight crew can manage the three secondary flight plans on three identical panels: SEC 1, SEC 2, and SEC 3 panels.

On each panel, the flight crew can:
- Check the source and route summary of the secondary flight plan
- Import the active flight plan, or any other secondary flight plan, as a new secondary flight plan
- Request a secondary flight plan to the ground station, and insert this secondary flight plan when received
- Perform an exchange between the secondary flight plan and the active flight plan
- Transfer the secondary flight plan to the ATC mailbox
- Print reports for the secondary flight plan
- Access the following SEC pages: SEC/F-PLN, SEC/PERF, SEC/WIND, SEC/FUEL&LOAD, SEC/INIT, and SEC/WHAT IF.

LINKS

For information about:
- The secondary flight plans, *Refer to DSC-22-FMS-10-40-60 Active and Secondary Flight Plans*
- The print function, *Refer to DSC-22-FMS-10-90 Print Function*.

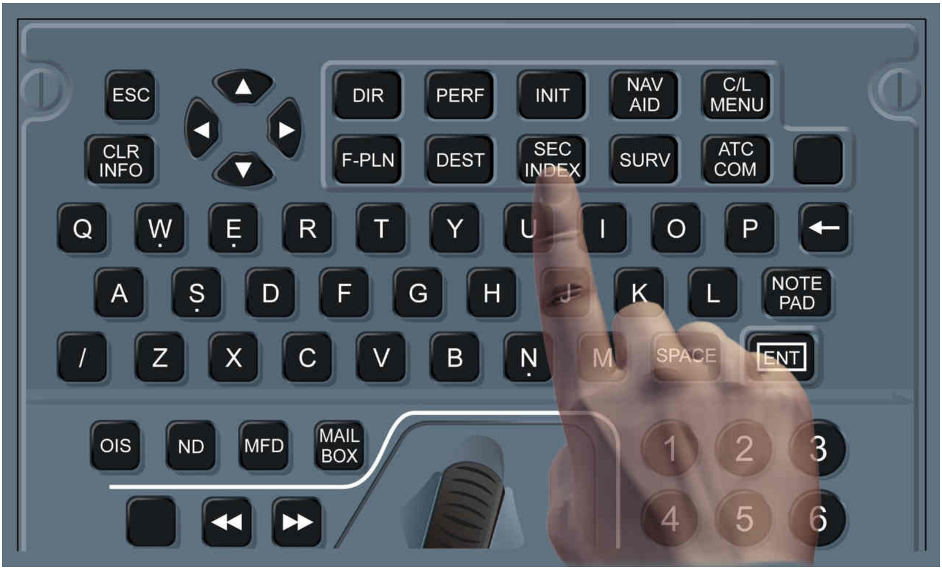
Ident.: DSC-22-FMS-20-20-20-370-00004297.0001001 / 14 APR 14

ACCESS

The flight crew can access the SEC INDEX page ia:

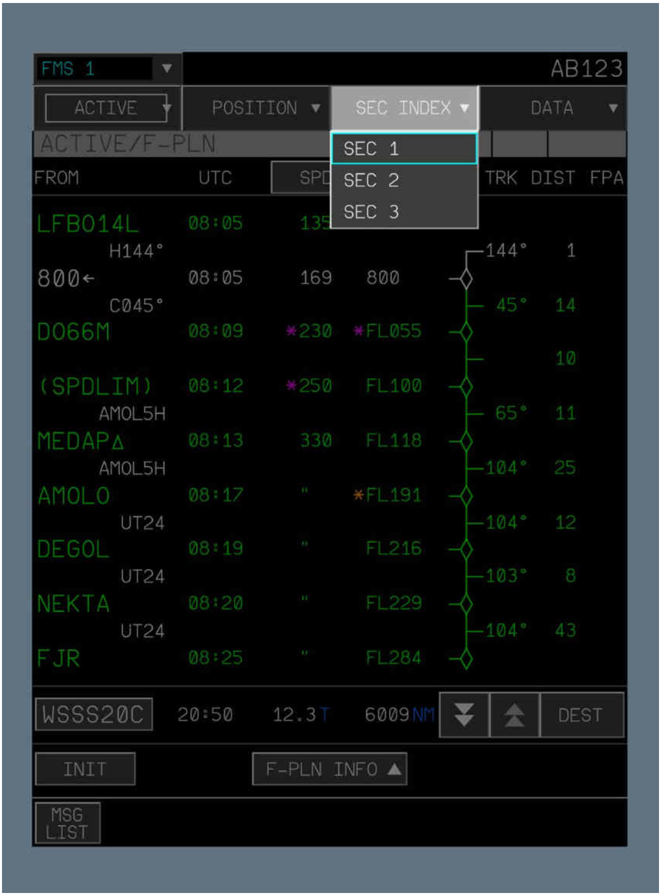
- The KCCU, by pressing the SEC INDEX key

KCCU


ESC
CLR INFO
DIR
PERF
INIT
NAV AID
C/L MENU
F-PLN
DEST
SEC INDEX
SURV
ATC COM
Q W E R T Y U I O P
A S D F G H J K L
NOTE PAD
/ Z X C V B N M
SPACE
ENT
OIS
ND
MFD
MAIL BOX
1 2 3
4 5 6

- The general menu bar, by selecting SEC 1(2)(3) in the SEC INDEX menu.

General Menu Bar


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN
SEC 1
SEC 2
SEC 3
INIT
F-PLN INFO
MSG
LIST

FROM	UTC	SPD		TRK	DIST	FPA
LFBO14L	08:05	135				
H144°				144°	1	
800←	08:05	169	800			
C045°				45°	14	
D066M	08:09	*230	*FL055			
					10	
(SPDLIM)	08:12	*250	FL100			
AMOL5H				65°	11	
MEDAPΔ	08:13	330	FL118			
AMOL5H				104°	25	
AMOLO	08:17	"	*FL191			
UT24				104°	12	
DEGOL	08:19	"	FL216			
UT24				103°	8	
NEKTA	08:20	"	FL229			
UT24				104°	43	
FJR	08:25	"	FL284			

WSSS20C 20:50 12.3T 6009NM DEST

Ident.: DSC-22-FMS-20-20-20-370-00004298.0001001 / 14 APR 14

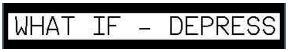
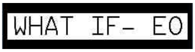
CITY-PAIR

Indicates the ICAO idents of the FROM/TO city-pair (i.e. departure airport and destination airport).

Ident.: DSC-22-FMS-20-20-20-370-00004055.0001001 / 22 APR 14

WHAT IF LABEL

Indicates that the secondary flight plan contains a WHAT IF scenario.

 WHAT IF - DEPRESS	The WHAT IF scenario is simulated depressurization.
 WHAT IF- EO	The WHAT IF scenario is a simulated engine-out.

For more information about the WHAT IF function, *Refer to DSC-22-FMS-10-40-40 WHAT IF Function*.

Ident.: DSC-22-FMS-20-20-20-370-00004299.0001001 / 22 APR 14

FLIGHT PLAN CREATION SOURCE

Indicates:

- The UTC time at which the secondary flight plan was created
- The source of creation of the secondary flight plan:
  - (IMPORT ACTIVE)
    The flight crew created the secondary flight plan by importing the active flight plan.
  - (IMPORT ACTIVE-MODIFIED)
    The flight crew created the secondary flight plan by importing the active flight plan, and changed it via flight plan revisions.
  - (SWAP ACTIVE)
    The flight crew created the secondary flight plan by performing an exchange between the active flight plan and the secondary flight plan.
  - (SWAP ACTIVE-MODIFIED)
    The flight crew created the secondary flight plan by performing an exchange between the active flight plan and the secondary flight plan, and changed it via a flight plan revisions.
  - (MANUAL)

    The flight crew manually created the secondary flight plan via:
    - ■ The SEC/INIT page, or
    - ■ The SEC/F-PLN page, or
    - ■ The SEC/INIT and the SEC/F-PLN pages.
  - (CPNY F-PLN)
    The flight crew created the secondary flight plan by inserting a received company flight plan.
  - (CPNY F-PLN-MODIFIED)
    The flight crew created the secondary flight plan by inserting a received company flight plan, and changed it via flight plan revisions.
  - (ATC F-PLN)
    The flight crew created the secondary flight plan by uploading a received ATC flight plan.

    Note: *An ATC flight plan can be uploaded only in the third secondary flight plan (SEC 3).*
  - (ATC F-PLN-MODIFIED)
    The flight crew created the secondary flight plan by uploading a received ATC flight plan, and changed it flight plan revisions.

    Note: *An ATC flight plan can be uploaded only in the third secondary flight plan (SEC 3).*

When the flight crew imports a secondary flight plan in another secondary flight plan, the source of creation of the new secondary flight plan is the source of the flight plan that was imported.

Ident.: DSC-22-FMS-20-20-20-370-00004300.0001001 / 22 APR 14

ROUTE SUMMARY

Indicates the route summary of the secondary flight plan.
The flight crew must read the summary from left to right, and from top to bottom.
Waypoints are displayed in large font. Airways and procedures are displayed in small font.

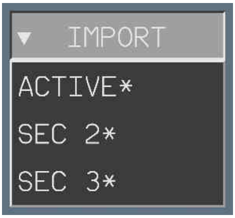
Note: *1. A VIA or a direct flight leg is indicated by DIR.*
2. A runway is indicated by RWY.
3. When the route has an approach procedure, only the first waypoint and the name of the procedure are displayed in the route summary.

Ident.: DSC-22-FMS-20-20-20-370-00004302.0001001 / 22 APR 14

IMPORT BUTTON

When clicked, opens the IMPORT menu.

IMPORT Menu



The flight crew selects one of the option of the IMPORT MENU in order to create the secondary flight plan by importing (i.e. making a copy of):
- The active flight plan, or
- One of the two other secondary flight plans.

For more information, *Refer to DSC-22-FMS-10-40-60 Secondary Flight Plan Initialization*.

Ident.: DSC-22-FMS-20-20-20-370-00004303.0001001 / 14 APR 14

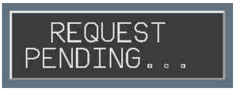
CPNY F-PLN REQUEST BUTTON

When clicked, displays the COMPANY F-PLN REQUEST page (*Refer to page*).

L2 The CPNY F-PLN REQUEST button is available, only when no other flight plan request is in progress.

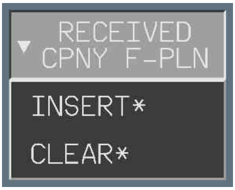
L1 When a request for a secondary flight plan is in progress, the button label is REQUEST PENDING... . When clicked, still displays the COMPANY F-PLN REQUEST page.

REQUEST PENDING...



When a secondary company flight plan is received, the button label is RECEIVED CPNY F-PLN. When clicked, opens a menu that enables the flight crew to insert or clear the received company flight plan.

RECEIVED CPNY F-PLN Menu



Ident.: DSC-22-FMS-20-20-20-370-00004304.0001001 / 22 APR 14

SEC PAGE BUTTONS

The SEC page buttons are not available, when the secondary flight plan is empty.

F-PLN BUTTON

When clicked, displays the SEC/F-PLN page (*Refer to page*).

PERF BUTTON

When clicked, displays the SEC/PERF page (*Refer to page*).

WIND BUTTON

When clicked, displays the SEC/WIND page (*Refer to page*).

FUEL&LOAD BUTTON

When clicked, displays the SEC/FUEL&LOAD page (*Refer to page*).

INIT BUTTON

When clicked, displays the SEC/INIT page (*Refer to page*).

WHAT IF BUTTON

When clicked, displays the SEC/WHAT IF page (*Refer to page*).
The WHAT IF button is not available, if the FMS Engine-Out (EO) mode is active.

Ident.: DSC-22-FMS-20-20-20-370-00004306.0001001 / 22 APR 14

DELETE BUTTON

When clicked, deletes the secondary flight plan and its associated data.

Ident.: DSC-22-FMS-20-20-20-370-00004301.0001001 / 22 APR 14

ROUTE SUMMARY SCROLL BUTTONS

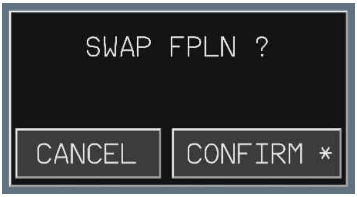
The flight crew uses the route summary scroll down(up) button to move, page by page, downward(upward) through the route summary.

Ident.: DSC-22-FMS-20-20-20-370-00004305.0001001 / 22 APR 14

SWAP ACTIVE BUTTON

When clicked, the secondary flight plan becomes the active flight plan, and vice versa.
The flight crew must perform a confirmation action.

CONFIRM/CANCEL Window



The SWAP ACTIVE button is not available, when the SWAP function is not available.
For more information about the SWAP function, *Refer to DSC-22-FMS-10-40-60 Secondary and Active Flight Plan Exchange*.

Ident.: DSC-22-FMS-20-20-20-370-00004309.0001001 / 22 APR 14

REJECTED ATC INFO BUTTON

When clicked, displays the REJECTED ATC INFO page (*Refer to page*).

The REJECTED ATC INFO button is displayed only on the SEC 3 panel, and when all of the following occur:
- An ATC flight plan is loaded
- The FMS rejected some elements of the ATC flight plan.
  The flight crew can check the rejected elements on the REJECTED ATC INFO page.

Note: *The flight crew can load an ATC flight plan only in the third secondary flight plan (SEC 3).*

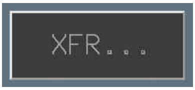
Ident.: DSC-22-FMS-20-20-20-370-00004307.0001001 / 22 APR 14

XFR TO MAILBOX BUTTON

When clicked:

- If the free text AMI option is not activated, sends the flight plan to the ATC mailbox
L2 During the transmission of the flight plan to the ATC mailbox, the button label is XFR..., and the button is not available.

XFR...



L1
- If the free text AMI option is activated, displays the TRANSFER TO MAILBOX page (*Refer to page*).
On the TRANSFER TO MAILBOX page, the flight crew can enter any free text that will be sent with the flight plan.

Ident.: DSC-22-FMS-20-20-20-370-00004308.0001001 / 22 APR 14

PRINT BUTTON

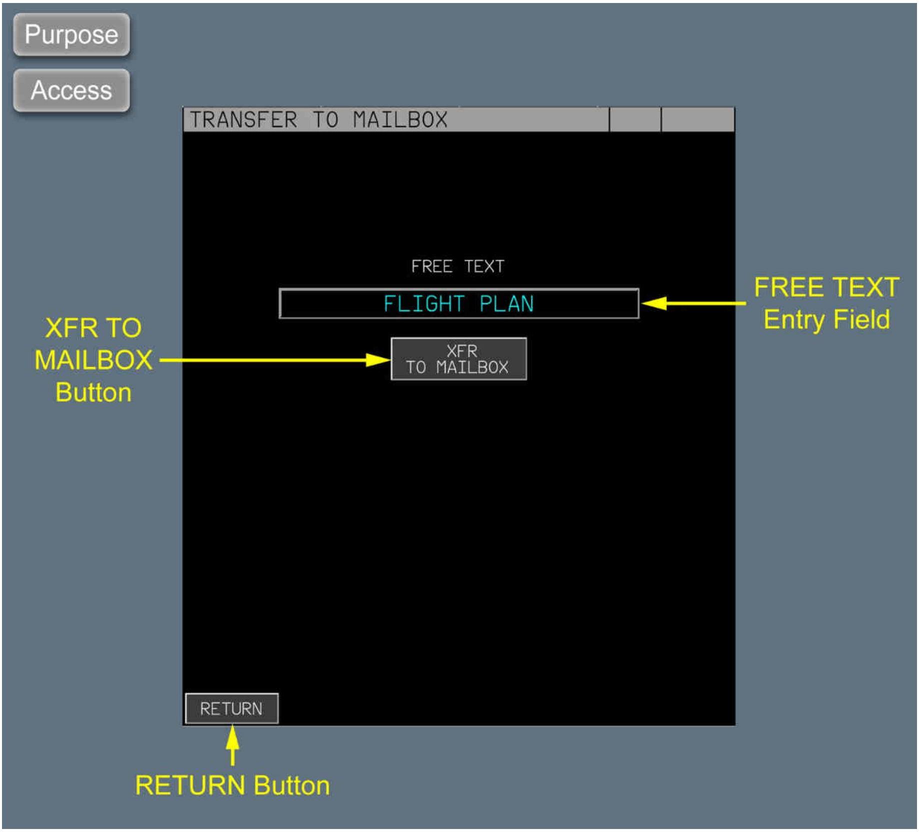
When clicked, prints the secondary flight plan.

TRANSFER TO MAILBOX PAGE

Applicable to: ALL

Ident.: DSC-22-FMS-20-20-20-380-00002736.0001001 / 22 APR 14

TRANSFER TO MAILBOX Page


Purpose
Access
TRANSFER TO MAILBOX
FREE TEXT
FLIGHT PLAN
XFR TO MAILBOX
RETURN
FREE TEXT Entry Field
XFR TO MAILBOX Button
RETURN Button

Ident.: DSC-22-FMS-20-20-20-380-00004310.0001001 / 22 APR 14

PURPOSE

The TRANSFER TO MAILBOX page enables the flight crew to sent a secondary flight plan with an associated free text to the ATC mailbox.

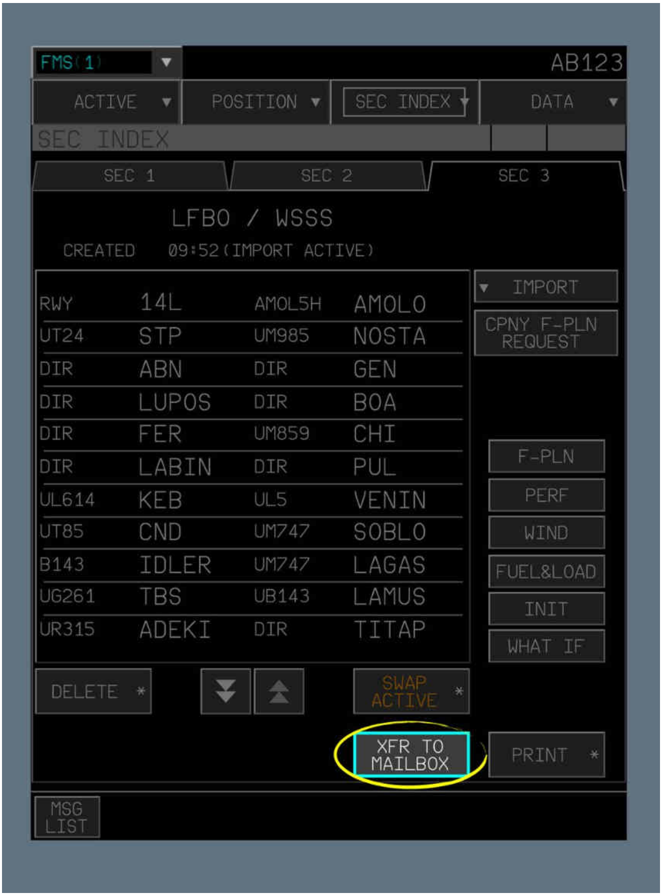
If the free text AMI option is not activated, the TRANSFER TO MAILBOX page is not available. In this case, the flight crew cannot enter free text. To send the secondary flight plan to the ATC mailbox, the flight crew clicks on the XFR TO MAILBOX button on the SEC INDEX page.
The TRANSFER TO MAILBOX page is available for the secondary flight plans only.

Ident.: DSC-22-FMS-20-20-20-380-00004311.0001001 / 14 APR 14

ACCESS

The flight crew can access the TRANSFER TO MAILBOX page via the SEC INDEX page, by clicking on the XFR TO MAILBOX button.

SEC INDEX page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
SEC INDEX
SEC 1
SEC 2
SEC 3
IMPORT
CPNY F-PLN REQUEST
F-PLN
PERF
WIND
FUEL&LOAD
INIT
WHAT IF
DELETE *
SWAP ACTIVE *
XFR TO MAILBOX
PRINT *
MSG LIST

LFBO / WSSS

CREATED 09:52 (IMPORT ACTIVE)

RWY	14L	AMOL5H	AMOLO
UT24	STP	UM985	NOSTA
DIR	ABN	DIR	GEN
DIR	LUPOS	DIR	BOA
DIR	FER	UM859	CHI
DIR	LABIN	DIR	PUL
UL614	KEB	UL5	VENIN
UT85	CND	UM747	SOBLO
B143	IDLER	UM747	LAGAS
UG261	TBS	UB143	LAMUS
UR315	ADEKI	DIR	TITAP

Ident.: DSC-22-FMS-20-20-20-380-00004312.0001001 / 22 APR 14

FREE TEXT ENTRY FIELD

The flight crew can enter a free text of up 24 characters in the entry field. The free text is sent with the flight plan request to the ATC mailbox.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 FREE TEXT.

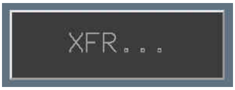
Ident.: DSC-22-FMS-20-20-20-380-00004313.0001001 / 22 APR 14

XFR TO MAILBOX BUTTON

When clicked, sends the secondary flight plan to the ATC mailbox.

L2 During the flight plan transmission to the ATC mailbox, the button label is XFR... .

XFR



Ident.: DSC-22-FMS-20-20-20-380-00004314.0001001 / 22 APR 14

RETURN BUTTON

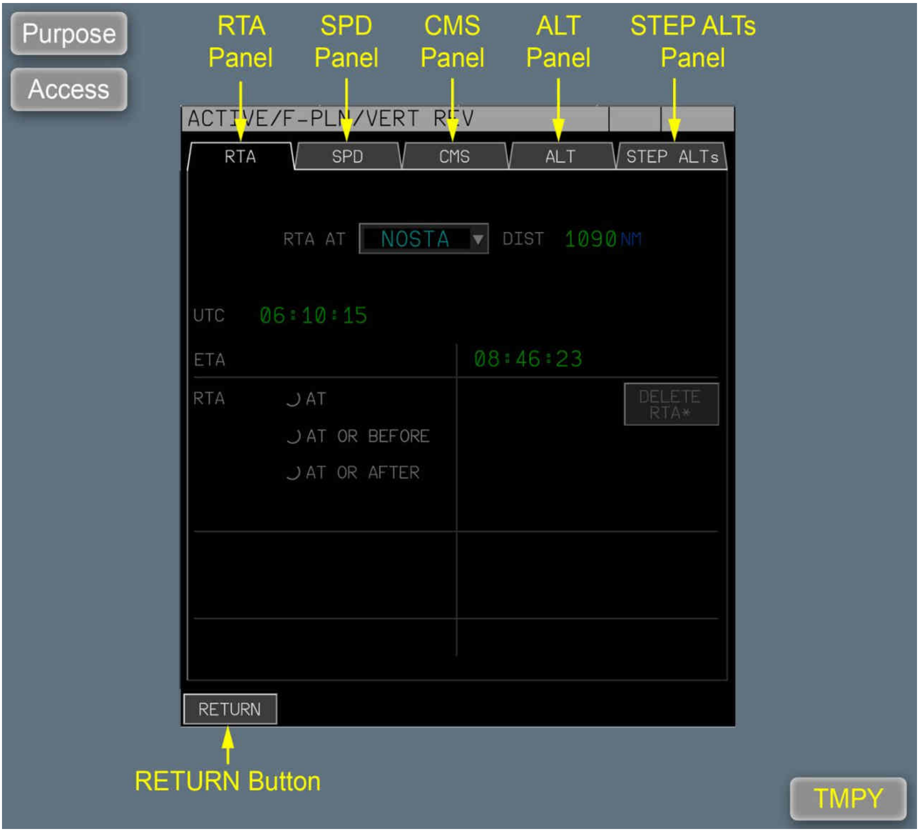
When clicked, displays the SEC INDEX page (*Refer to page*).

VERT REV PAGE

Applicable to: ALL

Ident.: DSC-22-FMS-20-20-20-390-00002737.0001001 / 22 APR 14

VERT REV Page


Purpose
Access
RTA Panel
SPD Panel
CMS Panel
ALT Panel
STEP ALTs Panel
ACTIVE/F-PLN/VERT REV
RTA
SPD
CMS
ALT
STEP ALTs
○ AT
○ AT OR BEFORE
○ AT OR AFTER
DELETE RTA*
RETURN
RETURN Button
TMPY

RTA AT NOSTA DIST 1090 NM

UTC 06:10:15

ETA 08:46:23

Ident.: DSC-22-FMS-20-20-20-390-00004315.0001001 / 22 APR 14

PURPOSE

The VERT REV page has 5 panels: RTA, SPD, CMS, ALT, and STEP ALTs.

On the RTA panel of the VERT REV page, the flight crew can:
- Insert, modify, or delete a time constraint (RTA) at a waypoint
- Insert, modify, or delete the Estimated Takeoff Time (ETT).

On the SPD panel of the VERT REV page, the flight crew can:
- Insert, modify, or delete a speed constraint at a waypoint
- Insert, modify, or delete the climb and descent speed limit.

On the CMS panel of the VERT REV page, the flight crew can insert, modify, or delete a Constant Mach Segment (CMS).
On the ALT panel of the VERT REV page, the flight crew can insert, modify, or delete a climb or descent altitude constraint at a waypoint.

On the STEP ALTs panel of the VERT REV page, the flight crew can:
- Insert, modify, or delete a step climb or step descent at a waypoint
- Insert a step climb with optimum step start point.

The VERT REV page is available for the active and secondary flight plans.

LINKS

For information about the:
- Time constraint revision, *Refer to DSC-22-FMS-10-40-30 Purpose*
- SPD CSTR revision, *Refer to DSC-22-FMS-10-40-30 Purpose*
- SPD LIMIT revision, *Refer to DSC-22-FMS-10-40-30 Purpose*
- CMS revision, *Refer to DSC-22-FMS-10-40-30 Purpose*
- ALT CSTR revision, *Refer to DSC-22-FMS-10-40-30 Purpose*
- STEP ALTs revision, *Refer to DSC-22-FMS-10-40-30 Purpose*.

Ident.: DSC-22-FMS-20-20-20-390-00004316.0001001 / 14 APR 14

ACCESS

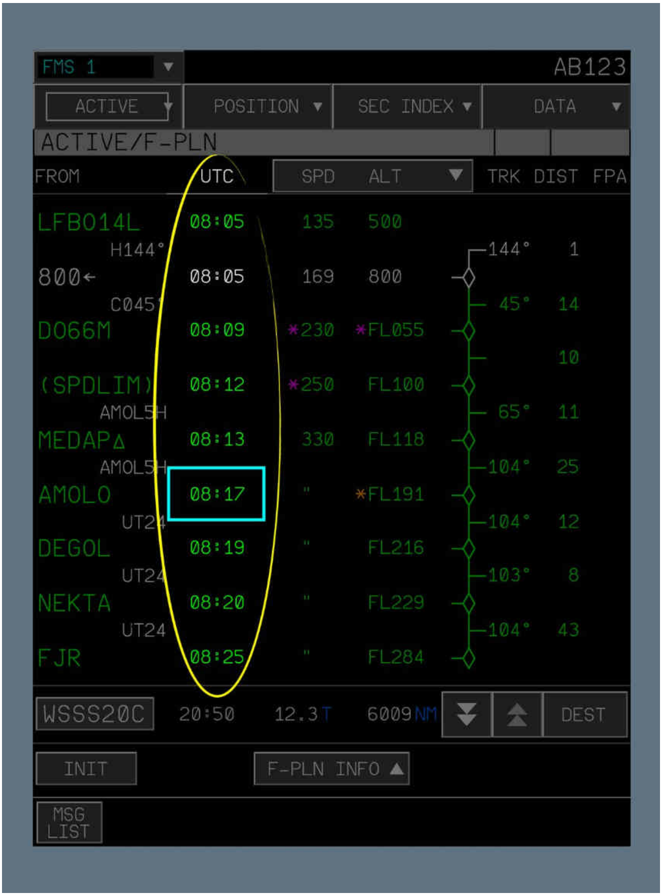
The flight crew can access the desired panel of the VERT REV page, as described below.

ACCESS [RTA]

The flight crew can access the RTA panel of the VERT REV page via the F-PLN page, by:

- Clicking on the time prediction that is associated with a waypoint

Time Prediction

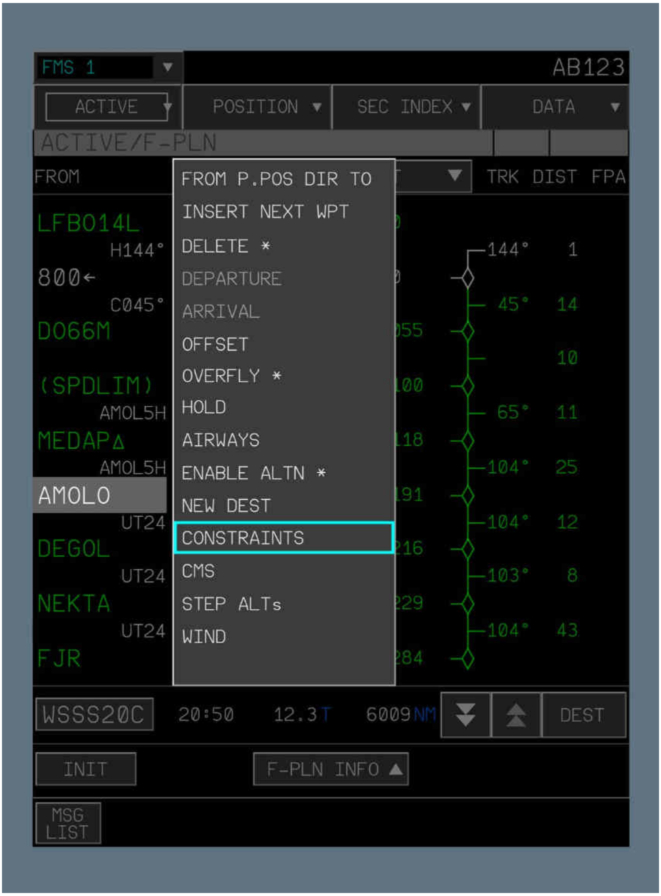


FROM	UTC	SPD	ALT	TRK	DIST	FPA
LFBO14L	08:05	135	500			
H144°				144°	1	
800←	08:05	169	800			
C045°				45°	14	
D066M	08:09	*230	*FL055			
					10	
(SPDLIM)	08:12	*250	FL100			
AMOL5H				65°	11	
MEDAPΔ	08:13	330	FL118			
AMOL5H				104°	25	
AMOLO	08:17	"	*FL191			
UT24				104°	12	
DEGOL	08:19	"	FL216			
UT24				103°	8	
NEKTA	08:20	"	FL229			
UT24				104°	43	
FJR	08:25	"	FL284			

WSSS20C 20:50 12.3T 6009NM

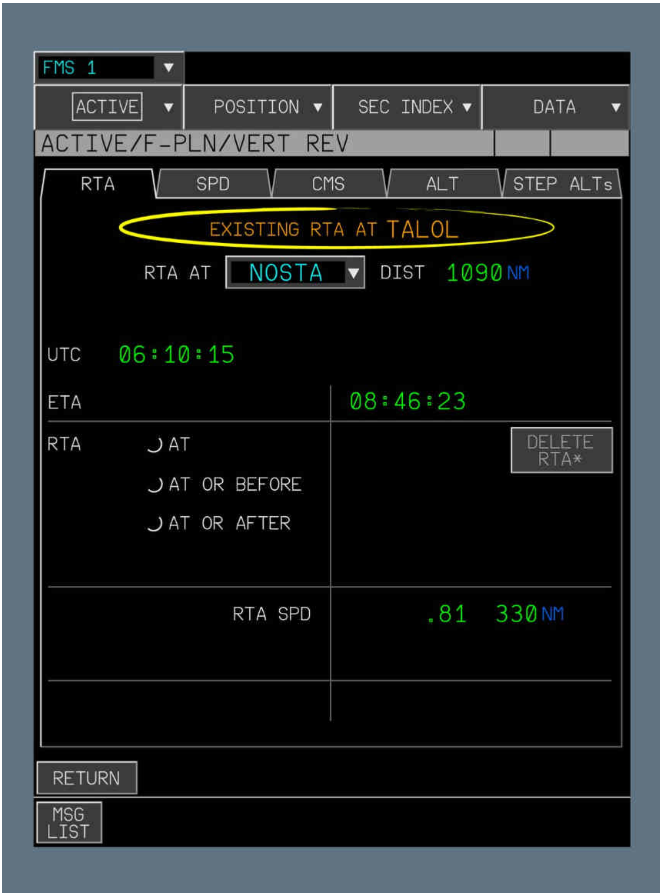
- Selecting CONSTRAINTS in the waypoint revisions menu.
  Then, the flight crew must click on the RTA tab.

Waypoint Revisions Menu


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN
FROM
TRK DIST FPA
FROM P.POS DIR TO
INSERT NEXT WPT
DELETE *
DEPARTURE
ARRIVAL
OFFSET
OVERFLY *
HOLD
AIRWAYS
ENABLE ALTN *
NEW DEST
CONSTRAINTS
CMS
STEP ALTs
WIND
LFBO14L
H144°
800←
C045°
D066M
(SPDLIM)
AMOL5H
MEDAP
AMOL5H
AMOLO
UT24
DEGOL
UT24
NEKTA
UT24
FJR
144° 1
45° 14
10
65° 11
104° 25
104° 12
103° 8
104° 43
WSSS20C
20:50
12.3T
6009NM
DEST
INIT
F-PLN INFO
MSG LIST

L3 *Note:* *1. The RTA message area of the RTA panel displays the EXISTING RTA AT XXXXXXX message (the "XXXXXXX" corresponds to a waypoint ident), if all of the following occur:*
- *There is already an RTA in the flight plan at the XXXXXXX waypoint*
- *The flight crew accesses the RTA panel via a waypoint that is not the XXXXXXX waypoint.*

EXISTING RTA AT XXXXXXX Message



EXISTING RTA AT TALOL

RTA AT NOSTA DIST 1090 NM

UTC 06:10:15

ETA 08:46:23

RTA ○ AT
○ AT OR BEFORE
○ AT OR AFTER

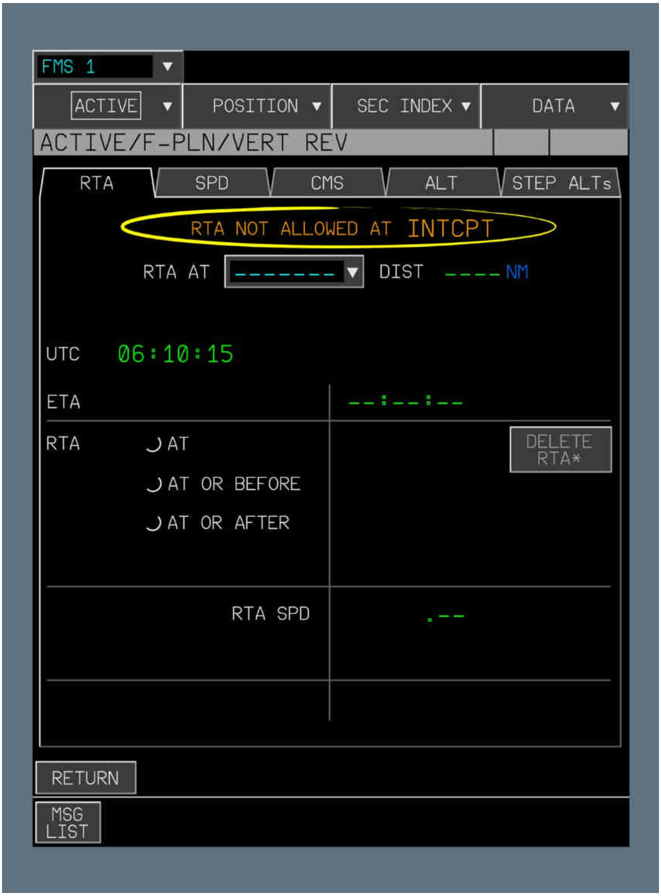
RTA SPD .81 330 NM

FMS 1
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN/VERT REV
RTA
SPD
CMS
ALT
STEP ALTs
DELETE RTA*
RETURN
MSG LIST

2. If the flight crew accesses the RTA panel via a waypoint at which it is not possible to insert an RTA, the RTA message area of the RTA panel displays the RTA NOT

ALLOWED AT XXXXXXX message (the "XXXXXXX" corresponds to the ident of the waypoint at which it is not possible to insert the RTA).

RTA NOT ALLOWED AT XXXXXXX Message


FMS 1
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN/VERT REV
RTA
SPD
CMS
ALT
STEP ALTs
RTA NOT ALLOWED AT INTCPT
RTA AT

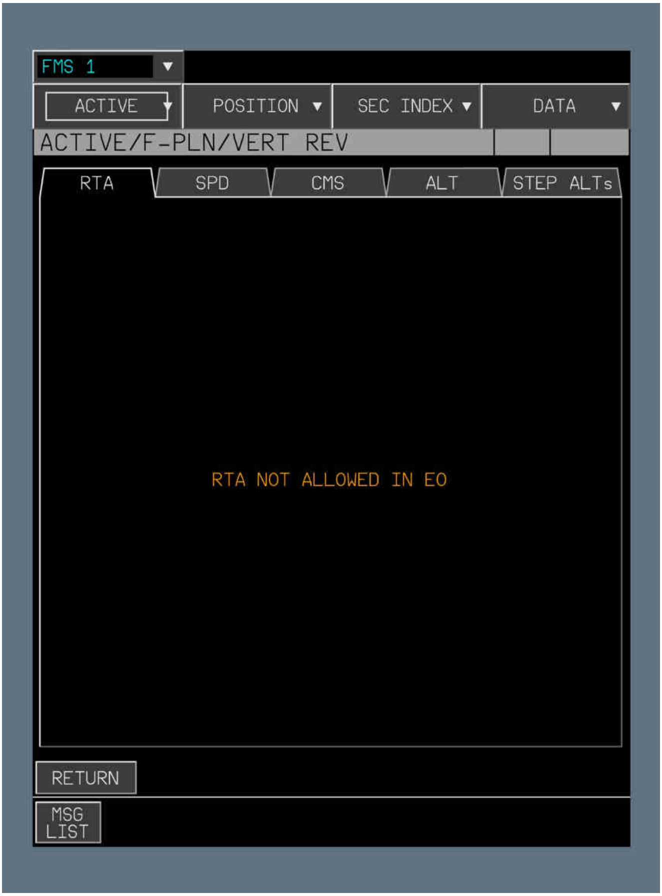
DIST
----NM
UTC
06:10:15
ETA
--:--:--
RTA
AT
AT OR BEFORE
AT OR AFTER
DELETE RTA*
RTA SPD
.--
RETURN
MSG LIST

3. *The RTA panel is not available, if the time constraint revision is not available. In this case, the RTA panel only displays a message to indicate the reason for which the time constraint revision is not available. This message can be one of the following:*
   - *RTA NOT ALLOWED IN EO*
   - *RTA NOT ALLOWED : CLOCK NOT VALID*
   - *RTA NOT ALLOWED IN MANUAL HOLD*
   - *RTA NOT ALLOWED IN GA*

- *RTA NOT ALLOWED AFTER DES SPD LIMIT.*

For more information about the reasons for which the time constraint revision is not available, Refer to DSC-22-FMS-10-40-30 Purpose.

RTA NOT ALLOWED IN EO Message


FMS 1
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN/VERT REV
RTA
SPD
CMS
ALT
STEP ALTs
RETURN
MSG LIST

RTA NOT ALLOWED IN EO

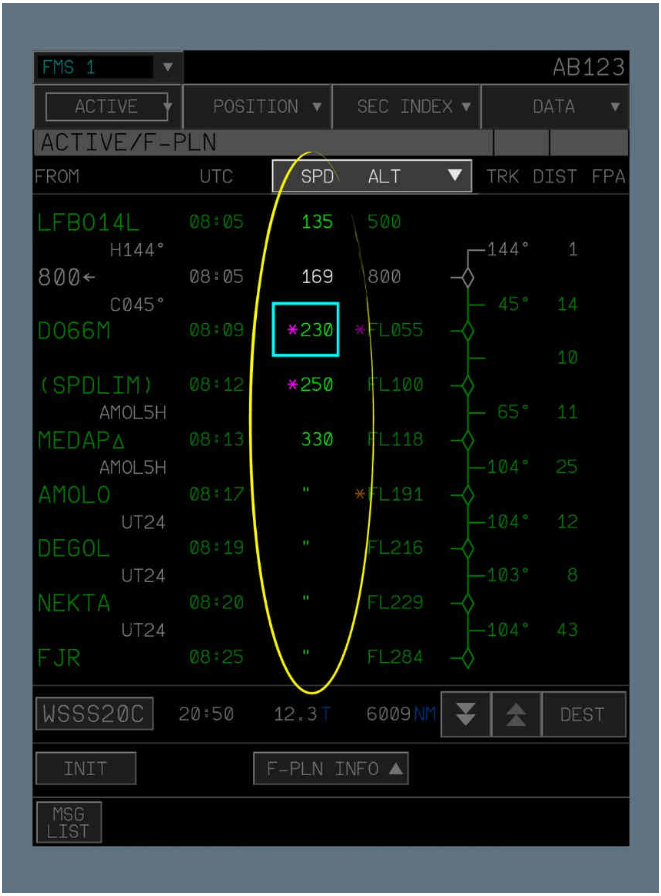
Ident.: DSC-22-FMS-20-20-20-390-00004318.0001001 / 14 APR 14

ACCESS [SPD]

The flight crew can access the SPD panel of the VERT REV page via:

- The F-PLN page, by:
  - Clicking on the speed prediction that is associated with a waypoint

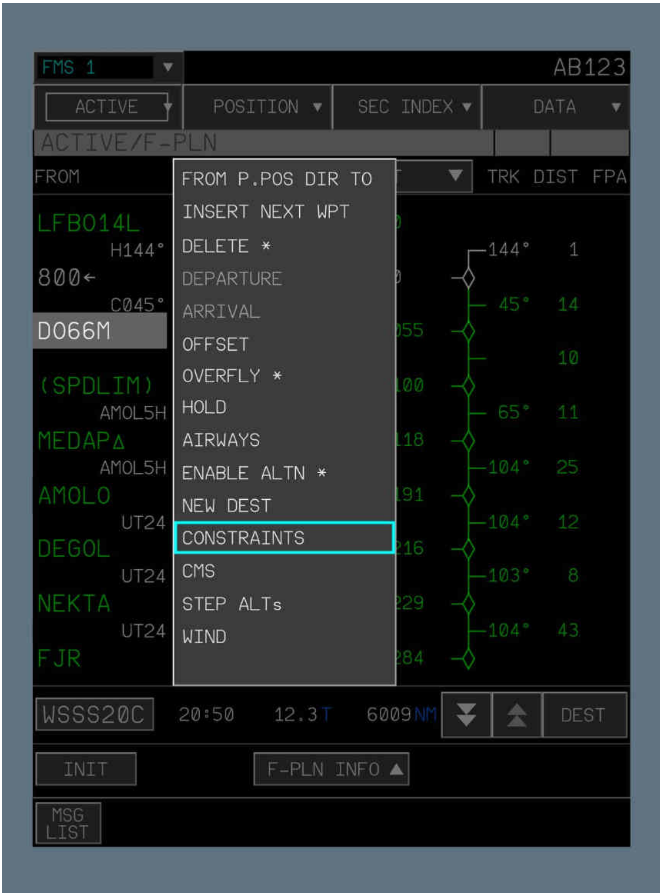
Speed Prediction


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN
WSSS20C
20:50
12.3T
6009NM
DEST
INIT
F-PLN INFO
MSG LIST

FROM	UTC	SPD	ALT	TRK	DIST	FPA
LFBO14L	08:05	135	500			
H144°				144°	1	
800←	08:05	169	800			
C045°				45°	14	
D066M	08:09	*230	*FL055			
					10	
(SPDLIM)	08:12	*250	FL100			
AMOL5H				65°	11	
MEDAP∆	08:13	330	FL118			
AMOL5H				104°	25	
AMOLO	08:17	"	*FL191			
UT24				104°	12	
DEGOL	08:19	"	FL216			
UT24				103°	8	
NEKTA	08:20	"	FL229			
UT24				104°	43	
FJR	08:25	"	FL284			

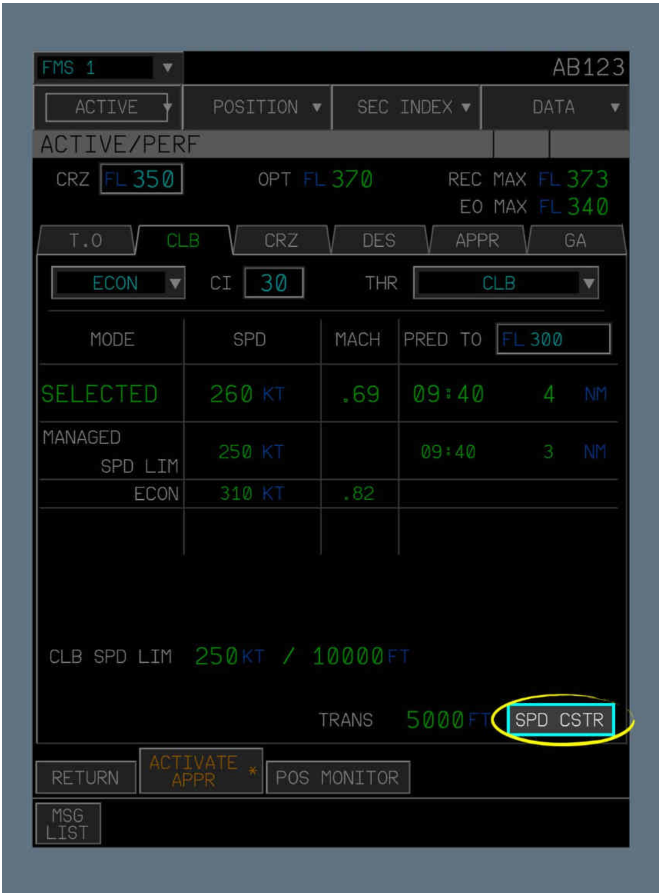
  - Selecting CONSTRAINTS in the waypoint revisions menu
    Then, the flight crew must click on the SPD tab.

Waypoint Revisions Menu


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN
FROM
TRK DIST FPA
LFBO14L
H144°
800←
C045°
D066M
(SPDLIM)
AMOL5H
MEDAP
AMOL5H
AMOLO
UT24
DEGOL
UT24
NEKTA
UT24
FJR
FROM P.POS DIR TO
INSERT NEXT WPT
DELETE *
DEPARTURE
ARRIVAL
OFFSET
OVERFLY *
HOLD
AIRWAYS
ENABLE ALTN *
NEW DEST
CONSTRAINTS
CMS
STEP ALTs
WIND
144° 1
45° 14
10
65° 11
104° 25
104° 12
103° 8
104° 43
WSSS20C
20:50
12.3T
6009NM
DEST
INIT
F-PLN INFO
MSG LIST

- The CLB or DES panel of the PERF page, by clicking on the SPD CSTR button.

PERF Page



FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/PERF
T.O
CLB
CRZ
DES
APPR
GA
RETURN
ACTIVATE APPR *
POS MONITOR
MSG LIST
SPD CSTR

CRZ FL 350

OPT FL 370

REC MAX FL 373

EO MAX FL 340

ECON

CI 30

THR CLB

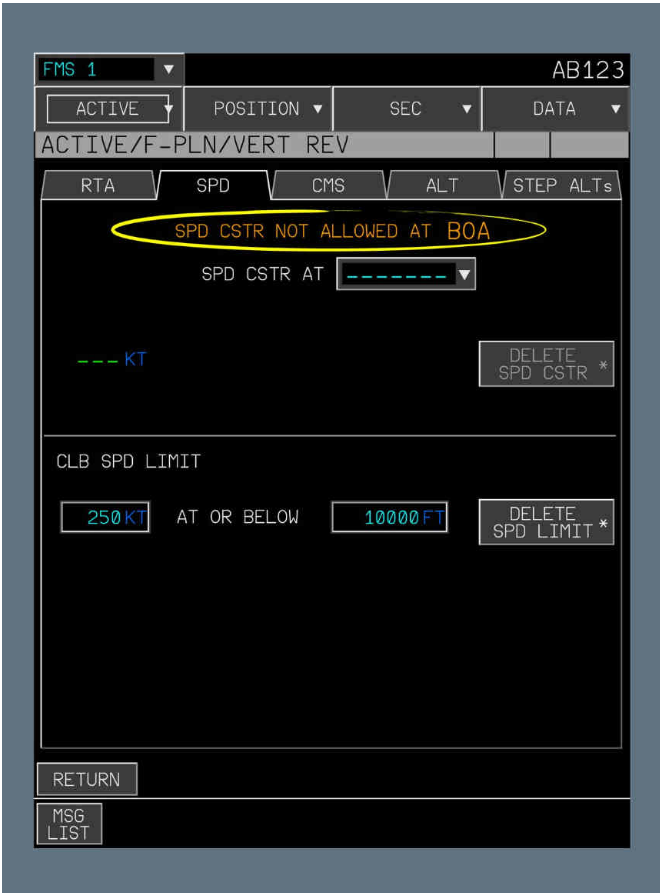
MODE	SPD	MACH	PRED TO FL 300	
SELECTED	260 KT	.69	09:40	4 NM
MANAGED SPD LIM	250 KT		09:40	3 NM
ECON	310 KT	.82		

CLB SPD LIM 250 KT / 10000 FT

TRANS 5000 FT

L3 *Note:* 1. *If the flight crew accesses the SPD panel via a waypoint at which it is not possible to insert a speed constraint, the SPD CSTR message area of the SPD panel displays the SPD CSTR NOT ALLOWED AT XXXXXXX message (the "XXXXXXX" corresponds to the ident of the waypoint at which it is not possible to insert the speed constraint).*

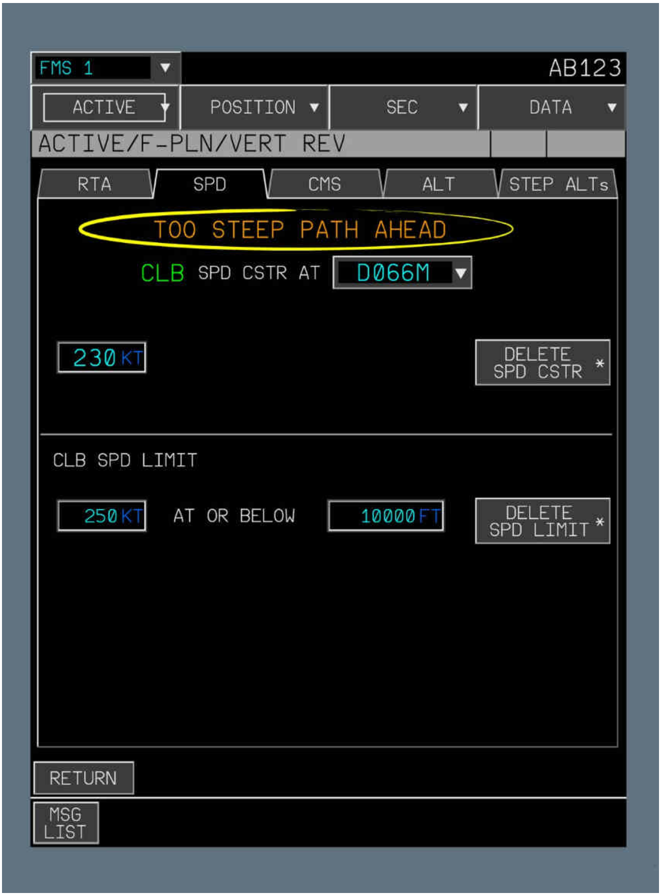
SPD CSTR NOT ALLOWED AT XXXXXXX Message


FMS 1
AB123
ACTIVE
POSITION
SEC
DATA
ACTIVE/F-PLN/VERT REV
RTA
SPD
CMS
ALT
STEP ALTs
SPD CSTR NOT ALLOWED AT BOA
SPD CSTR AT

---KT
DELETE SPD CSTR *
CLB SPD LIMIT
250KT
AT OR BELOW
10000FT
DELETE SPD LIMIT *
RETURN
MSG LIST

2. *If the flight crew accesses the SPD panel via a waypoint that is on a too-steep-path segment, the SPD CSTR message area of the SPD panel displays the TOO STEEP PATH message.*

TOO STEEP PATH Message



FMS 1
AB123
ACTIVE
POSITION
SEC
DATA
ACTIVE/F-PLN/VERT REV
RTA
SPD
CMS
ALT
STEP ALTs

TOO STEEP PATH AHEAD

CLB SPD CSTR AT D066M

230 KT

DELETE SPD CSTR *

CLB SPD LIMIT

250 KT AT OR BELOW 10000 FT

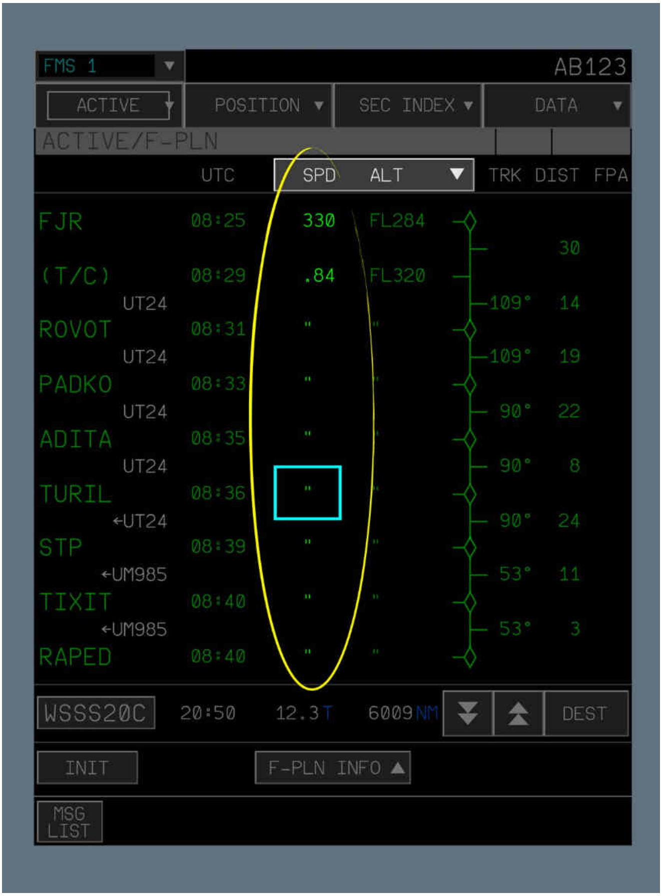
DELETE SPD LIMIT *
RETURN
MSG LIST

2 ACCESS [CMS]

The flight crew can access the CMS panel of the of the VERT REV page via:

- The F-PLN page, by
  - Clicking on the speed prediction of a cruise waypoint

Speed Prediction

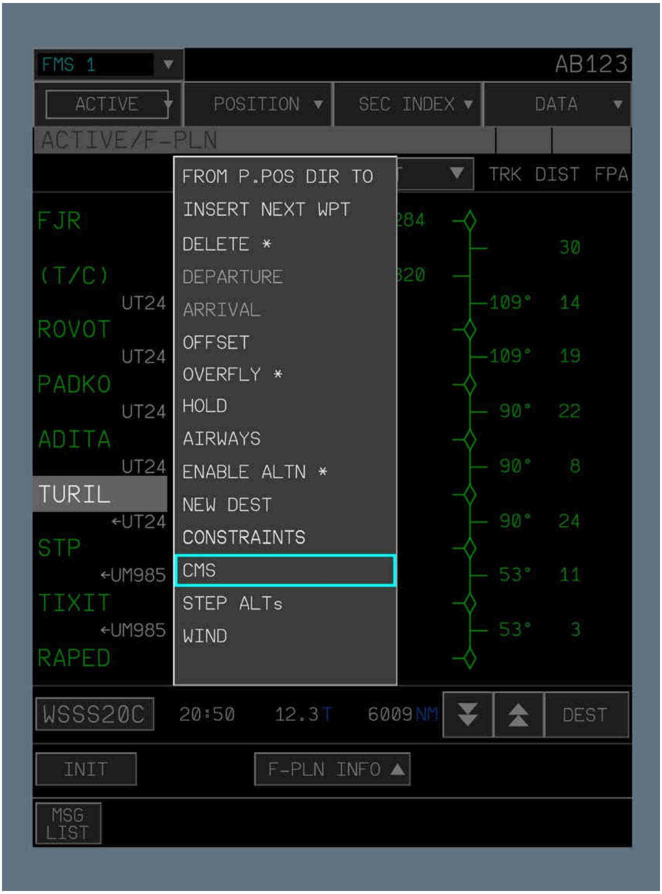

FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN
DEST
INIT
F-PLN INFO
MSG LIST

	UTC	SPD	ALT	TRK	DIST	FPA
FJR	08:25	330	FL284			
					30	
(T/C)	08:29	.84	FL320			
UT24				109°	14	
ROVOT	08:31	"	"			
UT24				109°	19	
PADKO	08:33	"	"			
UT24				90°	22	
ADITA	08:35	"	"			
UT24				90°	8	
TURIL	08:36	"	"			
←UT24				90°	24	
STP	08:39	"	"			
←UM985				53°	11	
TIXIT	08:40	"	"			
←UM985				53°	3	
RAPED	08:40	"	"			

WSSS20C 20:50 12.3T 6009NM

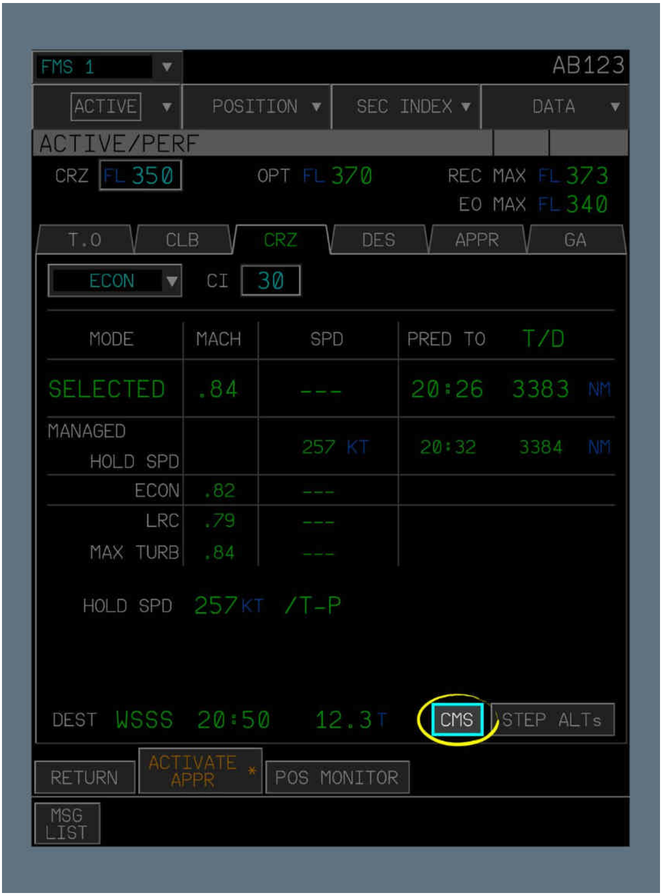
  - Selecting CMS in the waypoint revisions menu

Waypoint Revisions Menu


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN
FROM P.POS DIR TO
INSERT NEXT WPT
DELETE *
DEPARTURE
ARRIVAL
OFFSET
OVERFLY *
HOLD
AIRWAYS
ENABLE ALTN *
NEW DEST
CONSTRAINTS
CMS
STEP ALTs
WIND
TRK DIST FPA
FJR
(T/C)
UT24
ROVOT
PADKO
ADITA
TURIL
←UT24
STP
←UM985
TIXIT
RAPED
284
320
30
109° 14
109° 19
90° 22
90° 8
90° 24
53° 11
53° 3
WSSS20C
20:50
12.3T
6009NM
DEST
INIT
F-PLN INFO
MSG LIST

- The CRZ panel of the PERF page, by clicking on the CMS button.

PERF Page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/PERF
T.O
CLB
CRZ
DES
APPR
GA
ECON
CMS
STEP ALTs
RETURN
ACTIVATE APPR *
POS MONITOR
MSG LIST

CRZ FL 350 OPT FL 370 REC MAX FL 373
EO MAX FL 340

ECON CI 30

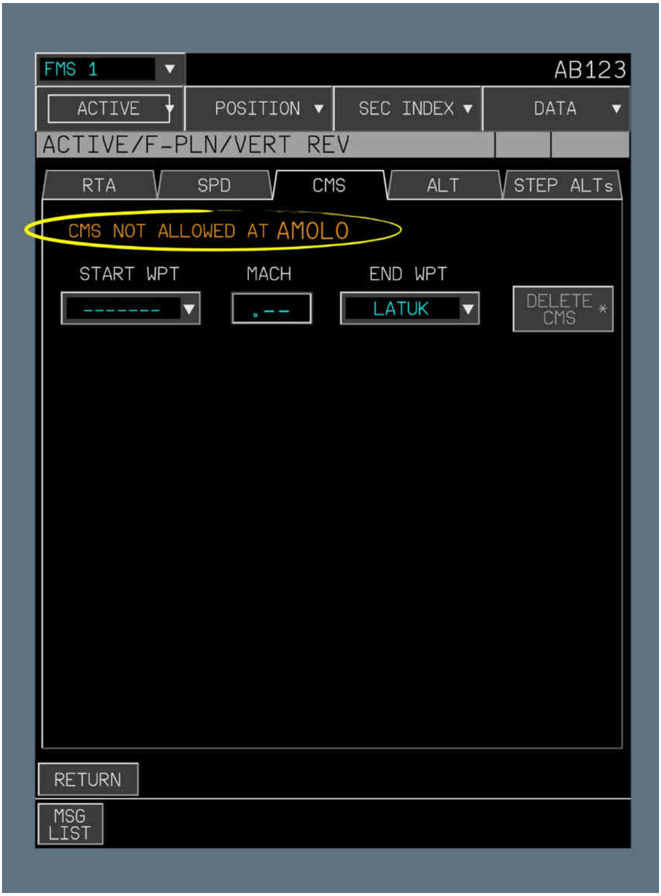
MODE	MACH	SPD	PRED TO	T/D	
SELECTED	.84	---	20:26	3383	NM
MANAGED HOLD SPD		257 KT	20:32	3384	NM
ECON	.82	---			
LRC	.79	---			
MAX TURB	.84	---			

HOLD SPD 257KT /T-P

DEST WSSS 20:50 12.3T

L3 *Note:* *1. If the flight crew accesses the CMS panel via a waypoint at which it is not possible to insert a CMS, the CMS message area of the CMS panel displays the CMS NOT ALLOWED AT XXXXXXX message (the "XXXXXXX" corresponds to the ident of the waypoint at which it is not possible to insert the CMS).*

CMS NOT ALLOWED AT XXXXXXX Message



FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN/VERT REV
RTA
SPD
CMS
ALT
STEP ALTs
CMS NOT ALLOWED AT AMOLO
START WPT
MACH
END WPT

.--
LATUK
DELETE CMS *
RETURN
MSG LIST

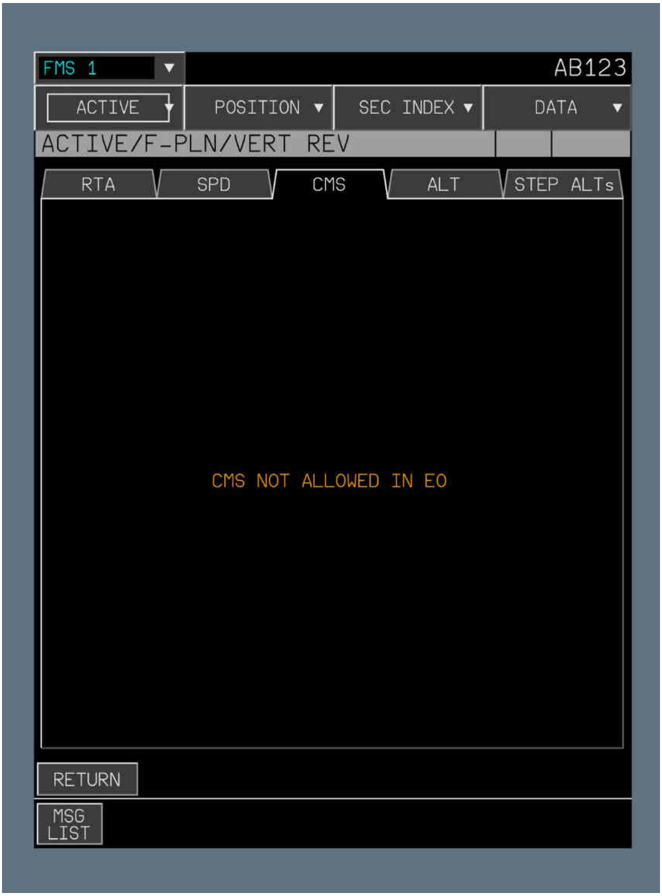
2. The CMS panel is not available, if the CMS revision is not available. In this case, the CMS panel only displays a message to indicate the reason for which the CMS revision is not available. This message can be one of the following:

- *CMS NOT ALLOWED IN EO*

- *CMS NOT ALLOWED IN ALTN F-PLN.*

For more information about the reasons for which the CMS revision is not available, Refer to DSC-22-FMS-10-40-30 Purpose.

CMS NOT ALLOWED IN EO Message


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN/VERT REV
RTA
SPD
CMS
ALT
STEP ALTs
RETURN
MSG LIST

CMS NOT ALLOWED IN EO

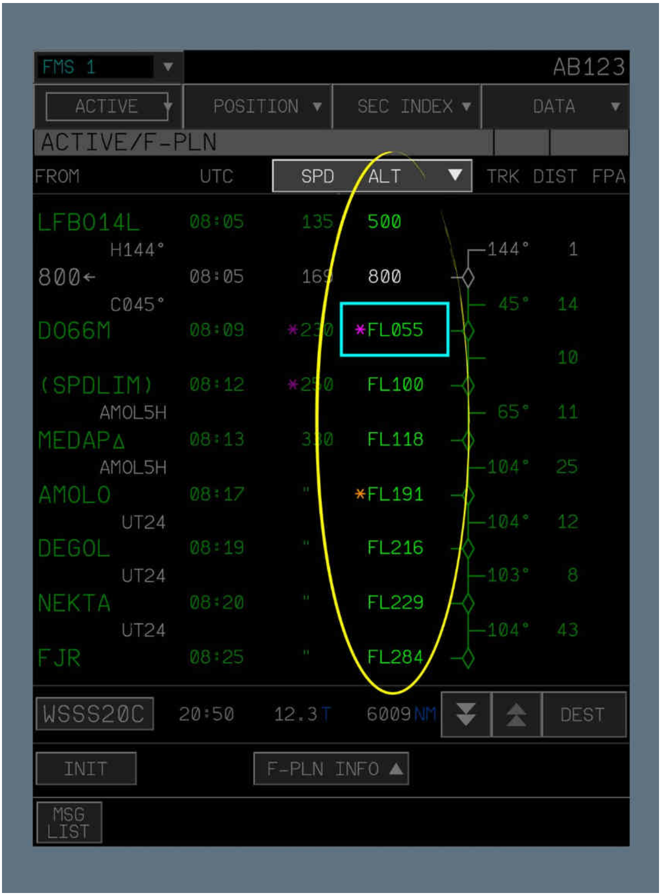
Ident.: DSC-22-FMS-20-20-20-390-00004320.0001001 / 14 APR 14

ACCESS [ALT]

The flight crew can access the ALT panel of the VERT REV page via the F-PLN page, by:

- Clicking on the altitude prediction that is associated with a takeoff, climb, descent, or approach waypoint

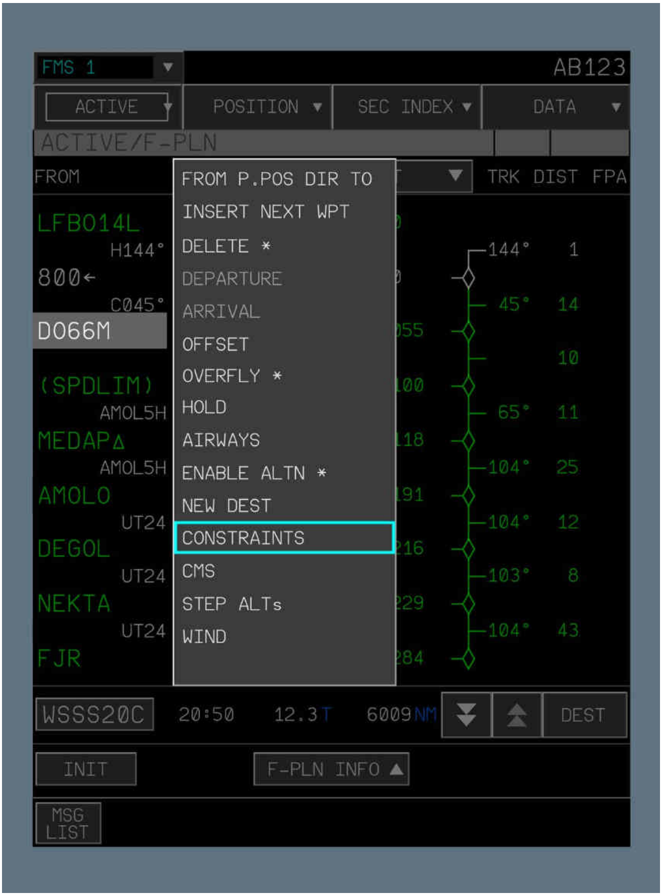
Altitude Prediction



FROM	UTC	SPD	ALT	TRK	DIST	FPA
LFBO14L	08:05	135	500			
H144°				144°	1	
800←	08:05	169	800			
C045°				45°	14	
D066M	08:09	*230	*FL055			
					10	
(SPDLIM)	08:12	*250	FL100			
AMOL5H				65°	11	
MEDAPΔ	08:13	330	FL118			
AMOL5H				104°	25	
AMOLO	08:17	"	*FL191			
UT24				104°	12	
DEGOL	08:19	"	FL216			
UT24				103°	8	
NEKTA	08:20	"	FL229			
UT24				104°	43	
FJR	08:25	"	FL284			
WSSS20C	20:50	12.3T	6009NM			

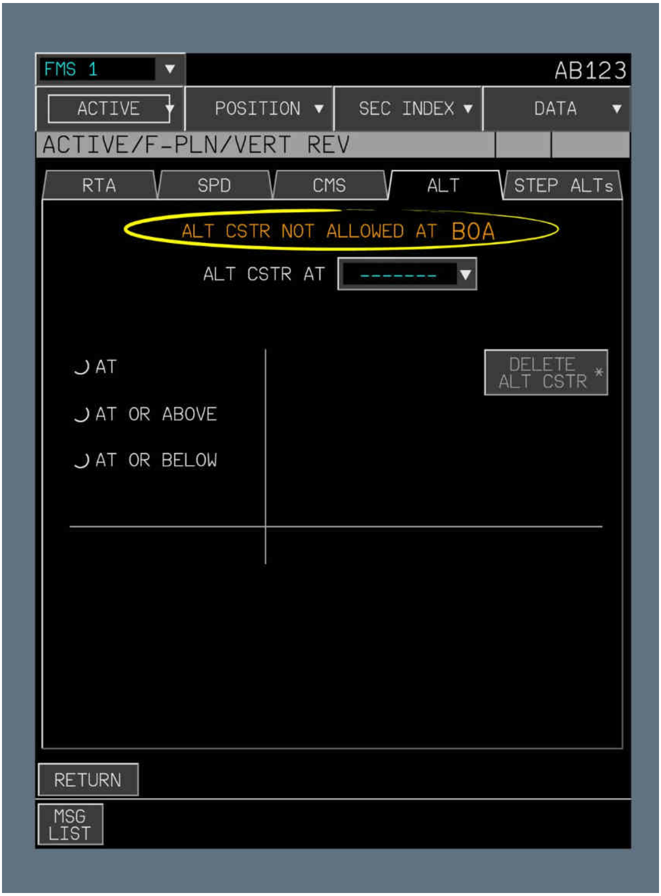
- Selecting CONSTRAINTS in the waypoint revisions menu.

Waypoint Revisions Menu


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN
FROM
TRK DIST FPA
LFBO14L
H144°
800←
C045°
D066M
(SPDLIM)
AMOL5H
MEDAPΔ
AMOL5H
AMOLO
UT24
DEGOL
UT24
NEKTA
UT24
FJR
FROM P.POS DIR TO
INSERT NEXT WPT
DELETE *
DEPARTURE
ARRIVAL
OFFSET
OVERFLY *
HOLD
AIRWAYS
ENABLE ALTN *
NEW DEST
CONSTRAINTS
CMS
STEP ALTs
WIND
144° 1
45° 14
10
65° 11
104° 25
104° 12
103° 8
104° 43
WSSS20C
20:50
12.3T
6009NM
DEST
INIT
F-PLN INFO
MSG LIST

L3 *Note:* *1. If the flight crew accesses the ALT panel via a waypoint at which it is not possible to insert an altitude constraint, the ALT CSTR message area of the ALT panel displays the ALT CSTR NOT ALLOWED AT XXXXXXX message (the "XXXXXXX" corresponds to the ident of the waypoint at which it is not possible to insert the ALT constraint).*

ALT CSTR NOT ALLOWED AT XXXXXXX Message

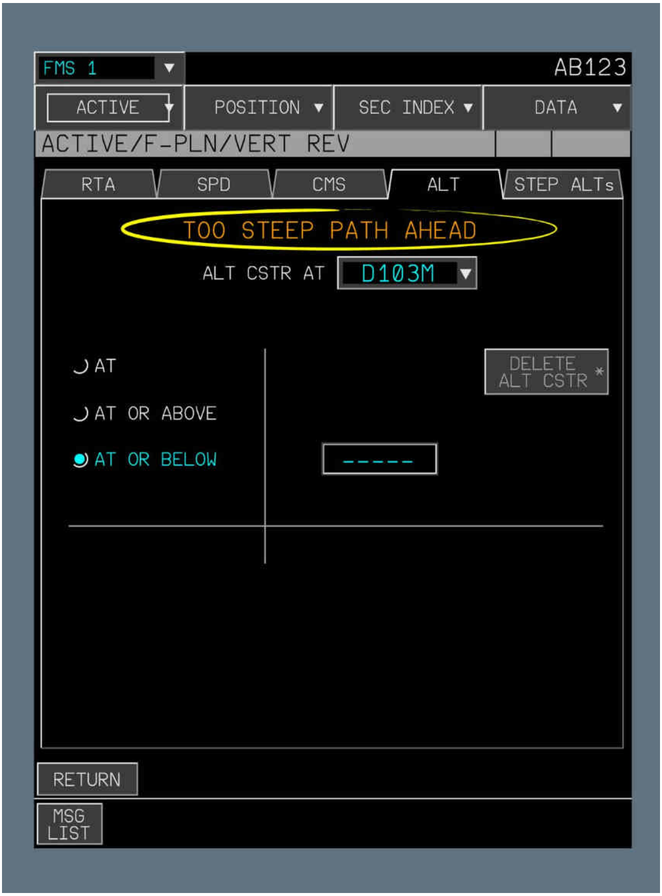

FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN/VERT REV
RTA
SPD
CMS
ALT
STEP ALTs

ALT CSTR NOT ALLOWED AT BOA

ALT CSTR AT --------

AT
AT OR ABOVE
AT OR BELOW
DELETE ALT CSTR *
RETURN
MSG LIST

2. If the flight crew accesses the ALT panel via a waypoint that is on a too-steep-path segment, the ALTS CSTR message area of the ALT panel displays the TOO STEEP PATH AHEAD message.



TOO STEEP PATH AHEAD

ALT CSTR AT D103M

○ AT
○ AT OR ABOVE
● AT OR BELOW

FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN/VERT REV
RTA
SPD
CMS
ALT
STEP ALTs

DELETE ALT CSTR *
RETURN
MSG LIST

TOO STEEP PATH AHEAD Message

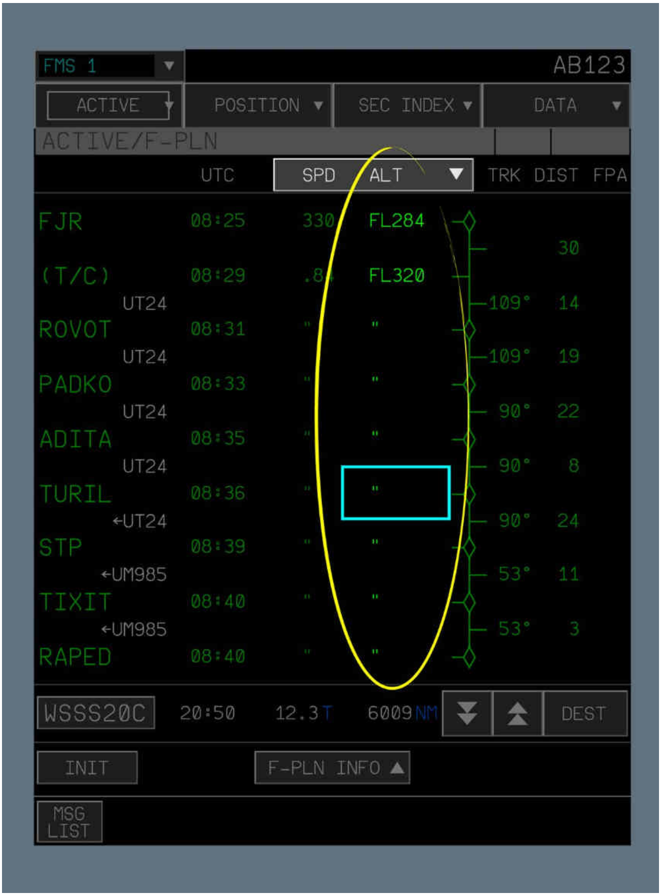
Ident.: DSC-22-FMS-20-20-20-390-00004321.0001001 / 14 APR 14

ACCESS [STEP ALTs]

The flight crew can access the STEP ALTs panel of the VERT REV page via:

- The F-PLN page, by:
  - Clicking on the altitude prediction of a cruise waypoint

Altitude Prediction

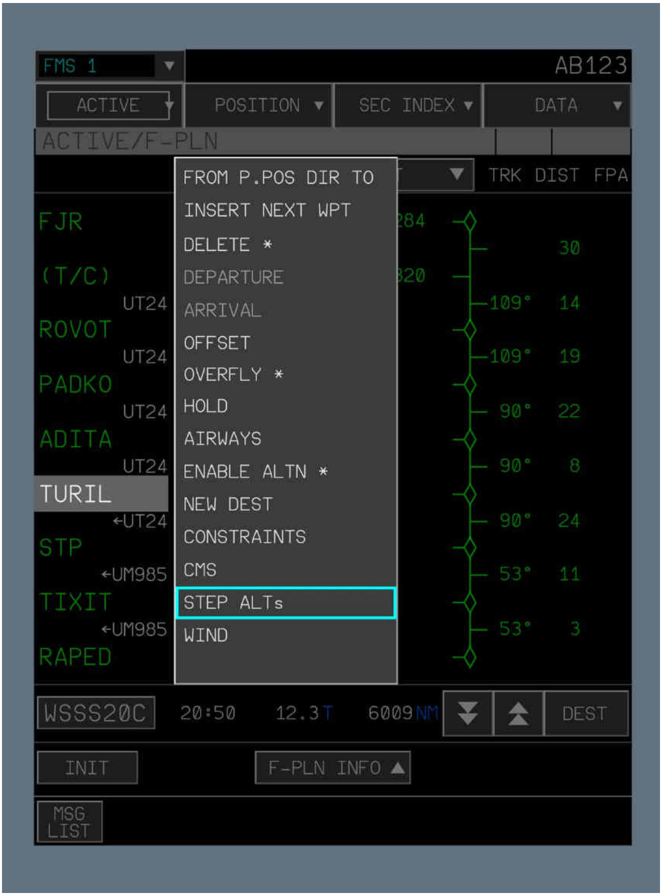

FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN
WSSS20C
DEST
INIT
F-PLN INFO
MSG LIST

	UTC	SPD	ALT	TRK	DIST	FPA
FJR	08:25	330	FL284			
					30	
(T/C)	08:29	.8	FL320			
UT24				109°	14	
ROVOT	08:31	"	"			
UT24				109°	19	
PADKO	08:33	"	"			
UT24				90°	22	
ADITA	08:35	"	"			
UT24				90°	8	
TURIL	08:36	"	"			
←UT24				90°	24	
STP	08:39	"	"			
←UM985				53°	11	
TIXIT	08:40	"	"			
←UM985				53°	3	
RAPED	08:40	"	"			

WSSS20C 20:50 12.3T 6009NM

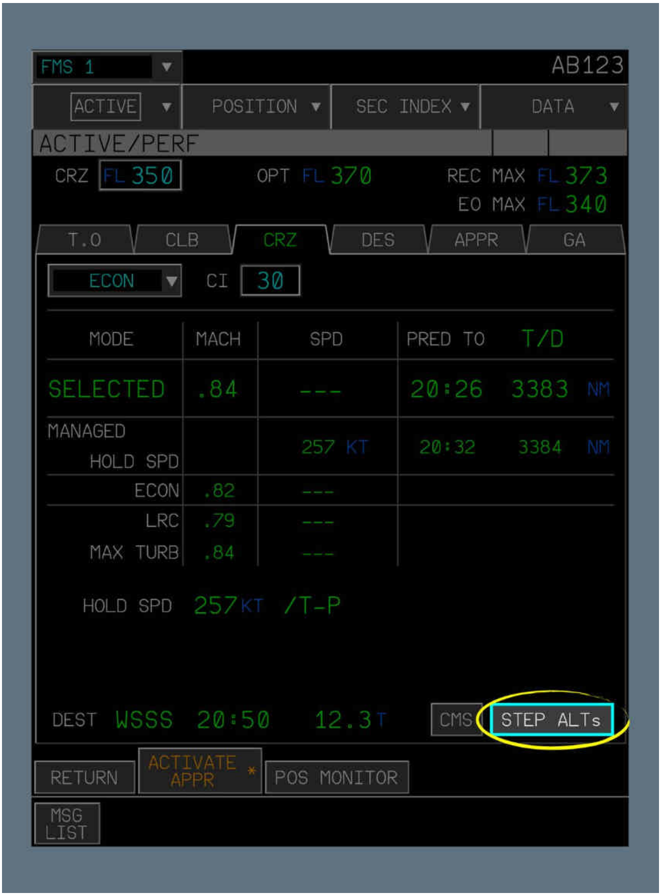
  - Selecting STEP ALTs in the waypoint revisions menu

Waypoint Revisions Menu


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN
TRK DIST FPA
FJR
(T/C)
UT24
ROVOT
UT24
PADKO
UT24
ADITA
UT24
TURIL
←UT24
STP
←UM985
TIXIT
←UM985
RAPED
FROM P.POS DIR TO
INSERT NEXT WPT
DELETE *
DEPARTURE
ARRIVAL
OFFSET
OVERFLY *
HOLD
AIRWAYS
ENABLE ALTN *
NEW DEST
CONSTRAINTS
CMS
STEP ALTs
WIND
109° 14
109° 19
90° 22
90° 8
90° 24
53° 11
53° 3
30
WSSS20C
20:50
12.3T
6009NM
DEST
INIT
F-PLN INFO
MSG LIST

- The CRZ panel of the PERF page, by clicking on the STEP ALTs button.

PERF Page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/PERF
T.O
CLB
CRZ
DES
APPR
GA
CMS
STEP ALTs
RETURN
ACTIVATE APPR *
POS MONITOR
MSG LIST

CRZ FL 350 OPT FL 370 REC MAX FL 373
EO MAX FL 340

ECON CI 30

MODE	MACH	SPD	PRED TO T/D	
SELECTED	.84	---	20:26	3383 NM
MANAGED HOLD SPD		257 KT	20:32	3384 NM
ECON	.82	---		
LRC	.79	---		
MAX TURB	.84	---		

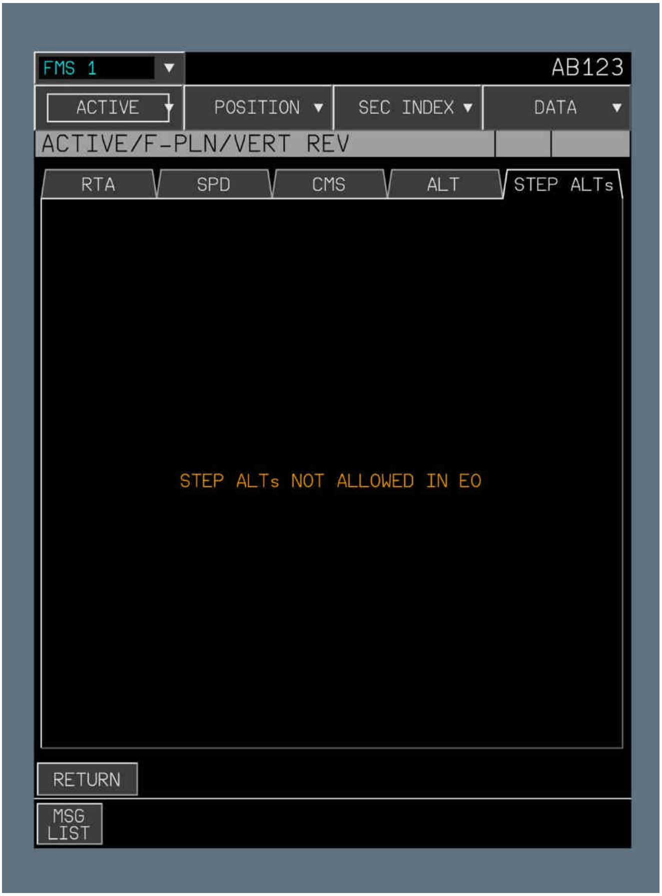
HOLD SPD 257KT /T-P

DEST WSSS 20:50 12.3T

L3 *Note:* *The STEP ALTs panel is not available, if the STEP ALTs revision is not available. In this case, the STEP ALTs panel only displays a message to indicate the reason for which the STEP ALTs revision is not available. This message can be one of the following:*

- *STEP ALTs NOT ALLOWED IN EO*
- *STEP ALTs NOT ALLOWED IN DES*
- *STEP ALTs NOT ALLOWED IN APPR*
- *STEP ALTs NOT ALLOWED IN GA*
- *STEP ALTs NOT ALLOWED IN DONE*
- *STEP ALTs NOT ALLOWED : NO CRZ FL.*

STEP ALTs NOT ALLOWED IN EO Message


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN/VERT REV
RTA
SPD
CMS
ALT
STEP ALTs
RETURN
MSG
LIST

STEP ALTs NOT ALLOWED IN EO

Ident.: DSC-22-FMS-20-20-20-390-00004322.0001001 / 22 APR 14

RETURN BUTTON

When clicked, displays the page that was displayed before the VERT REV page.

Ident.: DSC-22-FMS-20-20-20-390-00004323.0001001 / 22 APR 14

TMPY F-PLN BUTTON

When clicked, displays the F-PLN page.

The TMPY F-PLN button is displayed, only if a temporary flight plan is on standby.

Ident.: DSC-22-FMS-20-20-20-390-00004325.0001001 / 22 APR 14

RTA MESSAGE AREA

The RTA message area displays the following messages (only one message appears at a time):

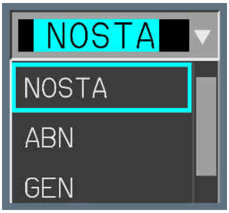
EXISTING RTA AT XXXXXXX	(The "XXXXXXX" corresponds to the ident of a waypoint.) Indicates that: - The flight plan has already an RTA at the XXXXXXX waypoint - The XXXXXXX waypoint is different from the revised waypoint that the flight crew selected to insert an RTA. The flight plan can have only one RTA. Therefore, if the flight crew inserts a new RTA at a waypoint that is not the XXXXXXX waypoint, the FMS deletes the RTA at the XXXXXXX waypoint.
EXISTING RTA AT XXXXXXX DELETED IN TMPY	(The "XXXXXXX" corresponds to the ident of a waypoint.) Indicates that the FMS deleted the RTA at the XXXXXXX waypoint.
RTA NOT ALLOWED AT XXXXXXX	(The "XXXXXXX" corresponds to the ident of the revised waypoint.) Indicates that the flight crew cannot insert an RTA at the XXXXXXX waypoint.

Ident.: DSC-22-FMS-20-20-20-390-00004326.0001001 / 22 APR 14

RTA AT LIST

Indicates the revised waypoint.
The revised waypoint is the waypoint at which the RTA will be inserted.
The flight crew enters the ident of the revised waypoint via the keyboard, or by selecting the ident from the RTA AT list.
The RTA AT list displays all of the possible waypoints at which an RTA can be inserted.

RTA AT List



By default, the selected revised waypoint is the waypoint of the F-PLN page from which the flight crew accessed the RTA panel.

L3 The RTA message area of the RTA panel displays the EXISTING RTA AT XXXXXXX message (the "XXXXXXX" corresponds to a waypoint ident), if all of the following occur:
- There is already an RTA in the flight plan at the XXXXXXX waypoint
- The flight crew selects a waypoint, from the RTA AT list, that is not the XXXXXXX waypoint.

L1 **ENTRY FORMAT**

Refer to DSC-22-FMS-20-80 WAYPOINT.

Ident.: DSC-22-FMS-20-20-20-390-00004327.0001001 / 22 APR 14

DIST

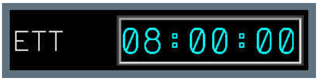
Indicates the distance, along the flight plan, between the aircraft present position and the revised waypoint.

Ident.: DSC-22-FMS-20-20-20-390-00004328.0001001 / 22 APR 14

UTC

Indicates the UTC time.
In the PREFLIGHT flight phase, the ETT entry field appears instead of the UTC time.

ETT Entry Field



ETT 08:00:00

L2 The entered ETT will be the aircraft time reference for the flight-plan time predictions.
For information about the ETT, *Refer to DSC-22-FMS-10-40-30 Purpose*.

L1 **ENTRY FORMAT**

Refer to DSC-22-FMS-20-80 ETT.

Ident.: DSC-22-FMS-20-20-20-390-00004329.0001001 / 22 APR 14

ETA

Indicates the Estimated Time of Arrival (ETA) at the revised waypoint.

Ident.: DSC-22-FMS-20-20-20-390-00004330.0001001 / 22 APR 14

RTA OPTION LIST

The flight crew selects the category of RTA, by selecting one of the following options:
- AT
- AT OR BEFORE
- AT OR AFTER.

When one of the three options is selected, the associated RTA entry field is displayed (*Refer to RTA Entry Field*).

Ident.: DSC-22-FMS-20-20-20-390-00004331.0001001 / 22 APR 14

RTA ENTRY FIELD

The flight crew enters the Required Time of Arrival (RTA) in the entry field.
The default value for the RTA is the ETA at the revised waypoint.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 RTA.

Ident.: DSC-22-FMS-20-20-20-390-00004335.0001001 / 22 APR 14

DELETE RTA BUTTON

When clicked, deletes the RTA, and creates(updates) the temporary flight plan.

L3 When clicked, displays the F-PLN page, if all of the following apply:
- The flight phase is DES or APPR
- The aircraft current altitude is below:
  - FL 100, or
  - The descent speed limit altitude, if the descent speed limit altitude is above FL 100.

Ident.: DSC-22-FMS-20-20-20-390-00004332.0001001 / 22 APR 14

RTA SPD

Indicates the Mach number and the CAS of the RTA speed.
The RTA speed is the managed speed/Mach target for the FG, if the flight crew engages the managed speed/Mach control.

L2 When an RTA is defined, but not yet inserted in the active flight plan (i.e. the temporary flight plan is on standby), the displayed RTA speed becomes the managed speed/Mach target, only after the flight crew inserts the temporary flight plan.

Ident.: DSC-22-FMS-20-20-20-390-00004334.0001001 / 22 APR 14

TIME ERROR

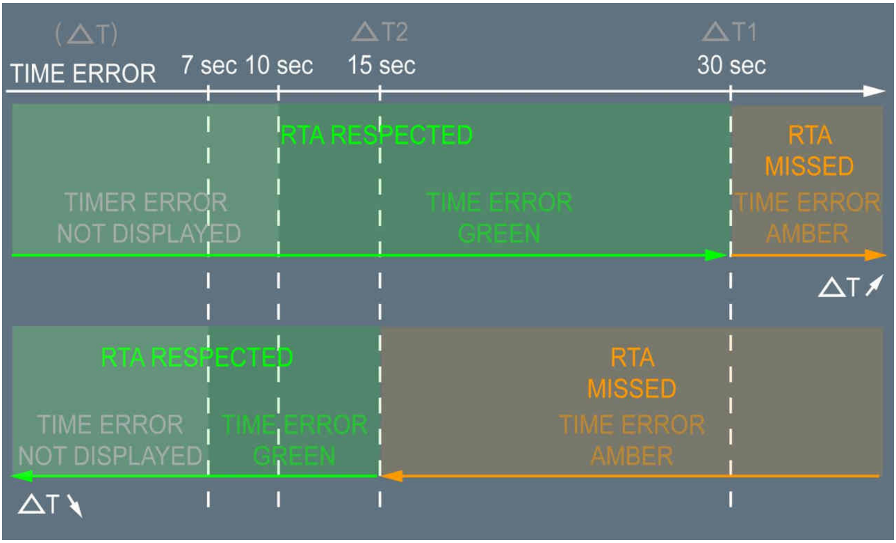
If applicable, indicates the time error and the type of time error.

Time error = ETA - RTA.

The type of time error can be one of the following:
- LATE: Indicates that the aircraft will arrive at the revised waypoint later than the requested AT or AT OR BEFORE constraint
- EARLY: Indicates the aircraft will arrive at the revised waypoint earlier than the requested AT or AT OR AFTER constraint.

L2 The following illustration explains the logic for the display of the time error.

Time Error Display


(ΔT)
TIME ERROR
7 sec
10 sec
ΔT2
15 sec
ΔT1
30 sec
RTA RESPECTED
TIMER ERROR NOT DISPLAYED
TIME ERROR GREEN
RTA MISSED
TIME ERROR AMBER
ΔT
RTA RESPECTED
TIME ERROR NOT DISPLAYED
TIME ERROR GREEN
RTA MISSED
TIME ERROR AMBER
ΔT

L3 *Note:* *ΔT1 and ΔT2 are respectively 30 s and 15 s, if the distance between the aircraft and the revised waypoint is less than 2 000 NM.*
If the distance is more than 2 000 NM, ΔT1 and ΔT2 linearly increase at a rate of 60 s per 1 000 NM.

Ident.: DSC-22-FMS-20-20-20-390-00004337.0001001 / 22 APR 14

SPD CSTR MESSAGE AREA

The SPD CSTR message area displays the following messages (only one message appears at a time):

SPD CSTR NOT ALLOWED AT XXXXXXX	(The "XXXXXXX" corresponds to the ident of the revised waypoint.) Indicates that the flight crew cannot insert a speed constraint at the XXXXXXX waypoint.
TOO STEEP PATH AHEAD	Indicates that the revised waypoint is on a too-steep-path segment.

Ident.: DSC-22-FMS-20-20-20-390-00004339.0001001 / 22 APR 14

SPD CSTR TYPE

Indicates the type of speed constraint.

The type of speed constraint can be one of the following:
- CLB: The speed constraint is a climb speed constraint
- DES: The speed constraint is a descent speed constraint.

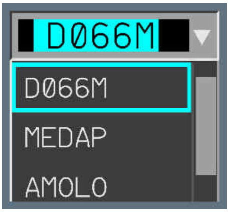
If the FMS cannot determine the type of speed constraint, the SPD CSTR type option list appears next to the SPD CSTR entry field. The SPD CSTR type option list enables the flight crew to select the desired type of speed constraint (*Refer to SPD CSTR Type Option List*).

Ident.: DSC-22-FMS-20-20-20-390-00004338.0001001 / 22 APR 14

SPD CSTR AT LIST

Indicates the revised waypoint.
The revised waypoint is the waypoint at which the speed constraint will be inserted.
The flight crew enters the ident of the revised waypoint via the keyboard, or by selecting the ident from the SPD CSTR AT list.
The SPD CSTR AT list displays all of the possible waypoints at which a speed constraint can be inserted.

SPD CSTR AT List



By default, the selected revised waypoint is the waypoint of the F-PLN page from which the flight crew accessed the SPD panel.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 WAYPOINT.

Ident.: DSC-22-FMS-20-20-20-390-00004340.0001001 / 22 APR 14

SPD CSTR ENTRY FIELD

The flight crew enters the speed constraint in the entry field.
There may be a default speed constraint that is associated with the revised waypoint, and that is stored in the navigation database. The flight crew can always overwrite the default value.

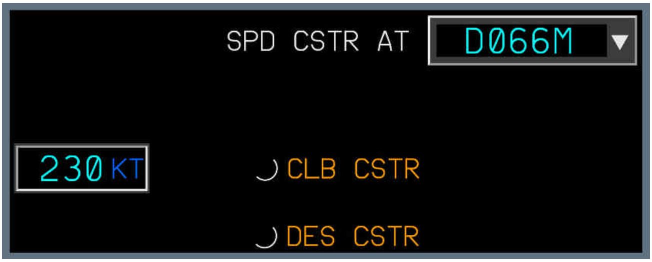
ENTRY FORMAT

Refer to DSC-22-FMS-20-80 SPD.

Ident.: DSC-22-FMS-20-20-20-390-00004341.0001001 / 22 APR 14

SPD CSTR TYPE OPTION LIST

SPD CSTR Type Option List



The flight crew selects the applicable type of speed constraint, by selecting one of the following options:
- CLB CSTR: The speed constraint is a climb speed constraint
- DES CSTR: The speed constraint is a descent speed constraint.

The SPD CSTR option list is displayed, only if the FMS cannot automatically determine the type of speed constraint.

Ident.: DSC-22-FMS-20-20-20-390-00004342.0001001 / 22 APR 14

DELETE SPD CSTR BUTTON

When clicked, deletes the speed constraint, and creates(updates) the temporary flight plan.

Ident.: DSC-22-FMS-20-20-20-390-00004343.0001001 / 22 APR 14

SPD LIMIT TYPE

Indicates the type of speed limit.

The type of speed limit can be one of the following:
- CLB SPD LIMIT: The speed limit is a climb speed limit
- DES SPD LIMIT: The speed limit is a descent speed limit.

Ident.: DSC-22-FMS-20-20-20-390-00004344.0001001 / 22 APR 14

SPD LIMIT ENTRY FIELDS

The flight crew enters the speed and altitude values of the speed limit in the entry fields.

The default speed limit is one of the following (the first-listed has the highest priority):
- The navigation database values, if any
  There may be default speed and altitude values that are associated with the departure airport and the destination airport, and that are stored in the navigation database.
- The FMS default values: 250 kt/10 000 ft.

The flight crew can always overwrite the default values.

ENTRY FORMAT

For the entry format of:
- Speed, *Refer to DSC-22-FMS-20-80 SPD*
- Altitude, *Refer to DSC-22-FMS-20-80 ALT*.

Ident.: DSC-22-FMS-20-20-20-390-00004345.0001001 / 22 APR 14

DELETE SPD LIMIT BUTTON

When clicked, deletes the speed limit, and creates(updates) the temporary flight plan.

Ident.: DSC-22-FMS-20-20-20-390-00004347.0001001 / 14 APR 14

CMS MESSAGE AREA

The CMS message area displays the following message:

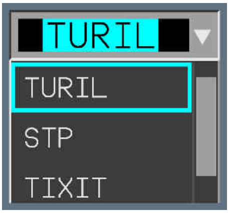
CMS CSTR NOT ALLOWED AT XXXXXXX	(The "XXXXXXX" corresponds to the ident of the revised waypoint.) Indicates that the flight crew cannot insert a CMS at the XXXXXXX waypoint.

Ident.: DSC-22-FMS-20-20-20-390-00004348.0001001 / 22 APR 14

START WPT LIST

Indicates the start waypoint.
The flight crew enters the ident of the start waypoint via the keyboard, or by selecting the ident from the START WPT list.
The START WPT list displays the flight-plan cruise waypoints that are after the aircraft present position.

START WPT List



ENTRY FORMAT

Refer to DSC-22-FMS-20-80 WAYPOINT.

Ident.: DSC-22-FMS-20-20-20-390-00004349.0001001 / 22 APR 14

MACH ENTRY FIELD

The flight crew enters the Mach value in the entry field.

ENTRY FORMAT

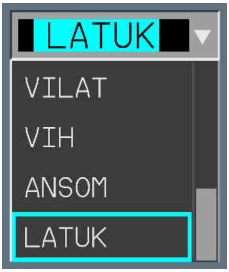
Refer to DSC-22-FMS-20-80 MACH.

Ident.: DSC-22-FMS-20-20-20-390-00004350.0001001 / 22 APR 14

END WPT LIST

Indicates the end waypoint.
The flight crew enters the ident of the end waypoint via the keyboard, or by selecting the ident from the END WPT list.
The END WPT list displays the flight-plan cruise waypoints that are after the selected start waypoint.

End Waypoint List



ENTRY FORMAT

Refer to DSC-22-FMS-20-80 WAYPOINT.

Ident.: DSC-22-FMS-20-20-20-390-00004351.0001001 / 22 APR 14

DELETE CMS BUTTON

When clicked, deletes the CMS, and creates(updates) the temporary flight plan.

Ident.: DSC-22-FMS-20-20-20-390-00004353.0001001 / 14 APR 14

ALT CSTR MESSAGE AREA

The ALT CSTR message area displays the following messages (only one message appears at a time):

ALT CSTR NOT ALLOWED AT XXXXXXX	(The "XXXXXXX" corresponds to the ident of the revised waypoint.) Indicates that the flight crew cannot insert an altitude constraint at the XXXXXXX waypoint.
TOO STEEP PATH AHEAD	Indicates that the revised waypoint is on a too-steep-path segment.

Ident.: DSC-22-FMS-20-20-20-390-00004354.0001001 / 14 APR 14

ALT CSTR TYPE

Indicates the type of altitude constraint.

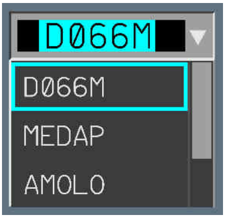
The type of altitude constraint can be one of the following:
- CLB: The altitude constraint is a climb altitude constraint
- DES: The altitude constraint is a descent altitude constraint.

If the FMS cannot determine the type of altitude constraint, the ALT CSTR type option list appears next to the ALT CSTR entry field. The ALT CSTR type option list enables the flight crew to select the desired type of altitude constraint (*Refer to ALT CSTR Type Option List*).

Ident.: DSC-22-FMS-20-20-20-390-00004355.0001001 / 14 APR 14

ALT CSTR AT LIST

Indicates the revised waypoint.
The revised waypoint is the waypoint on which the altitude constraint will be inserted.
The flight crew enters the ident of the revised waypoint via the keyboard, or by selecting the ident from the ALT CSTR AT list.
The ALT CSTR AT list displays all of the possible waypoints on which an altitude constraint can be inserted.



ALT CSTR AT List

By default, the selected revised waypoint is the waypoint of the F-PLN page from which the flight crew accessed the ALT panel.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 WAYPOINT.

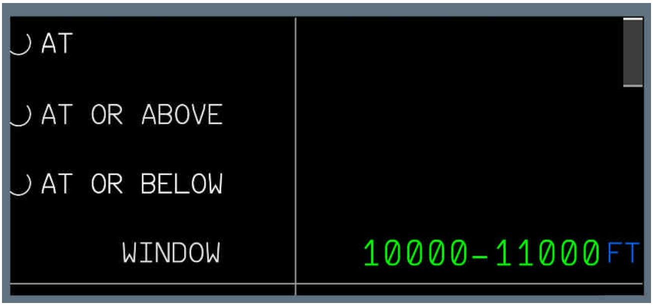
Ident.: DSC-22-FMS-20-20-20-390-00004356.0001001 / 14 APR 14

ALT CSTR OPTION LIST

The flight crew selects the category of altitude constraint, by selecting one of the following options:
- AT
- AT OR ABOVE
- AT OR BELOW.

When one of the three options is selected, the associated ALT CSTR entry field is displayed (*Refer to ALT CSTR Entry Field*).
The navigation database may have a window altitude constraint that is associated with the revised waypoint. In this case, the window altitude constraint appears below the ALT CSTR option list, and is selected by default.

Window Altitude Constraint



Note: *1. After selecting the AT, AT OR ABOVE, or AT OR BELOW option, the flight crew cannot select the window altitude constraint again.*
2. The flight crew cannot manually create a window altitude constraint.

Ident.: DSC-22-FMS-20-20-20-390-00004357.0001001 / 14 APR 14

ALT CSTR ENTRY FIELD

The flight crew enters the altitude constraint in the entry field.

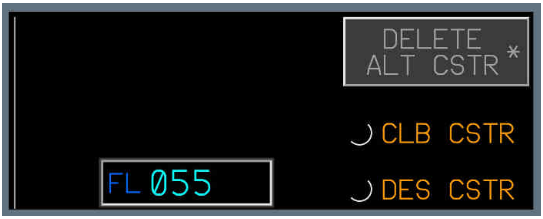
ENTRY FORMAT

Refer to DSC-22-FMS-20-80 ALT.

Ident.: DSC-22-FMS-20-20-20-390-00004358.0001001 / 14 APR 14

ALT CSTR TYPE OPTION LIST

ALT CSTR Type Option List



The flight crew selects the applicable type of altitude constraint, by selecting one of the following options:
- CLB CSTR: The altitude constraint is a climb altitude constraint
- DES CSTR: The altitude constraint is a descent altitude constraint.

The ALT CSTR type option list is displayed, only if the FMS cannot automatically determine the type of altitude constraint.

Ident.: DSC-22-FMS-20-20-20-390-00004360.0001001 / 22 APR 14

DELETE ALT CSTR BUTTON

When clicked, deletes the altitude constraint, and creates(updates) the temporary flight plan.

Ident.: DSC-22-FMS-20-20-20-390-00004359.0001001 / 14 APR 14

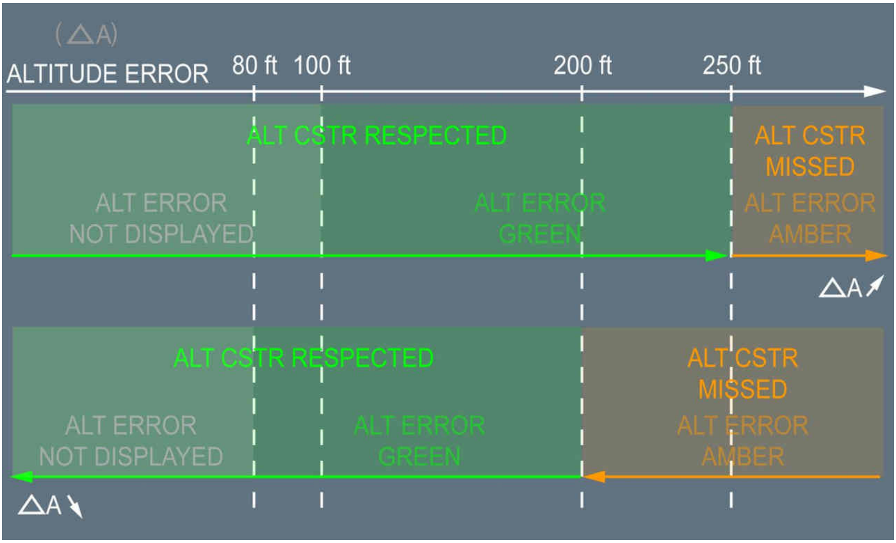
ALT ERROR

If applicable, indicates the altitude error.
The altitude error is the difference between the predicted altitude at the revised waypoint and the altitude constraint at the revised waypoint.

The altitude error can be positive or negative:
- If the altitude error is positive, the aircraft will be above the requested AT, AT OR BELOW, or WINDOW constraint
- If the altitude error is negative, the aircraft will be below the requested AT, AT OR ABOVE, or WINDOW constraint.

L2 The following illustration explains the logic for the display of the altitude error.

Altitude Error Display


(ΔA)
ALTITUDE ERROR
80 ft
100 ft
200 ft
250 ft
ALT CSTR RESPECTED
ALT ERROR NOT DISPLAYED
ALT ERROR GREEN
ALT CSTR MISSED
ALT ERROR AMBER
ΔA↗
ALT CSTR RESPECTED
ALT ERROR NOT DISPLAYED
ALT ERROR GREEN
ALT CSTR MISSED
ALT ERROR AMBER
ΔA↘

Ident.: DSC-22-FMS-20-20-20-390-00004362.0001001 / 14 APR 14

CRZ

Indicates the cruise flight level of the active flight plan.

Ident.: DSC-22-FMS-20-20-20-390-00004363.0001001 / 24 APR 14

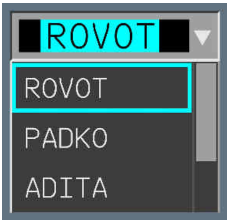
WPT LIST

Indicates the step start waypoint.

The flight crew enters the step start waypoint:
- By selecting the ident of the start waypoint from the WPT list, or
- Via the keyboard, by:
  - Entering the ident of the start waypoint, or
  - Entering a place/distance.
    The flight crew can enter a place/distance, only if the flight crew previously entered a step altitude in the ALT entry field on the same line.

The WPT list displays the flight-plan cruise waypoints that are after the aircraft present position.

WPT List



By default, the selected start waypoint for a new step is the revised waypoint. The revised waypoint is the waypoint of the F-PLN page from which the flight crew accessed the STEP ALTs panel.
If the flight crew selects the optimum step point as the step start waypoint, the entry field of the WPT list displays (OPT).

ENTRY FORMAT

For the entry format of:
- Waypoint ident, *Refer to DSC-22-FMS-20-80 WAYPOINT*
- Place/distance, *Refer to DSC-22-FMS-20-80 PLACE/DISTANCE (PD)*.

Ident.: DSC-22-FMS-20-20-20-390-00004364.0001001 / 17 APR 14

ALT ENTRY FIELD

The flight crew enters the step altitude in the entry field.

ENTRY FORMAT

Refer to DSC-22-FMS-20-80 ALT.

Ident.: DSC-22-FMS-20-20-20-390-00004333.0001001 / 22 APR 14

UTC(TIME) LABEL

Indicates the time reference:
- The UTC label indicates that the time reference is the UTC time
- The TIME label indicates that the time reference is the flight time.

L2 The time reference is defined as follows:
- In the PREFLIGHT flight phase:
  - If there is an entered Estimated Takeoff Time (ETT), the time reference is the UTC time
  - If there is no entered ETT, the time reference is the flight time

  The flight crew enters the ETT on the RTA panel of the VERT REV page (*Refer to page*).
- In flight:
  - If the UTC time is valid, the time reference is the UTC time
  - If the UTC time is not valid, the time reference is the flight time.

Ident.: DSC-22-FMS-20-20-20-390-00004366.0001001 / 22 APR 14

PREDICTIONS

Indicate the following predictions:
- The distance to the step start waypoint, along the flight plan
- The ETA, in UTC(flight) time, at the step start waypoint.

Ident.: DSC-22-FMS-20-20-20-390-00004365.0001001 / 22 APR 14

INFORMATION LABEL

L12

IGNORED	Indicates that the step is ignored. For information about ignored steps, *Refer to DSC-22-FMS-10-40-30 Purpose*.
ABOVE MAX FL	Indicates that the step is above the recommended maximum flight level.

Ident.: DSC-22-FMS-20-20-20-390-00004368.0001001 / 22 APR 14

STEP ALTS MESSAGE AREA

The STEP ALTs message area displays the following message:

STEP NOT ALLOWED AT XXXXXXX	(The "XXXXXXX" corresponds to the ident of the revised waypoint.) Indicates that the flight crew cannot insert a step altitude at the XXXXXXX waypoint.

Ident.: DSC-22-FMS-20-20-20-390-00004367.0001001 / 22 APR 14

SCROLL BUTTONS

The flight crew uses the scroll down(up) button to move, page by page, downward(upward) through the list of step altitudes.

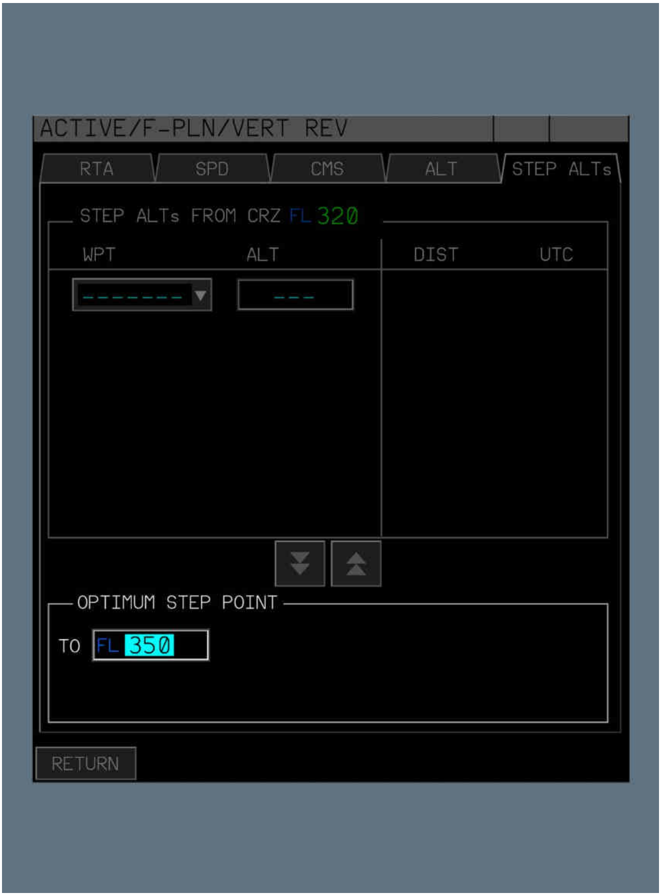
Ident.: DSC-22-FMS-20-20-20-390-00004369.0001001 / 22 APR 14

OPTIMUM STEP POINT AREA

NO STEP IN THE FLIGHT PLAN

When there is no step in the flight plan, the OPTIMUM STEP POINT area displays the TO entry field.

TO Entry Field


ACTIVE/F-PLN/VERT REV
RTA
SPD
CMS
ALT
STEP ALTs
STEP ALTs FROM CRZ FL 320
WPT
ALT
DIST
UTC

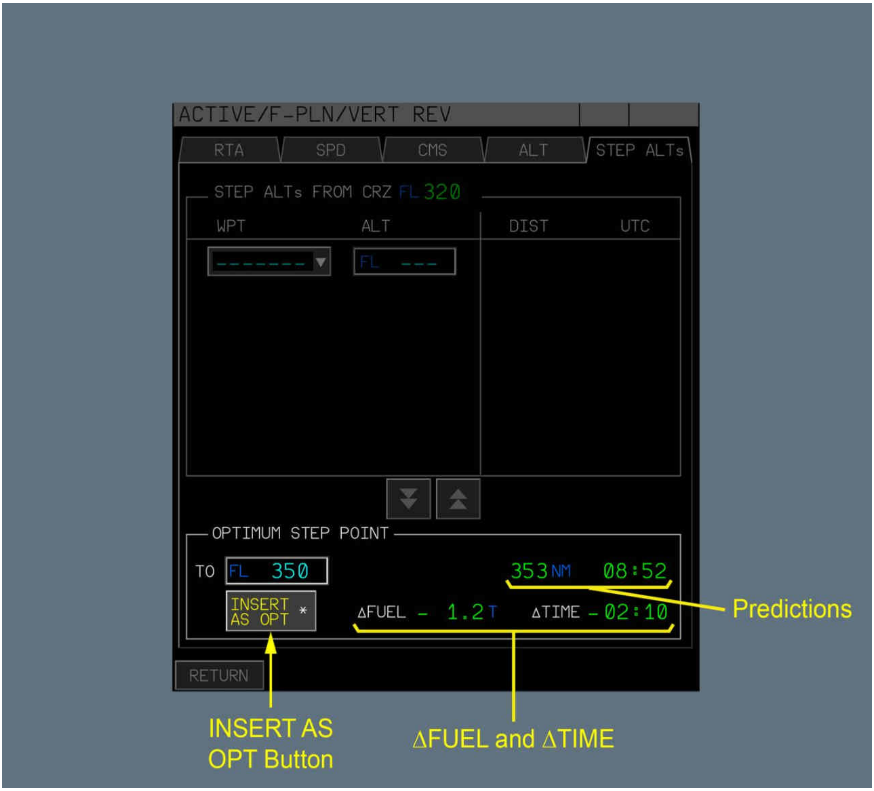
OPTIMUM STEP POINT
TO
FL 350
RETURN

In the TO entry field, the flight crew enters the step altitude for which they want to compute the optimum step point (for the entry format, *Refer to DSC-22-FMS-20-80 ALT*).

Note: *The entered step altitude needs to be at least 100 ft above the current cruise flight level.*

When a valid step altitude is entered, the FMS computes the optimum step point, and the OPTIMUM STEP POINT area displays the associated data.

Optimum Step Point


ACTIVE/F-PLN/VERT REV
RTA
SPD
CMS
ALT
STEP ALTs
STEP ALTs FROM CRZ FL 320
WPT
ALT
DIST
UTC

FL ---
OPTIMUM STEP POINT
TO
FL 350
353 NM
08:52
INSERT AS OPT *
ΔFUEL - 1.2 T
ΔTIME - 02:10
RETURN
Predictions
INSERT AS OPT Button
ΔFUEL and ΔTIME

Note: *During the optimum step point computation, dashes are displayed instead of the distance, time, and fuel values.*

Predictions

Indicate the following predictions:
- The distance to the optimum step point, along the flight plan
- The ETA, in UTC(flight) time, at the optimum step point.

L2 These distance and time predictions are not displayed, when the optimum step point is inserted in the active (or temporary) flight plan.

L1 ΔFUEL and ΔTIME

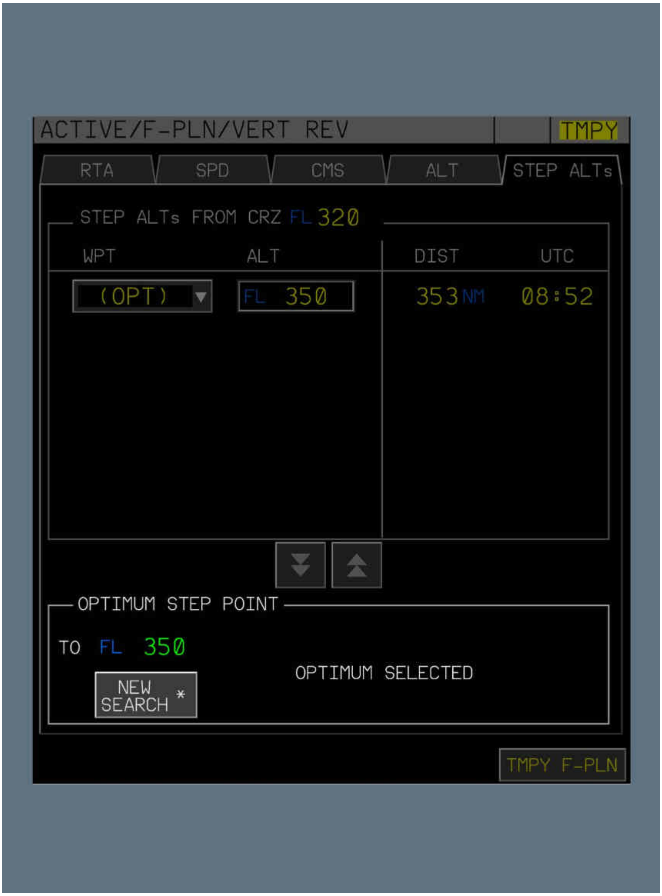
Indicate the following data:
- The quantity of fuel that will be saved or added, if the step with the optimum step point is inserted in the flight plan
- The time that will be saved or added, if the step with the optimum step point is inserted in the flight plan.

A minus sign means that some fuel or time will be saved.
A plus sign means that there will be an additional fuel or time cost.

INSERT AS OPT Button

When clicked, inserts the optimum step point in the temporary flight plan, and displays the OPTIMUM SELECTED label.
The label of the button changes from INSERT AS OPT to NEW SEARCH.

OPTIMUM SELECTED Label and NEW SEARCH Button

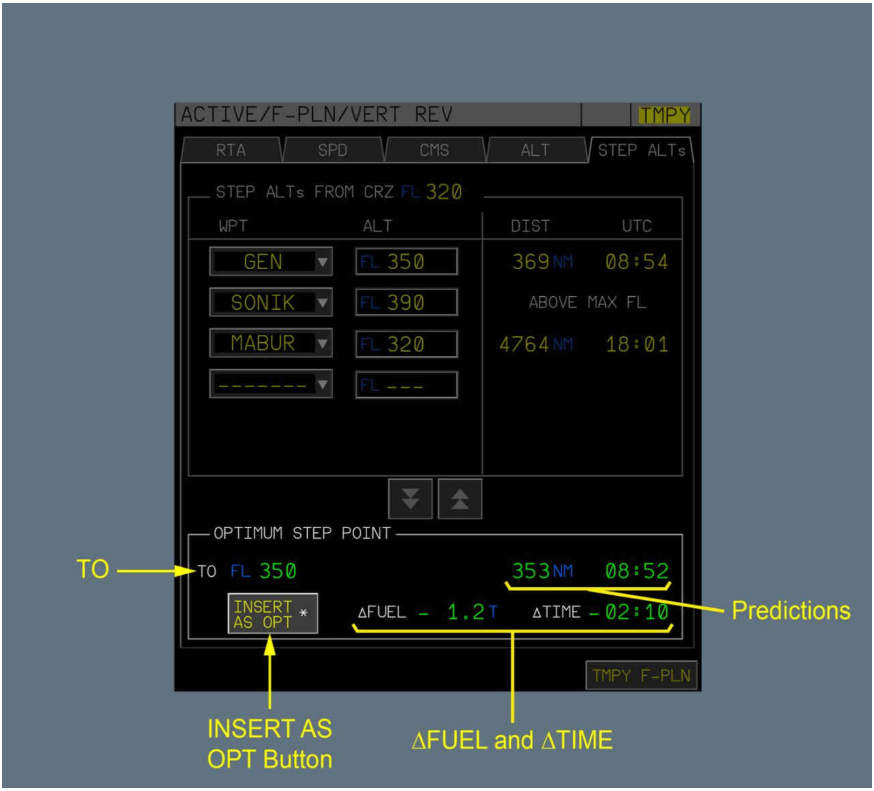

ACTIVE/F-PLN/VERT REV
TMPY
RTA
SPD
CMS
ALT
STEP ALTs
STEP ALTs FROM CRZ FL 320
WPT
ALT
DIST
UTC
(OPT)
FL 350
353 NM
08:52
OPTIMUM STEP POINT
TO FL 350
NEW SEARCH *
OPTIMUM SELECTED
TMPY F-PLN

If the flight crew clicks on the NEW SEARCH button, the FMS computes the optimum step point again. If the computation results in a new optimum step point, the label of the button changes from NEW SEARCH to INSERT AS OPT. When clicked, inserts the new optimum step point in the temporary flight plan.

THE FLIGHT PLAN HAS AT LEAST ONE STEP

If the next down-path step in the flight plan is a step climb, the FMS computes the optimum step point for this step, and the OPTIMUM STEP POINT area displays the associated data.

Optimum Step Point


ACTIVE/F-PLN/VERT REV
TMPY
RTA
SPD
CMS
ALT
STEP ALTs
STEP ALTs FROM CRZ FL 320
WPT
ALT
DIST
UTC
GEN
FL 350
369 NM
08:54
SONIK
FL 390
ABOVE MAX FL
MABUR
FL 320
4764 NM
18:01

FL ---
OPTIMUM STEP POINT
TO FL 350
353 NM
08:52
INSERT AS OPT *
ΔFUEL - 1.2 T
ΔTIME - 02:10
TMPY F-PLN
TO
Predictions
INSERT AS OPT Button
ΔFUEL and ΔTIME

TO

Indicates the climb step altitude of the computed optimum step point.

Predictions

Indicate the following predictions:
- The distance to the optimum step point, along the flight plan
- The ETA, in UTC(flight) time, at the optimum step point.

L2 These distance and time predictions are not displayed, when the optimum step point is inserted in the active (or temporary) flight plan.

L1 ΔFUEL and ΔTIME

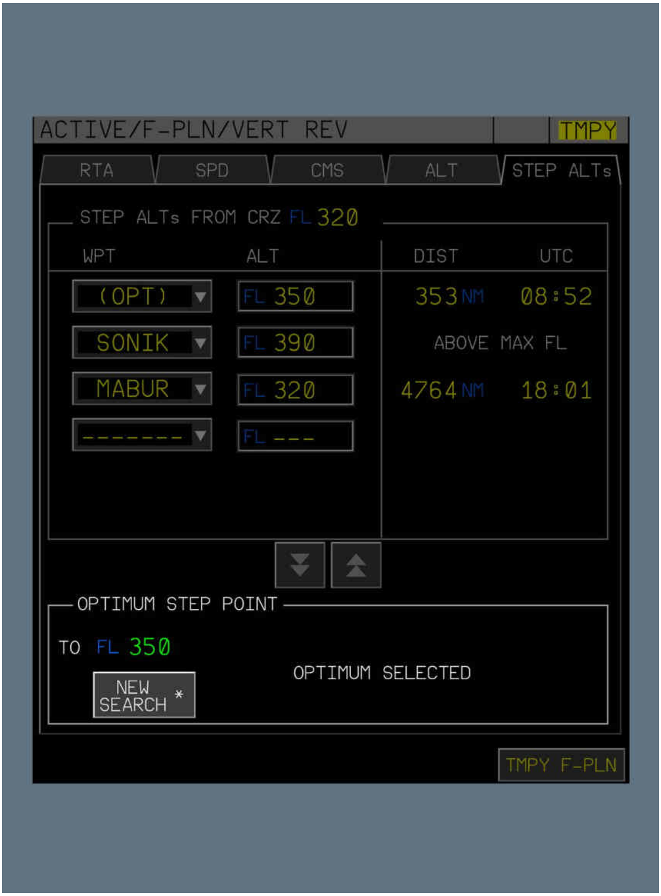
Indicate the following data:
- The quantity of fuel that will be saved or added, if the aircraft initiates the step climb at the optimum step point, instead of the start waypoint that was entered by the flight crew
- The time that will be saved or added, if the aircraft initiates the step climb at the optimum step point, instead of the start waypoint that was entered by the flight crew.

A minus sign means that some fuel or time will be saved.
A plus sign means that there will be an additional fuel or time cost.

INSERT AS OPT Button

When clicked, inserts the optimum step point in the temporary flight plan, and displays the OPTIMUM SELECTED label.
The label of the button changes from INSERT AS OPT to NEW SEARCH.

OPTIMUM SELECTED Label and NEW SEARCH Button



STEP ALTs FROM CRZ FL 320

WPT	ALT	DIST	UTC
(OPT)	FL 350	353 NM	08:52
SONIK	FL 390	ABOVE MAX FL	
MABUR	FL 320	4764 NM	18:01
--------	FL ---		

OPTIMUM STEP POINT

TO FL 350

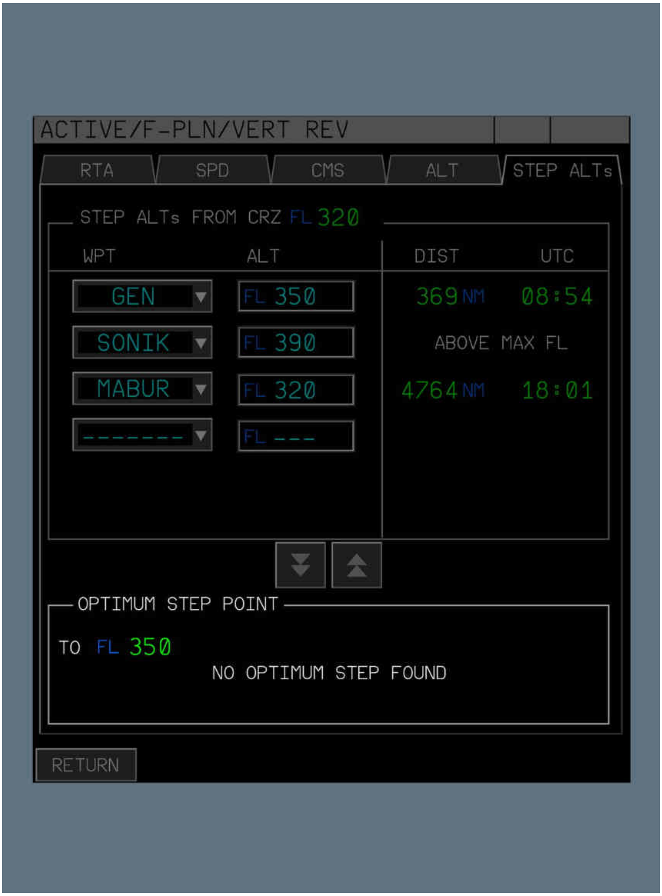
OPTIMUM SELECTED

If the flight crew clicks on the NEW SEARCH button, the FMS computes the optimum step point again. If the computation results in a new optimum step point, the label of the button changes from NEW SEARCH to INSERT AS OPT. When clicked, inserts the new optimum step point in the temporary flight plan.

NO OPTIMUM STEP

If there is no optimum step point, the OPTIMUM STEP POINT area displays the NO OPTIMUM STEP FOUND label.

NO OPTIMUM STEP FOUND Label



STEP ALTs FROM CRZ FL 320

WPT	ALT	DIST	UTC
GEN	FL 350	369 NM	08:54
SONIK	FL 390	ABOVE MAX FL	
MABUR	FL 320	4764 NM	18:01
--------	FL ---		

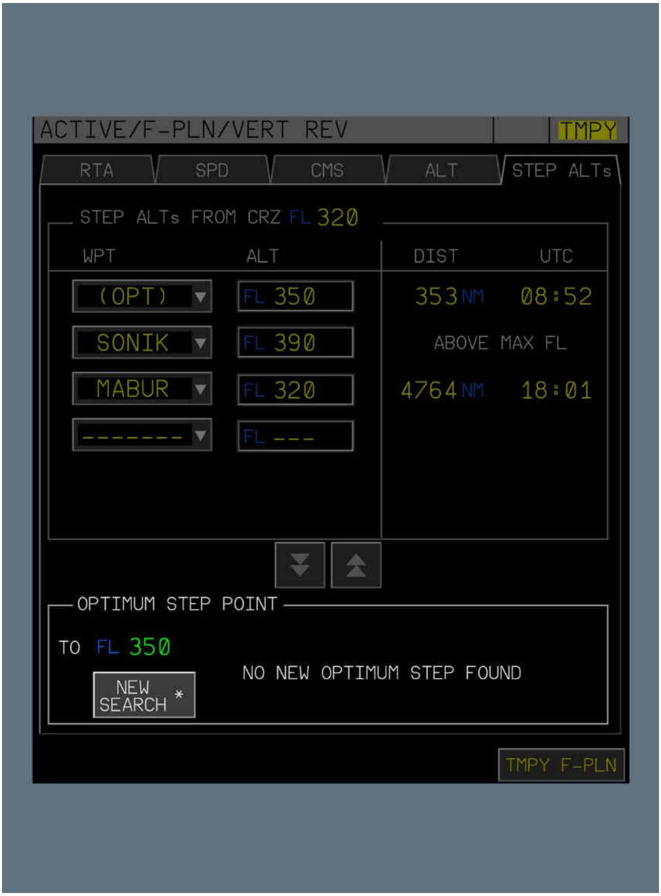
OPTIMUM STEP POINT

TO FL 350

NO OPTIMUM STEP FOUND

If there is already an optimum step point and the FMS does not find a better optimum step point after the flight crew clicks on the NEW SEARCH button, the OPTIMUM STEP POINT area displays the NO NEW OPTIMUM STEP FOUND label.

NO NEW OPTIMUM STEP FOUND Label


ACTIVE/F-PLN/VERT REV
TMPY
RTA
SPD
CMS
ALT
STEP ALTs
NEW SEARCH *
TMPY F-PLN

STEP ALTs FROM CRZ FL 320

WPT	ALT	DIST	UTC
(OPT)	FL 350	353 NM	08:52
SONIK	FL 390	ABOVE MAX FL	
MABUR	FL 320	4764 NM	18:01
--------	FL ---		

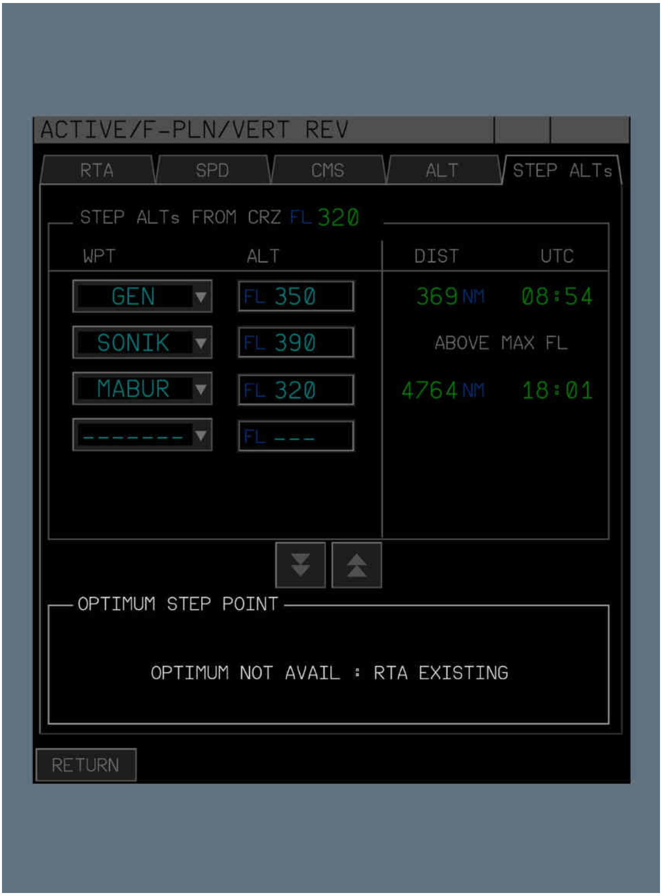
OPTIMUM STEP POINT

TO FL 350

NO NEW OPTIMUM STEP FOUND

If there is a time constraint in the flight plan, the FMS cannot compute the optimum step point. In this case, the OPTIMUM STEP POINT area displays the OPTIMUM NOT AVAIL : RTA EXISTING label.

OPTIMUM NOT AVAIL : RTA EXISTING Label



ACTIVE/F-PLN/VERT REV

STEP ALTs FROM CRZ FL 320

WPT	ALT	DIST	UTC
GEN	FL 350	369 NM	08:54
SONIK	FL 390	ABOVE MAX FL	
MABUR	FL 320	4764 NM	18:01
--------	FL ---		

OPTIMUM STEP POINT

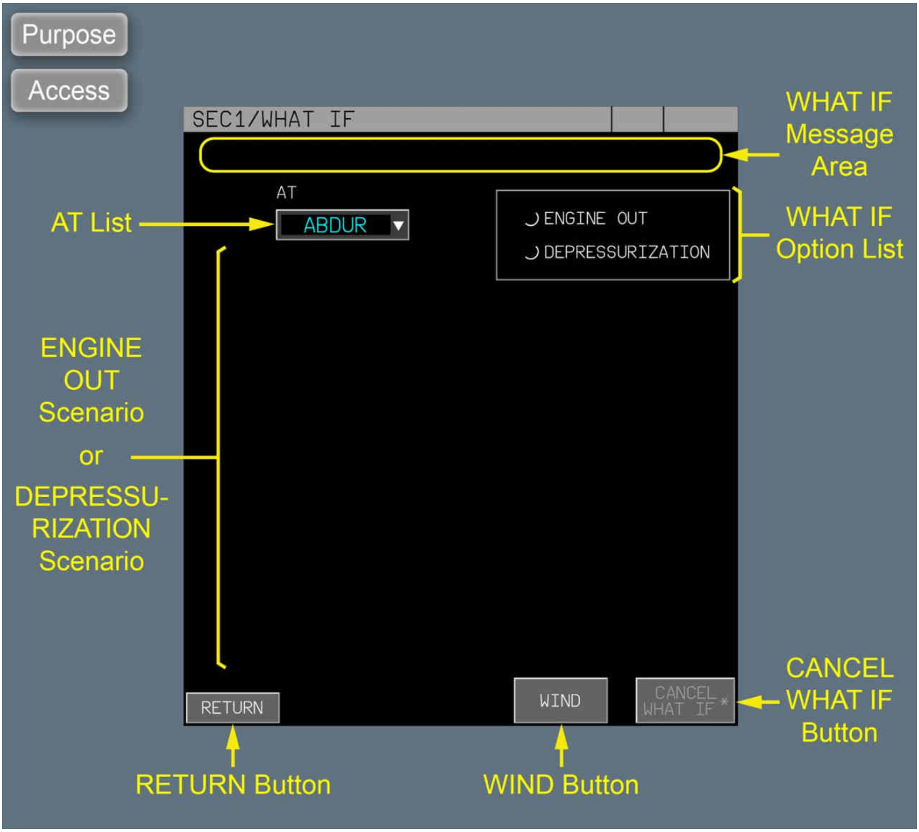
OPTIMUM NOT AVAIL : RTA EXISTING

WHAT IF PAGE

Applicable to: ALL

Ident.: DSC-22-FMS-20-20-20-400-00003618.0001001 / 22 APR 14

WHAT IF Page


Purpose
Access
SEC1/WHAT IF
WHAT IF Message Area
AT
AT List
ABDUR
ENGINE OUT
DEPRESSURIZATION
WHAT IF Option List
ENGINE OUT Scenario or DEPRESSU-RIZATION Scenario
RETURN
WIND
CANCEL WHAT IF *
CANCEL WHAT IF Button
RETURN Button
WIND Button

Ident.: DSC-22-FMS-20-20-20-400-00013258.0001001 / 22 APR 14

PURPOSE

On the WHAT IF page, the flight crew can enter and display the parameters that the FMS uses to simulate the WHAT IF event. The WHAT IF event can be:
- An engine-out that occurs during the CRZ flight phase, or
- Depressurization that occurs during the CRZ flight phase.

The WHAT IF page enables the flight crew to assess the capability of the aircraft to reach the destination airport of the flight plan, in the case of the WHAT IF event.
The WHAT IF page is available for the secondary flight plans only.

Note: *The FMS cannot simulate more than one WHAT IF event at a time for one secondary flight plan. However, the flight crew can select one WHAT IF event for each of the three secondary flight plans at the same time. The WHAT IF event can be different for each secondary flight plan.*

LINKS

For information about the WHAT IF function, *Refer to DSC-22-FMS-10-40-40 WHAT IF Function*.

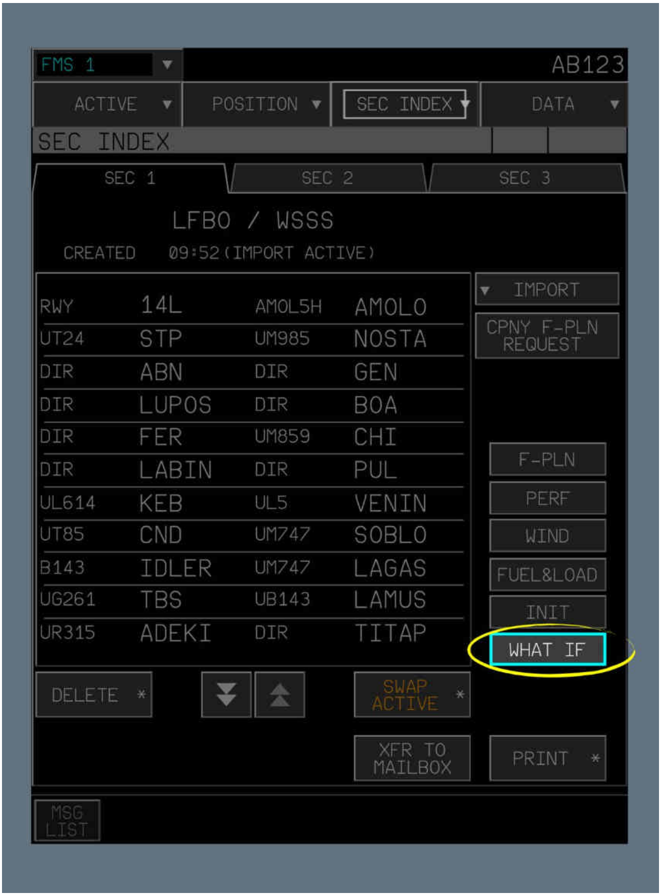
Ident.: DSC-22-FMS-20-20-20-400-00013259.0001001 / 14 APR 14

ACCESS

The flight crew can access the WHAT IF page via:

- The SEC INDEX page, by clicking on the WHAT IF button

SEC INDEX Page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
SEC INDEX
SEC 1
SEC 2
SEC 3
IMPORT
CPNY F-PLN REQUEST
F-PLN
PERF
WIND
FUEL&LOAD
INIT
WHAT IF
DELETE *
SWAP ACTIVE *
XFR TO MAILBOX
PRINT *
MSG LIST

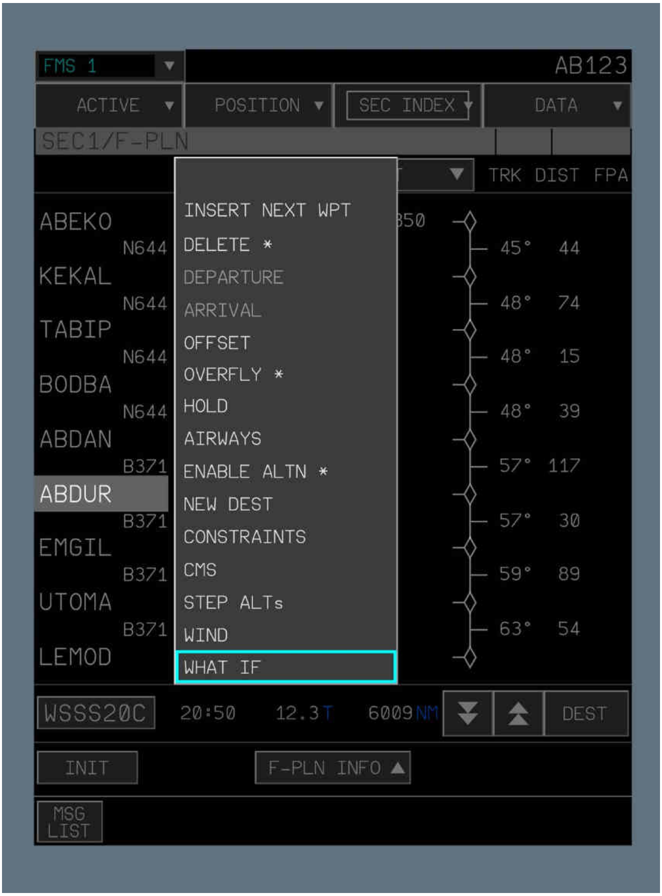
LFBO / WSSS

CREATED 09:52(IMPORT ACTIVE)

RWY	14L	AMOL5H	AMOLO
UT24	STP	UM985	NOSTA
DIR	ABN	DIR	GEN
DIR	LUPOS	DIR	BOA
DIR	FER	UM859	CHI
DIR	LABIN	DIR	PUL
UL614	KEB	UL5	VENIN
UT85	CND	UM747	SOBLO
B143	IDLER	UM747	LAGAS
UG261	TBS	UB143	LAMUS
UR315	ADEKI	DIR	TITAP

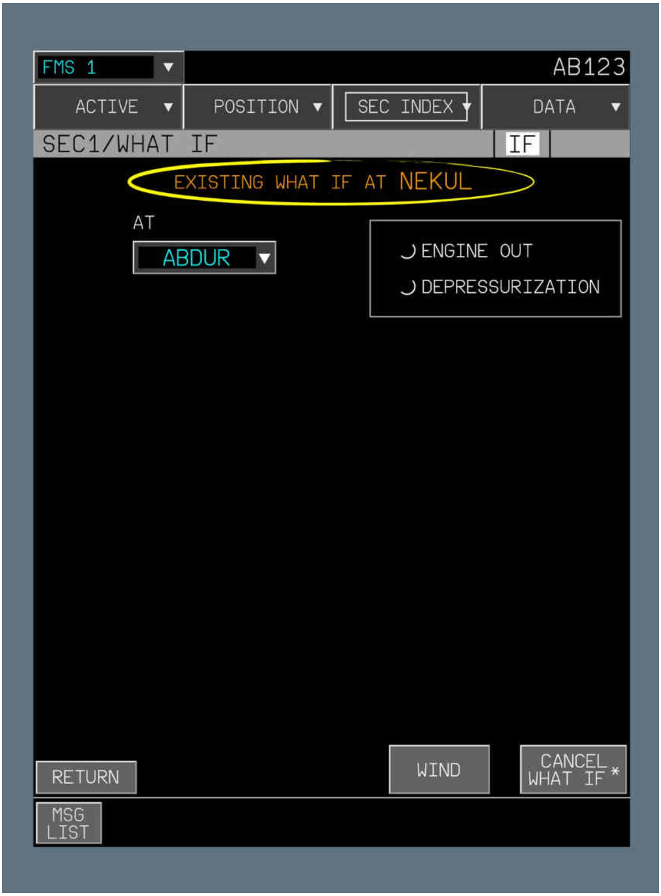
- The SEC/F-PLN page, by selecting WHAT IF in the waypoint revisions menu.
  The WHAT IF revision is available, only if the revised waypoint is a cruise waypoint of the flight plan.

Waypoint Revisions Menu


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
SEC1/F-PLN
TRK DIST FPA
ABEKO
N644
KEKAL
N644
TABIP
N644
BODBA
N644
ABDAN
B371
ABDUR
B371
EMGIL
B371
UTOMA
B371
LEMOD
350
45° 44
48° 74
48° 15
48° 39
57° 117
57° 30
59° 89
63° 54
INSERT NEXT WPT
DELETE *
DEPARTURE
ARRIVAL
OFFSET
OVERFLY *
HOLD
AIRWAYS
ENABLE ALTN *
NEW DEST
CONSTRAINTS
CMS
STEP ALTs
WIND
WHAT IF
WSSS20C
20:50
12.3T
6009NM
DEST
INIT
F-PLN INFO
MSG LIST

L3 *Note:* *1. The WHAT IF message area displays the EXISTING WHAT IF AT XXXXXXX message (the "XXXXXXX" corresponds to a waypoint ident), if all of the following occur:*
- *The secondary flight plan already contains a WHAT IF scenario at the XXXXXXX waypoint*
- *The flight crew accesses the WHAT IF page via a waypoint that is not the XXXXXXX waypoint.*

EXISTING WHAT IF AT XXXXXXX Message



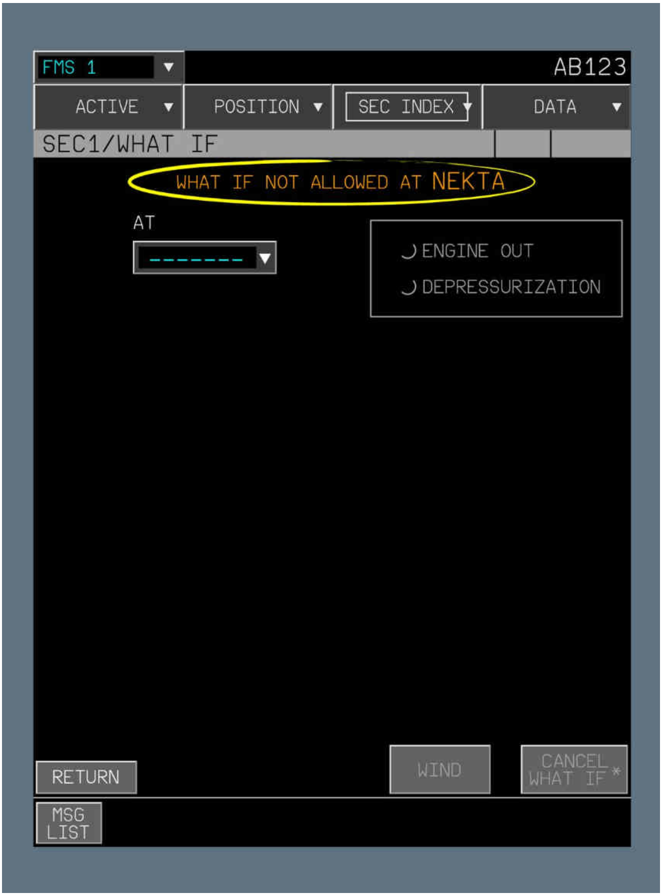
EXISTING WHAT IF AT NEKUL

AT ABDUR

FMS 1 ▼
AB123
ACTIVE ▼
POSITION ▼
SEC INDEX ▼
DATA ▼
SEC1/WHAT IF
IF
○ ENGINE OUT
○ DEPRESSURIZATION
RETURN
WIND
CANCEL WHAT IF *
MSG LIST

2. *If the flight crew accesses the WHAT IF page via a waypoint at which the FMS cannot simulate a WHAT IF event, the WHAT IF page displays the WHAT IF NOT ALLOWED AT XXXXXXX message (the "XXXXXXX" corresponds to the ident of the waypoint at which the FMS cannot simulate a WHAT IF event).*

WHAT IF NOT ALLOWED AT XXXXXXX Message


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
SEC1/WHAT IF

WHAT IF NOT ALLOWED AT NEKTA

AT

ENGINE OUT
DEPRESSURIZATION
RETURN
WIND
CANCEL WHAT IF *
MSG LIST

Ident.: DSC-22-FMS-20-20-20-400-00013572.0001001 / 22 APR 14

WHAT IF MESSAGE AREA

The WHAT IF message area displays the following messages (only one message appears at a time):

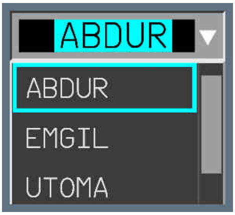
EXISTING WHAT IF AT XXXXXXX	(The "XXXXXXX" corresponds to the ident of a waypoint.) Indicates that: - The flight plan already has a WHAT IF event that is simulated at the XXXXXXX waypoint - The XXXXXXX waypoint is different from the revised waypoint that the flight crew selected to simulate the WHAT IF event. The secondary flight plan can have only one WHAT IF scenario. Therefore, in order to simulate a WHAT IF event at the revised waypoint, the flight crew must first cancel the WHAT IF scenario that currently applies to the secondary flight plan.
WHAT IF NOT ALLOWED AT XXXXXXX	(The "XXXXXXX" corresponds to the ident of the revised waypoint.) Indicates that the FMS cannot simulate a WHAT IF event at the XXXXXXX waypoint.

Ident.: DSC-22-FMS-20-20-20-400-00013552.0001001 / 14 APR 14

AT LIST

Indicates the revised waypoint.
The revised waypoint is the waypoint at which the FMS simulates the WHAT IF event.
The revised waypoint is a cruise waypoint of the flight plan.
The WHAT IF event applies to the secondary flight plan from the revised waypoint to the last waypoint of the CRZ flight phase.
The flight crew selects the revised waypoint from the AT list.
The AT list displays all of the possible waypoints at which the FMS can simulate a WHAT IF event.

AT List



By default, the revised waypoint is one of the following:
- The waypoint of the SEC/F-PLN page from which the flight crew accessed the WHAT IF page
- P.POS, if all of the following apply:
  - The flight crew accessed the WHAT IF page via the SEC INDEX page
  - The secondary flight plan contains no WHAT IF scenario
  - The active flight phase is CRZ, and the flight crew used a copy of the active flight plan to create the secondary flight plan
- The first cruise waypoint of the secondary flight plan, if all of the following apply:
  - The flight crew accessed the WHAT IF page via the SEC INDEX page
  - The secondary flight plan contains no WHAT IF scenario
  - The active flight phase is not CRZ, or the flight crew did not use a copy of the active flight plan to create the secondary flight plan
- The cruise waypoint of the flight plan at which there is a WHAT IF scenario, if all of the following apply:
  - The flight crew accessed the WHAT IF page via the SEC INDEX page
  - The secondary flight plan contains a WHAT IF scenario.

L3 The entry field of the AT list displays dashes, if the secondary flight plan contains no cruise waypoints.

L13

Note: 1. *If the flight crew selects P.POS as the revised waypoint, the WHAT IF scenario will apply until the end of the CRZ flight phase. However, if the revised waypoint is a cruise waypoint of the flight plan that is not P.POS, the FMS will automatically cancel the WHAT IF scenario, as soon as the aircraft sequences the revised waypoint.*

2. *The WHAT IF message area displays the EXISTING WHAT IF AT XXXXXXX message (the "XXXXXXX" corresponds to a waypoint ident), if all of the following occur:*
   - *The secondary flight plan already contains a WHAT IF scenario at the XXXXXXX waypoint*
   - *The flight crew selects a waypoint, from the AT list, that is not the XXXXXXX waypoint.*

Ident.: DSC-22-FMS-20-20-20-400-00013553.0001001 / 22 APR 14

WHAT IF OPTION LIST

The flight crew uses the WHAT IF option list to select the WHAT IF event that they want to simulate at the revised waypoint.

The WHAT IF option list has the following options:
- ENGINE OUT: The WHAT IF event is an engine-out
  When selected, displays the ENGINE OUT scenario (*Refer to ENGINE OUT Scenario*).
- DEPRESSURIZATION: The WHAT IF event is depressurization.
  When selected, displays the DEPRESSURIZATION scenario (*Refer to DEPRESSURIZATION Scenario*).

L2 *Note:* *If the predicted altitude at the revised waypoint is below FL 100, the DEPRESSURIZATION option is not available.*

Ident.: DSC-22-FMS-20-20-20-400-00013554.0001001 / 05 MAY 14

ENGINE OUT SCENARIO

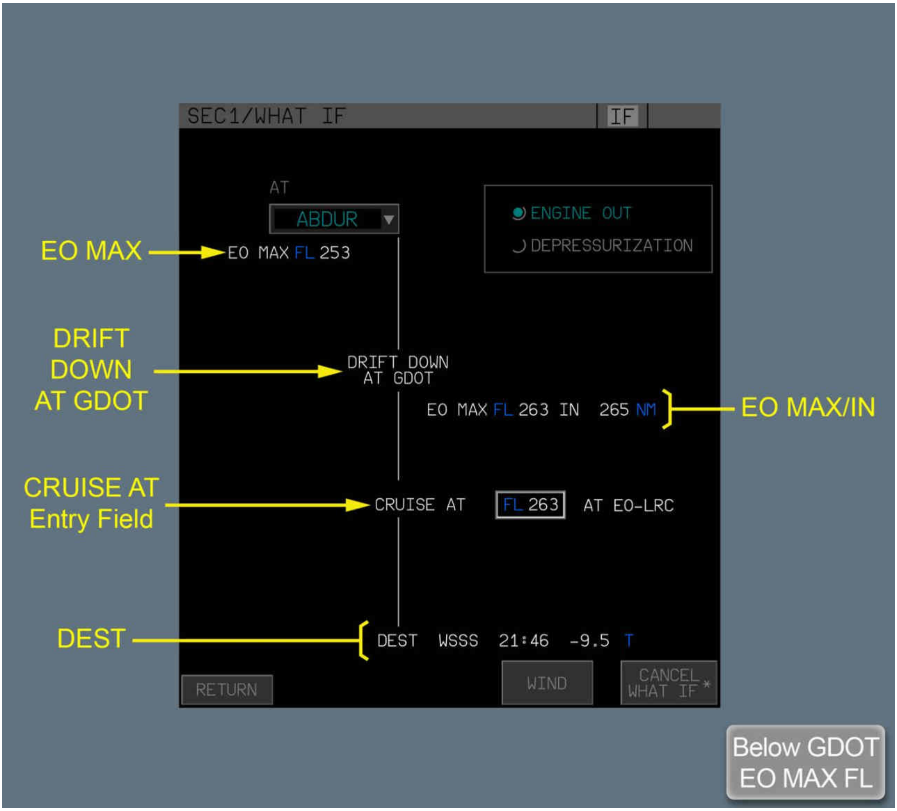
Indicates:
- The scenario that corresponds to the selected WHAT IF event: An engine-out
- The scenario parameters that the FMS uses to compute all predictions
- The fuel and time predictions at destination, based on the scenario parameters.

For the ENGINE OUT scenario, the FMS computes the GDOT Engine-Out Maximum Flight Level (GDOT EO MAX FL).

The GDOT EO MAX FL is the maximum flight level at which the aircraft can:
- Level off at EO-GDOT speed
- Begin to accelerate toward the EO-LRC speed.

The displayed ENGINE OUT scenario depends on the predicted altitude at the revised waypoint:
- If the predicted altitude at the revised waypoint is above the GDOT EO MAX FL, the scenario includes a drift-down procedure
- If the predicted altitude at the revised waypoint is below the GDOT EO MAX FL, the scenario includes a cruise at the predicted altitude of the revised waypoint.

ENGINE OUT Scenario [WHAT IF Event above GDOT EO MAX FL]


SEC1/WHAT IF

AT ABDUR

● ENGINE OUT
○ DEPRESSURIZATION

EO MAX FL 253

DRIFT DOWN
AT GDOT

EO MAX FL 263 IN 265 NM

CRUISE AT FL 263 AT EO-LRC

DEST WSSS 21:46 -9.5 T

EO MAX

DRIFT DOWN AT GDOT

EO MAX/IN

CRUISE AT Entry Field

DEST

Below GDOT EO MAX FL

EO MAX [WHAT IF EVENT ABOVE GDOT EO MAX FL]

Indicates the LRC EO MAX FL that is predicted at the revised waypoint.
The LRC EO MAX FL is the maximum flight level at which the aircraft is able to level off at EO-LRC speed.

L2 For more information about the LRC EO MAX FL, *Refer to DSC-22-FMS-10-60 LRC Engine-Out Maximum Flight Level (LRC EO MAX FL)*.

L1

EO MAX [WHAT IF EVENT BELOW GDOT EO MAX FL]

Indicates the GDOT EO MAX FL that is predicted at the revised waypoint.

DRIFT DOWN AT GDOT

Indicates that the ENGINE OUT scenario includes a drift-down procedure at EO-GDOT speed.

EO MAX/IN

Indicate:
- The GDOT EO MAX FL that is predicted at the end of the drift-down procedure
- The distance, from the revised waypoint, to reach the GDOT EO MAX FL.

CRUISE AT ENTRY FIELD [WHAT IF EVENT ABOVE GDOT EO MAX FL]

Indicates the cruise flight level at which the aircraft flies, when the ENGINE OUT scenario applies.
By default, the cruise flight level is the GDOT EO MAX FL that is predicted at the end of the drift-down procedure.
The flight crew can overwrite the default value.

L13

Note: 1. *The cruise flight level must be below the GDOT EO MAX FL. If the flight crew enters a cruise flight level that is above the GDOT EO MAX FL, the FMS message area displays the* ENTRY ABOVE EO MAX FL *message (Refer to message).*
2. *The cruise flight level must be above the following minimum altitude: Altitude of the destination airport of the secondary flight plan plus 1 500 ft. If the flight crew enters a cruise flight level that is below this minimum altitude, the FMS message area displays the* ENTRY OUT OF RANGE *message (Refer to message).*

The default value reappears, if the flight crew clears the manually-entered value.
The manually-entered value automatically reverts to the default value, if the manually-entered value goes above the GDOT EO MAX FL (due to a gross weight modification, for example).

Entry Format

Refer to DSC-22-FMS-20-80 CRZ FL.

CRUISE AT ENTRY FIELD [WHAT IF EVENT BELOW GDOT EO MAX FL]

Indicates the cruise flight level at which the aircraft flies, when the ENGINE OUT scenario applies.
By default, the cruise flight level is the cruise flight level that is predicted at the revised waypoint.
The flight crew can overwrite the default value.

L13

Note: 1. *The cruise flight level must be below the GDOT EO MAX FL. If the flight crew enters a cruise flight level that is above the GDOT EO MAX FL, the FMS message area displays the ENTRY ABOVE EO MAX FL message (Refer to message).*
2. *The cruise flight level must be above the following minimum altitude: Altitude of the destination airport of the secondary flight plan plus 1 500 ft. If the flight crew enters a cruise flight level that is below this minimum altitude, the FMS message area displays the ENTRY OUT OF RANGE message (Refer to message).*

The default value reappears, if the flight crew clears the manually-entered value.
The manually-entered value automatically reverts to the GDOT EO MAX FL, if the manually-entered value goes above the GDOT EO MAX FL (due to a gross weight modification, for example).

Entry Format

Refer to DSC-22-FMS-20-80 CRZ FL.

DEST

Indicates:
- The ident of the destination airport of the secondary flight plan
- The Estimated Time of Arrival (ETA), in UTC(flight) time, at the destination airport of the secondary flight plan

L2

The time reference is defined as follows:
- In the PREFLIGHT flight phase:
  - If there is an entered Estimated Takeoff Time (ETT), the time reference is the UTC time
  - If there is no entered ETT, the time reference is the flight time

  The flight crew enters the ETT on the RTA panel of the VERT REV page (*Refer to page*).
- In flight:
  - If the UTC time is valid, the time reference is the UTC time
  - If the UTC time is not valid, the time reference is the flight time.

L1

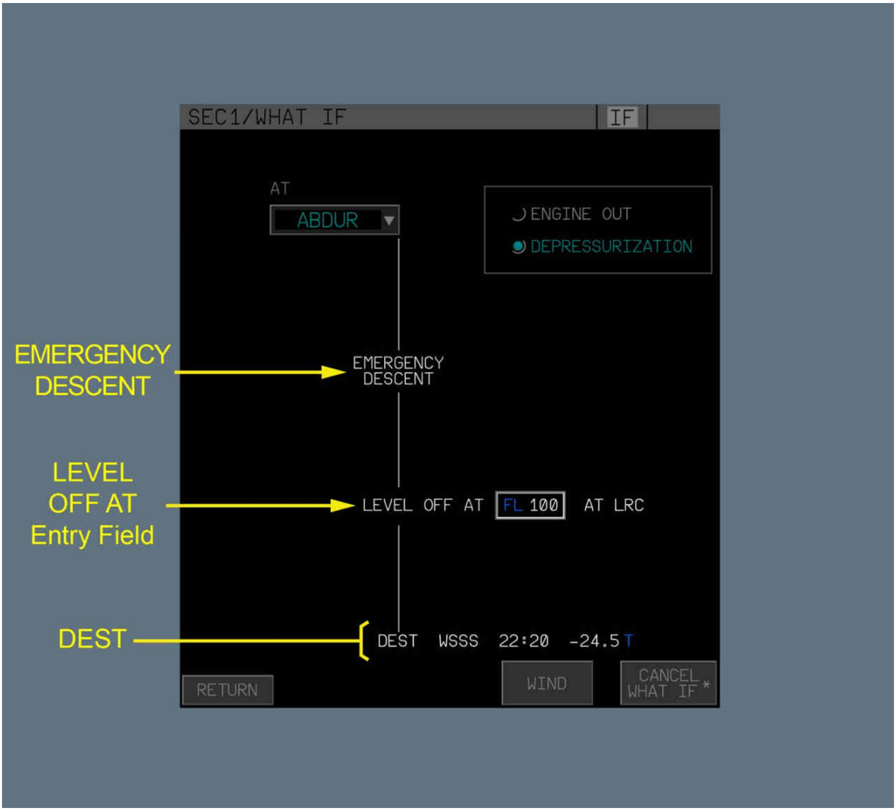
The FMS computes this ETA, based on the displayed and entered parameters of the WHAT IF scenario.
- The Estimated Fuel On Board (EFOB) at the destination airport of the secondary flight plan. The FMS computes this EFOB, based on the displayed and entered parameters of the WHAT IF scenario.

Note: *The EFOB value is always displayed in white (even if the value is negative).*

DEPRESSURIZATION SCENARIO

Indicates:
- The scenario that corresponds to the selected WHAT IF event: Depressurization
- The scenario parameters that the FMS uses to compute the predictions
- The fuel and time predictions at destination, based on the scenario parameters.

DEPRESSURIZATION Scenario


SEC1/WHAT IF
IF
RETURN
WIND
CANCEL WHAT IF *
EMERGENCY DESCENT
LEVEL OFF AT Entry Field
DEST

AT ABDUR

○ ENGINE OUT
● DEPRESSURIZATION

EMERGENCY DESCENT

LEVEL OFF AT FL 100 AT LRC

DEST WSSS 22:20 -24.5 T

EMERGENCY DESCENT

Indicates that the DEPRESSURIZATION scenario includes an emergency descent.

LEVEL OFF AT ENTRY FIELD

Indicates the cruise flight level at which the aircraft flies, when the DEPRESSURIZATION scenario applies.
By default, the cruise flight level is FL 100.
The flight crew can overwrite the default value.

L13

Note: *1. The cruise flight level must be below the predicted altitude at the revised waypoint. If the flight crew enters a cruise flight level that is above the predicted altitude at the revised waypoint, the FMS message area displays the ENTRY OUT OF RANGE message (Refer to message).*
2. The cruise flight level must be above the following minimum altitude: Altitude of the destination plus 1 500 ft. If the flight crew enters a cruise flight level that is below this minimum altitude, the FMS message area displays the ENTRY OUT OF RANGE message (Refer to message).

The default value reappears, if the flight crew clears the manually-entered value.

DEST

Indicates:
- The ident of the destination airport of the secondary flight plan
- The Estimated Time of Arrival (ETA), in UTC(flight) time, at the destination airport of the secondary flight plan

L2 The time reference is defined as follows:
- In the PREFLIGHT flight phase:
  - ■ If there is an entered Estimated Takeoff Time (ETT), the time reference is the UTC time
  - ■ If there is no entered ETT, the time reference is the flight time

  The flight crew enters the ETT on the RTA panel of the VERT REV page (*Refer to page*).
- In flight:
  - ■ If the UTC time is valid, the time reference is the UTC time
  - ■ If the UTC time is not valid, the time reference is the flight time.

L1 The FMS computes this ETA, based on the displayed and entered parameters of the WHAT IF scenario.
- The Estimated Fuel On Board (EFOB) at the destination airport of the secondary flight plan. The FMS computes this EFOB, based on the displayed and entered parameters of the WHAT IF scenario.

Note: *The EFOB value is always displayed in white (even if the value is negative).*

Ident.: DSC-22-FMS-20-20-20-400-00013556.0001001 / 22 APR 14

RETURN BUTTON

When clicked, displays the page that was displayed before the WHAT IF page.

Ident.: DSC-22-FMS-20-20-20-400-00013557.0001001 / 22 APR 14

WIND BUTTON

When clicked, displays the SEC/WIND page (*Refer to page*).

L2 The CRZ panel opens by default.

Ident.: DSC-22-FMS-20-20-20-400-00013558.0001001 / 14 APR 14

CANCEL WHAT IF BUTTON

When clicked:
- Cancels the WHAT IF scenario in the secondary flight plan
- Displays the SEC/F-PLN page (*Refer to page*).

L12

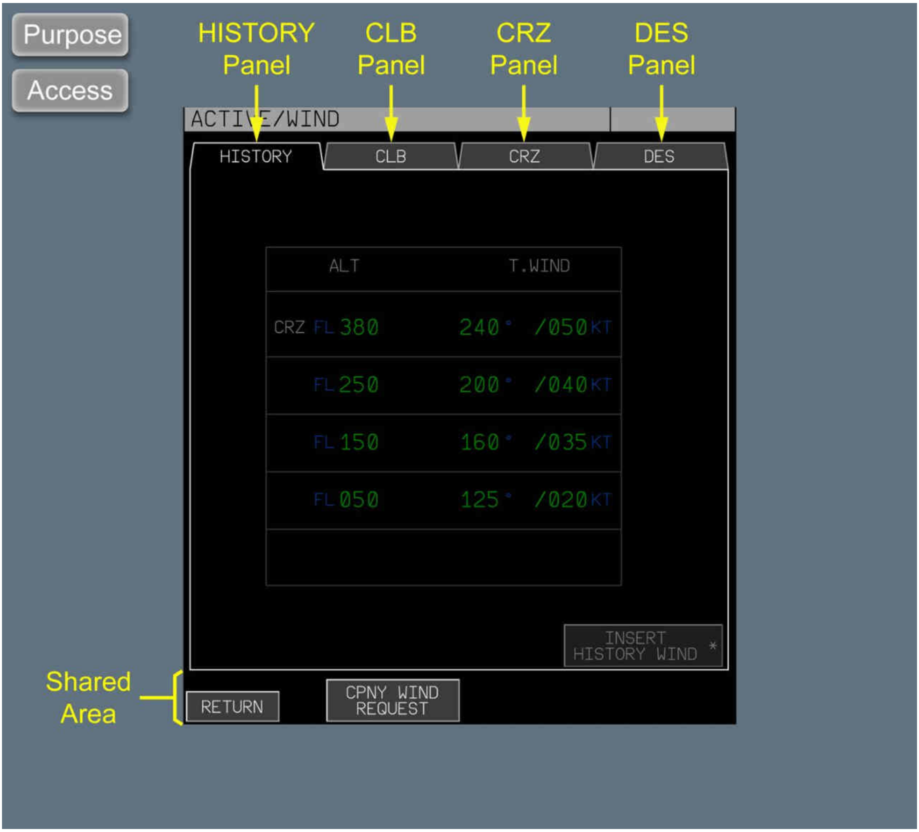
Note: *The FMS automatically cancels the WHAT IF scenario in the secondary flight plan, if one of the following occurs:*
- *The revised waypoint at which the FMS simulated the WHAT IF event was not P.POS, and the aircraft sequences this revised waypoint*
- *The flight crew uses the SWAP function (i.e. the secondary flight plan becomes the active flight plan, and vice versa)*
- *The revised waypoint at which the FMS simulated the WHAT IF event is no longer a cruise waypoint of the flight plan.*
- *The EO mode becomes active.*

WIND PAGE

Applicable to: ALL

Ident.: DSC-22-FMS-20-20-20-410-00002738.0001001 / 22 APR 14

WIND Page


Purpose
Access
HISTORY Panel
CLB Panel
CRZ Panel
DES Panel
ACTIVE/WIND
HISTORY
CLB
CRZ
DES
INSERT HISTORY WIND *
Shared Area
RETURN
CPNY WIND REQUEST

ALT	T.WIND
CRZ FL 380	240° /050 KT
FL 250	200° /040 KT
FL 150	160° /035 KT
FL 050	125° /020 KT

Ident.: DSC-22-FMS-20-20-20-410-00004370.0001001 / 22 APR 14

PURPOSE

The WIND page enables the flight crew to:
- Insert climb, cruise, and descent winds
- Insert cruise temperatures

- Insert the alternate trip wind
- Insert (or clear) the received company wind data.

The WIND page also displays the history winds on the HISTORY panel.
The WIND page is available for the active and secondary flight plans.
The SEC/WIND page has no HISTORY panel.

LINKS

For information about the WIND revision, *Refer to DSC-22-FMS-10-40-30 Purpose*.

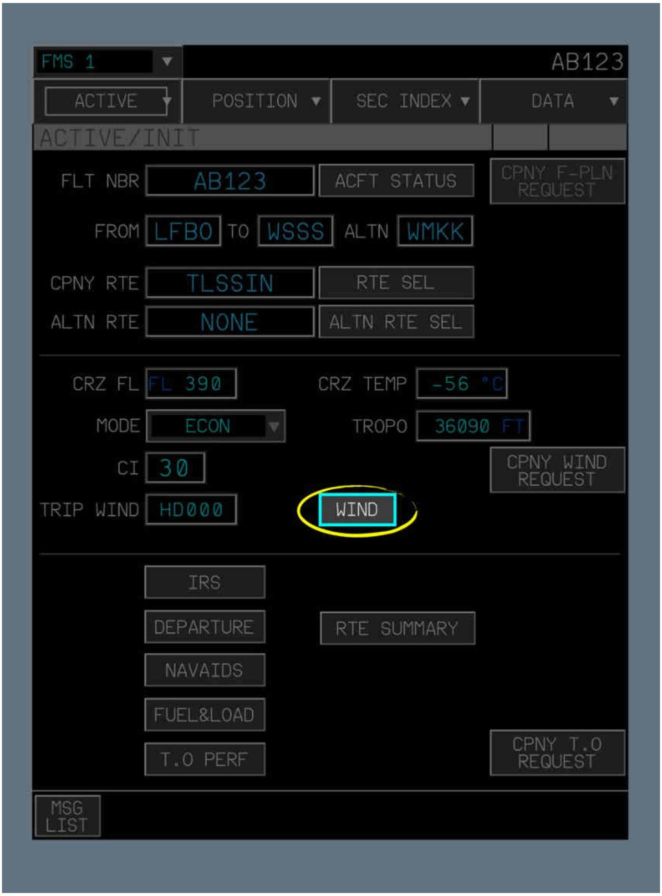
Ident.: DSC-22-FMS-20-20-20-410-00004371.0001001 / 14 APR 14

ACCESS

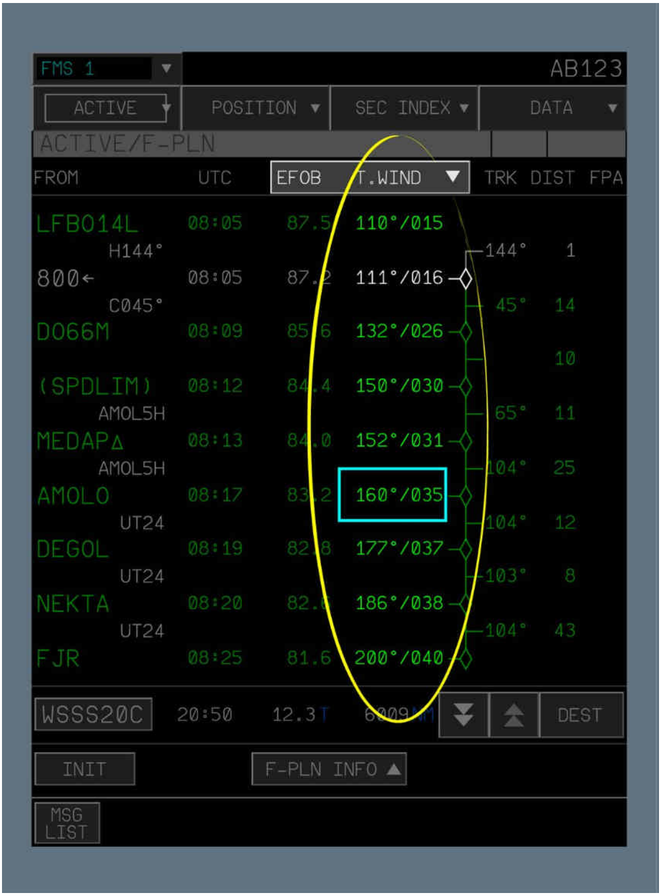
The flight crew can access:

- The WIND page via:
  - The INIT page, by clicking on the WIND button

INIT Page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/INIT
FLT NBR
AB123
ACFT STATUS
CPNY F-PLN REQUEST
FROM
LFBO
TO
WSSS
ALTN
WMKK
CPNY RTE
TLSSIN
RTE SEL
ALTN RTE
NONE
ALTN RTE SEL
CRZ FL
FL 390
CRZ TEMP
-56 °C
MODE
ECON
TROPO
36090 FT
CI
30
CPNY WIND REQUEST
TRIP WIND
HD000
WIND
IRS
DEPARTURE
RTE SUMMARY
NAVAIDS
FUEL&LOAD
T.O PERF
CPNY T.O REQUEST
MSG LIST

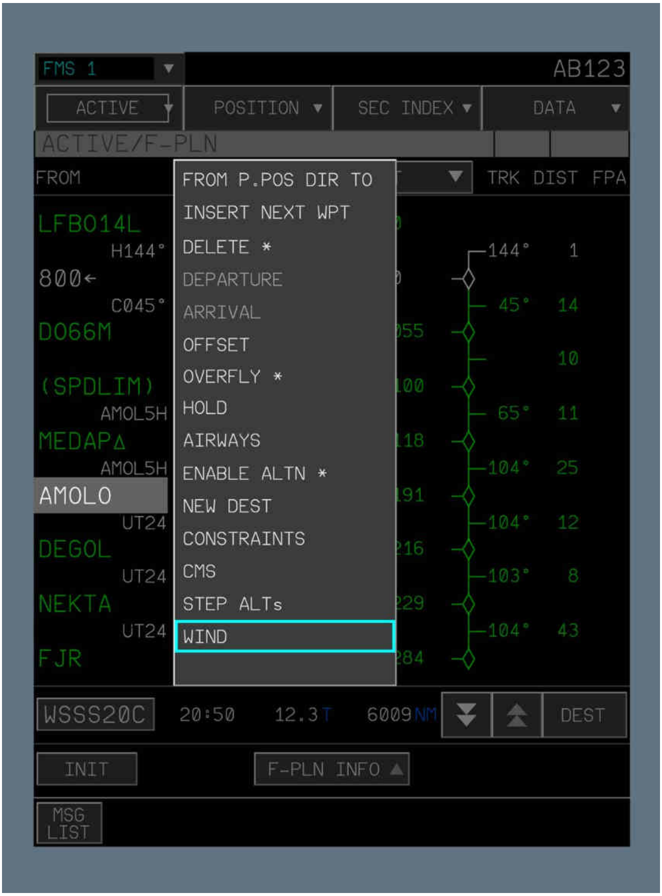
- The F-PLN page, by:
  - ■ Directly clicking on the wind prediction that is associated with a waypoint


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN
DEST
INIT
F-PLN INFO
MSG LIST

FROM	UTC	EFOB	T.WIND	TRK	DIST	FPA
LFBO14L	08:05	87.5	110°/015			
H144°				144°	1	
800←	08:05	87.2	111°/016			
C045°				45°	14	
D066M	08:09	85.6	132°/026			
					10	
(SPDLIM)	08:12	84.4	150°/030			
AMOL5H				65°	11	
MEDAPΔ	08:13	84.0	152°/031			
AMOL5H				104°	25	
AMOLO	08:17	83.2	160°/035			
UT24				104°	12	
DEGOL	08:19	82.8	177°/037			
UT24				103°	8	
NEKTA	08:20	82.6	186°/038			
UT24				104°	43	
FJR	08:25	81.6	200°/040			

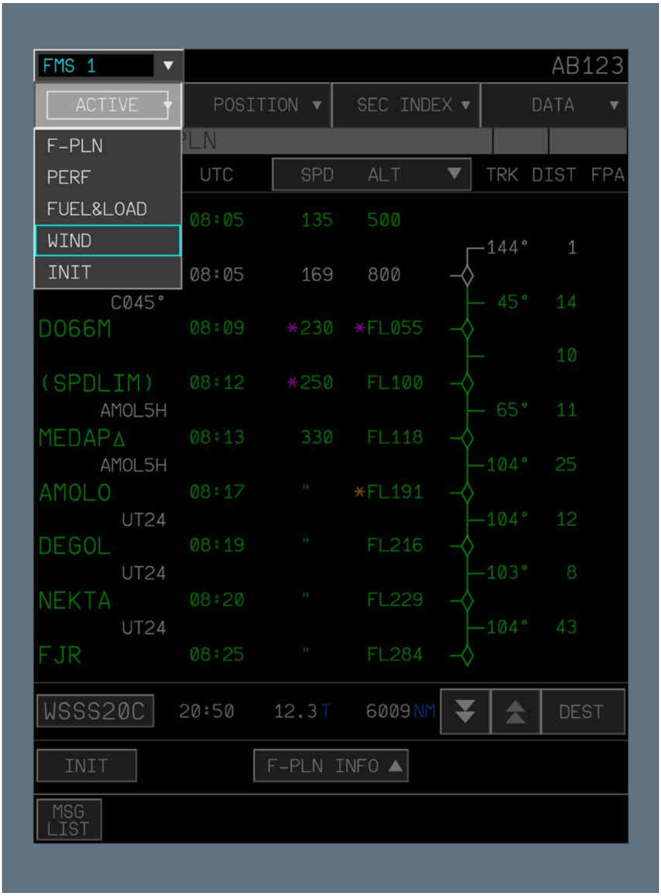
WSSS20C 20:50 12.3T 6009NM

- Selecting WIND in the waypoint revisions menu of any waypoint


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/F-PLN
FROM
TRK DIST FPA
LFBO14L
H144°
800←
C045°
D066M
(SPDLIM)
AMOL5H
MEDAP
AMOL5H
AMOLO
UT24
DEGOL
UT24
NEKTA
UT24
FJR
FROM P.POS DIR TO
INSERT NEXT WPT
DELETE *
DEPARTURE
ARRIVAL
OFFSET
OVERFLY *
HOLD
AIRWAYS
ENABLE ALTN *
NEW DEST
CONSTRAINTS
CMS
STEP ALTs
WIND
144° 1
45° 14
10
65° 11
104° 25
104° 12
103° 8
104° 43
WSSS20C
20:50
12.3T
6009NM
DEST
INIT
F-PLN INFO
MSG LIST

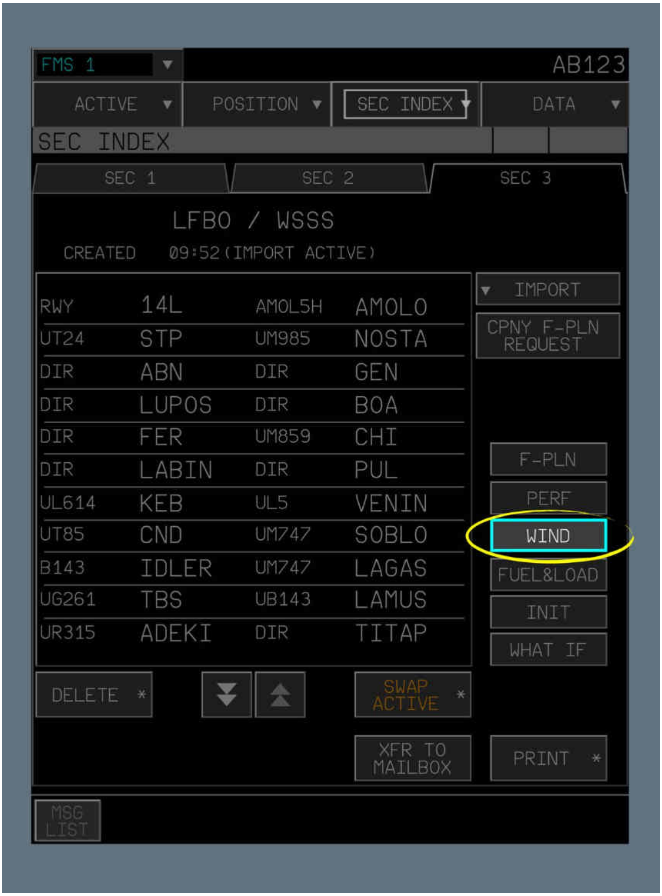
- The ACTIVE/WIND page via the general menu bar, by selecting WIND in the ACTIVE menu

General Menu Bar


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
F-PLN
PERF
FUEL&LOAD
WIND
INIT
UTC
SPD ALT
TRK DIST FPA
08:05 135 500
144° 1
08:05 169 800
C045°
45° 14
D066M 08:09 *230 *FL055
10
(SPDLIM) 08:12 *250 FL100
AMOL5H
65° 11
MEDAP 08:13 330 FL118
AMOL5H
104° 25
AMOLO 08:17 " *FL191
UT24
104° 12
DEGOL 08:19 " FL216
UT24
103° 8
NEKTA 08:20 " FL229
UT24
104° 43
FJR 08:25 " FL284
WSSS20C 20:50 12.3T 6009NM
DEST
INIT
F-PLN INFO
MSG LIST

- The SEC/WIND page via:
  - The SEC INDEX page, by clicking on the WIND button

SEC INDEX Page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
SEC INDEX
SEC 1
SEC 2
SEC 3
IMPORT
CPNY F-PLN REQUEST
F-PLN
PERF
WIND
FUEL&LOAD
INIT
WHAT IF
DELETE *
SWAP ACTIVE *
XFR TO MAILBOX
PRINT *
MSG LIST

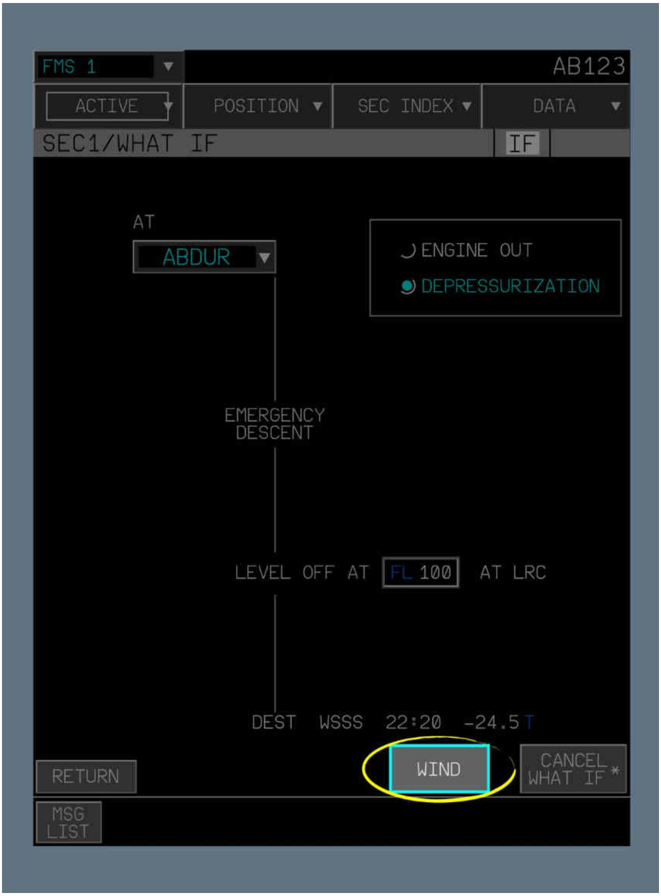
LFBO / WSSS

CREATED 09:52(IMPORT ACTIVE)

RWY	14L	AMOL5H	AMOLO
UT24	STP	UM985	NOSTA
DIR	ABN	DIR	GEN
DIR	LUPOS	DIR	BOA
DIR	FER	UM859	CHI
DIR	LABIN	DIR	PUL
UL614	KEB	UL5	VENIN
UT85	CND	UM747	SOBLO
B143	IDLER	UM747	LAGAS
UG261	TBS	UB143	LAMUS
UR315	ADEKI	DIR	TITAP

- The WHAT IF page, by clicking on the WIND button.

WHAT IF Page


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
IF
ENGINE OUT
EMERGENCY
DESCENT
RETURN
WIND
CANCEL
WHAT IF *
MSG
LIST

SEC1/WHAT IF

AT ABDUR

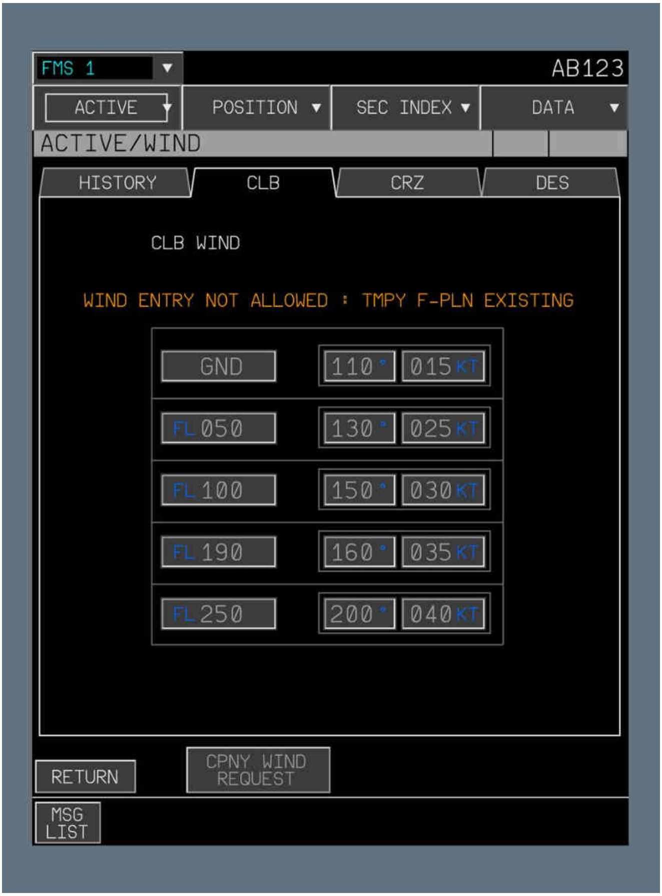
● DEPRESSURIZATION

LEVEL OFF AT FL 100 AT LRC

DEST WSSS 22:20 -24.5T

L2 When a temporary flight plan is on standby, the flight crew cannot enter or change any wind data. In this case, the flight crew can still access the WIND page. However, the entry fields cannot be selected, and the WIND page displays the WIND ENTRY NOT ALLOWED : TMPY F-PLN EXISTING label.

WIND ENTRY NOT ALLOWED : TMPY F-PLN EXISTING Label


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/WIND
HISTORY
CLB
CRZ
DES
RETURN
CPNY WIND REQUEST
MSG LIST

CLB WIND

WIND ENTRY NOT ALLOWED : TMPY F-PLN EXISTING

GND	110°	015KT
FL050	130°	025KT
FL100	150°	030KT
FL190	160°	035KT
FL250	200°	040KT

Ident.: DSC-22-FMS-20-20-20-410-00004372.0001001 / 22 APR 14

RETURN BUTTON

When clicked, displays the page that was displayed before the WIND page.

L2 If the flight crew accesses the WIND page via the general menu bar, the RETURN button does not appear.

Ident.: DSC-22-FMS-20-20-20-410-00004373.0001001 / 14 APR 14

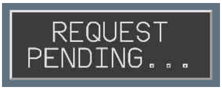
CPNY WIND REQUEST BUTTON

When clicked:

- If the free text AMI option is not activated, sends a company wind request to the company ground station (via ACARS)
- If the free text AMI option is activated, displays the COMPANY WIND DATA REQUEST page (*Refer to page*).
  On the COMPANY WIND DATA REQUEST page, the flight crew can enter free text that will be sent with the wind request.

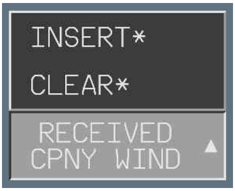
When a request for an active wind is in progress, the button label is REQUEST PENDING... . When clicked, still displays the COMPANY WIND DATA REQUEST page.

REQUEST PENDING...



When company wind data is received, the button label is RECEIVED CPNY WIND. When clicked, opens a menu that enables the flight crew to insert or clear the received company wind.

RECEIVED CPNY WIND



Ident.: DSC-22-FMS-20-20-20-410-00004375.0001001 / 22 APR 14

INSERT WIND BUTTON

When clicked, inserts the climb, cruise, and descent temporary winds and temperatures.

L2 Inserting, changing, or deleting wind data creates a set of temporary winds. The temporary winds are not considered for prediction computation, before they are inserted.
The DRAFT label indicates that there is a set of temporary winds (*Refer to DRAFT Label*).

L1 *Note:* *When temporary winds are on standby and the FMS creates a temporary flight plan (by a flight plan revision other than the WIND revision), the temporary winds are automatically inserted in the active and temporary flight plans.*

Ident.: DSC-22-FMS-20-20-20-410-00004376.0001001 / 14 APR 14

CANCEL WIND BUTTON

When clicked, cancels the climb, cruise, and descent temporary winds and temperatures. After canceling the temporary winds, the WIND page displays the inserted winds that were considered before the wind update.

L2 Inserting, changing, or deleting wind data creates a set of temporary winds. The temporary winds are not considered for prediction computation, before they are inserted.
The DRAFT label indicates that there is a set of temporary winds (*Refer to DRAFT Label*).

L1 *Note:* *When temporary winds are on standby and the FMS creates a temporary flight plan (by a flight plan revision other than the WIND revision), the temporary winds are automatically inserted in the active and temporary flight plans.*

Ident.: DSC-22-FMS-20-20-20-410-00004377.0001001 / 14 APR 14

ALT AND T.WIND

Indicate the history winds.
The history winds are the descent winds that were stored from the previous flight.
Winds are measured and stored for the CRZ FL, FL 250, FL 150, and FL 050.
The wind format is: Wind direction (true north reference) / Wind speed.
In preflight, the flight crew can insert the history winds of the previous flight as the climb winds for the next flight, with the INSERT HISTORY WIND button (*Refer to INSERT HISTORY WIND Button*).

L2 The history winds are only available for the active flight plan.

Ident.: DSC-22-FMS-20-20-20-410-00004378.0001001 / 22 APR 14

INSERT HISTORY WIND BUTTON

When clicked, inserts the history winds as the climb winds of the active flight plan, and displays the CLB panel of the WIND page.

Note:
1. *When the flight crew insert history winds, the FMS does not create temporary climb winds. The winds are directly inserted in the active flight plan.*
2. *The flight crew cannot insert the history winds, when temporary winds or a temporary flight plan are on standby.*

Ident.: DSC-22-FMS-20-20-20-410-00004380.0001001 / 22 APR 14

DRAFT LABEL

Indicates (on the CLB, CRZ, and DES panels) that temporary winds are on standby.
Inserting, changing, or deleting wind data creates a set of temporary winds. The temporary winds are not considered for prediction computation, before they are inserted.

Ident.: DSC-22-FMS-20-20-20-410-00004379.0001001 / 14 APR 14

ALT AND T.WIND ENTRY FIELDS [CLB]

Indicate the climb winds that are associated with a maximum of 5 altitudes or flight levels.
Inserted history winds are displayed in small font.
Inserted company wind uplinks and wind data that the flight crew enters are displayed in large font.

L2 The climb winds can be entered or changed only when all of the following apply:
- The active flight phase is the PREFLIGHT flight phase
- There is no temporary flight plan on standby.

L1 ALT ENTRY FIELD

Indicates a climb altitude:
- In feet, if the altitude is below the transition altitude
- In flight level, if the altitude is above the transition altitude.

The flight crew can enter a surface wind, by entering an altitude less than 400 ft, or by entering GND in the entry field.

Entry Format

Refer to DSC-22-FMS-20-80 WIND ALTITUDE.

T.WIND ENTRY FIELDS

Indicate the wind direction (true north reference) and the wind speed.

Entry Format

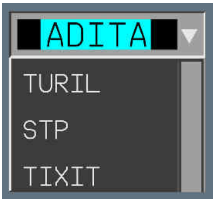
For the entry format of:
- Wind direction, *Refer to DSC-22-FMS-20-80 WIND DIRECTION*
- Wind speed, *Refer to DSC-22-FMS-20-80 WIND SPEED*.

Ident.: DSC-22-FMS-20-20-20-410-00004381.0001001 / 14 APR 14

CRZ WIND AT LIST

Indicates the cruise waypoint with which the displayed wind and temperature data are associated.
The flight crew selects the cruise waypoint from the CRZ WIND AT list.
The CRZ WIND AT list displays all cruise waypoints of the destination flight plan (between the T/C and the T/D).

CRZ WIND AT List



Ident.: DSC-22-FMS-20-20-20-410-00004382.0001001 / 22 APR 14

WAYPOINT SCROLL BUTTONS

The flight crew uses the scroll down(up) button to display the wind and temperature data of the next down-path(previous up-path) cruise waypoint, without opening the CRZ WPT AT list.

Note: *When the cursor is on the CRZ panel of the WIND page, the KCCU wheel has the same function as the scroll buttons: Scrolling down(up) the wheel displays the next down-path(previous up-path) cruise waypoint and the associated wind data.*

Ident.: DSC-22-FMS-20-20-20-410-00004383.0001001 / 14 APR 14

ALT AND T.WIND ENTRY FIELDS [CRZ]

Indicate the cruise winds that are associated with a maximum of four flight levels.

L2 The cruise winds can be entered, only if no temporary flight plan is on standby.

L1 ALT ENTRY FIELD

Indicates a cruise flight level.
When the flight crew enters an altitude, the altitude is propagated to all (up-path and down-path) cruise waypoints. The flight crew can change this altitude only on the waypoint on which it was defined, and not on the waypoints where the altitude was propagated. If the waypoint is sequenced, the flight crew can change the altitude value on the next down-path waypoint.

Entry Format

Refer to DSC-22-FMS-20-80 WIND ALTITUDE.

T.WIND ENTRY FIELDS

Indicate the wind direction (true north reference) and the wind speed.
When the flight crew enters a wind direction and a wind speed, these direction and speed are propagated to the down-path cruise waypoints, until the waypoint for which the flight crew entered different wind data for the same flight level.
The flight crew can always change, but not clear, propagated wind data.

Propagated wind data is displayed in small font. Wind data that the flight crew enters is displayed in large font.

Entry Format

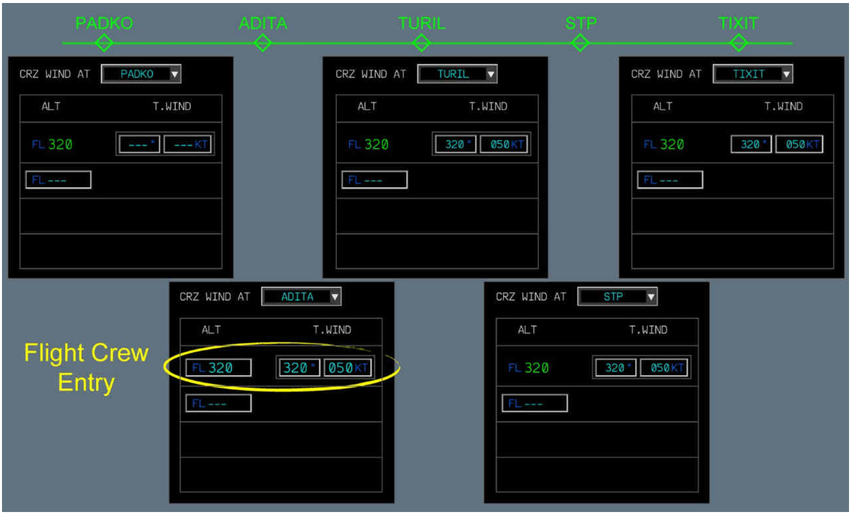
For the entry format of:
- Wind direction, *Refer to DSC-22-FMS-20-80 WIND DIRECTION*
- Wind speed, *Refer to DSC-22-FMS-20-80 WIND SPEED*.

EXAMPLE

Step 1

The flight crew enters a wind altitude, a wind direction, and a wind speed at ADITA:
- The wind altitude (FL 320) is propagated to all waypoints, and this altitude can be changed at only ADITA
- The wind direction and wind speed (320 °/050 kt) are propagated to all down-path waypoints, and can be changed at all down-path waypoints.

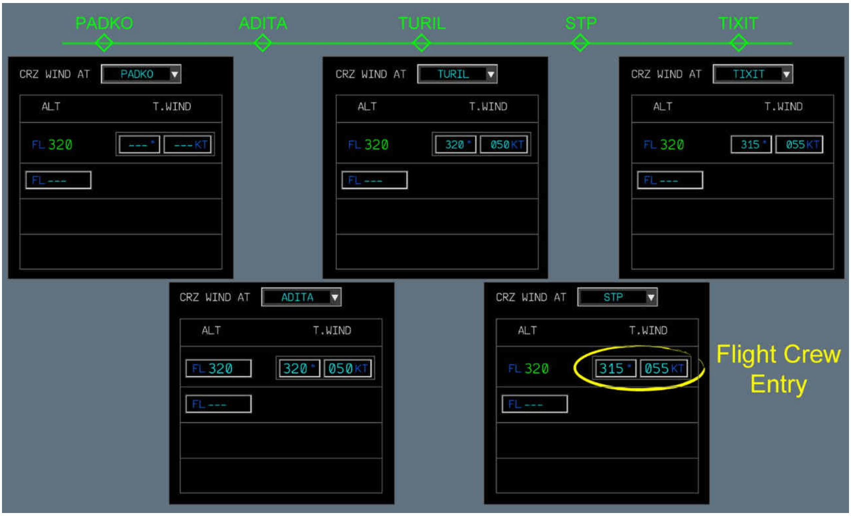
Step 1


PADKO
ADITA
TURIL
STP
TIXIT
CRZ WIND AT PADKO
ALT T.WIND
FL 320 ---° ---KT
FL ---
CRZ WIND AT TURIL
ALT T.WIND
FL 320 320° 050KT
FL ---
CRZ WIND AT TIXIT
ALT T.WIND
FL 320 320° 050KT
FL ---
Flight Crew Entry
CRZ WIND AT ADITA
ALT T.WIND
FL 320 320° 050KT
FL ---
CRZ WIND AT STP
ALT T.WIND
FL 320 320° 050KT
FL ---

Step 2

The flight crew changes the propagated wind at STP: The new wind direction and new wind speed (315 °/055 kt) are propagated to all down-path waypoints, and can be changed at all down-path waypoints.

STEP 2



CRZ WIND AT PADKO
ALT T.WIND
FL 320 ---° ---KT
FL ---

CRZ WIND AT TURIL
ALT T.WIND
FL 320 320° 050KT
FL ---

CRZ WIND AT TIXIT
ALT T.WIND
FL 320 315° 055KT
FL ---

CRZ WIND AT ADITA
ALT T.WIND
FL 320 320° 050KT
FL ---

CRZ WIND AT STP
ALT T.WIND
FL 320 315° 055KT
FL ---

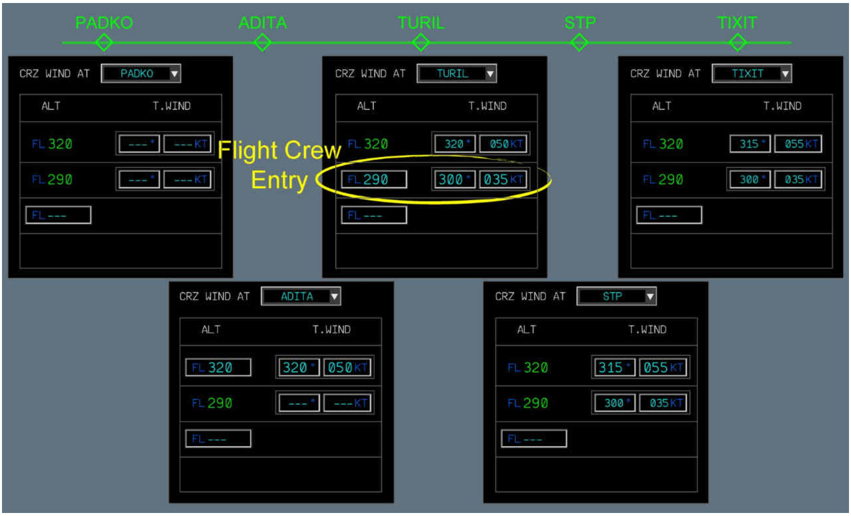
Flight Crew Entry

Step 3

The flight crew enters a wind altitude, a wind direction, and a wind speed at TURIL:

- The wind altitude (FL 290) is propagated to all waypoints, and this altitude can be changed only at TURIL
- The wind direction and wind speed (300 °/035 kt) are propagated to all down-path waypoints, and can be changed at all down-path waypoints.

STEP 3



CRZ WIND AT PADKO
ALT T.WIND
FL 320 ---° ---KT
FL 290 ---° ---KT
FL---

CRZ WIND AT TURIL
ALT T.WIND
FL 320 320° 050KT
FL 290 300° 035KT
FL---

CRZ WIND AT TIXIT
ALT T.WIND
FL 320 315° 055KT
FL 290 300° 035KT
FL---

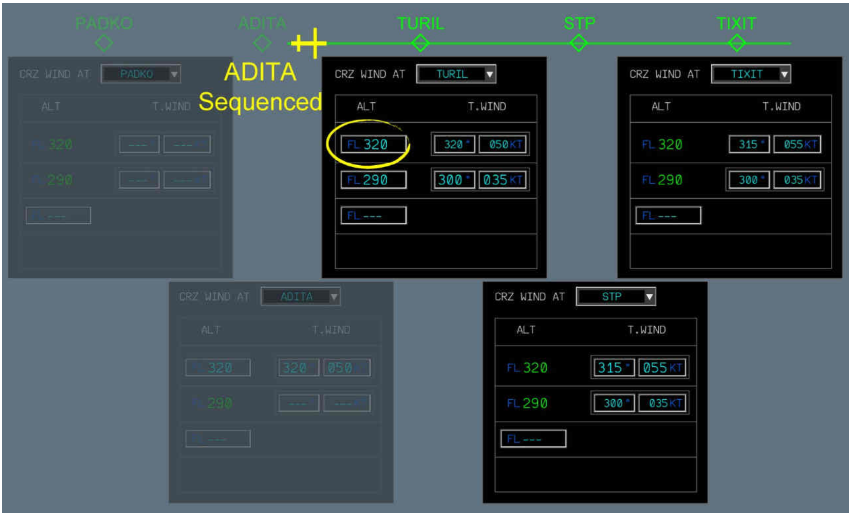
CRZ WIND AT ADITA
ALT T.WIND
FL 320 320° 050KT
FL 290 ---° ---KT
FL---

CRZ WIND AT STP
ALT T.WIND
FL 320 315° 055KT
FL 290 300° 035KT
FL---

Step 4

The aircraft sequences ADITA: The wind altitude (FL 320) that was entered at ADITA can now be changed at TURIL.

STEP 4


PADKO
ADITA
TURIL
STP
TIXIT
ADITA
Sequenced
CRZ WIND AT PADKO
ALT T.WIND
FL 320 --- ---
FL 290 --- ---
FL ---
CRZ WIND AT TURIL
ALT T.WIND
FL 320 320° 050KT
FL 290 300° 035KT
FL ---
CRZ WIND AT TIXIT
ALT T.WIND
FL 320 315° 055KT
FL 290 300° 035KT
FL ---
CRZ WIND AT ADITA
ALT T.WIND
FL 320 320 050
FL 290 --- ---
FL ---
CRZ WIND AT STP
ALT T.WIND
FL 320 315° 055KT
FL 290 300° 035KT
FL ---

Ident.: DSC-22-FMS-20-20-20-410-00004385.0001001 / 14 APR 14

ALT AND SAT ENTRY FIELDS

Indicate a flight level and the associated Static Air Temperature (SAT).
The flight crew enters the altitude and SAT to define a temperature profile for prediction computation.

L2 The FMS defines an estimated temperature profile that is based on the difference between a reference temperature profile and a measured or entered SAT at different altitudes.
The reference temperature profile is defined by the tropopause altitude that is entered on the INIT page. The default tropopause altitude is the ISA tropopause.
The flight crew defines the deviation from the reference temperature profile, for the cruise waypoints, by entering the SAT that is associated with an altitude.

L1 The temperature is propagated to the down-path cruise waypoints in the same manner as the wind data.

ENTRY FORMAT

For the entry format of:
- SAT altitude, *Refer to DSC-22-FMS-20-80 SAT ALTITUDE*
- SAT, *Refer to DSC-22-FMS-20-80 SAT*.

Ident.: DSC-22-FMS-20-20-20-410-00004386.0001001 / 14 APR 14

ALT AND T.WIND ENTRY FIELDS [DES]

Indicate the descent winds that are associated with a maximum of 5 altitudes or flight levels.

L2 The descent winds cannot be entered or changed, when one of the following apply:
- The active flight phase is the DES, APPR, or GA flight phase
- There is a temporary flight plan on standby.

L1 **ALT ENTRY FIELD**

Indicates the descent altitude:
- In feet, if the altitude is below the transition altitude
- In flight level, if the altitude is above the transition altitude.

The flight crew can enter a surface wind, by entering an altitude less than 400 ft, or by entering GND in the entry field.

Entry Format

Refer to DSC-22-FMS-20-80 WIND ALTITUDE.

T.WIND ENTRY FIELDS

Indicate the wind direction (true north reference) and the wind speed.

Note: *1. The FMS automatically synchronizes all of the following:*
- *The surface wind in the T.WIND entry fields of the DES panel of the ACTIVE/WIND page*
- *The MAG WIND entry fields of the DES panel of the ACTIVE/PERF page (Refer to page).*

2. The FMS automatically synchronizes all of the following:
- *The surface wind in the T.WIND entry fields of the DES panel of the SEC1(2)(3)/WIND page*
- *The MAG WIND entry fields of the DES panel of the SEC1(2)(3)/PERF page (Refer to page).*

3. In order to synchronize the entry fields, if the north reference is not the same on the PERF page and on the WIND page, the FMS uses the magnetic variation at the destination airport to change north wind from magnetic wind, and vice versa.

Entry Format

For the entry format of:
- Wind direction, *Refer to DSC-22-FMS-20-80 WIND DIRECTION*
- Wind speed, *Refer to DSC-22-FMS-20-80 WIND SPEED*.

Ident.: DSC-22-FMS-20-20-20-410-00004387.0001001 / 14 APR 14

ALTN TRIP WIND ALTITUDE

Indicates the alternate cruise flight level:
- If the alternate flight plan distance is less than 200 NM, the alternate cruise flight level is FL220
- If the alternate flight plan distance is 200 NM or more, the alternate cruise flight level is FL310.

The flight crew cannot change the alternate cruise flight level.

Ident.: DSC-22-FMS-20-20-20-410-00004388.0001001 / 14 APR 14

ALTN TRIP WIND ENTRY FIELDS

Indicate the alternate trip wind direction (true north reference) and speed.
L2 The alternate wind can be entered, only if no temporary flight plan is on standby.

L1 ENTRY FORMAT

For the entry format of:
- Wind direction, *Refer to DSC-22-FMS-20-80 WIND DIRECTION*
- Wind speed, *Refer to DSC-22-FMS-20-80 WIND SPEED*.

Intentionally left blank

ND

Ident.: DSC-22-FMS-20-50-00005220.0001001 / 22 APR 14
Applicable to: ALL

For information:
- About the FMS data on the upper part of the ND, *Refer to DSC-31-CDS-40-40-80 FMS Data Overview*
- About the interactive ND, *Refer to DSC-31-CDS-40-40-100 Interactive ND Overview*
- About the VD, *Refer to DSC-31-CDS-40-50 VD*.

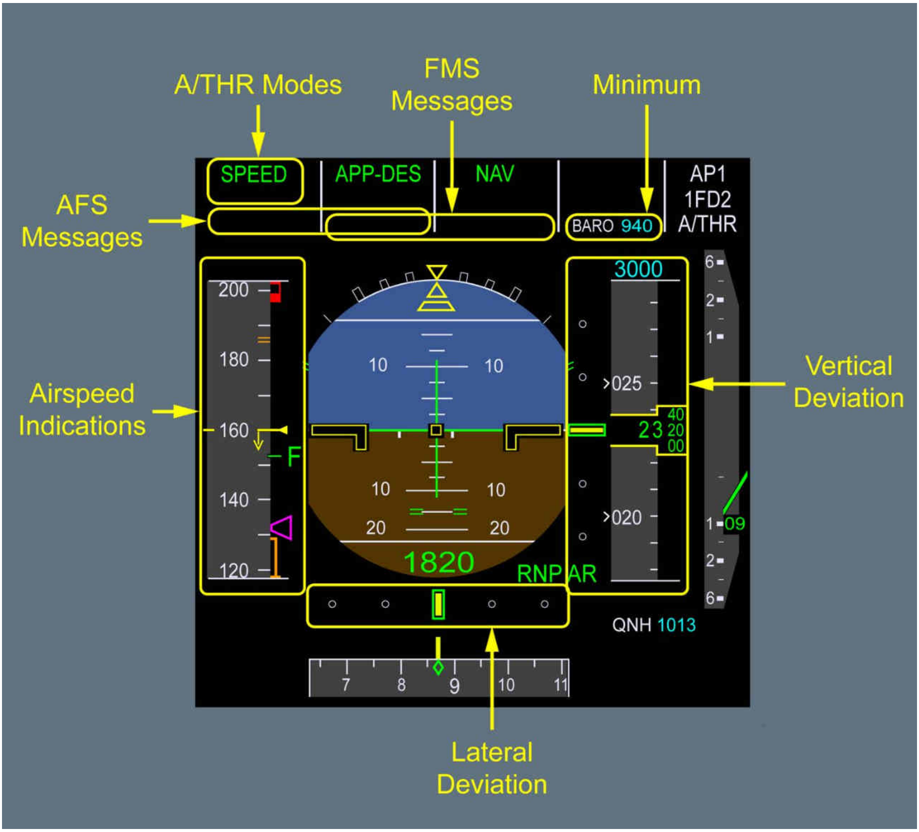
Intentionally left blank

FMS DATA ON THE PFD

Applicable to: ALL

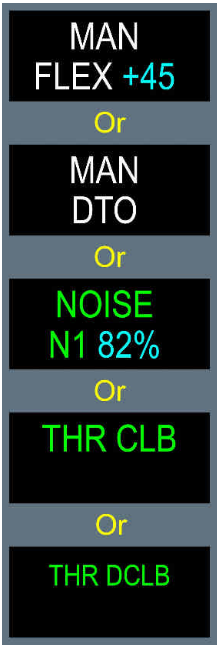
Ident.: DSC-22-FMS-20-40-10-00005210.0001001 / 24 APR 14

FMS Data on the PFD


A/THR Modes
FMS Messages
Minimum
AFS Messages
SPEED
APP-DES
NAV
AP1
1FD2
A/THR
BARO 940
3000
200
180
160
140
120
F
10
10
20
1820
RNP AR
>025
>020
23
40
20
00
6
2
1
1
09
2
6
QNH 1013
Airspeed Indications
Vertical Deviation
7
8
9
10
11
Lateral Deviation

Ident.: DSC-22-FMS-20-40-10-00005218.0001001 / 14 APR 14

A/THR MODES



The Flight Mode Annunciator (FMA) displays the A/THR mode. The A/THR mode can be associated with one of the following thrust settings:

- FLX thrust or DTO thrust, as selected on the T.O panel of the ACTIVE/PERF page
- NOISE thrust, as selected on the T.O or CLB panel of the ACTIVE/PERF page
- CLB thrust or DCLB climb thrust, as selected on the CLB panel of the ACTIVE/PERF page.

For more information about:

- The display conditions of the above-listed A/THR modes on the FMA, and information about all A/THR modes on the FMA, *Refer to DSC-22-FG-90-80 A/THR Messages and Modes (Column 1)*
- The ACTIVE/PERF page, *Refer to DSC-22-FMS-20-20-20 PERF Page*.

Ident.: DSC-22-FMS-20-40-10-00005211.0001001 / 22 APR 14

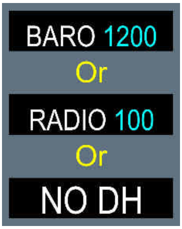
FMS MESSAGES

The third line of the FMA displays the following FMS messages:

- CHECK APPR SEL (*Refer to message*)
- CHECK EO SPD SETTING (*Refer to message*)
- EXTEND SPD BRK (*Refer to message*)
- NO NAV INTERCEPTION (*Refer to message*)
- NO VERT PATH INTERCEPT (*Refer to message*)
- RETRACT SPD BRK (*Refer to message*)
- SET HOLD SPD (*Refer to message*)
- T/D REACHED (*Refer to message*).

Ident.: DSC-22-FMS-20-40-10-00005212.0001001 / 22 APR 14

MINIMUM

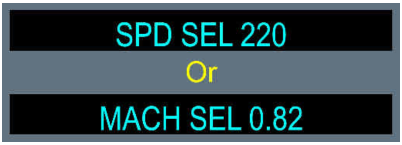


Indicates the required minimum altitude that is applicable to the approach procedure, as entered on the APPR panel of the ACTIVE/PERF page.

For more information about:
- The display of the required minimum altitude on the FMA, *Refer to DSC-22-FG-90-80 Minimum Descent Height/Altitude, or Decision Height (Column 4)*
- The ACTIVE/PERF page, *Refer to DSC-22-FMS-20-20-20 PERF Page*.

Ident.: DSC-22-FMS-20-40-10-00005213.0001001 / 04 DEC 14

AFS MESSAGES



The FMA displays the preselected speed(Mach), as entered on the CLB or CRZ panel of the ACTIVE/PERF page.

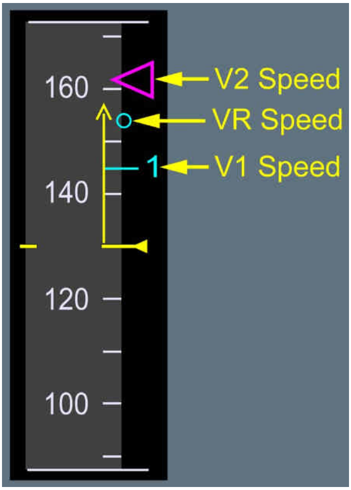
For more information about:
- The display of the AFS messages on the FMA, *Refer to DSC-22-FG-90-80 AFS Messages (Line 3)*
- The ACTIVE/PERF page, *Refer to DSC-22-FMS-20-20-20 PERF Page*.

Ident.: DSC-22-FMS-20-40-10-00005214.0001001 / 14 APR 14

AIRSPEED INDICATIONS

The PFD airspeed scale displays the following FMS airspeed indications:
- The takeoff speeds
- The managed speed target
- The short-term managed speed.

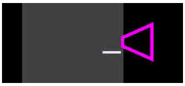
TAKEOFF SPEEDS



The PFD airspeed scale displays V1, VR, and V2, as entered on the T.O panel of the ACTIVE/PERF page.

For more information about:
- The display of airspeed indications on the PFD, *Refer to DSC-31-CDS-40-20-40 Airspeed Indications During Takeoff*
- The ACTIVE/PERF page, *Refer to DSC-22-FMS-20-20-20 PERF Page*.

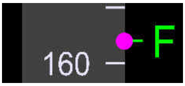
MANAGED SPEED TARGET



The FMS computes the managed speed target. The managed speed target appears as a magenta triangle on the PFD airspeed scale.

For more information about:
- The display of the managed speed target on the PFD airspeed scale, *Refer to DSC-31-CDS-40-20-40 General Airspeed Indications*
- The managed speed profile, *Refer to DSC-22-FMS-10-50-30 Overview*
- The managed speed/Mach target, *Refer to DSC-22-FG-60-20 Managed Speed/Mach Target*.

SHORT-TERM MANAGED SPEED



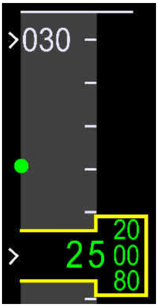
The FMS computes the short-term managed speed. The short-term managed speed appears as a magenta dot on the PFD airspeed scale. For more information about the short-term managed speed, *Refer to DSC-22-FG-60-20 Short-Term Managed Speed*.

Ident.: DSC-22-FMS-20-40-10-00005217.0001001 / 22 APR 14

VERTICAL DEVIATION

The FMS computes the vertical deviation. The vertical deviation is the difference between the current altitude of the aircraft and the FMS vertical profile.
The symbol that indicates the vertical deviation appears either on the PFD altitude scale, or on the PFD deviation scale.

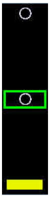
Note: *The flight crew can display the numeric value of the vertical deviation on the DES and APPR panels of the ACTIVE/PERF page (Refer to page).*



On the PFD altitude scale, a green dot indicates the altitude of the FMS vertical profile.

This green dot is displayed:
- At and after the T/D
- During the DES flight phase
- During the APPR flight phase, if the approach is not an RNAV (RNP) approach.

For more information about the display of the vertical deviation on the PFD altitude scale, *Refer to DSC-31-CDS-40-20-50 Vertical Deviation*.



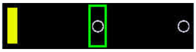
On the PFD deviation scale, a green rectangle indicates the vertical deviation.
This green rectangle is displayed during an RNAV (RNP) VIA or an RNAV(RNP) approach.

Ident.: DSC-22-FMS-20-40-10-00013666.0001001 / 22 APR 14

LATERAL DEVIATION

The FMS computes the lateral deviation. The lateral deviation is also referred to as the crosstrack error. The lateral deviation is the difference between the current aircraft position and the lateral flight plan of the FMS.
The symbol that indicates the lateral deviation appears on the PFD deviation scale.

Note: *The ND displays the numeric value of the lateral deviation. For more information about the display of the lateral deviation on the ND, Refer to DSC-31-CDS-40-40-80 FMS Data Overview.*



A green rectangle indicates the lateral deviation.
This green rectangle is displayed during an RNP AR procedure.

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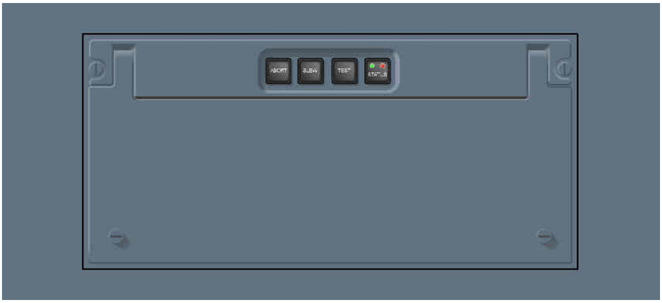
PRINTER

Ident.: DSC-22-FMS-20-75-00014188.0001001 / 22 APR 14
Applicable to: ALL

The PRINT function of the FMS uses the printer to print data and reports.

L2 For more information about the PRINT function, *Refer to DSC-22-FMS-10-90 Print Function*.

Printer



L1 For the description of the printer, *Refer to DSC-46-OIS-20-120 Overview*.

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HOW TO MANAGE FMS ERRONEOUS PREDICTIONS

Ident.: DSC-22-FMS-30-00025371.0001001 / 03 JUL 20
Applicable to: ALL

On ground or in flight, some FMS predictions could be temporary missing, or detected as erroneous. They may affect such data as ECON speed/Mach, T/D predictions, distances, fuel and time predictions.
The flight crew should not perform a reset of the FMC.

Note: *A FMC reset is without effect. It will restart the FMS, but it will not modify the conditions resulting in the erroneous or missing predictions.*

FOR MISSING PREDICTIONS OR OBVIOUS ERRONEOUS PREDICTIONS

To recover the FMS predictions:

1. On the WIND page, the flight crew should verify for each flight level:
   - The temperature value for each cruise waypoint
   - The wind data for each cruise waypoint.

   If some temperature or wind data are erroneous or missing the flight crew should:
   - Update data
   - Check if correct predictions are recovered.
2. In the legs of the Flight Plan, the flight crew should verify:
   - If there is one Flight Plan leg with erroneous predicted distance, or erroneous predicted time or erroneous predicted fuel consumption, and
   - If one Flight Plan leg with erroneous predictions exists, then the flight crew should:
     - Insert an intermediate waypoint
     - Check if correct predictions are recovered.

3. In the arrival procedure of the Flight Plan, the flight crew should verify:
   - If there is two successive waypoints separated by a distance of 3 NM or less, and
   - If one of these two waypoints contains an AT OR BELOW altitude constraint the flight crew should:
     - Insert the same altitude constraint to the lowest waypoint
     - Check if correct predictions are recovered.

1 FOR SUSPECTED ERRONEOUS PREDICTIONS OR TO FORCE A F-PLN RE-COMPUTATION

If the flight crew suspects that the FMS predictions are erroneous (slow computations, slightly erroneous values, ...) and if the previous actions remain not successful, in order to recover the FMS predictions, the flight crew should:

- Copy of the ACTIVE F-PLN into a SEC F-PLN
- Remove the STAR procedure of the ACTIVE F-PLN

  Note: *The STAR usually contains a lot of constraints which may disturb FMS predictions computations.*
- Insert again the STAR in the ACTIVE F-PLN, later during the flight.

HOW TO CHANGE DEPARTURE T.O DATA AFTER REJECTED TAKEOFF

Ident.: DSC-22-FMS-30-00025329.0001001 / 03 JAN 20
Applicable to: ALL

In case of rejected takeoff (with an aircraft speed above 90 kt or with sufficient thrust), the FMS remains in TAKEOFF phase and the flight crew cannot modify the FMS departure T.O Data in the active flight plan.

To change the FMS departure in the active flight plan, the flight crew:
- Uses an empty SEC F-PLN, or deletes a SEC F-PLN
- Initializes the SEC F-PLN with the appropriate inputs in the INIT/F-PLN/FUEL/PERF pages of the SEC F-PLN
- Uses the SWAP function in order to activate the secondary flight plan with the updated inputs.

The FMS remains in TAKEOFF phase but all the FMS data are updated and available for the new takeoff.

OVERVIEW

Applicable to: ALL

Ident.: DSC-22-FMS-40-10-00000522.0001001 / 04 SEP 14

NORMAL OPERATION

In normal operation:

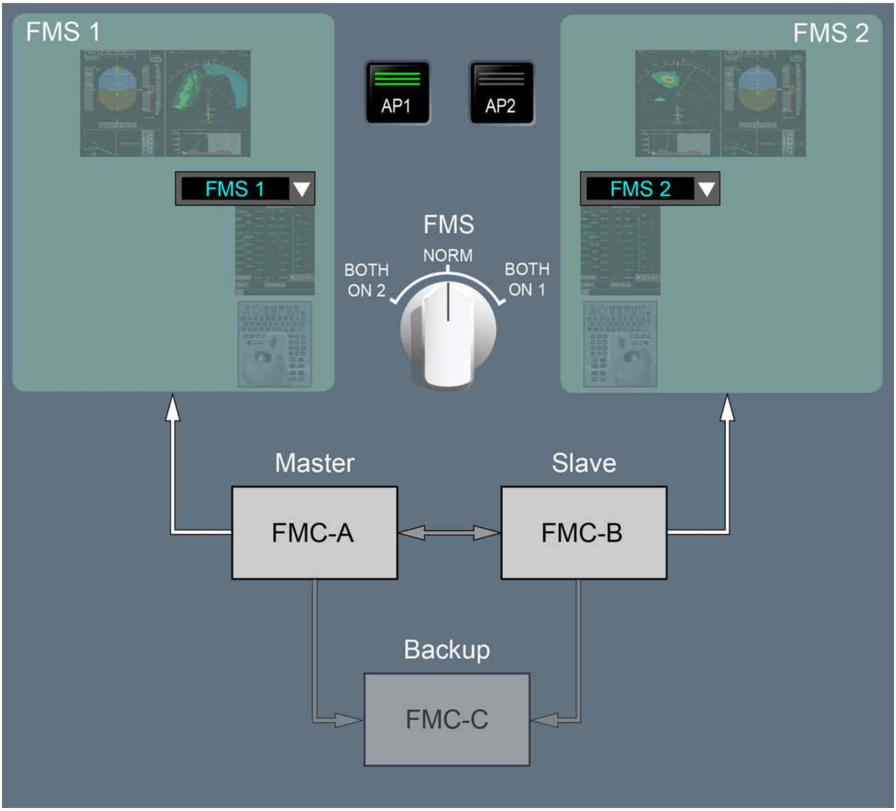
- FMC-A provides data to FMS 1
- FMC-B provides data to FMS 2
- FMC-C is the backup FMC
- The FMS selector is set to NORM.

L2 FMC-A, FMC-B, and FMC-C are three identical computers, each able to complete all FMS tasks. However, FMC-A and FMC-B are assigned to a specific FMS side (i.e. FMC-A is assigned to FMS 1, and FMC-B is assigned to FMS 2), or to the standby position.

Note: *FMC-A cannot be assigned to FMS 2, and FMC-B cannot be assigned to FMS 1.*

In the case of an FMC-A or FMC-B failure, an automatic reconfiguration of the FMCs occurs, and FMC-C is assigned to either FMS 1 or FMS 2. For more information about abnormal operation, *Refer to Abnormal Operation*.

Normal Operation


FMS 1
FMS 2
AP1
AP2
FMS 1
FMS 2
FMS
NORM
BOTH
ON 2
BOTH
ON 1
Master
Slave
FMC-A
FMC-B
Backup
FMC-C

L1

DUAL MODE

In normal operation, FMS 1 and FMS 2 operate in DUAL mode: The two active FMCs independently calculate data, and then share, compare, and synchronize these data.

MASTER AND SLAVE FMC s

Of the two active FMCs, one FMC is referred to as the "master", and the other FMC is referred to as the "slave".
The Flight Guidance (FG) uses the long-term guidance data of the master FMC only.

L2 The master FMC provides some important FMS data to the slave FMC. For example:
- The FMS flight phase
- The AFS CP selected altitude
- The frequency and course of the landing system.

L1 The selection of the master FMC is based on which Autopilot (AP) is engaged, and on the position of the FMS selector. The position of the FMS selector has priority over the engaged AP.

Master FMS	Position of the FMS selector		
Engaged AP	**BOTH ON 2**	**NORM**	**BOTH ON 1**
AP 1	FMS 2	FMS 1	FMS 1
AP 2	FMS 2	FMS 2	FMS 1

When no AP is engaged and the FMS selector is in the NORM position, the FMC of FMS 1 is the master FMC.

L2 For more information about the FMS selector, *Refer to DSC-22-FMS-20-70 FMS Selector*

L1 BACKUP FMC

If FMC-A or FMC-B fails, FMC-C is able to take over and to provide data for either FMS 1 or FMS 2. For more information about abnormal operation, *Refer to Abnormal Operation*.
The backup FMC also independently achieves some simple calculations.

L2 During an RNP AR procedure, the backup FMC also computes lateral deviation. For more information, *Refer to DSC-22-FMS-10-30-50 LDEV and VDEV computation*.

L1 In normal operation, FMC-C is the backup FMC.

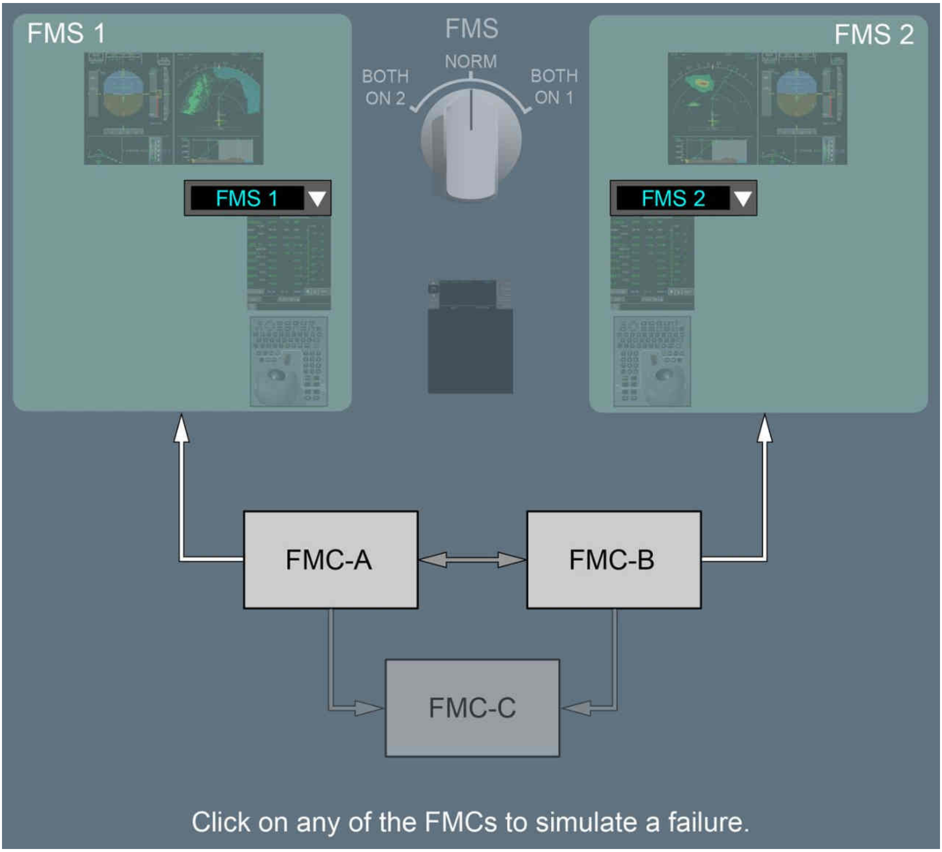
Ident.: DSC-22-FMS-40-10-00000529.0001001 / 04 SEP 14

ABNORMAL OPERATION

In abnormal operation, one (or more) of the following cases may occur:

- FMS 1 and FMS 2 no longer share data
  In this case, the two active FMCs operate in INDEPENDENT mode: *Refer to DSC-22-FMS-40 INDEPENDENT Mode*.
- One or more FMCs fail
  On the illustration below, click on any of the FMCs to simulate a failure.

Abnormal Operation


FMS 1
FMS
NORM
BOTH ON 2
BOTH ON 1
FMS 2
FMS 1
FMS 2
FMC-A
FMC-B
FMC-C
Click on any of the FMCs to simulate a failure.

For information about:

- The failure of one FMC: *Refer to DSC-22-FMS-40 Failure of One FMC*
- The failure of two FMCs: *Refer to DSC-22-FMS-40 Failure of Two FMCs (SINGLE Mode)*
- The failure of all FMCs: *Refer to DSC-22-FMS-40 Failure of All FMCs (Backup Navigation)*.

- An automatic FMC reset occurs: *Refer to DSC-22-FMS-40 Automatic FMC Reset*
- The PRIMs reject FMC data, while the flight crew performs a RNP AR procedure: *Refer to DSC-22-FMS-40 FMC Data Not Valid during a RNP AR Procedure*.

The NDs display the Backup Trajectory (BACKUP TRAJ) if:

- The FMC abnormal operation causes the loss of the flight plan in the two active FMCs
- During a RNP AR procedure, the PRIMs reject the FMC data of the two active flight plans and request the display of the BACKUP TRAJ.

The BACKUP TRAJ is based on the FMS data that the CDS memorizes, when the abnormal operation occurs.

Note: *The BACKUP TRAJ function automatically deactivates when at least one FMC provides a valid flight plan to the CDS. During a RNP AR procedure, the BACKUP TRAJ function deactivates only if, above safety altitude, the flight crew revises the active flight plan at aircraft present position (i.e. DIR TO).*

L2 For more information about the BACKUP TRAJ, *Refer to DSC-31-CDS-40-40-90 BACKUP TRAJ*.

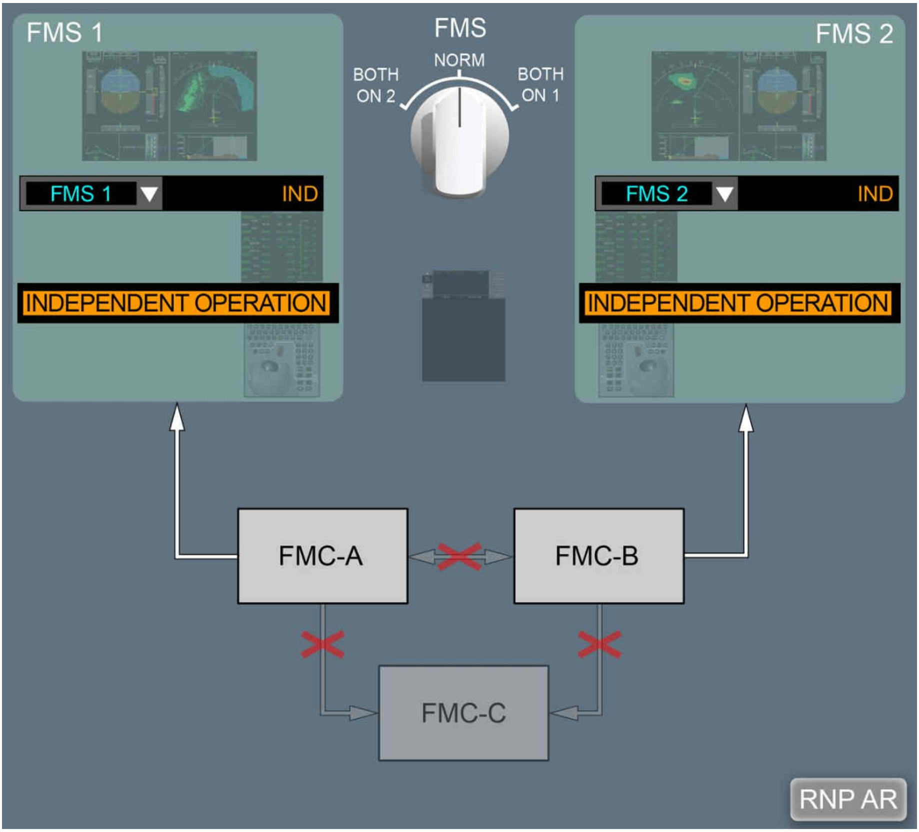
INDEPENDENT MODE

Ident.: DSC-22-FMS-40-00000523.0001001 / 03 AUG 16
Applicable to: ALL

In normal operation, FMS 1 and FMS 2 are in DUAL mode: The two active FMCs independently calculate data, and then share, compare, and synchronize these data.
Both FMS change from DUAL to INDEPENDENT mode, if there is a communication failure (due to an avionics network failure) between the active FMCs.
When both FMS operate in INDEPENDENT mode, the FMCs no longer share information. The FMCs therefore operate independently. If the flight crew modifies any entry on one , the flight crew must duplicate the entry on the other FMS MFD page.

Note: *If the flight crew performs an RNP AR procedure, the PRIMs consider that the data of the two active FMCs are not valid. As a result, the PRIMs reject the two active FMCs and no longer consider their data for guidance. Two rejected active FMCs does not result in the AP disengagement (if previously engaged). The PRIMs use the data of the backup FMC for the FG. No lateral mode reversion occurs but vertical guidance mode reverts in basic mode. After the exit of the RNP AR procedures, the flight crew shall pull the HDG knob on the FCU in order to interact with the MFD FMS pages.*

INDEPENDENT Mode


FMS 1
FMS
NORM
BOTH ON 2
BOTH ON 1
FMS 2
FMS 1
IND
FMS 2
IND
INDEPENDENT OPERATION
INDEPENDENT OPERATION
FMC-A
FMC-B
FMC-C
RNP AR

L3 At FMC power-up, the active FMCs crosscheck the specific data that must be identical in both active FMCs for normal operation in DUAL mode. If any part of this data is not identical in both active FMCs, the active FMCs change to INDEPENDENT mode.

The specific data are:
- Navigation, performance, and magnetic variation databases
- Airline Modifiable Information (AMI) file
- Aircraft type and engine type
- FM operational program
- Engine manufacturer program pins.

L1 CONTROLS AND INDICATORS

ECAM ALERTS

If the active FMCs change to INDEPENDENT mode while the flight crew performs an RNP AR procedure (i.e. with the NAV mode engaged with the AP or the FD engaged. The flight crew must engage the AP if the RNP value is strictly below 0.3 NM), the following ECAM alert is triggered: AUTO FLT FMS 1+2 REJECTED (*Refer to procedure*).

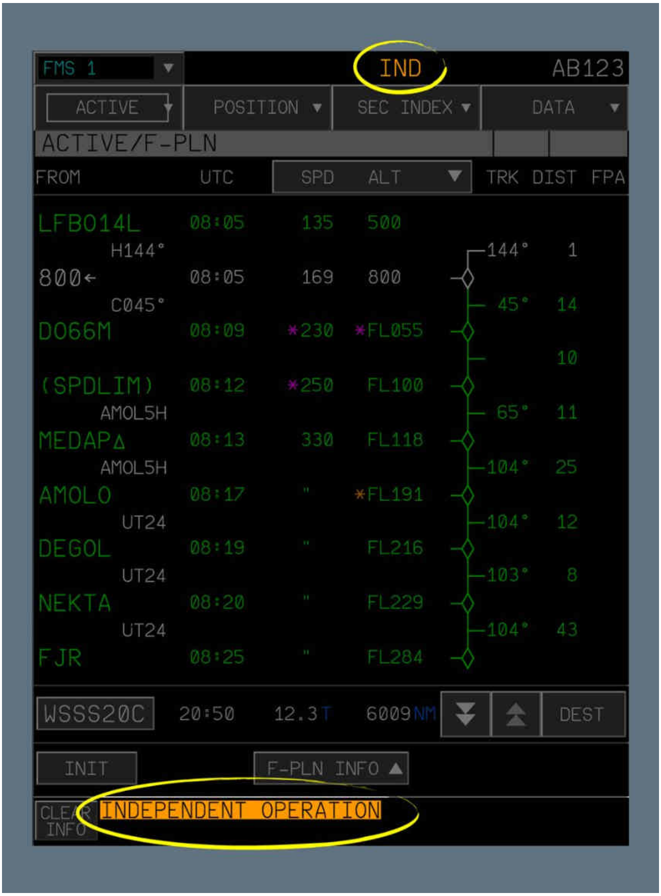
ON THE MFD AND THE ND

If the flight crew does not perform an RNP AR procedure

If the flight crew does not perform an RNP AR procedure, both MFDs display:
- The IND message in the shared message area
- The INDEPENDENT OPERATION message in the FMS message area.

L3 At FMC power-up, if the active FMCs change to INDEPENDENT mode because they do not have identical data, the FMS message area displays one or more of the following messages to indicate the data that is not identical:
- FMCs ACFT STATUS DISAGREE INDEPENDENT OPERATION (*Refer to message*)
- FMCs PIN PROG TYPE DISAGREE INDEPENDENT OPERATION (*Refer to message*).

F-PLN Page



IND AB123

ACTIVE/F-PLN

FROM	UTC	SPD	ALT	TRK	DIST	FPA
LFBO14L	08:05	135	500			
H144°				144°	1	
800←	08:05	169	800			
C045°				45°	14	
D066M	08:09	*230	*FL055			
					10	
(SPDLIM)	08:12	*250	FL100			
AMOL5H				65°	11	
MEDAP∆	08:13	330	FL118			
AMOL5H				104°	25	
AMOLO	08:17	"	*FL191			
UT24				104°	12	
DEGOL	08:19	"	FL216			
UT24				103°	8	
NEKTA	08:20	"	FL229			
UT24				104°	43	
FJR	08:25	"	FL284			

WSSS20C 20:50 12.3T 6009NM

INDEPENDENT OPERATION

L2 In addition, the POSITION pages do not display:

- On the MFD of the Captain, the position data that FMS 2 provides
- On the MFD of the First Officer, the position data that FMS 1 provides.

L1 If the flight crew performs an RNP AR procedure

If both FMS change to INDEPENDENT mode while the flight crew performs an RNP AR procedure:

- On both NDs:
  - The upper part of the ND displays the BACKUP TRAJ
  - The FMS message zone of ND displays RNP AR CAPABILITY LOST
  - The VD displays the altitude and distance scales in red.

L2 *Note: The VD of the Captain(First Officer) no longer displays the flight plan, neither weather(terrain) data.*

L1

- If the MFD displays an FMS page, the FMS page disappears, and the MFD displays the FMS PAGE NOT AVAIL message instead of the FMS page.

L3 *Note: An additional secondary MFD may appear on the outer display unit of the Captain, on the outer display unit of the First Officer, or on both sides. This display configuration occurs if the center lower DU displays the OIS, and the outer display unit display MFD. In this display configuration, on the additional secondary MFD:*

- *The FMS page disappears*
- *The ADDITIONAL FMS PAGE NOT AVAIL message appears instead of the FMS page.*

FAILURE OF ONE FMC

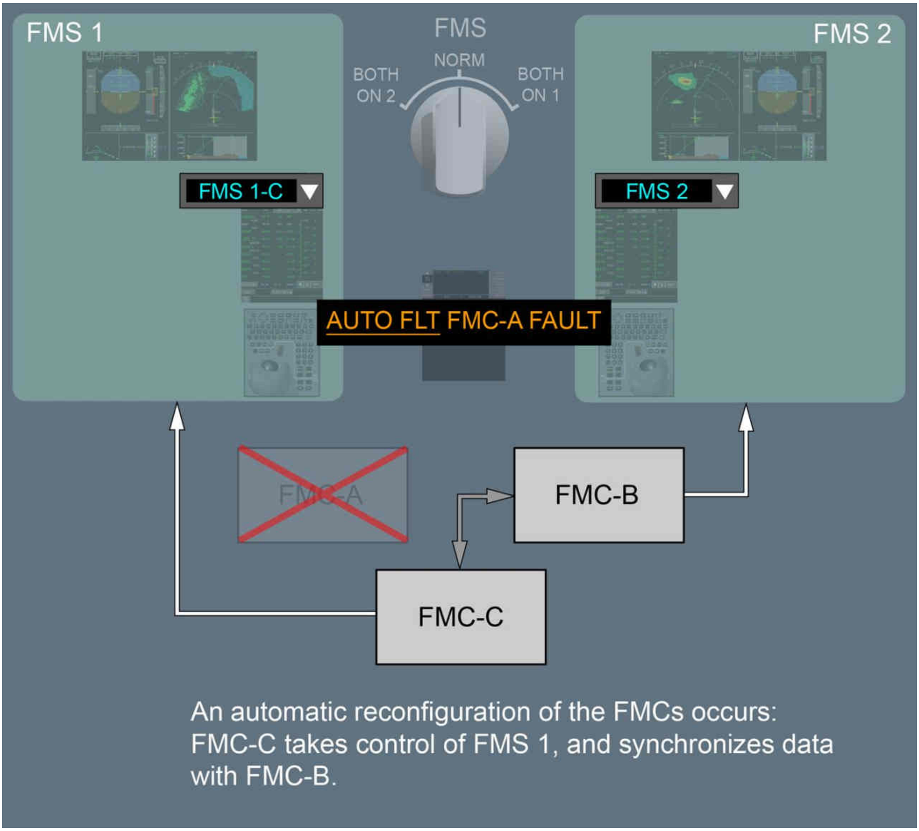
Ident.: DSC-22-FMS-40-00000524.0001001 / 04 SEP 14
Applicable to: ALL

If one of the active FMCs fails, an automatic reconfiguration of the FMCs occurs. The backup FMC takes over, and synchronizes with the active FMC that is not affected. FMS 1 and FMS 2 are still operative. However, redundancy is lost, because there is no longer a backup FMC.
If the backup FMC fails, the reconfiguration of the FMCs is not necessary. The active FMCs will continue to control FMS 1 and FMS 2, but redundancy is lost.

Note:

1. *One active FMC failure does not disengage the AP (if previously engaged) and no mode reversion occurs. When AP 1(2) is engaged, if the active FMC that fails is used for FMS 1(2), the PRIMs temporarily use the data of the opposite FMS for the Flight Guidance (FG), until the backup FMC takes control of the affected FMS.*
2. *The behavior remains the same during an RNP AR procedure.*

The following illustration provides an example (automatic reconfiguration after the failure of FMC-A).


FMS 1
FMS
NORM
BOTH ON 2
BOTH ON 1
FMS 2
FMS 1-C
FMS 2
AUTO FLT FMC-A FAULT
FMC-A
FMC-B
FMC-C

An automatic reconfiguration of the FMCs occurs: FMC-C takes control of FMS 1, and synchronizes data with FMC-B.

CONTROLS AND INDICATORS

ECAM ALERTS

In the case of an FMC failure, one of the following ECAM alerts is triggered:
- AUTO FLT FMC-A FAULT (*Refer to procedure*), if FMC-A is failed
- AUTO FLT FMC-B FAULT (*Refer to procedure*), if FMC-B is failed
- AUTO FLT FMC-C FAULT (*Refer to procedure*), if FMC-C is failed.

ON THE MFD AND THE ND

If the backup FMC (i.e. FMC-C) fails, the MFD will not indicate the FMC failure.

If FMC-A(B) fails:

- On the ND:
  - The upper part of the ND of the Captain(First Officer) no longer displays the flight plan and displays the MAP NOT AVAIL message

L2 *Note: The display on the upper part of the ND of weather(terrain) data remains operative.*

L1
  - The VD of the Captain(First Officer) displays the altitude and distance scales in red

L2 *Note: The VD of the Captain(First Officer) no longer displays the flight plan, neither weather(terrain) data.*

L1
- If the MFD of the Captain(First Officer) displays an FMS page, the FMS page disappears, and the MFD displays the FMS PAGE NOT AVAIL message instead of the FMS page.

L3 *Note: An additional secondary MFD may appear on the outer display unit of the Captain(First Officer). This display configuration occurs if the center lower display unit displays the OIS, and the outer display unit displays two MFDs. In this display configuration, on the additional secondary MFD:*
  - *The FMS page disappears*
  - *The ADDITIONAL FMS PAGE NOT AVAIL message appears instead of the FMS page.*

L1 As soon as the backup FMC (i.e. FMC-C) takes over, the MFD displays:

- FMS 1-C(FMS 2-C) in the MFD system menu, to indicate that FMC-C will provide data to FMS 1(2)
- The DATA/STATUS page (before engine start), or the ACTIVE/F-PLN page (after engine start)
- The PLEASE WAIT FOR FMS RESYNCH message in the FMS message area.
  When the backup FMC becomes operative, the PLEASE WAIT FOR FMS RESYNCH message disappears from the FMS message area.

FAILURE OF TWO FMCS (SINGLE MODE)

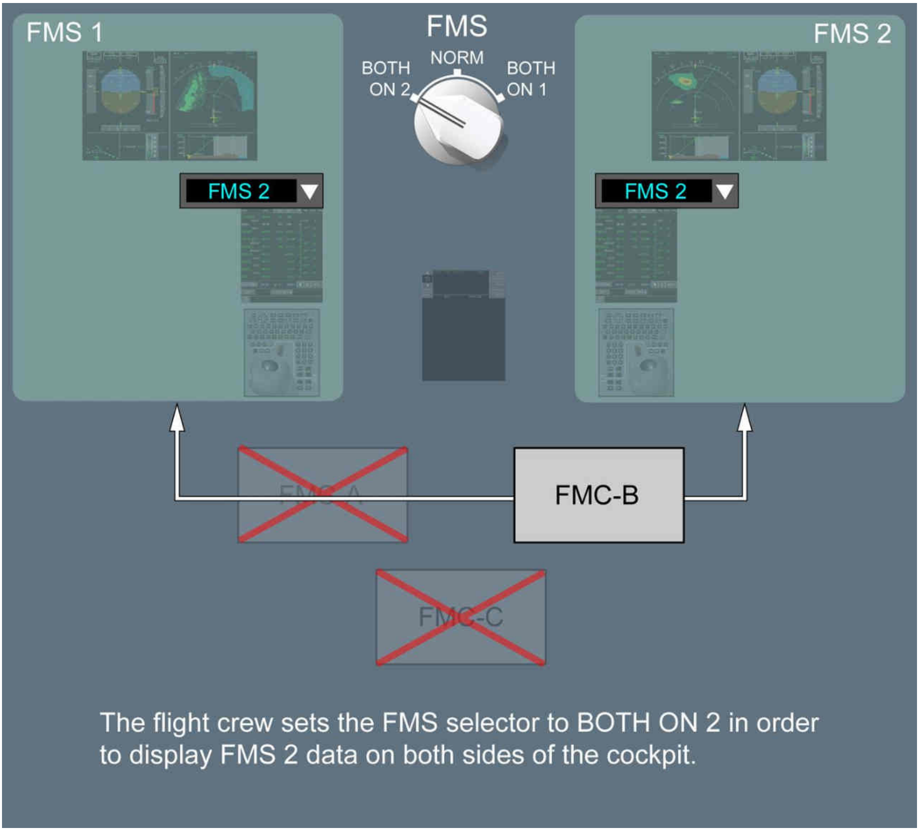
Ident.: DSC-22-FMS-40-00000525.0001001 / 02 OCT 14
Applicable to: ALL

If two FMCs fail, one entire FMS side (FMS 1 or FMS 2) is failed. The remaining FMS operates in SINGLE mode.

The flight crew uses the FMS selector as follows:
- If FMS 1 is failed, the flight crew sets the FMS selector to BOTH ON 2, in order to display FMS 2 data on both sides of the cockpit
- If FMS 2 is failed, the flight crew sets the FMS selector to BOTH ON 1, in order to display FMS 1 data on both sides of the cockpit.

Note: *1. One FMS failure does not result in the AP disengagement (if previously engaged) and no mode reversion occurs. When AP 1(2) is engaged, if FMS 1(2) fails, the PRIMs temporarily use the data from FMS 2(1) for Flight Guidance (FG), until the flight crew sets the FMS selector to BOTH ON 2(1).*
2. The behavior remains the same during an RNP AR procedure.

The following illustration provides an example (manual reconfiguration after the failure of FMC-A and FMC-C).



The flight crew sets the FMS selector to BOTH ON 2 in order to display FMS 2 data on both sides of the cockpit.

CONTROLS AND INDICATORS

ECAM ALERTS

In the case of a dual FMC failure, one of the following ECAM alerts is triggered:

- AUTO FLT FMS 1 FAULT (*Refer to procedure*), if FMS 1 is failed
- AUTO FLT FMS 2 FAULT (*Refer to procedure*), if FMS 2 is failed.

Note: *After the flight crew clears the procedure, the WD displays the FMS SWTG memo to indicate that the FMS selector is set to BOTH ON 2 or BOTH ON 1.*

ON THE MFD AND THE ND

If FMS 1(2) fails:

- On the ND:
  - The upper part of the ND of the Captain(First Officer) no longer displays the flight plan and displays the MAP NOT AVAIL message

    L3 If the two active FMCs fail, and the time between the two failures is too short for the backup FMC to synchronize the data, all FMS data is lost. As a result, the BACKUP TRAJ appears on the upper part of both NDs. The flight crew must initialize the FMS again.

    L2 *Note:* *1. The display of weather(terrain) data on the upper part of the ND remains operative.*
    2. If the failure causes the loss of the flight plan in the remaining FMCs, the MAP NOT AVAIL message does not appear. The upper part of both NDs displays the BACKUP TRAJ. For more information, Refer to DSC-31-CDS-40-40-90 BACKUP TRAJ.

  - L1 The VD of the Captain(First Officer) displays the altitude and distance scales in red

    L2 *Note:* *The VD of the Captain(First Officer) no longer displays the flight plan, neither weather(terrain) data.*

- L1 If the MFD of the Captain(First Officer) displays an FMS page, the FMS page disappears, and the MFD displays the FMS PAGE NOT AVAIL message instead of the FMS page.

  L3 *Note:* *An additional secondary MFD may appear on the outer display unit of the Captain(First Officer). This display configuration occurs if the center lower display unit displays the OIS, and the outer display unit displays two MFDs. In this display configuration, on the additional secondary MFD:*
  - *The FMS page disappears*
  - *The ADDITIONAL FMS PAGE NOT AVAIL message appears instead of the FMS page.*

L1 After the flight crew sets the FMS selector to BOTH ON 2(1):

- The MFD of the Captain(First Officer) displays the ACTIVE/F-PLN page
  The MFD system menu displays the same label as on the MFD of the First Officer(Captain). The fact that both MFD system menus display the same label indicates that both sides of the cockpit display data that comes from the same FMC.
- The ND of the Captain(First Officer) displays the OFFSIDE FM CONTROL message
  This message indicates that the active FMC on the side of the First Officer(Captain) provides the FMS data for the side of the Captain(First Officer).

- The PFD of the Captain(First Officer) displays the same RNP AR lateral and vertical deviations as on the PFD of the First Officer(Captain).
- On the EFIS CP of the Captain(First Officer), the flight crew can no longer select:
  - The FMS display options: CSTR, WPT, VORD, NDB, and ARPT
  - The ND mode (except the ROSE-VOR and ROSE-LS modes)
  - The ND range (except the ZOOM position).

  The flight crew manages these display options via the EFIS CP of the First Officer(Captain).

L2 *Note: The ND and VD displays of weather(terrain) data remain operative.*

FAILURE OF ALL FMCS (BACKUP NAVIGATION)

Ident.: DSC-22-FMS-40-00000526.0002001 / 14 APR 16
Applicable to: ALL

If all FMCs fail, all FMS data and functions are lost on both sides (FMS 1 and FMS 2). However, the ND still displays a trajectory. This trajectory is the BACKUP TRAJ.

L2 For more information about the BACKUP TRAJ, *Refer to DSC-31-CDS-40-40-90 BACKUP TRAJ*.

L1 The flight crew must tune the navaids via the STBY RAD NAV mode of the RMP.

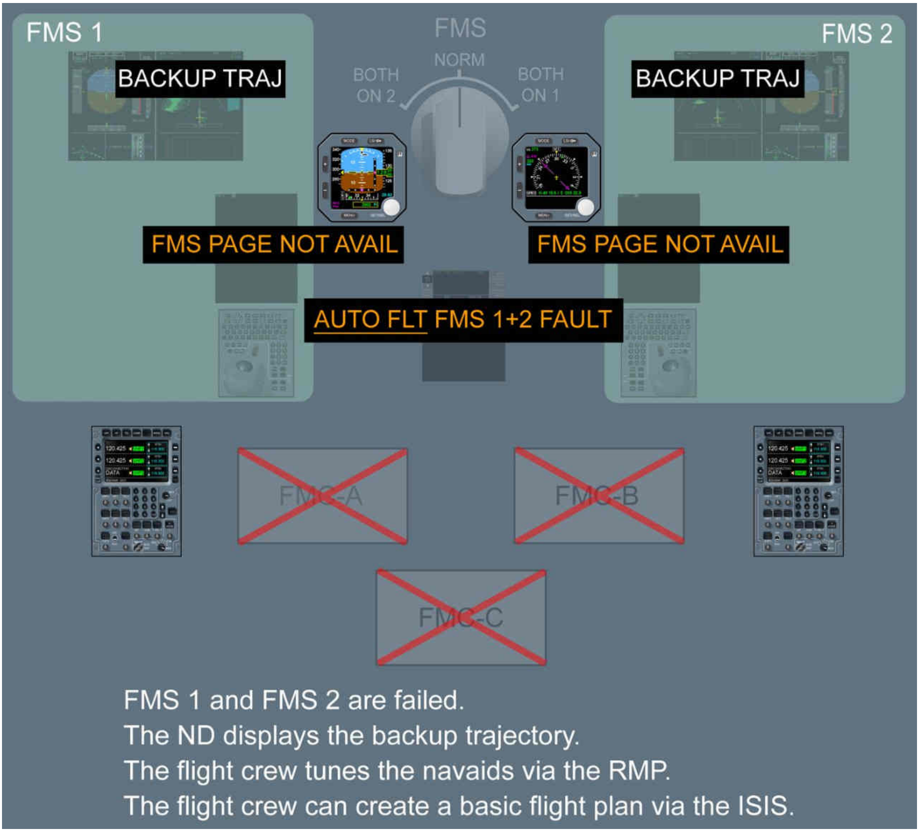
L2 For more information about the STBY RAD NAV mode of the RMP, *Refer to DSC-34-NAV-70-30 How to Tune the Navaids in STBY RAD NAV*.

L1 *Note:*
1. *The failure of all FMCs does not disengage the AP (if previously engaged), but the lateral and vertical guidance modes revert in basic mode.*
2. *The behavior remains the same during an RNP AR procedure.*

If necessary, the flight crew can create a basic flight plan via the SND ◁✻ .

L2 For more information about the SND, *Refer to DSC-34-NAV-30-10 Overview*.

Failure of All FMCs


FMS 1
FMS
NORM
BOTH ON 2
BOTH ON 1
FMS 2
BACKUP TRAJ
BACKUP TRAJ
FMS PAGE NOT AVAIL
FMS PAGE NOT AVAIL
AUTO FLT FMS 1+2 FAULT
FMC-A
FMC-B
FMC-C

FMS 1 and FMS 2 are failed.
The ND displays the backup trajectory.
The flight crew tunes the navaids via the RMP.
The flight crew can create a basic flight plan via the ISIS.

L1 CONTROLS AND INDICATORS

ECAM ALERTS

If all FMCs fail, the following ECAM alert is triggered: AUTO FLT FMS 1+2 FAULT (*Refer to procedure*).

ON THE MFD AND THE ND

If all FMCs fail:
- On both NDs:
  - The upper part of the ND displays the BACKUP TRAJ
  - The VD displays the altitude and distance scales in red

L2 *Note: The VD of the Captain(First Officer) no longer displays the flight plan, neither weather(terrain) data.*

L1
- If the MFD displays an FMS page, the FMS page disappears, and the MFD displays the FMS PAGE NOT AVAIL message instead of the FMS page.

L3 *Note: An additional secondary MFD may appear on the outer display unit of the Captain, on the outer display unit of the First Officer, or on both sides. This display configuration occurs if the center lower DU displays the OIS, and the outer display unit display MFD. In this display configuration, on the additional secondary MFD:*
- *The FMS page disappears*
- *The ADDITIONAL FMS PAGE NOT AVAIL message appears instead of the FMS page.*

FMC RESET AND RESYNCHRONIZATION

Applicable to: ALL

Ident.: DSC-22-FMS-40-20-00000527.0001001 / 04 SEP 14

AUTOMATIC FMC RESET

If the FMC software does not work correctly, or receives instructions to perform operations that are not possible, the FMC automatically resets.

MINOR RESET

In the case of a **minor** reset, the FMC recovers all of the FMS data.
After the data is recovered, the FMC resynchronizes with the other active FMC, in order to restore the DUAL mode of operation.

MAJOR RESET

When three resets occur at short intervals, the FMC loses all of the FMS data. This type of reset is referred to as a **major** reset. To recover the FMS data, the FMC resynchronizes with the active FMC, if there is one.

LATCH

When four resets occur at short intervals, the FMC automatically latches its state, and the AUTO FLT FMC-A(B)(C) FAULT alert is triggered. The backup FMC, if available, takes over.

Ident.: DSC-22-FMS-40-20-00000530.0001001 / 04 SEP 14

AUTOMATIC FMC RESYNCHRONIZATION

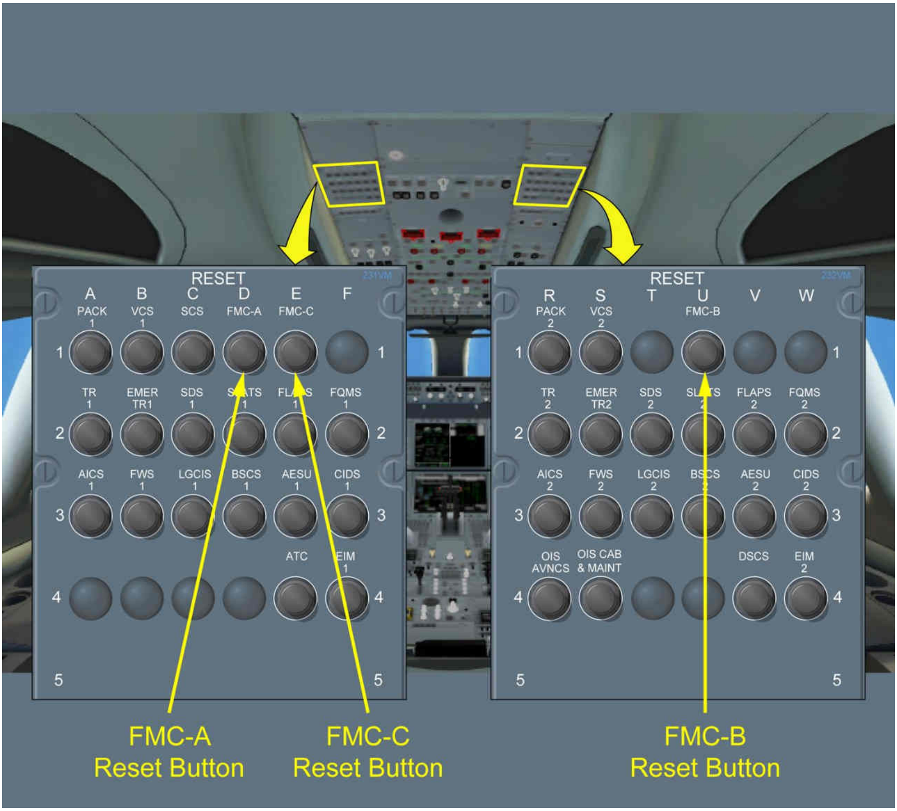
After a reset, the FMC resynchronizes with the active FMC, in order to recover all of the FMS data, and to restore the DUAL mode of operation.
If several resynchronizations occur and fail, at short intervals, the active FMCs automatically change to INDEPENDENT mode.

Ident.: DSC-22-FMS-40-20-00000531.0001001 / 04 DEC 14

MANUAL FMC RESET

In some cases, it may be necessary to manually reset the FMCs.
The flight crew should reset only one FMC at a time.
In order to manually reset FMC-A(B)(C), the flight crew uses the FMC-A(B)(C) reset button that is on the overhead panel.

Reset Buttons


RESET
A B C D E F
PACK 1
VCS 1
SCS
FMC-A
FMC-C
TR 1
EMER TR1
SDS 1
SLATS 1
FLAPS 1
FQMS 1
AICS 1
FWS 1
LGCIS 1
BSCS 1
AESU 1
CIDS 1
ATC
EIM 1
1 2 3 4 5
RESET
R S T U V W
PACK 2
VCS 2
FMC-B
TR 2
EMER TR2
SDS 2
SLATS 2
FLAPS 2
FQMS 2
AICS 2
FWS 2
LGCIS 2
BSCS 2
AESU 2
CIDS 2
OIS AVNCS
OIS CAB & MAINT
DSCS
EIM 2
FMC-A Reset Button
FMC-C Reset Button
FMC-B Reset Button

FMC MALFUNCTION

If the flight crew detects an FMC malfunction (with or without the associated AUTO FLT FMC-A(B)(C) FAULT alert), the flight crew can attempt to restore the FMS functions by a reset of the affected FMC.
For information on how to manually reset an FMC in the case of an FMC malfunction, *Refer to PRO-ABN-ABN-RESET AUTO FLT FMC-A(B)(C) Reset*.

ABNORMAL CONFIGURATION OF THE FMCs

Before engine start, if all FMCs are operative, the three FMCs automatically ensure the normal operation configuration. The normal configuration is the following configuration:

- FMC-A is assigned to FMS 1
- FMC-B is assigned to FMS 2
- FMC-C is the backup FMC.

After engine start, the flight crew may detect that the three FMCs are operative, but in an abnormal configuration (e.g. FMC-C is assigned to FMS 1, and FMC-A is the backup FMC).

Note: *In the case of an abnormal configuration, the PRIMs downgrade the RNP AR capability.*

The flight crew can restore the normal operation configuration by a reset of one of the FMCs that is not in the correct configuration.
Example: FMC-C is assigned to FMS 1, FMC-B is assigned to FMS 2, and FMC-A is the backup FMC. All three FMCs are operative. When the flight crew resets FMC-C, FMC-A takes control of FMS 1, and FMC-C becomes the backup FMC again.
For information on how to manually reset an FMC in the case of an abnormal configuration of the FMCs, *Refer to PRO-ABN-ABN-RESET AUTO FLT FMC-A(B)(C) Reset*.

Ident.: DSC-22-FMS-40-20-00000532.0001001 / 04 SEP 14

FMS STATUS DURING FMC RESET AND RESYNCHRONIZATION

During an FMC reset and resynchronization:

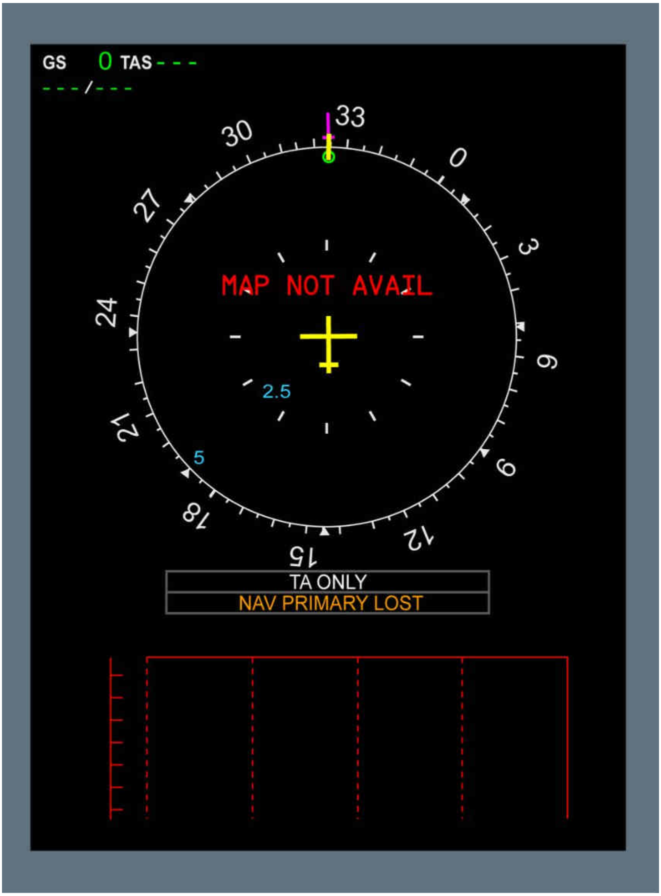
- On the ND:
  - The upper part of the ND displays the MAP NOT AVAIL message

L2 *Note:* *If the reset causes the loss of the flight plan in the two active FMCs, the MAP NOT AVAIL message does not appear. The upper part of both NDs displays the BACKUP TRAJ.*

L1
  - The VD displays the altitude and distance scales in red

L2 *Note:* *The VD of the Captain(First Officer) no longer displays the flight plan, neither weather(terrain) data.*

ND during FMC Reset and Resynchronization

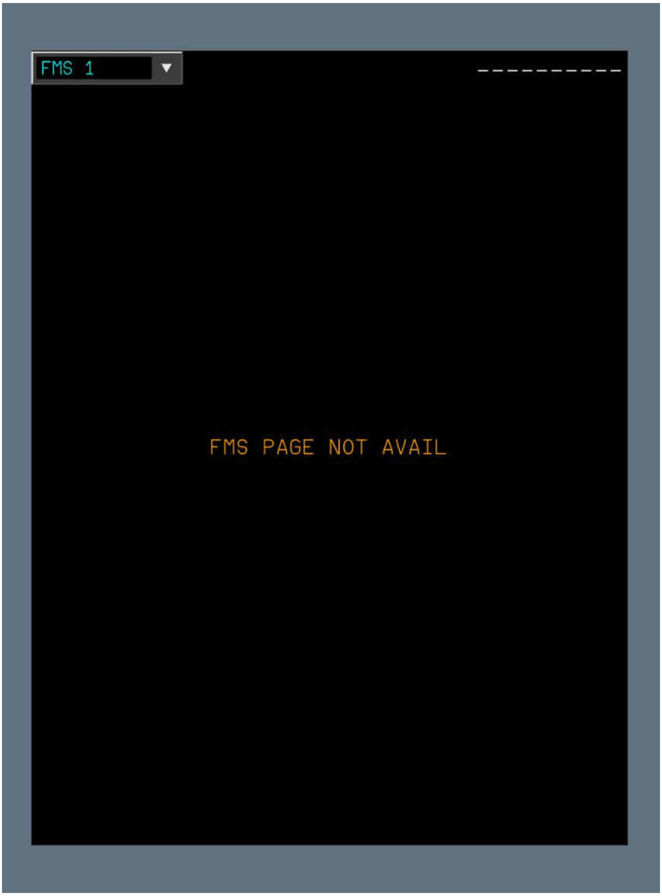


MAP NOT AVAIL

TA ONLY
NAV PRIMARY LOST

L1 - If the MFD displays an FMS page, the FMS page disappears, and the MFD temporarily displays the FMS PAGE NOT AVAIL message instead of the FMS page.

MFD during FMC Reset



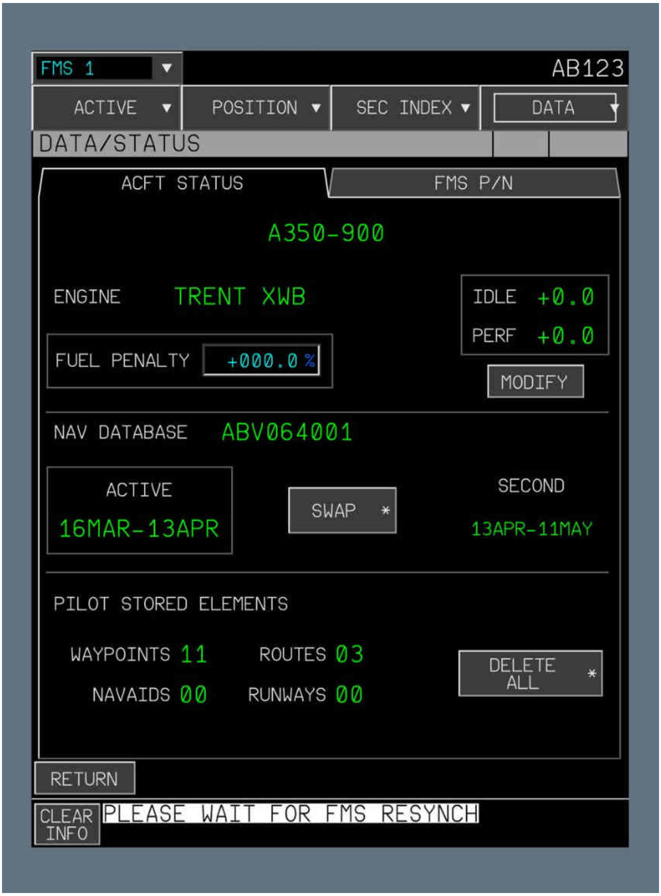
FMS PAGE NOT AVAIL

L3 *Note:* *An additional secondary MFD may appear on the outer display unit of the Captain, on the outer display unit of the First Officer, or on both sides. This display configuration occurs if the center lower DU displays the OIS, and the outer display unit display MFD. In this display configuration, on the additional secondary MFD:*
- *The FMS page disappears*
- *The ADDITIONAL FMS PAGE NOT AVAIL message appears instead of the FMS page.*

L1 During the FMC resynchronization, the MFD displays:

- The DATA/STATUS page
- The PLEASE WAIT FOR FMS RESYNCH message in the FMS message area.

MFD during FMC Resynchronization


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
DATA/STATUS
ACFT STATUS
FMS P/N
MODIFY
SWAP *
PILOT STORED ELEMENTS
DELETE ALL *
RETURN
CLEAR INFO

A350-900

ENGINE TRENT XWB

IDLE +0.0
PERF +0.0

FUEL PENALTY +000.0 %

NAV DATABASE ABV064001

ACTIVE 16MAR-13APR

SECOND 13APR-11MAY

WAYPOINTS 11
ROUTES 03
NAVAIDS 00
RUNWAYS 00

PLEASE WAIT FOR FMS RESYNCH

After FMC resynchronization, the MFD displays:

- Before engine start, the DATA/STATUS page
- After engine start, the ACTIVE/F-PLN page.

- The automatic tuning of the navaids is lost on the affected side.
  After FMC resynchronization, the automatic tuning is recovered.

- One reset of an active FMC does not disengage AP (if previously engaged) and no mode reversion occurs. When AP 1(2) is engaged, if the active FMC that resets is the FMC that is used for FMS 1(2), the PRIMs temporarily use the data of FMS 2(1) for FG, until the recovery of the affected FMC.
- If the flight crew performs an RNP AR procedure, no resynchronization occurs after an FMC reset. The PRIMs reject the affected FMC. For more information, *Refer to DSC-22-FMS-40 FMC Data Not Valid during a RNP AR Procedure*.

FMC DATA NOT VALID DURING A RNP AR PROCEDURE

Ident.: DSC-22-FMS-40-00000533.0001001 / 02 OCT 14
Applicable to: ALL

While the aircraft performs a RNP AR procedure (i.e. with the NAV mode engaged and with the AP or the FD engaged), the PRIMs reject a FMC in two cases:

- The PRIMs detect a FMC reset, and the PRIMs reject this FMC
- The PRIMs cross check the data that the three FMCs provide. If the PRIMs consider that the data of a FMC is not valid, the PRIMs reject this FMC

As a result, the PRIMs no longer use the rejected FMC for the Flight Guidance (FG).
If the PRIMs reject the backup FMC, redundancy is lost, and RNP AR capability is downgraded.

If the PRIMs reject one active FMC, the affected FMS is inoperative. The PRIMs use the active FMC that is operative, and the backup FMC. RNP AR capability is downgraded. The flight crew uses the FMS selector as follows:

- If the PRIMs reject the FMC that controls FMS 1, the flight crew sets the FMS selector to BOTH ON 2 in order to display FMS 2 data on both sides of the cockpit
- If the PRIMs reject the FMC that controls FMS 2, the flight crew sets the FMS selector to BOTH ON 1 in order to display FMS 1 data on both sides of the cockpit.

Note: *One rejected active FMC does not disengage AP (if previously engaged) and no mode reversion occurs. When AP 1(2) is engaged, if the active FMC that is rejected is the FMC that is used for FMS 1(2), the flight crew shall select AP 2(1).*

If the PRIMs reject the two active FMCs, both FMS are inoperative. The PRIMs use the backup FMC only. RNP AR capability is lost.

Note: *Two rejected active FMCs do not disengage AP (if previously engaged). The PRIMs use the data of the backup FMC for the FG. No lateral mode reversion occurs but vertical guidance mode reverts in basic mode. The flight crew cannot interact anymore with MFD FMS pages until exiting the RNP AR procedures by pulling HDG knob on FCU.*

CONTROLS AND INDICATORS

ECAM ALERTS

If the PRIMs reject FMC data, one of the following ECAM alerts is triggered:

- AUTO FLT FMS BKUP REJECTED (*Refer to procedure*), if the PRIMs reject the backup FMC
- AUTO FLT FMS 1 REJECTED (*Refer to procedure*), if the PRIMs reject the active FMC that controls FMS 1

L2 *Note: After the flight crew clears the procedure, the WD displays the FMS SWTG memo to indicate that the FMS selector is set to BOTH ON 2.*

L1
- AUTO FLT FMS 2 REJECTED (*Refer to procedure*), if the PRIMs reject the active FMC that controls FMS 2

L2 *Note: After the flight crew clears the procedure, the WD displays the FMS SWTG memo to indicate that the FMS selector is set to BOTH ON 1.*

L1
- AUTO FLT FMS 1+2 REJECTED (*Refer to procedure*), if the PRIMs reject the two active FMCs.

ON THE MFD, THE PFD AND THE ND

If the PRIMs reject the backup FMC

If the PRIMs reject the backup FMC, the MFD and the ND do not display specific indications.

If the PRIMs reject one active FMC

If the PRIMs reject the FMC that controls FMS 1(2):

- On the ND:
  - The upper part of the ND of the Captain(First Officer) displays the MAP NOT AVAIL message instead of the flight plan.

L2 *Note:* *The display of weather(terrain) data on the upper part of the ND remains operative.*

L1
  - The VD of the Captain(First Officer) displays the altitude and distance scales in red

L2 *Note:* *The VD of the Captain(First Officer) no longer displays the flight plan, neither weather(terrain) data.*

L3 *Note:* *If the VD displays the FMS dialog box:*
  - *The FMS dialog box disappears*
  - *The FMS PAGE NOT AVAIL message appears instead of the FMS dialog box.*

L1
- If the MFD of the Captain(First Officer) displays an FMS page, the FMS page disappears, and the MFD displays the FMS PAGE NOT AVAIL message instead of the FMS page.

L3 *Note:* *An additional secondary MFD may appear on the outer display unit of the Captain(First Officer). This display configuration occurs if the center lower display unit displays the OIS, and the outer display unit displays two MFDs. In this display configuration, on the additional secondary MFD:*
  - *The FMS page disappears*
  - *The ADDITIONAL FMS PAGE NOT AVAIL message appears instead of the FMS page.*

L1
- On the PFD of the Captain(First Officer) , the lateral and vertical RNP AR deviation scales and the RNP AR title disappear.

After the flight crew sets the FMS selector to BOTH ON 2(1):

- The MFD of the Captain(First Officer) displays the ACTIVE/F-PLN page
  The MFD system menu displays the same label as on the MFD of the First Officer(Captain). The fact that both MFD system menus display the same label indicates that both sides of the cockpit display data that comes from the same FMC.
- The ND of the Captain(First Officer) displays the OFFSIDE FM CONTROL message
  This message indicates that the active FMC on the side of the First Officer(Captain) provides the FMS data for the side of the Captain(First Officer).

- The PFD of the Captain(First Officer) displays the same RNP AR lateral and vertical deviations as on the PFD of the First Officer(Captain).
- On the EFIS CP of the Captain(First Officer), the flight crew can no longer select:
  - The FMS display options: CSTR, WPT, VORD, NDB, and ARPT
  - The ND mode (except the ROSE-VOR and ROSE-LS modes)
  - The ND range (except the ZOOM position).

  The flight crew manages these display options via the EFIS CP of the First Officer(Captain).

L2 *Note: The ND and VD displays of weather(terrain) data remain operative.*

L1 If the PRIMs reject the data of the two active FMCs

If the PRIMs reject the two active FMCs:

- On both NDs:
  - The upper part of the ND displays the BACKUP TRAJ (refer to *Refer to DSC-31-CDS-40-40-90 BACKUP TRAJ*)
  - The upper part of the ND displays the RNP AR CAPABILITY LOST message
  - The VD displays the altitude and distance scales in red

L3 *Note: If the ND displays the FMS dialog box instead of the VD:*
  - *The FMS dialog box disappears*
  - *The FMS PAGE NOT AVAIL message appears instead of the FMS dialog box.*

L1
- On both PFDs, the RNP AR vertical deviation disappears.

  Note: On both PFDs, the RNP AR lateral deviation remains, based on the backup FMC computation.
- If the MFD displays an FMS page, the FMS page disappears, and the MFD displays the FMS PAGE NOT AVAIL message instead of the FMS page.

L3 *Note: An additional secondary MFD may appear on the outer display unit of the Captain, on the outer display unit of the First Officer, or on both sides. This display configuration occurs if the center lower DU displays the OIS, and the outer display unit display MFD. In this display configuration, on the additional secondary MFD:*
  - *The FMS page disappears*
  - *The ADDITIONAL FMS PAGE NOT AVAIL message appears instead of the FMS page.*

DISPLAY OF ERRONEOUS FIX INFO ON THE ND

Ident.: DSC-22-FMS-40-00025376.0001001 / 03 JUL 20
Applicable to: ALL

1 DESCRIPTION

The FIX INFO revision allows the flight crew:
- To create a waypoint at the intersection of the F-PLN and the FIX INFO (radial, circle (radius) or abeam)
- To display the FIX INFO (radial, circle (radius) or abeam) on the ND.

For more information on the FIX INFO, *Refer to FIX INFO*.
When the ND displays a FIX INFO (dotted blue line or dotted blue circle), this FIX INFO may not appear correctly. This is particularly visible for FIX INFO RADIUS with a large radius (more than 300 NM).
The flight crew must not base any decision making on the display of the FIX INFO on the ND. For example, the use of the FIX INFO circle (radius) function is not recommended to display ETOPS operating area on the ND, as it may not show appropriate information relative to the current aircraft position or the planned trajectory.

The following information are correct and the flight crew can use them:
- On the ND, the waypoint created at the intersection of the FIX INFO and the F-PLN is correct.
- On the MFD, the information on the FIX INFO page are correct:
  - The time of arrival at the intersection waypoint
  - The distance to the intersection waypoint
  - The predicted altitude at the intersection waypoint.

Intentionally left blank

ERRONEOUS TRAJECTORY WHILE IN HDG(TRK) MODE DURING PROCEDURES WITH A TURN DIRECTION ON A LEG WITH AN ALTITUDE TERMINATION

Ident.: DSC-22-FMS-45-00023833.0001001 / 01 SEP 16
Applicable to: ALL

In some very specific operational conditions that depend on the coding in the Navigation Database of the procedure, and on various performance conditions (aircraft weight, flaps, thrust setting, temperature, wind ...), the FMS may compute an erroneous trajectory.

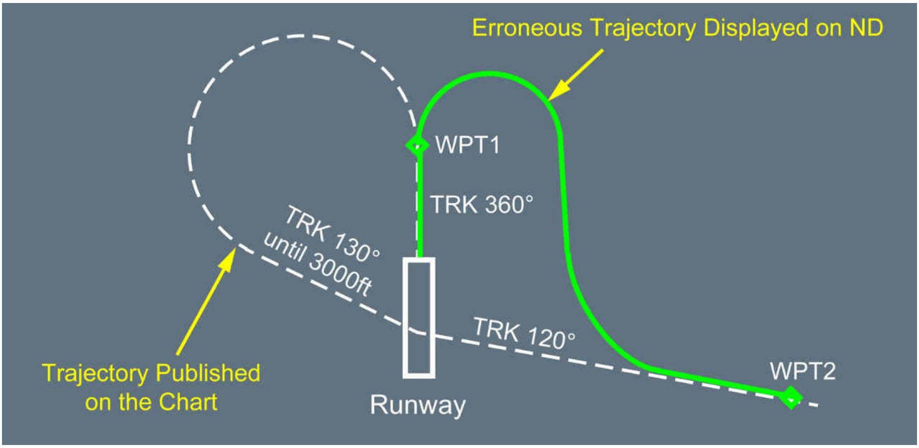
The SIDs and the Missed Approach procedures that may be affected are coded in the Navigation Database with a leg that has a turn direction and an altitude termination. The leg can be one of the following:
- A Course-to-an-Altitude (CA) leg that defines a course to follow to an altitude
- A Fix-to-an-Altitude (FA) leg that defines a track to follow from a waypoint to an altitude
- A Heading-to-an-Altitude (VA) leg that defines a heading to follow to an altitude
- A Holding-to-an-Altitude (HA) leg that defines a holding pattern to an altitude.

The turn direction (left or right) that is coded on a leg indicates that the aircraft has to execute a turn in the specified direction to intercept the leg.
In some very specific operational conditions, the FMS may predict that the aircraft will reach the altitude that terminates the leg, before the initiation of the leg. In that case, the FMS ignores the leg and the associated turn direction.
The FMS computes a new trajectory to directly join the next leg. The trajectory may not be consistent with the published trajectory.
The abnormal behavior depends on the AP/FD lateral modes engaged.

After takeoff, the NAV mode engages. At any time before the end of the altitude termination leg:
- If the NAV mode stays engaged, the FMS will compute a trajectory consistent with the published trajectory
- If the HDG/TRK mode is engaged, the FMS may compute an erroneous trajectory and display it on the ND. If the flight crew engages the NAV mode, the aircraft will follow the erroneous trajectory.

Example:
- Leg 1: A Course-to-Fix (CF) leg that defines a track (360 °) to a waypoint (WPT1)
- Leg 2: A Course-to-an-Altitude (CA) leg that defines a track (130 °) to intercept an altitude (3 000 ft). The leg is coded in the Navigation Database with a turn direction (left). The end of the leg depends on the aircraft performance. The turn direction is indicated by an arrow on the line of leg 1 on the F-PLN page of the MFD.
- Leg 3: A CF leg that defines a track (120 °) to a waypoint (WPT2).

Erroneous trajectory on ND



Depending on the aircraft performance, the FMS may predict that the aircraft will reach 3 000 ft before WPT1. In that case, if the HDG/TRK mode is engaged, the FMS ignores the leg 2 (CA leg) because the aircraft is already above the altitude that ends leg 2, before the beginning of leg 2. The FMS also ignores the turn direction that is coded on the leg.
As a result, the FMS computes again the trajectory from the end of leg 1, directly to leg 3. As shown on the above illustration, this trajectory includes a right turn, instead of a left turn, because it induces the shortest course change to intercept leg 3 (CF leg). This erroneous trajectory will be displayed on the ND.
If flight crew reengages the NAV mode before the end of the altitude termination leg, the aircraft follows this erroneous trajectory.

OPERATIONAL RECOMMENDATIONS

The flight crew should pay particular attention to the check of the flight plan during the Cockpit Preparation, and during the Descent Preparation.

CAUTION	Even if the flight plan is correct during the Cockpit Preparation or during the Descent Preparation, the FMS may compute and display an erroneous trajectory when the FMS updates its predictions after takeoff or after go-around initiation.

When in HDG/TRK mode after takeoff or go around initiation, if the flight crew detects that the lateral flight plan does not agree with the published trajectory, the flight crew should keep the HDG/TRK mode engaged, and monitor NAVAID raw data as appropriate.

The flight crew should only reengage the NAV mode when the lateral flight plan is consistent with the published trajectory.

ERRONEOUS ALTITUDE CONSTRAINT AFTER SID OR STAR SELECTION CHANGE

Ident.: DSC-22-FMS-45-00023660.0001001 / 07 JUL 16
Applicable to: ALL

DESCRIPTION

When the flight crew changes the SID or the STAR procedure, the FMS may keep a constraint of the previous procedure after the change.
The condition of occurrence is that both SID(STAR) procedures have the same last(first) waypoint but with different associated altitude constraints.
At the first SID(STAR) selection, the waypoint is linked to the en-route flight plan and the FMS considers this waypoint as the first(last) en-route waypoint.
When the SID(STAR) is changed, the FMS may keep the constraint of the first(last) en-route waypoint rather than the constraint of the new selected SID(STAR).

Note: *The issue may also appear if the altitude constraint was inserted manually in the previous SID(STAR).*

PROCEDURE

As per SOP, the flight crew must compare the inserted SID(STAR), including constraints, with the charts and make corrections if necessary.

ERRONEOUS FUEL & LOAD VALUES FOLLOWING RECEIVED CPNY F-PLN

Ident.: DSC-22-FMS-45-00023924.0001001 / 08 NOV 18
Applicable to: ALL

DESCRIPTION

In SEC 1(2)(3) on the SEC INDEX page, if the flight crew presses the IMPORT/ACTIVE button when a CPNY F-PLN is received, the FMS creates a link between the SEC 1(2)(3) F-PLN and the ACTIVE F-PLN. This action can be due to an inadvertent selection of the IMPORT/ACTIVE button instead of the RECEIVED CPNY F-PLN button.
This link has no impact on the current flight preparation: if the flight crew presses the RECEIVED CPNY F-PLN button, the FMS correctly inserts the CPNY F-PLN in the SEC 1(2)(3) F-PLN.
However, this link is erroneously active for the next flight. When the flight crew creates a new SEC 1(2)(3) F-PLN (received by ACARS or not), the fuel and load data stored during the FMS DONE phase of the previous flight are inserted in this SEC 1(2)(3) F-PLN. Then, when the flight crew swaps the ACTIVE F-PLN with this SEC 1(2)(3) F-PLN, the FMS inserts these fuel and load data in the ACTIVE F-PLN.

These erroneous data may affect the automatic fuel distribution and the fuel order in case of refuel process in progress.

PROCEDURE

HOW TO AVOID THIS ERRONEOUS INSERTION OF DATA?

If a CPNY F-PLN is received via ACARS, the flight crew inserts the F-PLN on the ACTIVE F-PLN only.

L2 Because there is no IMPORT button on the ACTIVE/INIT page, there is no risk of inadvertently pressing the IMPORT/ACTIVE button.

L1 Then the flight crew imports the ACTIVE F-PLN in the SEC 1(2)(3).

HOW TO MANAGE THE ERRONEOUS INSERTION OF DATA IN THE ACTIVE F-PLN?

The flight crew must overwrite the erroneous data values:

- Flight number
- Cruise flight level and temperature
- Tropopause altitude
- Cost Index (CI)
- ZFW, ZFWCG, Minimum fuel at destination, and BLOCK fuel
- Route reserve and final fuel (time) data
- Passenger number.

Note: *These data are inserted during the MFD FMS Preparation part of the Cockpit Preparation SOP (Refer to PRO-NOR-SOP-60 MFD FMS Preparation - Flight Plan Initialization).*

ERRONEOUS VERTICAL GUIDANCE IN APPROACH SUBSEQUENT TO A DIR TO PERFORMED WHEN NEAR THE TOP OF DESCENT

Ident.: DSC-22-FMS-45-00024988.0001001 / 08 JUL 19
Applicable to: ALL

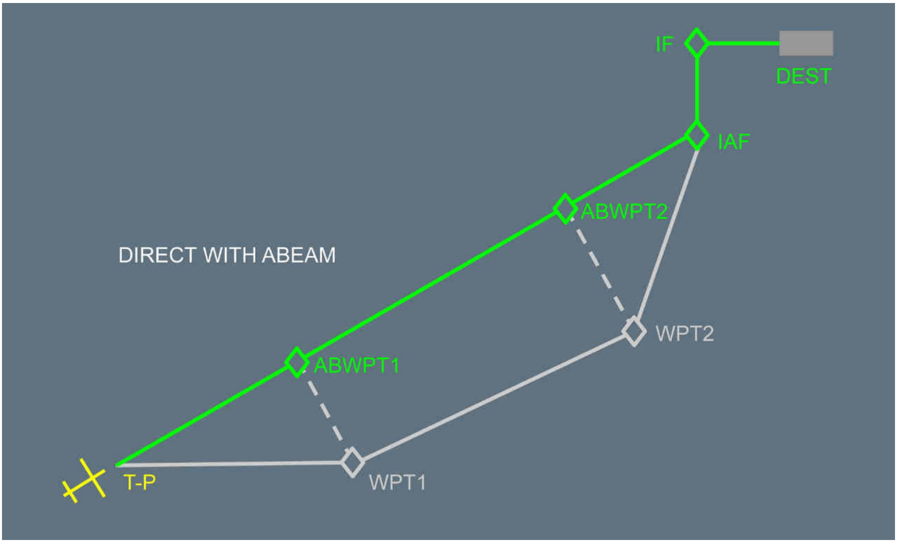
DESCRIPTION

When the flight crew inserts a DIR TO waypoint, the FMS computes the horizontal path to the destination. When near the top of descent, if the flight crew inserts a DIR TO waypoint that is at, or after the IAF, the FMS computation may be erroneous for all of the following:
- The distance of the legs after the DIR TO waypoint
- The vertical deviation on the legs after the DIR TO waypoint
- The vertical guidance in DES or APP DES mode.

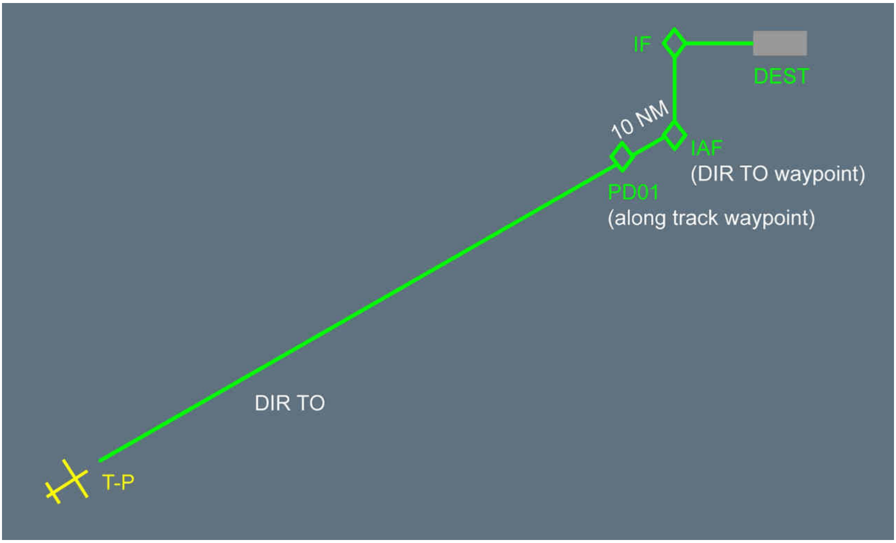
In order to compute the turn radius of the horizontal path, the FMS uses the current TAS at the time of the DIR TO insertion. This is the cause to the erroneous calculation. Instead, the FMS should use the TAS that is predicted at the DIR TO waypoint.

PROCEDURE

When near the top of descent, to insert a DIR TO waypoint that is at or after the IAF, the flight crew should use the DIRECT WITH ABEAM function. The flight crew must then check that at least one abeam waypoint is computed ahead of the position of the aircraft.
For more information on the DIRECT WITH ABEAM function, *Refer to DSC-22-FMS-10-40-20 Purpose*.



If there is no abeam waypoint computed, the flight crew must insert a place/distance waypoint 10 NM before the DIR TO waypoint. For more information, *Refer to DSC-22-FMS-20-20-20 DATA/WAYPOINT Page*



FMC RESET DUE TO F-PLN CONTENT WITH TWO SUCCESSIVE WAYPOINTS DISTANT FROM LESS THAN 2 NM

Ident.: DSC-22-FMS-45-00025375.0001001 / 03 JUL 20
Applicable to: ALL

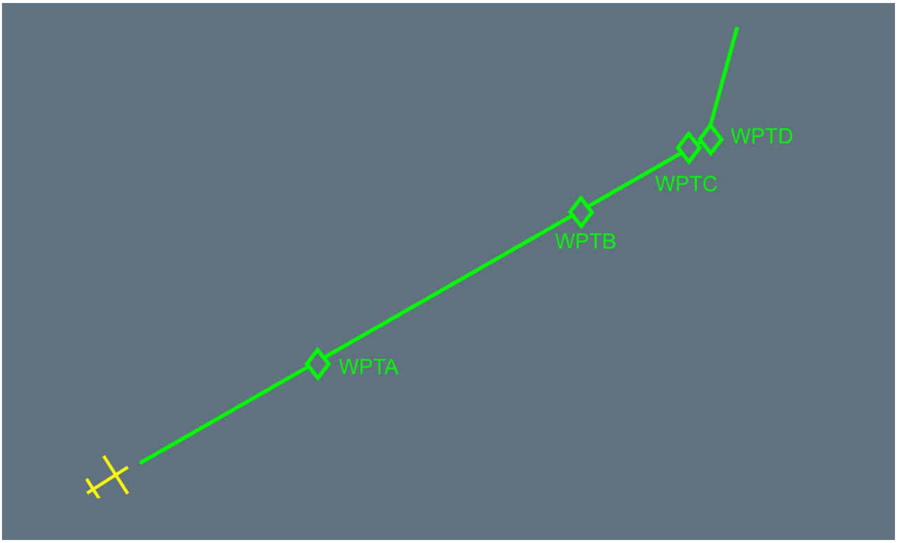
DESCRIPTION

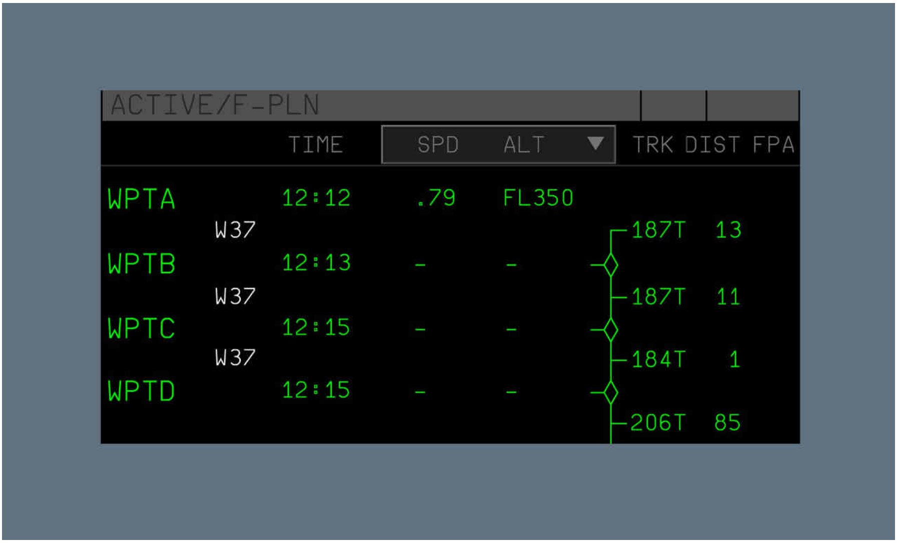
The reset occurs on the ground or in flight, upon F-PLN initialization or revisions, if either ACTIVE or SEC F-PLN has two successive waypoints with this specific configuration:

- The aircraft predicted speed for the two successive waypoints is above 250 kt
- The distance between the two successive waypoints is less than 2 NM
- The course change is above or equal to 3 °.

Note: *The waypoints could belong to the navigation database, the waypoints could be created by the pilot or the waypoints could be uplinked from the company ground station.*

The illustrations below are an example of an issue that the flight crew should identify and clean:





```
ACTIVE/F-PLN
                 TIME     SPD    ALT  ▼   TRK  DIST FPA
WPTA             12:12    .79    FL350
          W37                              187T   13
WPTB             12:13     -      -
          W37                              187T   11
WPTC             12:15     -      -
          W37                              184T    1
WPTD             12:15     -      -
                                           206T   85
```

Due to the specific configuration of these two waypoints, the transition of the path between WPT C and WPT D is very short. For each waypoint, the FMS builds this transition with several segments

from the previous leg to the next leg. The FMS continuously starts to build the transition, but never succeed. This causes to the reset.
The reset is repeated as long as the conditions mentioned above are present in one of the F-PLN.

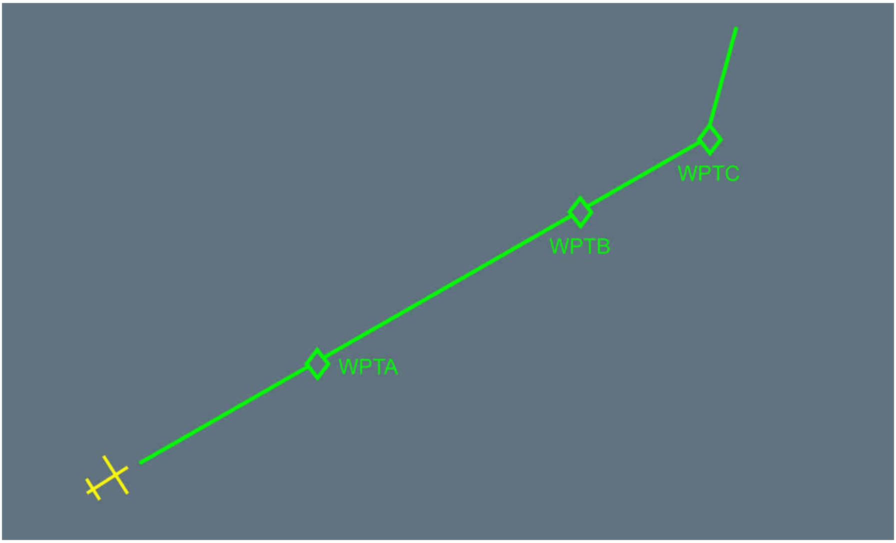
1 OPERATIONAL RECOMMENDATIONS

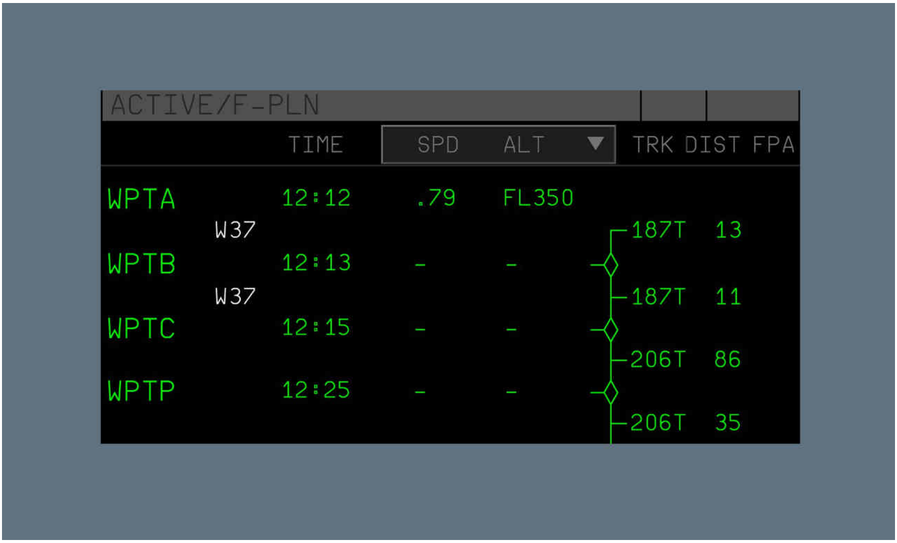
Check in the ACTIVE F-PLN and SEC F-PLN the presence of waypoints with a predicted speed above 250 kt.
If this condition is true, the flight crew must check:

1. If the distance between two successive waypoints is less than 2 NM, and
2. If the course change between these two successive waypoints is above or equal to 3 °.

If all the above conditions are met, the flight crew must:
- Not store any F-PLN that contains this configuration in a SEC F-PLN (else the reset will occur)
- Delete one of the two successive waypoints from the F-PLN.

The following illustrations show the result after the correction:





```
ACTIVE/F-PLN
                 TIME      SPD    ALT ▼     TRK  DIST FPA
WPTA             12:12     .79    FL350
           W37                             187T   13
WPTB             12:13      -      -
           W37                             187T   11
WPTC             12:15      -      -
                                           206T   86
WPTP             12:25      -      -
                                           206T   35
```

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AIRCRAFT SYSTEMS

23 - COMMUNICATION

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DSC-23-10 System Description

DSC-23-10-10 Overview

Introduction....................A
Communication System Architecture....................B
RMP Architecture....................C

DSC-23-10-20 Internal Communication

Flight Interphone....................A
Cabin Interphone....................B
Passenger Address (PA)....................C
Service Interphone....................D

DSC-23-10-30 External Communication

DSC-23-10-30-10 Radiocommunication

VHF....................A
HF....................B

DSC-23-10-30-20 SATCOM

SATCOM....................A

DSC-23-10-30-30 SELCAL

SELCAL....................A

DSC-23-20 Controls and Indicators

Cockpit View....................A
AUDIO INDICATORS....................B
Calls Panel....................C
Cockpit Handset Description....................D
DATALINK COM STATUS Page....................E
DATALINK INIT Page....................F
DATALINK ROUTER Page....................G
ELT Panel....................H
EVAC Panel (if installed)....................I
GND HF DATALINK pb-sw....................J
HF Page....................K
NAV Page....................L
Maintenance Nose Gear Panel....................M
MEMO....................N
MENU Page....................O
MOBILE COM pb-sw....................P

Continued on the following page

Continued from the previous page

PAX INFO pb-sw .... Q
Glareshield PTT pb (If Installed) and Loudspeaker Volume Controls Knob Panel........ R
RMP External Communication........ S
RMP Messages........ T
RMP Overview........ U
SATCOM CONFIG Page........ V
SATCOM SETTING Page........ W
SQWK Page........ X
SVCE INT OVRD pb........ Y
TEL Page........ Z
VHF DATALINK PROVIDER Page........ AA
VHF Page........ AB

DSC-23-25 Temporary Abnormal Behaviors

Loss of HF voice or HF datalink........ A

DSC-23-30 Abnormal Operations

DSC-23-30-10 RMP Failures

Single RMP Failure........ A
Dual RMP Failure........ B

DSC-23-30-20 RMP Connection Failures

RMP Synchronization Failure........ A
RMP - VHF/HF Transceiver Connection Failure........ B

Localization Title	Toc Index	ID	Reason
DSC-23-10-10 RMP	B	1	Revision of the if-installed element to be in accordance with the if-installed table.
DSC-23-20 COMMAND pb-sw	I	1	Correction of a typo.
DSC-23-20 HORN OFF pb	I	2	Addition of the if-installed symbol for harmonization purpose.
DSC-23-20 CAPT and PURS Switch	I	3	Addition of the if-installed symbol for harmonization purpose.

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INTRODUCTION

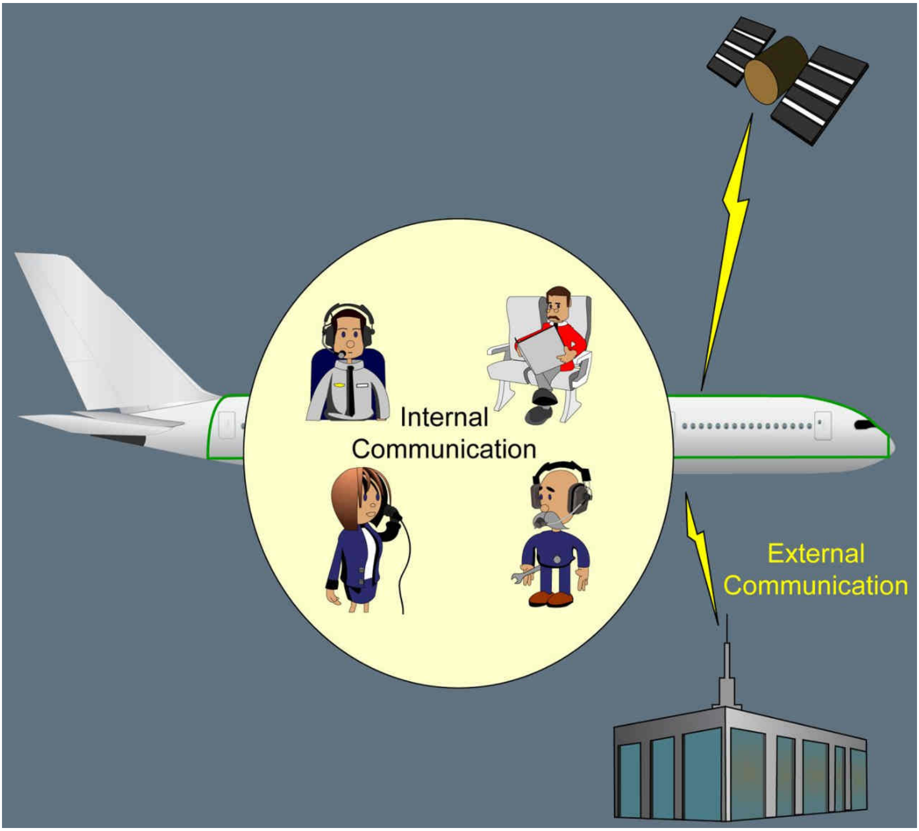
Ident.: DSC-23-10-10-00000477.0001001 / 07 JUL 16
Applicable to: ALL

The communication system enables:

- Internal communication between the:
  - Flight crew and additional cockpit occupant(s)
  - Cabin crew
  - Ground crew
  - Passengers (i.e. for flight or cabin crew announcements)

  Internal communication is possible via the flight, cabin, and service interphones, and via the Passenger Address (PA).
- External communication via radiocommunication (HF or VHF) or Satellite Communication (SATCOM), either in voice mode or data mode.

L2 HF data mode ◁ is optional.

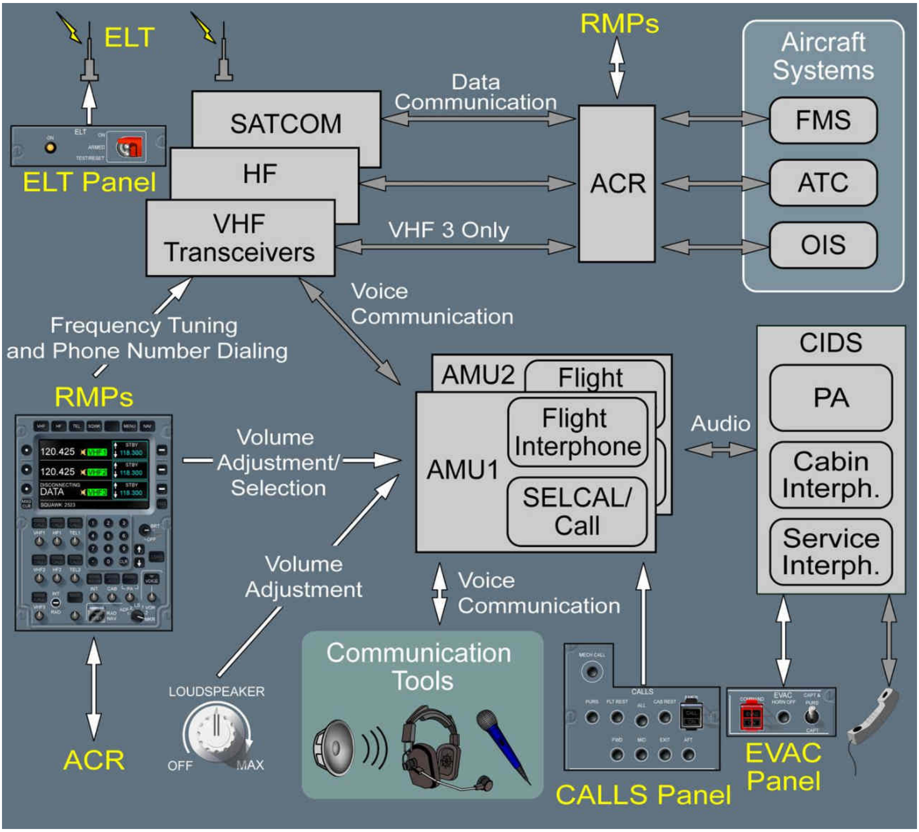

Internal
Communication
External
Communication

COMMUNICATION SYSTEM ARCHITECTURE

Applicable to: ALL

Ident.: DSC-23-10-10-10-00007814.0001001 / 30 APR 14

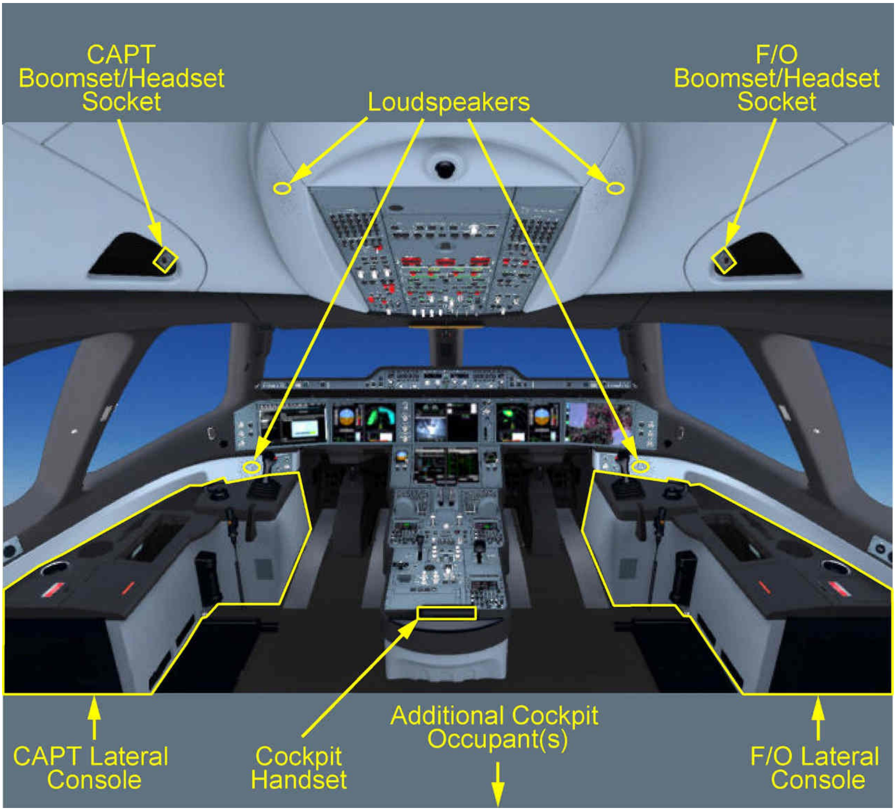
COMMUNICATION SYSTEM ARCHITECTURE


ELT
ELT Panel
SATCOM
HF
VHF Transceivers
Data Communication
VHF 3 Only
RMPs
ACR
Aircraft Systems
FMS
ATC
OIS
Voice Communication
Frequency Tuning and Phone Number Dialing
RMPs
AMU2
Flight
AMU1
Flight Interphone
SELCAL/ Call
Audio
CIDS
PA
Cabin Interph.
Service Interph.
Volume Adjustment/ Selection
Volume Adjustment
Voice Communication
ACR
LOUDSPEAKER
OFF
MAX
Communication Tools
CALLS Panel
EVAC Panel

Ident.: DSC-23-10-10-10-00000113.0001001 / 08 NOV 18

COMMUNICATION EQUIPMENT

Communication Equipment Cockpit View


CAPT Boomset/Headset Socket
Loudspeakers
F/O Boomset/Headset Socket
CAPT Lateral Console
Cockpit Handset
Additional Cockpit Occupant(s)
F/O Lateral Console

The cockpit has the following equipment:

- Four loudspeakers

L2 The two loudspeakers on the left are for communication broadcasts that the Captain selects on the RMP.

The two loudspeakers on the right are for communication broadcasts that the First Officer selects on the RMP.

L1
- One Push-To-Talk switch (PTT sw) on each sidestick
- Two glareshield PTT pb
- Three boomsets/headsets

- Three hand microphones, each with a PTT sw

L3 Communication via the hand microphone takes priority over communication via the boomset or via the oxygen mask microphone.

L1
- One microphone on the oxygen mask of the Captain (CAPT), First Officer (FO) and third occupant
- One cockpit handset.

Ident.: DSC-23-10-10-10-00000114.0001001 / 03 JUL 20

1 RADIO MANAGEMENT PANEL (RMP)

There are three Radio Management Panels (RMPs) in the cockpit. The flight crew uses these RMPs to control the communication system.

On each RMP, the flight crew can:
- Select the communication mean(s) in transmission and/or reception mode(s)
- Tune HF and VHF frequencies
- Dial SATCOM Telephone (TEL) numbers
- Select voice or data mode
- Monitor and change data mode parameters
- Enter the Squawk (SQWK) code and squawk IDENT
- Load frequencies and phone numbers from the mailbox
- Select Standby Radio Navigation (STBY RAD NAV) and tune the NAVAIDs (only via RMP 1 and RMP 2).
  For information on standby radio navigation tuning, *Refer to DSC-34-NAV-70-30 How to Tune the Navaids in STBY RAD NAV*.
- Adjust the volume for voice communication and for NAVAID identification.

In addition to the RMPs, the flight crew uses:
- The CALLS panel to generate visual, and aural call indications (in the cabin and/or on the steering nose gear panel) via the flight and cabin interphones
- The Evacuation (EVAC) Panel ◁ , to initiate evacuation of the aircraft
- The Emergency Locator Transmitter (ELT) panel, to control the ELT.

L2 For more information on the RMPs, *Refer to DSC-23-10-10 RMP Architecture*.

Ident.: DSC-23-10-10-10-00000115.0001001 / 30 APR 14

L2 AUDIO MANAGEMENT UNIT (AMU)

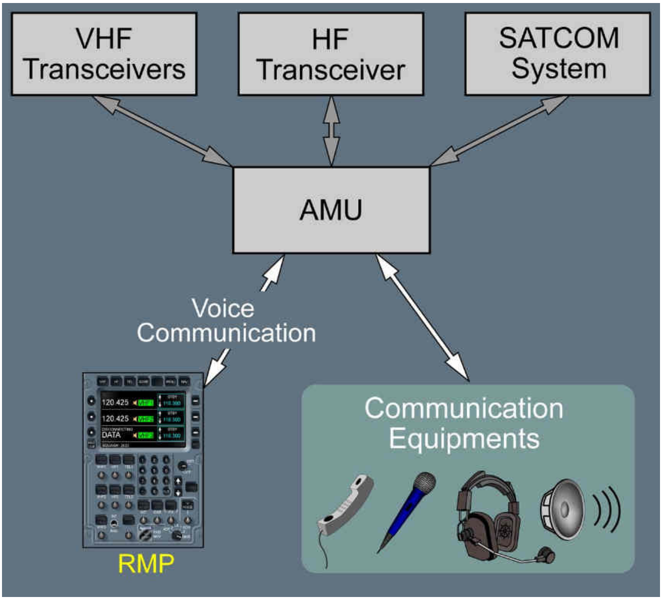
There are two Audio Management Units (AMUs) in the aircraft. The AMUs are located in the avionic bays.

The AMUs manage:
- communication transmission / reception of all the radio communication and radio navigation facilities,
- Internal communication.

L3 The AMUs manage, and adjust the volume of audio signals (analog) between the communication equipment and the:
- HF/VHF transceivers
- SATCOM system
- SELCAL
- NAVAID receivers (for NAVAID identification in STBY RAD NAV)
- Flight interphone
- Cabin Intercommunication Data System (CIDS) that includes:
  - The cabin interphone
  - The service interphone
  - The Passenger Address (PA).

L2 *Note: The cockpit handset is directly connected to the CIDS.*

L3 The AMU is the interface for the voice.

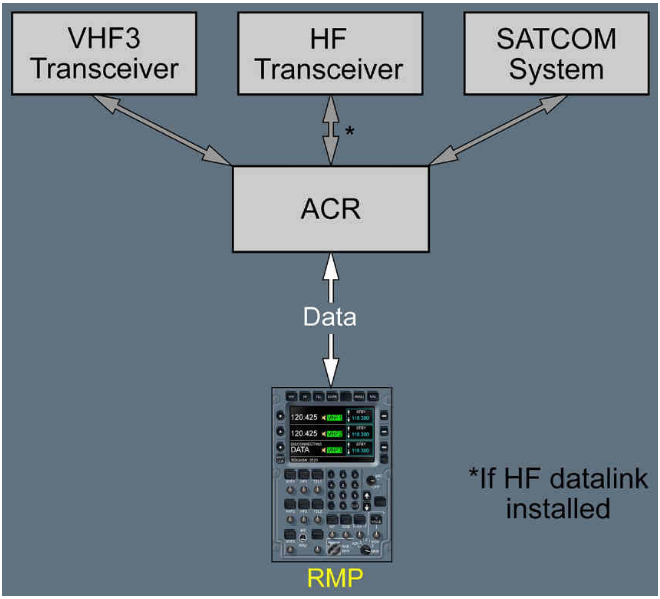

VHF Transceivers
HF Transceiver
SATCOM System
AMU
Voice Communication
RMP
Communication Equipments

L2 AVIONICS COMMUNICATION ROUTER (ACR)

The RMPs also transmit flight crew selections to the Avionics Communication Router (ACR). The ACR controls datalink communications for Air Traffic Control (ATC) and Airline Operational Communications (AOC) applications.

Note: *The ACR interfaces with:*
- *The Flight Management System (FMS)*
- *The ATC datalink system*
- *The Onboard Information System (OIS).*

The ACR is the interface for the data.

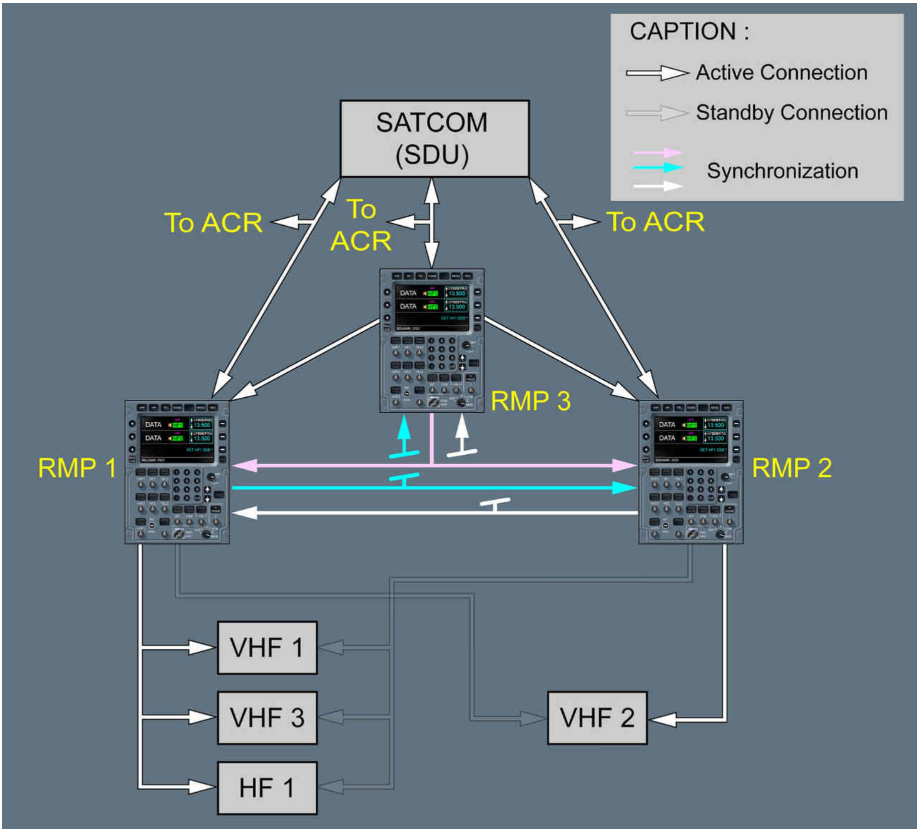

VHF3 Transceiver
HF Transceiver
SATCOM System
*
ACR
Data
120.425
120.425
DATA
RMP
*If HF datalink installed

Note: *The datalink communication uses VHF, HF and SATCOM. HF data mode ◁ is optional.*

RMP ARCHITECTURE

Applicable to: ALL

Ident.: DSC-23-10-10-20-00000117.0001001 / 03 AUG 16


CAPTION :
Active Connection
Standby Connection
Synchronization
SATCOM (SDU)
To ACR
To ACR
To ACR
RMP 3
RMP 1
RMP 2
VHF 1
VHF 3
HF 1
VHF 2

Ident.: DSC-23-10-10-20-00000118.0001001 / 30 APR 14

RMP SYNCHRONIZATION

The RMPs share selections and inputs to enable the flight crew to control all radio communication via any RMP.

L3 The RMPs share mainly the following data:
- Active and standby frequencies
- SATCOM channels and their status (e.g. logged on/off, cabin calls enabled/disabled, connected)
- Active function displays (e.g. Amplitude Modulation (AM))

L1 However, it is possible to display a different page on each RMP.

Ident.: DSC-23-10-10-20-00000119.0001001 / 14 APR 16

ACTIVE COMMUNICATION

In normal operation:
- The Captain controls communication via RMP 1
- The First Officer controls communication via RMP 2
- The third occupant controls communication via RMP 3
- The fourth occupant controls communication via the fourth occupant ACP ◁ .

RMPs 1 and 2 are directly connected to the VHF and HF transceivers.
L3 RMP 1 transmits all commands to VHF 1, VHF 3 and HF 1.
RMP 2 transmits all commands to VHF 2.
L1 RMP 3 transmits commands to RMP 1 or RMP 2, via the appropriate control connection. RMP 1 and/or RMP 2 then send these commands to the appropriate transceivers.
All three RMPs are directly connected to the SATCOM system.

Ident.: DSC-23-10-10-20-00000120.0001001 / 30 APR 14

STANDBY CONTROL

If a connection or an RMP fails, the communication system can automatically reconfigure to ensure continued communication control.
L3 Standby connections are activated instead of the failed connections.
L1 RMP 3 can be used, as a backup, instead of the failed RMP (not for STBY RAD NAV control).
For information on reconfiguration with RMP failures or with connection failures, *Refer to Abnormal operations chapter*.
If the FMS can no longer control the radio NAVAIDS (e.g. FMS failure), RMPs 1 and 2 can also be used, as a backup, to tune the NAVAIDS.

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FLIGHT INTERPHONE

Ident.: DSC-23-10-20-00000121.0001001 / 30 APR 14
Applicable to: ALL

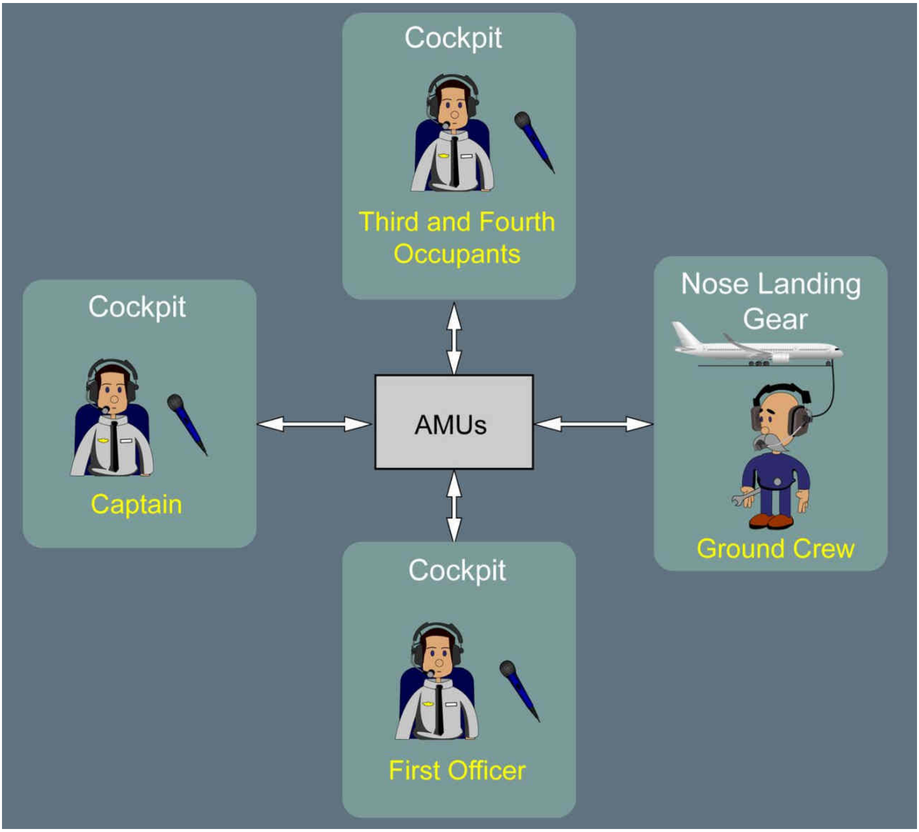
L3 The Audio Management Units (AMUs) host the flight interphone.

L1 The flight crewmembers use the flight interphone to communicate with each other, and with the ground crew via the:

- Boomsets/headsets
- Hand microphones
- Microphones on the oxygen masks.

The ground crew can communicate with the flight crew via the FLT INT jack on the maintenance nose landing gear panel.

Flight Interphone


Cockpit
Third and Fourth Occupants
Cockpit
Captain
AMUs
Nose Landing Gear
Ground Crew
Cockpit
First Officer

Before transmitting via the flight interphone, on the RMP the flight crewmember must:
- Press and release the INT reception knob to the out position
- Press the INT transmission key
- Press a PTT sw or set the INT/RAD sw to RAD to transmit.

For permanent transmission (i.e. conference mode):
- Press and release the INT reception knob to the out position
- Set the INT/RAD sw to INT.

CABIN INTERPHONE

Ident.: DSC-23-10-20-00000122.0001001 / 30 APR 14
Applicable to: ALL

L3 The Cabin Intercommunication Data System (CIDS) hosts the cabin interphone.

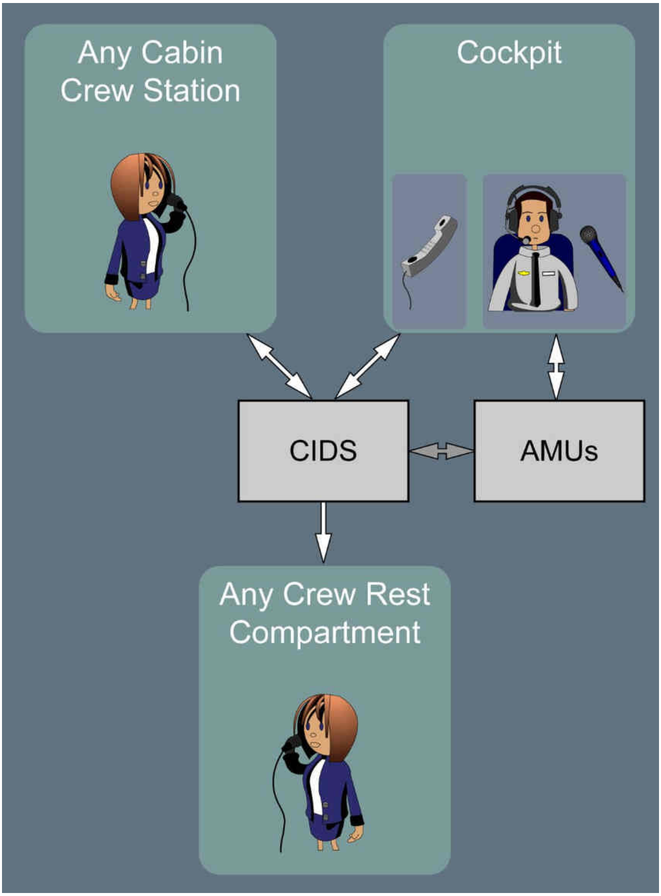
L1 The flight crew can use the cabin interphone to communicate with the cabin crew at any cabin crew station, and with a crewmember in a crew rest compartment via the:

- Boomsets/headsets
- Hand microphones
- Microphones on the oxygen masks
- Cockpit handset.

L2 For more information *Refer to Cockpit handset description* .

L1 *Note:* *Cabin crewmembers can also use the cabin interphone to communicate with other cabin crewmembers that are at different attendant stations or in the crew rest compartment.*

Cabin Interphone


Any Cabin Crew Station
Cockpit
CIDS
AMUs
Any Crew Rest Compartment

Before transmitting via any other appropriate equipment, on the RMP the flight crewmember should:

- Press and release the CAB reception knob in the out position
- Press the CAB transmission key
- Press a PTT sw or set the INT/RAD sw to RAD to transmit.

PASSENGER ADDRESS (PA)

Ident.: DSC-23-10-20-00000132.0001001 / 30 APR 14
Applicable to: ALL

L3 The Cabin Intercommunication Data System (CIDS) hosts the PA.

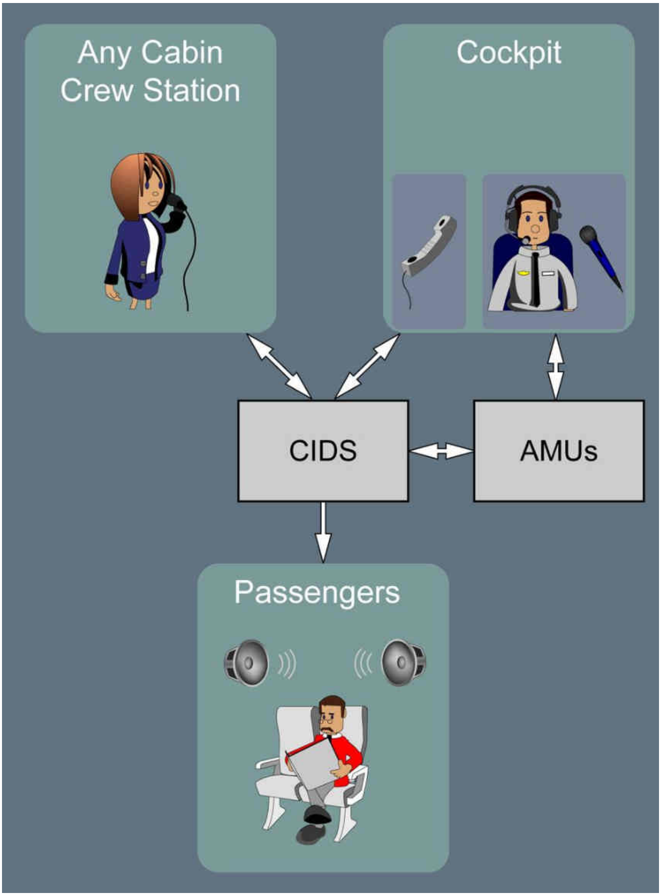
L1 The flight crew, and the cabin crew can use the PA to make announcements to the passengers via the:

- Boomsets/headsets
- Hand microphones
- Microphones on the oxygen masks
- Cockpit handset.

L2 For more information *Refer to Cockpit handset description*.

For more information on the PA, *Refer to CCOM/General information on the Passenger Address system.*

PA


Any Cabin Crew Station
Cockpit
CIDS
AMUs
Passengers

L1 Before making an announcement via any other appropriate equipment, on the RMP the flight crewmember should:
- Press and release the PA reception knob to the out position
- Press and hold the PA transmission key on the RMP to make the announcement.

Note: It is not necessary to use a PTT sw.

SERVICE INTERPHONE

Ident.: DSC-23-10-20-00000134.0001001 / 07 NOV 18
Applicable to: ALL

L3 The Cabin Intercommunication Data System (CIDS) hosts the service interphone.

L1 The flight crew can use the service interphone to communicate with the cabin crew at any cabin crew station, and with the ground crew via the:
- Boomsets/headsets
- Hand microphones
- Microphones on the oxygen masks
- Cockpit handset.

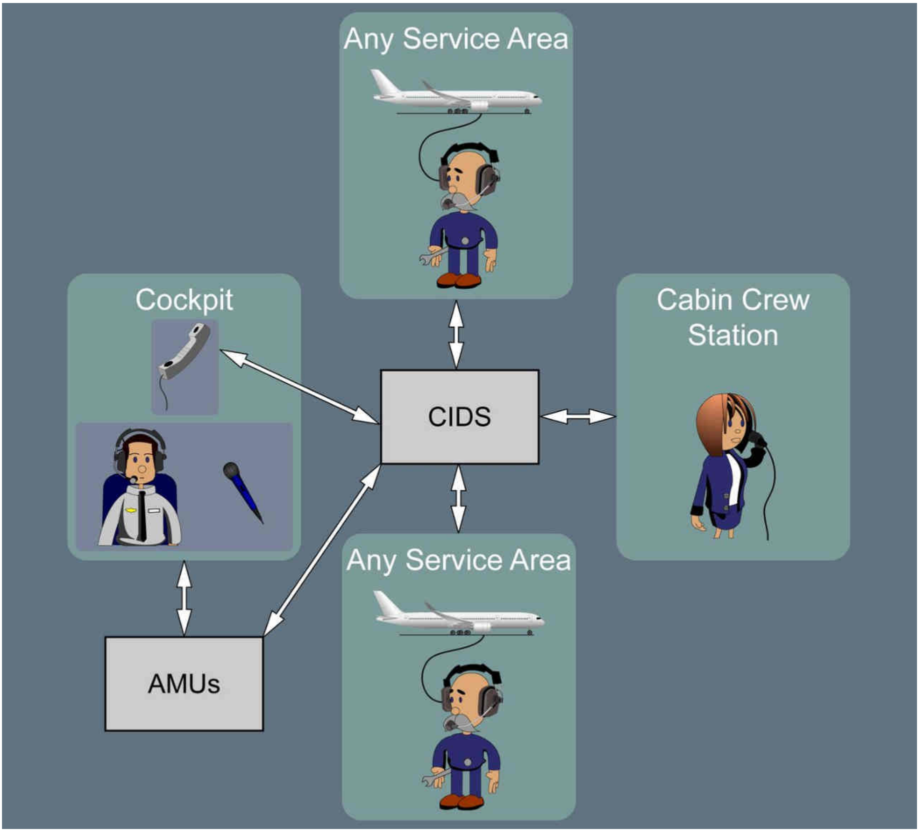
L2 For more information *Refer to Cockpit handset description*.

L1 The ground crew can communicate with the flight crew via any SVCE INT jack at any service area.

L2 There is a SVCE INT jack:
- At the nose landing gear maintenance panel
- In the APU bay
- In the avionic bay
- At several locations on the fuselage.

L1 *Note:* *Ground crewmembers can also use the service interphone to communicate with other ground crewmembers who are at different service areas.*

Service Interphone


Any Service Area
Cockpit
Cabin Crew Station
CIDS
AMUs
Any Service Area

Before transmitting via any other appropriate equipment, on the RMP the flight crewmember should:
- Press and release the CAB reception knob to the out position
- Press the CAB transmission key
- Press a PTT sw or set the INT/RAD sw to RAD to transmit.

Radiocommunication

VHF

Ident.: DSC-23-10-30-10-00000136.0001001 / 30 APR 14
Applicable to: ALL

The communication system has three VHF channels, and each channel has its own antenna.

L2 For antenna locations *Refer to DSC-20-20-20 Antenna Locations*

L3 Each VHF transceiver operates within a frequency band that ranges from 118.000 MHz to 136.975 MHz, by increments of 8.33 kHz.

L1 VHF 1 and VHF 2 are for short-range communication in voice mode only.
VHF 3 is mainly for short-range communication in data mode. VHF 3 can be a backup for communication in voice mode.

L3 Data communication is automatically transferred to the SATCOM if:
- VHF 3 is in voice mode, or
- The aircraft is outside the range of a VHF station.

The Operator can customize the configuration software that defines the policy for Avionics Communication Router (ACR) transfers.

HF

Ident.: DSC-23-10-30-10-00000137.0001001 / 08 NOV 18
Applicable to: ALL

The communication system has:
- Two independent HF channels (HF 1 and HF 2 ◁) that operate either in Amplitude Modulation (AM) or Single Side Band (SSB) mode and
- One antenna.

L2 The flight crew can select the AM or SSB mode via the HF page on any RMP.
For antenna locations *Refer to DSC-20-20-20 Antenna Locations*

L1 HF 1 and HF 2 ◁ are for long-range communication in voice mode and in data mode ◁ .
The two channels (HF 1 and HF 2 ◁) use the same antenna, and cannot transmit simultaneously.

L3 HF voice transceiver operates within a frequency band that ranges from 2 MHz to 29.999 MHz, by increments of 1 kHz.

L2 In case of simultaneous voice and data transmission, voice communication takes priority over data communication. Simultaneous reception is possible, when HF is not in transmission.

L3 On ground, HF data mode ◁ communication is automatically inhibited. For maintenance purposes, the ground crew can override the inhibition of the data mode using the GND HF DATALINK pb-sw

◁ on the overhead maintenance panel. Manual override is nevertheless not possible during refueling / defueling / fuel transfer operations.

SATCOM

SATCOM

Ident.: DSC-23-10-30-20-00000138.0001001 / 06 NOV 14
Applicable to: ALL

The flight crew, the cabin crew, and the passengers use the SATCOM to communicate with ground, in voice and data modes.

The SATCOM system supports five channels of simultaneous operation:
- Two channels are allocated to cockpit voice
- One to data
- Two to swiftbroadband.

L2 Swiftbroadband allows more simultaneous users and provides voice and high-speed data to cabin passengers services.
For information on priority levels, *Refer to DSC-23-20 Priority Level*.

L1 The SATCOM has:
- An antenna to exchange signals with Ground Earth Stations (GES), via geostationary satellites
L2 For localization *Refer to DSC-20-20-20 Antenna Locations*
L3 - A Satellite Data Unit (SDU), that encodes/decodes the voice and data signals that are exchanged between the GES and the aircraft systems
  The SDU interfaces with the RMPs, the AMUs, and the ACR.
  Voice communication is exchanged via the AMUs, and data communication via the ACR.
  The SDU also receives aircraft position and aircraft attitude data from the Air Data and Inertial Reference Units (ADIRUs), in order to send an appropriate steering command to the HGA.
- A High Power Amplifier (HPA), that amplifies SDU signals.
- A Diplexer / Low Noise Amplifier (D/LNA) that amplifies the signal received from the satellite and permits to transmit and emit at the same time.
- A High Gain Antenna (HGA) that integrates the Beam Steering function in order to steer the antenna to track the selected satellite.

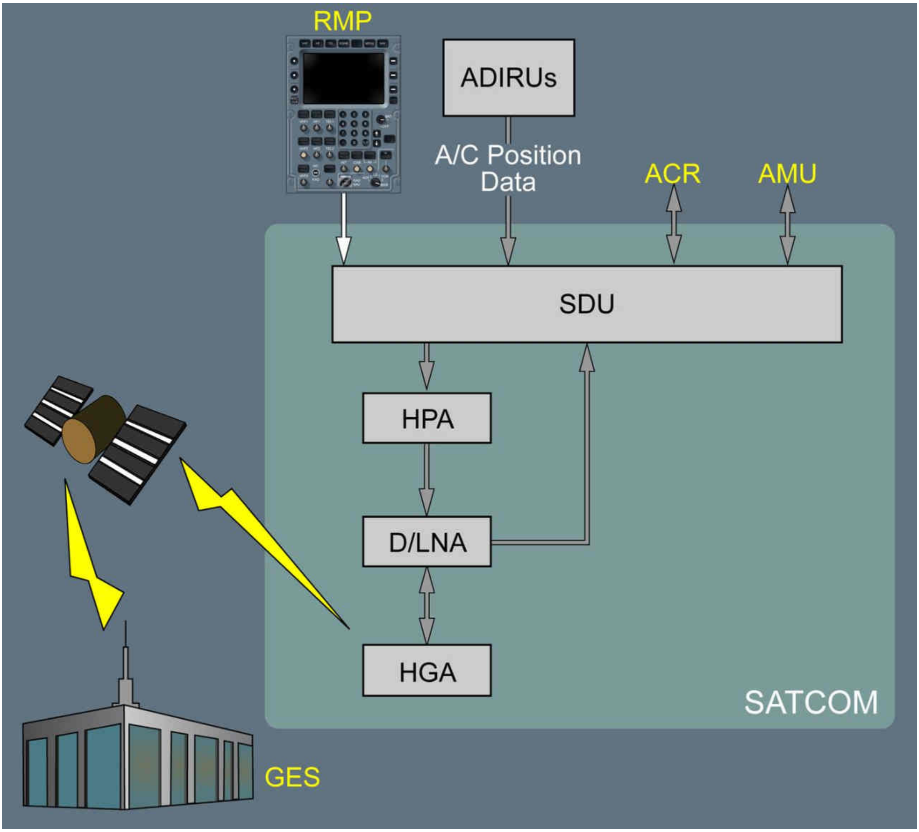
The SATCOM system is not available, when the position of the aircraft exceeds a latitude of 80 ° North or 80 ° South.

Note: *The coverage is guaranteed between 72 ° north latitude and 72 ° south latitude.*

L1 The flight crew can select either one of the following functions for SATCOM connection to a GES:
- The AUTO LOG ON function
  The SATCOM automatically selects the satellite and the GES .
- The MANUAL LOG ON function
  The flight crew manually selects the satellite and the GES .

The flight crew uses the LOG OFF function to disconnect the SATCOM.

SATCOM


RMP
ADIRUs
A/C Position Data
ACR
AMU
SDU
HPA
D/LNA
HGA
SATCOM
GES

SELCAL

SELCAL

Ident.: DSC-23-10-30-30-00000139.0001001 / 06 MAR 15
Applicable to: ALL

In order to help the selection of the numerous VHF or HF messages, the Selective Calling (SELCAL) identifies incoming VHF or HF calls that have the aircraft-specific SELCAL code. SELCAL then triggers visual and aural alerts:

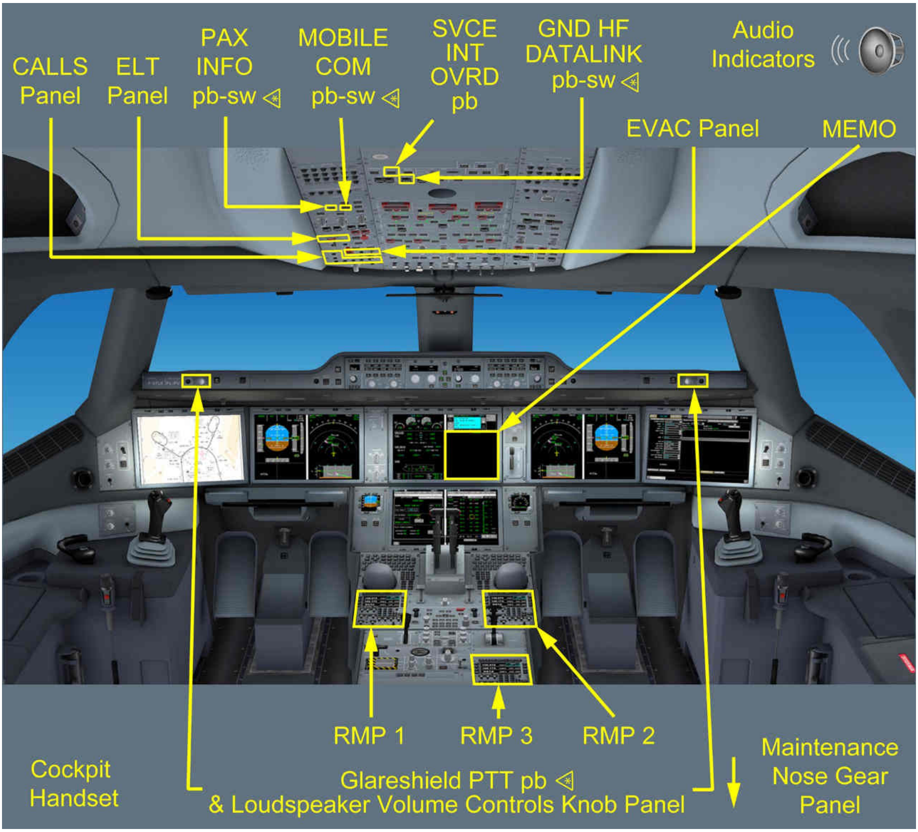
- On the RMP, the CALL light of the corresponding VHF or HF transmission key flashes in amber and the Reset (RST) key comes on in amber.
- A buzzer sounds in the cockpit until the flight crew presses the RST key of the RMP, or the flight crew answers the call.

Note: *The buzzer sounds when an incoming call is identified, regardless of the setting of the loudspeaker volume, but is inhibited during takeoff and landing.*

Intentionally left blank

COCKPIT VIEW

Ident.: DSC-23-20-00000140.0001001 / 07 JUL 16
Applicable to: ALL


CALLS Panel
ELT Panel
PAX INFO pb-sw ◁
MOBILE COM pb-sw ◁
SVCE INT OVRD pb
GND HF DATALINK pb-sw ◁
Audio Indicators
EVAC Panel
MEMO
RMP 1
RMP 3
RMP 2
Cockpit Handset
Glareshield PTT pb ◁
& Loudspeaker Volume Controls Knob Panel
Maintenance Nose Gear Panel

Cockpit View

L2 For information on the communication equipment, *Refer to DSC-23-10-10 Communication Equipment*

AUDIO INDICATORS

Ident.: DSC-23-20-00020260.0001001 / 07 NOV 16
Applicable to: ALL

EVAC HORN ◁

Audio Indicator	Condition or Cause	Duration
Evac Horn ◁	*Refer to DSC-23-20 EVAC Panel (if installed)*	Depends on the position of the CAPT & PURS/CAPT sw and who orders the evacuation.

SELCAL

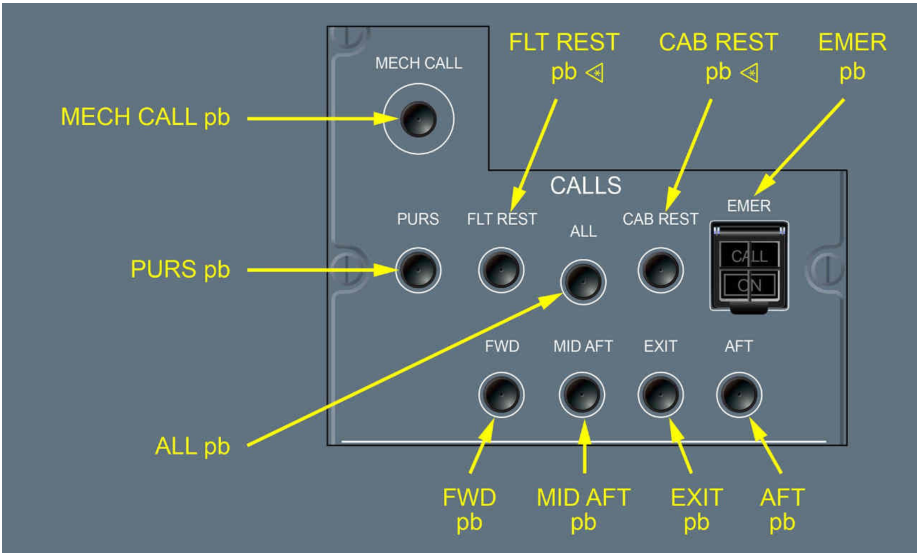
Audio Indicator	Condition or Cause	Duration
Continuous Buzzer (Sound)	*Refer to DSC-23-10-30-30 SELCAL*	Sounds until the flight crew presses the RST key, or the flight crew answers the call.

CALLS PANEL

Applicable to: ALL

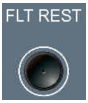
Ident.: DSC-23-20-70-00000151.0001001 / 14 APR 16

CALLS Panel


MECH CALL
FLT REST pb ◁
CAB REST pb ◁
EMER pb
MECH CALL pb
CALLS
PURS
FLT REST
ALL
CAB REST
EMER
CALL
ON
PURS pb
FWD
MID AFT
EXIT
AFT
ALL pb
FWD pb
MID AFT pb
EXIT pb
AFT pb

Ident.: DSC-23-20-70-00022468.0001001 / 08 NOV 18

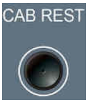
FLT REST PB



When pressed:
- A high/low chime sounds through the FCRC loudspeakers
- The FROM CAPTAIN message appears on the related Attendant Indication Panel (AIP).

Ident.: DSC-23-20-70-00023410.0001001 / 14 APR 16

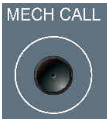
CAB REST pb



When pressed:
- A high/low chime sounds through the CCRC loudspeakers
- The FROM CAPTAIN message appears on the related Attendant Indication Panel (AIP).

Ident.: DSC-23-20-70-00000237.0001001 / 30 APR 14

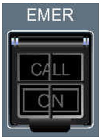
MECH CALL pb



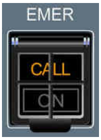
When pressed:
- The COCKPIT CALL light on the maintenance nose gear panel comes on
- An external horn sounds as long as the flight crew maintains the MECH CALL pb pressed.

Ident.: DSC-23-20-70-00000238.0001001 / 17 NOV 17

EMER pb



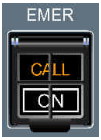
Neither the flight crew nor the cabin crew has made an EMER call.



The cabin crew has made an EMER call:

- The CALL light flashes or come on steady
- A buzzer sounds three times through the cockpit loudspeakers
- The ATT transmission key flashes amber on all RMPs.

Note: *The selection of flashing/steady mode can be assigned via the Cabin Assignment Module (CAM).*



When pressed by the flight crew:
- The ON light and the CALL light come on steady
- A pink light, on all the ACPs in the cabin, flashes or comes on steady
- The EMER CAPT message appears at all AIPs and a red light comes on
- Three successive high/low chime are dispatched via cabin loudspeakers.

Crew rest compartments ⊲ are also called.

Note: The selection of flashing/steady mode can be assigned via the Cabin Assignment Module (CAM).

Ident.: DSC-23-20-70-00000242.0001001 / 06 NOV 14

ALL pb

When pressed:
- A pink light, on all the ACPs in the cabin, comes on. For information on the ACPs, *Refer to CCOM/04-20-20 Area Call Panel (ACP)*
- The CALL ALL CAPT message appears on all AIPs in the cabin. For information on the AIPs, *Refer to CCOM/04-20-20 Attendant Indication Panel (AIP)*
- A high/low chime sounds through the cabin loudspeakers.

Ident.: DSC-23-20-70-00000233.0001001 / 30 APR 14

PURS pb

When pressed:
- A pink light, on the Purser Area Call Panel (ACP), comes on
- The CAPTAIN CALL message appears on the Purser Attendant Indication Panel (AIP)
- A high/low chime sounds through the associated cabin loudspeakers.

Ident.: DSC-23-20-70-00011269.0001001 / 30 APR 14

FWD(MID)(EXIT)(AFT) pb

When pressed:
- A pink light, on the FWD(MID)(EXIT)(AFT) ACPs in the cabin, comes on. For information on the ACPs, Refer to CCOM/Area Call Panel (ACP)
- The CALL FWD(MID)(EXIT)(AFT) CAPT message appears on all AIPs in the cabin. For information on the AIPs, Refer to CCOM/attendant Indication Panel (AIP)
- A high/low chime sounds through the cabin loudspeakers

COCKPIT HANDSET DESCRIPTION

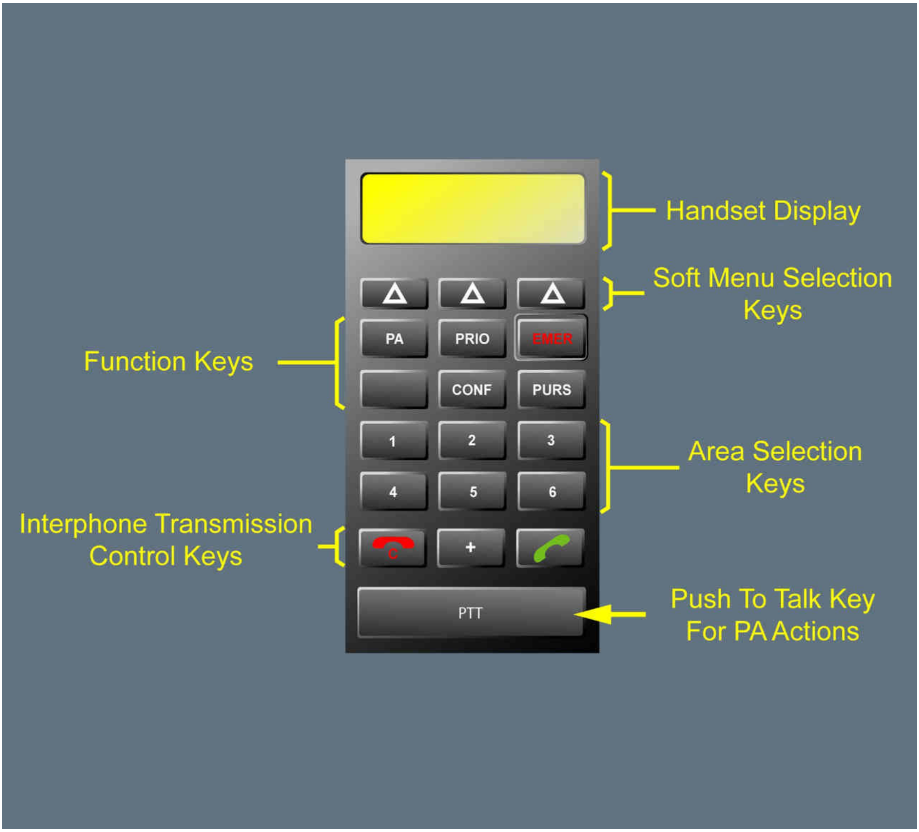
Applicable to: ALL

Ident.: DSC-23-20-105-00000124.0001001 / 03 JAN 20

The flight crew can use the cockpit handset:
- For passenger address
- For internal communication to each cabin or CCRC handset
- For communication with ground crew to each service area.

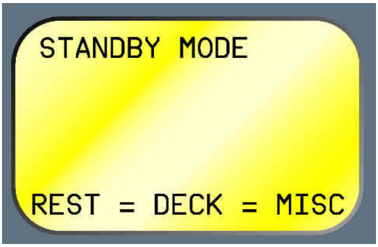
L3 The company can customize the CIDS to permit the crew to have access to optional functions through the Cabin Assignment Module (CAM) (100000 parameter compilation).

Cockpit Handset Layout


Handset Display
Soft Menu Selection Keys
Function Keys
PA
PRIO
EMER
CONF
PURS
1
2
3
4
5
6
Area Selection Keys
Interphone Transmission Control Keys
C
+
PTT
Push To Talk Key For PA Actions

Ident.: DSC-23-20-105-00000126.0001001 / 02 OCT 14

HANDSET DISPLAY



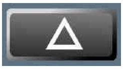
STANDBY MODE

REST = DECK = MISC

Line 1: Handset status line
Line 2: User input data, origin and target of received calls
Line 3: Soft menu line

Ident.: DSC-23-20-105-00000127.0001001 / 03 JAN 20

SOFT MENU SELECTION KEYS

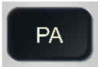


When pressed, access the relevant menu or function displayed on the soft menu line.

Ident.: DSC-23-20-105-00000128.0001001 / 03 JAN 20

FUNCTION KEYS

PASSENGER ADDRESS (PA) KEY



When pressed, access the PA menu on the dialing feedback line.

After the access to the PA menu, the flight crew can choose a specific zone for passenger address using:

- Area selection key, or
- Soft menu selection key.

To transmit voice message, the flight crew will push and keep pushed the PTT key.

PRIO KEY

L12

When pressed, access the PRIO menu on the dialing feedback line. After the access to the PRIO menu the flight crew can press PURS or CONF key to change the priority.
To transmit voice message, the flight crew will push and keep pushed the PTT key.

Note: *For the handset operation, the following order of priority is defined (level 1 is the highest priority) :*
- *Level 1: Emergency call (EMER)*
- *Level 2: Calls from cockpit*
- *Level 3: Priority calls (PRIO)*
- *Level 4: Purser calls (PURS)*
- *Level 5: Conference calls (CONF)*
- *Level 6: Normal calls*

For passenger address operation, the following order of priority is defined (not combined with interphone) :
- *Level 1: PA from AMU (cockpit)*
- *Level 2: Direct passenger address (Direct PA)*
- *Level 3: Priority passenger address (PRIO PA)*
- *Level 4: Normal passenger address (PA)*

CONF KEY

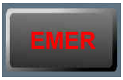
When pushed, access the CONF menu on the dialing feedback line.
The flight crew chooses the desired zone for conference interphone calls by using the soft menu selection key.
The flight crew will push the SEND key to activate the CONF call.

PURS KEY

When pushed, access the PURS menu on the dialing feedback line.
The flight crew will push the SEND key after PURS key to activate the purser call.

EMER KEY

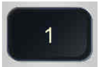
L12



When pushed, initiates an emergency call to all the handsets in the cabin.
For activation of the emergency call the flight crew must press the EMER key at least 1 s.
This key also requires higher pressure than the others.
The emergency call has priority over any other function or call.

Ident.: DSC-23-20-105-00000129.0001001 / 03 JAN 20

AREA SELECTION KEYS

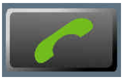


When pressed, selects the correspondent zone for PA.

Ident.: DSC-23-20-105-00000130.0001001 / 03 JAN 20

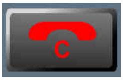
INTERPHONE TRANSMISSION CONTROL KEYS

SEND KEY



When pressed, calls the selected interphone address

C. KEY

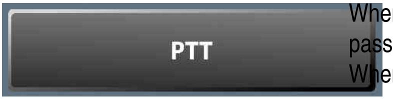


When pressed:
- Undo or deletes the last selection menu, or
- Stops the conversation.

Ident.: DSC-23-20-105-00000131.0001001 / 03 JAN 20

PUSH TO TALK KEY

L12



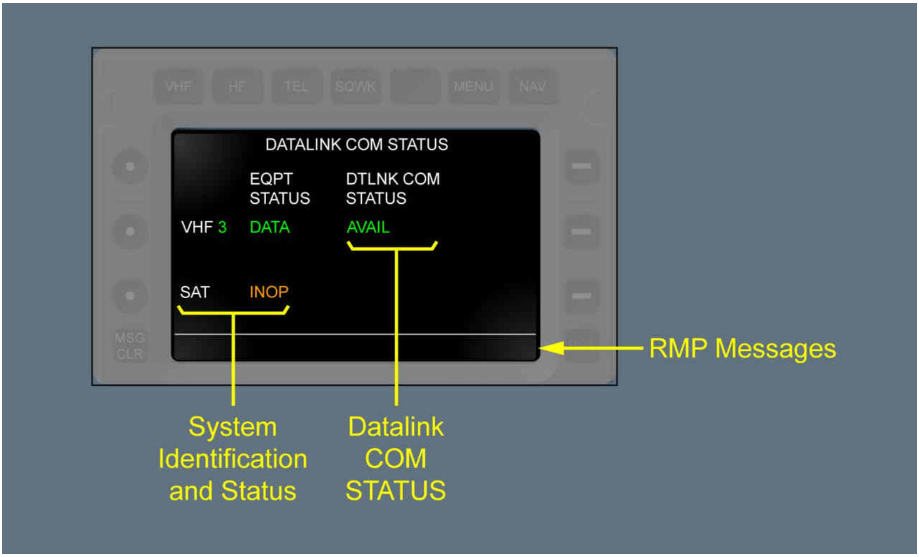
When pressed and keep pressed, directly access to passenger for the entire aircraft.
When specific areas are selected before the PTT key is pressed, announcements will be made on these areas only.
This mode overrides all other active announcements.

DATALINK COM STATUS PAGE

Applicable to: ALL

Ident.: DSC-23-20-37-00000158.0001001 / 30 APR 14

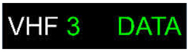
DATALINK COM STATUS Page


VHF
HF
TEL
SQWK
MENU
NAV
MSG CLR
DATALINK COM STATUS
EQPT STATUS
DTLNK COM STATUS
VHF 3
DATA
AVAIL
SAT
INOP
RMP Messages
System Identification and Status
Datalink COM STATUS

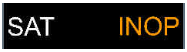
The DATALINK COM STATUS page indicates which communication means are available for data communication.

Ident.: DSC-23-20-37-00000216.0001001 / 30 APR 14

SYSTEM IDENTIFICATION AND STATUS



VHF 3 is available in data mode.



The SATCOM is inoperative.

Ident.: DSC-23-20-37-00000217.0001001 / 30 APR 14

DATALINK COM STATUS

When there is no display, indicates the associated communication means is either in voice mode, or not available.

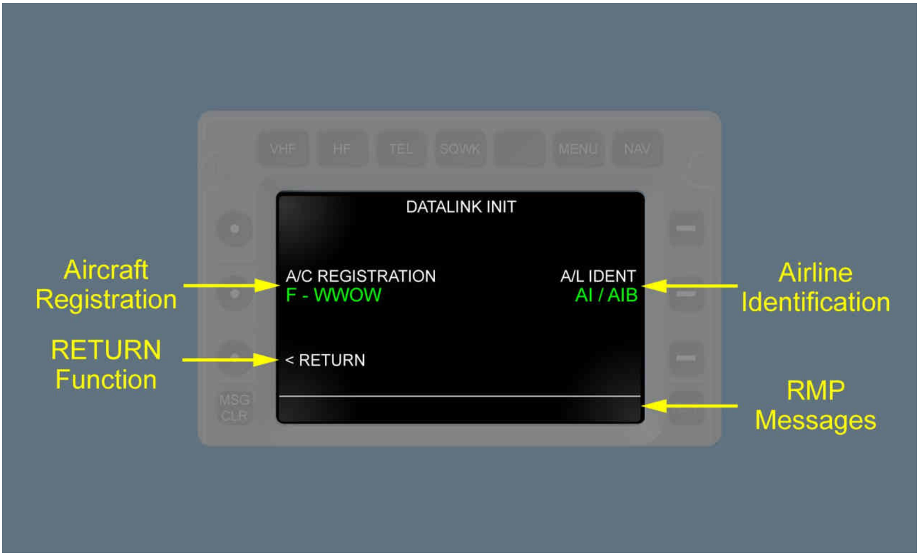
AVAIL	The associated communication means is available for data communication.
NOT AVAIL	The associated communication means is not available for data communication.

DATALINK INIT PAGE

Applicable to: ALL

Ident.: DSC-23-20-36-00000147.0001001 / 30 APR 14

DATALINK INIT Page


VHF
HF
TEL
SQWK
MENU
NAV
MSG CLR
Aircraft Registration
RETURN Function
Airline Identification
RMP Messages

DATALINK INIT

A/C REGISTRATION
F - WWOW

A/L IDENT
AI / AIB

< RETURN

The DATALINK INIT page displays the information that identifies the aircraft in datalink messages.

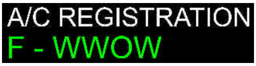
Ident.: DSC-23-20-36-00000213.0001001 / 30 APR 14

AIRLINE IDENTIFICATION

A/L IDENT AI / AIB	The ACR hosts datalink configuration data, and sends the airline identification information to the RMPs. The flight crew cannot modify this information.

Ident.: DSC-23-20-36-00000214.0001001 / 30 APR 14

AIRCRAFT REGISTRATION



A/C REGISTRATION
F - WWOW

The ACR hosts datalink configuration data, and sends the aircraft registration information to the RMPs.
The flight crew cannot modify this information.

Ident.: DSC-23-20-36-00000215.0001001 / 30 APR 14

RETURN FUNCTION

< RETURN

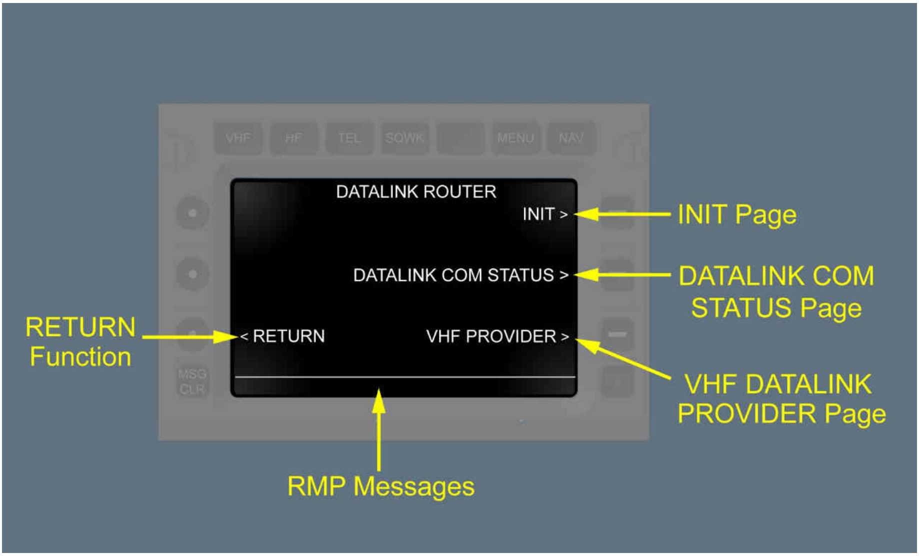
When selected, the previous page (DATALINK ROUTER) appears.

DATALINK ROUTER PAGE

Applicable to: ALL

Ident.: DSC-23-20-35-00000146.0001001 / 30 APR 14

DATALINK ROUTER Page


VHF
HF
TEL
SQWK
MENU
NAV
DATALINK ROUTER
INIT >
DATALINK COM STATUS >
< RETURN
VHF PROVIDER >
MSG CLR
INIT Page
DATALINK COM STATUS Page
VHF DATALINK PROVIDER Page
RETURN Function
RMP Messages

The DATALINK ROUTER, also referred to as the Avionics Communication Router (ACR), manages data communication.
On the DATALINK ROUTER page, the flight crew can access sub-pages to display some data communication parameters, and to change the VHF datalink provider.

Ident.: DSC-23-20-35-00000212.0001001 / 30 APR 14

RETURN FUNCTION

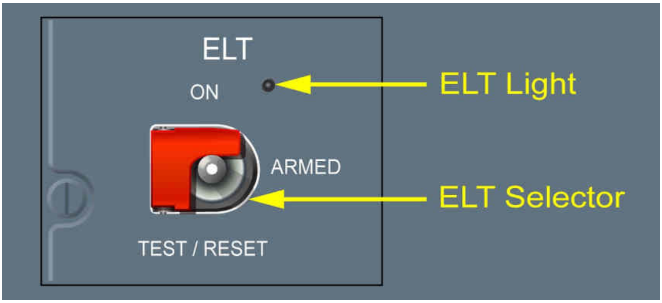
< RETURN	When selected, the previous page (MENU) appears.

ELT PANEL

Applicable to: ALL

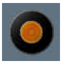
Ident.: DSC-23-20-90-00000153.0001001 / 27 JUN 17

ELT Panel



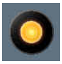
Ident.: DSC-23-20-90-00000244.0001001 / 30 APR 14

ELT light



The ELT is not transmitting.

L12

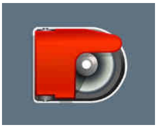


The ELT is either transmitting, or running a self-test.

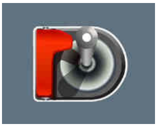
Note: *If the ELT is transmitting when the aircraft is on the ground, the external horn sounds.*

Ident.: DSC-23-20-90-00000246.0001001 / 27 JUN 17

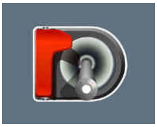
ELT selector



The Emergency Locator Transmitter (ELT) is armed, and automatically transmits the emergency radio signal, when the aircraft sustains an abnormal load factor.



The ELT is on, and transmits the emergency radio signal.



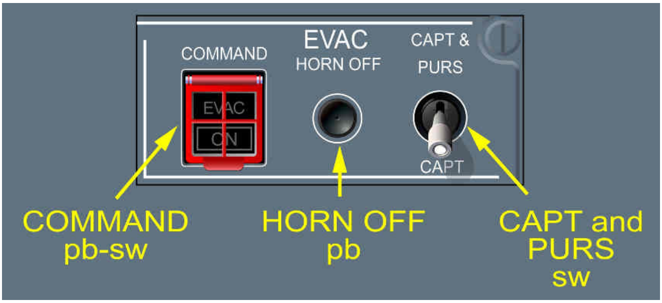
- The ELT stops transmitting, or
- An ELT self-test starts.

EVAC PANEL (IF INSTALLED)

Applicable to: ALL

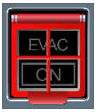
Ident.: DSC-23-20-80-00000152.0001001 / 12 DEC 16

EVAC Panel


COMMAND
EVAC
HORN OFF
CAPT &
PURS
EVAC
ON
CAPT
COMMAND pb-sw
HORN OFF pb
CAPT and PURS sw

Ident.: DSC-23-20-80-00000239.0001001 / 03 JUL 20

1 COMMAND pb-sw



Normal Operation. Neither the Captain nor the Chief Purser order an evacuation.

The Chief Purser requests or orders an evacuation.

If the CAPT & PURS/CAPT sw is set to CAPT position, when the Chief Purser requests an evacuation:
- The EVAC light comes on
- A horn sounds in the cockpit during 3 s.

If the CAPT & PURS/CAPT sw is set to CAPT & PURS position, when the Chief Purser orders an evacuation:
- The EVAC light flashes
- A horn sounds continuously in the cockpit
- The EVACUATION ALERT message appears on all Attendant Indication Panels (AIP) in the cabin
- EVAC CMD pb on FAPs, and AAPs will be lit in the cabin
- The evacuation horn sounds in the cabin.

The Flight Crew orders an evacuation, regardless of the CAPT & PURS/CAPT sw position (CAPT or CAPT & PURS).

When pressed:
- The ON light and the EVAC light flashes
- The EVACUATION ALERT message appears on all Attendant Indication Panels (AIP) in the cabin
- EVAC CMD pb on FAPs, and AAPs will be lit in the cabin
- The evacuation horn sounds continuously in the cabin.

Ident.: DSC-23-20-80-00000240.0001001 / 03 JUL 20

2 HORN OFF pb

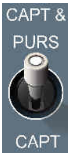
When pressed, the horn goes off in the cockpit.

Ident.: DSC-23-20-80-00000241.0001001 / 03 JUL 20

3 CAPT AND PURS SWITCH

CAPT &
PURS
CAPT

Only the Captain can order the evacuation.

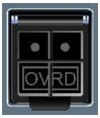


The Captain or the Chief Purser can order the evacuation.

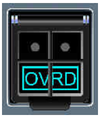
GND HF DATALINK pb-sw ⩤

Ident.: DSC-23-20-00000159.0001001 / 07 JUL 16
Applicable to: ALL

L2 GND HF DATALINK pb-sw ⩤



HF data communication is automatically inhibited on ground.

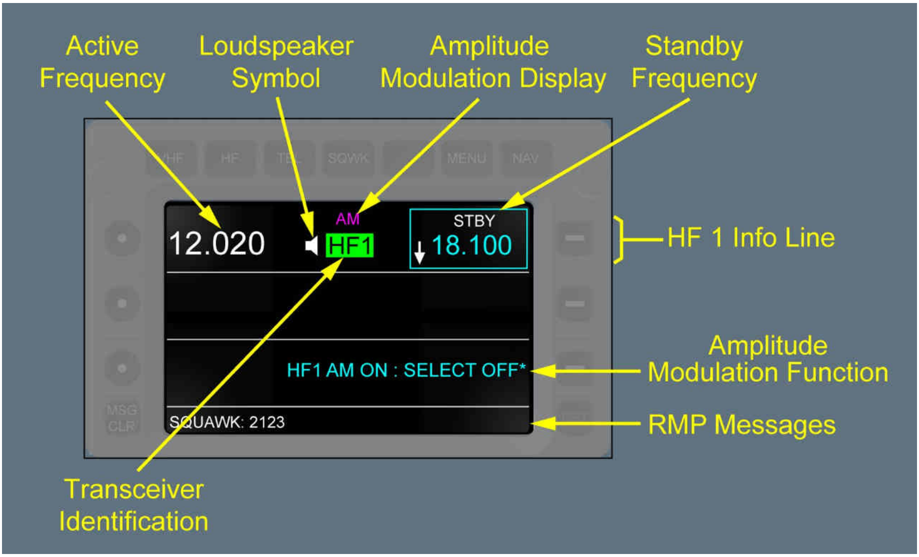


When pushed, HF data communication is permitted. The override is not possible during refueling / defueling / fuel transfer operations.

HF PAGE

Applicable to: ALL

Ident.: DSC-23-20-20-00000144.0001001 / 30 APR 14


Active
Frequency
Loudspeaker
Symbol
Amplitude
Modulation Display
Standby
Frequency
VHF
HF
TEL
SQWK
MENU
NAV
12.020
AM
HF1
STBY
18.100
HF 1 Info Line
Amplitude
Modulation Function
RMP Messages
MSG
CLR
Transceiver
Identification

HF1 AM ON : SELECT OFF*

SQUAWK: 2123

HF Page

The illustration indicates:
- HF 1 is in transmission (AM mode) and reception mode
- The active frequency is 12.020 MHz
- The standby frequency is boxed to indicate that it is selected for modification.

Ident.: DSC-23-20-20-00000199.0001001 / 30 APR 14

LOUDSPEAKER SYMBOL

	When there is no display, indicates reception mode is off.
🔈	The active frequency is in reception mode.
L13 🔇	The active frequency is in transmission mode, but not in reception mode. When the flight crew turns on the transmission mode only, the symbol flashes for 2 s, and then remains steady.

Ident.: DSC-23-20-20-00000200.0001001 / 30 APR 14

TRANSCEIVER IDENTIFICATION

HF1	HF 1 is not in transmission mode.
HF1	HF 1 is in transmission mode.

Ident.: DSC-23-20-20-00000201.0001001 / 07 JUL 16

ACTIVE FREQUENCY

12.020

The HF transceiver is tuned on the displayed frequency.

L12

--.---

The HF transceiver is in voice mode, and is either failed or not available.

For information on possible failures:
- *Refer to DSC-23-30-20 RMP Synchronization Failure*
- *Refer to DSC-23-30-20 RMP - VHF/HF Transceiver Connection Failure*.

DATA

The HF transceiver is in data mode ◁✳ .

L12

The HF transceiver is in data mode ◁✳ , and is either failed or not available.

For more information on possible failure:
- *Refer to DSC-23-30-20 RMP Synchronization Failure*
- *Refer to DSC-23-30-20 RMP - VHF/HF Transceiver Connection Failure*

Ident.: DSC-23-20-20-00000202.0001001 / 07 MAY 18

STANDBY (STBY) FREQUENCY

15.500

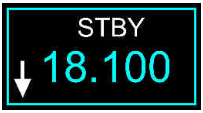
The standby frequency is displayed and cannot be changed.

L12

--.---

The HF transceiver is in voice mode and is either failed, or not available. For an example of failure, *Refer to DSC-23-30-20 RMP Synchronization Failure*.

L12


STBY
18.100

When boxed, the standby frequency can be modified.

A voice standby frequency displays:
- In large characters until it is inserted, via the appropriate LSK
- In small characters after insertion.

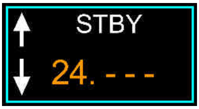
Note: *After a flight crewmember modifies the standby frequency, they should insert it, in order to prevent inadvertent modification of the frequency.*

The up-arrow and the down-arrow indicate that the list of frequencies can be scrolled up, or down.

The list contains the following frequencies:
- 8.364 MHz
- The modifiable frequency.

When the flight crew enters a frequency, via the numerical keypad, the modifiable frequency appears automatically whatever the current display.

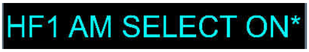
L12


STBY
24. - - -

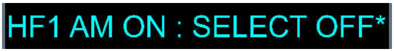
The standby frequency is not a standard HF voice frequency. The flight crew can clear the erroneous digits, via the CLR key, until the standby frequency displays in blue again.
The HF1 FREQ NOT VALID RMP message is also displayed.
For more information on this message, *Refer to DSC-23-20 VHF 1(2)(3)/HF 1 FREQ NOT VALID*.

Ident.: DSC-23-20-20-00000203.0001001 / 30 APR 14

AMPLITUDE MODULATION FUNCTION


HF1 AM SELECT ON*

HF 1 is in Single Side Band (SSB) mode. When the flight crew presses the associated LSK, the Amplitude Modulation (AM) mode activates.

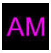

HF1 AM ON : SELECT OFF*

HF 1 is in Amplitude Modulation (AM) mode. When the flight crew presses the associated LSK, the Single Side Band (SSB) mode activates.

Ident.: DSC-23-20-20-00000204.0001001 / 30 APR 14

AMPLITUDE MODULATION DISPLAY

When there is no display, indicates that Single Side Band (SSB) mode is active.


AM

Amplitude Modulation (AM) mode is active.

NAV PAGE

Ident.: DSC-23-20-00000184.0001001 / 30 APR 14
Applicable to: ALL

The flight crew uses the NAV page to tune the NAVAID frequencies/channel when FMS 1 and FMS 2 are failed.
This page is available on RMP 1 and RMP 2 only. The flight crew must press the RAD NAV STBY key to enable the NAV page access key.

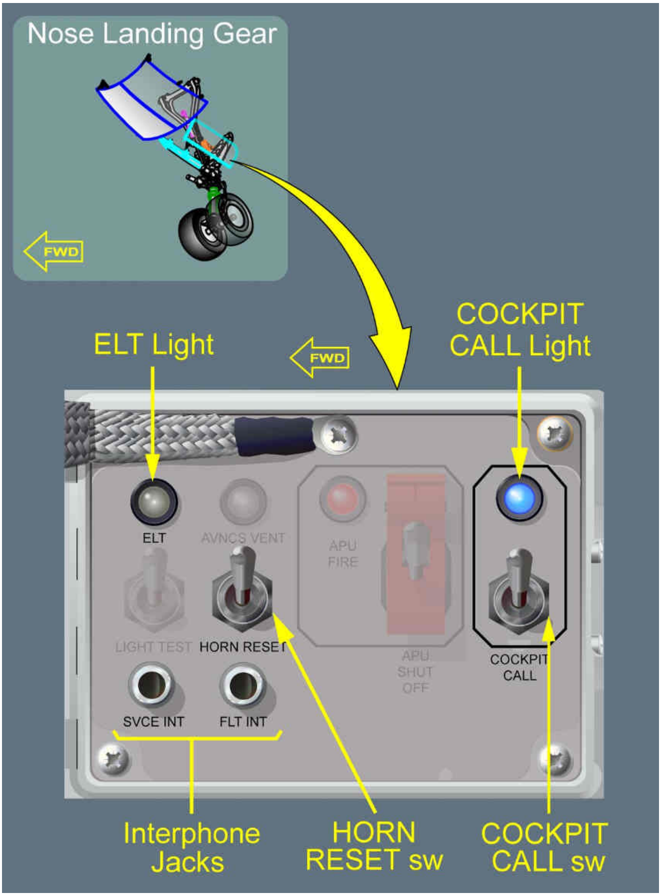
L2 For more information on how to tune the navaid in standby mode, *Refer to DSC-34-NAV-70-30 How to Tune the Navaids in STBY RAD NAV*.

MAINTENANCE NOSE GEAR PANEL

Applicable to: ALL

Ident.: DSC-23-20-95-00000155.0001001 / 30 APR 14

Maintenance Nose Gear Panel


Nose Landing Gear
FWD
ELT Light
FWD
COCKPIT CALL Light
ELT
AVNCS VENT
APU FIRE
LIGHT TEST
HORN RESET
APU SHUT OFF
COCKPIT CALL
SVCE INT
FLT INT
Interphone Jacks
HORN RESET sw
COCKPIT CALL sw

Ident.: DSC-23-20-95-00020040.0001001 / 30 APR 14

L2 INTERPHONE JACKS

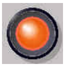
Transmission is made with INT for flight operations (for example push back).

Transmission is made with CAB for maintenance operations.

Ident.: DSC-23-20-95-00000249.0001001 / 30 APR 14

L2 ELT light

The ELT is not transmitting.



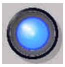
The ELT is transmitting.

Note: *If the ELT is transmitting when the aircraft is on the ground, the external horn sounds.*

Ident.: DSC-23-20-95-00000250.0001001 / 30 APR 14

L2 COCKPIT CALL light

The flight crew does not initiate a call from the cockpit.



The flight crew initiates a call from the cockpit. This light flashes and the external horn sounds.

Ident.: DSC-23-20-95-00000251.0001001 / 28 APR 17

L2 COCKPIT CALL sw

L23

COCKPIT
CALL

When pushed down and maintained:
- The buzzer sounds through the loudspeakers in the cockpit
  The buzzer in the cockpit goes off when the ground crew releases the COCKPIT CALL sw.
- The MECH light on the MECH key flashes in amber on the cockpit RMP.

  The flashed MECH light on the MECH key goes off when:
  - The flight crew pushes the MECH key in order to answer the call, or
  - Automatically after 60 s if the flight crew does not answer.

Ident.: DSC-23-20-95-00000252.0001001 / 12 MAY 14

L2 HORN RESET sw

L23

When pushed down the COCKPIT CALL light goes off.
When the flight crew releases the MECH pb on the overhead CALLS panel, the external horn stops but the COCKPIT CALL light remains on.

MEMO

Applicable to: ALL

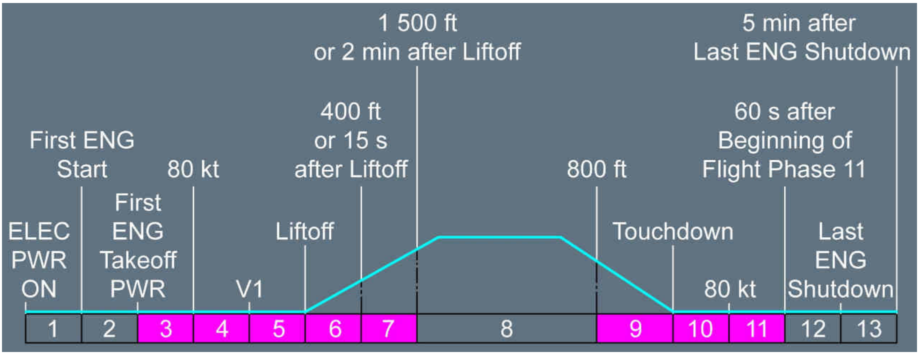
Ident.: DSC-23-20-60-00016913.0001001 / 14 APR 16

L12

CAPT(F/O) LOUDSPKR LO	The volume of the loudspeakers on the side of the CAPT(F/O) is low. Appears on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
2
3
4
5
6
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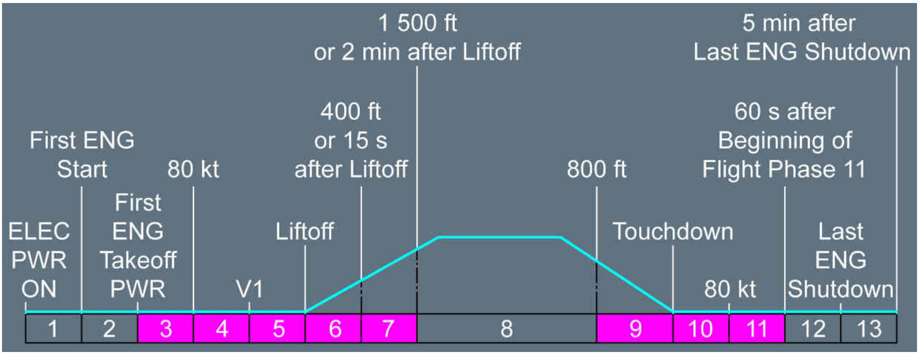
Ident.: DSC-23-20-60-00016915.0001001 / 14 APR 16

L12

CAPT(F/O) LOUDSPKR OFF	The loudspeakers on the side of the CAPT(F/O) are off. Appears on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: DSC-23-20-60-00000157.0001001 / 30 APR 14

CAPT(F/O) ON RMP 3	RMP 1(2) is OFF. Indicates that the CAPT(F/O) must use RMP 3. Appears on the WD.

Ident.: DSC-23-20-60-00000272.0001001 / 30 APR 14

L12

CAPT+F/O ON RMP 3	RMPs 1 and 2 are OFF. Both the CAPT and the F/O must use RMP 3. Appears on the WD.

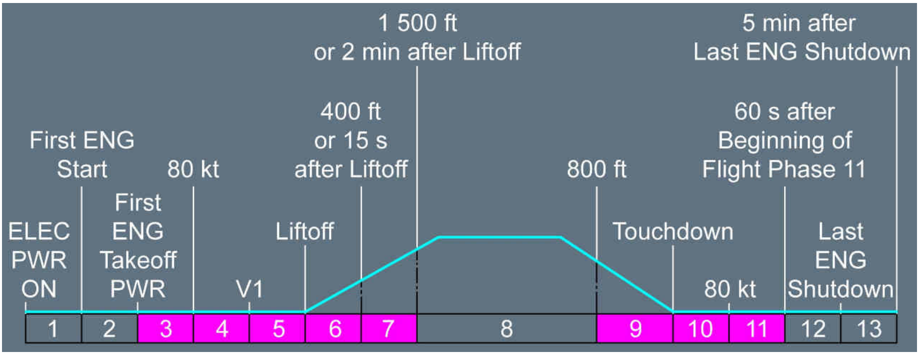
Ident.: DSC-23-20-60-00000274.0001001 / 07 JUL 16

L12

CPNY DTLNK NOT AVAIL	The COMPANY COM is not available following a loss of network coverage on the data communication mean. The flight crew can attempt to set another communication mean in data mode. Appears on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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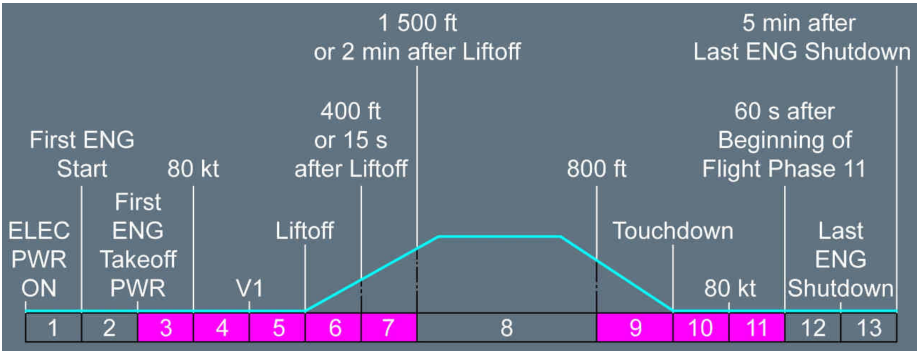
Ident.: DSC-23-20-60-00000275.0001001 / 07 JUL 16

L12

GND HF DATALINK OVRD	The GND HF DATALINK pb-sw ⊲ is in the override position: HF data communication is not inhibited on ground except during refueling / defueling / fuel transfer operations. Appears on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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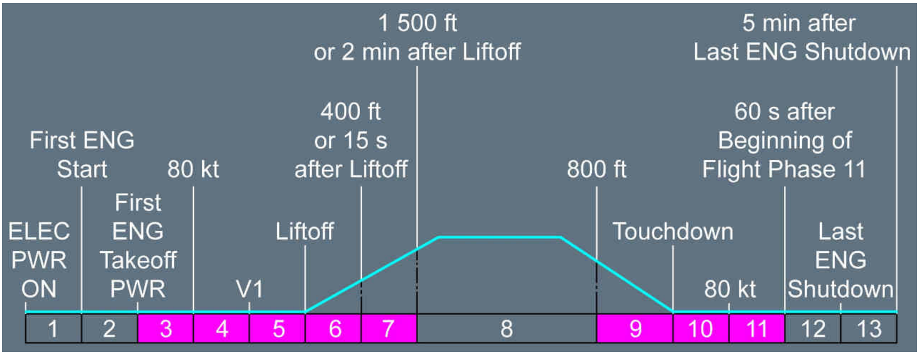
Ident.: DSC-23-20-60-00000276.0001001 / 30 APR 14

L12

HF VOICE	HF data mode is: - Not selected, or - Interrupted. Appears on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: DSC-23-20-60-00000277.0001001 / 14 APR 16

L12

PA IN USE ◁	The flight crew presses and holds the PA transmission key, or the PTT button on the cockpit handset, to make an announcement in the cabin. Appears on the WD.

Ident.: DSC-23-20-60-00000278.0001001 / 06 NOV 14

L12

RMP 1+2+3 OFF	RMPs 1, 2 and 3 are OFF. Appears on the WD.

Ident.: DSC-23-20-60-00000279.0001001 / 30 APR 14

L12

RMP 1+3(2+3) OFF	RMPs 1 and 3(2 and 3) are OFF. Appears on the WD.

Ident.: DSC-23-20-60-00000280.0001001 / 30 APR 14

L12

RMP 3 OFF	Only RMP 3 is OFF. Appears on the WD.

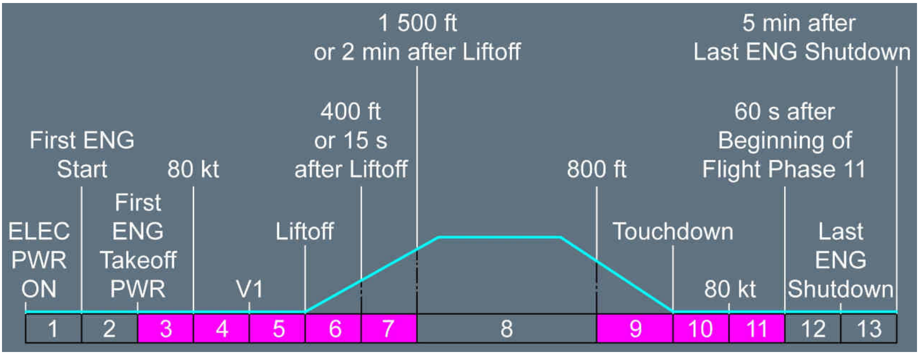
Ident.: DSC-23-20-60-00000281.0001001 / 06 NOV 14

L12

TEL EMER(ATC)(CPNY) CALL	The flight crew receives an emergency(ATC)(company) telephone call via the SATCOM or the SELCAL. Appears on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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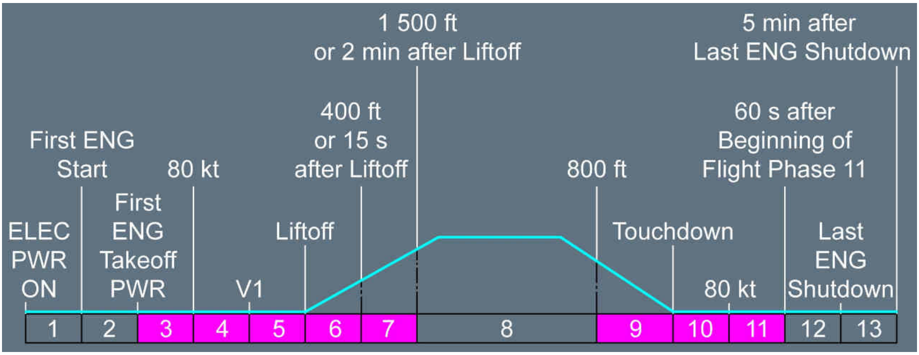
Ident.: DSC-23-20-60-00000282.0001001 / 30 APR 14

L12

VHF DTLNK MAN SCAN	The flight crew manually selected the datalink provider via the VHF DATALINK PROVIDER page on the RMP. Appears on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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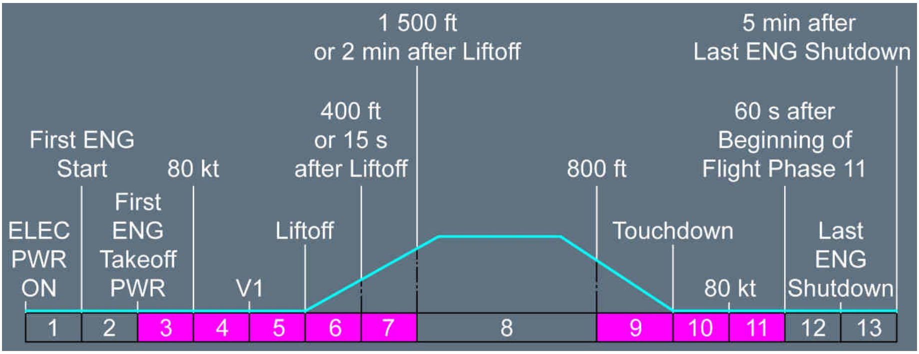
Ident.: DSC-23-20-60-00000283.0001001 / 30 APR 14

L12

VHF VOICE	VHF data mode is: - Not selected, or - Interrupted. Appears on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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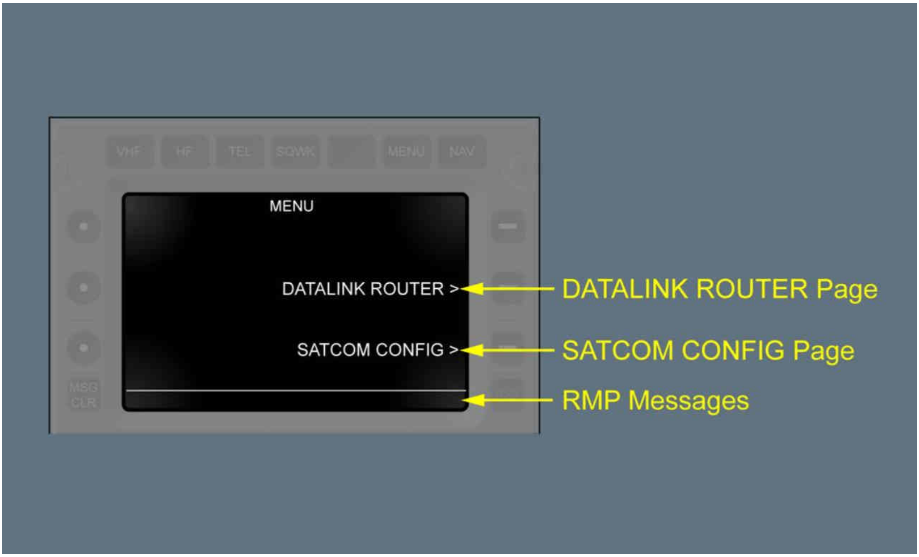
MENU PAGE

Ident.: DSC-23-20-00000183.0001001 / 30 APR 14
Applicable to: ALL

MENU Page


VHF
HF
TEL
SQWK
MENU
NAV
MENU
DATALINK ROUTER >
SATCOM CONFIG >
MSG CLR
DATALINK ROUTER Page
SATCOM CONFIG Page
RMP Messages

MOBILE COM PB-SW ◁

Ident.: DSC-23-20-00000161.0001001 / 07 JUL 16
Applicable to: ALL

For more information about the MOBILE COM pb-sw, *Refer to DSC-44-20 MOBILE COM pb-sw (if installed)*.

PAX INFO PB-SW ◁

Ident.: DSC-23-20-00000162.0001001 / 07 JUL 16
Applicable to: ALL

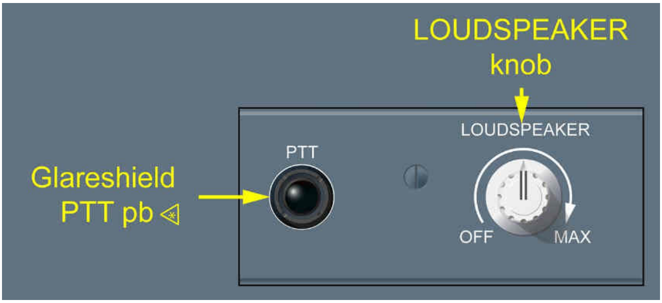
For more information about the PAX INFO pb-sw, *Refer to DSC-44-20 PAX INFO pb-sw (if installed)*.

GLARESHIELD PTT PB (IF INSTALLED) AND LOUDSPEAKER VOLUME CONTROLS KNOB PANEL

Applicable to: ALL

Ident.: DSC-23-20-93-00000154.0001001 / 08 NOV 18

Glareshield PTT pb ◁ and Loudspeaker Volume Controls knob Panel


LOUDSPEAKER
knob
Glareshield
PTT pb ◁
PTT
LOUDSPEAKER
OFF
MAX

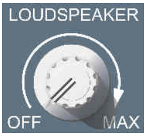
Ident.: DSC-23-20-93-00000247.0001001 / 08 NOV 18

GLARESHIELD PTT PB ◁

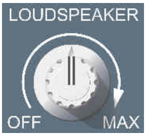
The flight crew uses this glareshield PTT pb ◁ to activate the microphones of the boomset and oxygen masks.

Ident.: DSC-23-20-93-00000248.0001001 / 12 APR 16

Loudspeaker Volume Control knob


LOUDSPEAKER
OFF
MAX

The two onside loudspeakers are OFF.


LOUDSPEAKER
OFF
MAX

The two onside loudspeakers are on. The volume is adjusted by turning the knob.

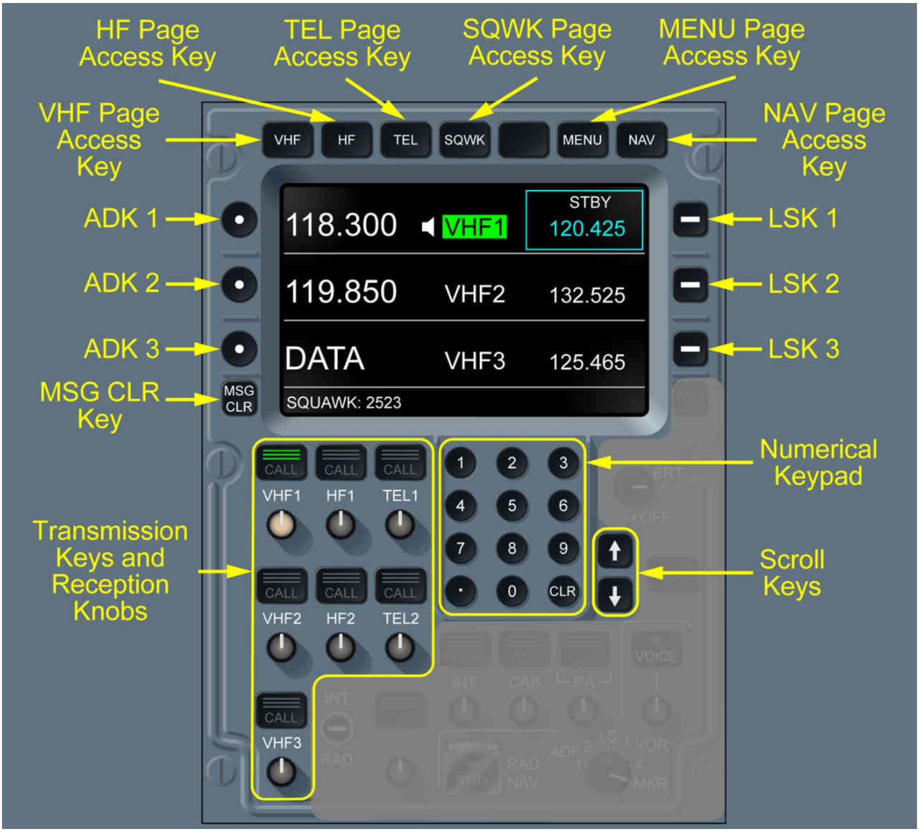
Note:
- *The volume control knobs of the loudspeakers adjust the volume of voice communication messages, but cannot adjust the volume of Flight Warning System (FWS) and Aircraft Environment Surveillance System (SURV) audio messages.*
- *In the case of acoustic feedback (i.e. Larsen effect) from the cockpit loudspeaker, the flight crew should reduce the volume of the cockpit loudspeaker. However, the flight crew should ensure that the volume of the cockpit loudspeaker is sufficient to hear radio communication.*

RMP EXTERNAL COMMUNICATION

Applicable to: ALL

Ident.: DSC-23-20-06-00000142.0001001 / 30 APR 14

RMP External Communication


HF Page Access Key
TEL Page Access Key
SQWK Page Access Key
MENU Page Access Key
VHF Page Access Key
NAV Page Access Key
VHF
HF
TEL
SQWK
MENU
NAV
ADK 1
ADK 2
ADK 3
MSG CLR Key
LSK 1
LSK 2
LSK 3
118.300
VHF1
STBY
120.425
119.850
VHF2
132.525
DATA
VHF3
125.465
SQUAWK: 2523
MSG CLR
CALL
VHF1
HF1
TEL1
VHF2
HF2
TEL2
VHF3
Transmission Keys and Reception Knobs
Numerical Keypad
1
2
3
4
5
6
7
8
9
·
0
CLR
Scroll Keys

Ident.: DSC-23-20-06-00000189.0001001 / 30 APR 14

Line Selection KEYS : LSK 1(2)(3)

When pressed, selects, validates, or activates the corresponding displays (e.g. frequencies, functions, page titles).

Ident.: DSC-23-20-06-00000190.0001001 / 30 APR 14

Activation/Dialing KEYS : ADK 1(2)(3)

When pressed, dials, selects, validates, activates the corresponding displays (e.g. frequencies, functions).

Ident.: DSC-23-20-06-00000191.0001001 / 30 APR 14

MESSAGE CLEAR (MSG CLR) KEY

When pressed, clears any displayed RMP message.

Note: *Does not clear the squawk code that appears on the VHF, HF and TEL pages.*

Ident.: DSC-23-20-06-00000192.0001001 / 30 APR 14

NUMERICAL KEYPAD

NUMBER KEYS

When pressed, inserts the corresponding number at the cursor position, in the field selected for modification.

DECIMAL KEY

Not active. The decimal is automatically-entered where necessary.

CLR KEY

- When pressed and released, clears the last digit
- When pressed and maintained, clears the field selected for modification, and displays the last validated entry.

Ident.: DSC-23-20-06-00000193.0001001 / 30 APR 14

SCROLL KEYS

UP KEY

- When pressed and released, scrolls up a list of items provided that an up arrow is displayed in the field that is selected for modification.
- When pressed and maintained, displays the first item of the list.

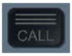
DOWN KEY

- When pressed and released, scrolls down a list of items provided that a down arrow is displayed in the field that is selected for modification.
- When pressed and maintained, displays the last item of the list.

Ident.: DSC-23-20-06-00000194.0001001 / 30 APR 14

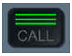
VHF 1(2)(3)/HF 1(2)/TEL 1(2) TRANSMISSION KEYS AND Reception knobS

VHF 1(2)(3)/HF 1(2)/TEL 1(2) Transmission KEYS

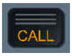


The associated communication means (i.e. VHF 1(2)(3), HF 1(2) or TEL 1(2)) is not in transmission mode. When pressed, the transmission key turns on the transmission mode.

Note: *Only one communication means at a time (internal and external communication) can be in transmission mode on each RMP.*



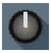
The associated communication means (i.e. VHF 1(2)(3), HF 1(2) or TEL 1(2)) is in transmission mode. When pressed, the transmission key turns off the transmission mode.
The TEL 1(2) transmission key flashes to indicate that an outgoing telephone call is connected, and TEL 1(2) is not in transmission mode. When pressed, the TEL 1(2) transmission key activates the transmission mode and enables the telephone communication.



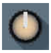
Flashes to indicate an incoming:
- Telephone call, or
- SELCAL.

When a telephone call, or a SELCAL is received, a buzzer sounds in the cockpit until it is reset, via the RST key, or the flight crew answers the call.

VHF 1(2)(3)/HF 1(2)/TEL 1(2) Reception knobS



The associated communication means (i.e. VHF 1(2)(3), HF 1(2) or TEL 1(2)) is not in reception mode. When pressed and released in the out position, the reception knob turns on the reception mode.



The associated communication means (i.e. VHF 1(2)(3), HF 1(2) or TEL 1(2)) is in reception mode. When pressed and released in the in position, the reception knob turns off the reception mode.
When turned, the reception knob adjusts the volume of the headset.

RMP MESSAGES

Applicable to: ALL

Ident.: DSC-23-20-100-00000156.0001001 / 07 NOV 16

RMP MESSAGES

The RMP displays messages to inform the flight crew, when:
- A selection is not appropriate, or not complete, or
- A connection is failed, or
- Voice or data mode is not available.

Note: *The current squawk is displayed by default in the scratchpads of the VHF, HF, and TEL pages. In addition, in the case the XPDR is not in the AUTO mode, the current XPDR mode (i.e. ON or STBY) is also displayed.*

L3 An RMP message can be displayed on all RMPs simultaneously (global display), or on one RMP only (local display). However, some local messages can be displayed on more than one RMP, provided that the same page is displayed.
If several messages are displayed one after the other without being cleared, the active messages are stored in a queue, in their order of appearance (the RMP displays the most recent message).
The flight crew must check, and clear the active messages, one by one, in order to cancel the queue.

L1 The various RMP communication messages are listed below:

Ident.: DSC-23-20-100-00000253.0001001 / 30 APR 14

L12

DATA FIELD NOT MODIFIABLE : The flight crew tries to modify a field that cannot be modified.

Ident.: DSC-23-20-100-00000254.0001001 / 30 APR 14

L12

VHF 3 DATA MODE NOT AVAILABLE : The flight crew tries to activate VHF 3 in data mode, but the data mode is not available.

Ident.: DSC-23-20-100-00000255.0001001 / 30 APR 14

L12

VHF 1(2)(3) / HF 1 FREQ NOT COMPLETED : The flight crew tries to validate a frequency that is not complete.

Ident.: DSC-23-20-100-00000256.0001001 / 30 APR 14

L12

VHF 1(2)(3) / HF 1 FREQ NOT VALID : The flight crew enters a frequency that is not a standard VHF / HF voice communication frequency.

Ident.: DSC-23-20-100-00000257.0001001 / 30 APR 14

L12

VHF 1(2)(3) / HF 1 / TEL 1(2) RECEPTION NOT SELECTED : The flight crew selects VHF 1(2)(3) / HF 1 / TEL 1(2) in transmission mode, but the reception mode is not active.

Ident.: DSC-23-20-100-00000258.0001001 / 30 APR 14

L12

VHF 1(2)(3) / HF 1 STBY REVERTED TO PREV ENTRY : The flight crew tries to validate a frequency that is not a standard VHF / HF voice frequency, and the VHF 1(2)(3) / HF 1 FREQ NOT VALID message is already displayed. The last validated STBY frequency appears instead of the invalid entry.

Ident.: DSC-23-20-100-00000259.0001001 / 30 APR 14

L12

HF 1 VOICE MODE NOT AVAILABLE : The flight crew tries to activate HF 1 in voice mode, but the voice mode is not available.

Ident.: DSC-23-20-100-00000260.0001001 / 30 APR 14

L12

LOG OFF TO MODIFY SATCOM SETTINGS: The flight crew tries to modify the SATCOM settings, but the SATCOM is logged on.

Ident.: DSC-23-20-100-00000261.0001001 / 30 APR 14

L12

MAN DIALING NOT ALLOWED : The flight crew tries to manually dial a telephone number, but the SATCOM configuration software does not permit it.

Ident.: DSC-23-20-100-00000262.0001001 / 30 APR 14

L12

NO MORE LIST ITEMS : The flight crew tries to scroll through a list and the first (last) element of the list is displayed.

Ident.: DSC-23-20-100-00000263.0001001 / 30 APR 14

L12

NO NUMBER DIALED : The flight crew tries to make a telephone call by pressing an ADK, but has not dialed a telephone number.

Ident.: DSC-23-20-100-00000264.0001001 / 30 APR 14

L12

SATCOM CONFIG PAGE NOT AVAIL : The flight crew presses the SATCOM CONFIG page access key, but the SATCOM or the connections between the RMPs and the SATCOM are failed.

Ident.: DSC-23-20-100-00000265.0001001 / 30 APR 14

L12

SATCOM LOG ON: FAIL : The flight crew tries to log on the SATCOM, but the log on fails.

Ident.: DSC-23-20-100-00000266.0001001 / 30 APR 14

L12

SATCOM SETTING PAGE NOT AVAIL : The flight crew presses the SATCOM SETTING page access key, but the SATCOM, or the connections between the RMPs and the SATCOM are failed.

Ident.: DSC-23-20-100-00000267.0001001 / 30 APR 14

L12

TEL 1(2) CONNECTION: FAIL : The flight crew tries to make a telephone call, but it cannot be established or it is interrupted due to a failure.

Ident.: DSC-23-20-100-00000268.0001001 / 30 APR 14

L12

TEL 1(2) NOT CONNECTED : The flight crew selects TEL 1(2) in transmission mode, but no connection is established.

Ident.: DSC-23-20-100-00000269.0001001 / 30 APR 14

L12

TEL 1(2) REVERTED TO PREV ENTRY : The flight crew dials a telephone number, then clears it by using the MSG CLR key.

Ident.: DSC-23-20-100-00000270.0001001 / 30 APR 14

L12

TEL 1(2) STILL CONNECTED : The flight crew tries to end a telephone call that is still connected.

Ident.: DSC-23-20-100-00000271.0001001 / 30 APR 14

L12

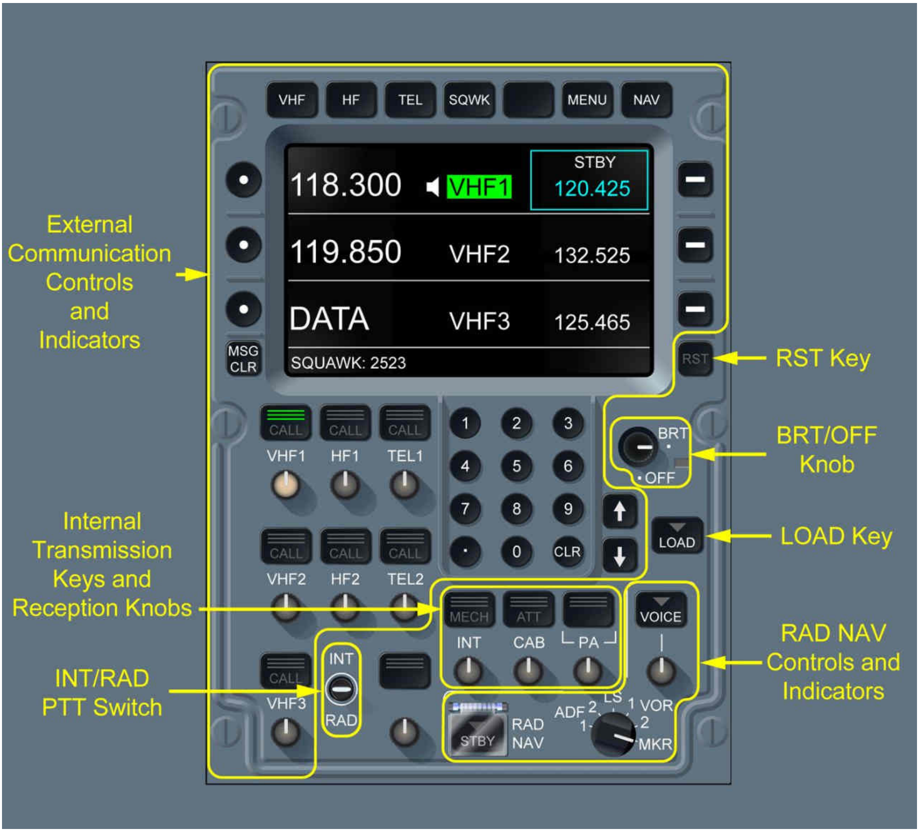
USE MAN SCAN TO MODIFY PROVIDER	:	The flight crew tries to modify the VHF datalink provider on the VHF DATALINK PROVIDER page, and the AUTO SCAN function is active.

RMP OVERVIEW

Applicable to: ALL

Ident.: DSC-23-20-05-00000141.0001001 / 30 APR 14

RMP Overview

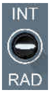

VHF
HF
TEL
SQWK
MENU
NAV
118.300
VHF1
STBY
120.425
119.850
VHF2
132.525
DATA
VHF3
125.465
SQUAWK: 2523
MSG CLR
RST
External Communication Controls and Indicators
RST Key
BRT
OFF
BRT/OFF Knob
LOAD
LOAD Key
CALL
VHF1
HF1
TEL1
VHF2
HF2
TEL2
VHF3
1
2
3
4
5
6
7
8
9
0
CLR
Internal Transmission Keys and Reception Knobs
MECH
ATT
INT
CAB
PA
VOICE
RAD NAV Controls and Indicators
INT
RAD
INT/RAD PTT Switch
STBY
RAD NAV
ADF
LS
VOR
MKR

Ident.: DSC-23-20-05-00000178.0001001 / 02 OCT 14

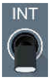
INT/RAD SWITCH

The flight crew uses the INT/RAD sw to activate the boomset, or the oxygen mask microphones.

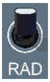
The switch on:
- RMP 1 controls the microphones for the Captain
- RMP 2 controls the microphones for the First Officer
- RMP 3 controls the microphones for the third occupant.



The Interphone/Radio Push-To-Talk switch (INT/RAD sw) is in the off position.



- When set to RAD, the INT/RAD sw activates the boomset or the oxygen mask microphone. However, the appropriate transmission key should be selected first, in order to transmit the message.
- When released, the INT/RAD sw returns to the off position.

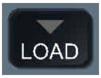


- When set to INT, the INT/RAD sw activates the boomset or the oxygen mask microphone.
- When released, the INT/RAD sw remains in the INT position, until the flight crew selects another.

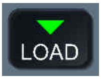
Note: *When set to INT position induces an attenuation of the loudspeaker in the cockpit.*

Ident.: DSC-23-20-05-00020046.0001001 / 30 APR 14

LOAD KEY



Load key is not active.

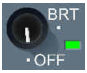


The light comes on when a VHF or HF CPDLC frequency is received on the mailbox. When pressed, provided that the corresponding HF or VHF page and LSK KEY is selected on the RMP, loads and displays the frequency automatically.

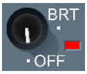
Ident.: DSC-23-20-05-00000179.0001001 / 30 APR 14

BRT/OFF knob

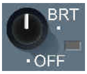
The flight crew uses the BRT/OFF knob to turn the RMP on or off, and to adjust the brightness of the RMP screen.
The status indicator changes color to indicate the status of the RMP.



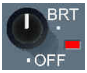
The RMP is OFF and is available.



The RMP is OFF, and is failed.



The RMP is on.



The RMP is on, but is failed.

Ident.: DSC-23-20-05-00000180.0001001 / 28 APR 17

RST KEY

The Reset (RST) key is not active.

The RST key goes on in amber, when the buzzer sound associated to an incoming SELCAL, or telephone call is generated.
When the RST key is pressed, the buzzer sound is canceled, and the RST light goes off.

Ident.: DSC-23-20-05-00000181.0001001 / 30 APR 14

RAD NAV CONTROLS AND INDICATORS

For more information for description. *Refer to DSC-34-NAV-70-20 STBY RAD NAV Key*

Ident.: DSC-23-20-05-00000182.0001001 / 30 APR 14

INT(CAB)(PA) TRANSMISSION KEY AND Reception knob

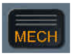
INT(CAB)(PA) Transmission KEY

The associated interphone (i.e. INT, CAB, or PA) is not in transmission mode.
When pressed, the transmission key turns on the transmission mode.

Note: *Only one communication type at a time (internal and external communication) can be in transmission mode on each RMP.*

The associated interphone (i.e. INT, CAB, or PA) is in transmission mode.
When pressed, the transmission key turns off the transmission mode.

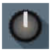
Note: *To make an announcement on the PA, the flight crew must press and maintain the PA transmission key during the announcement. In this case, it is not necessary to use any PTT sw.*



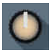
Flashes to indicate an incoming:
- Call from the ground crew (MECH light), or
- Call from the cabin crew (ATT light).

When a ground(cabin) crew call is received, a buzzer sounds in the cockpit, and the MECH(ATT) light flashes for 60 s, or until the flight crew answers the call.

INT(CAB)(PA) Reception knob



The associated interphone (i.e. INT, CAB, or PA) is not in reception mode. When pressed and released in the out position, the reception knob turns on the reception mode.



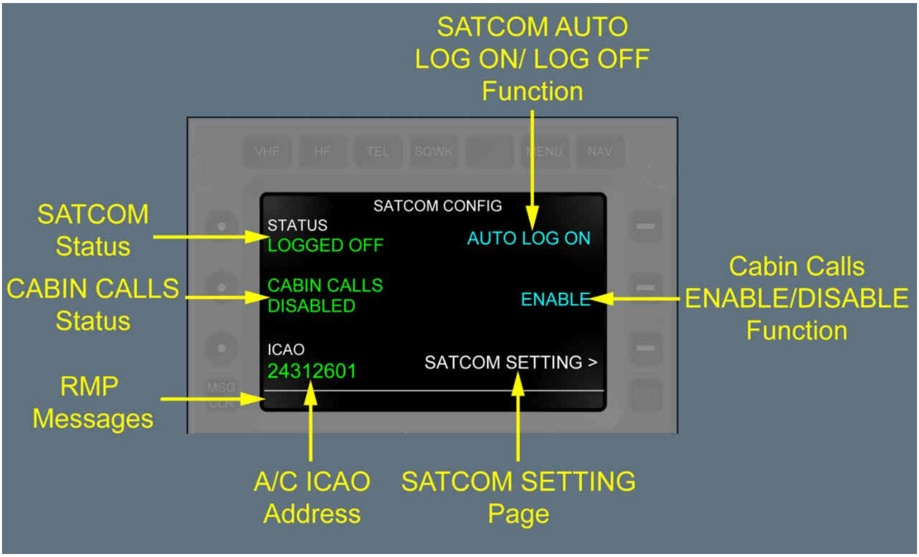
The associated interphone (i.e. INT, CAB, or PA) is in reception mode. When pressed and released in the in position, the reception knob turns off the reception mode.
When turned, the reception knob adjusts the volume of the headset.

SATCOM CONFIG PAGE

Applicable to: ALL

Ident.: DSC-23-20-40-00000149.0001001 / 30 APR 14

SATCOM CONFIG Page



SATCOM CONFIG
STATUS
LOGGED OFF
AUTO LOG ON
CABIN CALLS
DISABLED
ENABLE
ICAO
24312601
SATCOM SETTING >

SATCOM AUTO LOG ON/ LOG OFF Function
SATCOM Status
CABIN CALLS Status
Cabin Calls ENABLE/DISABLE Function
RMP Messages
A/C ICAO Address
SATCOM SETTING Page
VHF
HF
TEL
SQWK
MENU
NAV
MSG CLR

Ident.: DSC-23-20-40-00000222.0001001 / 30 APR 14

SATCOM STATUS

LOGGED ON AUTO	The SATCOM is on and connected. The satellite and the GES are automatically-selected.
LOGGED ON MANUAL	The SATCOM is on and connected. The satellite and the GES are manually-selected.
LOGGING ON AUTO	The SATCOM is attempting to connect. The satellite and the GES are automatically-selected.
LOGGING ON MANUAL	The SATCOM is attempting to connect. The satellite and the GES are manually-selected.
LOGGING OFF	The SATCOM is logging off.

LOGGED OFF	The SATCOM is disconnected. The satellite and the GES are not connected.

Ident.: DSC-23-20-40-00000223.0001001 / 04 DEC 14

SATCOM AUTO LOG ON/OFF FUNCTION

L13 AUTO LOG ON *	The AUTO LOG ON function is available, and can be activated by pressing the associated Line Selection Key (LSK). When this function is active, the satellite and the GES are automatically-selected. Appears, only when SATCOM is logged off.
L13 LOG OFF *	The LOG OFF function is available, and can be activated by pressing the associated LSK. Appears, only when SATCOM is logged on or logging on.

Ident.: DSC-23-20-40-00000224.0001001 / 30 APR 14

CABIN CALLS STATUS

ENABLED	It is possible to make telephone calls in the cabin.
DISABLED	It is not possible to make telephone calls in the cabin.

Ident.: DSC-23-20-40-00000225.0001001 / 30 APR 14

CABIN CALLS ENABLE/DISABLE FUNCTION

ENABLE *	The cabin telephone calls ENABLE function is available. When this function is selected, it is possible to make telephone calls from the cabin via the SATCOM.
DISABLE *	The cabin telephone calls DISABLE function is available. When this function is selected, it is not possible to make telephone calls from the cabin via the SATCOM.

Ident.: DSC-23-20-40-00000226.0001001 / 30 APR 14

AIRCRAFT ICAO ADDRESS

L13

ICAO
24312601

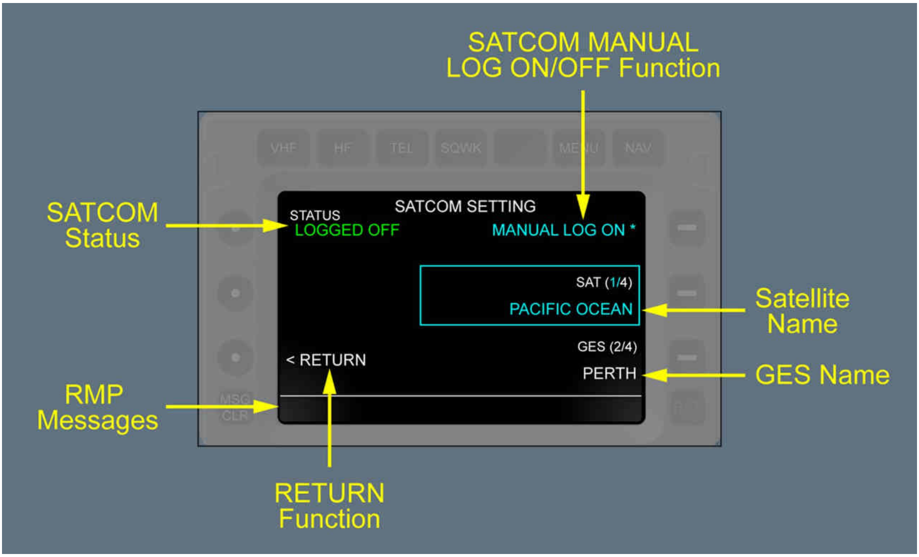
The aircraft ICAO address identifies the aircraft during all SATCOM voice or data communication.The flight crew cannot change the address.
The aircraft ICAO address is entered in the Satellite Data Unit (SDU) by software pin programming.

SATCOM SETTING PAGE

Applicable to: ALL

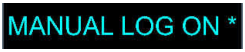
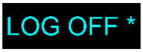
Ident.: DSC-23-20-50-00000150.0001001 / 30 APR 14

SATCOM SETTING Page


SATCOM MANUAL
LOG ON/OFF Function
VHF
HF
TEL
SQWK
MENU
NAV
SATCOM
Status
SATCOM SETTING
STATUS
LOGGED OFF
MANUAL LOG ON *
SAT (1/4)
PACIFIC OCEAN
GES (2/4)
PERTH
< RETURN
MSG
CLR
Satellite
Name
GES Name
RMP
Messages
RETURN
Function

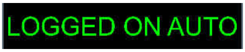
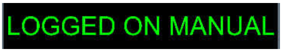
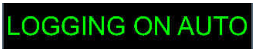
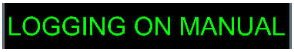
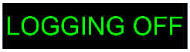
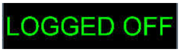
Ident.: DSC-23-20-50-00000227.0001001 / 30 APR 14

SATCOM MANUAL LOG ON/OFF FUNCTION

L13  MANUAL LOG ON *	The MANUAL LOG ON function is available, and can be activated by pressing the associated Line Selection Key (LSK). When this function is active, the satellite and the GES are manually-selected. Appears, only when SATCOM is logged off.
L13  LOG OFF *	The LOG OFF function is available, and can be activated by pressing the associated LSK. Appears, when SATCOM is logged on, or logging on.

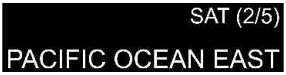
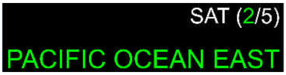
Ident.: DSC-23-20-50-00000228.0001001 / 30 APR 14

SATCOM STATUS

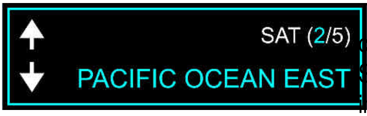
 LOGGED ON AUTO	The SATCOM is on and connected. The satellite and the GES are automatically-selected.
 LOGGED ON MANUAL	The SATCOM is on and connected. The satellite and the GES are manually-selected.
 LOGGING ON AUTO	The SATCOM is attempting to connect. The satellite and the GES are automatically-selected.
 LOGGING ON MANUAL	The SATCOM is attempting to connect. The satellite and the GES are manually-selected.
 LOGGING OFF	The SATCOM is logging off.
 LOGGED OFF	The SATCOM is disconnected. The satellite and the GES are not connected.

Ident.: DSC-23-20-50-00000229.0001001 / 30 APR 14

SATELLITE NAME

 SAT (2/5) PACIFIC OCEAN EAST	The SATCOM is not connected, and the flight crew cannot change the satellite name.
 SAT (2/5) PACIFIC OCEAN EAST	The SATCOM is connected, and the flight crew cannot change the satellite name.

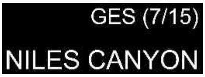
L12



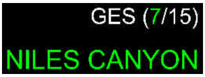
The SATCOM is not connected, and the flight crew can change the satellite name, because it is boxed.
SAT(2/5) indicates that PACIFIC OCEAN EAST is second in the list of satellites, and there are 5 satellites currently available.
The up and down arrows indicate that the flight crew can scroll through the list of currently available satellites.

Ident.: DSC-23-20-50-00000230.0001001 / 06 NOV 14

GROUND EARTH STATION (GES) NAME

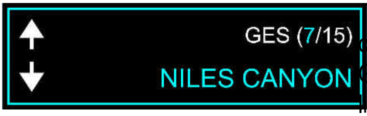


The SATCOM is not connected, and the flight crew cannot change the GES.



The SATCOM is connected, and the flight crew cannot change the GES.

L12



The SATCOM is not connected. The GES is boxed, and can be changed.
GES(7/15) indicates that NILES CANYON is seventh in the list of GES, and there are 15 GES currently available.
The up and down arrows indicate that the flight crew can scroll through the list of currently available GES.

Ident.: DSC-23-20-50-00000231.0001001 / 30 APR 14

RETURN FUNCTION

When selected, the previous page (SATCOM CONFIG) appears.

SQWK PAGE

Ident.: DSC-23-20-00000185.0001001 / 30 APR 14
Applicable to: ALL

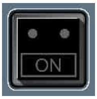
The flight crew uses the SQWK page to:

- Set the squawk,
- Activate the IDENT function. *Refer to DSC-34-SURV-50-20 RMP*

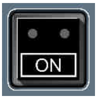
SVCE INT OVRD pb

Ident.: DSC-23-20-00000160.0001001 / 30 APR 14
Applicable to: ALL

L2 SVCE INT OVRD pb



The service interphone is automatically inhibited in flight.



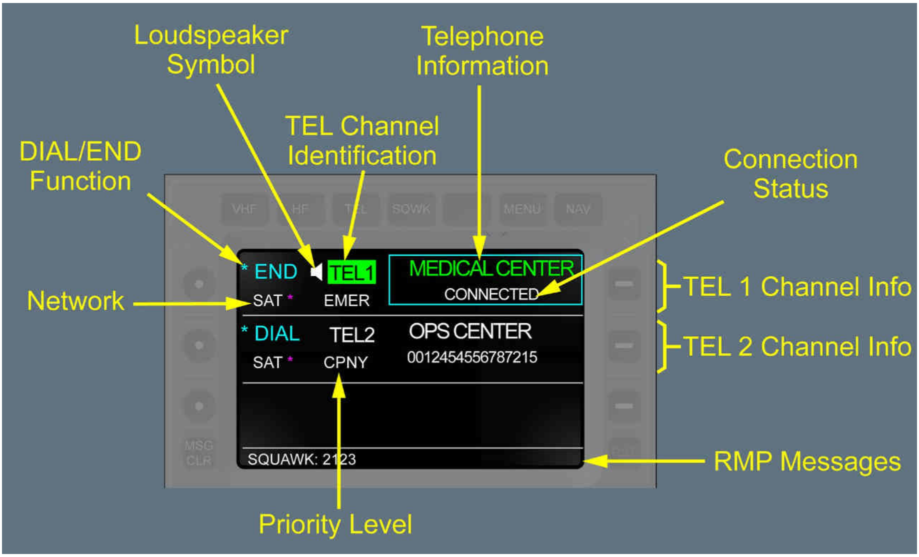
If the service interphone remains abnormally inhibited on ground, the ground crew can manually activate it, by pressing the SVCE INT OVRD pb .

TEL PAGE

Applicable to: ALL

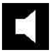
Ident.: DSC-23-20-30-00000145.0001001 / 07 NOV 16

TEL Page

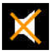

Loudspeaker Symbol
Telephone Information
TEL Channel Identification
DIAL/END Function
Connection Status
VHF
HF
TEL
SQWK
MENU
NAV
Network
* END
TEL1
MEDICAL CENTER
CONNECTED
SAT *
EMER
* DIAL
TEL2
OPS CENTER
SAT *
CPNY
0012454556787215
SQUAWK: 2123
MSG CLR
TEL 1 Channel Info
TEL 2 Channel Info
RMP Messages
Priority Level

Ident.: DSC-23-20-30-00000205.0001001 / 30 APR 14

LOUDSPEAKER SYMBOL

	When there is no display, indicates reception mode is off.
	The active frequency is in reception mode.

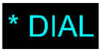
L13

	The active frequency is in transmission mode, but not in reception mode. When the flight crew turns on the transmission mode only, the symbol flashes for 2 s, and then remains steady.

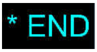
Ident.: DSC-23-20-30-00000206.0001001 / 30 APR 14

DIAL/END FUNCTION

L12

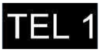
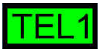
 * DIAL	When selected, the telephone number is dialed, and connected. After the telephone number is connected, the transmission and reception modes should be activated via the appropriate TEL transmission key and reception knob. The DIAL function appears, when the associated telephone number is not yet connected.

L12

 * END	When selected, the telephone number is disconnected. The END function appears, when the associated telephone number is connected.

Ident.: DSC-23-20-30-00000207.0001001 / 30 APR 14

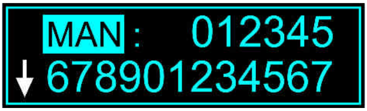
TELEPHONE (TEL) CHANNEL IDENTIFICATION

 TEL 1	TEL 1(2) is not in transmission mode.
 TEL 1	TEL 1(2) is in transmission mode.

Ident.: DSC-23-20-30-00000208.0001001 / 30 APR 14

TELEPHONE INFORMATION

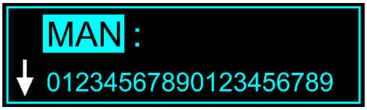
L12



MAN : 012345
↓ 678901234567

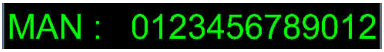
- When boxed, indicates that the flight crew can modify the telephone information field
- MAN indicates that the flight crew has manually dialed the telephone number
- The down arrow indicates that the flight crew can scroll down the list
- The manually-dialed telephone number is displayed in big characters to indicate that it is not validated
- The telephone information appears on two lines, until the connection is established, and CONNECTING is displayed.

Note: *The flight crew can dial a telephone number manually even if the MAN line is not already displayed. Dialing the telephone number via the keypad will automatically display the MAN line.*



MAN :
↓ 01234567890123456789

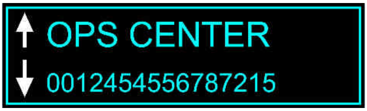
The flight crew has manually-dialed and validated the telephone number.



MAN : 0123456789012

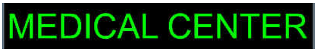
The manually-dialed telephone call is connected.

L12



↑ OPS CENTER
↓ 0012454556787215

- When boxed, indicates that the flight crew can modify the telephone information field
- The up arrow and down arrow indicate that the flight crew can scroll up or down the list
- The telephone number is selected from the list of pre-dialed telephone numbers
- The telephone information appears on two lines, until the connection is established, and CONNECTING is displayed.



MEDICAL CENTER

The pre-dialed telephone number, selected by the flight crew from the scroll list, is connected.

EXTERNAL	An external call is received. In this case, the status of the connection can be INCOMING CALL, CONNECTED, or CALL ENDED.
- - - - - - - - - - - - - - - DIALING NOT AVAIL	The SATCOM is either failed, or not logged on.

Ident.: DSC-23-20-30-00000209.0001001 / 30 APR 14

TELEPHONE CONNECTION STATUS

	When there is no display, indicates no telephone call connection.
L13 CONNECTING	Connection of the telephone call is in progress. Appears for outgoing telephone calls only.
CONNECTED	Telephone call connection is established.
L12 CALL ENDED	Disconnection of the telephone call is in progress. Appears temporarily, when: - The flight crew ends the call, or - The ground station ends the call, or - The flight crew rejects an incoming external call, or - The telephone connection is failed.
INCOMING CALL	The flight crew is receiving a telephone call from a ground station.

Ident.: DSC-23-20-30-00000210.0001001 / 30 APR 14

PRIORITY LEVEL

Each telephone number is assigned a priority level.

L3 The airline can assign and customize the priority levels.

L1

EMER	Top priority.
ATC	High priority.
CPNY	Medium priority.
PUBLIC	Low priority.

- - - - -	The SATCOM is either failed, or not available.

Ident.: DSC-23-20-30-00000211.0001001 / 30 APR 14

NETWORK

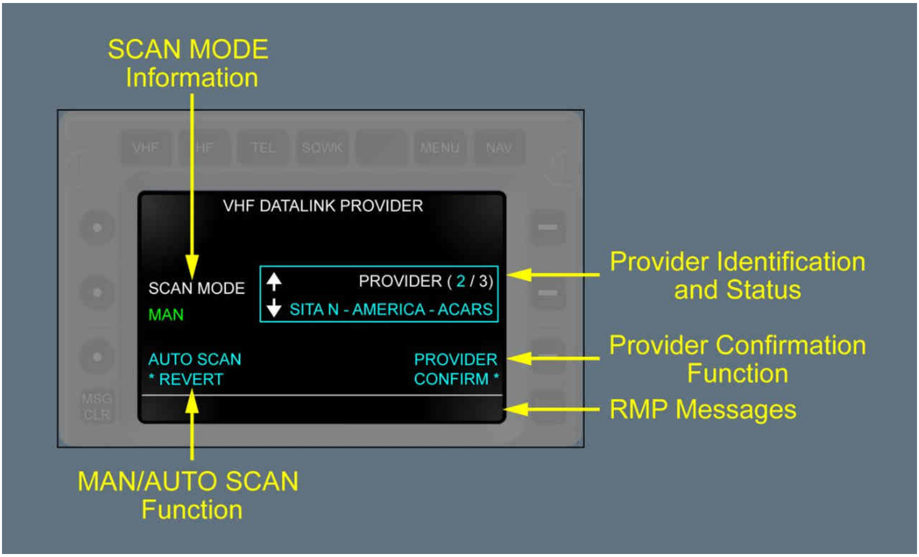
SAT	The SATCOM is available.

VHF DATALINK PROVIDER PAGE

Applicable to: ALL

Ident.: DSC-23-20-38-00000148.0001001 / 30 APR 14

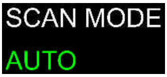
VHF DATALINK PROVIDER Page


SCAN MODE
Information
VHF
HF
TEL
SQWK
MENU
NAV
VHF DATALINK PROVIDER
SCAN MODE
MAN
PROVIDER (2 / 3)
SITA N - AMERICA - ACARS
AUTO SCAN
* REVERT
PROVIDER
CONFIRM *
MSG
CLR
Provider Identification
and Status
Provider Confirmation
Function
RMP Messages
MAN/AUTO SCAN
Function

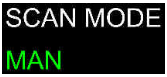
The VHF DATALINK PROVIDER displays the selected ground network for VHF data communication. Also, the flight crew can activate either the automatic, or manual, scan mode for the selection of the ground network.

Ident.: DSC-23-20-38-00000218.0001001 / 30 APR 14

SCAN MODE INFORMATION


SCAN MODE
AUTO

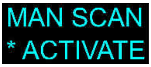
The automatic VHF datalink provider scan mode is active.


SCAN MODE
MAN

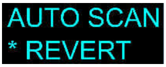
The manual VHF datalink provider scan mode is active.

Ident.: DSC-23-20-38-00000219.0001001 / 30 APR 14

MAN/AUTO SCAN FUNCTION


MAN SCAN
* ACTIVATE

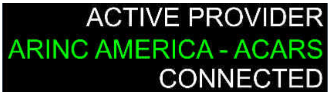
The flight crew can activate the MAN SCAN function by pressing the associated Activation/Dialing Key (ADK).
When the MAN SCAN function is active, the flight crew can manually select the VHF datalink provider.


AUTO SCAN
* REVERT

The flight crew can activate the AUTO SCAN function by pressing the associated ADK.
When the AUTO SCAN function is active, the system automatically selects the most appropriate VHF datalink provider.

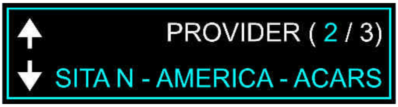
Ident.: DSC-23-20-38-00000220.0001001 / 30 APR 14

PROVIDER IDENTIFICATION AND STATUS


ACTIVE PROVIDER
ARINC AMERICA - ACARS
CONNECTED

The VHF datalink provider was automatically selected, and is connected.

L12


PROVIDER (2 / 3)
SITA N - AMERICA - ACARS

The MAN SCAN function is active.
The flight crew can use the UP and DOWN keys on the RMP, to manually select a provider in the list.
When scrolling: if a provider is already connected , the PROVIDER header changes to ACTIVE PROVIDER, and the RMP displays “CONNECTED” as the status.

Ident.: DSC-23-20-38-00000221.0001001 / 30 APR 14

PROVIDER CONFIRMATION FUNCTION

: When there is no display indicates the AUTO SCAN function is active.

PROVIDER CONFIRM *	The MAN SCAN function is active, and the flight crew has manually selected a provider. To connect the provider, the flight crew should confirm the selection by pressing the associated Line Selection Key (LSK).

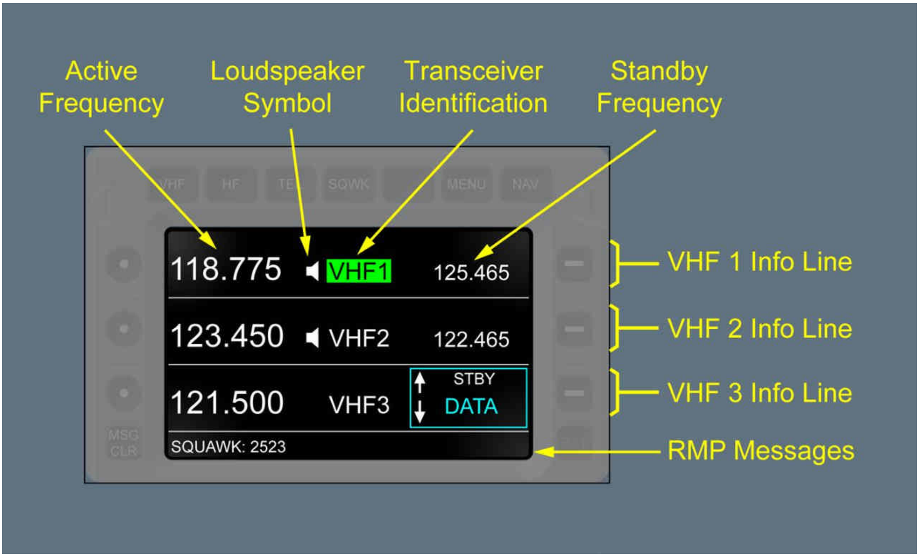
VHF PAGE

Applicable to: ALL

Ident.: DSC-23-20-10-00000143.0001001 / 30 APR 14

L2 After an RMP power-up or reset, or after deactivation of the RAD NAV STBY mode, the RMP display defaults to the VHF page.

VHF Page


Active Frequency
Loudspeaker Symbol
Transceiver Identification
Standby Frequency
VHF
HF
TEL
SQWK
MENU
NAV
118.775
VHF1
125.465
123.450
VHF2
122.465
121.500
VHF3
STBY
DATA
SQUAWK: 2523
MSG CLR
VHF 1 Info Line
VHF 2 Info Line
VHF 3 Info Line
RMP Messages

L1 In the illustration::

- VHF 1 is in transmission and reception mode, 118.775 MHz is the active frequency, and 125.465 MHz is the standby frequency
- VHF 2 is in reception mode only
- VHF 3 is neither in transmission nor reception mode
- The VHF 3 standby frequency is boxed to indicate that it is selected for modification
- The current squawk code is 2523.

Ident.: DSC-23-20-10-00000195.0001001 / 30 APR 14

LOUDSPEAKER SYMBOL

	When there is no display, indicates reception mode is off.
🔈	The active frequency is in reception mode.
L13	
🔇	The active frequency is in transmission mode, but not in reception mode. When the flight crew turns on the transmission mode only, the symbol flashes for 2 s, and then remains steady.

Ident.: DSC-23-20-10-00000196.0001001 / 30 APR 14

TRANSCEIVER IDENTIFICATION

VHF1	VHF 1(2)(3) is not in transmission mode.
VHF1	VHF 1(2)(3) is in transmission mode.

Ident.: DSC-23-20-10-00000197.0001001 / 30 APR 14

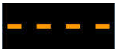
ACTIVE FREQUENCY

123.450	The VHF transceiver is tuned on the displayed frequency.
L12	
- - - . - - -	The VHF transceiver is in voice mode, and is either failed or not available. For information on possible failures: - *Refer to DSC-23-30-20 RMP Synchronization Failure* - *Refer to DSC-23-30-20 RMP - VHF/HF Transceiver Connection Failure*.

FOR VHF 3 ONLY

DATA	Data mode is active.
DISCONNECTING DATA	Data mode is disconnecting.

L12

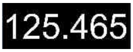


The VHF transceiver is in data mode, and is either failed or not available.

For information on possible failures:
- *Refer to DSC-23-30-20 RMP Synchronization Failure*
- *Refer to DSC-23-30-20 RMP - VHF/HF Transceiver Connection Failure*.

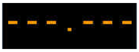
Ident.: DSC-23-20-10-00000198.0001001 / 07 MAY 18

STANDBY (STBY) FREQUENCY



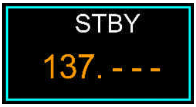
The standby frequency cannot be modified.

L12



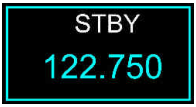
The VHF transceiver is in voice mode and is either failed, or not available. For an example of failure, *Refer to DSC-23-30-20 RMP Synchronization Failure*.

L12



The modified standby frequency is not a standard VHF voice frequency. The flight crew can clear the erroneous digits, via the CLR key, until the standby frequency displays in blue again.
The VHF 1(2) FREQ NOT VALID RMP message is also displayed.
For more information on this message, *Refer to DSC-23-20 VHF 1(2)(3)/HF 1 FREQ NOT VALID*.

FOR VHF 1 AND VHF 2 ONLY



When boxed, the standby frequency can be modified.

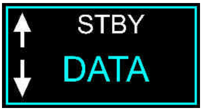
The standby frequency appears in :
- Big characters until it is validated by the flight crew, via the appropriate LSK
- Small characters after validation by the flight crew.

When entering a frequency, the system assists you and completes the digits of the frequency.

Note: *After a flight crewmember modifies a standby frequency, they should validate it, in order to prevent inadvertent modification of the frequency.*

FOR VHF 3 ONLY

L12



When boxed, the standby frequency can be modified.

The standby frequency (except DATA) appears in :
- Big characters until it is validated by the flight crew, via the appropriate LSK
- Small characters after validation by the flight crew.

Note: *After a flight crewmember modifies a standby frequency, they should validate it, in order to prevent inadvertent modification of the frequency.*

When entering a frequency, the system assists you and completes the digits of the frequency.
The up-arrow and the down-arrow indicate that the flight crew can use the up and down keys to scroll through the list of frequencies.

The list contains the following frequencies :
- DATA
- 121.500 MHz
- the modifiable frequency.

When the flight crew enters a frequency, via the numerical keypad, the modifiable frequency appears automatically whatever the current display.

Intentionally left blank

LOSS OF HF VOICE OR HF DATALINK

Ident.: DSC-23-25-00023781.0001001 / 08 NOV 18
Applicable to: ALL

DESCRIPTION

The HF system may not be able to correctly tune the selected frequency in VOICE or DATA mode. As a result, the COM HF 1(HF 2) FAULT (*Refer to procedure*) and the COM HF 1(HF 2) DATALINK FAULT (*Refer to procedure*) alerts can be triggered.
In this case, the HF system is not able to transmit or receive anymore, either in VOICE or in DATA mode. There is no sound in reception and no sidetone in transmission.

PROCEDURE

The flight crew can transmit on a new VOICE HF frequency in order to recover a normal operation of the system.

On any of the three RMPs:
- Change the affected HF1(HF2) frequency to a different VOICE frequency
- Transmit on this new frequency.

■ **If the HF communication is recovered:**
The alert disappears. The HF transmission and reception are recovered in both VOICE and DATA mode.

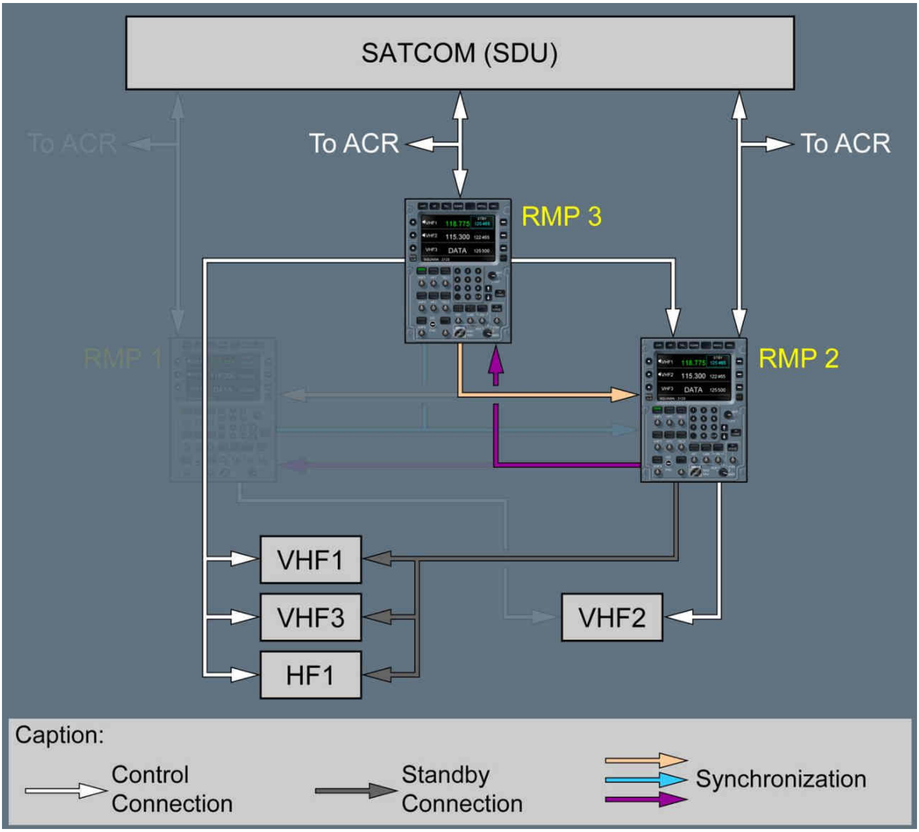
■ **If the HF communication is still inoperative:**
Voice or data communication remains available via VHF or SATCOM.

Intentionally left blank

SINGLE RMP FAILURE

Ident.: DSC-23-30-10-00000164.0001001 / 07 MAY 18
Applicable to: ALL

Single RMP Failure


SATCOM (SDU)
To ACR
To ACR
To ACR
RMP 3
RMP 1
RMP 2
VHF1
VHF3
HF1
VHF2
Caption:
Control Connection
Standby Connection
Synchronization

If RMP 1 or RMP 2 fails, the Captain or the First Officer can use RMP 3 to recover control of the communication system.

When the failed RMP is turned off:
- RMP 3 connects directly to the VHF and HF transceivers
- The affected flight crewmember can control the onside communication equipment, via RMP 3.

L3 If RMP 1 fails, RMP 3 controls VHF 1, VHF 3 and HF 1.

If RMP 2 fails, RMP 3 controls VHF 2.

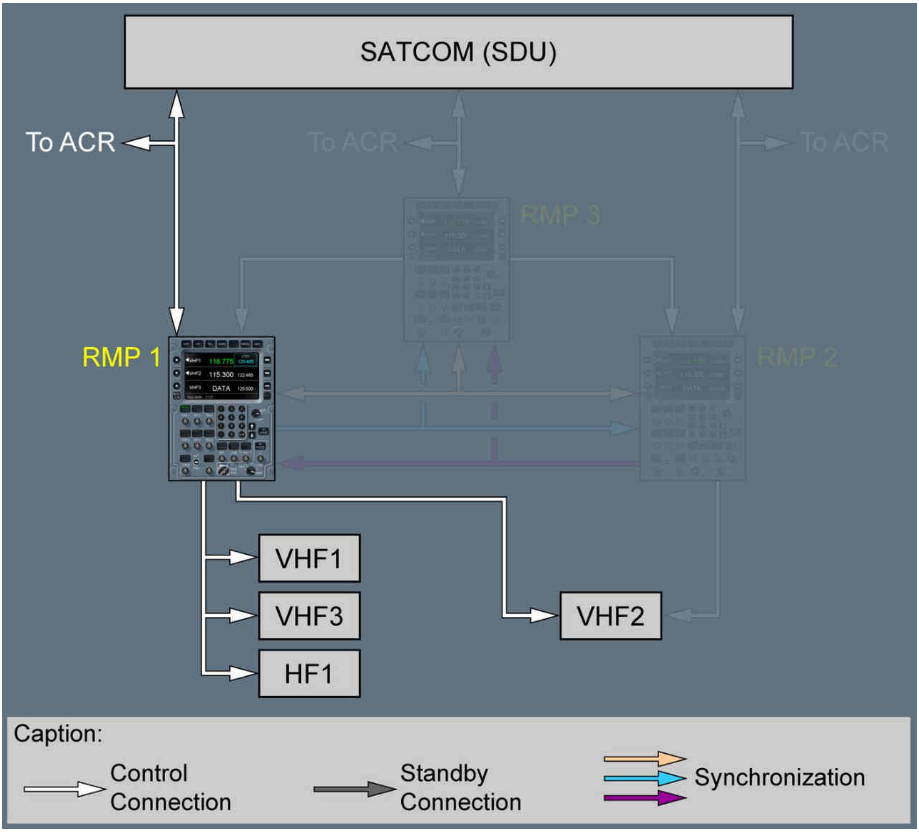
L1 Standby radio navigation control is available via the operative RMP (RMP 1 and 2 only).

DUAL RMP FAILURE

Ident.: DSC-23-30-10-00000165.0001001 / 30 APR 14

Applicable to: ALL

Dual RMP Failure


SATCOM (SDU)
To ACR
To ACR
To ACR
RMP 3
RMP 1
RMP 2
VHF1
VHF3
HF1
VHF2
Caption:
Control Connection
Standby Connection
Synchronization

If two RMPs fail, the Captain and the First Officer can use the remaining RMP to control the communication system.

When the failed RMPs are turned off, the operative RMP connects to, and controls all the radio communication means.

L3 Control of all radio communication is enabled by activation of standby connections.
L1 If RMP 1 and RMP 2 fail, standby radio navigation control is no longer available.

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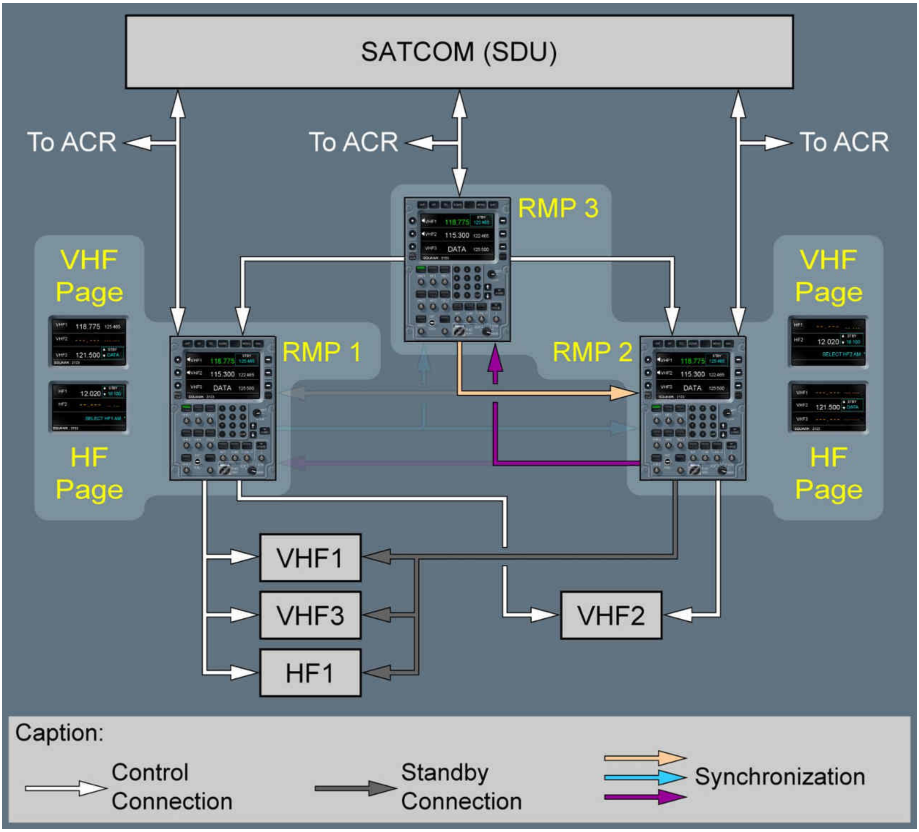
RMP SYNCHRONIZATION FAILURE

Ident.: DSC-23-30-20-00000166.0001001 / 30 APR 14
Applicable to: ALL

RMP Synchronization Failure


SATCOM (SDU)
To ACR
To ACR
To ACR
RMP 3
VHF Page
HF Page
RMP 1
RMP 2
VHF Page
HF Page
VHF1
VHF3
HF1
VHF2
Caption:
Control Connection
Standby Connection
Synchronization

A synchronization failure results in a partial display of the VHF, HF, and NAV pages on each RMP.

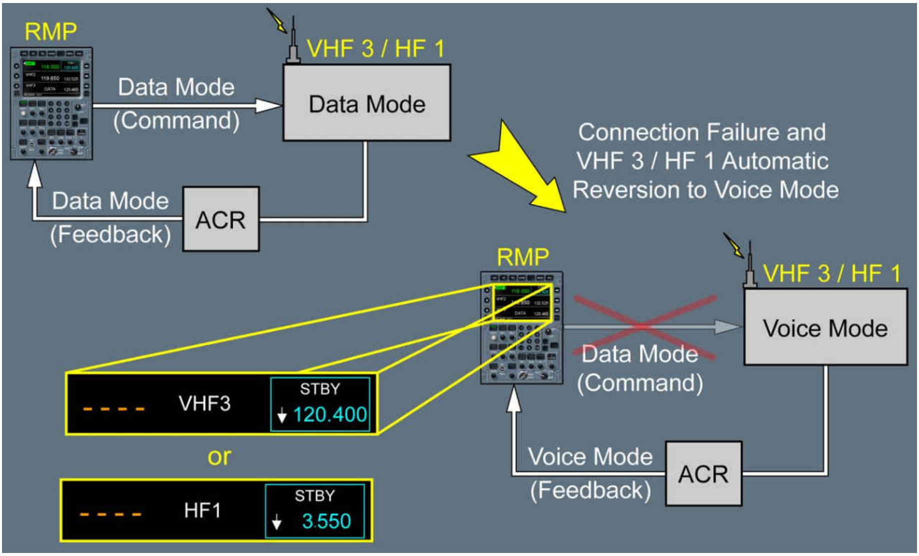
L3 In the above illustration of connection failure, RMP 1 does not share information related to VHF 1, VHF 3 and HF 1 with the two other RMPs. Therefore, RMP 1 synchronization is interrupted. Only RMP 2 and RMP 3 are synchronized.

L1 The displays on the TEL, SATCOM and DATALINK ROUTER pages are normal.

RMP - VHF/HF TRANSCEIVER CONNECTION FAILURE

Ident.: DSC-23-30-20-00000167.0001001 / 30 APR 14
Applicable to: ALL

In the case of a control connection failure between a RMP and a VHF/HF transceiver in voice mode, the RMPs continue to operate normally. However, the affected transceiver cannot be controlled and remains tuned to the pre-failure active frequency.
The flight crew detects the discrepancy only when a frequency change is attempted and feedback from Air Traffic Control (ATC) is not consistent.
If such failure occurs when VHF 3/HF 1 is in data mode, the transceiver automatically returns to the tune pre-failure standby frequency. Amber dashes replace DATA because the transceiver is in a mode (voice mode) that is not consistent with the mode commanded by the RMP (data mode).
L3 The ACR sends the VHF 3/HF 1 active mode information (voice or data) to the RMPs.
The illustration below shows an example of what happens when the connection, between an RMP and VHF 3/HF 1 fail.
In normal operation, a standby connection failure has no effect on the control of the VHF/HF transceivers.


RMP
VHF 3 / HF 1
Data Mode
(Command)
Data Mode
Data Mode
(Feedback)
ACR
Connection Failure and
VHF 3 / HF 1 Automatic
Reversion to Voice Mode
RMP
VHF 3 / HF 1
Voice Mode
Data Mode
(Command)
Voice Mode
(Feedback)
ACR
- - - -
VHF3
STBY
120.400
or
- - - -
HF1
STBY
3.550

AIRCRAFT SYSTEMS

24 - ELECTRICAL SYSTEM

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DSC-24-10 System Description

DSC-24-10-10 Overview

Overview.......... A

DSC-24-10-20 AC Generation

AC Generation.......... A

DSC-24-10-30 DC Generation

DC Generation.......... A

DSC-24-10-40 Emergency Generation

Emergency Generation.......... A

DSC-24-10-50 Electrical Networks and Supply Centers

Electrical Networks.......... A
Power Centers.......... B

DSC-24-10-60 Electrical Network Management

Electrical Load and Network Management.......... A
C/B Monitoring Function.......... B

DSC-24-20 Controls and Indicators

Cockpit View.......... A
BAT Panel.......... B
ELEC AC SD Page: In-Flight Configuration.......... C
ELEC AC SD Page: On-Ground Configuration.......... D
ELEC C/B SD Page.......... E
ELEC DC SD Page.......... F
ELEC Panel.......... G
ELEC REMOTE C/B CTL PB-SW.......... H
EMER ELEC PWR Panel.......... I
External Power Panel.......... J
External Refuel Panel.......... K
Ground Service Control Panel.......... L
MEMO.......... M
PAX PERS ELEC SPLY pb-sw .... N
TOWING ON BAT Panel.......... O
Power Outlet 110V/60Hz.......... P

Continued on the following page

Continued from the previous page

DSC-24-30 Normal Operations

Overview........ A
On Ground with Batteries Only........ B
On Ground with One External Power Unit........ C
On Ground with One External Power Unit and APU Running........ D
On Ground with Two External Power Units........ E
On Ground with Two External Power Units, and APU Running........ F
On Ground with APU Running........ G
All Engines Running........ H

DSC-24-40 Abnormal Operations

Reconfigurations Overview........ A
In Flight with Two Generators on Same Side........ B
In Flight with Two Generators on Same Side, and APU Running........ C
In Flight with Two Generators on Opposite Sides, and APU Running........ D
In Flight with One Generator running........ E
In Flight with One Generator, and APU Running........ F
SMOKE Configuration - SIDE 1&2 ISOL pb-sw........ G
EMERGENCY Configuration - BUS TIE pb-sw........ H
EMERGENCY configuration, With APU Running........ I
In Flight, ATU Failure........ J
In Flight, TR Failure........ K

Localization Title	Toc Index	ID	Reason
DSC-24-20 EXT 1(2) pb	G	1	Correction of a typo error.

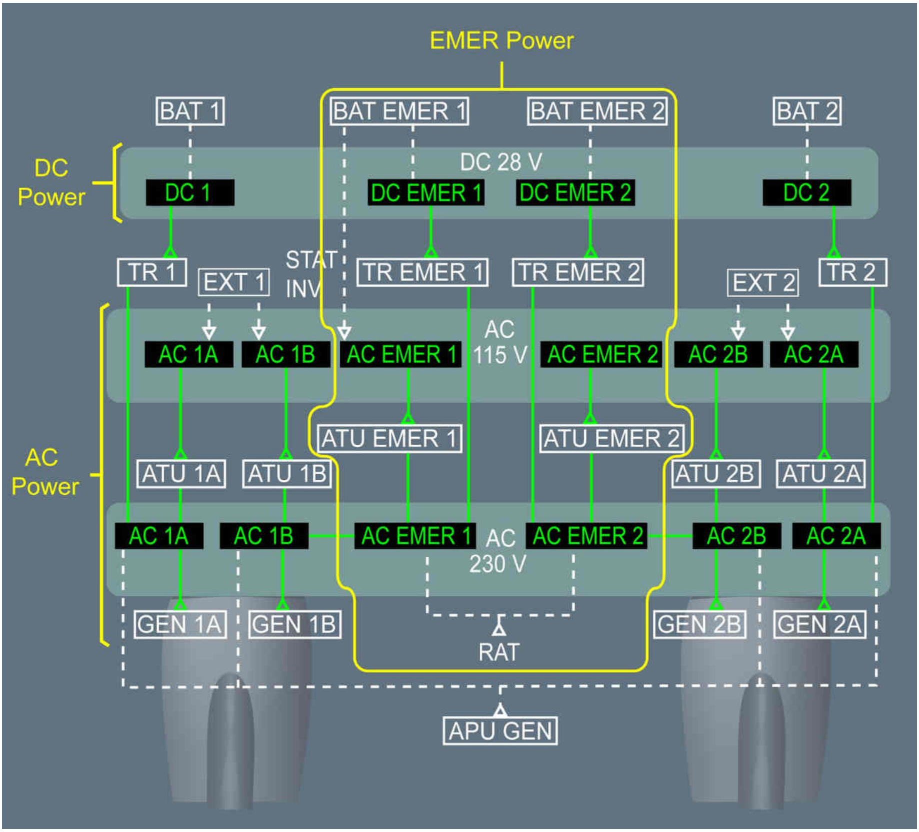
Intentionally left blank

OVERVIEW

Ident.: DSC-24-10-10-00001783.0001001 / 03 SEP 15
Applicable to: ALL

The electrical system generates and provides electrical power to all applicable aircraft systems.

General


EMER Power
BAT 1
BAT EMER 1
BAT EMER 2
BAT 2
DC Power
DC 28 V
DC 1
DC EMER 1
DC EMER 2
DC 2
TR 1
EXT 1
STAT INV
TR EMER 1
TR EMER 2
EXT 2
TR 2
AC 115 V
AC 1A
AC 1B
AC EMER 1
AC EMER 2
AC 2B
AC 2A
ATU EMER 1
ATU EMER 2
AC Power
ATU 1A
ATU 1B
ATU 2B
ATU 2A
AC 1A
AC 1B
AC EMER 1
AC 230 V
AC EMER 2
AC 2B
AC 2A
GEN 1A
GEN 1B
RAT
GEN 2B
GEN 2A
APU GEN

AC POWER

Four engine generators (GEN 1A, GEN 1B, GEN 2B, and GEN 2A) and one APU generator (APU GEN) can provide AC 230 V power.
Two external power units (EXT 1, EXT 2) can provide AC 115 V power.

The normal AC electrical system has four Auto Transformer Units (ATU 1A, ATU 1B, ATU 2B, and ATU 2A). Each of these four ATUs converts:

- AC 115 V power into AC 230 V when the associated power source is an external power unit
- AC 230 V power into AC 115 V when the associated power source is an engine generator or the APU generator.

L2 For more information, *Refer to DSC-24-10-20 Overview*.

L1 DC POWER

Two Transformer Rectifiers (TR 1 and TR 2) provide Direct Current (DC) 28 V power from AC 230 V power.
Two emergency transformer rectifiers (TR EMER 1 and TR EMER 2) provide some DC 28 V power from AC 230 V power (AC EMER 1 and AC EMER 2).
In the event that AC power is not available, four batteries can also provide DC power (BAT 1, BAT 2, BAT EMER 1, and BAT EMER 2).

L2 For more information, *Refer to DSC-24-10-30 Overview*.

L1 EMER POWER

In emergency configuration:

- The RAT provide AC 230 V power
- Two emergency transformer units (ATU EMER 1, ATU EMER 2) provide AC 115 V power from AC 230 V power
- One DC Static Inverter (STAT INV) can also provide some AC 115 V power from DC 28 V power.

L2 For more information, *Refer to DSC-24-10-40 Static Inverter*.

L1 ELECTRICAL NETWORKS AND SUPPLY CENTERS

Electrical power is provided to:

- The normal AC and DC networks via:
  - 4 AC 115 V normal busbars (AC 1A, AC 1B, AC 2B, and AC 2A)
  - 4 AC 230 V normal busbars (AC 1A, AC 1B, AC 2B, and AC 2A)
  - 2 DC 28 V normal busbars (DC 1 and DC 2).
- The emergency AC and DC networks via:
  - 2 AC 115 V emergency busbars (AC EMER 1, and AC EMER 2)
  - 2 AC 230 V emergency busbars (AC EMER 1, and AC EMER 2)
  - 2 DC 28 V emergency busbars (DC EMER 1, and DC EMER 2).

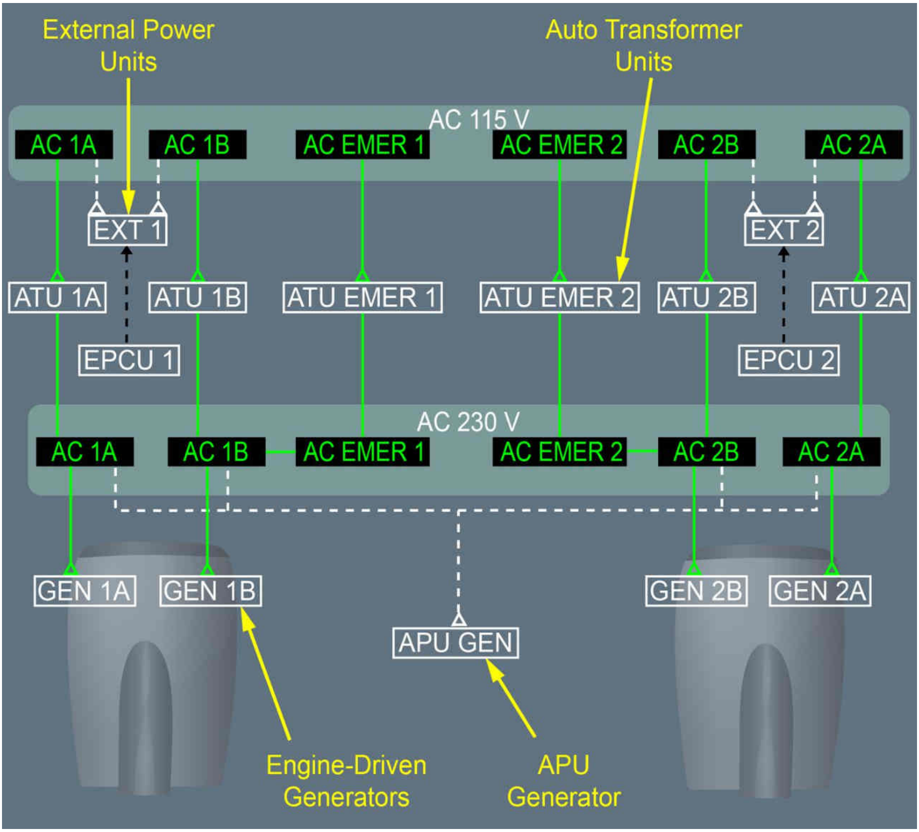
L2 For more information, *Refer to DSC-24-10-50 Normal Network*.

AC GENERATION

Applicable to: ALL

Ident.: DSC-24-10-20-10-00012303.0001001 / 08 JUL 19

AC Generation


External Power Units
Auto Transformer Units
AC 115 V
AC 1A
AC 1B
AC EMER 1
AC EMER 2
AC 2B
AC 2A
EXT 1
EXT 2
ATU 1A
ATU 1B
ATU EMER 1
ATU EMER 2
ATU 2B
ATU 2A
EPCU 1
EPCU 2
AC 230 V
AC 1A
AC 1B
AC EMER 1
AC EMER 2
AC 2B
AC 2A
GEN 1A
GEN 1B
GEN 2B
GEN 2A
APU GEN
Engine-Driven Generators
APU Generator

Ident.: DSC-24-10-20-10-00001785.0001001 / 28 APR 14

ENGINE-DRIVEN GENERATORS

Each engine has two generators. These engine-driven generators are the primary sources of electrical power during normal operations. When an engine is running, its generators provide AC 230 V power at variable frequency.

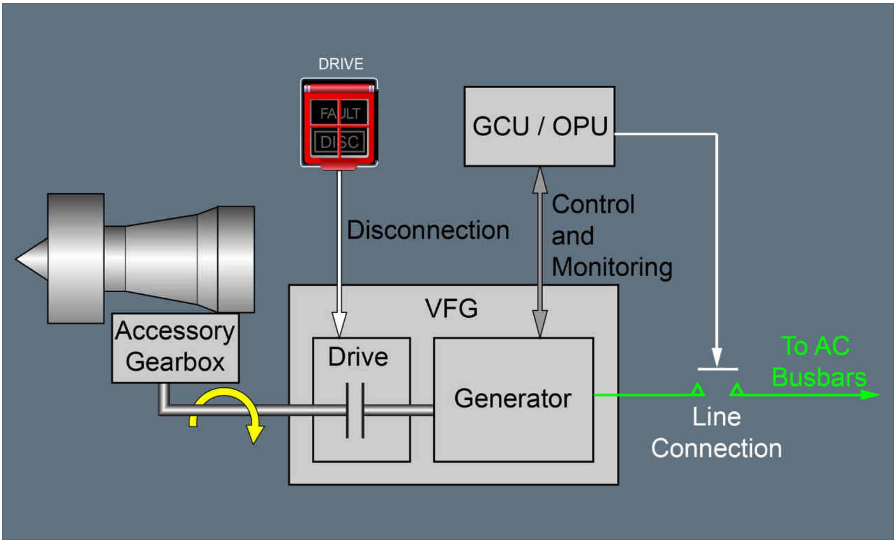
L3 This frequency ranges from 390 Hz to 800 Hz, depending on the N3 rotation speed of the engine.

An internal oil system lubricates and cools the engine generators.

L1 Each engine generator supplies AC power to its assigned AC busbar (e.g. GEN 1A supplies AC 1A).

L2 Each engine generator can supply up to 100 KVA.
There is one Variable Frequency Generator (VFG) and Generator Control Unit (GCU) / Overvoltage Protection Unit (OPU) per engine generator. Each GCU controls and monitors one generator.

Variable Frequency Generator


DRIVE
FAULT
DISC
GCU / OPU
Disconnection
Control
and
Monitoring
VFG
Accessory
Gearbox
Drive
Generator
To AC
Busbars
Line
Connection

L3 The GCU:
- Monitors the frequency of the generator
- Controls the voltage of the generator
- Detects the generator overloads
- Detects the oil low pressure and oil overtemperature.

The GCU transmits those informations to the ECAM as necessary.
The OPU is a redundant overvoltage protection.
The flight crew can manually disconnect the generator from the engine by the guarded DISC pb.

L2 For more information on the DISC pb, *Refer to DSC-24-20 DRIVE 1A(1B)(2B)(2A) pb*.

Ident.: DSC-24-10-20-10-00001786.0001001 / 03 DEC 15

APU GENERATOR

The APU is connected to one APU S/G. This equipment can be used either as a starter or as a generator. The generator provides AC 230 V power at a constant frequency of 400 Hz.

The APU generator can replace the function of any engine generator, on ground and in flight, in the operational envelope of the APU:
- On ground, the APU generator is able to supply the entire aircraft network
- In flight, the APU generator can replace up to 2 engine generators
  L2 For more information *Refer to DSC-24-40 In Flight with Two Generators on Same Side, and APU Running* and *Refer to DSC-24-40 In Flight with Two Generators on Opposite Side, and APU Running*.
- L1 In flight, if the entire normal AC network (AC 1A, AC 1B, AC 2B, and AC 2A busbars) is lost, the RAT will be deployed to recover the complete emergency AC network and the following rule is applicable for the APU:
  - In the case of an all engine failure (e.g. all engine flameout), the APU will automatically start and supply only side 1 (AC 1A and AC 1B busbars), or
  - In the case of failure of all engine generators (e.g. EMER ELEC configuration), the APU start must be considered and if available, the APU supply only side 1 (AC 1A and AC 1B busbars).

L2 For more information on the electrical configuration with the APU only, *Refer to DSC-24-30 On Ground with APU Running*.
The APU generator can supply up to 150 KVA on ground, and 100 KVA in flight.

The APU has one Starter Generator Control Unit (SGCU). The SGCU:
- Controls the frequency and voltage of the generator
- Detects the APU generator overloads.
  For more information, *Refer to DSC-49-10 APU Starter Generator System*.

Ident.: DSC-24-10-20-10-00013614.0001001 / 28 APR 14

AUTO TRANSFORMER UNITS

In normal operation, the Auto Transformer Units (ATUs) supply the AC 115 V network with power coming from the AC 230 V network.
The ATUs can also supply the AC 230 V network from the AC 115 V power in some configuration (e.g. power supply from external power unit in AC 115 V).

There are 6 ATUs:
- ATU 1A,
  L2 Transforms power from the AC 1A 230 V busbar to the AC 1A 115 V busbar
- L1 ATU 1B,
  L2 Transforms power from the AC 1B 230 V busbar to the AC 1B 115 V busbar

L1 - ATU EMER 1,
L2 Transforms power from the AC EMER 1 230 V busbar to the AC EMER 1 115 V busbar
L1 - ATU EMER 2,
L2 Transforms power from the AC EMER 2 230 V busbar to the AC EMER 2 115 V busbar
L1 - ATU 2B,
L2 Transforms power from the AC 2B 230 V busbar to the AC 2B 115 V busbar
L1 - ATU 2A.
L2 Transforms power from the AC 2A 230 V busbar to the AC 2A 115 V busbar.

Ident.: DSC-24-10-20-10-00001787.0001001 / 28 APR 14

EXTERNAL POWER UNITS

On ground, it is possible to connect as many as two external power units (EXT 1 and EXT 2).
One external power unit is sufficient to supply the entire aircraft network, but depending on the demand, some loads may be shed.

L2 The external power units supply the aircraft by providing AC 115 V power at a constant frequency of 400 Hz. Each external power unit can supply up to 90 KVA.
There is one External Power Control Unit (EPCU) per external power unit.

L3 The EPCU:
- Controls the frequency and voltage from the external power unit
  If the external power unit supplies more than 90 KVA, the EPCU automatically limits the power supply of the external power unit to 90 KVA
- Detects the external power unit overloads.

L1 GROUND SERVICING

Electrical power is available on ground to supply the ground service devices (e.g. cargo loading, cleaning, servicing, lighting).
In this configuration, the emergency electrical network is not power supplied, and only a part of the normal network used for ground operation is supplied.

In this configuration, the external power unit supplies only the following loads:
- Cabin and cockpit lighting
- Hydraulic compartment lighting
- Cargo compartment lighting and power outlets
- Landing gear compartment lighting and servicing power outlets
- Equipment compartment lighting and servicing power outlets
- Vacuum cleaner power outlets
- Cockpit servicing power outlets
- Fuel quantity indicators
- Navigation lights

- Parking brake
- Cargo door pumps.

L2 For more information, *Refer to DSC-24-20 Ground Service Control Panel*.

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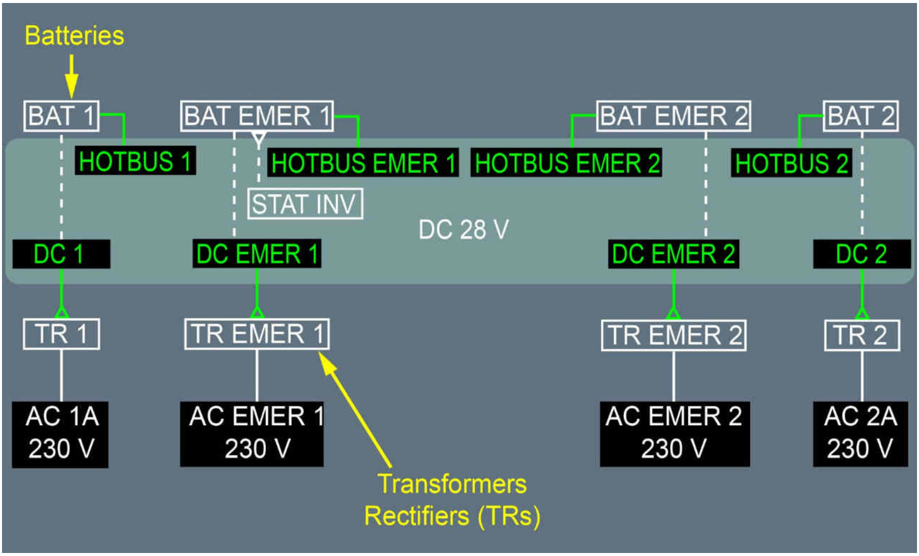
DC GENERATION

Ident.: DSC-24-10-30-10-00001788.0001001 / 28 APR 14
Applicable to: ALL

DC Generation


Batteries
BAT 1
BAT EMER 1
BAT EMER 2
BAT 2
HOTBUS 1
HOTBUS EMER 1
HOTBUS EMER 2
HOTBUS 2
STAT INV
DC 28 V
DC 1
DC EMER 1
DC EMER 2
DC 2
TR 1
TR EMER 1
TR EMER 2
TR 2
AC 1A 230 V
AC EMER 1 230 V
AC EMER 2 230 V
AC 2A 230 V
Transformers Rectifiers (TRs)

Ident.: DSC-24-10-30-10-00001789.0002001 / 21 DEC 15
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD

BATTERIES

The aim of the batteries is to provide DC 28 V electrical power to the aircraft:
- On ground, or
- When no AC power is available, or
- In flight in emergency conditions.

L2 Each battery has a capacity of 55 Ah.

L1 The batteries are not to be considered as the primary power source for DC network supply.

L2 Their essential purpose is:
- To ensure the No Break Power Transfer (NBPT) function
- To start the APU when no AC power is available
- Energize the DC network for specific ground operations with batteries only (refuel, maintenance, and towing).
  For more information, *Refer to DSC-24-30 On Ground with Batteries Only*.

L1 Batteries are connected to the DC network supplied by a transformer rectifier for charge.

The aircraft has four batteries:
- BAT 1
  L2 Supplies the DC 1 busbar
  L3 BAT 1 is permanently connected to HOTBUS 1.
- L1 BAT 2
  L2 Supplies the DC 2 busbar
  L3 BAT 2 is permanently connected to HOTBUS 2.
- L1 BAT EMER 1
  L2 Supplies the DC EMER 1 busbar
  L3 BAT EMER 1 is permanently connected to HOTBUS EMER 1.
- L1 BAT EMER 2.
  L2 Supplies the DC EMER 2 busbar.
  L3 BAT EMER 2 is permanently connected to HOTBUS EMER 2.

The systems connected to the HOTBUS bars remain supplied by their associated batteries even if the BAT pb is set to OFF.

L1 The charging, monitoring function and the interface with the aircraft are included directly in the battery.
In normal operation, BAT 1, BAT 2, BAT EMER 1, and BAT EMER 2 respectively connect to DC 1, DC 2, DC EMER 1, and DC EMER 2 busbars.

L2 NO BREAK POWER TRANSFER (NBPT)

If AC power is not available (TR 1 and TR 2 not operative), or during any source transfer, the DC 1 and DC 2 busbars are automatically connected to their corresponding batteries. As a result, the DC network is a No Break Power Transfer (NBPT) network.
The NBPT prevents busbar power interruption during source transfer. It is available on ground and in flight.

L3 The NBPT function only applies to the DC network, to which most avionics systems and all display units, are connected.

Ident.: DSC-24-10-30-10-00001789.0001001 / 28 APR 14
Applicable to: ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB

BATTERIES

The aim of the batteries is to provide DC 28 V electrical power to the aircraft:
- On ground, or
- When no AC power is available, or
- In flight in emergency conditions.

L2 Each battery has a capacity of 50 Ah.
L1 The batteries are not to be considered as the primary power source for DC network supply.

L2 Their essential purpose is:
- To ensure the No Break Power Transfer (NBPT) function
- To start the APU when no AC power is available
- Energize the DC network for specific ground operations with batteries only (refuel, maintenance, and towing).
  For more information, *Refer to DSC-24-30 On Ground with Batteries Only*.

L1 Batteries are connected to the DC network supplied by a transformer rectifier for charge.

The aircraft has four batteries:
- BAT 1
  L2 Supplies the DC 1 busbar
  L3 BAT 1 is permanently connected to HOTBUS 1.
- L1 BAT 2
  L2 Supplies the DC 2 busbar
  L3 BAT 2 is permanently connected to HOTBUS 2.
- L1 BAT EMER 1
  L2 Supplies the DC EMER 1 busbar
  L3 BAT EMER 1 is permanently connected to HOTBUS EMER 1.
- L1 BAT EMER 2.
  L2 Supplies the DC EMER 2 busbar.
  L3 BAT EMER 2 is permanently connected to HOTBUS EMER 2.

The systems connected to the HOTBUS bars remain supplied by their associated batteries even if the BAT pb is set to OFF.
L1 The charging, monitoring function and the interface with the aircraft are included directly in the battery.
In normal operation, BAT 1, BAT 2, BAT EMER 1, and BAT EMER 2 respectively connect to DC 1, DC 2, DC EMER 1, and DC EMER 2 busbars.

L2 NO BREAK POWER TRANSFER (NBPT)

If AC power is not available (TR 1 and TR 2 not operative), or during any source transfer, the DC 1 and DC 2 busbars are automatically connected to their corresponding batteries. As a result, the DC network is a No Break Power Transfer (NBPT) network.
The NBPT prevents busbar power interruption during source transfer. It is available on ground and in flight.

L3 The NBPT function only applies to the DC network, to which most avionics systems and all display units, are connected.

Ident.: DSC-24-10-30-10-00001790.0001001 / 28 APR 14
Applicable to: ALL

TRANSFORMER RECTIFIERS (TRS)

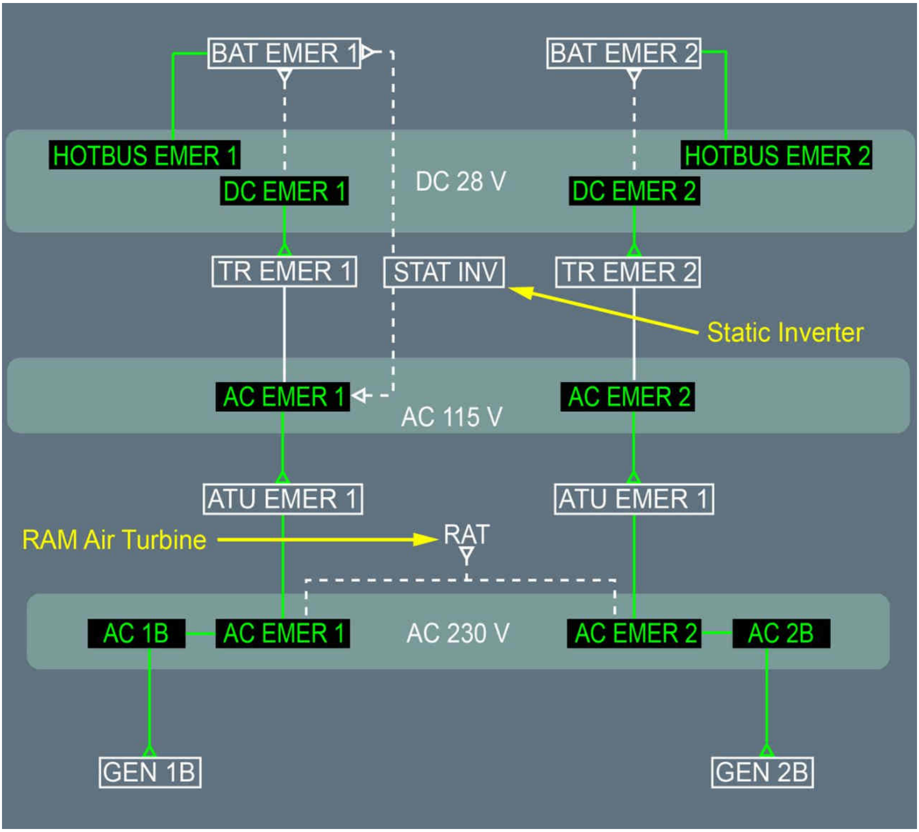
The Transformer Rectifiers (TRs) supply the DC network with a DC 28 V power from the AC 230 V power.

There are 4 TRs:
- TR 1
  L2 Transforms power from the AC 1A 230 V busbar, to supply the DC 1 busbar
- L1 TR EMER 1
  L2 Transforms power from the AC EMER 1 230 V busbar, to supply the DC EMER 1 busbar
- L1 TR EMER 2
  L2 Transforms power from the AC EMER 2 230 V busbar, to supply the DC EMER 2 busbar
- L1 TR 2
  L2 Transforms power from the AC 2A 230 V busbar, to supply the DC 2 busbar.

EMERGENCY GENERATION

Ident.: DSC-24-10-40-10-00013540.0001001 / 28 APR 14
Applicable to: ALL

Emergency Generation


BAT EMER 1
BAT EMER 2
HOTBUS EMER 1
HOTBUS EMER 2
DC EMER 1
DC 28 V
DC EMER 2
TR EMER 1
STAT INV
TR EMER 2
Static Inverter
AC EMER 1
AC 115 V
AC EMER 2
ATU EMER 1
ATU EMER 1
RAM Air Turbine
RAT
AC 1B
AC EMER 1
AC 230 V
AC EMER 2
AC 2B
GEN 1B
GEN 2B

In the normal configuration, the AC 1B 230 V and AC 2B 230 V busbars respectively supply the AC EMER 1 230 V and AC EMER 2 230 V busbars.

The 230 V power is converted to:
- AC 115 V power by the ATU EMER 1 and ATU EMER 2
- DC 28 V on the DC EMER 1 and DC EMER 2 by the TR EMER 1 and TR EMER 2.

Ident.: DSC-24-10-40-10-00001791.0001001 / 02 APR 15
Applicable to: ALL

STATIC INVERTER

The static inverter powers the AC EMER 1 115 V busbar in the following cases:

- During RAT extension
- After landing with the RAT extended (emergency configuration), when the aircraft speed is less than 140 kt
- On ground during maintenance on batteries operations,
  L2 For more information on the maintenance on batteries configuration, *Refer to DSC-24-30 On Ground with Batteries Only*.
- L1 On ground, when no AC power source is available.

The static inverter transforms DC power from BAT EMER 1 into AC 115 V power at a constant frequency of 400 Hz.

Ident.: DSC-24-10-40-10-00013541.0003001 / 29 MAR 17
Applicable to: ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB

RAM AIR TURBINE (RAT)

If the AC 1A, AC 1B, AC 2B, and AC 2A busbars are lost in flight, the RAT extends automatically, and mechanically drives the emergency generator. This emergency generator supplies the AC EMER 1 and AC EMER 2 busbars with AC 230 V power at a variable frequency.
L3 This frequency ranges from 360 Hz to 800 Hz, depending on the rotation speed of the RAT.
L1 The emergency generator can supply all the electrical loads that are necessary for the remainder of the flight and for landing.
L2 For more information on the emergency configuration of the electrical system, *Refer to DSC-24-40 EMERGENCY configuration, With APU Running*.
The RAT is on the right hand side of the aft belly fairing, and supplies power, when the aircraft speed is 140 kt or above.
The RAT Generator Control Unit (GCU) monitors and controls the RAT.

L3 The RAT GCU:

- Monitors the frequency of the emergency generator
- Controls the extension of the RAT
- Controls the output voltage of the emergency generator.

Ident.: DSC-24-10-40-10-00013541.0001001 / 01 MAR 17
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD

RAM AIR TURBINE (RAT)

If the AC 1A, AC 1B, AC 2B, and AC 2A busbars are lost in flight, the RAT extends automatically, and mechanically drives the emergency generator. This emergency generator supplies the AC EMER 1 and AC EMER 2 busbars with AC 230 V power at a variable frequency.

L3 This frequency ranges from 360 Hz to 800 Hz, depending on the rotation speed of the RAT.

L1 The emergency generator can supply all the electrical loads that are necessary for the remainder of the flight and for landing.

L2 For more information on the emergency configuration of the electrical system, *Refer to DSC-24-40 EMERGENCY configuration, With APU Running*.
The emergency batteries are not charged when the RAT is extended.
The RAT is on the right hand side of the aft belly fairing, and supplies power, when the aircraft speed is 140 kt or above.
The RAT Generator Control Unit (GCU) monitors and controls the RAT.

L3 The RAT GCU:
- Monitors the frequency of the emergency generator
- Controls the extension of the RAT
- Controls the output voltage of the emergency generator.

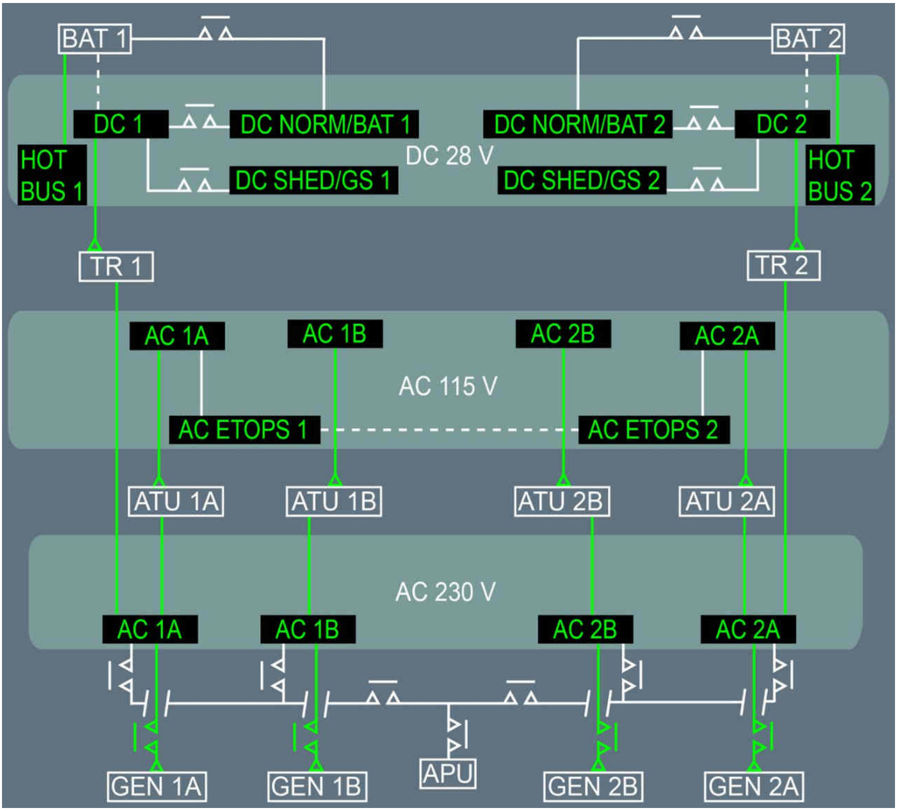
Intentionally left blank

ELECTRICAL NETWORKS

Applicable to: ALL

Ident.: DSC-24-10-50-10-00001792.0001001 / 02 OCT 14

NORMAL NETWORK


BAT 1
BAT 2
DC 1
DC NORM/BAT 1
DC NORM/BAT 2
DC 2
HOT BUS 1
DC 28 V
HOT BUS 2
DC SHED/GS 1
DC SHED/GS 2
TR 1
TR 2
AC 1A
AC 1B
AC 2B
AC 2A
AC 115 V
AC ETOPS 1
AC ETOPS 2
ATU 1A
ATU 1B
ATU 2B
ATU 2A
AC 230 V
AC 1A
AC 1B
AC 2B
AC 2A
APU
GEN 1A
GEN 1B
GEN 2B
GEN 2A

Normal Network

Each engine generator connects to the electrical network via its assigned contactor.
The normal network is supplied via 8 AC busbars: AC 1A, AC 1B, AC 2B, and AC 2A, (four in AC 115 V and four in AC 230 V).

ETOPS 1(2) BUSBARS

The ETOPS 1 and ETOPS 2 busbars supply loads mandatory for ETOPS flights but not mandatory in emergency configuration. The AC 1A 115 V and 2A 115 V busbars supply the ETOPS busbars.
As soon as three engine generators are lost in flight (one side lost), the ETOPS busbar not power supplied is automatically supplied by the offside ETOPS busbar.

L2

DC SHED/GS 1(2)

The DC SHED/GS 1 and DC SHED/GS 2 busbars avoid supplying DC 28 V power loads that are not used during ground servicing. In all other configurations, those busbars are powered by the DC 1 and DC 2 busbars.

DC NORM/BAT 1(2)

The DC NORM/BAT 1 and DC NORM/BAT 2 busbars are used to supply DC 28 V power by the normal batteries for all load used during specific modes on ground (e.g. "refuel on batteries" or "towing on batteries"). In all other configurations, those busbars are powered by the DC 1 and DC 2 busbars.
For more information, *Refer to DSC-24-30 On Ground with Batteries Only*.

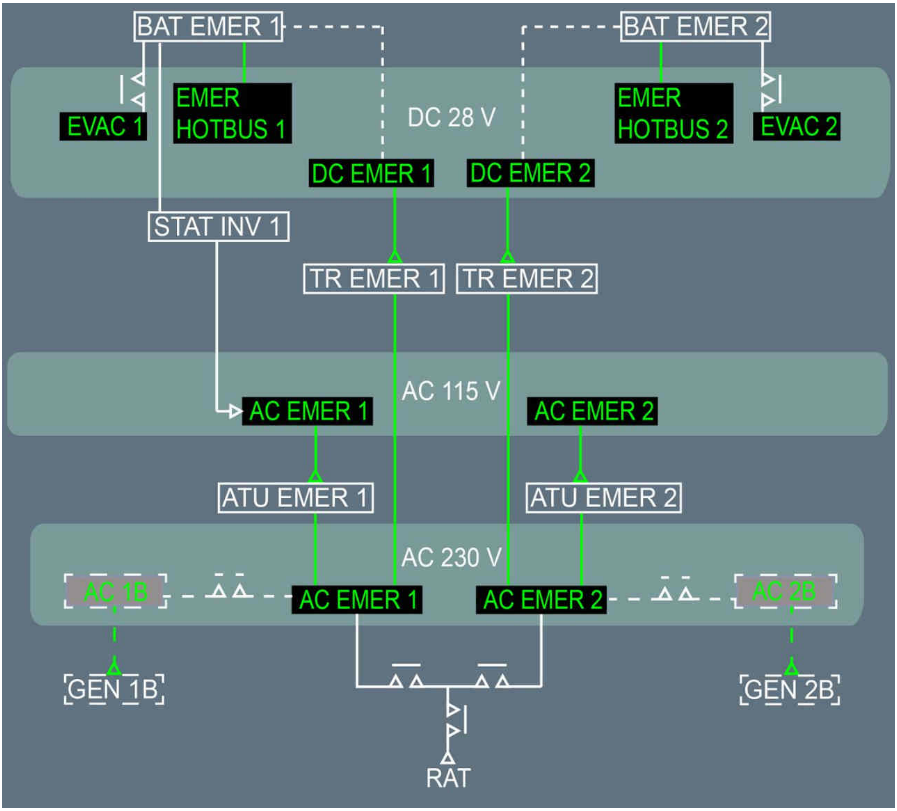
HOTBUS

The HOTBUS bars enable to power supply some equipments by the battery, even if the corresponding BAT pb on the overhead panel is set to OFF.
In this case, the corresponding DC busbar is not power supplied.

Ident.: DSC-24-10-50-10-00001794.0001001 / 28 APR 14

EMERGENCY NETWORK

Emergency Network


BAT EMER 1
BAT EMER 2
EVAC 1
EMER HOTBUS 1
DC 28 V
EMER HOTBUS 2
EVAC 2
DC EMER 1
DC EMER 2
STAT INV 1
TR EMER 1
TR EMER 2
AC 115 V
AC EMER 1
AC EMER 2
ATU EMER 1
ATU EMER 2
AC 230 V
AC 1B
AC EMER 1
AC EMER 2
AC 2B
GEN 1B
GEN 2B
RAT

The emergency network is supplied:
- Via the AC 1B busbar, and
- Via the AC 2B busbar, or
- Directly from the RAT, if the AC 1A, AC 1B, AC 2B, and AC 2A busbars are lost.

L2 Even if there is another main power source (with APU running or engine restart), the RAT always and only power supplies the EMER busbars.

L3 As soon as RAT power is available, the EMER busbars are disconnected from normal AC power supply, and connected to the RAT power supply.

L1 If either AC 1B or AC 2B busbars is lost, the corresponding EMER busbar will be automatically supplied by the opposite side EMER busbar.

L2

EVAC

The DC EVAC 1 and DC EVAC 2 busbars supply power to the CIDS as soon as the EMER EXIT LT sw is set to ARM or ON position. This setting enables BAT EMER 1 and BAT EMER 2 to power the CIDS during an emergency evacuation when all BAT pb are set to OFF.

HOTBUS

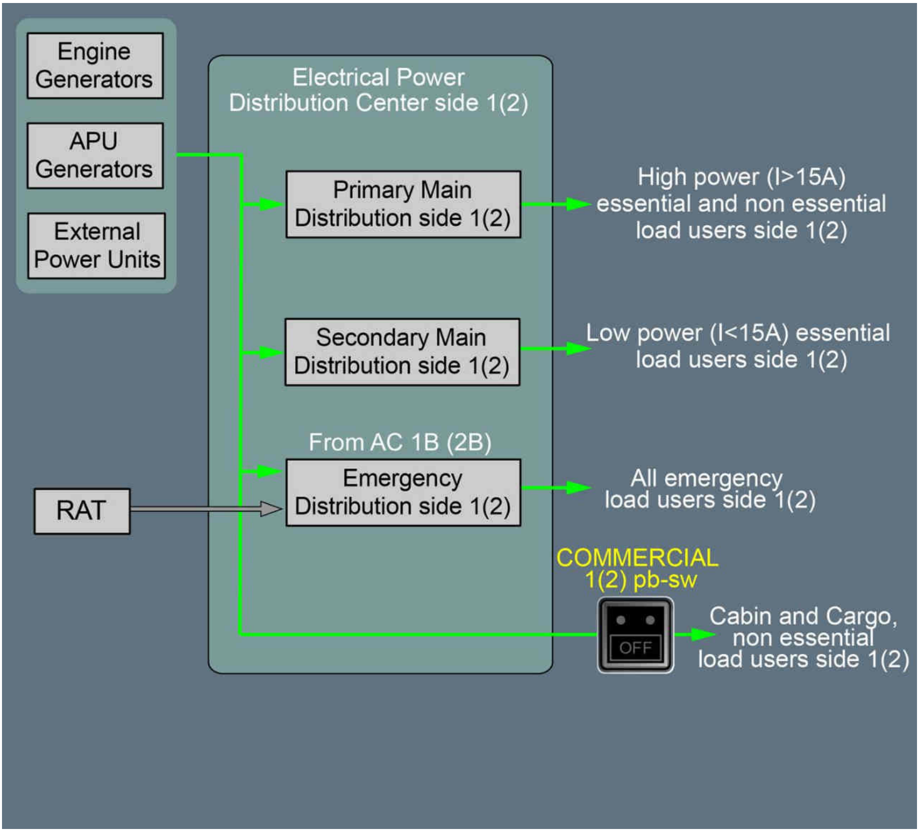
The HOTBUS bars enable to power supply some equipments by the battery, even if the corresponding BAT pb on the overhead panel is set to OFF.
In this case, the corresponding DC busbar is not power supplied.

POWER CENTERS

Applicable to: ALL

Ident.: DSC-24-10-50-20-00001793.0001001 / 28 APR 14

Electrical Power Distribution System


Engine Generators
APU Generators
External Power Units
RAT
Electrical Power Distribution Center side 1(2)
Primary Main Distribution side 1(2)
Secondary Main Distribution side 1(2)
From AC 1B (2B)
Emergency Distribution side 1(2)
High power (I>15A) essential and non essential load users side 1(2)
Low power (I<15A) essential load users side 1(2)
All emergency load users side 1(2)
COMMERCIAL 1(2) pb-sw
OFF
Cabin and Cargo, non essential load users side 1(2)

The aircraft systems are supplied via the Electrical Power Distribution System (EPDS).
The EPDS has two Electrical Power Distribution Centers (EPDC), one for each side.

The main functions of the EPDC are:

- Electrical Network Management Function (ENMF): Management of the connection/disconnection of the power sources and control of the contactors to reconfigure the network
- Electrical Load Management Function (ELMF): Optimization of the load on the power sources availability.
- L2 Circuit Breaker Monitoring Function (CBMF): To monitor and store the status of each circuit breaker
- Power Distribution Maintenance Function (PDMF): Provides the maintenance operators with a secured access to the normal distribution centers.
- L3 Monitoring and protection of the ATU and of the external power unit.

L1 Each EPDC supplies power to the busbars located on the following distribution systems:

- The Primary Main Distribution: To supply electricity to all high load users (more than 15 A) of the normal network

  L2 The Primary Main Distribution supplies AC 230 V, AC 115 V, and DC 28 V power to the normal network
- L1 The Secondary Main Distribution: To supply electricity to essential low load users (less than, or equal to 15 A) of the normal network

  L2 The Secondary Distribution supplies AC 115 V, and DC 28 V power to the normal network
- L1 The Emergency Distribution: To supply electricity for all emergency loads

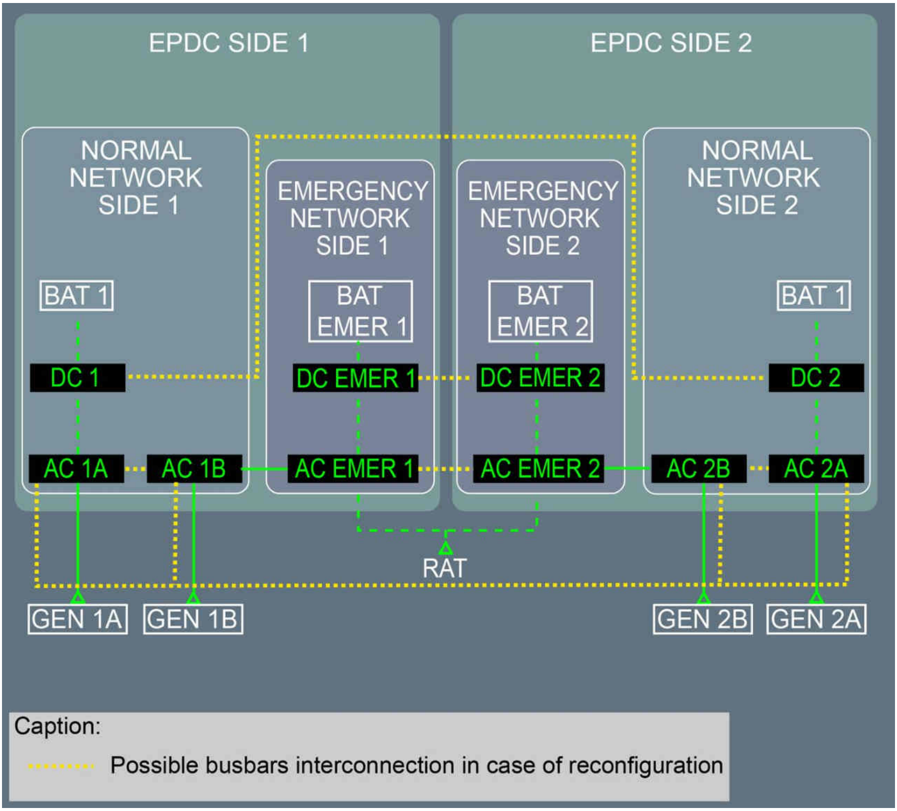
  L2 The Emergency Distribution supplies AC 230 V, AC 115 V, and DC 28 V power to the emergency network
- L1 The cabin and cargo non-essentials loads.

  L2 The EPDC supplies AC 230 V, AC 115 V, and DC 28 V power to the cabin and cargo non-essential network. The power supply can be disconnected by the COMMERCIAL 1(2) pb-sw.

Ident.: DSC-24-10-50-20-00013489.0001001 / 28 APR 14

EPDC STANDARD BUSBARS INTERCONNECTION

EPDC Standard Busbars Interconnection


EPDC SIDE 1
EPDC SIDE 2
NORMAL NETWORK SIDE 1
EMERGENCY NETWORK SIDE 1
EMERGENCY NETWORK SIDE 2
NORMAL NETWORK SIDE 2
BAT 1
BAT EMER 1
BAT EMER 2
BAT 1
DC 1
DC EMER 1
DC EMER 2
DC 2
AC 1A
AC 1B
AC EMER 1
AC EMER 2
AC 2B
AC 2A
RAT
GEN 1A
GEN 1B
GEN 2B
GEN 2A
Caption:
Possible busbars interconnection in case of reconfiguration

The EPDC is divided into two sides, side 1 and side 2.

Each side contains:
- A NORMAL network containing the normal AC and DC busbars and the normal battery
- An EMERGENCY network containing the emergency AC and DC busbars and the emergency batteries.

The engine generators supply the normal network that supplies the emergency network.
The emergency network can be autonomously power supplied by the RAT in case of EMERGENCY configuration.

In normal configuration:
- AC 1B and AC EMER 1 are interconnected
- AC 2B and AC EMER 2 are interconnected
- The other busbars are not interconnected.

In some specific cases, automatic reconfiguration can occur, and busbars can be interconnected:
- AC 1A, AC 1B, AC 2B, and AC 2A (115 V or 230 V) can interconnect
- AC EMER 1 230 V and AC EMER 2 230 V can interconnect
- DC 1 and DC 2 busbars can interconnect
- DC EMER 1 and DC EMER 2 can interconnect.

The flight crew can also modify the configuration (e.g. SMOKE, EMER CONFIG) by using the SIDE 1&2 ISOL pb-sw or the BUS TIE pb-sw on the overhead panel.

L2 For more information on the SMOKE configuration - SIDE 1&2 ISOL pb-sw, *Refer to DSC-24-40 SMOKE configuration - SIDE 1&2 ISOL pb-sw*.
For more information on the EMERGENCY configuration - BUS TIE pb-sw, *Refer to DSC-24-40 EMERGENCY configuration - BUS TIE pb-sw*.

ELECTRICAL LOAD AND NETWORK MANAGEMENT

Ident.: DSC-24-10-60-00001796.0001001 / 28 APR 14
Applicable to: ALL

ELECTRICAL LOAD MANAGEMENT FUNCTION (ELMF)

If a generator overload occurs, the ELMF will determine the exact value of the overload and will automatically shed the necessary commercial (non-essential) electrical loads.

L2 The ELMF manages shedding of the non essential loads.

These commercial loads are:
- Galleys
- Air conditioning recirculation fans
- Supplementary cooling system
- Floor panel heating
- Water and waste ice protection
- Lavatory and cabin lights
- Water heater
- Water pump
- Seat power supply.

L1 When sufficient power is recovered, connections restore automatically.
L2 The ELMF function is hosted in the CPIOM J (J71, J72).
L3 Any commercial high or low AC load can be shed.
The ELMF uses a criteria based on consumption priority to identify which loads to reconnect.
L2 If the ELMF is inoperative or failed, the ENMF manages the overload protection.
L3 The ENMFs will perform this function, on high commercial AC loads above 15 A (e.g. galleys).

L1 ELECTRICAL NETWORK MANAGEMENT FUNCTION (ENMF)

The Electrical Network Management Function (ENMF 1 and ENMF 2) controls the electrical networks by:
- Managing the connection of AC and DC power sources
- Ensuring power supply to busbars for essential load users during electrical reconfiguration due to generator loss. In this case, the ENMF sheds the appropriate load groups before system reconfiguration.
  L2 For more information on the electrical reconfigurations, *Refer to DSC-24-40 Reconfigurations Overview*.
- L1 Shedding groups of loads in the case of generators overload.
  L2 In the case of overload of a power source, if the ELMF shedding is not sufficient, the ENMF will automatically shed groups of high consumer loads
- L1 Triggering applicable MEMO, or information message on the ELEC SD page, in the case of load shedding.

L2 The ENMF function is hosted on the EPDC.

C/B MONITORING FUNCTION

Ident.: DSC-24-10-60-00012579.0001001 / 02 OCT 14
Applicable to: ALL

C/B MONITORING FUNCTION (CBMF)

The Circuit Breaker (C/B) monitoring functions (normal and emergency) are to:

- Identify the tripped C/Bs (conventional and RCCBs) that connect loads to the electrical network
- Display these tripped C/Bs on the C/B SD page.

Two types of Circuit Breakers (C/Bs) protect the electrical networks:

- Conventional C/Bs on the normal and emergency networks

L2 Conventional C/Bs connect:

  - High loads to the normal network
  - High and low loads to the emergency network.

L1 - Remote Control C/Bs (RCCB, SSPC) that act as self monitored contactors, on the normal network.

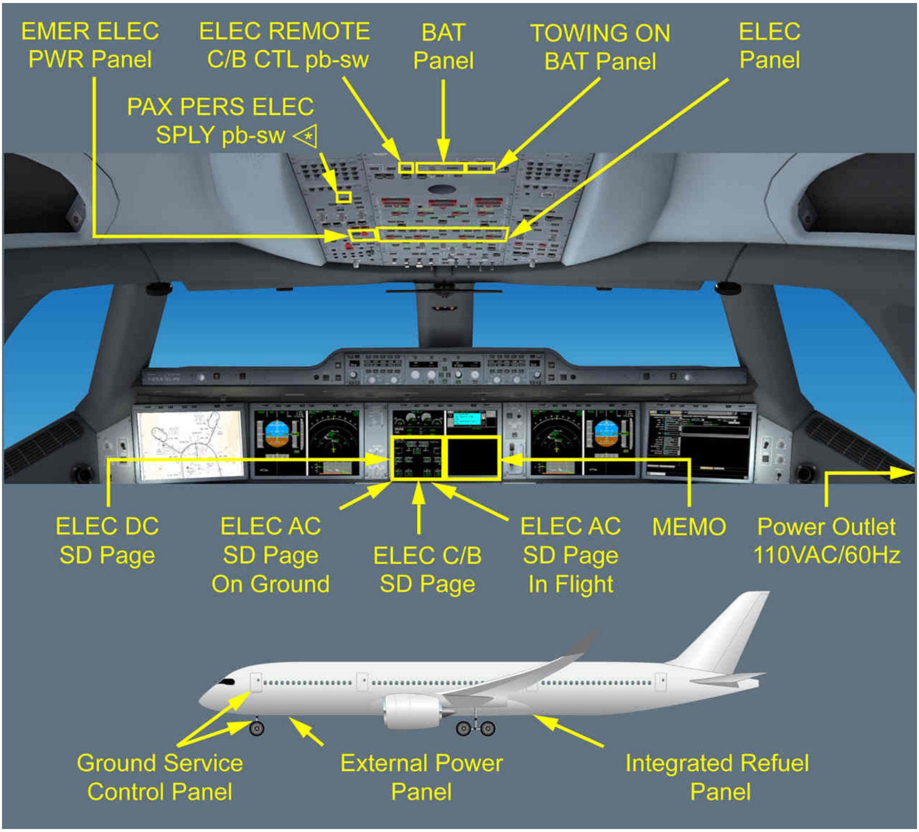
L2 RCCB connect low loads to the normal network.

L3 Low loads are on the secondary supply center or on the cabin supply centers.

COCKPIT VIEW

Ident.: DSC-24-20-00001798.0001001 / 23 OCT 17
Applicable to: ALL

Cockpit View

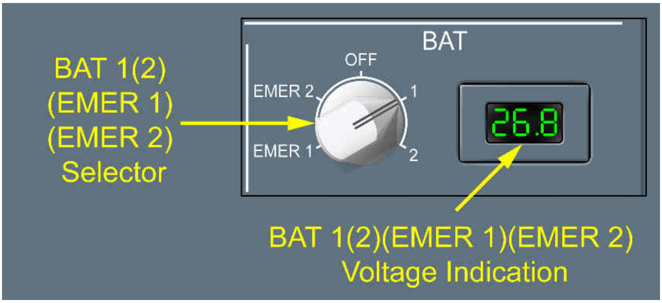

EMER ELEC
PWR Panel
ELEC REMOTE
C/B CTL pb-sw
BAT
Panel
TOWING ON
BAT Panel
ELEC
Panel
PAX PERS ELEC
SPLY pb-sw
ELEC DC
SD Page
ELEC AC
SD Page
On Ground
ELEC C/B
SD Page
ELEC AC
SD Page
In Flight
MEMO
Power Outlet
110VAC/60Hz
Ground Service
Control Panel
External Power
Panel
Integrated Refuel
Panel

BAT PANEL

Applicable to: ALL

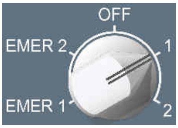
Ident.: DSC-24-20-30-00001801.0001001 / 28 APR 14

BAT Panel


BAT
OFF
EMER 2
1
EMER 1
2
26.8
BAT 1(2) (EMER 1) (EMER 2) Selector
BAT 1(2)(EMER 1)(EMER 2) Voltage Indication

Ident.: DSC-24-20-30-00001823.0001001 / 28 APR 14

BAT 1(2)(EMER 1)(EMER 2) SELECTOR


OFF
EMER 2
1
EMER 1
2

Enable to select the battery, in order to display the associated voltage.

Ident.: DSC-24-20-30-00001824.0001001 / 28 APR 14

BAT 1(2)(EMER 1)(EMER 2) VOLTAGE INDICATION

Display the voltage of the selected battery.

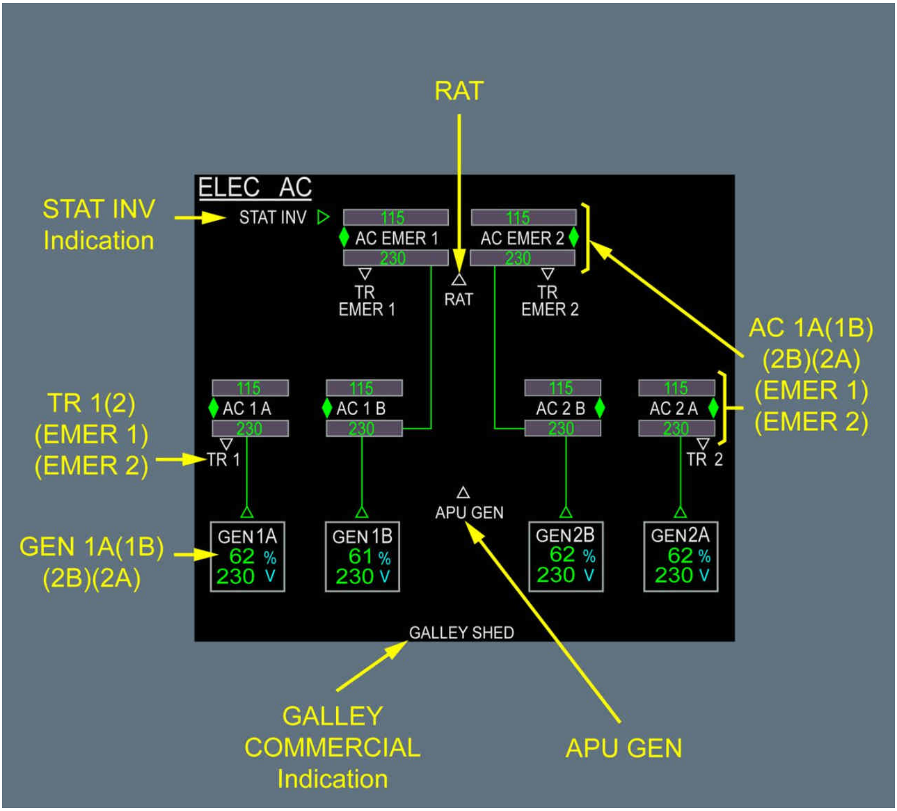
ELEC AC SD PAGE: IN-FLIGHT CONFIGURATION

Applicable to: ALL

Ident.: DSC-24-20-60-00001803.0001001 / 06 NOV 14

ELEC AC SD PAGE: IN-FLIGHT CONFIGURATION

ELEC AC System Display: In-Flight Configuration

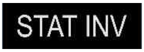

RAT
ELEC AC
STAT INV
Indication
STAT INV ▷
115
AC EMER 1
230
115
AC EMER 2
230
TR
EMER 1
RAT
TR
EMER 2
AC 1A(1B)
(2B)(2A)
(EMER 1)
(EMER 2)
TR 1(2)
(EMER 1)
(EMER 2)
115
AC 1 A
230
115
AC 1 B
230
115
AC 2 B
230
115
AC 2 A
230
TR 1
TR 2
APU GEN
GEN 1A(1B)
(2B)(2A)
GEN 1A
62 %
230 V
GEN 1B
61 %
230 V
GEN 2B
62 %
230 V
GEN 2A
62 %
230 V
GALLEY SHED
GALLEY
COMMERCIAL
Indication
APU GEN

Ident.: DSC-24-20-60-00001828.0001001 / 06 NOV 14

STAT INV

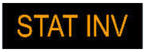
	When there is no display, the static inverter is on standby.
STAT INV ▷	The static inverter is in operation.

STAT INV INDICATION



The static inverter operates normally.

L12



The static inverter is failed.
Associated with the following ECAM alert: ELEC STATIC INV FAULT - *Refer to procedure*.

GENERATOR CONTACTOR

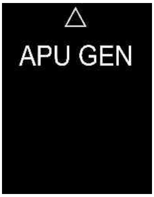
▷ The static inverter is connected to the AC EMER busbar.

▷ The static inverter contactor is failed: The static inverter is no longer connected to the AC EMER busbar.

Ident.: DSC-24-20-60-00001830.0001001 / 03 DEC 15

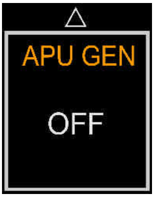
APU GEN

APU GEN ON STANDBY



The APU generator is on standby: The APU is off.

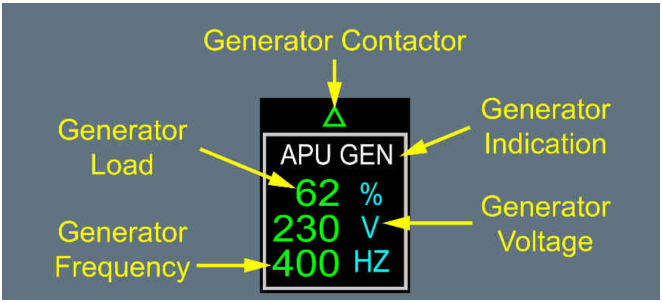
APU GEN SET TO OFF



The APU MASTER sw is set to ON, or the APU autostart is operative.
The generator contactor is not connected to the electrical network.

APU GEN IN OPERATION

APU GEN In Operation


Generator Contactor
Generator Load
Generator Indication
Generator Voltage
Generator Frequency
APU GEN
62 %
230 V
400 HZ

Generator Contactor

△	The APU generator supplies electrical power to the electrical network.
△	The APU generator is not connected to the electrical network.

Generator Indication

APU GEN	Normal operation.
APU GEN	The APU generator is failed.

Generator Load

L12	90 %	The APU generator load is normal. The load is normal, when it is less than 120 %.
L12	125 %	There is an overload on the APU generator. The load is above 120 % for more than 5 min or above 160 % for more than 5 s.

Generator Voltage

L12	230 V	The APU generator voltage is normal. The voltage is normal between 230 V and 240 V.

200 V	The APU generator voltage is abnormal.

Generator Frequency

L12

400 HZ	The APU generator frequency is normal. The frequency is between 385 Hz and 418 Hz.
380 HZ	The APU generator frequency is abnormal.

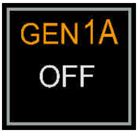
Ident.: DSC-24-20-60-00001831.0001001 / 28 APR 14

GALLEY/COMMERCIAL SHEDDING INDICATION

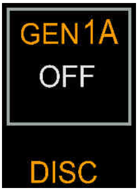
COMMERCIAL OFF	All commercial loads are shed.
GALLEY SHED	All galley loads are shed.
COMMERCIAL PARTLY SHED	Some commercial loads are shed.
GALLEY PARTLY SHED	Some galley loads are shed.

Ident.: DSC-24-20-60-00001832.0001001 / 28 APR 17

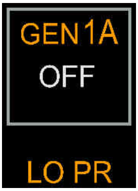
GEN 1A(1B)(2B)(2A)



The engine generator is off.

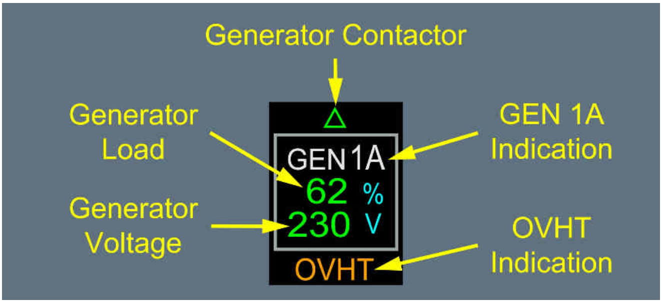


The engine generator is disconnected from the engine.

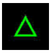


A low oil pressure is detected in the generator.

GEN 1A(1B)(2B)(2A) In Operation

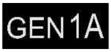

Generator Contactor
Generator Load
Generator Voltage
GEN 1A Indication
OVHT Indication
GEN1A
62 %
230 V
OVHT

GENERATOR CONTACTOR



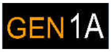
The engine generator is connected to the electrical network.

GEN 1A INDICATION

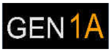


Normal operation.

L12



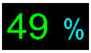
The generator is off or failed.
Associated with the following ECAM alert: ELEC GEN 1A(1B)(2B)(2A) FAULT - *Refer to procedure*.



The assigned engine is not running.

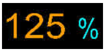
GENERATOR LOAD

L12



The engine generator load is normal.
The load is normal, when it is less than 120 %.

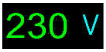
L12



There is an overload on the engine generator.
The load is above 120 % for more than 5 min or above 160 % for more than 5 s.

GENERATOR VOLTAGE

L12



The engine generator voltage is normal.
The voltage is normal between 230 V and 240 V.

245 V	The engine generator voltage is abnormal.

OVHT INDICATION

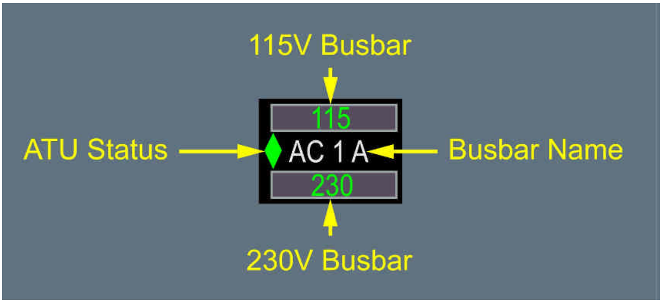
L13

OVHT	The engine generator is overheated. The temperature is above 199 °C.

Ident.: DSC-24-20-60-00001833.0001001 / 30 APR 14

AC 1A(1B)(2B)(2A)(EMER 1)(EMER 2)

AC BUSBAR In Operation



ATU STATUS

◆	The ATU is in operation.
◊	The ATU is not connected.

L12

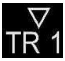
◆	The ATU is failed. Associated with the following ECAM alert: ELEC ATU 1A(1B)(2B)(2A) - *Refer to procedure*.

BUSBAR INDICATION

230	The AC busbar is powered.
230	The AC busbar is not powered.

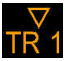
Ident.: DSC-24-20-60-00001834.0001001 / 30 APR 14

TR 1(2)(EMER 1)(EMER 2)



The TR is powered.

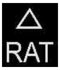
L12



The TR is failed, or is not powered.
Associated with the following ECAM alert: ELEC TR 1(2)(EMER 1)(EMER 2) FAULT- *Refer to procedure*.

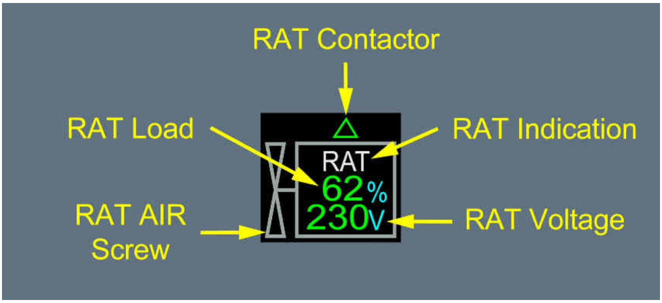
Ident.: DSC-24-20-60-00001835.0001001 / 28 APR 14

RAT

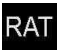


The RAT is on standby.

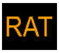
RAT In Operation


RAT Contactor
RAT Load
RAT Indication
RAT
62%
230V
RAT AIR Screw
RAT Voltage

RAT INDICATION



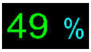
Normal operation.



The RAT is failed.

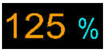
RAT LOAD

L12



The RAT load is normal.
The load is normal, when it is less than 120 %.

L12



There is an overload on the RAT.
The load is above 120 %.

RAT CONTACTOR

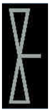
△	The RAT is connected to the emergency network.
△	The RAT contactor is failed.
△	The RAT is not connected to the emergency network.

RAT VOLTAGE

L12

230 V	The RAT voltage is normal. The voltage is normal between 225 V and 245 V.
251 V	The RAT voltage is abnormal.

RAT AIR SCREW



The RAT is deployed.

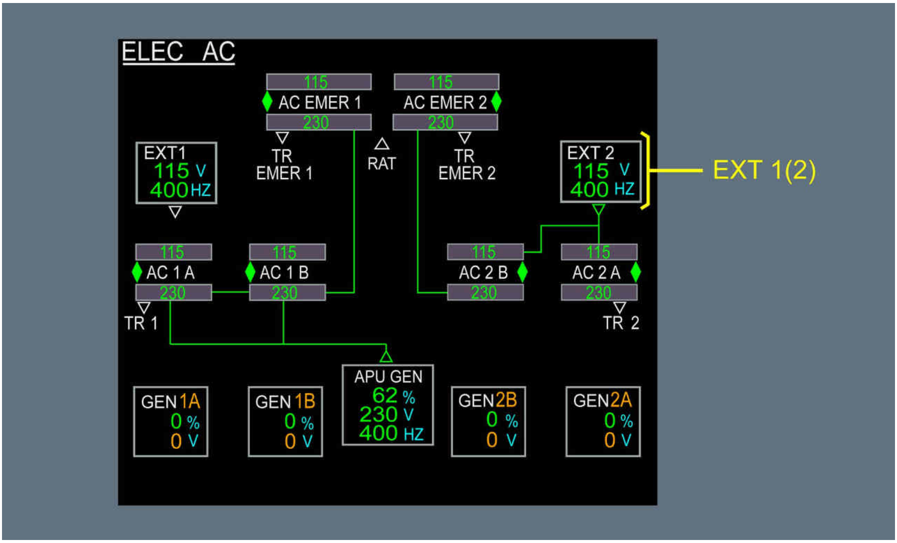
ELEC AC SD PAGE: ON-GROUND CONFIGURATION

Applicable to: ALL

Ident.: DSC-24-20-50-00001804.0001001 / 28 APR 17

ELEC AC SD PAGE: ON-GROUND CONFIGURATION

ELEC AC SD Page: On-Ground Configuration

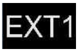

ELEC AC
115
AC EMER 1
230
115
AC EMER 2
230
TR
EMER 1
RAT
TR
EMER 2
EXT1
115 V
400 HZ
EXT 2
115 V
400 HZ
EXT 1(2)
115
AC 1 A
230
115
AC 1 B
230
115
AC 2 B
230
115
AC 2 A
230
TR 1
TR 2
APU GEN
62 %
230 V
400 HZ
GEN 1A
0 %
0 V
GEN 1B
0 %
0 V
GEN 2B
0 %
0 V
GEN 2A
0 %
0 V

L2 For more information on the ELEC AC SD page, *Refer to DSC-24-20 ELEC AC SD Page: In-Flight Configuration* .

Ident.: DSC-24-20-50-00001836.0001001 / 28 APR 14

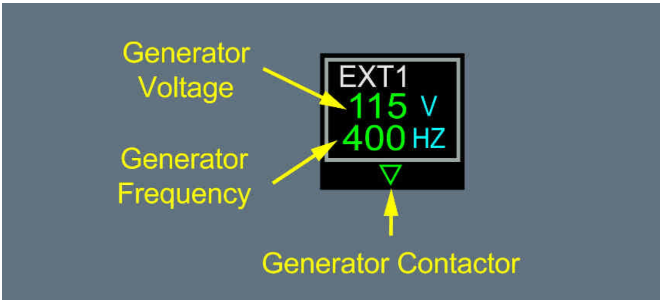
EXT 1(2) INDICATION

When there is no display, the aircraft is not on ground.

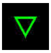


The aircraft is on ground and the external power is not connected to the aircraft.

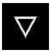
External Power Unit In Operation


Generator Voltage
Generator Frequency
EXT1
115 V
400 HZ
Generator Contactor

GENERATOR CONTACTOR



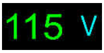
The external power unit supplies the electrical network.



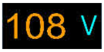
The external power unit does not supply the electrical network.

GENERATOR VOLTAGE

L12



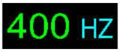
The external power unit voltage is normal.
The voltage is normal between 110 V and 120 V.



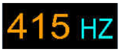
The external power unit voltage is abnormal.

GENERATOR FREQUENCY

L12



The external power unit frequency is normal.
The frequency is normal between 390 Hz and 410 Hz.



The external power unit frequency is abnormal.

ELEC C/B SD PAGE

Applicable to: ALL

Ident.: DSC-24-20-80-00001806.0001001 / 02 MAY 14

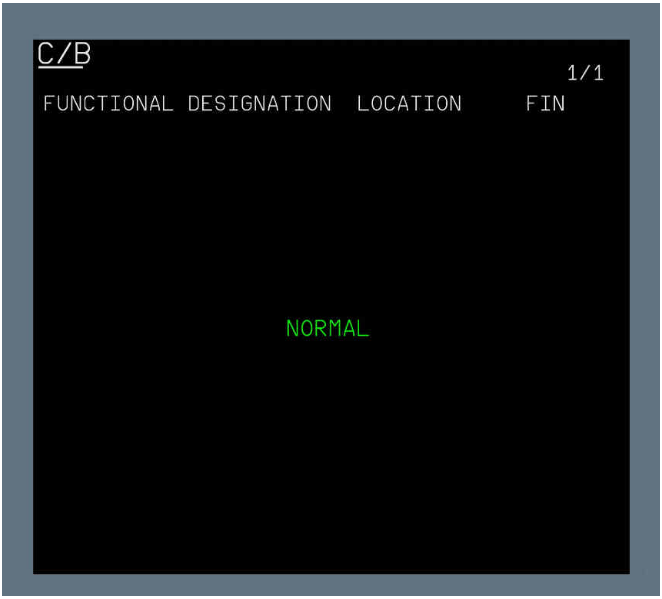
CALL OF THE C/B SD PAGE

In order to display the C/B SD page, the crew turns the SD knob or presses the ALL pb on the ECP. This will display the SD page grid on the ECP.

L2 For more information on the SD page grid, *Refer to DSC-31-CDS-60-10-80 SD Page Grid*.

L1 ELEC C/B SD PAGE: NO C/B TRIPPED

ELEC C/B SD Page: No C/B Tripped



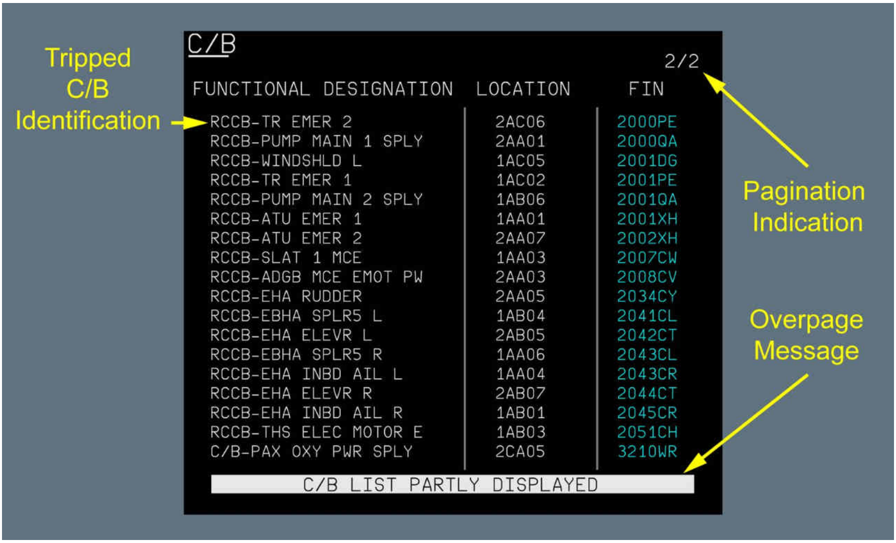
C/B
1/1
FUNCTIONAL DESIGNATION LOCATION FIN
NORMAL

NORMAL	Indicates that no C/B is tripped.
NOT AVAIL	The C/B monitoring function is lost.

Ident.: DSC-24-20-80-00016909.0001001 / 02 MAY 14

ELEC C/B SD PAGE: AT LEAST ONE C/B TRIPPED

ELEC C/B page: At least one C/B tripped



C/B

2/2

FUNCTIONAL DESIGNATION	LOCATION	FIN
RCCB-TR EMER 2	2AC06	2000PE
RCCB-PUMP MAIN 1 SPLY	2AA01	2000QA
RCCB-WINDSHLD L	1AC05	2001DG
RCCB-TR EMER 1	1AC02	2001PE
RCCB-PUMP MAIN 2 SPLY	1AB06	2001QA
RCCB-ATU EMER 1	1AA01	2001XH
RCCB-ATU EMER 2	2AA07	2002XH
RCCB-SLAT 1 MCE	1AA03	2007CW
RCCB-ADGB MCE EMOT PW	2AA03	2008CV
RCCB-EHA RUDDER	2AA05	2034CY
RCCB-EBHA SPLR5 L	1AB04	2041CL
RCCB-EHA ELEVR L	2AB05	2042CT
RCCB-EBHA SPLR5 R	1AA06	2043CL
RCCB-EHA INBD AIL L	1AA04	2043CR
RCCB-EHA ELEVR R	2AB07	2044CT
RCCB-EHA INBD AIL R	1AB01	2045CR
RCCB-THS ELEC MOTOR E	1AB03	2051CH
C/B-PAX OXY PWR SPLY	2CA05	3210WR

C/B LIST PARTLY DISPLAYED

TRIPPED C/B IDENTIFICATION

The last tripped C/B is displayed at the top of the tripped C/B list.
The location and the Functional Identification Number (FIN) of the tripped C/B is for maintenance purposes only.

PAGINATION INDICATION

When there are more than 18 tripped C/Bs, a second page can be displayed and the pagination indication helps to know what page is displayed.

OVERPAGE MESSAGE

When there are more than 30 tripped C/Bs, this message appears to inform the flight crew that there are more tripped C/Bs than it can be displayed (a maximum of two pages are available).

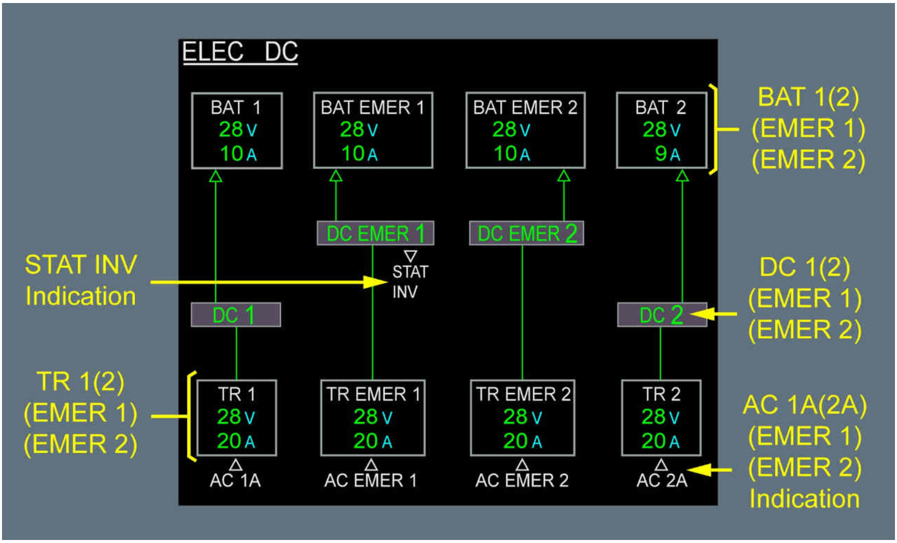
ELEC DC SD PAGE

Applicable to: ALL

Ident.: DSC-24-20-70-00001805.0001001 / 28 APR 14

ELEC DC SD PAGE

ELEC DC SD Page


ELEC DC
BAT 1
28 V
10 A
BAT EMER 1
28 V
10 A
BAT EMER 2
28 V
10 A
BAT 2
28 V
9 A
BAT 1(2)
(EMER 1)
(EMER 2)
DC EMER 1
DC EMER 2
STAT INV
Indication
STAT
INV
DC 1
DC 2
DC 1(2)
(EMER 1)
(EMER 2)
TR 1(2)
(EMER 1)
(EMER 2)
TR 1
28 V
20 A
TR EMER 1
28 V
20 A
TR EMER 2
28 V
20 A
TR 2
28 V
20 A
AC 1A(2A)
(EMER 1)
(EMER 2)
Indication
AC 1A
AC EMER 1
AC EMER 2
AC 2A

Ident.: DSC-24-20-70-00001837.0001001 / 30 APR 14

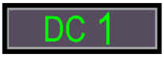
STAT INV INDICATION

	When there is no indication, the static inverter is not in operation.
▽ STAT INV	The static inverter is in operation.
▽ STAT INV	The static inverter is failed. Associated with the following ECAM alert:ELEC STATIC INV FAULT - *Refer to procedure*.

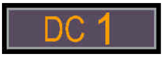
L12

Ident.: DSC-24-20-70-00001838.0001001 / 28 APR 14

DC 1(2)(EMER 1)(EMER 2)



The DC busbar is powered.

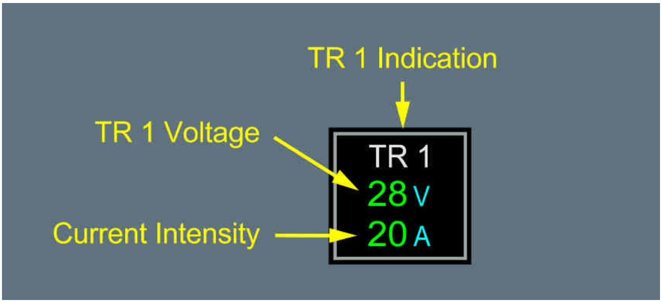


The DC busbar is not powered.

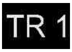
Ident.: DSC-24-20-70-00001839.0001001 / 30 APR 14

TR 1(2)(EMER 1)(EMER 2)

TR 1(2)(EMER 1)(EMER 2)

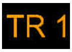

TR 1 Indication
TR 1 Voltage
Current Intensity
TR 1
28 V
20 A

TR 1 INDICATION



The TR is powered.

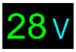
L12



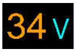
The TR is not powered, or failed.
Associated with the following ECAM alert:ELEC TR 1(2)(EMER 1)(EMER 2) FAULT - *Refer to procedure*.

TR VOLTAGE

L12



The TR voltage is normal.
Normal voltage is between 27 V and 32 V.



The TR voltage is abnormal.

CURRENT INTENSITY

L12

20 A	The current is normal. The current is normal when above, or equal to, 2 A.
1 A	The current is abnormal.

Ident.: DSC-24-20-70-00001840.0001001 / 28 APR 14

AC 1A(2A)(EMER 1)(EMER 2) INDICATION

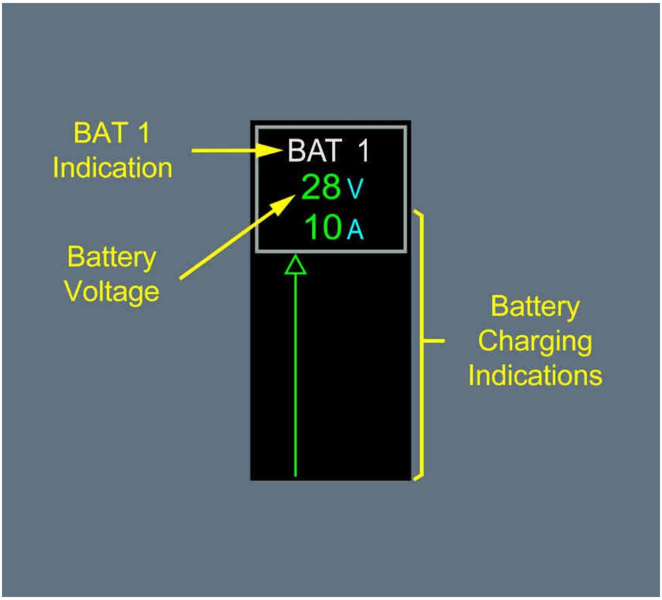
△ AC 1A	The AC busbar supplies its assigned TR.
△ AC 1A	The AC busbar does not supply its assigned TR.

Ident.: DSC-24-20-70-00001841.0001001 / 27 JUN 17

BAT1(2) (EMER 1)(EMER 2)

BAT 1 OFF	The battery is off.

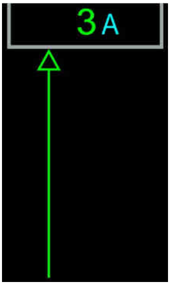
BAT 1 In Operation


BAT 1 Indication
Battery Voltage
BAT 1
28 V
10 A
Battery Charging Indications

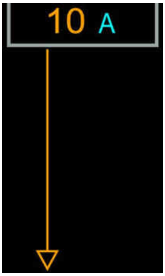
BAT 1 INDICATION

BAT 1	Normal operation.
BAT 1	The battery is off, or failed.

BATTERY CHARGING INDICATIONS



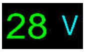
The battery charges provided that the current is above 1 A.



The battery discharges.

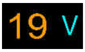
BATTERY VOLTAGE

L12



The battery voltage is normal.

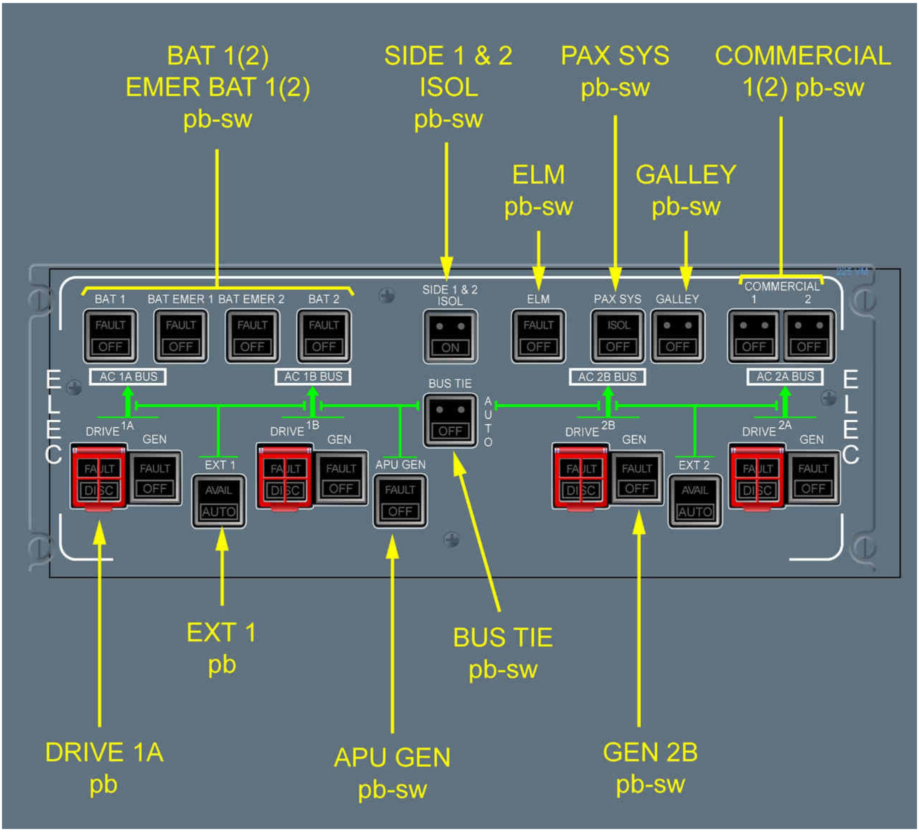
The voltage is normal, if:
- It is above 25 V, or
- It is above 20 V and the battery is discharging, or
- Only for BAT 1 and BAT 2: It is greater than 18.5 V and the battery is discharging with APU in a starting sequence.



The battery voltage is abnormal.

ELEC PANEL

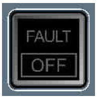
Ident.: DSC-24-20-10-00001799.0002001 / 08 NOV 18
Applicable to: ALL


BAT 1(2)
EMER BAT 1(2)
pb-sw
SIDE 1 & 2
ISOL
pb-sw
PAX SYS
pb-sw
COMMERCIAL
1(2) pb-sw
ELM
pb-sw
GALLEY
pb-sw
BAT 1
BAT EMER 1
BAT EMER 2
BAT 2
SIDE 1 & 2
ISOL
ELM
PAX SYS
GALLEY
COMMERCIAL
1
2
FAULT
OFF
ON
ISOL
AC 1A BUS
AC 1B BUS
AC 2B BUS
AC 2A BUS
BUS TIE
AUTO
ELEC
DRIVE 1A
GEN
DRIVE 1B
DRIVE 2B
DRIVE 2A
EXT 1
EXT 2
AVAIL
AUTO
APU GEN
DISC
EXT 1
pb
BUS TIE
pb-sw
DRIVE 1A
pb
APU GEN
pb-sw
GEN 2B
pb-sw

ELEC Panel

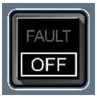
Ident.: DSC-24-20-10-00001810.0001001 / 07 JUL 16
Applicable to: ALL

BAT 1 (2) (EMER 1)(EMER 2) PB-SW



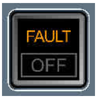
Normal position.
The battery is connected to the network if all connecting conditions are true.

L12



The battery is disconnected from the network.
Associated with the following ECAM alert: ELEC BAT 1(2)(EMER 1)(EMER 2) OFF - *Refer to procedure*.

L12

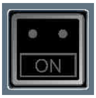


The battery is in fault (due to overcharge or overheat or internal contactors failures or power-up test failed)
The battery automatically disconnects from its associated DC busbar.
Associated with the following ECAM alert: ELEC BAT 1(2)(EMER 1)(EMER 2) FAULT - *Refer to procedure*.

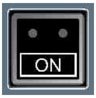
Note: *The FAULT light may flash during battery test.*

Ident.: DSC-24-20-10-00012601.0001001 / 17 NOV 17
Applicable to: ALL

SIDE 1&2 ISOL PB-SW



Normal position.
The SIDE 1&2 EPDC are not isolated.

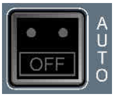


The SIDE 1&2 contactors are open to segregate EPDC 1 from EPDC 2.

L2 If the RAT is extended, this pb-sw will not segregate the emergency busbars in order to keep the emergency network powered by the RAT.
For more information on the SIDE1&2 ISOL pb-sw operation, *Refer to DSC-24-40 SMOKE configuration - SIDE 1&2 ISOL pb-sw*.

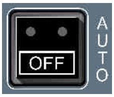
Ident.: DSC-24-20-10-00001811.0001001 / 17 NOV 17
Applicable to: ALL

BUS TIE PB-SW



Normal position.
The BUS TIE contactors automatically open or close, to reconfigure the electrical network, when necessary.

L12



The BUS TIE contactors are manually open to segregate:

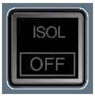
- The normal AC busbars (AC 1A, AC 1B, AC 2A, and AC 2B) from each other
- The DC 1 and DC 2 busbars from each other
- The DC EMER 1 and DC EMER 2 busbars from each other (not applicable when RAT extended)
- The AC EMER 1 and AC EMER 2 busbars from each other (not applicable when RAT extended)
- The ETOPS AC 1 and ETOPS AC 2 busbars from each other.

Associated with the following ECAM alert: ELEC BUS TIE OFF - *Refer to procedure*.

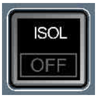
L2 For more information on the BUS TIE pb-sw operation, *Refer to DSC-24-40 EMERGENCY configuration - BUS TIE pb-sw*.

Ident.: DSC-24-20-10-00001812.0002001 / 07 JUL 16
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB

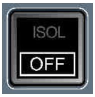
PAX SYS PB-SW



Normal operation: The IFE center and passenger seats are electrically supplied.



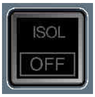
The electrical supply of the IFE center and passenger seats is shut down. The ISOL light also comes on when the cabin crew presses any of the PAX SYS pb-sw located in the cabin.



When this PAX SYS pb-sw located on the overhead panel is pressed, the electrical supply of the IFE center and passenger seats is shut down.

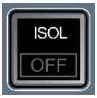
Ident.: DSC-24-20-10-00001812.0001001 / 07 JUL 16
Applicable to: ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB

PAX SYS PB-SW



Normal operation: The IFE center and passenger seats are electrically supplied.

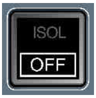
L12



The electrical supply of the IFE center and passenger seats is shut down.
The ISOL light also comes on when the cabin crew presses any of the PAX SYS pb-sw located in the cabin.

Note: *The cabin connectivity services (OMTS ◁ and Internet ◁) are also deactivated.*

L12

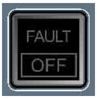


When this PAX SYS pb-sw located on the overhead panel is pressed, the electrical supply of the IFE center and passenger seats is shut down.

Note: *The cabin connectivity services (OMTS ◁ and Internet ◁) are also deactivated.*

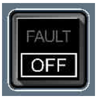
Ident.: DSC-24-20-10-00001813.0001001 / 28 APR 14
Applicable to: ALL

ELM PB-SW



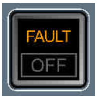
The automatic shedding function for high and low commercial loads is available.

L12



The ELMF is off: The automatic shedding function for low commercial loads is not available.
ENMF 1 and 2 can shed high loads, if necessary.

L12

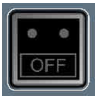


The ELMF has failed: The automatic shedding function for low commercial loads is not available.
ENMF 1 and 2 can shed high loads, if necessary.
Associated with the following ECAM alert: ELEC LOAD MANAGEMENT FAULT - *Refer to procedure*.

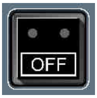
Ident.: DSC-24-20-10-00001815.0001001 / 28 APR 14
Applicable to: ALL

GALLEY PB-SW

L12



The galleys are supplied.
Some galleys may be automatically shed, if necessary.

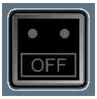


All galleys are manually shed.

Ident.: DSC-24-20-10-00001816.0001001 / 07 JUL 16
Applicable to: ALL

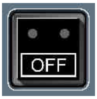
COMMERCIAL 1(2) PB-SW

L12



All commercial loads of the left (right) cabin supply centers, are supplied.
Some commercial loads may be automatically shed, if necessary.

L12

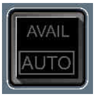


All commercial loads of the left (right) cabin supply centers, are manually shed.

The commercial loads are:
- Galleys
- In-Flight Entertainment (IFE) system
- Cargo loading system
- Internal video system
- Cabin, lavatory, and cargo lighting system
- Water heater
- Water and waste ice protection
- Crew rest door locking system
- Cabin and cargo temperature and ventilation control system
- Wireless airport communication system
- Aircraft wireless system

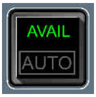
Ident.: DSC-24-20-10-00001817.0002001 / 03 JUL 20
Applicable to: ALL

1 EXT 1(2) PB



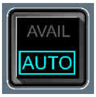
The external power unit is not connected to the aircraft.

L12



The external power unit is connected to the aircraft and:
- Is available to supply the electrical network, or
- Partially supplies the electrical network when the ground servicing mode is activated.
  For more information on the ground servicing mode, *Refer to DSC-24-20 Ground Service Control Panel*.

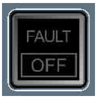
To avoid the display of spurious dispatch messages, the GND SVCE sw 1 on the door 1L must be set to OFF before setting the EXT 1(2) pb to the AUTO position.



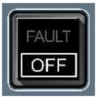
The external power unit is connected to the aircraft and the flight crew has pressed the EXT 1(2) pb. The external power unit:
- Supplies the electrical network, or
- Does not supply the electrical network due to an automatic electrical reconfiguration (APU or engine power supply).

Ident.: DSC-24-20-10-00001818.0001001 / 28 APR 14
Applicable to: ALL

APU GEN PB-SW

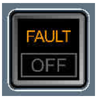


The APU generator is available to supply the electrical network, with the APU running.



The APU generator is manually disconnected from the electrical network.

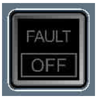
L12



The APU generator is failed.
The SGCU disconnects the APU generator from the electrical network.
The FAULT light goes off when the APU is selected OFF.
Associated with the following ECAM alert: ELEC APU GEN FAULT - *Refer to procedure*.

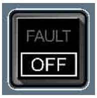
Ident.: DSC-24-20-10-00001819.0001001 / 07 JUL 16
Applicable to: ALL

GEN 1A(1B)(2B)(2A) PB-SW



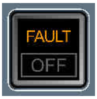
The engine generator is connected to the electrical network.

L12



The engine generator is manually disconnected from the electrical network.
Associated with the following ECAM alerts: ELEC GEN 1A(1B)(2B)(2A) OFF - *Refer to procedure*.

L12



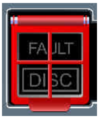
One of the following conditions is applicable:
- The associated engine is not running.
  The FAULT light goes off when the associated engine starts.
- The engine generator is failed.
  The engine generator is no longer connected to the electrical network.
  Associated with the following ECAM alerts: ELEC GEN 1A(1B)(2B)(2A) FAULT - *Refer to procedure*.

The FAULT light goes off when the generator is selected OFF.

Note: If the DRIVE pb is set to DISC, the engine generator is disconnected from the engine, and the GEN pb-sw automatically sets to FAULT.

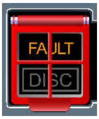
Ident.: DSC-24-20-10-00001820.0001001 / 28 APR 14
Applicable to: ALL

DRIVE 1A(1B)(2B)(2A) PB



The engine drive the generator.

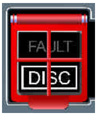
L123



The engine generator must be disconnected from the engine.
This can be due to an engine mechanical fault, or an oil overheat.

Associated with one of the following ECAM alerts:
- ELEC DRIVE 1A(1B)(2B)(2A) MECH FAULT - *Refer to procedure*, or
- ELEC DRIVE 1A(1B)(2B)(2A) OIL OVHT - *Refer to procedure*.

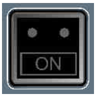
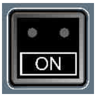
L12



The engine generator is disconnected from the engine.
It can only be reconnected by maintenance action on the ground, after removal of the generator from the aircraft, and refurbishment in a workshop.
Associated with the following ECAM alerts: *Refer to procedure*.

ELEC REMOTE C/B CTL PB-SW

Ident.: DSC-24-20-00001808.0001001 / 28 APR 14
Applicable to: ALL

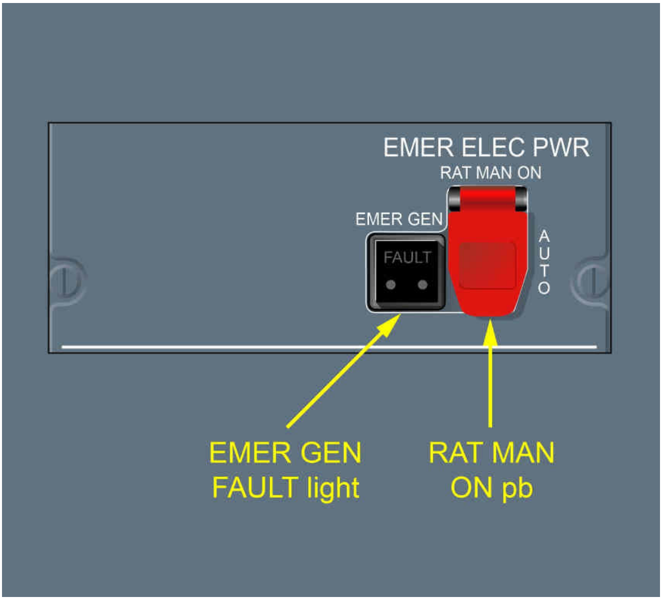
	Normal electrical configuration.
	Only some functions used for maintenance purpose are power supplied, and not the entire network. DC EMER 1(2) supplies on ground the maintenance functions.

EMER ELEC PWR PANEL

Applicable to: ALL

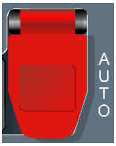
Ident.: DSC-24-20-20-00001800.0001001 / 28 APR 14

EMER ELEC PWR Panel

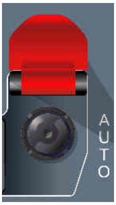

EMER ELEC PWR
RAT MAN ON
EMER GEN
FAULT
AUTO
EMER GEN FAULT light
RAT MAN ON pb

Ident.: DSC-24-20-20-00001821.0001001 / 28 APR 14

RAT MAN ON PB



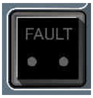
Normal position:
- The RAT is stowed, and the emergency generator does not supply the emergency network.
- If all AC 230 V busbars are lost, the RAT automatically extends, and the emergency generator connects to the emergency network.



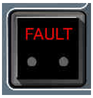
The guard is open.
When the pushbutton is pressed, the RAT extends, and the emergency generator connects to the emergency network.

Ident.: DSC-24-20-20-00001822.0001001 / 28 APR 14

EMER GEN FAULT LIGHT



The emergency generator is available, if necessary.



Comes on when:
- The RAT is extending, or
- The electrical system is in emergency configuration (RAT extended), and the emergency generator does not supply the emergency network.

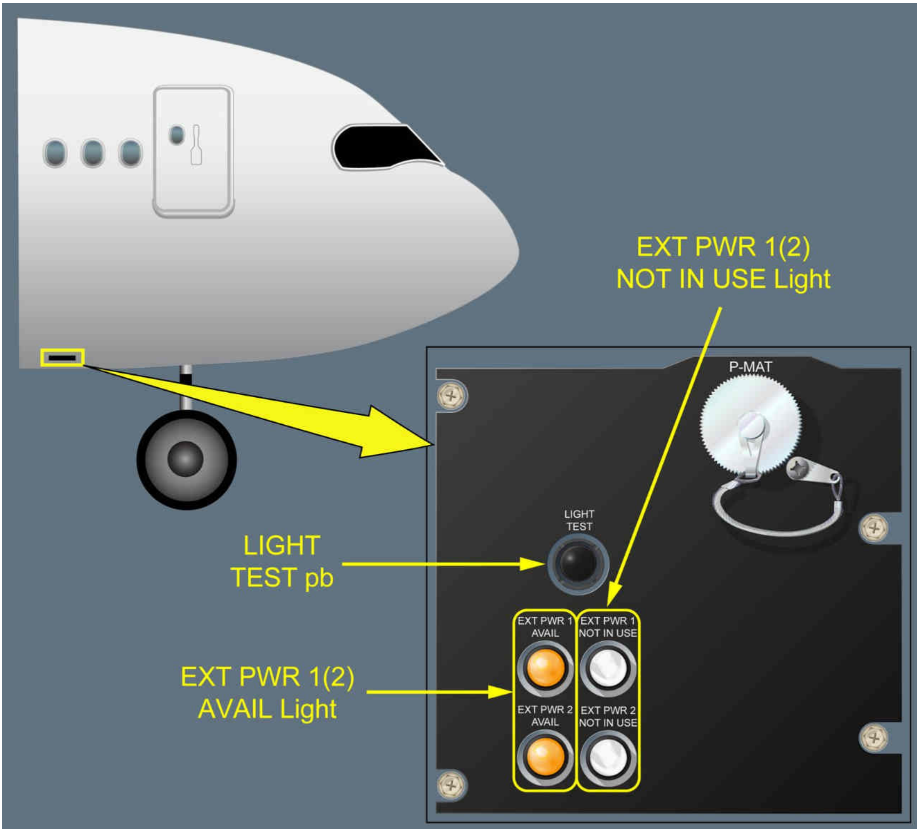
L2 For more information on the EMER CONFIG display, *Refer to DSC-24-40 EMERGENCY configuration, With APU Running*.

EXTERNAL POWER PANEL

Applicable to: ALL

Ident.: DSC-24-20-100-00001802.0001001 / 28 APR 14

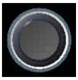
External Power Panel


EXT PWR 1(2)
NOT IN USE Light
P-MAT
LIGHT
TEST
LIGHT
TEST pb
EXT PWR 1(2)
AVAIL Light
EXT PWR 1
AVAIL
EXT PWR 1
NOT IN USE
EXT PWR 2
AVAIL
EXT PWR 2
NOT IN USE

Ident.: DSC-24-20-100-00001825.0001001 / 28 APR 14

EXT PWR 1(2) NOT IN USE LIGHT

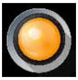
Comes on to inform the ground crew that the flight crew has set off the EXT 1(2) pb, indicating that the external power is on standby, and can be disconnected from the aircraft.



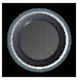
When there is no indication, the flight crew has set the EXT 1(2) pb to ON, indicating that the external power is in operation, and should not be disconnected.

Ident.: DSC-24-20-100-00001826.0001001 / 28 APR 14

EXT PWR 1(2) AVAIL LIGHT



Comes on to inform the ground crew that the applicable external power unit is connected to the aircraft, with an appropriate voltage and frequency.



When there is no display, the external power is not connected to the aircraft.

Ident.: DSC-24-20-100-00001827.0001001 / 28 APR 14

LIGHT TEST PB

The LIGHT TEST pb is used to test the associated EXT PWR AVAIL light and EXT PWR NOT IN USE light.

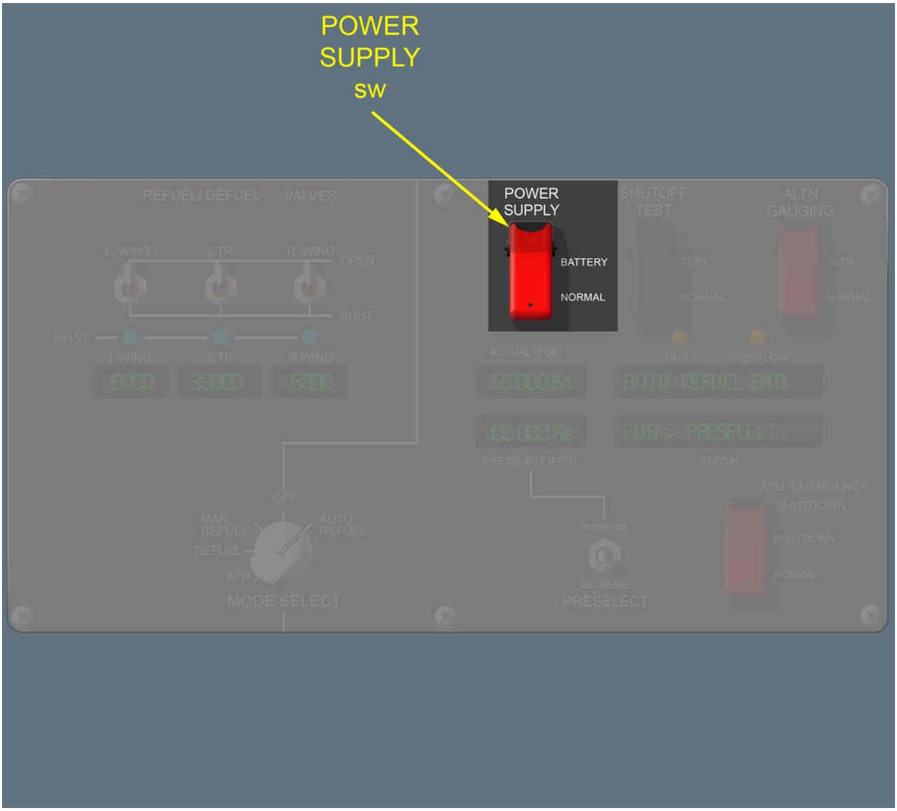
EXTERNAL REFUEL PANEL

Applicable to: ALL

Ident.: DSC-24-20-110-00012617.0001001 / 28 APR 14

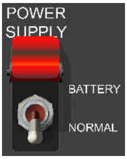
EXTERNAL REFUEL PANEL

External Refuel Panel

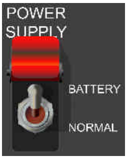

POWER SUPPLY SW
REFUEL/ DEFUEL VALVES
L WING
CTR
R WING
OPEN
SHUT
HI LVL
L WING
CTR
R WING
15000
35000
15000
POWER SUPPLY
BATTERY
NORMAL
SHUTOFF TEST
TEST
NORMAL
ALTN GAUGING
ALTN
NORMAL
FAULT
OVERFLOW
ACTUAL (FOB)
65 000 Kg
AUTO REFUEL END
00 003 Kg
606 > PRESELECT
PRESELECT (FFOB)
STATUS
APU EMERGENCY SHUTDOWN
SHUTDOWN
NORMAL
OFF
MAN REFUEL
AUTO REFUEL
DEFUEL
XFR
MODE SELECT
INCREASE
DECREASE
PRESELECT

Ident.: DSC-24-20-110-00012949.0001001 / 28 APR 14

POWER SUPPLY SW


POWER SUPPLY
BATTERY
NORMAL

Normal operation. The refuel system is power supplied by the normal DC network.


POWER SUPPLY
BATTERY
NORMAL

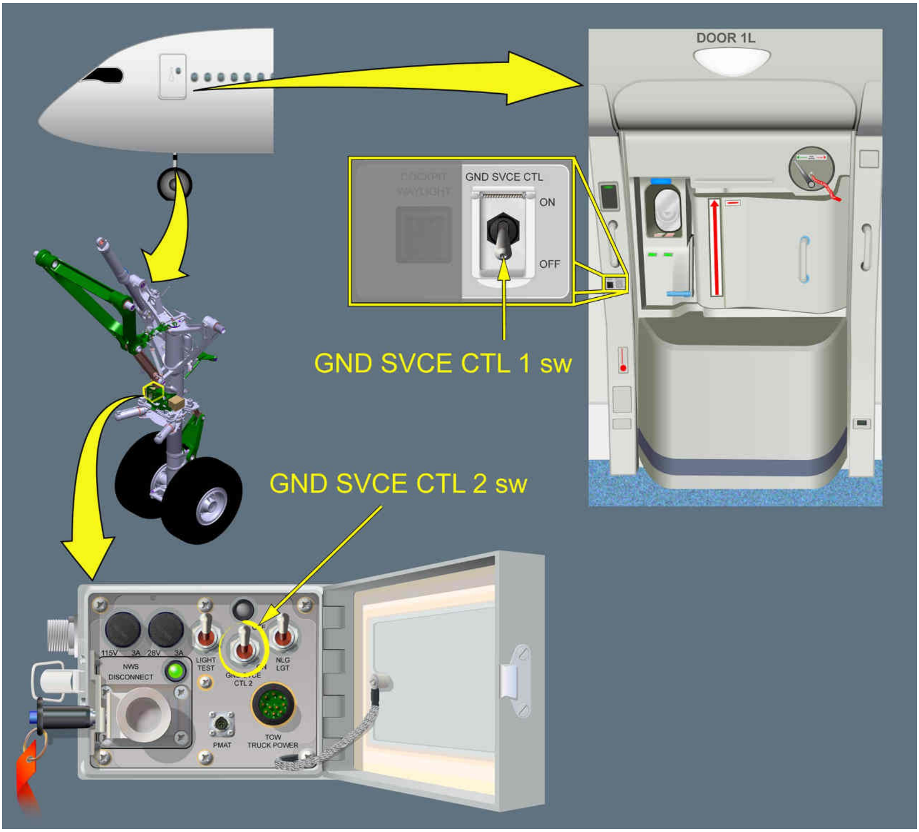
Refuel on battery mode. The DC NORM/BAT busbar is power supplied by the batteries to supply the refueling system.

GROUND SERVICE CONTROL PANEL

Applicable to: ALL

Ident.: DSC-24-20-90-00013537.0001001 / 03 JAN 20

Ground Service Control Panels


DOOR 1L
COCKPIT
WAYLIGHT
GND SVCE CTL
ON
OFF
GND SVCE CTL 1 sw
GND SVCE CTL 2 sw
115V 3A
28V 3A
NWS
DISCONNECT
LIGHT
TEST
CTL 2
NLG
LGT
PMAT
TOW
TRUCK POWER

There are two ground service controls (GND SVCE CTL) switches, that allow the supply of the electrical power necessary for ground servicing (cargo loading, cleaning, servicing, lighting).

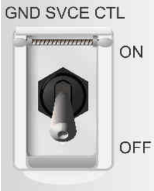
Those switches enable the supply of the ground servicing devices as soon as:
- At least one of the GND SVCE CTL sw is set to ON
- At least one external power unit is connected to the aircraft.

In ground servicing mode, as soon as one aircraft power source (engine generator or APU) supply the aircraft, the function is disconnected. The function will automatically reconnect if the aircraft power source is disconnected.

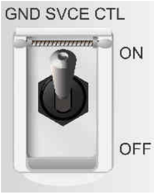
L2 As soon as the last external power unit is disconnected, the function is disconnected.
For more information on the ground servicing operation, *Refer to DSC-24-30 On Ground with One External Power Unit*.

Ident.: DSC-24-20-90-00013508.0001001 / 03 JAN 20

GND SVCE CTL 1 SW



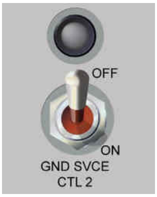
The ground servicing function is not operating.



The ground servicing function is operating. Only the systems used for ground operation are power supplied.

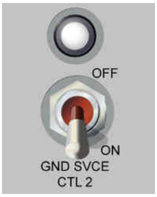
Ident.: DSC-24-20-90-00025299.0001001 / 03 JAN 20

GND SVCE CTL 2 SW



The ground servicing function is disconnected.
The associated white light is set off.

Note: *After use, the switch returns to the center position.*



The ground servicing function is connected. Only the systems used for ground operation are power supplied.
The associated white light is set on.

Note: *After use, the switch returns to the center position.*
The light remains on as long as the function is active.

MEMO

Applicable to: ALL

Ident.: DSC-24-20-120-00020961.0001001 / 28 APR 14

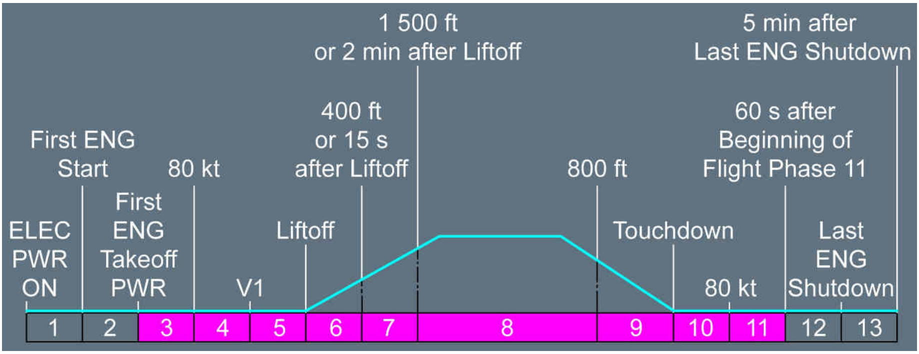
ELEC EXT PWR	At least one external power is available.

L12

ELEC EXT PWR	At least one external power is available and one engine is running. Appears on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

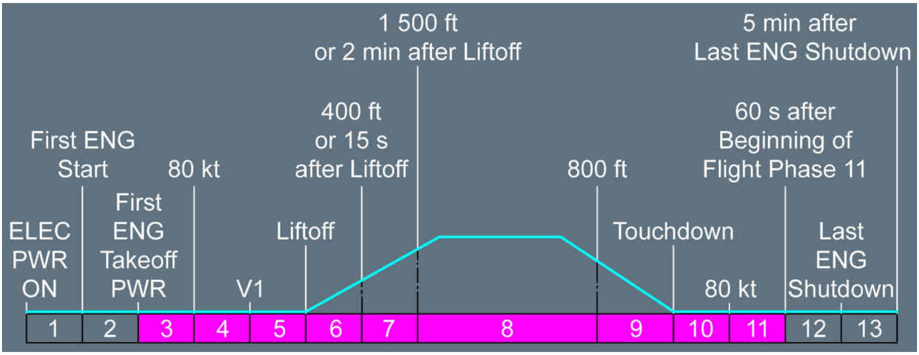
Ident.: DSC-24-20-120-00020962.0001001 / 28 APR 14

L12

ELEC SHED	At least one load is shed. Appears on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
2
3
4
5
6
7
8
9
10
11
12
13

Ident.: DSC-24-20-120-00020963.0001001 / 28 APR 14

RAT OUT	The RAT module is deployed.
L12 RAT OUT	The RAT module is deployed and aircraft is on ground before takeoff. Appears on the WD.

Ident.: DSC-24-20-120-00020964.0001001 / 28 APR 14

REMOTE C/B CTL ON	The ELEC REMOTE C/B CTL pb-sw is turned ON and the aircraft is on ground with the engines off.
L12 REMOTE C/B CTL ON	The ELEC REMOTE C/B CTL pb-sw is turned ON and at least one engine is running. Appears on the WD.

L2 For more information on the ELEC REMOTE C/B CTL pb-sw, *Refer to DSC-24-20 ELEC REMOTE C/B CTL pb-sw*.

PAX PERS ELEC SPLY PB-SW ⧏

Ident.: DSC-24-20-00001807.0001001 / 07 JUL 16
Applicable to: ALL

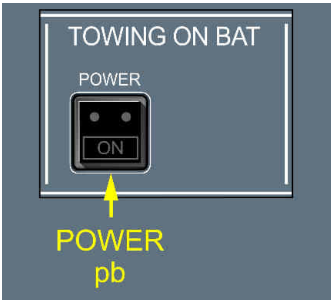
For more information about the PAX PERS ELEC SPLY pb-sw, *Refer to DSC-44-20 PAX PERS ELEC SPLY pb-sw (if installed)*.

TOWING ON BAT PANEL

Applicable to: ALL

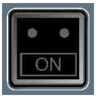
Ident.: DSC-24-20-40-00012608.0001001 / 28 APR 14

TOWING ON BAT Panel



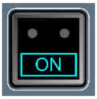
Ident.: DSC-24-20-40-00012604.0001001 / 28 APR 14

POWER PB



Normal operation. The towing network is supplied by the normal DC power.

L12



The towing network is supplied by the BAT 1.
No other source supplies the aircraft electrical network.

POWER OUTLET 110V/60HZ

Ident.: DSC-24-20-00024401.0001001 / 23 OCT 17
Applicable to: ALL

POWER OUTLET

The flight crew can use the power outlet (110 VAC / 60 Hz) to plug a Portable Electronic Device (PED).

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OVERVIEW

Ident.: DSC-24-30-00001848.0001001 / 28 APR 14
Applicable to: ALL

In normal operations, and before all engines are started, the electrical network automatically reconfigures to supply as many busbars as possible.

L2 This reconfiguration takes generator availability into account, and occurs according to the following priority rules:

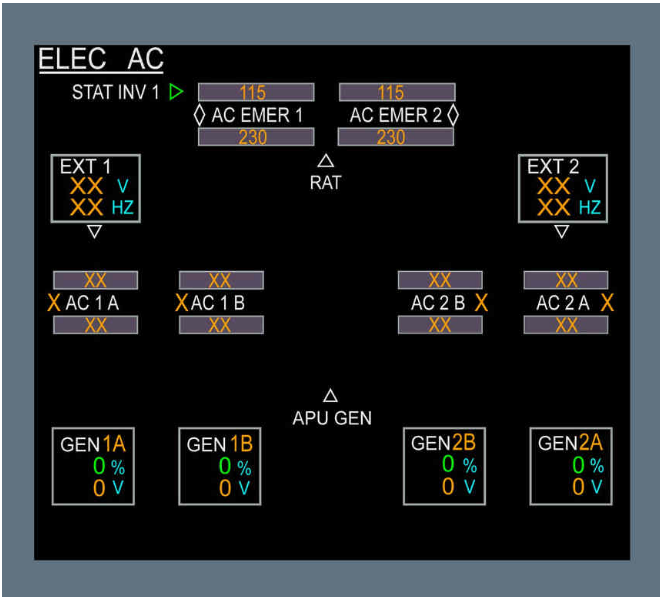
1. One generator supplies a maximum of 2 main busbars
2. Each generator supplies its own busbar in priority
3. On ground, if only the APU is available, it supplies the entire electrical network
4. In flight, the APU cannot supply 2 different sides
5. In flight, the APU replaces in priority a lost generator on side 1, except if 2 power sources are lost on side 2
6. When 2 AC sources are available (engine generator or APU), the entire network is supplied. The electrical load is balanced between the 2 sides
7. It is not possible to have simultaneously more than 4 AC sources that supply the electrical network.

ON GROUND WITH BATTERIES ONLY

Ident.: DSC-24-30-00001849.0001001 / 28 APR 17
Applicable to: ALL

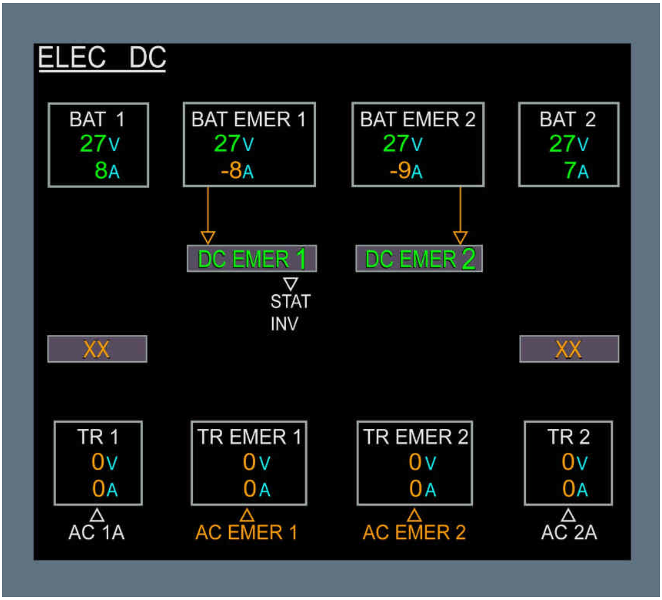
The DC EMER 1 busbar powers the AC EMER 1 busbar, via the static inverter, in AC 115 V power.

AC - On ground, with Batteries


ELEC AC
STAT INV 1
115
AC EMER 1
230
115
AC EMER 2
230
EXT 1
XX V
XX HZ
RAT
EXT 2
XX V
XX HZ
XX
X AC 1 A
XX
XX
X AC 1 B
XX
XX
AC 2 B X
XX
XX
AC 2 A X
XX
APU GEN
GEN 1A
0 %
0 V
GEN 1B
0 %
0 V
GEN 2B
0 %
0 V
GEN 2A
0 %
0 V

BAT EMER 1, 2 respectively supply the DC EMER 1, 2 busbars.

Batteries Only-ELEC DC


ELEC DC
BAT 1
27V
8A
BAT EMER 1
27V
-8A
BAT EMER 2
27V
-9A
BAT 2
27V
7A
DC EMER 1
DC EMER 2
STAT
INV
XX
XX
TR 1
0V
0A
AC 1A
TR EMER 1
0V
0A
AC EMER 1
TR EMER 2
0V
0A
AC EMER 2
TR 2
0V
0A
AC 2A

SPECIFIC BATTERIES MODES ON GROUND

On ground operation, with no electrical power source, the following ground configurations with batteries can be selected.

L2 The function operates if the batteries capacity is above 20 %. Below this value, the function will automatically disconnect.

L1 REFUEL ON BATTERIES

In normal conditions, the DC network supplies DC power to refuel the aircraft. If the normal network is not available, batteries (BAT 1 and BAT 2) can supply the electrical power for refuel operation.
The duration of the refuel on batteries is limited to 10 min (with nominal batteries capacity).

L2 For more information, *Refer to DSC-24-20 External Refuel Panel*.

L1 MAINTENANCE ON BATTERIES

If emergency network is not available, the emergency batteries (BAT EMER 1 and BAT EMER 2) are able to provide maintenance service to the aircraft for a limited duration.

L2 This function uses the Power Distribution Maintenance Function: PDMF, that can be activated via the ELEC REMOTE C/B CTL pb-sw.

For more information, *Refer to DSC-24-20 ELEC REMOTE C/B CTL pb-sw*.

L1 TOWING ON BATTERIES

In normal conditions, the DC network supplies the electrical power to the system required for towing (brakes, position lights, flight interphone, minimum flight deck lighting, and VHF). If normal network is not available, the towing is permitted on battery power only (BAT 1), for a limited duration.

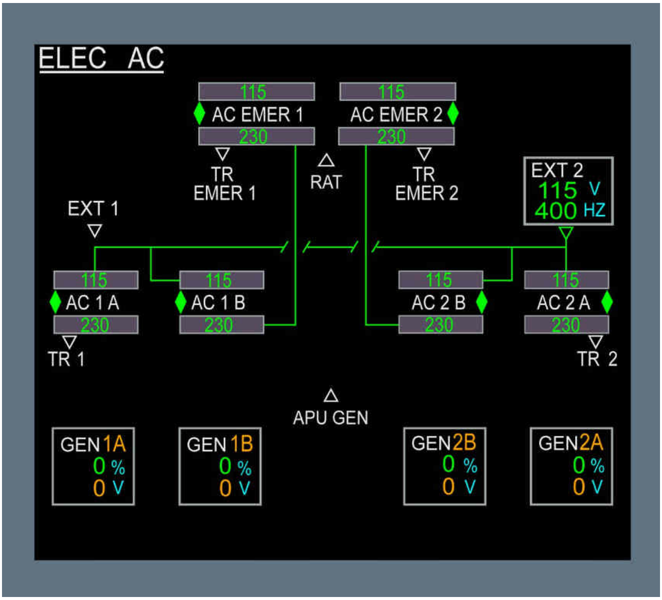
L2 For more information, *Refer to DSC-24-20 TOWING ON BAT panel*.

ON GROUND WITH ONE EXTERNAL POWER UNIT

Ident.: DSC-24-30-00001850.0001001 / 28 APR 17
Applicable to: ALL

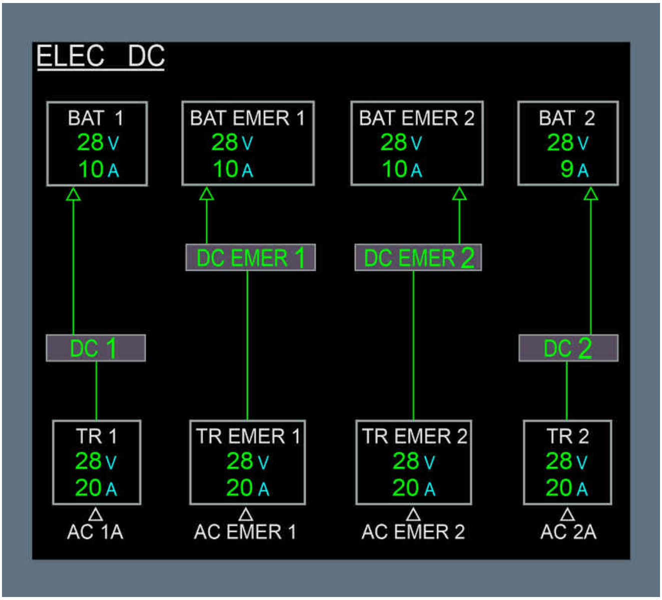
On side 2, the external power unit (EXT 2) supplies its onside busbars (AC 2B, and AC 2A) and the opposite side busbars (AC 1A, and AC 1B) with AC 115 V power.
The ATUs convert the AC 115 V power into AC 230 V power to supply the AC EMER 1 and 2 busbars.

AC - On ground, with one External Power Unit


ELEC AC
115
AC EMER 1
230
115
AC EMER 2
230
TR
EMER 1
RAT
TR
EMER 2
EXT 2
115 V
400 HZ
EXT 1
115
AC 1 A
230
115
AC 1 B
230
115
AC 2 B
230
115
AC 2 A
230
TR 1
TR 2
APU GEN
GEN 1A
0 %
0 V
GEN 1B
0 %
0 V
GEN 2B
0 %
0 V
GEN 2A
0 %
0 V

Note: With the here above configuration, a partial shedding is possible.

DC - On ground, with one External Power Unit


ELEC DC
BAT 1
28 V
10 A
BAT EMER 1
28 V
10 A
BAT EMER 2
28 V
10 A
BAT 2
28 V
9 A
DC EMER 1
DC EMER 2
DC 1
DC 2
TR 1
28 V
20 A
TR EMER 1
28 V
20 A
TR EMER 2
28 V
20 A
TR 2
28 V
20 A
AC 1A
AC EMER 1
AC EMER 2
AC 2A

GROUND SERVICING MODE

The ground servicing electrical network is supplied, when:
- One GND SVCE CTL sw is set to on
- At least one external power source is connected to the aircraft
- The ground servicing electrical network is not powered by any aircraft source.

In this configuration, the emergency electrical network is not supplied, and only a part of the normal network used for ground operation is supplied.

L3 There is no dedicated network to ground servicing on DC busbars. Ground servicing loads are installed on DC normal busbars.
Only the busbars 1A and 2A are supplied. Busbars 1B and 2B and the emergency network are not supplied.

In this configuration, the external power unit supplies only the following loads:
- Cabin and cockpit lighting
- Hydraulic compartment lighting
- Cargo compartment lighting and power outlets
- Landing gear compartment lighting and servicing power outlets
- Equipment compartment lighting and servicing power outlets

- Vacuum cleaner power outlets
- Cockpit servicing power outlets
- Fuel quantity indicators
- Navigation lights
- Parking brake
- Cargo door pumps.

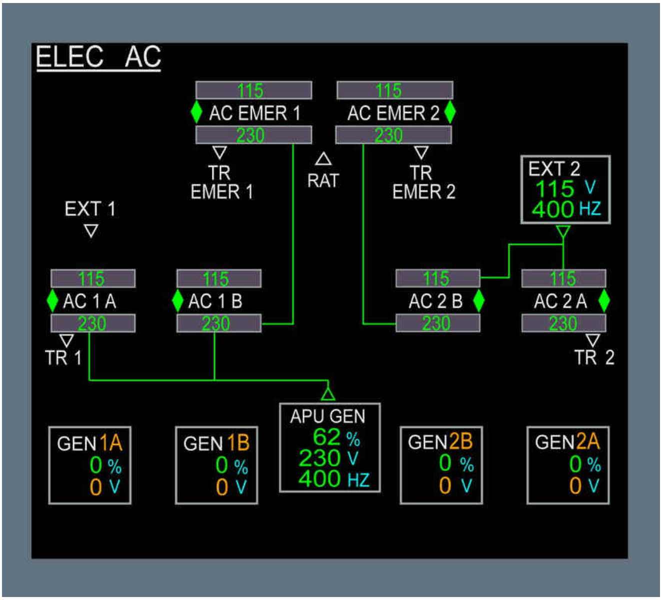
L2 For more information on the GND SVCE CTL panel , *Refer to DSC-24-20 Ground Service Control Panel*.

ON GROUND WITH ONE EXTERNAL POWER UNIT AND APU RUNNING

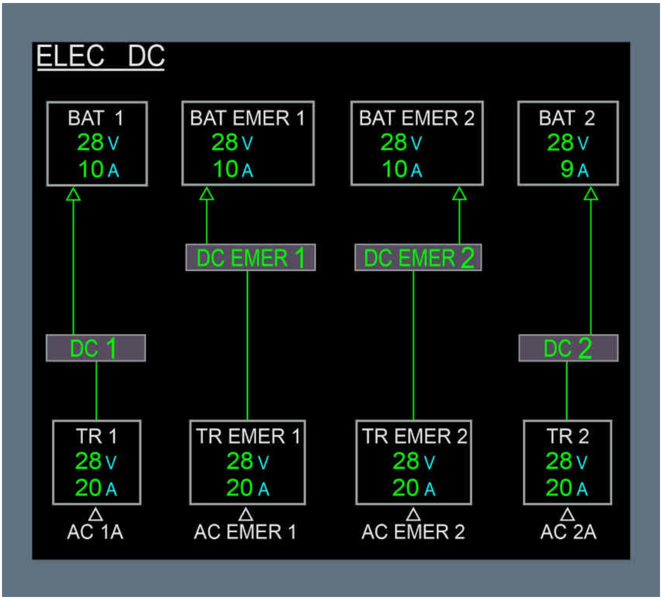
Ident.: DSC-24-30-00001851.0001001 / 28 APR 17
Applicable to: ALL

On side 1, the APU generator supplies the AC busbars (AC 1A and AC 1B) with AC 230 V power.
On side 2, the external power unit (EXT 2) supplies its onside busbars (AC 2A and AC 2B) with AC 115 V power.

AC - On ground, with one External Power Unit and APU


ELEC AC
115
AC EMER 1
230
115
AC EMER 2
230
TR EMER 1
RAT
TR EMER 2
EXT 2
115 V
400 HZ
EXT 1
115
AC 1 A
230
115
AC 1 B
230
115
AC 2 B
230
115
AC 2 A
230
TR 1
TR 2
APU GEN
62 %
230 V
400 HZ
GEN 1A
0 %
0 V
GEN 1B
0 %
0 V
GEN 2B
0 %
0 V
GEN 2A
0 %
0 V

DC - On ground, with one External Power Unit and APU

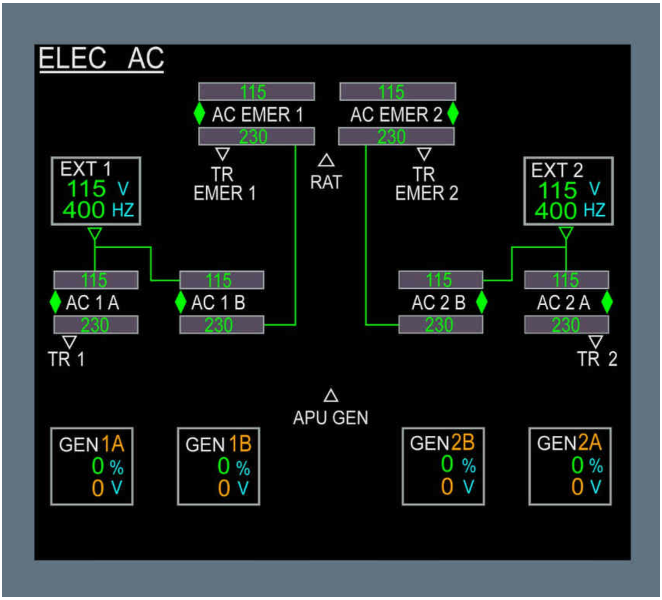

ELEC DC
BAT 1
28 V
10 A
BAT EMER 1
28 V
10 A
BAT EMER 2
28 V
10 A
BAT 2
28 V
9 A
DC EMER 1
DC EMER 2
DC 1
DC 2
TR 1
28 V
20 A
TR EMER 1
28 V
20 A
TR EMER 2
28 V
20 A
TR 2
28 V
20 A
AC 1A
AC EMER 1
AC EMER 2
AC 2A

ON GROUND WITH TWO EXTERNAL POWER UNITS

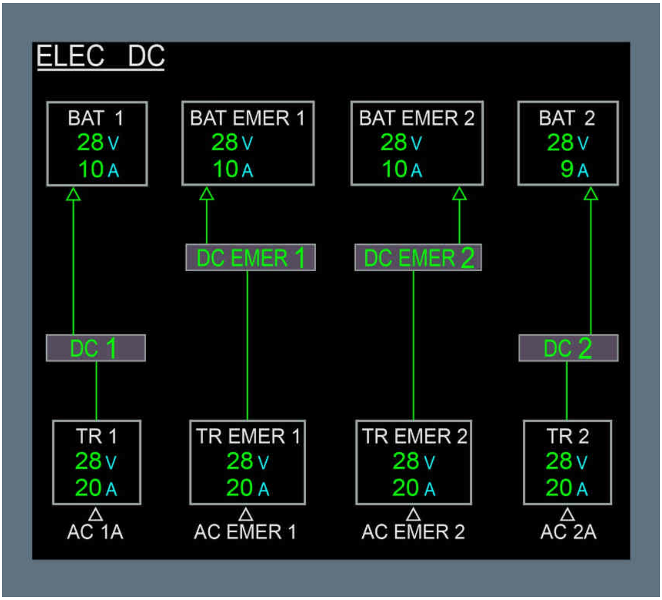
Ident.: DSC-24-30-00001852.0001001 / 28 APR 17
Applicable to: ALL

On side 1, the external power unit (EXT 1) supplies its onside busbars (AC 1A and AC 1B) in AC 115 V power.
On side 2, the external power unit (EXT 2) supplies its onside busbars (AC 2B and AC 2A) in AC 115 V power.

AC - On ground, with two External Power Unit


ELEC AC
115
AC EMER 1
230
115
AC EMER 2
230
TR
EMER 1
RAT
TR
EMER 2
EXT 1
115 V
400 HZ
EXT 2
115 V
400 HZ
115
AC 1 A
230
TR 1
115
AC 1 B
230
115
AC 2 B
230
115
AC 2 A
230
TR 2
APU GEN
GEN 1A
0 %
0 V
GEN 1B
0 %
0 V
GEN 2B
0 %
0 V
GEN 2A
0 %
0 V

DC - On ground, with two External Power Unit

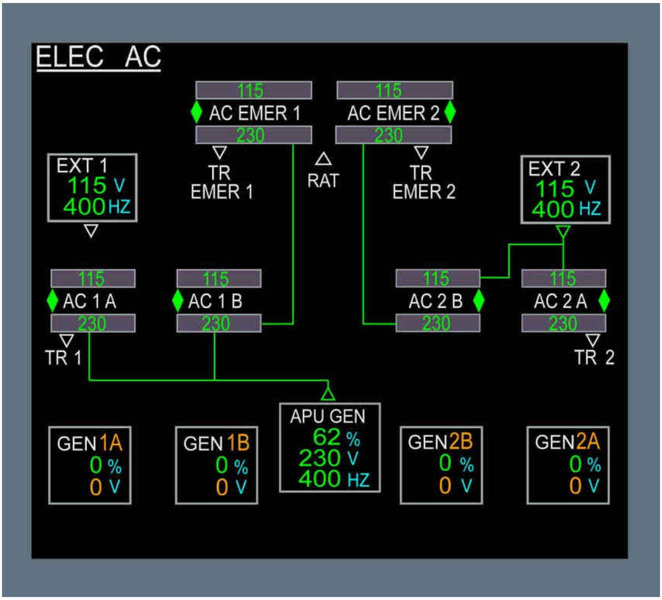

ELEC DC
BAT 1
28 V
10 A
BAT EMER 1
28 V
10 A
BAT EMER 2
28 V
10 A
BAT 2
28 V
9 A
DC EMER 1
DC EMER 2
DC 1
DC 2
TR 1
28 V
20 A
TR EMER 1
28 V
20 A
TR EMER 2
28 V
20 A
TR 2
28 V
20 A
AC 1A
AC EMER 1
AC EMER 2
AC 2A

ON GROUND WITH TWO EXTERNAL POWER UNITS, AND APU RUNNING

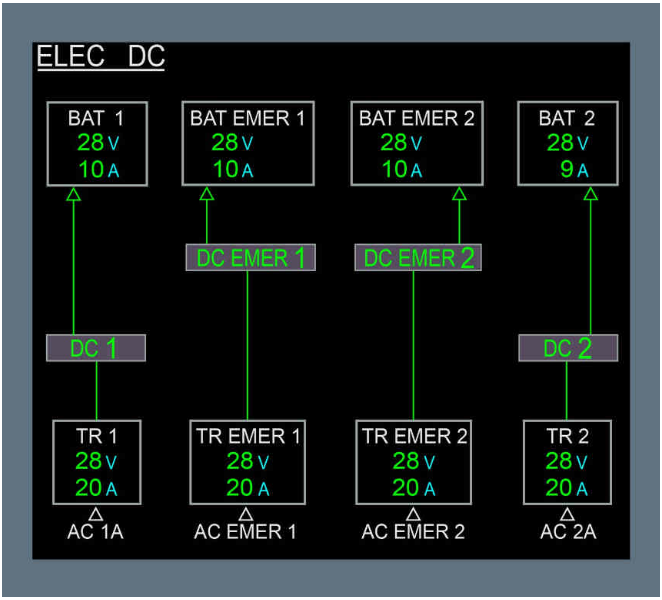
Ident.: DSC-24-30-00001853.0001001 / 28 APR 17
Applicable to: ALL

On side 1, the APU generator supplies the AC busbars (AC 1A and AC 1B) with AC 230 V power.
The other external power unit (EXT 1) is not used.
On side 2, the external power unit (EXT 2) supplies its own side busbars (AC 2B and AC 2A) with AC 115 V power.

AC - On ground, with two External Power Unit and APU


ELEC AC
115
AC EMER 1
230
115
AC EMER 2
230
TR
EMER 1
RAT
TR
EMER 2
EXT 1
115 V
400 HZ
EXT 2
115 V
400 HZ
115
AC 1 A
230
TR 1
115
AC 1 B
230
115
AC 2 B
230
115
AC 2 A
230
TR 2
APU GEN
62 %
230 V
400 HZ
GEN 1A
0 %
0 V
GEN 1B
0 %
0 V
GEN 2B
0 %
0 V
GEN 2A
0 %
0 V

DC - On ground, with two External Power Unit and APU

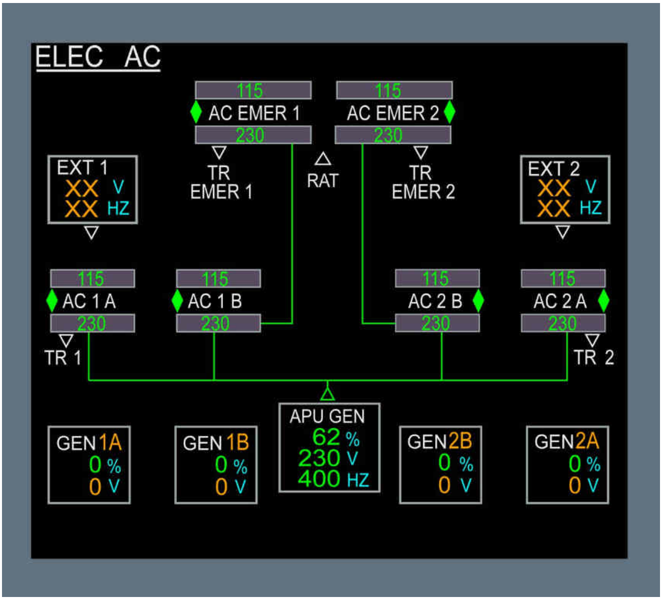

ELEC DC
BAT 1
28 V
10 A
BAT EMER 1
28 V
10 A
BAT EMER 2
28 V
10 A
BAT 2
28 V
9 A
DC EMER 1
DC EMER 2
DC 1
DC 2
TR 1
28 V
20 A
TR EMER 1
28 V
20 A
TR EMER 2
28 V
20 A
TR 2
28 V
20 A
AC 1A
AC EMER 1
AC EMER 2
AC 2A

ON GROUND WITH APU RUNNING

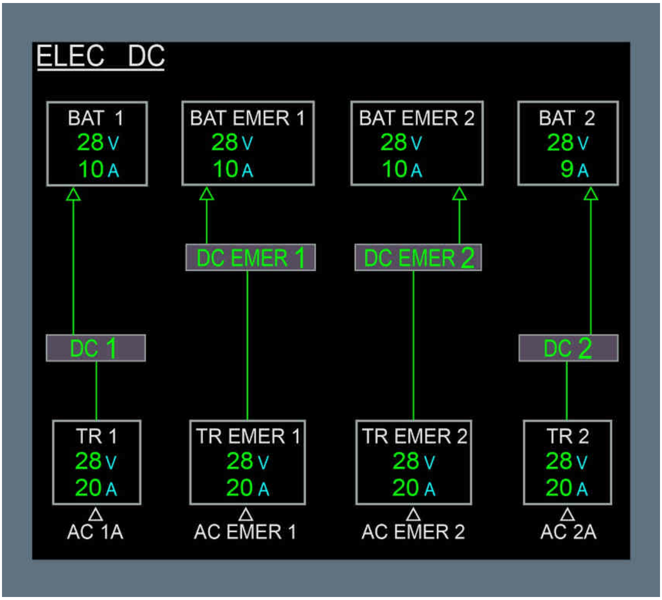
Ident.: DSC-24-30-00001854.0001001 / 28 APR 17
Applicable to: ALL

The APU generator supplies all AC busbars of sides 1 and 2 with AC 230 V power.

AC - On ground, with APU


ELEC AC
115
AC EMER 1
230
115
AC EMER 2
230
EXT 1
XX V
XX HZ
TR
EMER 1
RAT
TR
EMER 2
EXT 2
XX V
XX HZ
115
AC 1 A
230
115
AC 1 B
230
115
AC 2 B
230
115
AC 2 A
230
TR 1
TR 2
APU GEN
62 %
230 V
400 HZ
GEN 1A
0 %
0 V
GEN 1B
0 %
0 V
GEN 2B
0 %
0 V
GEN 2A
0 %
0 V

DC - On ground, with APU

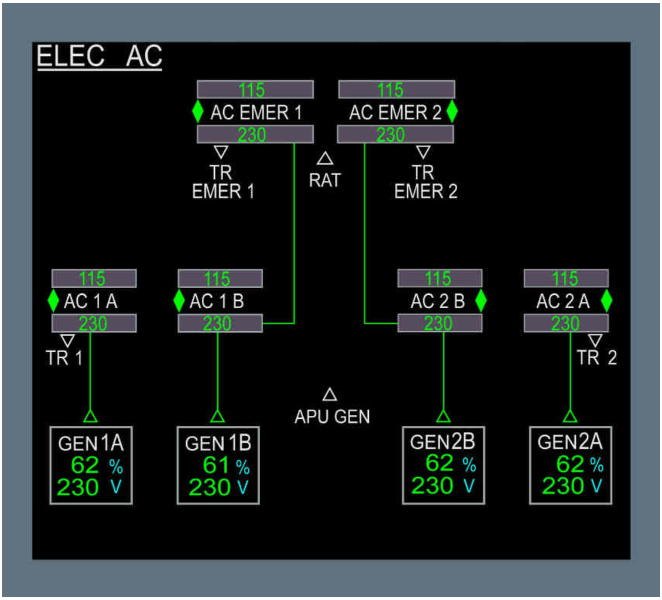

ELEC DC
BAT 1
28 V
10 A
BAT EMER 1
28 V
10 A
BAT EMER 2
28 V
10 A
BAT 2
28 V
9 A
DC EMER 1
DC EMER 2
DC 1
DC 2
TR 1
28 V
20 A
TR EMER 1
28 V
20 A
TR EMER 2
28 V
20 A
TR 2
28 V
20 A
AC 1A
AC EMER 1
AC EMER 2
AC 2A

ALL ENGINES RUNNING

Ident.: DSC-24-30-00001857.0001001 / 28 APR 14
Applicable to: ALL

Each engine generator supplies its assigned AC busbar with 230 V power. The ATUs then convert the 230 V power to 115 V power. The AC 230 V busbars then supplies power, as follows:
- The AC 1B busbar supplies the AC EMER 1
- The AC 2B busbar supplies the AC EMER 2.

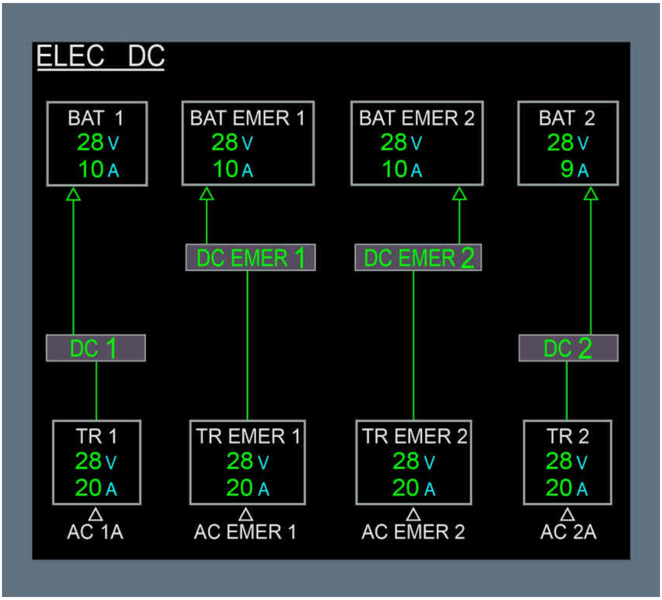
AC - All Engines Running


ELEC AC
115
AC EMER 1
230
115
AC EMER 2
230
TR
EMER 1
RAT
TR
EMER 2
115
AC 1 A
230
TR 1
115
AC 1 B
230
115
AC 2 B
230
115
AC 2 A
230
TR 2
APU GEN
GEN1A
62 %
230 V
GEN 1B
61 %
230 V
GEN2B
62 %
230 V
GEN2A
62 %
230 V

The AC busbar supplies power to the DC busbars via their associated TRs, as follows:

- The AC 1A supplies the DC 1, then the DC 1 busbar charges the BAT 1
- The AC EMER 1 supplies the DC EMER 1, then the DC EMER 1 busbar charges the BAT EMER 1
- The AC EMER 2 supplies the DC EMER 2, then the DC EMER 2 busbar charges the BAT EMER 2
- The AC 2A supplies the DC 2, then the DC 2 busbar charges the BAT 2.

DC - All Engines Running


ELEC DC
BAT 1
28 V
10 A
BAT EMER 1
28 V
10 A
BAT EMER 2
28 V
10 A
BAT 2
28 V
9 A
DC EMER 1
DC EMER 2
DC 1
DC 2
TR 1
28 V
20 A
TR EMER 1
28 V
20 A
TR EMER 2
28 V
20 A
TR 2
28 V
20 A
AC 1A
AC EMER 1
AC EMER 2
AC 2A

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RECONFIGURATIONS OVERVIEW

Ident.: DSC-24-40-00001858.0001001 / 02 OCT 14
Applicable to: ALL

In any abnormal electrical configuration (e.g. failure of one or more engine generators, TR failure, ATU failure), the electrical network automatically reconfigures to ensure that the remaining power sources continue to supply as many busbars as possible.

LOSS OF ONE POWER SOURCE

The different losses of one power source are:

- Loss of one engine generator and the APU is not available.

  The ELMF sheds the following loads:
  - Two galley feeders
  - Floor panel heaters
  - One recirculation fan
  - SCS system, one VCRU among two.

- Loss of one engine generator and the APU is available:
  The APU will supply the busbar of the lost generator, therefore no shedding is needed.
- Loss of one ATU.

  The ELMF sheds the following loads:
  - One galley feeder
  - Second galley feeder.

- Loss of one TRU:
  The ENMF performs the shedding function.

LOSS OF TWO POWER SOURCES

The different losses of two power sources are:

- Loss of two engine generators on opposite side:
  Both remaining generators supply its onside busbars.

  The ELMF sheds the following loads:
  - Two galley feeder
  - Floor panel heaters
  - One recirculation fan
  - SCS system, one VCRU out of three.

- Loss of two engine generators on the same side:
  The remaining side generators supply the opposite side busbars.
  The ENMF performs the shedding function.

- Loss of two generators on opposite sides and the APU is available:
  Priority is given to the segregation of sources. The remaining side 2 generator will supply its onside busbars. The APU will supply the busbar associated with the lost generator on side 1.
  The ELMF will consider the APU nominal power and will shed loads as applicable.
- Loss of two generators on the same side and APU is available:
  The APU will supply the two busbars associated with the lost generators.

  The ELMF sheds the following loads:
  - Two galley feeders
  - Floor panel heaters
  - One recirculation fan
  - SCS system, one VCRU out of three.

LOSS OF THREE POWER SOURCES

The different losses of three power sources are:
- Loss of three generators:
  The ENMF performs the shedding function.
- Loss of three engine generators and the APU is available:
  The remaining generator will supply the two onside busbars. The APU will supply the two offside busbars.
  The ELMF will consider the APU nominal power and shed loads as applicable.

FAILURE OF ALL ENGINE AND APU GENERATORS

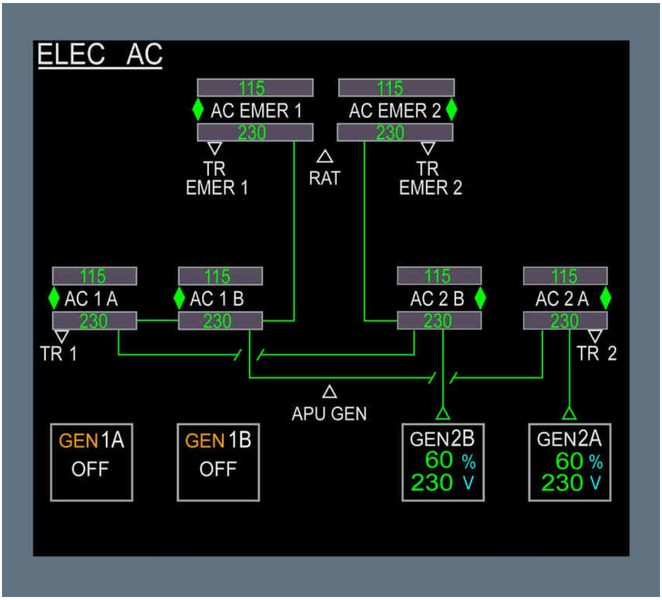
The RAT will supply the emergency network.

IN FLIGHT WITH TWO GENERATORS ON SAME SIDE

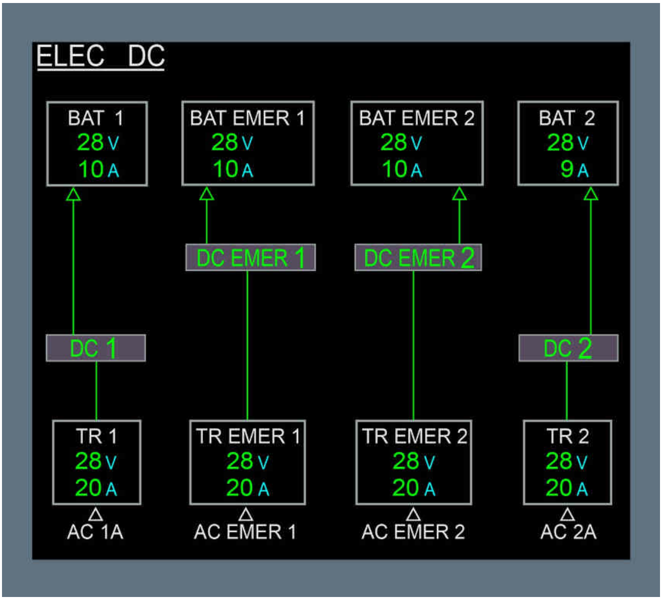
Ident.: DSC-24-40-00012098.0001001 / 28 APR 17
Applicable to: ALL

The first generator of engine 2 (e.g. GEN 2A) supplies its assigned busbar (AC 2A) and the busbar AC 1B on side 1 with AC 230 V power.
The second generator of engine 2 (e.g. GEN 2B) supplies its assigned busbar (AC 2B) and the busbar AC 1A on side 1 with AC 230 V power.

AC - In Flight, with two Generators on Side 2


ELEC AC
115
AC EMER 1
230
115
AC EMER 2
230
TR
EMER 1
RAT
TR
EMER 2
115
AC 1 A
230
115
AC 1 B
230
115
AC 2 B
230
115
AC 2 A
230
TR 1
TR 2
APU GEN
GEN 1A
OFF
GEN 1B
OFF
GEN2B
60 %
230 V
GEN2A
60 %
230 V

DC - In Flight, with two Generators on Side 2

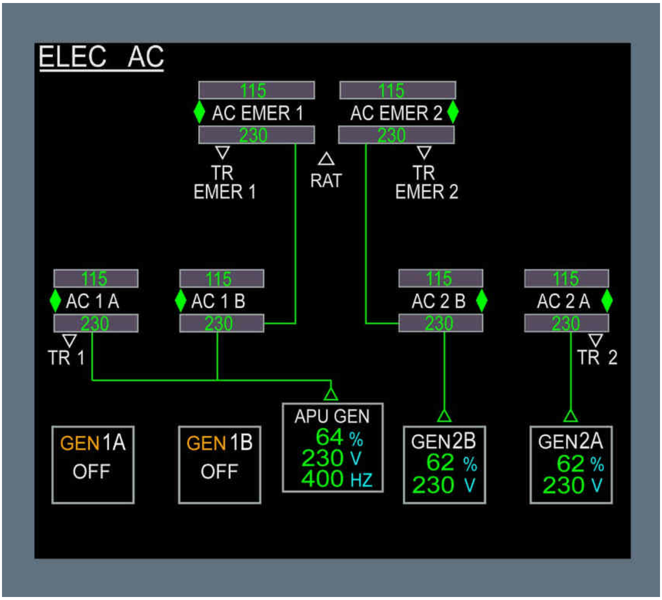

ELEC DC
BAT 1
28 V
10 A
BAT EMER 1
28 V
10 A
BAT EMER 2
28 V
10 A
BAT 2
28 V
9 A
DC EMER 1
DC EMER 2
DC 1
DC 2
TR 1
28 V
20 A
TR EMER 1
28 V
20 A
TR EMER 2
28 V
20 A
TR 2
28 V
20 A
AC 1A
AC EMER 1
AC EMER 2
AC 2A

IN FLIGHT WITH TWO GENERATORS ON SAME SIDE, AND APU RUNNING

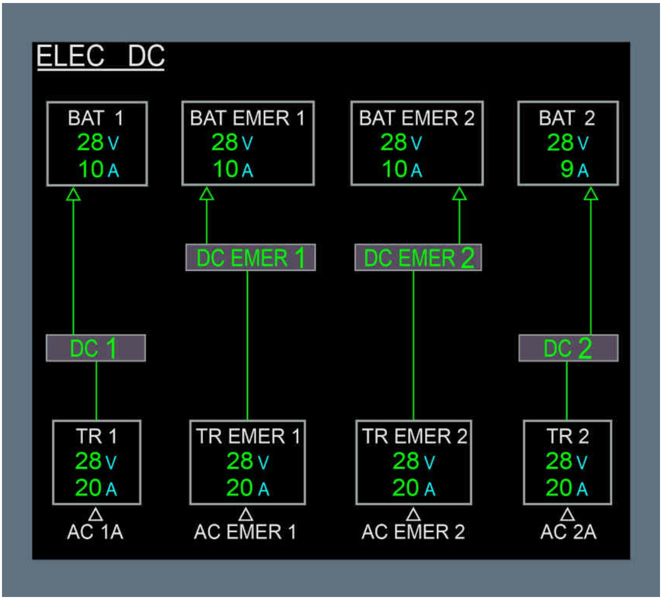
Ident.: DSC-24-40-00001856.0001001 / 28 APR 17
Applicable to: ALL

The 2 available engine generators on side 2 (GEN 2B, and GEN 2A) supply their assigned AC busbar with AC 230 V power.
The APU generator supplies the 2 AC busbars of the opposite side (AC 1A, and AC 1B) with AC 230 V power.

AC - In Flight, with two Generators on Side 2 and APU


ELEC AC
115
AC EMER 1
230
115
AC EMER 2
230
TR EMER 1
RAT
TR EMER 2
115
AC 1 A
230
115
AC 1 B
230
115
AC 2 B
230
115
AC 2 A
230
TR 1
TR 2
GEN 1A
OFF
GEN 1B
OFF
APU GEN
64 %
230 V
400 HZ
GEN2B
62 %
230 V
GEN2A
62 %
230 V

DC - In Flight, with two Generators on Side 2 and APU

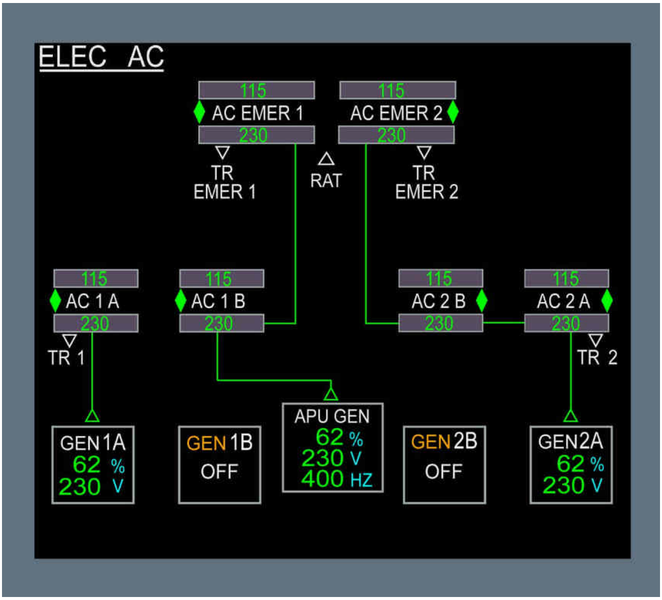

ELEC DC
BAT 1
28 V
10 A
BAT EMER 1
28 V
10 A
BAT EMER 2
28 V
10 A
BAT 2
28 V
9 A
DC EMER 1
DC EMER 2
DC 1
DC 2
TR 1
28 V
20 A
TR EMER 1
28 V
20 A
TR EMER 2
28 V
20 A
TR 2
28 V
20 A
AC 1A
AC EMER 1
AC EMER 2
AC 2A

IN FLIGHT WITH TWO GENERATORS ON OPPOSITE SIDES, AND APU RUNNING

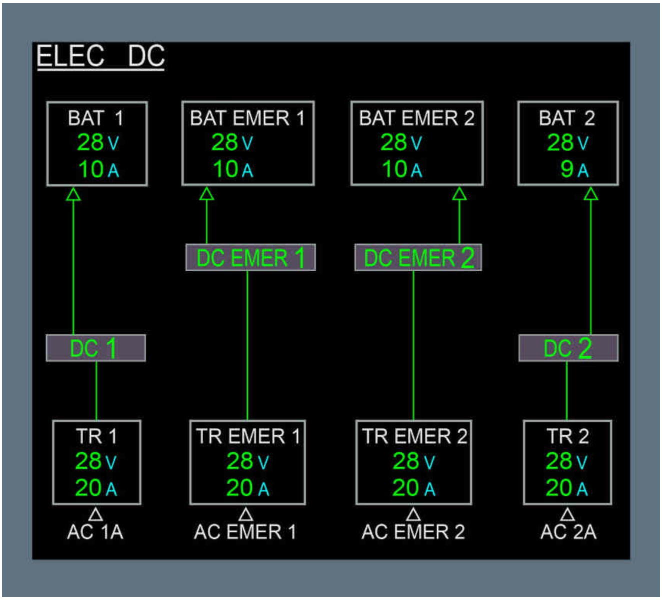
Ident.: DSC-24-40-00012097.0001001 / 28 APR 17
Applicable to: ALL

On side 1, the engine generator (GEN 1A) supplies its assigned AC busbar (AC 1A) with AC 230 V power, and the APU supplies the remaining busbar (AC 1B) with AC 230 V power.
On side 2, the engine generator (e.g. GEN 2A) supplies its onside busbars (AC 2B, and AC 2A) with AC 230 V power.

AC - In Flight, with two Generators on Opposite Sides and APU


ELEC AC
115
AC EMER 1
230
115
AC EMER 2
230
TR
EMER 1
RAT
TR
EMER 2
115
AC 1 A
230
TR 1
115
AC 1 B
230
115
AC 2 B
230
115
AC 2 A
230
TR 2
GEN 1A
62 %
230 V
GEN 1B
OFF
APU GEN
62 %
230 V
400 HZ
GEN 2B
OFF
GEN2A
62 %
230 V

DC - In Flight, with two Generators on Opposite Sides and APU

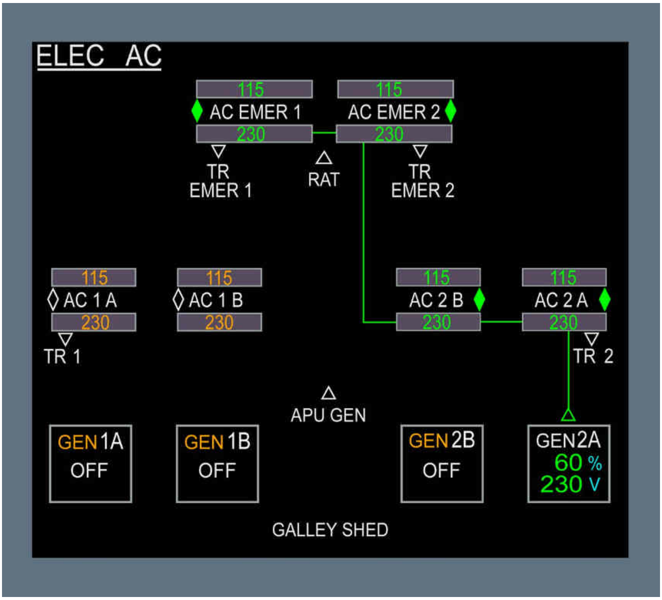

ELEC DC
BAT 1
28 V
10 A
BAT EMER 1
28 V
10 A
BAT EMER 2
28 V
10 A
BAT 2
28 V
9 A
DC EMER 1
DC EMER 2
DC 1
DC 2
TR 1
28 V
20 A
TR EMER 1
28 V
20 A
TR EMER 2
28 V
20 A
TR 2
28 V
20 A
AC 1A
AC EMER 1
AC EMER 2
AC 2A

IN FLIGHT WITH ONE GENERATOR RUNNING

Ident.: DSC-24-40-00012609.0001001 / 05 NOV 18
Applicable to: ALL

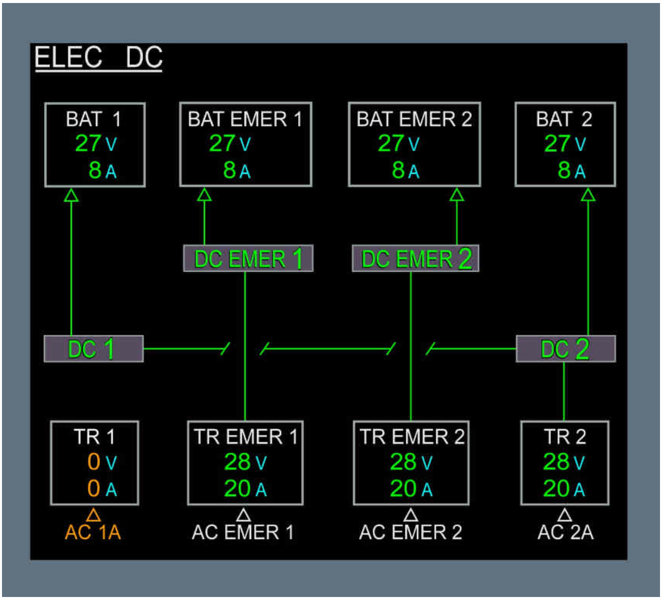
On side 2, the engine generator (e.g. GEN 2A) supplies its onside busbars. The offside busbars are not power supplied, except the AC EMER 1 busbar. AC EMER 2 supplies the AC EMER 1 busbar, and both ETOPS busbars (not represented on the ELEC AC SD page)
This case is identical (symmetrically) if the remaining generator is on side 1.

AC - In Flight, with one Generator Running


ELEC AC
115
AC EMER 1
230
115
AC EMER 2
230
TR
EMER 1
RAT
TR
EMER 2
115
AC 1 A
230
TR 1
115
AC 1 B
230
115
AC 2 B
230
115
AC 2 A
230
TR 2
APU GEN
GEN 1A
OFF
GEN 1B
OFF
GEN 2B
OFF
GEN2A
60 %
230 V
GALLEY SHED

The TR 1 is not power supplied as AC 1A power is not available. Therefore, the DC 1 busbar is automatically power supplied by DC 2 busbar. All the DC busbars are power supplied.

DC - In Flight, with one Generator Running

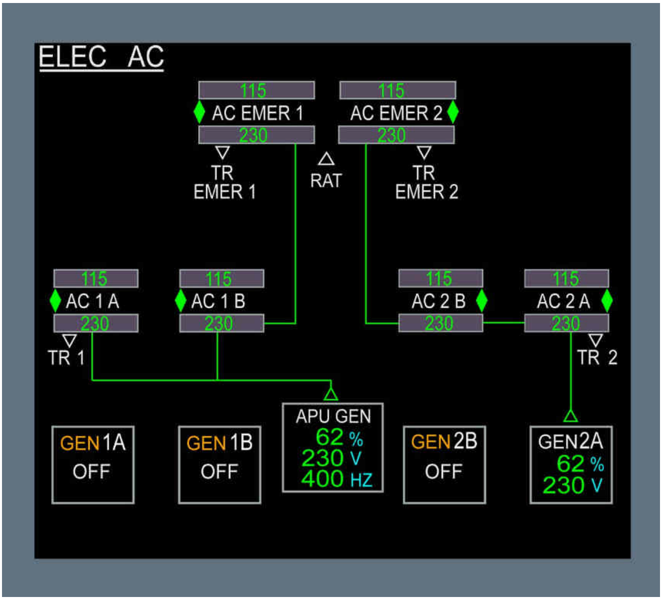

ELEC DC
BAT 1
27 V
8 A
BAT EMER 1
27 V
8 A
BAT EMER 2
27 V
8 A
BAT 2
27 V
8 A
DC EMER 1
DC EMER 2
DC 1
DC 2
TR 1
0 V
0 A
TR EMER 1
28 V
20 A
TR EMER 2
28 V
20 A
TR 2
28 V
20 A
AC 1A
AC EMER 1
AC EMER 2
AC 2A

IN FLIGHT WITH ONE GENERATOR, AND APU RUNNING

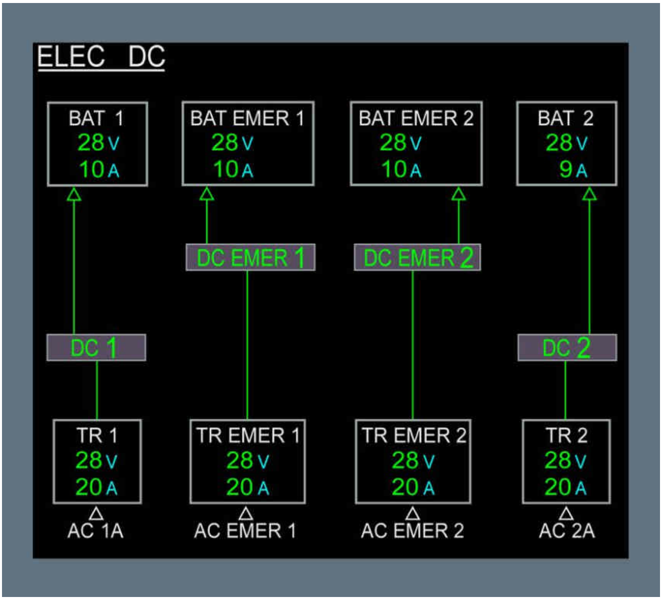
Ident.: DSC-24-40-00001855.0001001 / 28 APR 17
Applicable to: ALL

On side 1, the APU generator supplies the AC busbars (AC 1A, AC 1B) with AC 230 V power.
On side 2, the engine generator (e.g. GEN 2A) supplies its onside busbars (AC 2B, AC 2A) with AC 230 V power.

AC - In Flight, with one Generator and APU Running


ELEC AC
115
AC EMER 1
230
115
AC EMER 2
230
TR
EMER 1
RAT
TR
EMER 2
115
AC 1 A
230
TR 1
115
AC 1 B
230
115
AC 2 B
230
115
AC 2 A
230
TR 2
APU GEN
62 %
230 V
400 HZ
GEN 1A
OFF
GEN 1B
OFF
GEN 2B
OFF
GEN2A
62 %
230 V

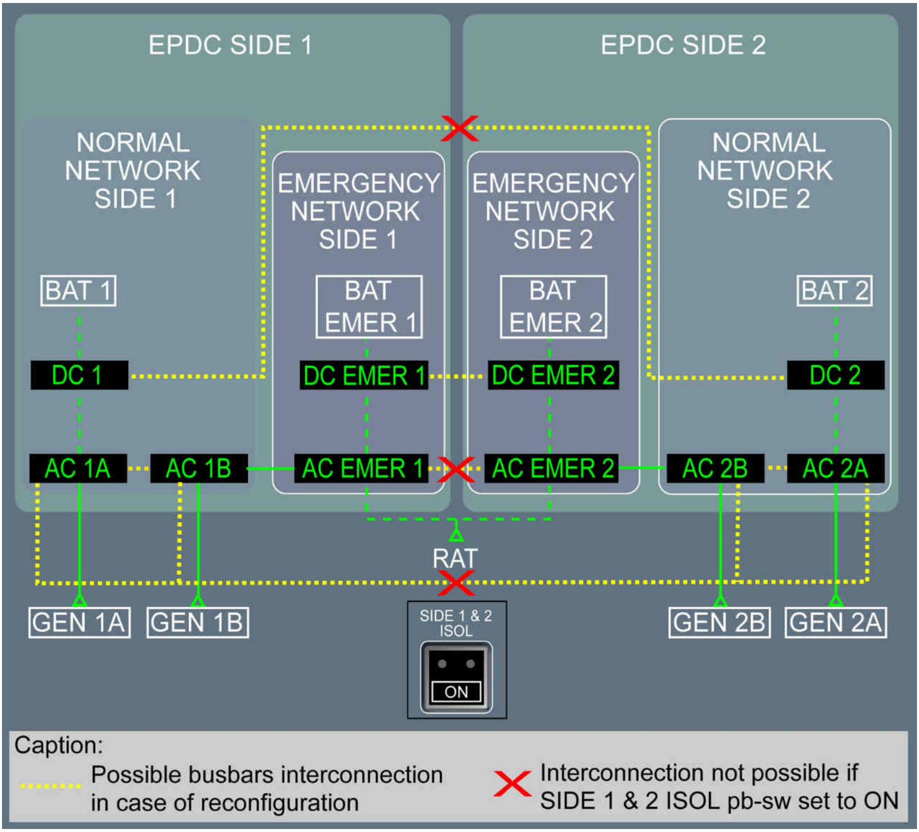
DC - In Flight, with one Generator and APU Running


ELEC DC
BAT 1
28 V
10 A
BAT EMER 1
28 V
10 A
BAT EMER 2
28 V
10 A
BAT 2
28 V
9 A
DC EMER 1
DC EMER 2
DC 1
DC 2
TR 1
28 V
20 A
TR EMER 1
28 V
20 A
TR EMER 2
28 V
20 A
TR 2
28 V
20 A
AC 1A
AC EMER 1
AC EMER 2
AC 2A

SMOKE CONFIGURATION - SIDE 1&2 ISOL PB-SW

Ident.: DSC-24-40-00013488.0001001 / 15 APR 19
Applicable to: ALL

SMOKE Configuration - SIDE 1&2 ISOL pb-sw


EPDC SIDE 1
EPDC SIDE 2
NORMAL NETWORK SIDE 1
EMERGENCY NETWORK SIDE 1
EMERGENCY NETWORK SIDE 2
NORMAL NETWORK SIDE 2
BAT 1
BAT EMER 1
BAT EMER 2
BAT 2
DC 1
DC EMER 1
DC EMER 2
DC 2
AC 1A
AC 1B
AC EMER 1
AC EMER 2
AC 2B
AC 2A
RAT
GEN 1A
GEN 1B
SIDE 1 & 2 ISOL
ON
GEN 2B
GEN 2A
Caption:
Possible busbars interconnection in case of reconfiguration
Interconnection not possible if SIDE 1 & 2 ISOL pb-sw set to ON

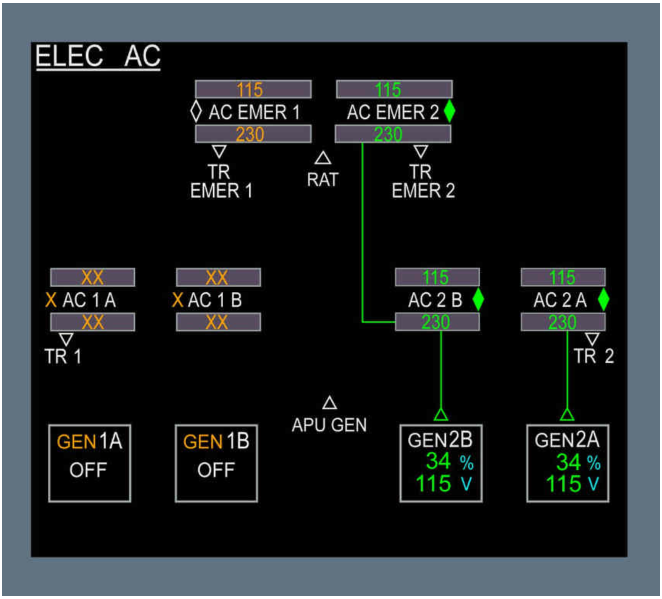
In the case of SMOKE procedure, the SIDE 1&2 ISOL pb-sw is pressed to ON.

In this case, several contactors operate to segregate the 2 sides of the EPDC:
- The side 1 and side 2 AC busbars are disconnected from each other
- L2 The AC busbars remain connected per side (AC 1A still connected to AC 1B and AC 2B still connected to AC 2A)
- L1 The normal DC 1 and DC 2 busbars are disconnected from each other (DC EMER 1 and DC EMER 2 busbars remain connected to each other).

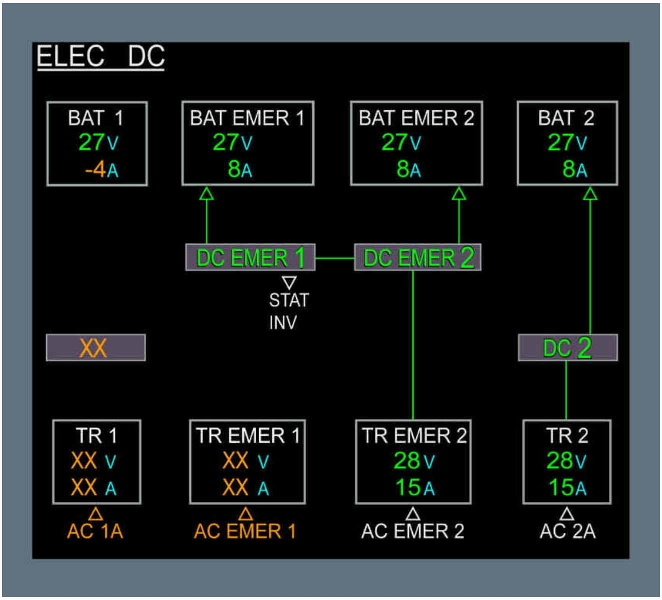
L2 For more information on the SIDE1&2 ISOL pb-sw, *Refer to DSC-24-20 SIDE 1&2 ISOL pb-sw*.
L1 As soon as the flight crew pressed the SIDE 1&2 ISOL pb-sw, as per SMOKE procedure, the flight crew will shutdown the electrical side 1 then side 2, by setting OFF the corresponding generators.
L2 For more information about the [QRH] SMOKE procedure: *Refer to procedure*.
L1 On the following example, the 2 engine generators of side 1 (GEN 1A and GEN 1B) were set to OFF by the corresponding GEN pb-sw.

As a consequence the electrical configuration is the following:
- AC 1A, AC 1B, and AC EMER 1 busbars are lost
- DC 1 busbar is lost
- DC EMER 2 busbar supplies DC EMER 1 busbar.

AC - In Flight - SMOKE Configuration - SIDE 1 disconnected (GEN 1A and GEN 1B OFF)


ELEC AC
115
AC EMER 1
230
115
AC EMER 2
230
TR EMER 1
RAT
TR EMER 2
XX
X AC 1 A
XX
TR 1
XX
X AC 1 B
XX
115
AC 2 B
230
115
AC 2 A
230
TR 2
APU GEN
GEN 1A
OFF
GEN 1B
OFF
GEN2B
34 %
115 V
GEN2A
34 %
115 V

DC - In Flight - SMOKE Configuration - SIDE 1 disconnected (GEN 1A and GEN 1B OFF)

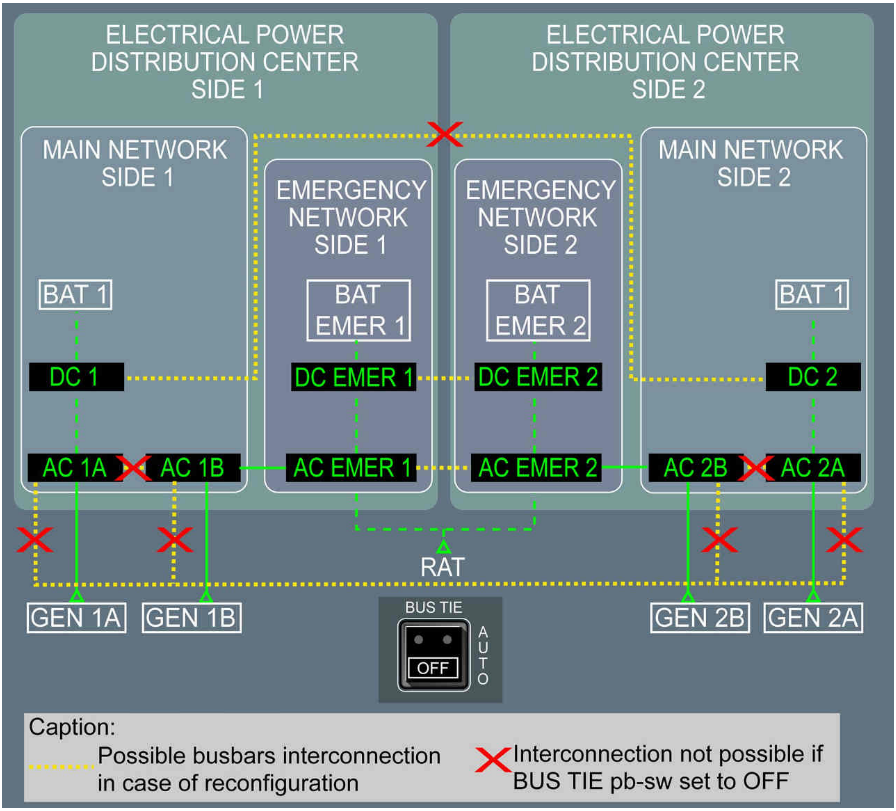

ELEC DC
BAT 1
27V
-4A
BAT EMER 1
27V
8A
BAT EMER 2
27V
8A
BAT 2
27V
8A
DC EMER 1
DC EMER 2
STAT
INV
XX
DC 2
TR 1
XX V
XX A
AC 1A
TR EMER 1
XX V
XX A
AC EMER 1
TR EMER 2
28V
15A
AC EMER 2
TR 2
28V
15A
AC 2A

EMERGENCY CONFIGURATION - BUS TIE PB-SW

Ident.: DSC-24-40-00013506.0001001 / 17 NOV 17
Applicable to: ALL

EMERGENCY CONFIGURATION - BUS TIE PB-SW

EMERGENCY Configuration - BUS TIE pb-sw


ELECTRICAL POWER DISTRIBUTION CENTER SIDE 1
ELECTRICAL POWER DISTRIBUTION CENTER SIDE 2
MAIN NETWORK SIDE 1
EMERGENCY NETWORK SIDE 1
EMERGENCY NETWORK SIDE 2
MAIN NETWORK SIDE 2
BAT 1
BAT EMER 1
BAT EMER 2
BAT 1
DC 1
DC EMER 1
DC EMER 2
DC 2
AC 1A
AC 1B
AC EMER 1
AC EMER 2
AC 2B
AC 2A
RAT
GEN 1A
GEN 1B
GEN 2B
GEN 2A
BUS TIE
OFF
AUTO
Caption:
Possible busbars interconnection in case of reconfiguration
Interconnection not possible if BUS TIE pb-sw set to OFF

In the case of EMER CONFIG procedure, the BUS TIE is pressed to OFF.

In this case, several contactors operate to segregate:
- The normal AC busbars (AC 1A, AC 1B, AC 2B and AC 2A) from/to each other
- The normal DC 1 and DC 2 busbars from each other.

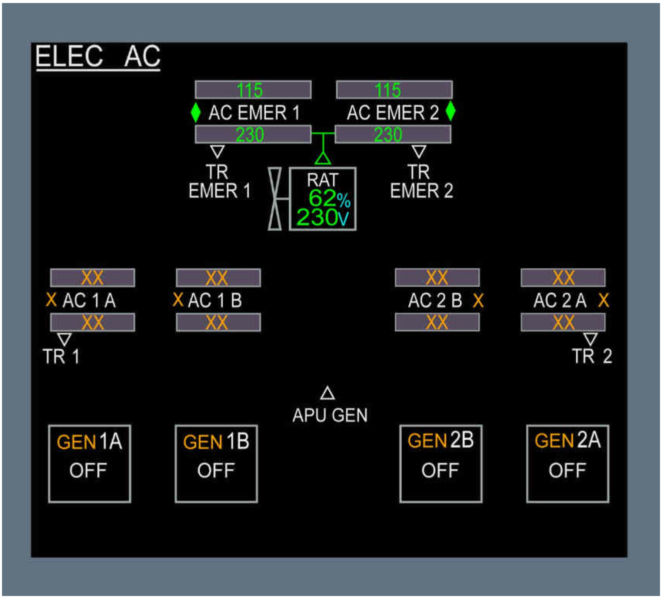
The emergency busbars are not segregated in that case to keep the emergency network powered by the RAT.

L2 For more information on the BUS TIE pb-sw, *Refer to DSC-24-20 BUS TIE pb-sw*.

L1 EMER CONFIG procedure comes on if all normal AC busbars are not power supplied (AC 1A, AC 1B, AC 2B, and AC 2A).

The RAT will automatically extend to power supply the AC emergency busbars (AC EMER 1 and AC EMER 2) with 230 V. The ATU EMER 1 and 2 will then convert the AC 230 V in AC 115 V for the same AC emergency busbars.

AC - In Flight - EMERGENCY Configuration

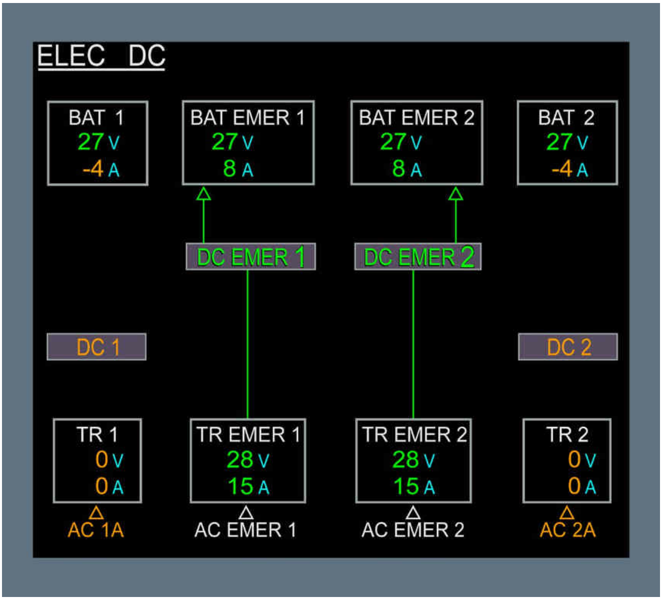

ELEC AC
115
AC EMER 1
230
115
AC EMER 2
230
TR
EMER 1
RAT
62%
230V
TR
EMER 2
XX
X AC 1 A
XX
TR 1
XX
X AC 1 B
XX
XX
AC 2 B X
XX
XX
AC 2 A X
XX
TR 2
APU GEN
GEN 1A
OFF
GEN 1B
OFF
GEN 2B
OFF
GEN 2A
OFF

The DC normal busbars (DC 1 and DC 2) are not power supplied. The DC emergency busbars (DC EMER 1 and DC EMER 2) are power supplied by the AC emergency busbars (AC EMER 1 and AC EMER 2).

The BAT EMER 1 and 2 could be respectively loaded by DC EMER 1 and DC EMER 2, if these DC busbars are available.

Each BAT EMER is kept connected to the DC EMER of the same side.

DC - In Flight - EMERGENCY Configuration


ELEC DC
BAT 1
27 V
-4 A
BAT EMER 1
27 V
8 A
BAT EMER 2
27 V
8 A
BAT 2
27 V
-4 A
DC EMER 1
DC EMER 2
DC 1
DC 2
TR 1
0 V
0 A
TR EMER 1
28 V
15 A
TR EMER 2
28 V
15 A
TR 2
0 V
0 A
AC 1A
AC EMER 1
AC EMER 2
AC 2A

L2 For more information on the EMER CONFIG procedure, *Refer to PRO-ABN-ELEC ELEC EMER CONFIG*.

EMERGENCY CONFIGURATION, WITH APU RUNNING

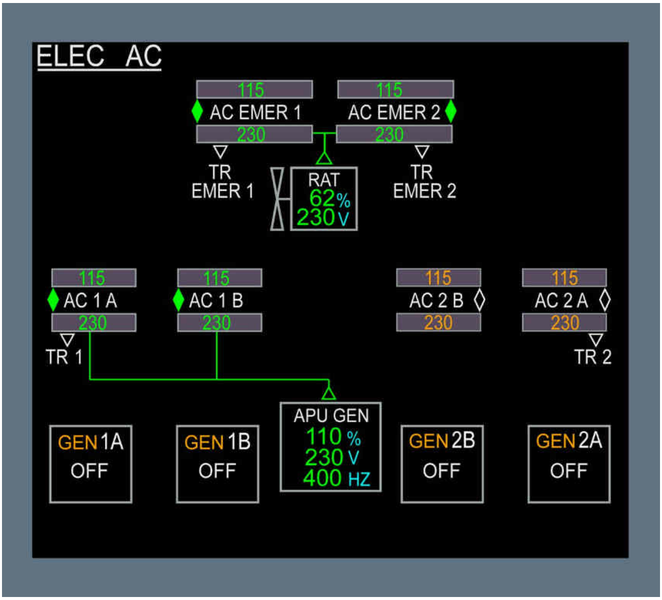
Ident.: DSC-24-40-00014363.0001001 / 07 MAY 18
Applicable to: ALL

In the case of loss of power supply on all normal AC busbars (AC 1A, AC 1B, AC 2B, and AC 2A), the RAT automatically extend to power supply the AC emergency busbars (AC EMER 1 and AC EMER 2) with 230 V.
If the loss of all normal AC busbars is due to an all engine failure in flight, the APU automatically starts (APU autostart function), and supplies the AC side 1 busbars (AC 1A and AC 1B) with 230 V.

L2 For more information on the APU autostart function, *Refer to DSC-49-30 Automatic APU Start and Bleed Supply*.

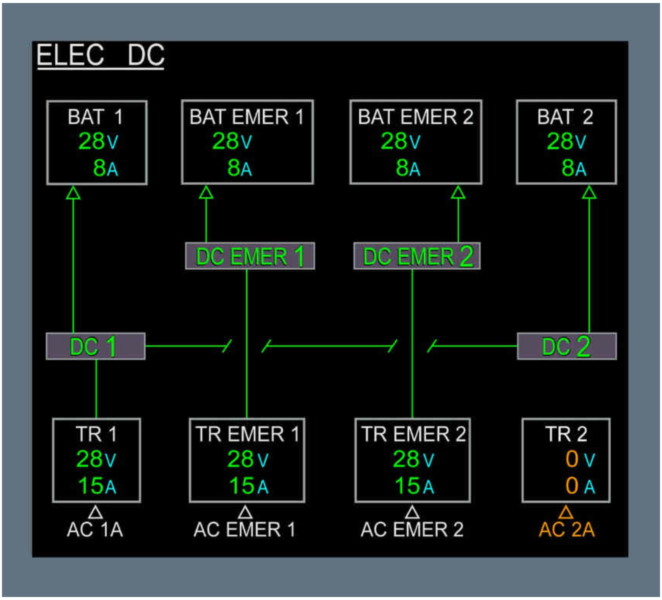
L1 The AC side 2 busbars (AC 2B and AC 2A) are not power supplied.

AC - In Flight - EMERGENCY Configuration, with APU Running


ELEC AC
115
AC EMER 1
230
115
AC EMER 2
230
TR
EMER 1
RAT
62 %
230 V
TR
EMER 2
115
AC 1 A
230
115
AC 1 B
230
115
AC 2 B
230
115
AC 2 A
230
TR 1
TR 2
APU GEN
110 %
230 V
400 HZ
GEN 1A
OFF
GEN 1B
OFF
GEN 2B
OFF
GEN 2A
OFF

The AC 1A busbar power supplies the TR 1 and so the DC 1 busbar. Because the TR 2 is not power supplied by AC 2A busbar, the TR 1 supplies the DC 2 busbar. The DC emergency busbars (DC EMER 1 and DC EMER 2) are power supplied by the AC emergency busbars (AC EMER 1 and AC EMER 2).

DC - In Flight - EMERGENCY Configuration, with APU Running

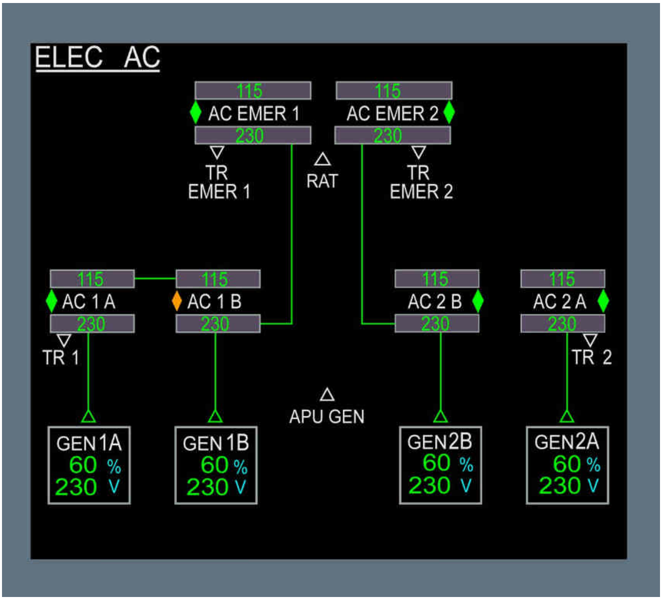

ELEC DC
BAT 1
28V
8A
BAT EMER 1
28V
8A
BAT EMER 2
28V
8A
BAT 2
28V
8A
DC EMER 1
DC EMER 2
DC 1
DC 2
TR 1
28V
15A
TR EMER 1
28V
15A
TR EMER 2
28V
15A
TR 2
0 V
0 A
AC 1A
AC EMER 1
AC EMER 2
AC 2A

IN FLIGHT, ATU FAILURE

Ident.: DSC-24-40-00012612.0001001 / 28 APR 17
Applicable to: ALL

The ATU converts AC 230 V power to AC 115 V. If one ATU fails (e.g. ATU 1B), the AC 115 V busbar will automatically power the other AC115 V busbar on the same side (e.g. AC 1A 115 V supply the AC 1B 115 V).

AC - ATU failure

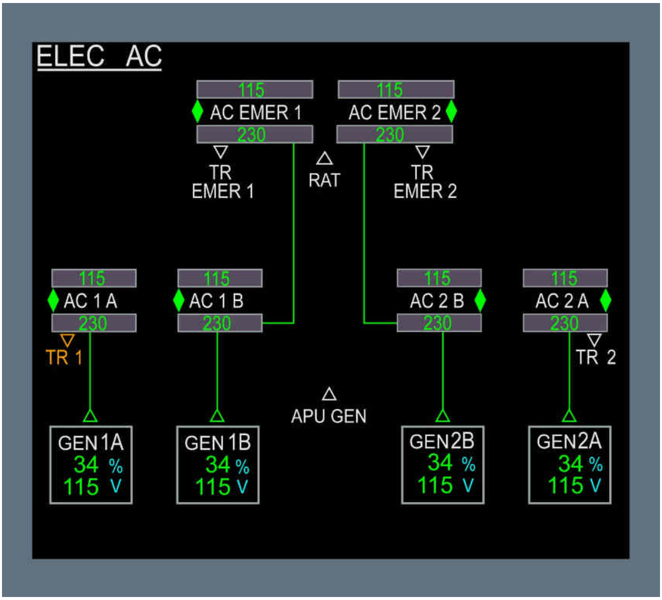

ELEC AC
115
AC EMER 1
230
TR
EMER 1
115
AC EMER 2
230
TR
EMER 2
RAT
115
AC 1 A
230
TR 1
115
AC 1 B
230
115
AC 2 B
230
115
AC 2 A
230
TR 2
APU GEN
GEN1A
60 %
230 V
GEN1B
60 %
230 V
GEN2B
60 %
230 V
GEN2A
60 %
230 V

IN FLIGHT, TR FAILURE

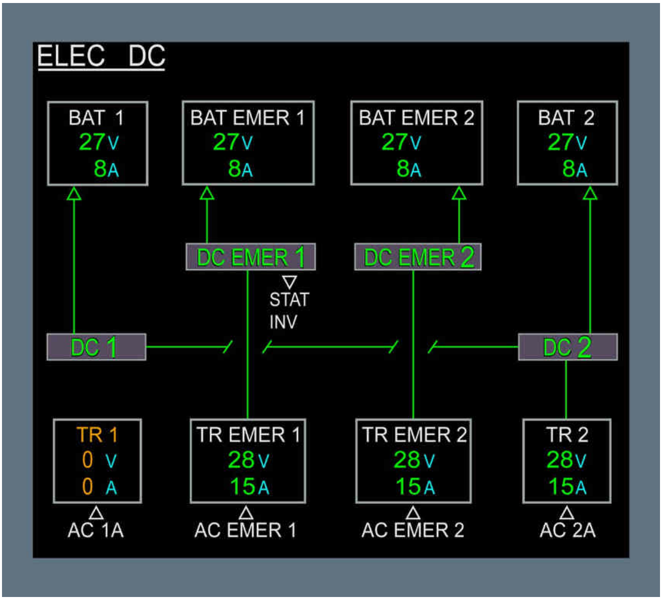
Ident.: DSC-24-40-00013571.0001001 / 28 APR 17
Applicable to: ALL

The TR converts AC 230 V power to DC 28 V. If one TR fails (e.g. TR 1), the DC 2 busbar will automatically power the DC 1 busbar. The logic is the same between DC EMER 1 and DC EMER 2 busbars.

AC - In Flight, TR Failure


ELEC AC
115
AC EMER 1
230
115
AC EMER 2
230
TR
EMER 1
RAT
TR
EMER 2
115
AC 1 A
230
TR 1
115
AC 1 B
230
115
AC 2 B
230
115
AC 2 A
230
TR 2
APU GEN
GEN 1A
34 %
115 V
GEN 1B
34 %
115 V
GEN2B
34 %
115 V
GEN2A
34 %
115 V

DC - In Flight, TR Failure


ELEC DC
BAT 1
27V
8A
BAT EMER 1
27V
8A
BAT EMER 2
27V
8A
BAT 2
27V
8A
DC EMER 1
DC EMER 2
STAT
INV
DC 1
DC 2
TR 1
0 V
0 A
TR EMER 1
28V
15A
TR EMER 2
28V
15A
TR 2
28V
15A
AC 1A
AC EMER 1
AC EMER 2
AC 2A

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AIRCRAFT SYSTEMS

25 - EQUIPMENT

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DSC-25-10 Cockpit

Overview.......... A
Cockpit View.......... B
Cockpit Panels.......... C
Cockpit Seats.......... D

DSC-25-20 Emergency Equipment

Emergency Equipment.......... A

DSC-25-30 Crew Rest Compartments

DSC-25-30-10 Flight Crew Rest Compartment

Flight Crew Rest Compartment.......... A

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OVERVIEW

Ident.: DSC-25-10-00001925.0001001 / 02 OCT 14
Applicable to: ALL

The cockpit is designed for a two-member flight crew.

The aircraft and system controls are arranged in such a way that, when the pilots are seated in their normal flight configuration:
- Both flight crewmember are forward facing
- Both flight crewmember can monitor all instruments and systems
- Each flight crewmember can access and control all aircraft systems controls required to operate the aircraft.

In addition, the Forward Facing cockpit layout with the "Dark Cockpit" concept assists both crewmember to properly manage and monitor the various aircraft systems.
L2 For more information, *Refer to FCTM/AOP-10-20-30 Dark Cockpit Concept for Overhead Panel*.

L1 Most system controls are located on:
- The pedestal
- The main instrument panel
- The glareshield
- The overhead panel.

There are two adjustable seats for the flight crew and two seats at the rear of the cockpit for two additional occupants.

L12

Note: *This chapter describes the panels and equipment of the basic aircraft configuration, and may not correspond to the customized configuration of a specific aircraft.*

For more information on the installed equipment or panels:
- *Refer to the relevant chapter's system description*
- *Use the OPS Library INTERFACE SEARCH.*

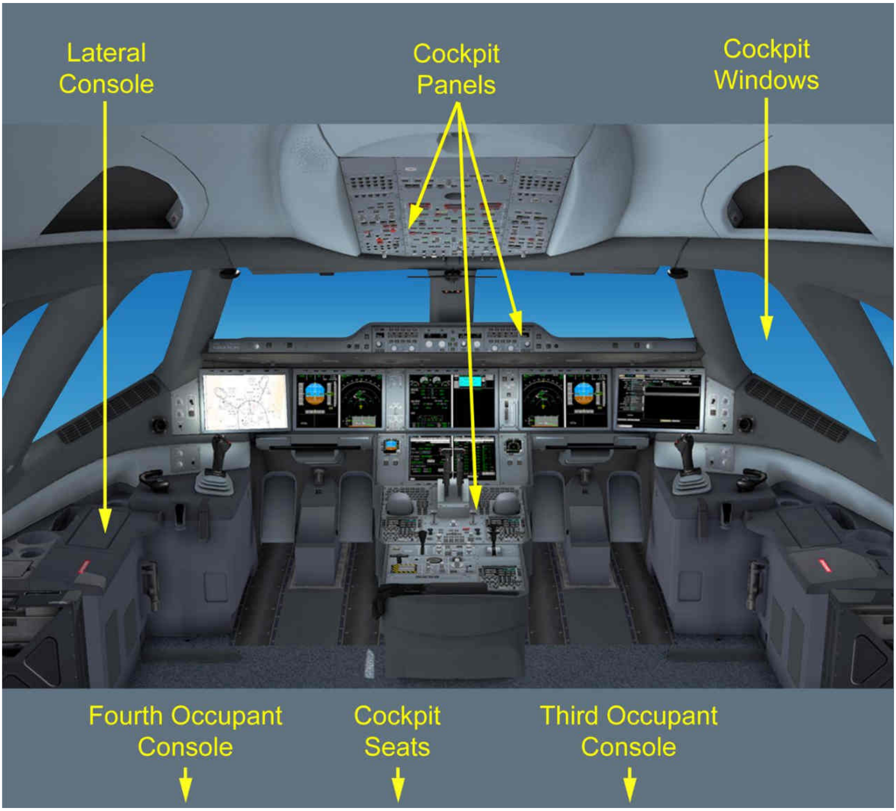
COCKPIT VIEW

Applicable to: ALL

Ident.: DSC-25-10-10-00001970.0001001 / 29 APR 14

COCKPIT FRONT VIEW

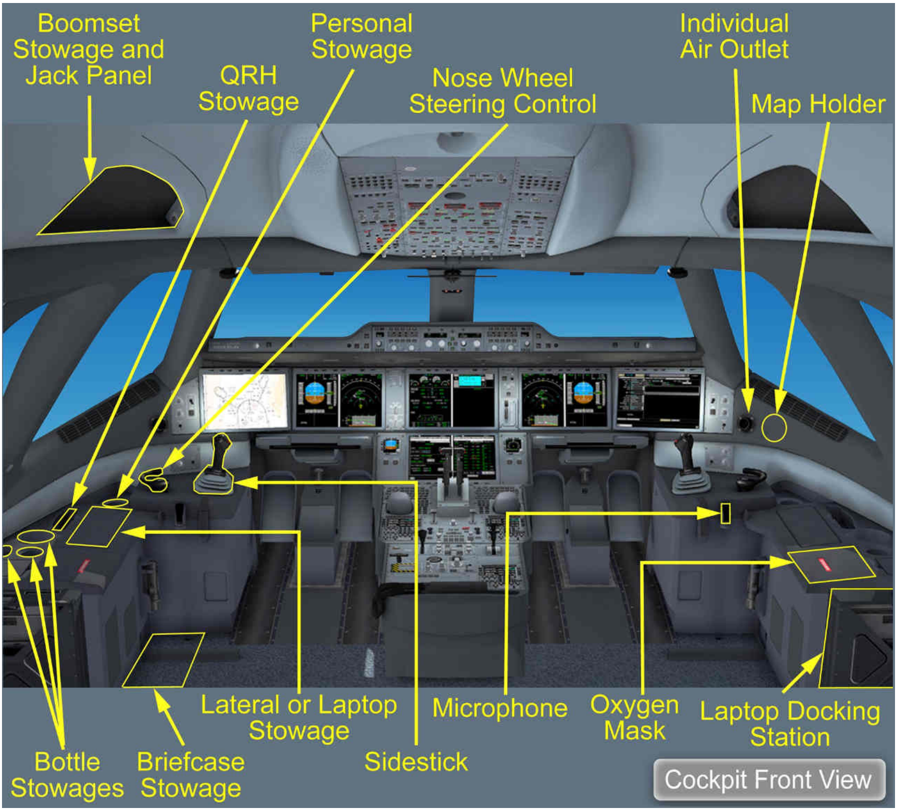
Cockpit Front View


Lateral Console
Cockpit Panels
Cockpit Windows
Fourth Occupant Console
Cockpit Seats
Third Occupant Console

Ident.: DSC-25-10-10-00001973.0001001 / 23 OCT 17

LATERAL CONSOLE

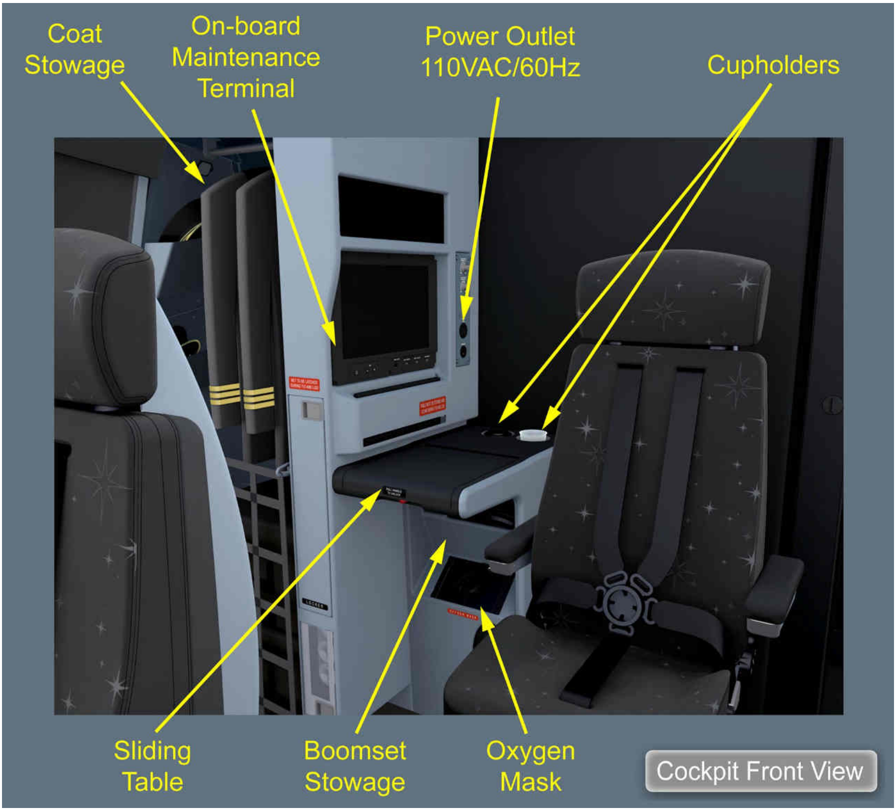
Cockpit Lateral Console


Boomset Stowage and Jack Panel
Personal Stowage
Individual Air Outlet
QRH Stowage
Nose Wheel Steering Control
Map Holder
Lateral or Laptop Stowage
Microphone
Oxygen Mask
Laptop Docking Station
Bottle Stowages
Briefcase Stowage
Sidestick
Cockpit Front View

Ident.: DSC-25-10-10-00001974.0001001 / 23 OCT 17

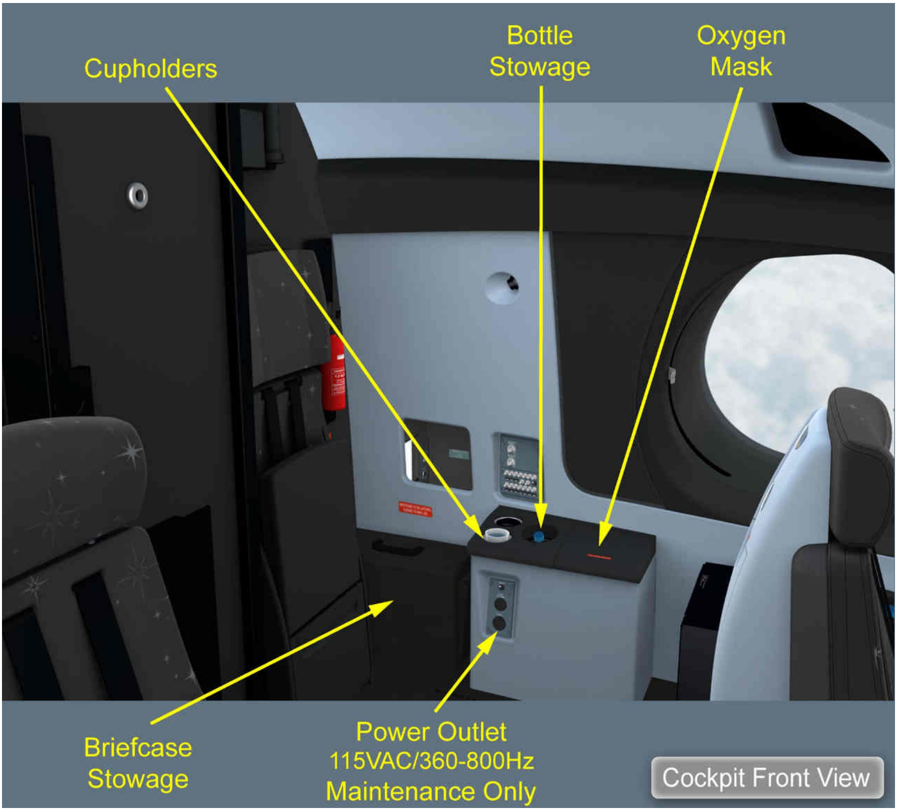
THIRD OCCUPANT CONSOLE

Third Occupant Console


Coat Stowage
On-board Maintenance Terminal
Power Outlet 110VAC/60Hz
Cupholders
Sliding Table
Boomset Stowage
Oxygen Mask
Cockpit Front View

Ident.: DSC-25-10-10-00001975.0001001 / 13 JAN 15

FOURTH OCCUPANT CONSOLE


Cupholders
Bottle Stowage
Oxygen Mask
Briefcase Stowage
Power Outlet
115VAC/360-800Hz
Maintenance Only
Cockpit Front View

Fourth Occupant Console

Ident.: DSC-25-10-10-00001976.0001001 / 29 APR 14

COCKPIT WINDOWS

For the cockpit windows description, *Refer to DSC-56-10 Overview*.

Ident.: DSC-25-10-10-00024400.0001001 / 23 OCT 17

LAPTOP DOCKING STATION

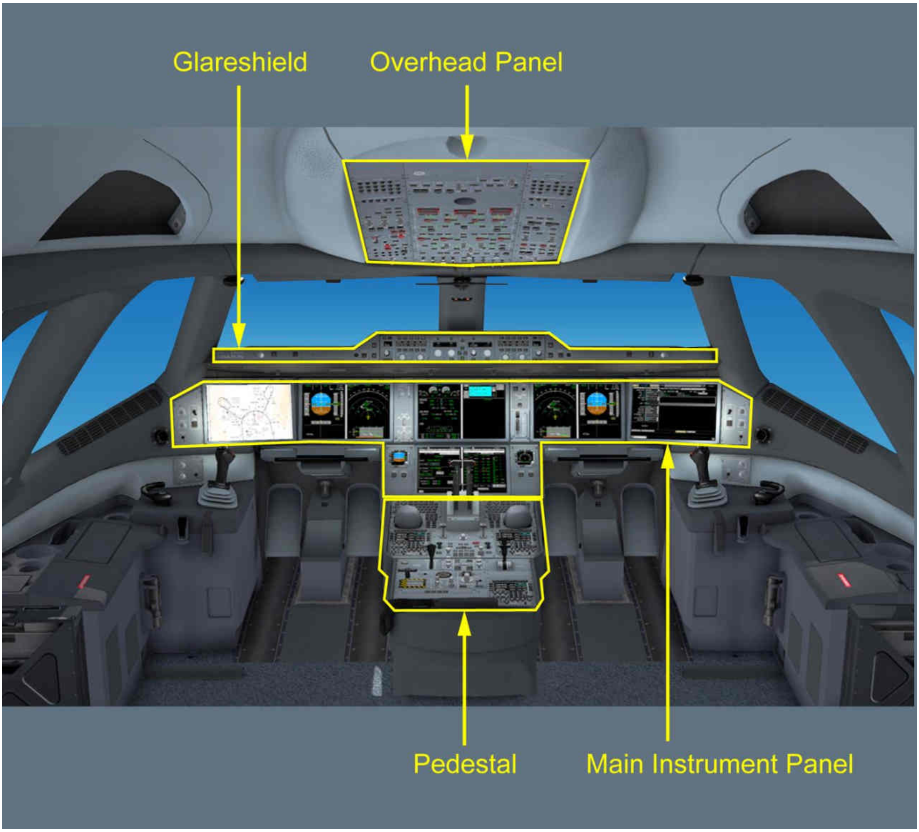
For the laptop docking station description, *Refer to DSC-46-OIS-20-60 Overview*.

COCKPIT PANELS

Applicable to: ALL

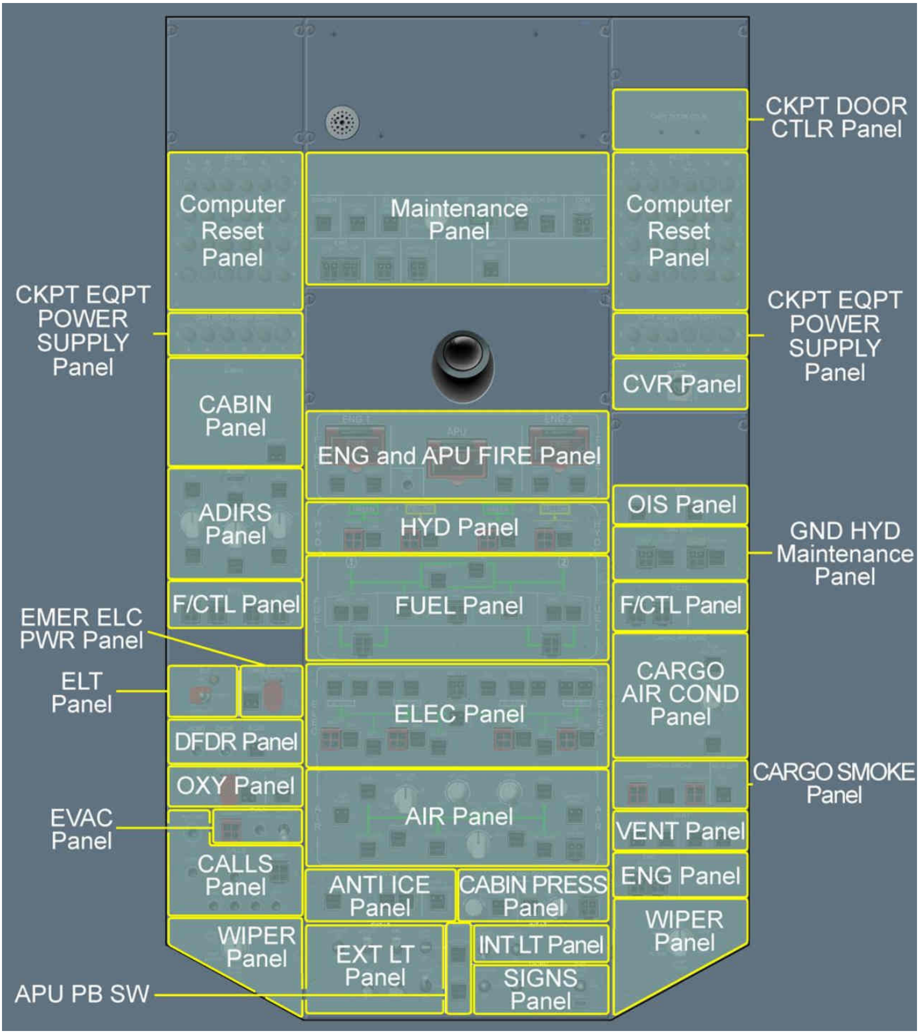
Ident.: DSC-25-10-20-00016017.0001001 / 29 APR 14

Cockpit Panels


Glareshield
Overhead Panel
Pedestal
Main Instrument Panel

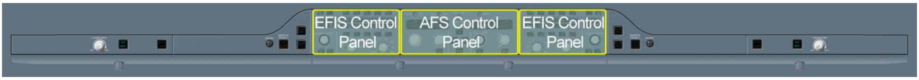
Ident.: DSC-25-10-20-00016018.0001001 / 29 APR 14

Overhead Panel


CKPT DOOR CTLR Panel
Computer Reset Panel
Maintenance Panel
Computer Reset Panel
CKPT EQPT POWER SUPPLY Panel
CKPT EQPT POWER SUPPLY Panel
CVR Panel
CABIN Panel
ENG and APU FIRE Panel
OIS Panel
ADIRS Panel
HYD Panel
GND HYD Maintenance Panel
F/CTL Panel
FUEL Panel
F/CTL Panel
EMER ELC PWR Panel
ELT Panel
CARGO AIR COND Panel
ELEC Panel
DFDR Panel
OXY Panel
CARGO SMOKE Panel
EVAC Panel
AIR Panel
VENT Panel
CALLS Panel
ANTI ICE Panel
CABIN PRESS Panel
ENG Panel
WIPER Panel
EXT LT Panel
INT LT Panel
WIPER Panel
SIGNS Panel
APU PB SW

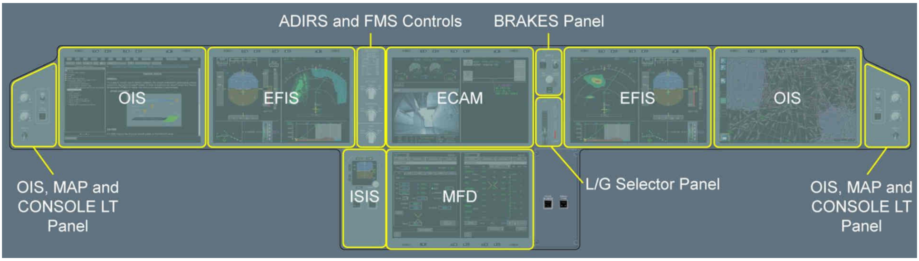
Ident.: DSC-25-10-20-00016019.0001001 / 29 APR 14

Glareshield


EFIS Control Panel
AFS Control Panel
EFIS Control Panel

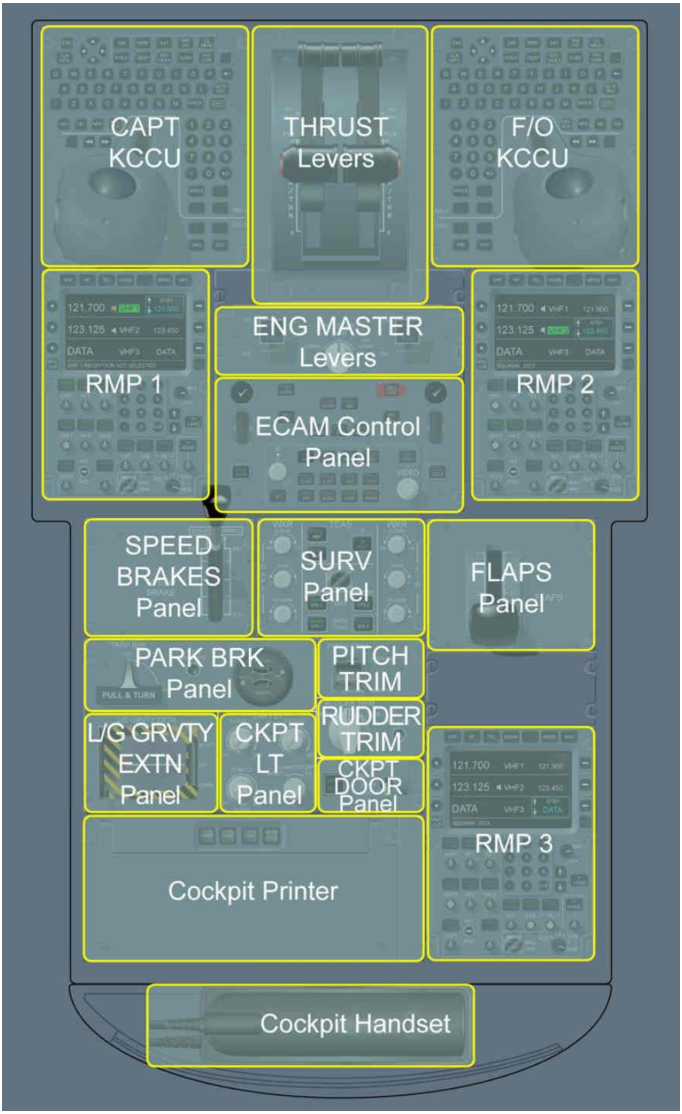
Ident.: DSC-25-10-20-00016020.0001001 / 29 APR 14

Main Instrument Panel


ADIRS and FMS Controls
BRAKES Panel
OIS
EFIS
ECAM
EFIS
OIS
ISIS
MFD
OIS, MAP and CONSOLE LT Panel
L/G Selector Panel
OIS, MAP and CONSOLE LT Panel

Ident.: DSC-25-10-20-00016021.0001001 / 29 APR 14

Pedestal

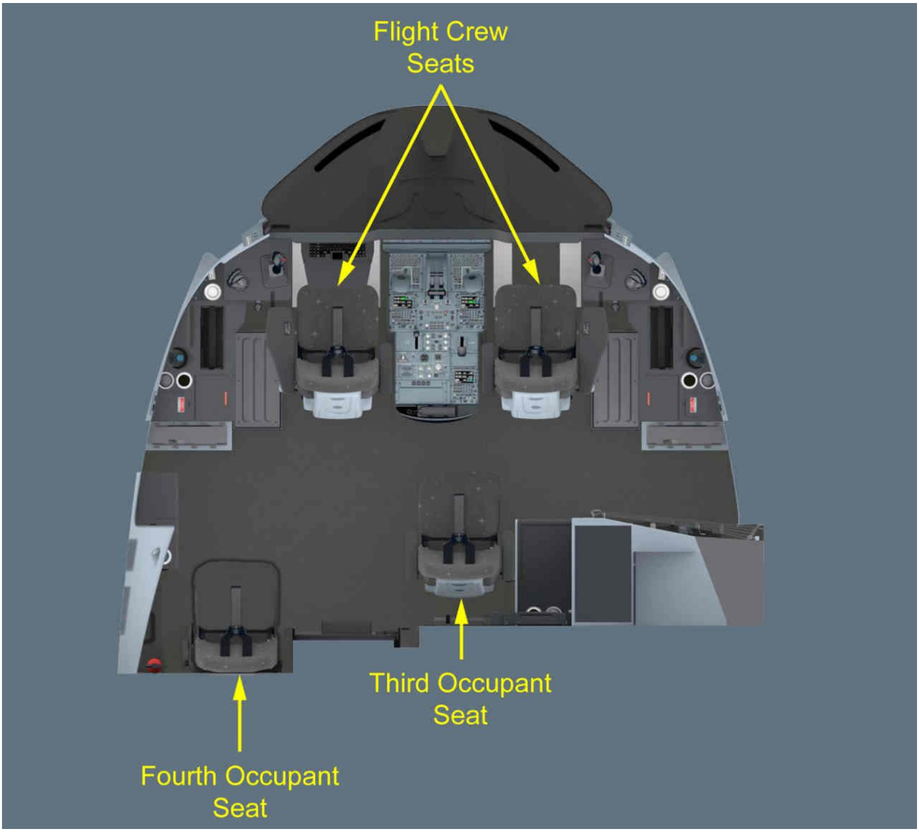

CAPT KCCU
THRUST Levers
F/O KCCU
RMP 1
ENG MASTER Levers
ECAM Control Panel
RMP 2
SPEED BRAKES Panel
SURV Panel
FLAPS Panel
PARK BRK Panel
PITCH TRIM
RUDDER TRIM
L/G GRVTY EXTN Panel
CKPT LT Panel
CKPT DOOR Panel
RMP 3
Cockpit Printer
Cockpit Handset

COCKPIT SEATS

Applicable to: ALL

Ident.: DSC-25-10-30-00001972.0001001 / 29 APR 14

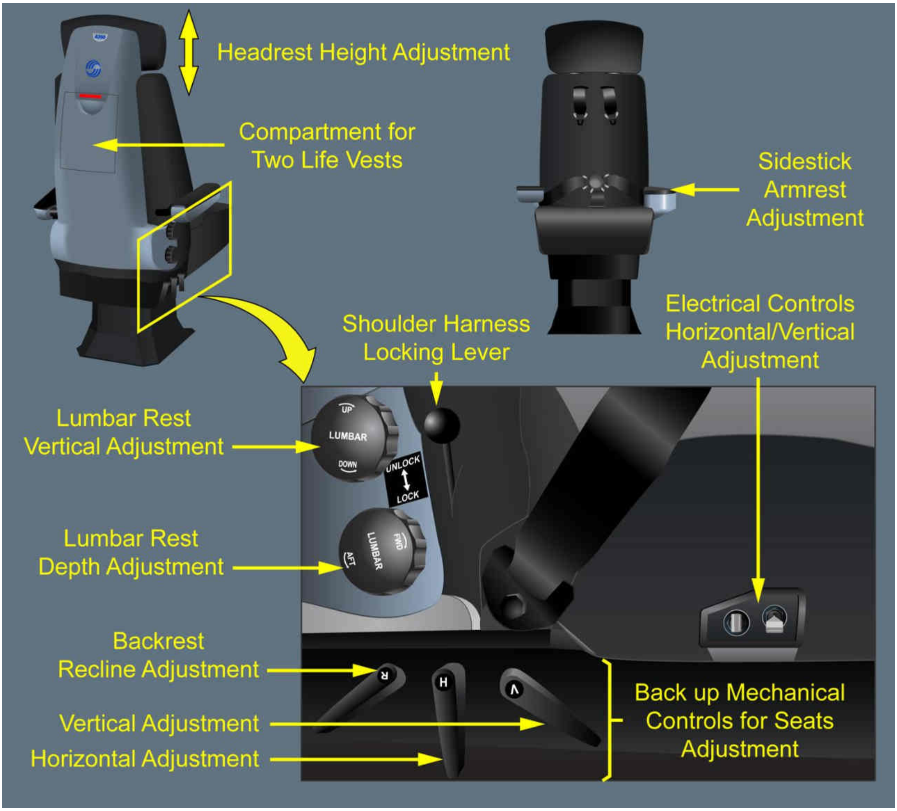
Cockpit Plan


Flight Crew
Seats
Third Occupant
Seat
Fourth Occupant
Seat

Ident.: DSC-25-10-30-00001982.0001001 / 03 JAN 19

FLIGHT CREW SEAT

Flight Crew Seat


Headrest Height Adjustment
Compartment for Two Life Vests
Sidestick Armrest Adjustment
Shoulder Harness Locking Lever
Electrical Controls Horizontal/Vertical Adjustment
Lumbar Rest Vertical Adjustment
UP
LUMBAR
DOWN
UNLOCK
LOCK
Lumbar Rest Depth Adjustment
FWD
LUMBAR
AFT
Backrest Recline Adjustment
R
H
V
Vertical Adjustment
Horizontal Adjustment
Back up Mechanical Controls for Seats Adjustment

FLIGHT CREW SEAT ADJUSTMENT

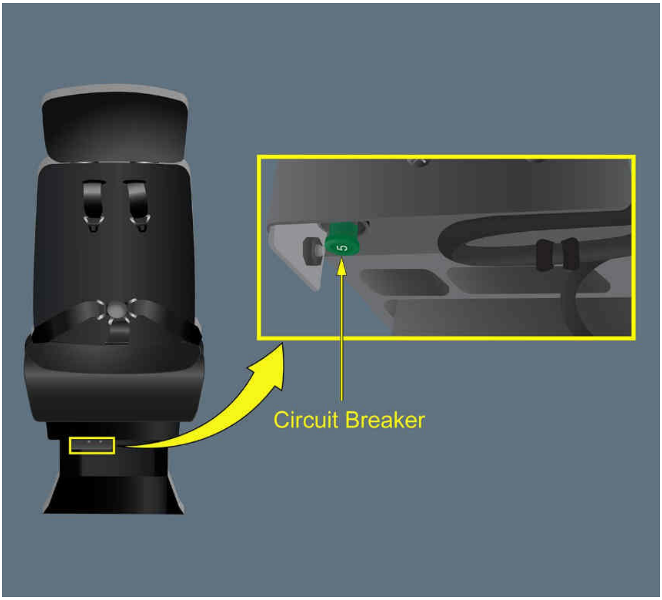
In order to electrically adjust the seat, the flight crew can press the horizontal or the vertical electrical controls in the desired direction.

As a backup, in order to mechanically adjust the seat, the flight crew can lift the horizontal or the vertical mechanical control handle.

In order to manually adjust the backrest position of the seat, the flight crew can lift the backrest recline mechanical control handle.

In order to adjust the depth and the vertical position of the lumbar rest, the flight crew turns the appropriate lumbar rest controller to the desired position.

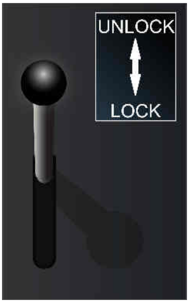
Note: *A circuit breaker is under the seat. When it is pulled, this circuit breaker stops the electrical power of the seat.*



HEADREST HEIGHT ADJUSTMENT

The flight crew can manually adjust the height of the headrest.

SHOULDER HARNESS LOCKING LEVER



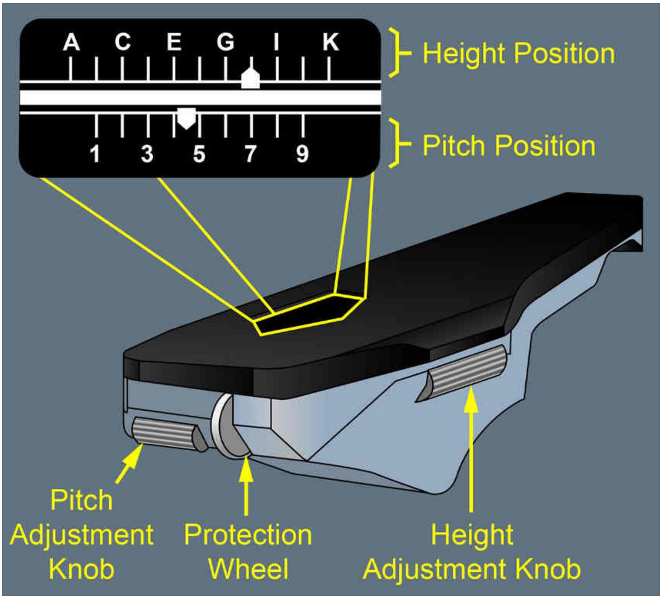
In order to lock the shoulder harness position, the flight crew sets the shoulder harness lever to LOCK.

SIDESTICK ARMREST ADJUSTMENT

In order to adjust the position of the sidestick armrest, the flight crew:

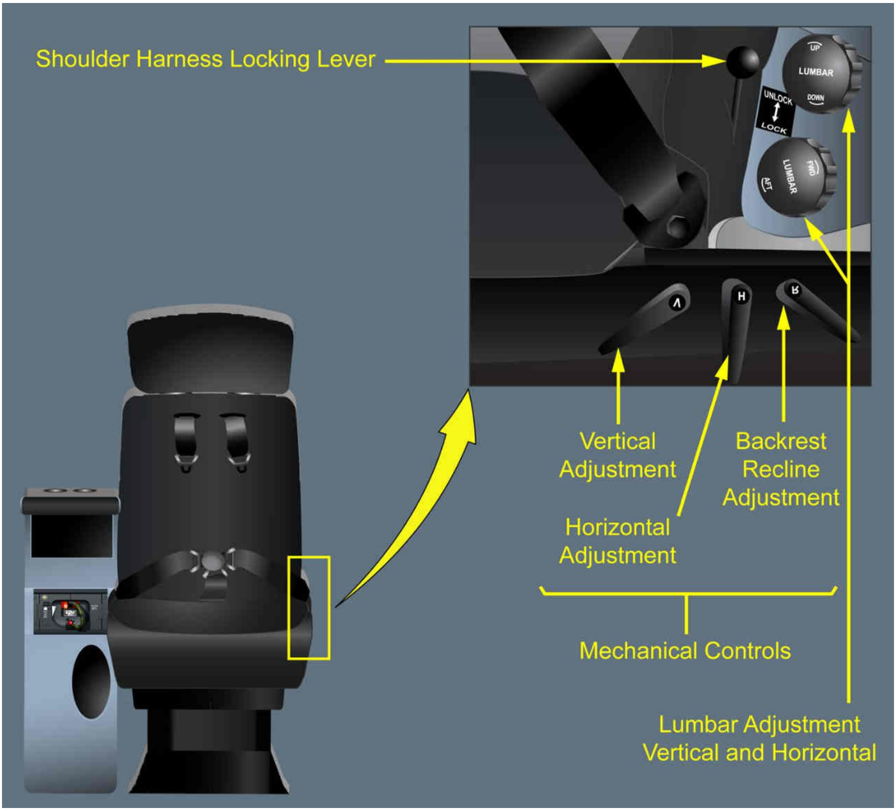
- Turns the pitch adjustment knob to adjust the pitch of the sidestick armrest
- Turns the height adjustment knob to adjust the height of the sidestick armrest.

Sidestick Armrest


A C E G I K
Height Position
1 3 5 7 9
Pitch Position
Pitch Adjustment Knob
Protection Wheel
Height Adjustment Knob

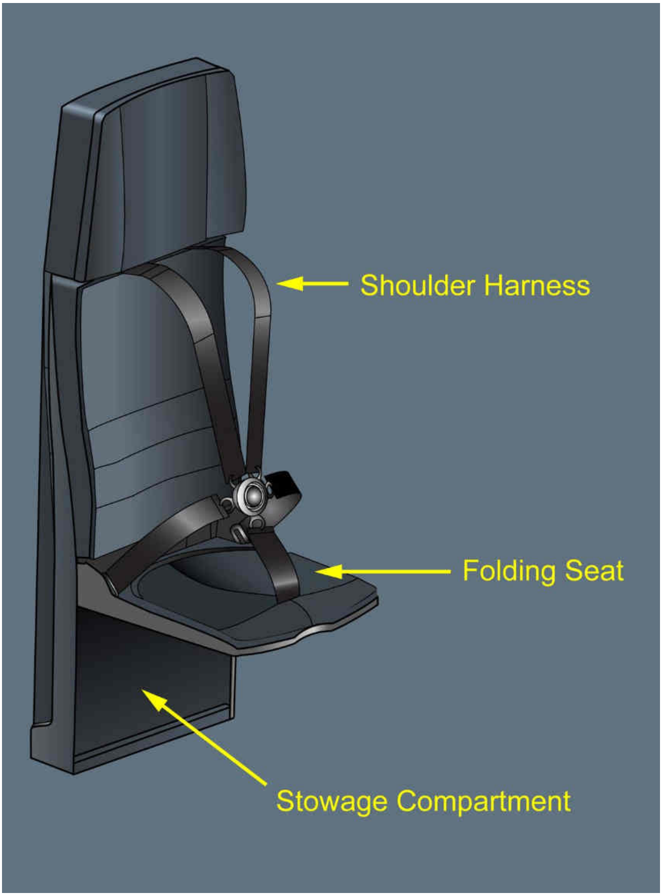
THIRD OCCUPANT SEAT

Third Occupant Seat


Shoulder Harness Locking Lever
UP
LUMBAR
DOWN
UNLOCK
LOCK
FWD
LUMBAR
AFT
V
H
R
Vertical Adjustment
Backrest Recline Adjustment
Horizontal Adjustment
Mechanical Controls
Lumbar Adjustment Vertical and Horizontal

FOURTH OCCUPANT SEAT

Fourth Occupant Seat


Shoulder Harness
Folding Seat
Stowage Compartment

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EMERGENCY EQUIPMENT

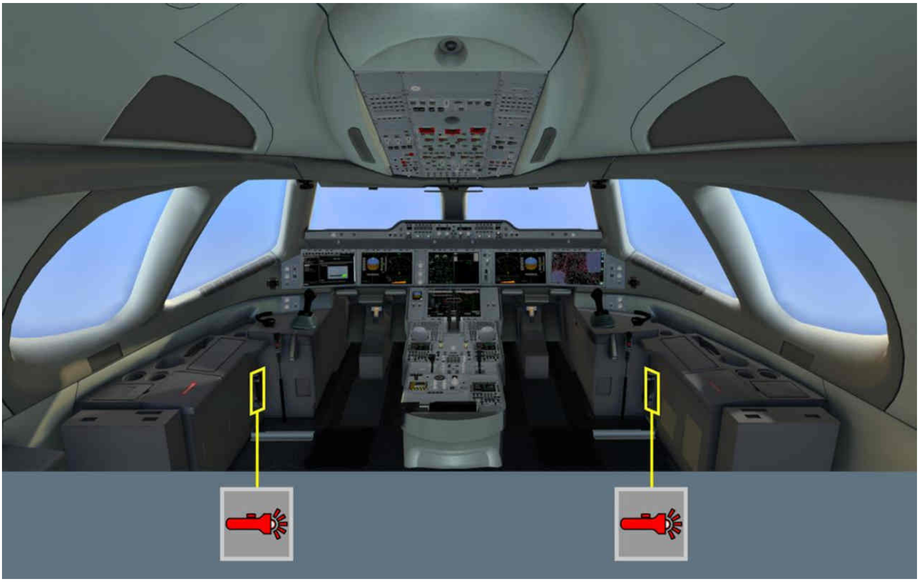
Applicable to: ALL

Ident.: DSC-25-20-10-00016503.0001001 / 29 APR 14

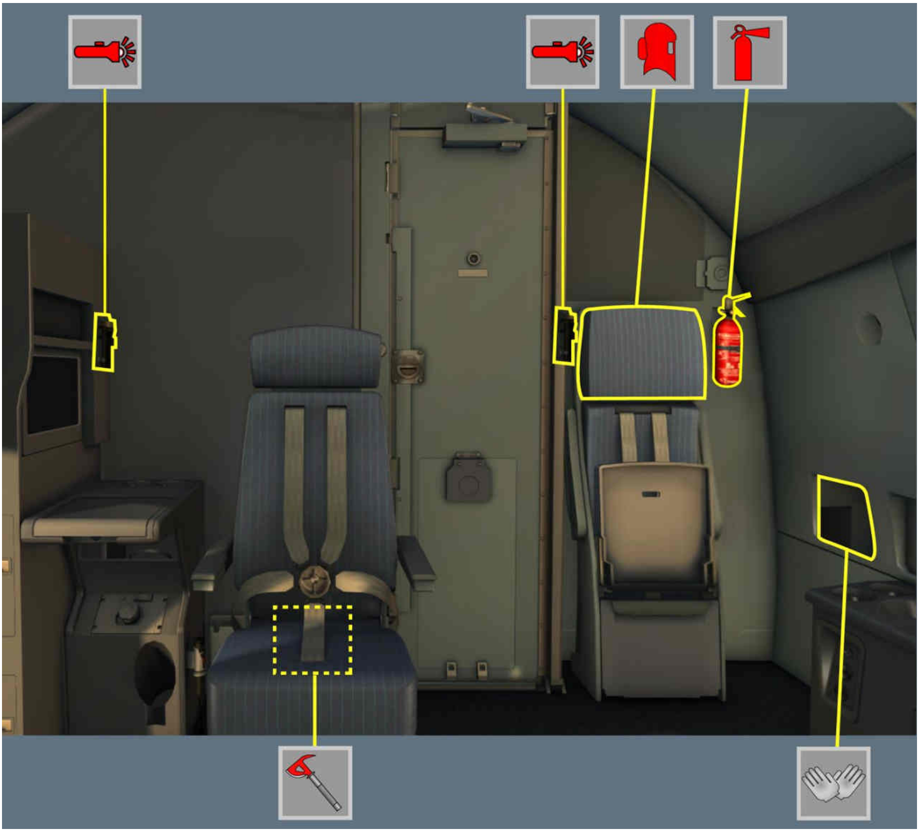
Placards indicate the location of emergency equipment on board the aircraft. To consult the list of symbols, *Refer to CCOM/11-10-20 Typical List of Symbols*.

Ident.: DSC-25-20-10-00016502.0001001 / 29 APR 14

Cockpit Front View



Cockpit Rear View



Ident.: DSC-25-20-10-00016504.0001001 / 03 DEC 15

For the description of the cabin emergency equipment, Refer to CCOM/EMERGENCY AND MEDICAL EQUIPMENT/Emergency Equipment/Location/Emergency Equipment in the Cabin.

FLIGHT CREW REST COMPARTMENT

Ident.: DSC-25-30-10-00020593.0001001 / 02 OCT 14
Applicable to: ALL

DESCRIPTION

The Flight Crew Rest Compartment (FCRC) allow two flight crew members to relax during long-haul flights.
The FCRC must not be occupied during taxi, takeoff and landing, unless it has been fitted with the appropriate equipment.
For the description and operation of the FCRC, *Refer to CCOM/02-70-10 Flight Crew Rest Compartment - Introduction*.

EVACUATION

The primary evacuation path is the main entrance door of the FCRC.
When the main entrance is not usable, the evacuation is possible through an emergency hatch. For the description of the emergency hatch, *Refer to CCOM/02-70-30 Flight Crew Rest Compartment - Emergency Hatch*.

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AIRCRAFT SYSTEMS

26 - FIRE AND SMOKE PROTECTION

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DSC-26-10 Overview

Overview.. A

DSC-26-20 Architecture

Fire Protection System.. A
Smoke Detection System.. B

DSC-26-30 Engine Fire Protection

DSC-26-30-10 System Description

Overview.. A
Detection.. B
Extinguishing.. C

DSC-26-30-20 Controls and Indicators

Cockpit View... A
ENG MASTER Panel.. B
FIRE Panel... C

DSC-26-40 APU Fire Protection

DSC-26-40-10 System Description

Overview.. A
Detection.. B
Extinguishing.. C

DSC-26-40-20 Controls and Indicators

Cockpit View... A
FIRE Panel... B
Maintenance Nose Gear Panel... C

DSC-26-50 Main Landing Gear Fire Protection

DSC-26-50-10 System Description

Detection.. A

DSC-26-50-20 Controls and Indicators

Cockpit View... A
MLG Bay Light.. B

DSC-26-60 Avionics Bay Smoke Dectection

DSC-26-60-10 System Description

Detection.. A

Continued on the following page

Continued from the previous page

DSC-26-60-20 Controls and Indicators

Cockpit View.......A
COND SD Page.......B
VENT Panel.......C

DSC-26-70 Cargo Compartment Protection

DSC-26-70-10 System Description

Overview.......A
Smoke Detection.......B
Fire Extinguishing.......C

DSC-26-70-20 Controls and Indicators

Cockpit View.......A
Cargo Smoke Panel.......B
COND SD Page.......C

DSC-26-80 Cabin Areas Protection

DSC-26-80-10 Lavatory

Lavatory Smoke Detection.......A

DSC-26-80-20 Crew Rest Compartments

Crew Rest Comparment Detection.......A

DSC-26-90 Cabin Systems Smoke Detection

DSC-26-90-10 System Description

Cabin Systems Smoke Detection.......A

DSC-26-90-20 Controls and Indicators

Cockpit View.......A
CAB SYS SMOKE Panel.......B

Localization Title	Toc Index	ID	Reason
DSC-26-90-20 PAX BBAND pb-sw	B	1	Revision of the abbreviation to be in accordance with the abbreviation list.
DSC-26-90-20 PAX BBAND pb-sw	B	2	Revision of the abbreviation to be in accordance with the abbreviation list.

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OVERVIEW

Ident.: DSC-26-10-00000089.0004001 / 07 JUL 16
Applicable to: ALL

The fire and smoke protection system includes:

- Fire and overheat detection for the following aircraft areas:
  - The engines (*Refer to Engine fire protection*)
  - The APU (*Refer to APU fire protection*)
  - The Main Landing Gear (MLG) bay (*Refer to MLG bay fire protection*).
- Smoke detection for the following aircraft areas:
  - The avionics bay (*Refer to Avionics bay smoke detection*)
  - The cargo compartments (*Refer to Cargo compartment smoke detection*)
  - The lavatories (*Refer to Lavatories smoke detection*)
  - The Flight Crew Rest Compartment ◁ (FCRC) and the Cabin Crew Rest Compartment ◁ (CCRC) (*Refer to FCRC and CCRC smoke detection*)
  - The IFE bay (*Refer to Cabin Systems Smoke Detection*)
  - The PAX BBAND bay ◁ (*Refer to Cabin Systems Smoke Detection*).
- Fire extinguishing for the following aircraft areas:
  - The engines (*Refer to Engine fire extinguishing*)
  - The APU (*Refer to APU fire extinguishing*)
  - The cargo compartments (*Refer to Cargo compartment fire extinguishing*)
  - The lavatories (*Refer to Lavatories fire extinguishing*).

In addition, the aircraft has portable fire extinguishers in the cockpit and in the cabin areas.

L2 Fore more information, *Refer to DSC-25-20 Overview*

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FIRE PROTECTION SYSTEM

Ident.: DSC-26-20-00000091.0001001 / 18 APR 14
Applicable to: ALL

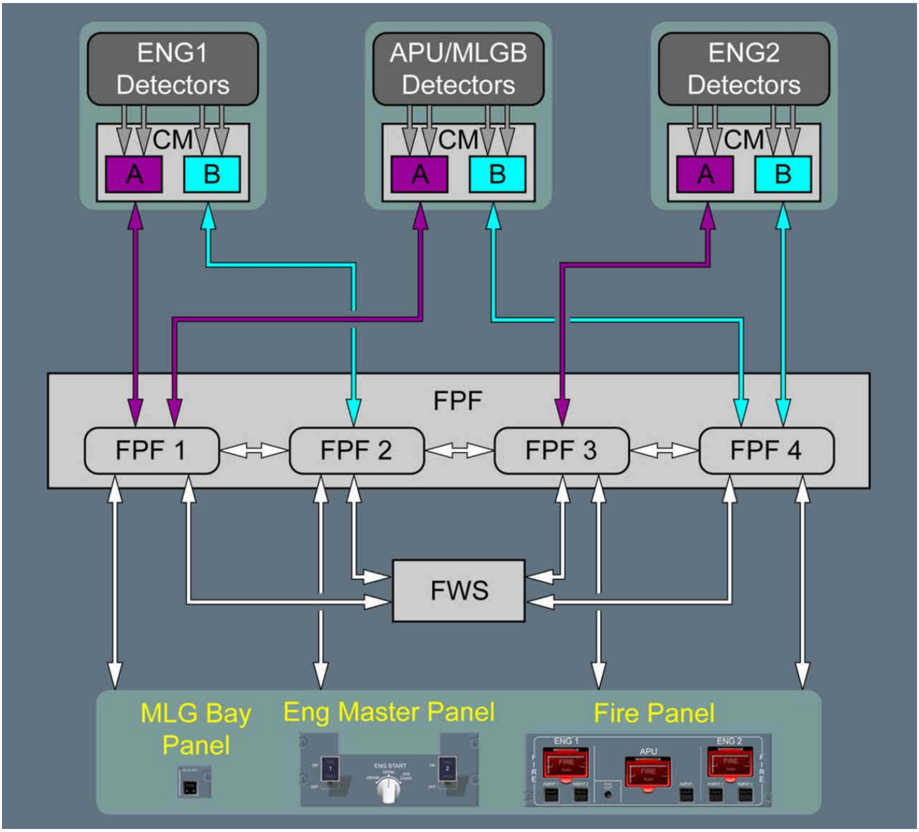
The Fire Protection System (FPS) monitors fire detection in:
- The engines
- The APU
- The MLG bay.

The FPS also manages fire extinguishing in:
- The engines
- The APU.

The FPS has:
- A Fire Protection Function (FPF)
- Detection loops in the sensitive areas
- Conversion Modules (CMs) which change the information from the detection loops into digital information usable by the FPF
- A fire extinguishing system.

The FPF has four independent channels.
L3 The CPIOMs J21, J22, J23 and J24 each host a FPF channel.
L1 In the case of a channel failure, the applicable dispatch message is triggered.

Fire Protection System


ENG1 Detectors
CM
A
B
APU/MLGB Detectors
CM
A
B
ENG2 Detectors
CM
A
B
FPF
FPF 1
FPF 2
FPF 3
FPF 4
FWS
MLG Bay Panel
Eng Master Panel
Fire Panel

SMOKE DETECTION SYSTEM

Ident.: DSC-26-20-00000090.0001001 / 18 APR 14
Applicable to: ALL

The Smoke Detection System (SDS) includes:
- Smoke detectors in several areas of the aircraft
- A Smoke Detection Function (SDF) with two independent and redundant channels.

L2 One channel is active at a time, the other is on stand-by.

L1 The Smoke Detection Function (SDF) is a part of the Cabin Intercommunication Data System (CIDS). The SDF monitors the information sent by the smoke detectors

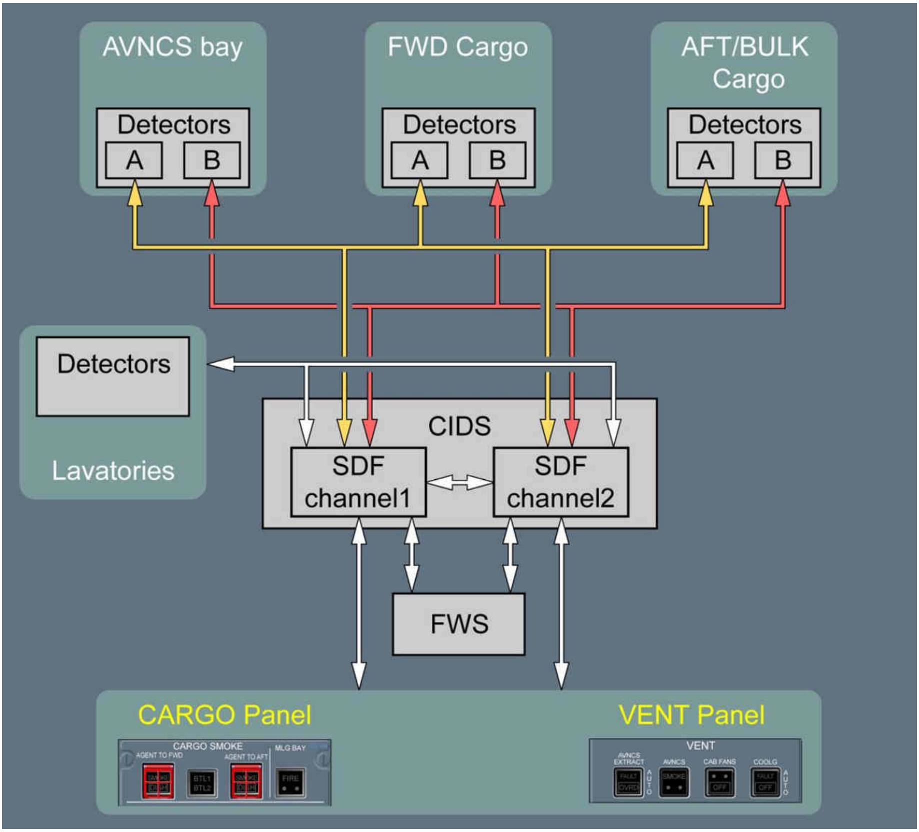
The SDF:
- Monitors the information sent by the smoke detectors
- In the case of a detection of smoke, sends applicable information to the ECAM and the Flight Attendant Panel (FAP)
- Manages the fire extinguishing system of the cargo compartments.

In the case of a SDF loss, the SMOKE DET FAULT ECAM alert is triggerred.

L2 For more information on the SMOKE DET FAULT ECAM alert, *Refer to procedure*.

L1 In the case of a SDF channel failure, the applicable dispatch message is triggered.

Smoke Detection System


AVNCS bay
Detectors
A
B
FWD Cargo
Detectors
A
B
AFT/BULK Cargo
Detectors
A
B
Detectors
Lavatories
CIDS
SDF channel1
SDF channel2
FWS
CARGO Panel
CARGO SMOKE
AGENT TO FWD
AGENT TO AFT
MLG BAY
SMOKE
DISCH
BTL1
BTL2
FIRE
VENT Panel
VENT
AVNCS EXTRACT
AVNCS
CAB FANS
COOLG
FAULT
OVRD
AUTO
SMOKE
OFF

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OVERVIEW

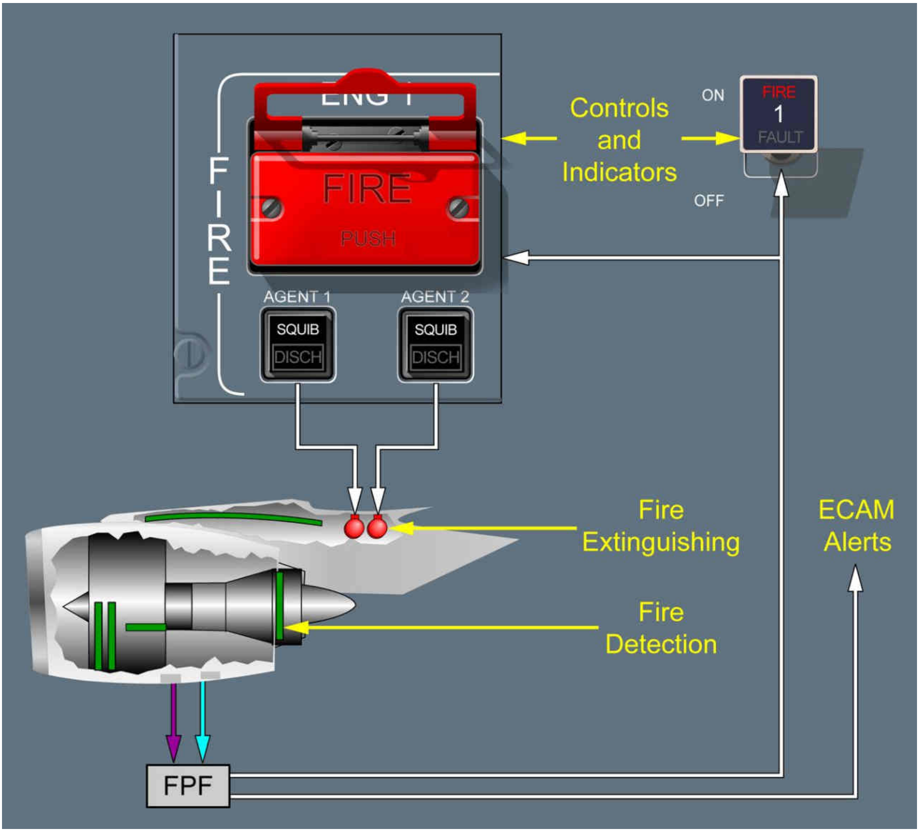
Ident.: DSC-26-30-10-00000187.0001001 / 18 APR 14
Applicable to: ALL

The FPS for each engine has:
- A Fire Protection Function (FPF) that monitors all sensitive zones
- Two extinguisher bottles that discharge extinguisher agent
- Assigned pushbuttons on the FIRE panel

L2 The flight crew uses these pushbuttons to isolate the applicable engine(s) from the other aircraft systems, and to control fire extinguishing.

L1 - Visual and aural alerts.

Engine Fire Protection


ENG 1
FIRE
FIRE
PUSH
AGENT 1
AGENT 2
SQUIB
DISCH
SQUIB
DISCH
Controls
and
Indicators
ON
FIRE
1
FAULT
OFF
Fire
Extinguishing
ECAM
Alerts
Fire
Detection
FPF

DETECTION

Applicable to: ALL

Ident.: DSC-26-30-10-10-00000301.0001001 / 18 APR 14

FIRE DETECTION

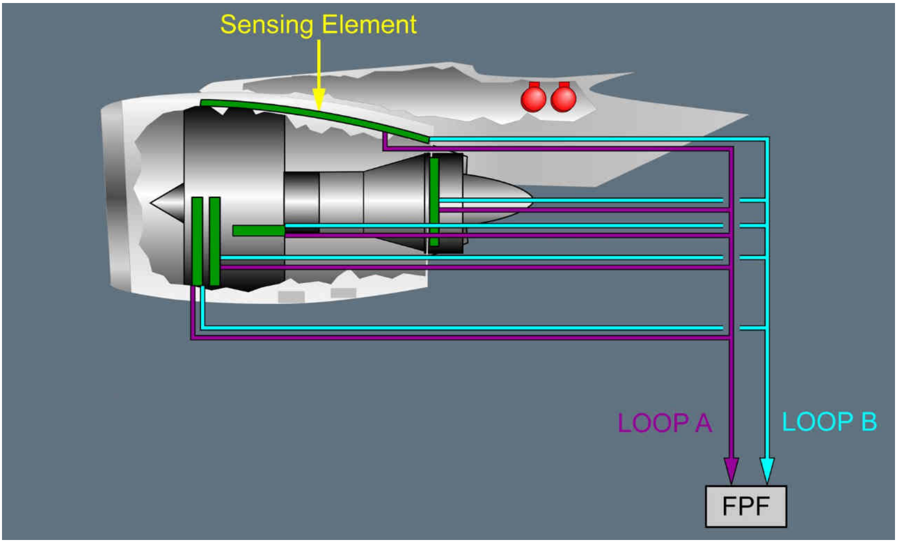
The Fire Protection System (FPS) uses two identical loops (A and B) to monitor the sensitive zones.

L2 The sensitive zones of the engines are the:
- Fan compartment
- Intermediate compressor compartment
- Core compartment / Pylon.

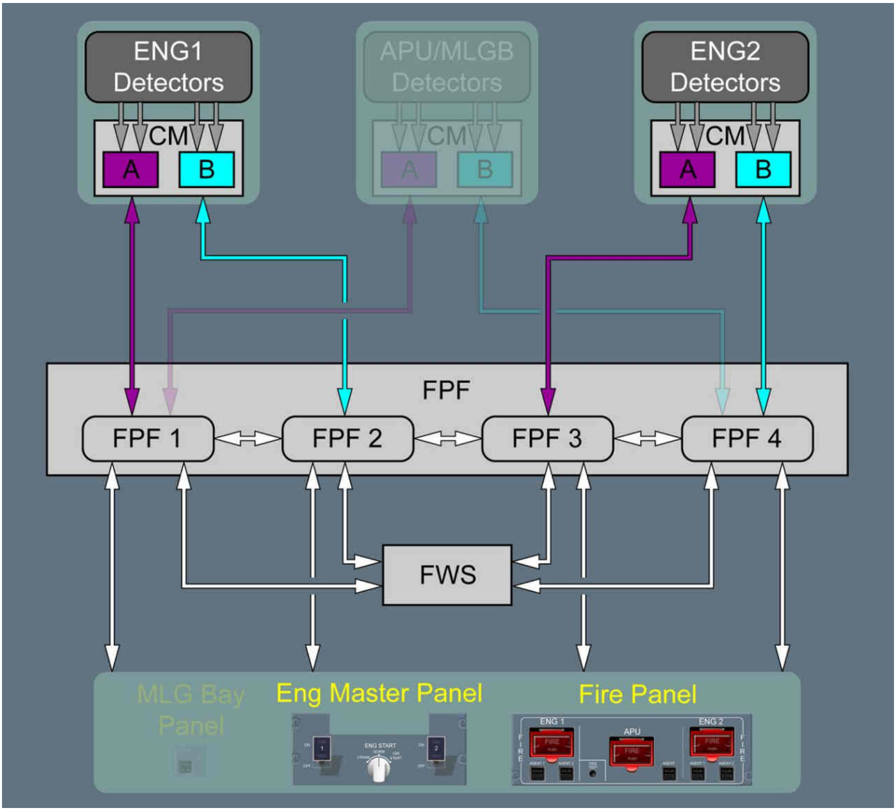
L3 The above zones are protected, because they are heat sensitive zones in which a fire could potentially start.

L1 Each loop has a fire detector for each sensitive zone.
The Fire Protection Function (FPF) receives information from the two loops. The FPF provides information to the ECAM to generate applicable fire warnings or loop cautions.

Engine Fire Protection



Fire Protection System


ENG1 Detectors
CM
A
B
APU/MLGB Detectors
CM
A
B
ENG2 Detectors
CM
A
B
FPF
FPF 1
FPF 2
FPF 3
FPF 4
FWS
MLG Bay Panel
Eng Master Panel
Fire Panel
ENG START
ENG 1
APU
ENG 2
FIRE
FIRE
FIRE

L3 For each engine, two different FPF channels compare the information that they receive from both loops.

L1 When fire is detected in an engine:
- The continuous repetitive chime sounds
- The MASTER WARN lights flash
- The associated ENG FIRE alert is triggered
- The SD displays the ENG SD page
- On the FIRE panel, the assigned FIRE light comes on
- On the ENG MASTER panel, the assigned FIRE light comes on.

Ident.: DSC-26-30-10-10-00000653.0001001 / 03 SEP 14

L2 FIRE DETECTION AND LOOP FAULT LOGIC

If the loops detect either a fire, or a fault, the following alert(s) or dispatch message(s) are triggered:

Detection on LOOP A		Detection on LOOP B		Alert / Dispatch Message
Fire	**Fault**	**Fire**	**Fault**	
Yes	No	Yes	No	ENG 1(2) FIRE
No	Yes	Yes	No	ENG 1(2) FIRE
Yes	No	No	Yes	ENG 1(2) FIRE
No	Yes	No	Yes	ENG 1(2) FIRE On the same engine: If one failure occurs after the other, within 5 s.
				ENG 1(2) FIRE DET FAULT On the same engine: If one failure occurs after the other, at an interval of more than 5 s.
No	Yes	No	No	Applicable dispatch message. If a failure is detected in one loop, the other loop is not affected and continues to operate. Therefore, fire detection remains available.
Yes	No	No	No	
No	No	Yes	No	
No	No	No	Yes	

EXTINGUISHING

Ident.: DSC-26-30-10-00000302.0001001 / 18 APR 14
Applicable to: ALL

The flight crew can isolate and extinguish an engine fire via the FIRE panel in the cockpit.

ENGINE ISOLATION

In case of engine fire, the flight crew can press the assigned ENG FIRE pb-sw to isolate the affected engine.

L2 When pressed, the system:

- Stops the aural fire warning
- Arms the squibs on the fire extinguishers
  The fire extinguisher bottles are ready to discharge.
- Closes the low-pressure fuel valve
- Closes the hydraulic fire shutoff valve
- Closes the engine bleed valve
- Closes the pack flow control valve
- Shuts off the FADEC power supply.

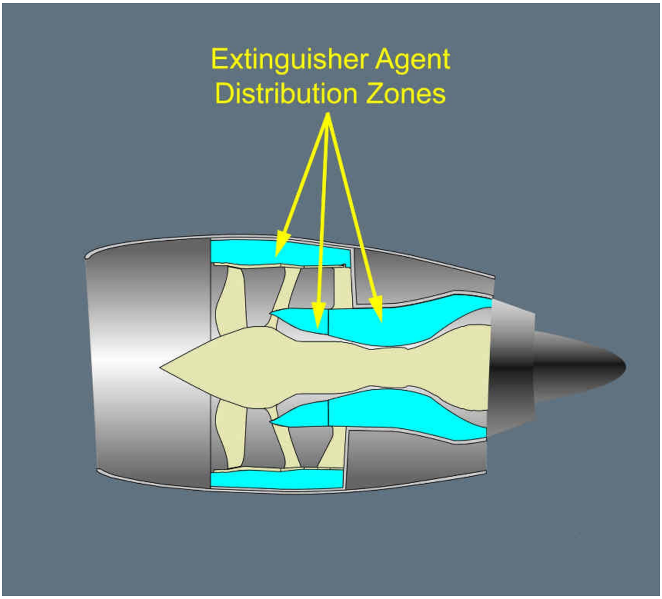
L1 FIRE EXTINGUISHING

Each engine has two fire extinguisher bottles.

L3 Each extinguisher bottle has two squibs that enable the discharge of fire extinguisher agent.

L1 After isolating the affected engine, the flight crew can discharge the extinguisher bottles with the assigned AGENT pb.

Extinguisher Agent - Distribution Zones



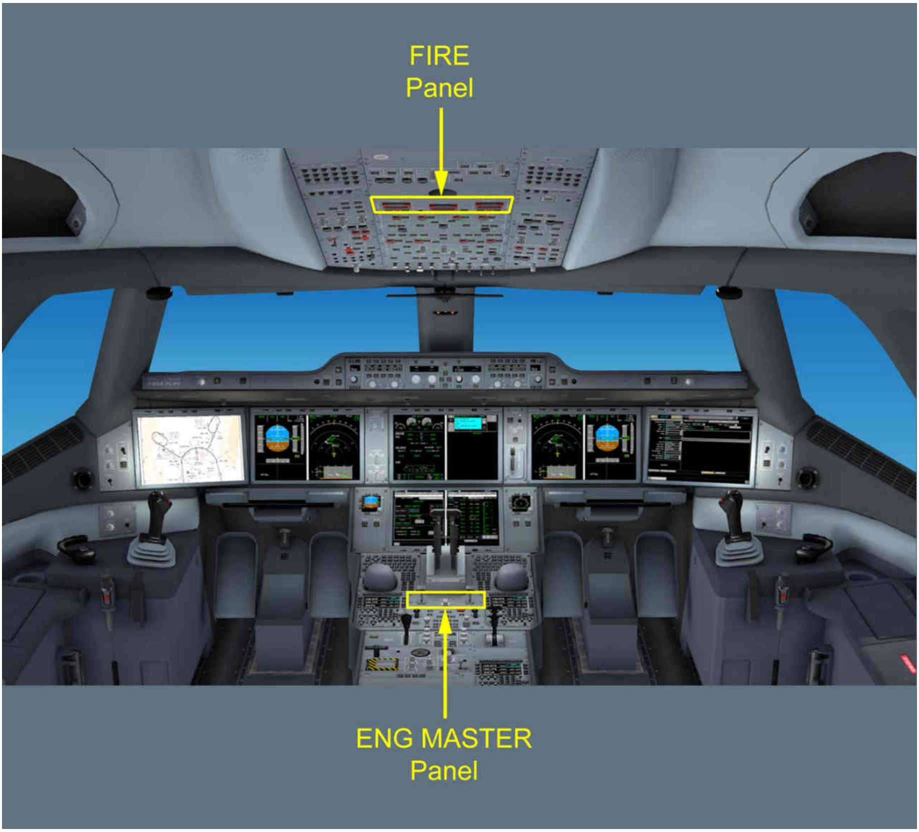
L3 The fire extinguisher can be discharged if:
- At least one fire extinguisher squib is operational, and
- There is sufficient pressure in the bottle.

L1 In the case of a failure of a component of the fire extinguishing system, the applicable dispatch message is triggered.

COCKPIT VIEW

Ident.: DSC-26-30-20-00000303.0001001 / 18 APR 14
Applicable to: ALL

Cockpit View

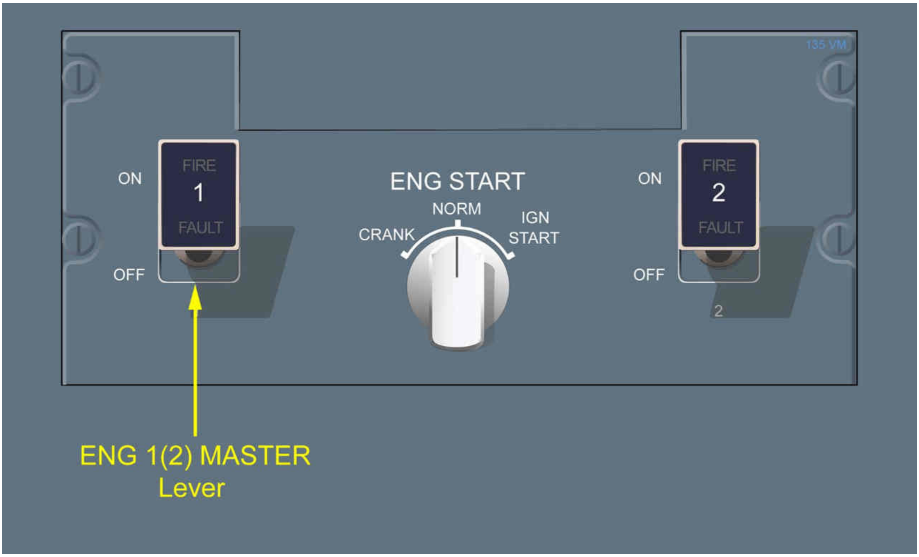


ENG MASTER PANEL

Applicable to: ALL

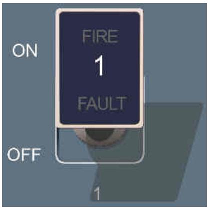
Ident.: DSC-26-30-20-20-00000305.0001001 / 18 APR 14

ENG MASTER Panel


135 VM
ON
FIRE
1
FAULT
OFF
ENG START
NORM
CRANK
IGN
START
ON
FIRE
2
FAULT
OFF
2
ENG 1(2) MASTER
Lever

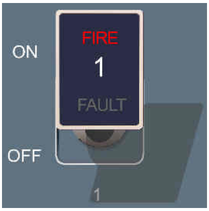
Ident.: DSC-26-30-20-20-00002640.0001001 / 18 APR 14

ENG 1(2) MASTER LEVER


ON
FIRE
1
FAULT
OFF
1

No fire is detected.

L12


ON
FIRE
1
FAULT
OFF
1

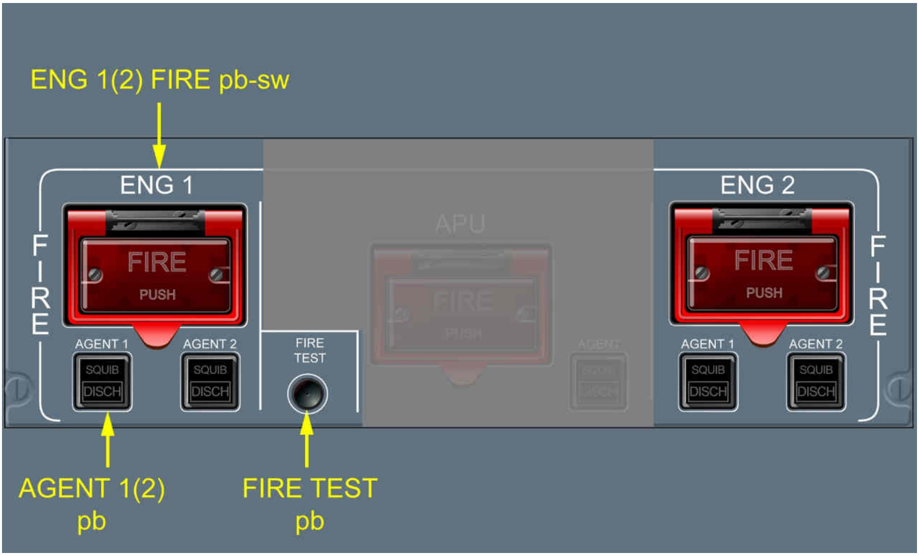
Fire is detected or the flight crew is pressing the FIRE TEST pb (*Refer to FIRE TEST pb*).
Associated with the following ECAM alert: ENG 1(2) FIRE (*Refer to procedure*).

FIRE PANEL

Applicable to: ALL

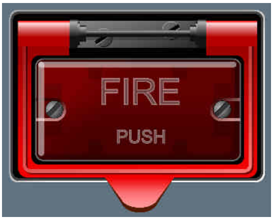
Ident.: DSC-26-30-20-10-00000304.0001001 / 02 OCT 14

FIRE Panel


ENG 1(2) FIRE pb-sw
ENG 1
FIRE
FIRE
PUSH
AGENT 1
AGENT 2
SQUIB
DISCH
FIRE
TEST
APU
ENG 2
AGENT 1(2)
pb
FIRE TEST
pb

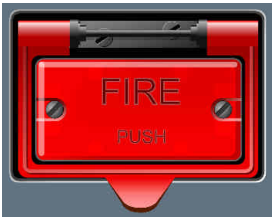
Ident.: DSC-26-30-20-10-00002505.0001001 / 18 APR 14

ENG 1(2) FIRE PB-SW

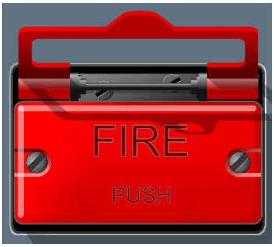


Normal position. No fire is detected.

L12



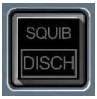
The light of the ENG 1(2) FIRE pb-sw comes on if:
- The flight crew is pressing the FIRE TEST pb (*Refer to FIRE TEST pb*), or
- Fire is detected. The FIRE light of the ENG MASTER panel comes on, and also indicates the affected engine. Associated with the following ECAM alert: ENG 1(2) FIRE (*Refer to procedure*).
  The light remains on, until the fire is extinguished, regardless of the position of the ENG FIRE pb-sw.



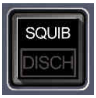
When pressed:
- All associated systems are isolated from the engine
- The aural fire warning stops
- The fire extinguishing system is armed, the bottles are ready to discharge.

Ident.: DSC-26-30-20-10-00002506.0001001 / 18 APR 14

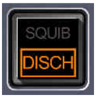
AGENT 1(2) PB



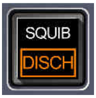
Normal position.



The squibs of the fire extinguisher bottle are armed. The fire extinguisher bottle is ready to discharge the extinguisher agent.
When pressed, the extinguisher bottle discharges and the SQUIB light goes off.



The fire extinguisher bottle discharges.



The flight crew is pressing the FIRE TEST pb (*Refer to FIRE TEST pb*).

Ident.: DSC-26-30-20-10-00002507.0001001 / 18 APR 14

FIRE TEST PB

Tests the engines, the APU and the main landing gear bay fire detection systems.

When pressed for at least three seconds, and until released:
- The continuous repetitive chime sounds
- The MASTER WARN lights flash
- The ECAM displays ENG 1 FIRE, ENG 2, FIRE, APU FIRE and MLG FIRE warnings titles
- All ENG FIRE pb-sw come on red
- The APU FIRE pb-sw comes on red
- The FIRE light of the MLG BAY light comes on red
- All SQUIB lights of the AGENT pb come on
- All DISCH lights of the AGENT pb come on
- All FIRE lights on the ENG MASTER panel come on.

Intentionally left blank

OVERVIEW

Ident.: DSC-26-40-10-00000352.0001001 / 18 APR 14
Applicable to: ALL

The FPS for the APU has:

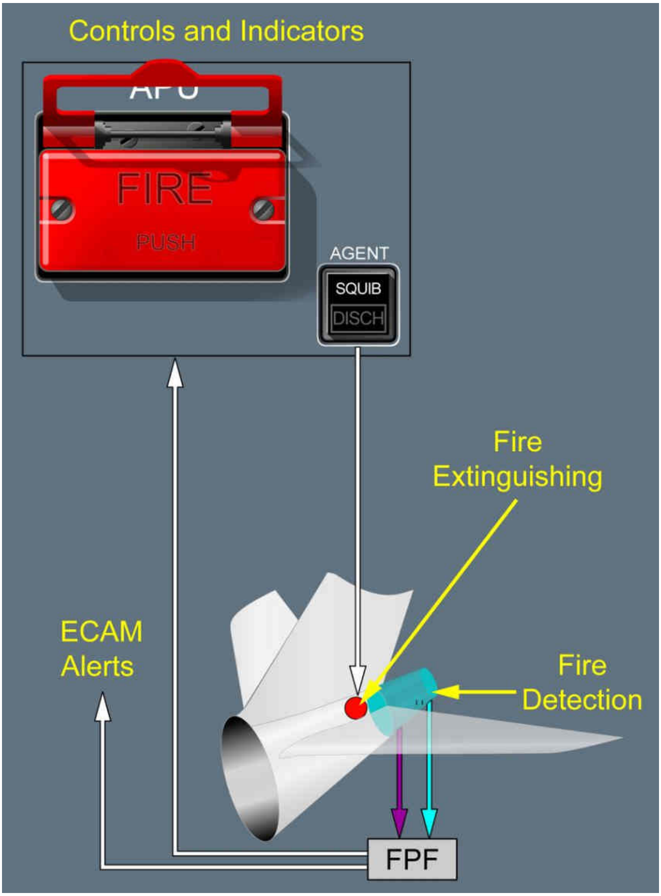
- A fire detection system
- One extinguisher bottle that discharges extinguisher agent
- Assigned pushbuttons on the FIRE panel

L2 The flight crew uses these pushbuttons to isolate the APU from the other aircraft systems, and to control fire extinguishing.

L1
- Visual and aural alerts.

On ground, if a fire is detected, the FPS automatically activates the extinguishing system.

APU Fire Protection


Controls and Indicators
APU
FIRE
PUSH
AGENT
SQUIB
DISCH
Fire
Extinguishing
ECAM
Alerts
Fire
Detection
FPF

DETECTION

Applicable to: ALL

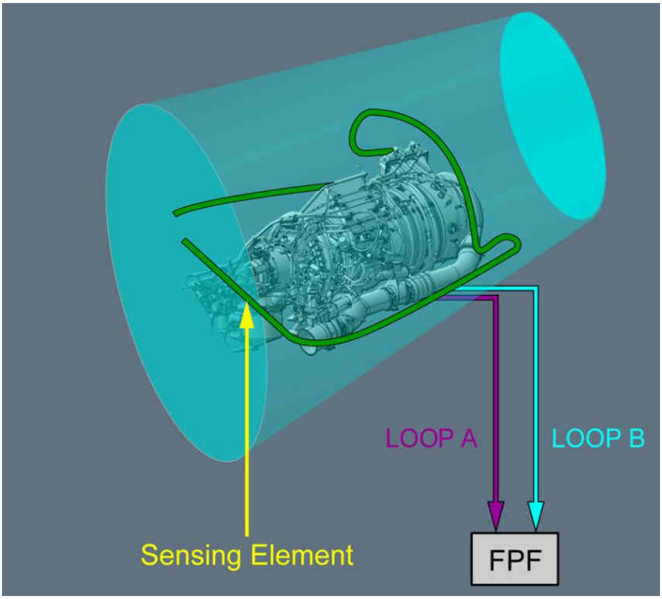
Ident.: DSC-26-40-10-10-00000353.0001001 / 18 APR 14

FIRE DETECTION

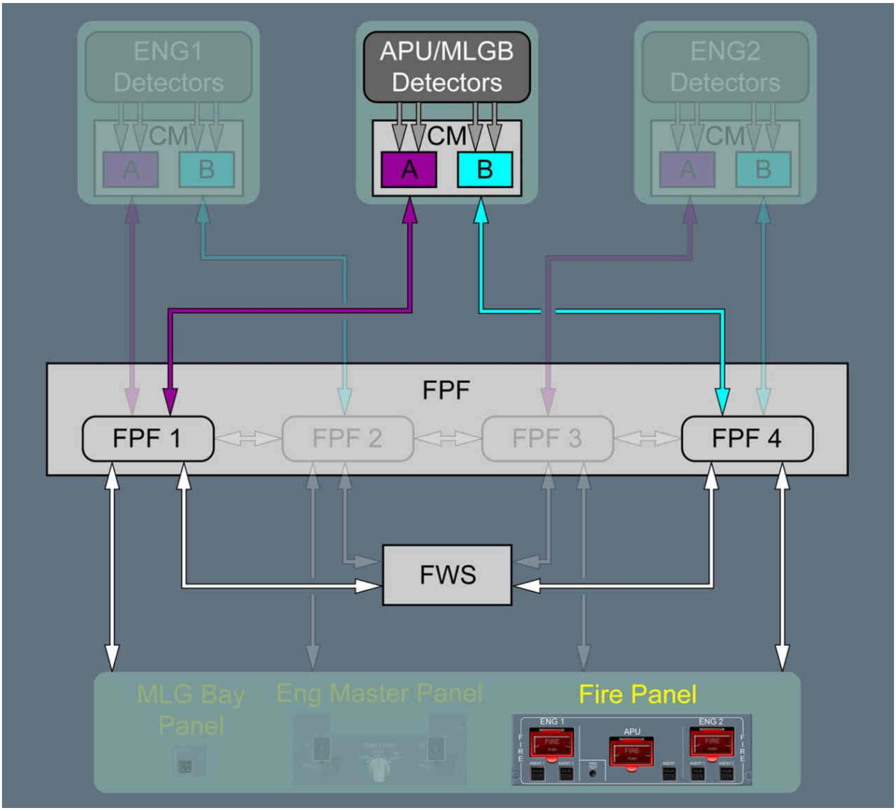
The Fire Protection System (FPS) uses two identical loops (A and B). Each loop has a fire detector.

The Fire Protection Function (FPF) receives information from the two loops. The FPF provides information to the ECAM to generate applicable fire warnings or loop cautions.

Fire Detection Architecture



Fire Protection System


ENG1 Detectors
APU/MLGB Detectors
ENG2 Detectors
CM
A
B
CM
A
B
CM
A
B
FPF
FPF 1
FPF 2
FPF 3
FPF 4
FWS
MLG Bay Panel
Eng Master Panel
Fire Panel
ENG 1
APU
ENG 2
FIRE

L3 Two different FPF channels compare the information that they receive from both loops.

L1 If the FPF channels detect a fire:

- The continuous repetitive chime (CRC) sounds
- The MASTER WARN lights flash
- The ECAM APU FIRE warning is triggered
- On the FIRE panel, the APU FIRE light comes on
- The ECAM SD displays the APU SD page
- On ground:
  - The APU automatically shuts down, and the external horn sounds
  - The APU FIRE light, on the Maintenance Nose Gear panel, comes on.

Ident.: DSC-26-40-10-10-00000354.0001001 / 18 APR 14

L2 FIRE DETECTION AND LOOP FAULT LOGIC

If the loops detect either a fire, or a fault, the following alert(s) or dispatch message(s) are triggered:

Detection on LOOP A		Detection on LOOP B		Alert / Dispatch Message
Fire	**Fault**	**Fire**	**Fault**	
Yes	No	Yes	No	APU FIRE
No	Yes	Yes	No	APU FIRE
Yes	No	No	Yes	APU FIRE
No	Yes	No	Yes	APU FIRE If one failure occurs after the other, within 5 s.
				APU FIRE DET FAULT If one failure occurs after the other, at an interval of more than 5 s.
No	Yes	No	No	Applicable dispatch message. If a failure is detected in one loop, the other loop is not affected and continues to operate. Therefore, fire detection is still available.
Yes	No	No	No	
No	No	Yes	No	
No	No	No	Yes	

EXTINGUISHING

Ident.: DSC-26-40-10-00000355.0001001 / 07 JAN 16
Applicable to: ALL

The flight crew can isolate and extinguish an APU fire from the FIRE panel in the cockpit.

APU ISOLATION

In case of APU fire, the flight crew can press the APU FIRE pb-sw to isolate the APU.

L2 When pressed, the system:
- Shuts down the APU
- Stops the aural warning
- Arms the squibs on the fire extinguisher
  The fire extinguisher bottle is ready to discharge.
- Closes the low-pressure fuel valve
- Shuts off the APU fuel pumps
- Closes the APU bleed valve and crossbleed valve
- Closes the APU isolation valve
- Deactivates the APU generator.

L1 FIRE EXTINGUISHING

The APU has one fire extinguisher bottle.

L3 The extinguisher bottle has two squibs that enable the discharge of fire extinguisher agent.

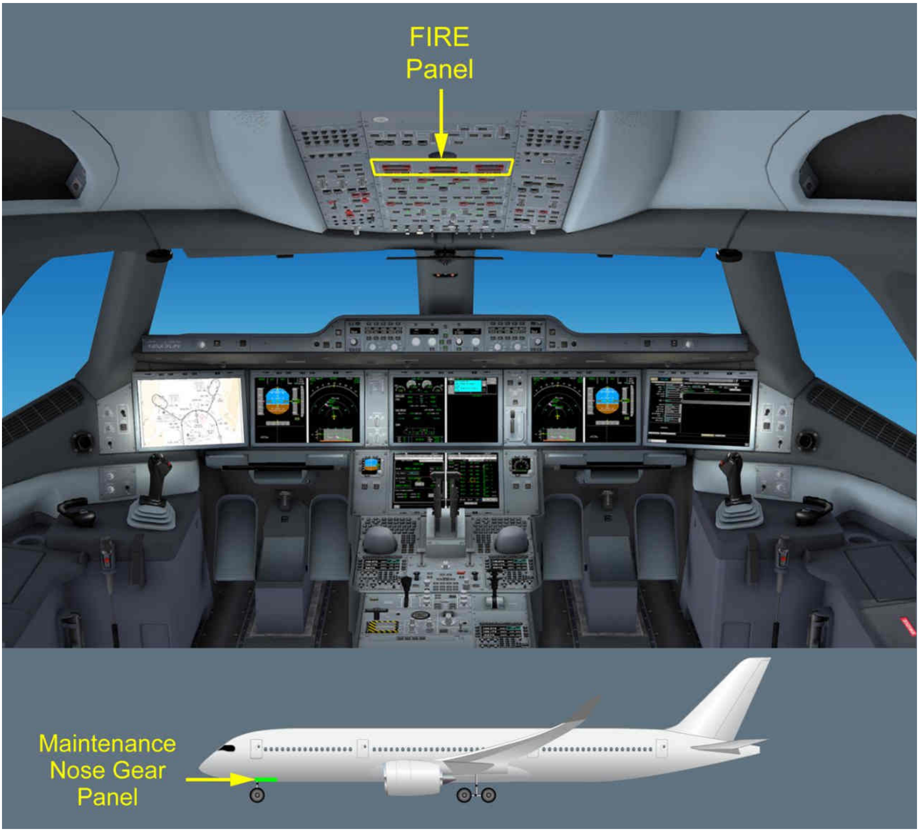
L1 After isolating the APU, the flight crew can discharge the extinguisher bottle with the APU AGENT pb.
On ground, the FPF automatically discharge the extinguisher bottle.

L3 The fire extinguisher agent can be discharged if:
- At least one fire extinguisher squib is operational, and
- There is sufficient pressure in the bottle.

COCKPIT VIEW

Ident.: DSC-26-40-20-00000356.0001001 / 18 APR 14
Applicable to: ALL

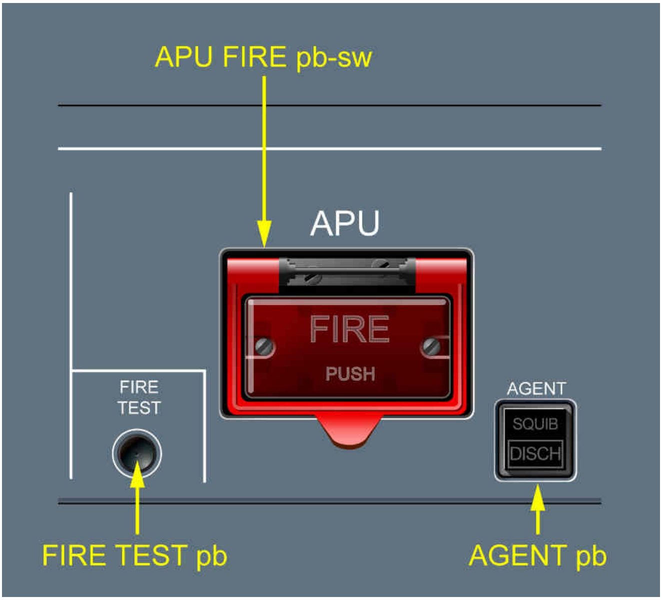
Cockpit View


FIRE
Panel
Maintenance
Nose Gear
Panel

FIRE PANEL

Applicable to: ALL

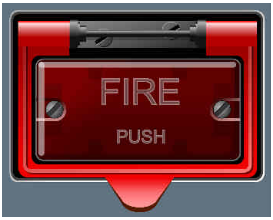
Ident.: DSC-26-40-20-10-00000357.0001001 / 18 APR 14


APU FIRE pb-sw
APU
FIRE
PUSH
FIRE
TEST
AGENT
SQUIB
DISCH
FIRE TEST pb
AGENT pb

FIRE Panel

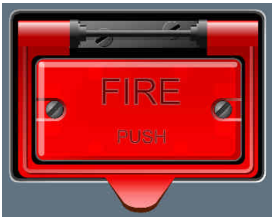
Ident.: DSC-26-40-20-10-00000358.0001001 / 18 APR 14

APU FIRE PB-SW



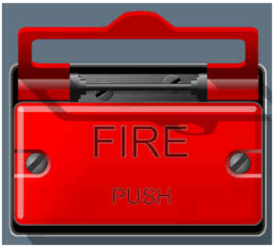
Normal position. No fire is detected.

L12



The light of the APU FIRE pb-sw comes on if:

- The flight crew is pressing the FIRE TEST pb (*Refer to FIRE TEST pb*), or
- Fire is detected.
  Associated with the following ECAM alert: APU FIRE (*Refer to procedure*).
  The light remains on, until the fire is extinguished, regardless of the position of the APU FIRE pb-sw.

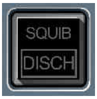


When pressed:

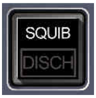
- All associated systems are isolated from the APU
- The aural fire warning stops
- The fire extinguishing system is armed, the bottle is ready to discharge.

Ident.: DSC-26-40-20-10-00000359.0001001 / 18 APR 14

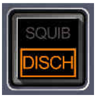
AGENT PB



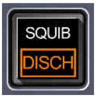
Normal position.



The squibs of the fire extinguisher bottle are armed. The fire extinguisher bottle is ready to discharge extinguisher agent.
When pressed, the extinguisher bottle discharges and the SQUIB light goes off.



The fire extinguisher bottle discharges.



The flight crew is pressing the FIRE TEST pb (*Refer to FIRE TEST pb*).

Ident.: DSC-26-40-20-10-00020901.0001001 / 18 APR 14

FIRE TEST PB

Tests the engines, the APU and the main landing gear bay fire detection systems.

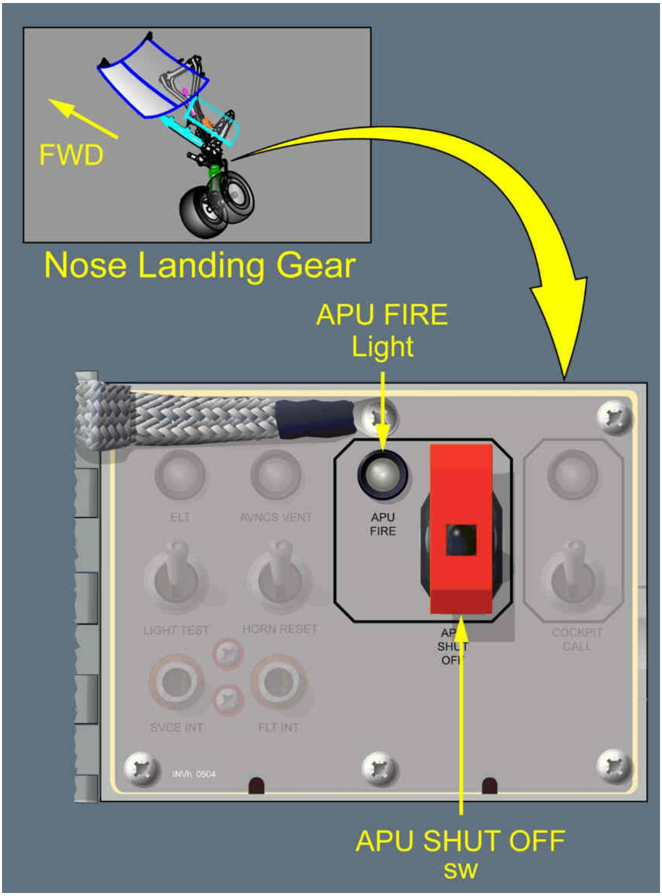
When pressed for at least three seconds, and until released:
- The continuous repetitive chime sounds
- The MASTER WARN lights flash
- The ECAM displays ENG 1 FIRE, ENG 2, FIRE, APU FIRE and MLG FIRE warnings titles
- All ENG FIRE pb-sw come on red
- The APU FIRE pb-sw comes on red
- The FIRE light of the MLG BAY light comes on red
- All SQUIB lights of the AGENT pb come on
- All DISCH lights of the AGENT pb come on
- All FIRE lights on the ENG MASTER panel come on.

MAINTENANCE NOSE GEAR PANEL

Applicable to: ALL

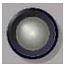
Ident.: DSC-26-40-20-20-00000360.0001001 / 18 APR 14

Maintenance Nose Gear Panel

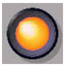

FWD
Nose Landing Gear
APU FIRE
Light
ELT
AVNCS VENT
APU
FIRE
LIGHT TEST
HORN RESET
AP
SHUT
OF
COCKPIT
CALL
SVCE INT
FLT INT
INVh 0504
APU SHUT OFF
SW

Ident.: DSC-26-40-20-20-00000361.0001001 / 18 APR 14

APU FIRE LIGHT



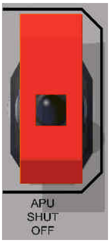
Normal position. No fire is detected.



Fire is detected in the APU compartment. In addition of the light, an external horn comes on.
The APU automatically shuts down, the APU fuel valves close, and the APU fire extinguisher automatically discharges the agent 10 s after this warning appears.
The light and the horn remain on, until the fire is extinguished.

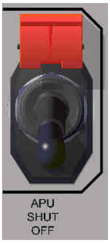
Ident.: DSC-26-40-20-20-00000362.0001001 / 18 APR 14

APU SHUT OFF SW



Normal position.

L12



The ground crew has opened the guard.

When pushed down and released:
- Initiates an APU emergency shutdown
- Stops the external horn in the case of an APU FIRE alert.

For more information about APU emergency shutdown sequence,*Refer to DSC-49-40 APU Emergency Shutdown* .

DETECTION

Applicable to: ALL

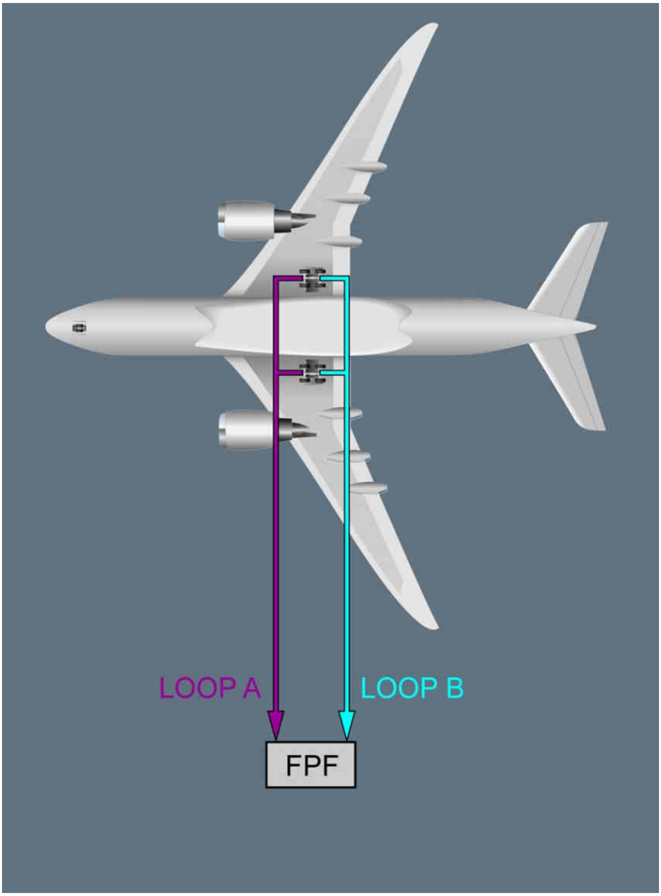
Ident.: DSC-26-50-10-10-00000366.0001001 / 18 APR 14

FIRE DETECTION

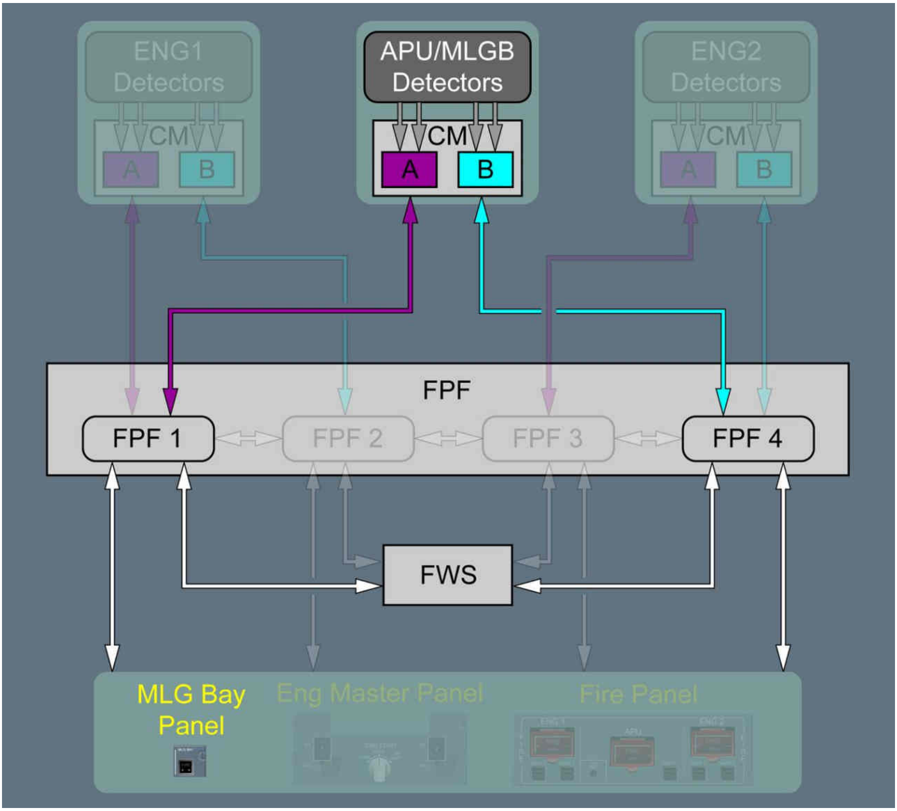
The Fire Protection System (FPS) for the Main Landing Gear (MLG) bay have:
- A Fire Protection Function (FPF)
- A MLG bay Fire indicator
- Visual and aural alerts.

This system detects overheat in the MLG bay.
The FPS uses two identical loops (A and B) for each sensitive zone.
The FPF receives information from the two loops. The FPF provides information to the ECAM to generate applicable fire warnings or loop cautions.

Fire Detection - Architecture



Fire Protection System


ENG1 Detectors
CM
A
B
APU/MLGB Detectors
CM
A
B
ENG2 Detectors
CM
A
B
FPF
FPF 1
FPF 2
FPF 3
FPF 4
FWS
MLG Bay Panel
Eng Master Panel
Fire Panel

L3 Two different FPF channels compare the information that they receive from both loops.

L1 If a fire is detected in the MLG bay:
- The continuous repetitive chime (CRC) sounds
- The MASTER WARN lights flash
- The ECAM MLG BAY FIRE warning is triggered
- The MLG BAY FIRE light comes on
- The ECAM SD displays the WHEEL SD page.

Ident.: DSC-26-50-10-10-00000367.0001001 / 18 APR 14

L2 FIRE DETECTION AND LOOP FAULT LOGIC

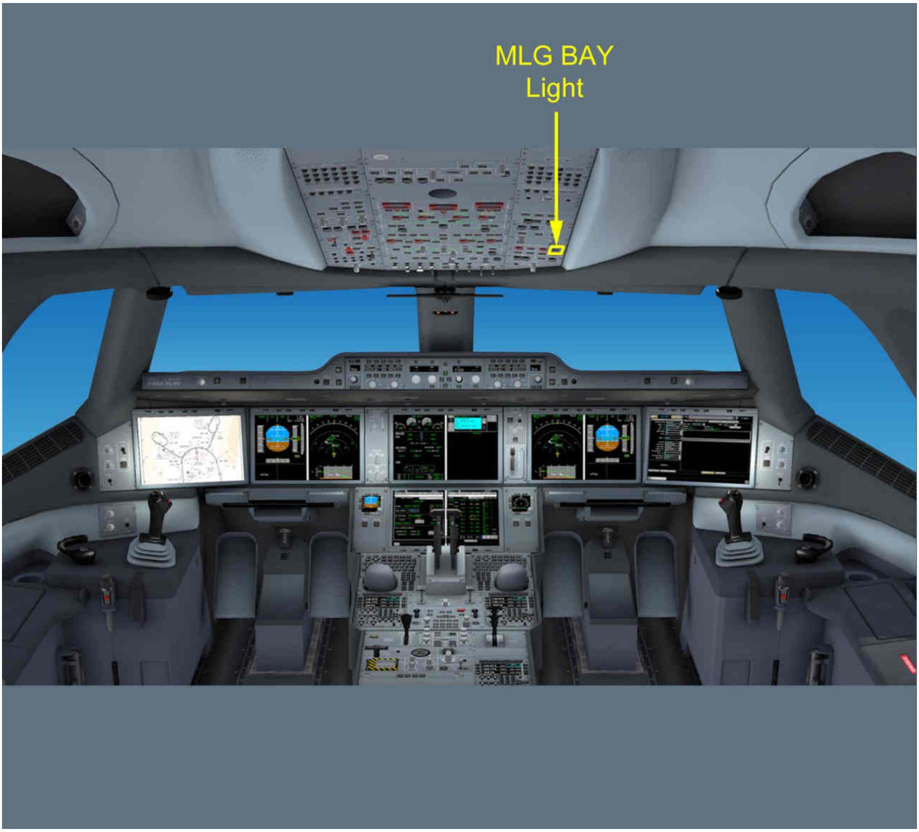
If the loops detect either a fire, or a fault, the following alert(s) or dispatch message(s) are triggered:

Detection on LOOP A		Detection on LOOP B		Alert / Dispatch Message
Fire	**Fault**	**Fire**	**Fault**	
Yes	No	Yes	No	MLG BAY FIRE
No	Yes	Yes	No	MLG BAY FIRE
Yes	No	No	Yes	MLG BAY FIRE
No	Yes	No	Yes	MLG BAY FIRE If one failure occurs after the other, within 5 s.
				MLG BAY FIRE DET FAULT If one failure occurs after the other, at an interval of more than 5 s.
No	Yes	No	No	Applicable dispatch message. If a failure is detected in one loop, the other loop is not affected and continues to operate. Therefore, fire detection remains available.
Yes	No	No	No	
No	No	Yes	No	
No	No	No	Yes	

COCKPIT VIEW

Ident.: DSC-26-50-20-00000313.0001001 / 18 APR 14
Applicable to: ALL

Cockpit View

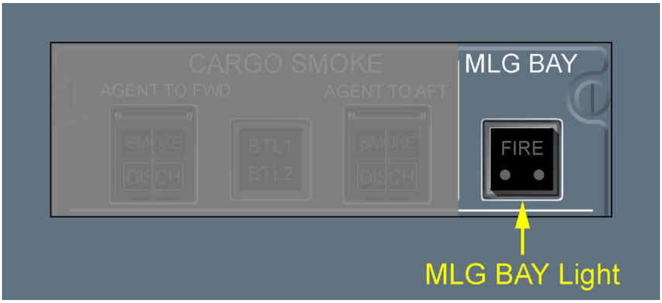


MLG BAY LIGHT

Applicable to: ALL

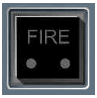
Ident.: DSC-26-50-20-10-00000314.0001001 / 17 NOV 17

MLG Bay Light


CARGO SMOKE
AGENT TO FWD
AGENT TO AFT
SMOKE
DISCH
BTL 1
BTL 2
SMOKE
DISCH
MLG BAY
FIRE
MLG BAY Light

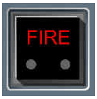
Ident.: DSC-26-50-20-10-00005023.0001001 / 18 APR 14

MLG BAY LIGHT



No fire is detected.

L12



The MLG BAY light comes on if:
- The flight crew is pressing the FIRE TEST pb (*Refer to FIRE TEST pb*), or
- Fire is detected in the MLG bay.
  Associated with the following ECAM alert: MLG BAY FIRE (*Refer to procedure*).

DETECTION

Applicable to: ALL

Ident.: DSC-26-60-10-10-00000371.0001001 / 29 OCT 14

GENERAL

The avionics bay has a Smoke Detection System (SDS).

The SDS has:
- Smoke detectors

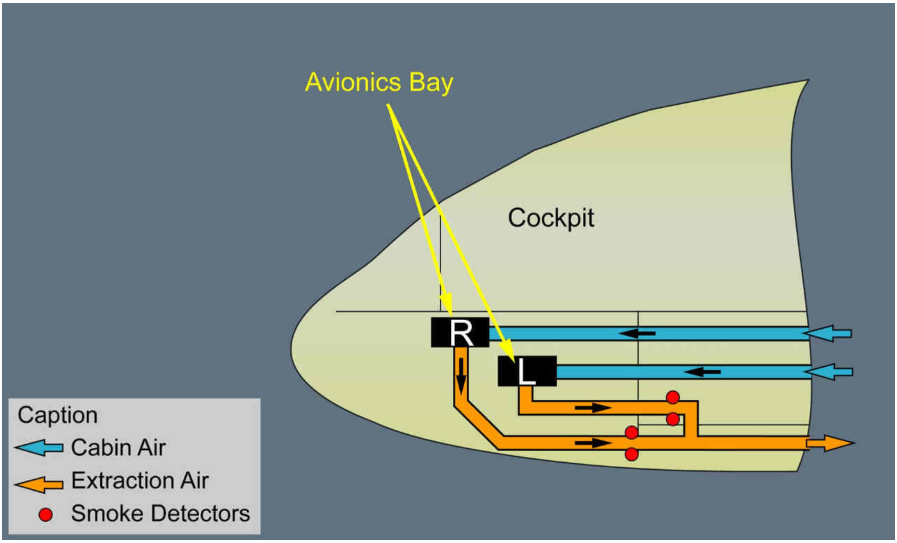
L2 The SDS monitors the:
- Left (L) avionics ventilation circuit
- Right (R) avionics ventilation circuit.

Each avionics ventilation circuit has two smoke detectors. They are in the air extraction ducts.

L1
- A Smoke Detection Function (SDF).

The SDF monitors the information received from the detectors of a specific avionics ventilation circuit. The SDF provides information to the ECAM to generate applicable smoke warnings, or detector fault cautions.

Avionics Bay - Smoke Detection



Ident.: DSC-26-60-10-10-00000372.0001001 / 18 APR 14

DETECTION LOGIC

The SMOKE L(R) AVNCS SMOKE alert is triggered if, in the left(right) avionics ventilation circuit:

- Both detectors detect smoke
- One detector detects smoke and the other is failed.

L2 For more information on the SMOKE L(R) AVNCS SMOKE ECAM procedure, *Refer to procedure*.

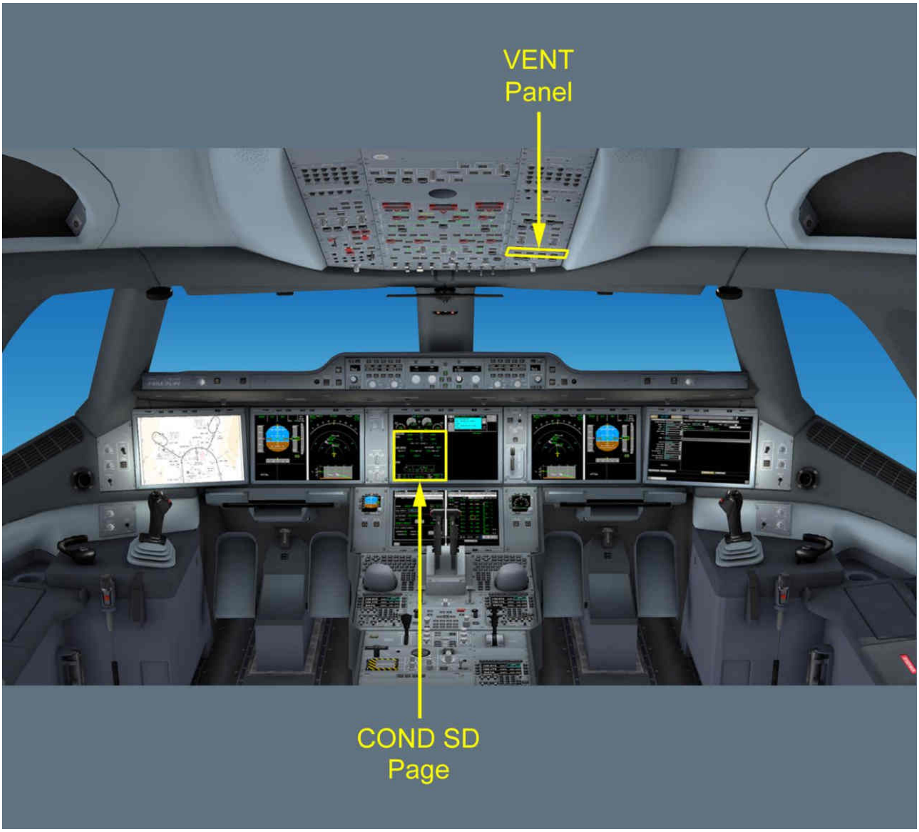
L1 The SMOKE L(R) AVNCS DET FAULT alert is triggered if both detectors fail in the left(right) avionics ventilation circuit.

L2 For more information on the SMOKE L(R) AVNCS DET FAULT ECAM procedure, *Refer to procedure.*

L1 In the case of a failure, the applicable dispatch message is triggered.

COCKPIT VIEW

Ident.: DSC-26-60-20-00000373.0001001 / 18 APR 14
Applicable to: ALL

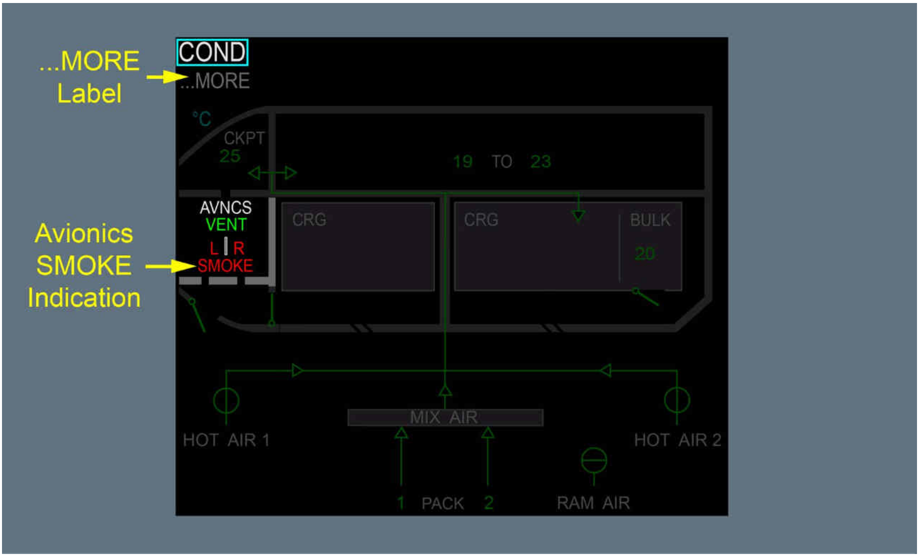


Cockpit View

COND SD PAGE

Applicable to: ALL

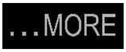
Ident.: DSC-26-60-20-20-00000377.0001001 / 18 APR 14


...MORE
Label
COND
...MORE
°C
CKPT
25
19 TO 23
AVNCS
VENT
L R
SMOKE
Avionics
SMOKE
Indication
CRG
CRG
BULK
20
MIX AIR
HOT AIR 1
HOT AIR 2
1 PACK 2
RAM AIR

COND SD page

Ident.: DSC-26-60-20-20-00018339.0001001 / 18 APR 14

...MORE LABEL

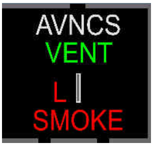


Indicates that more information is available on the COND SD MORE page.
In order to display the COND SD MORE page, the flight crew presses the MORE pb on the ECP.

Ident.: DSC-26-60-20-20-00000381.0001001 / 18 APR 14

AVIONICS SMOKE INDICATION

L12


AVNCS
VENT
L
SMOKE

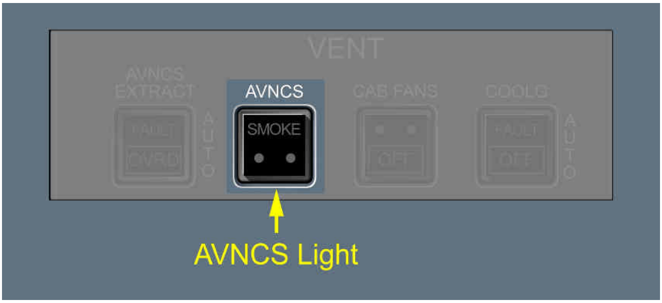
Smoke is detected in the associated circuit of the avionics bay.
Associated with the following ECAM alert: SMOKE L(R) AVNCS SMOKE (*Refer to procedure*).

VENT PANEL

Applicable to: ALL

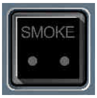
Ident.: DSC-26-60-20-10-00000374.0001001 / 18 APR 14

VENT Panel


VENT
AVNCS EXTRACT
FAULT
OVRD
AUTO
AVNCS
SMOKE
CAB FANS
OFF
COOLG
FAULT
OFF
AUTO
AVNCS Light

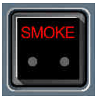
Ident.: DSC-26-60-20-10-00000376.0001001 / 27 MAY 14

AVNCS LIGHT



No smoke detected.

L12



Smoke is detected in the ventilation duct of the avionics bay
Associated with the following ECAM alert: SMOKE L(R) AVNCS SMOKE (*Refer to procedure*).

Note: *The AVNCS light is powered by the side 1 of the electrical network. In the case of a SMOKE L AVNCS SMOKE, the side 1 of the electrical network is shed as per procedure and the light will go off. Use the COND SD page to confirm the elimination of the smoke threat. For more information on the COND SD page, Refer to DSC-26-60-20 COND SD Page.*

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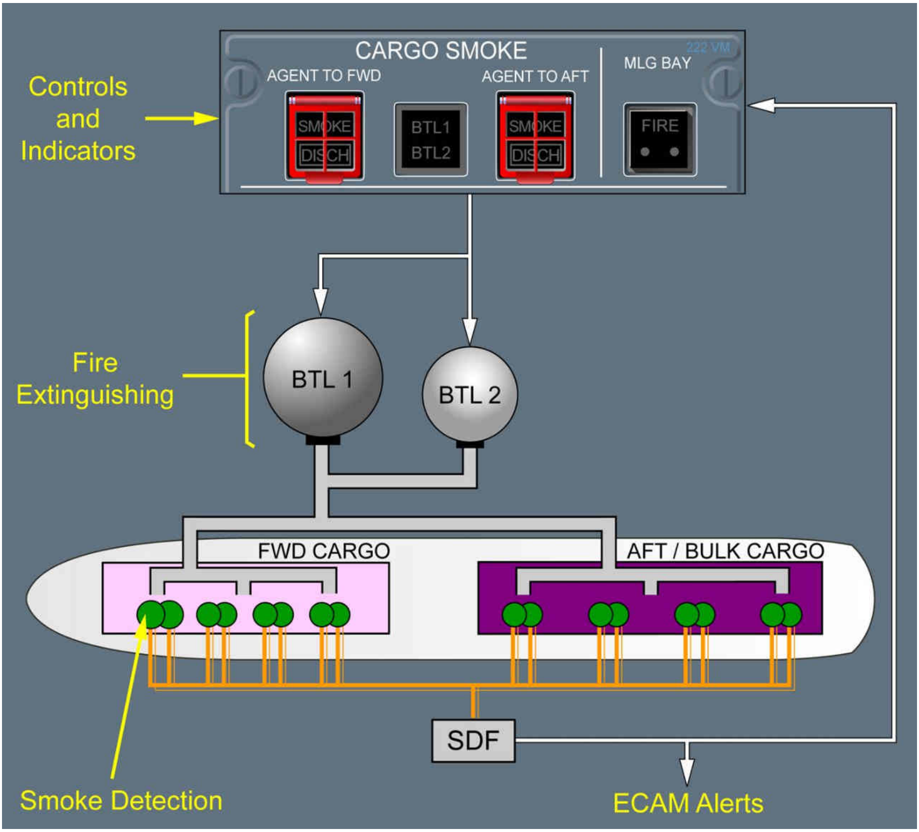
OVERVIEW

Ident.: DSC-26-70-10-00000388.0001001 / 18 APR 14
Applicable to: ALL

Both the forward and the aft/bulk cargo compartments have a fire protection system.

The fire protection system of the cargo compartments has a:
- Smoke Detection System (SDS)
- Fire extinguishing system.

Cargo Compartments - Fire Protection Description


Controls
and
Indicators
CARGO SMOKE
AGENT TO FWD
AGENT TO AFT
MLG BAY
222 VM
SMOKE
DISCH
BTL1
BTL2
SMOKE
DISCH
FIRE
Fire
Extinguishing
BTL 1
BTL 2
FWD CARGO
AFT / BULK CARGO
SDF
Smoke Detection
ECAM Alerts

SMOKE DETECTION

Applicable to: ALL

Ident.: DSC-26-70-10-10-00000389.0001001 / 03 SEP 14

DETECTION

The Smoke Detection System (SDS) has:

- Smoke detectors in the forward and aft/bulk cargo compartments

L2 These detectors are in cavities within the ceiling panels. Each cargo compartment cavity has two detectors. There are:
  - Four cavities in the forward cargo compartment
  - Four cavities in the aft/bulk cargo compartment, one of which is in the bulk cargo compartment.

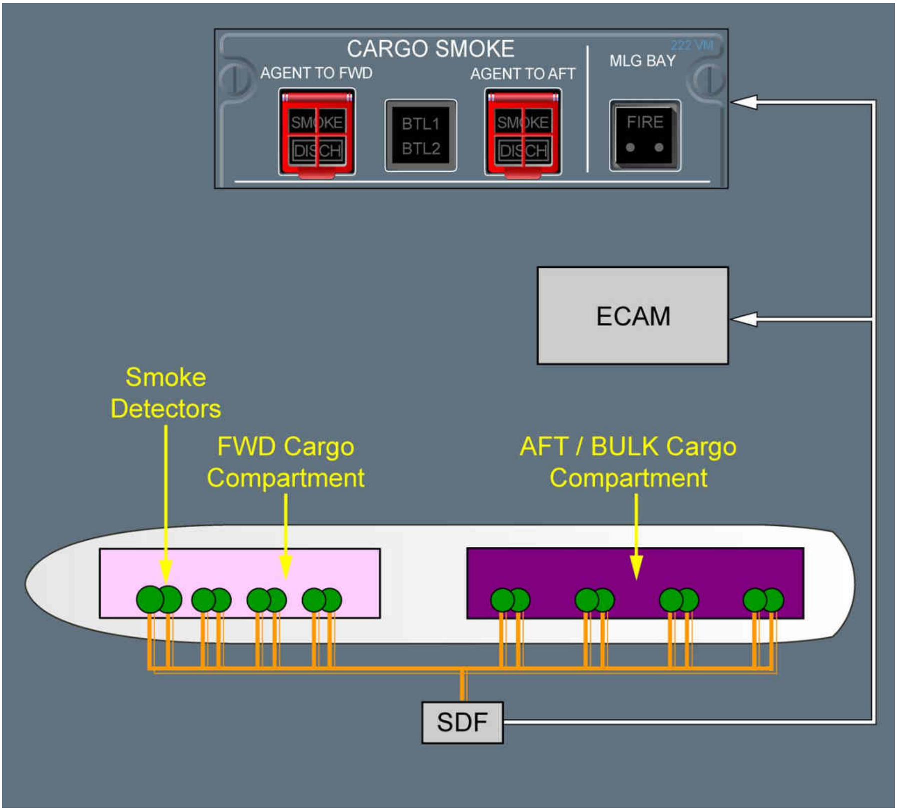
L1
- A Smoke Detection Function (SDF) that monitors the information received from the detectors of a given compartment. The SDF provides information to the ECAM to generate applicable smoke warnings, or detector fault cautions.

If smoke is detected in a cargo compartment, the associated SMOKE alert are triggered.
If smoke is detected in a cargo compartment, the ventilation automatically stops.

L3 Therefore:

- The isolation valves close
- The extraction fan stops.

Cargo Compartments - Smoke Detection


CARGO SMOKE
AGENT TO FWD
AGENT TO AFT
MLG BAY
SMOKE
DISCH
BTL1
BTL2
SMOKE
DISCH
FIRE
ECAM
Smoke Detectors
FWD Cargo Compartment
AFT / BULK Cargo Compartment
SDF

Ident.: DSC-26-70-10-10-00000391.0001001 / 18 APR 14

DETECTION LOGIC

The SMOKE FWD(AFT/BULK) CARGO SMOKE alert is triggered if, in the forward(aft/bulk) cargo compartment:
- Both detectors in one cavity detect smoke, or
- One detector detects smoke and the other detector of the same cavity is failed.

L2 For more information on the SMOKE FWD CARGO SMOKE ECAM alert, *Refer to procedure*.
For more information on the SMOKE AFT/BULK CARGO SMOKE ECAM alert, *Refer to procedure*.

L1 The SMOKE FWD(AFT/BULK) CARGO DET FAULT alert is triggered if both detectors fail in one cavity of the forward(aft/bulk) cargo compartment.

L2 For more information on the SMOKE FWD CARGO DET FAULT ECAM alert, *Refer to procedure*.
For more information on the SMOKE AFT/BULK CARGO DET FAULT ECAM alert, *Refer to procedure*.

L1 In the case of a failure, the applicable dispatch message is triggered.

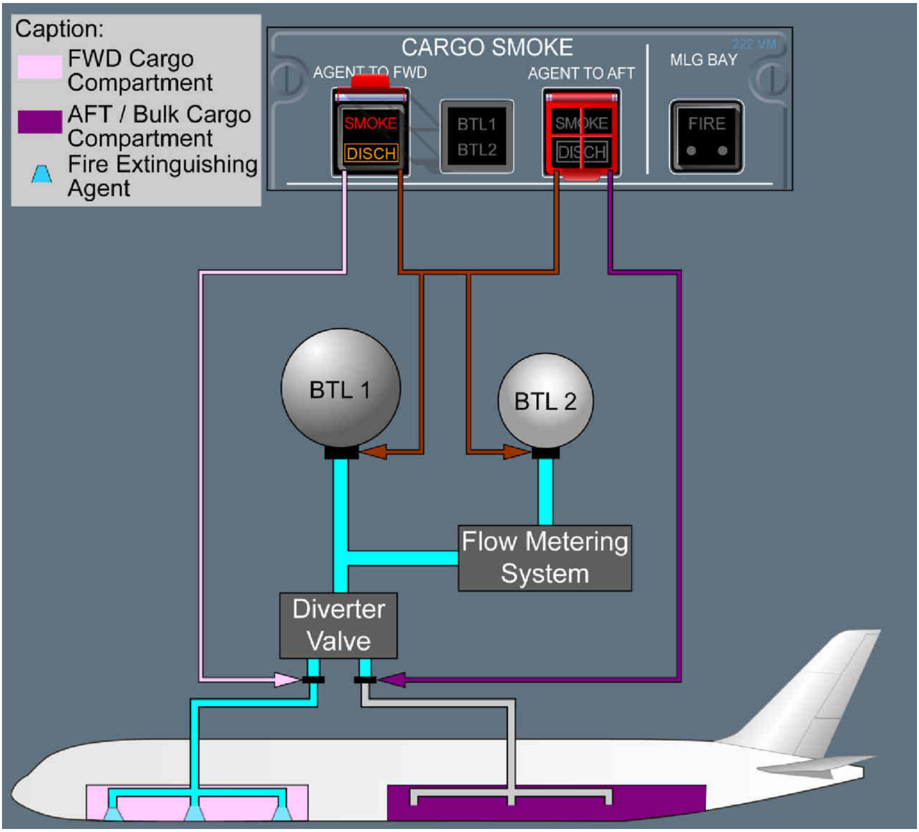
FIRE EXTINGUISHING

Ident.: DSC-26-70-10-00000390.0001001 / 26 JUL 17
Applicable to: ALL

The fire extinguishing system ensures that a sufficient concentration of extinguisher agent is maintained in the affected cargo compartment, for a duration that depends on the installed configuration of the fire extinguisher bottles. A sufficient concentration of extinguisher agent extinguishes or suppresses the fire by depriving the fire of oxygen.
There are two fire extinguisher bottles that can discharge extinguisher agent in the forward or aft/bulk cargo compartment.

When the fire extinguisher bottles discharge, the agent protects the affected cargo compartment against fire for:
- 195 min, or
- 290 min ◁ , or
- 360 min ◁ .

Fire Extinguishing


Caption:
FWD Cargo Compartment
AFT / Bulk Cargo Compartment
Fire Extinguishing Agent
CARGO SMOKE
AGENT TO FWD
AGENT TO AFT
MLG BAY
SMOKE
DISCH
BTL1
BTL2
SMOKE
DISCH
FIRE
BTL 1
BTL 2
Flow Metering System
Diverter Valve

When the flight crew presses the assigned push-button, the extinguisher agent is released into the affected cargo compartment.

L3 A diverter valve directs extinguisher agent to either the forward or aft/bulk cargo compartment.

L2 The bottles discharge as follow:

- Bottle 1 first discharges extinguisher agent in the affected cargo compartment. This takes approximately 1 min.

  L3 Bottle 1 is emptied in order to have a sufficient concentration of extinguisher agent in the affected cargo compartment.

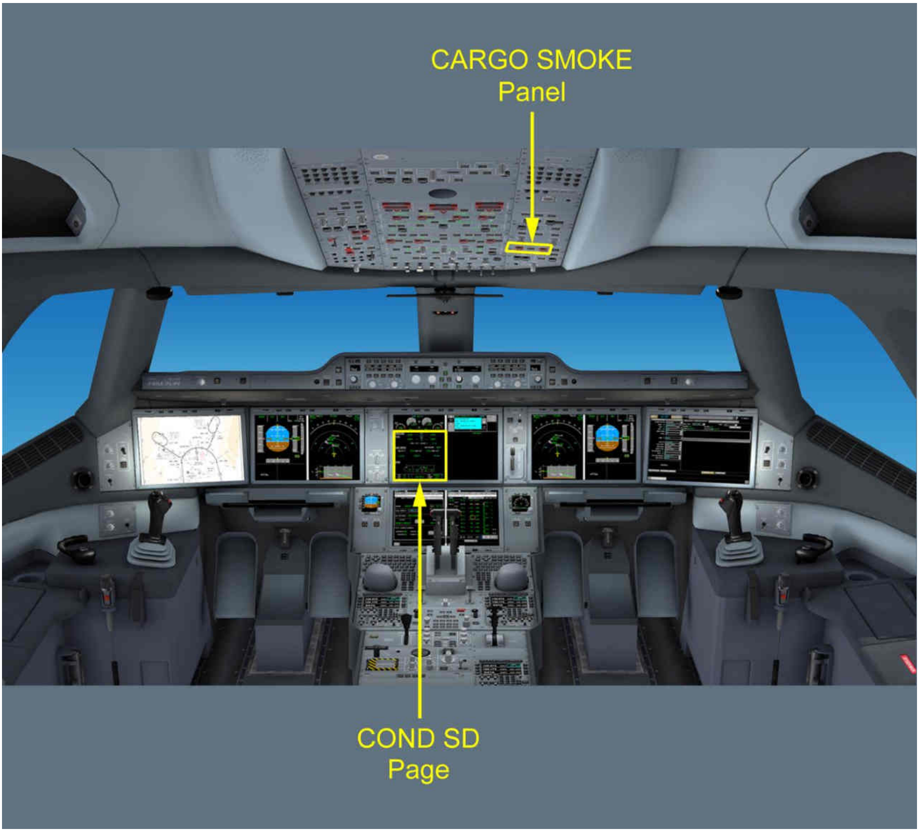
- L2 Bottle 2 then slowly discharges extinguisher agent, to provide sufficient extinguisher agent concentration in the affected cargo compartment until the end of the flight.

  L3 A flow-metering system regulates the flow of extinguisher agent.

COCKPIT VIEW

Ident.: DSC-26-70-20-00000392.0001001 / 18 APR 14
Applicable to: ALL

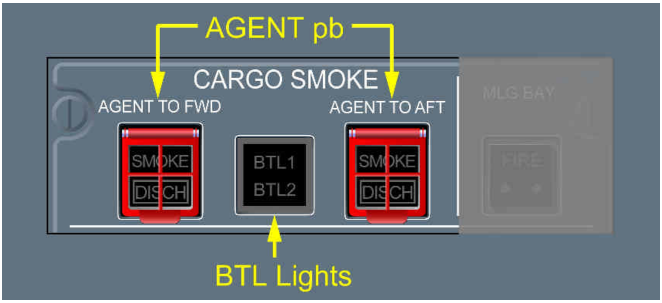
Cockpit View



CARGO SMOKE PANEL

Applicable to: ALL

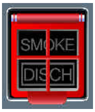
Ident.: DSC-26-70-20-10-00000393.0001001 / 18 APR 14


AGENT pb
CARGO SMOKE
AGENT TO FWD
AGENT TO AFT
SMOKE
DISCH
BTL1
BTL2
SMOKE
DISCH
MLG BAY
FIRE
BTL Lights

Cargo Smoke Panel

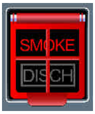
Ident.: DSC-26-70-20-10-00000395.0001001 / 13 JAN 15

AGENT TO FWD(AFT) PB

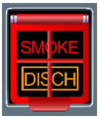

SMOKE
DISCH

No smoke is detected.

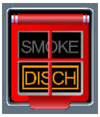
L12


SMOKE
DISCH

Smoke is detected in the associated cargo compartment.
Associated with the following ECAM alerts: SMOKE FWD CARGO SMOKE or SMOKE AFT/BULK CARGO SMOKE.
For more information on the SMOKE FWD CARGO SMOKE alert, *Refer to procedure*.
For more information on the SMOKE AFT/BULK CARGO SMOKE alert, *Refer to procedure*.
The SMOKE light remains on, as long as smoke is detected.
When pressed, the bottles discharge extinguisher agent in the associated cargo compartment.


SMOKE
DISCH

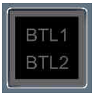
Smoke is detected in the associated cargo compartment, and the fire extinguisher bottles discharge.



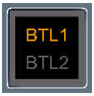
The fire extinguisher bottles discharge.

Ident.: DSC-26-70-20-10-00000396.0001001 / 18 APR 14

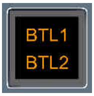
BTL LIGHTS



Normal position. No bottle has discharged.



The fire extinguisher bottle 1 has discharged.



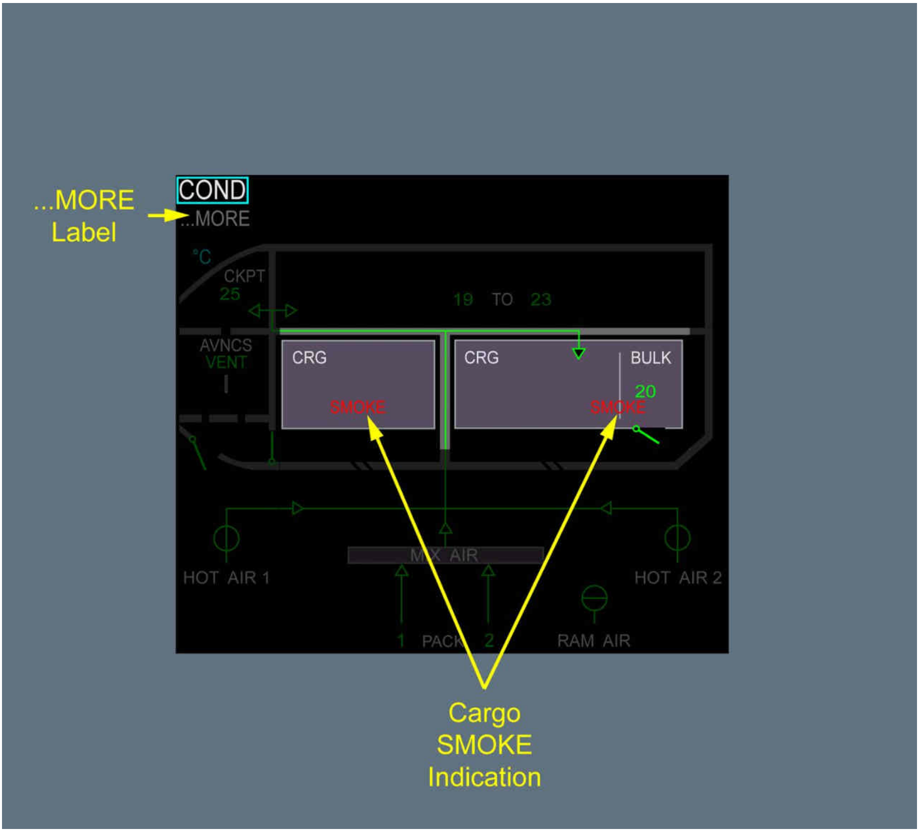
Both fire extinguisher bottles have discharged.

COND SD PAGE

Applicable to: ALL

Ident.: DSC-26-70-20-20-00000394.0001001 / 18 APR 14

COND SD page


...MORE Label
COND
...MORE
°C
CKPT
25
19 TO 23
AVNCS
VENT
CRG
SMOKE
CRG
BULK
20
SMOKE
HOT AIR 1
MIX AIR
HOT AIR 2
1 PACK 2
RAM AIR
Cargo SMOKE Indication

Ident.: DSC-26-70-20-20-00019199.0001001 / 18 APR 14

...MORE LABEL

Indicates that more information is available on the COND SD MORE page.
In order to display the COND SD MORE page, the flight crew presses the MORE pb on the ECP.

Ident.: DSC-26-70-20-20-00000398.0001001 / 18 APR 14

CARGO SMOKE INDICATION

L12

SMOKE

Smoke is detected in the associated cargo compartment.

Associated with one of the following ECAM alerts:
- SMOKE FWD CARGO SMOKE (*Refer to procedure*), or
- SMOKE AFT/BULK CARGO SMOKE (*Refer to procedure*).

Intentionally left blank

LAVATORY SMOKE DETECTION

Applicable to: ALL

Ident.: DSC-26-80-10-10-00000416.0001001 / 18 APR 14

Each lavatory has a Smoke Detection System (SDS).

Each SDS has:
- A smoke detector next to the air extraction vent
- A Smoke Detection Function (SDF).

If the SDF detects smoke in any lavatory, the SMOKE LAVATORY SMOKE ECAM alert is triggered, and the Flight Attendant Panel (FAP) displays an associated cabin smoke alert.

L2 For more information on the SMOKE LAVATORY SMOKE ECAM alert, *Refer to PRO-ABN-SMOKE SMOKE LAVATORY SMOKE*.

L1 In the case of a failure of the lavatory SDS, the SMOKE LAVATORY DET FAULT ECAM alert and the applicable dispatch messages are triggered.

L2 For more information on the SMOKE LAVATORY DET FAULT ECAM alert, *Refer to procedure*.

Ident.: DSC-26-80-10-10-00000418.0001001 / 18 APR 14

WASTEBIN FIRE EXTINGUISHING

The wastebin in each lavatory has a built-in, automatic, fire extinguishing system.

Intentionally left blank

CREW REST COMPARMENT DETECTION

Ident.: DSC-26-80-20-00000328.0001001 / 09 MAR 16
Applicable to: ALL

Each crew rest compartment has a Smoke Detection System (SDS).

Each SDS has:
- Smoke detectors
- A Smoke Detection Function (SDF) which monitors the information sent by the smoke detectors.

If the SDF detects smoke:
- In the Flight Crew Rest Compartment ◁ (FCRC), the SMOKE FLT REST SMOKE alert is triggered and the Flight Attendant Panel (FAP) displays an associated cabin smoke alert
- In the Cabin Crew Rest Compartment ◁ (CCRC), the SMOKE CABIN REST SMOKE alert is triggered and the Flight Attendant Panel (FAP) displays an associated cabin smoke alert.

L2 Fore more information on the SMOKE FLT REST SMOKE or SMOKE CABIN REST SMOKE ECAM alerts, *Refer to procedure*.

L1 If the smoke detectors of the FCRC fail, the SMOKE FLT REST DET FAULT is triggered.
If the smoke detectors of the CCRC fail, the SMOKE CABIN REST DET FAULT is triggered.

L2 Fore more information on the SMOKE FLT REST DET FAULT or SMOKE CABIN REST DET FAULT ECAM alerts, *Refer to procedure*.

L1 In the case of a failure of the SDS of the crew rest compartments, the applicable dispatch message is triggered.

Intentionally left blank

CABIN SYSTEMS SMOKE DETECTION

Ident.: DSC-26-90-10-00023591.0001001 / 07 JUL 16
Applicable to: ALL

The IFE bay and the PAX BBAND bay ◁ are both installed aft of the bulk cargo compartment.
The IFE bay and the PAX BBAND bay ◁ have a Smoke Detection System (SDS).

The SDS has:
- Smoke detectors in the ventilation system of both the IFE bay and the PAX BBAND bay ◁
- A Smoke Detection Function (SDF) that monitors the information from the smoke detectors.

If the SDF detects smoke in the ventilation system of the IFE bay or the PAX BBAND bay ◁ , the following alert triggers respectively:
- SMOKE IFE BAY SMOKE

L2 For more information about the SMOKE IFE BAY SMOKE ECAM procedure, *Refer to procedure*.

L1 - SMOKE PAX BBAND SMOKE ◁ .

L2 For more information about the SMOKE PAX BBAND SMOKE ◁ ECAM procedure, *Refer to procedure*.

The SMOKE IFE BAY SMOKE or SMOKE PAX BBAND SMOKE ◁ alert triggers if:
- Both detectors detect smoke, or
- One detector detects smoke and the other is failed.

L1 If the SDS of the IFE bay or the PAX BBAND bay ◁ fails, the following alert triggers respectively:
- SMOKE IFE BAY DET FAULT

L2 For more information about the SMOKE IFE BAY DET FAULT ECAM procedure, *Refer to procedure*.

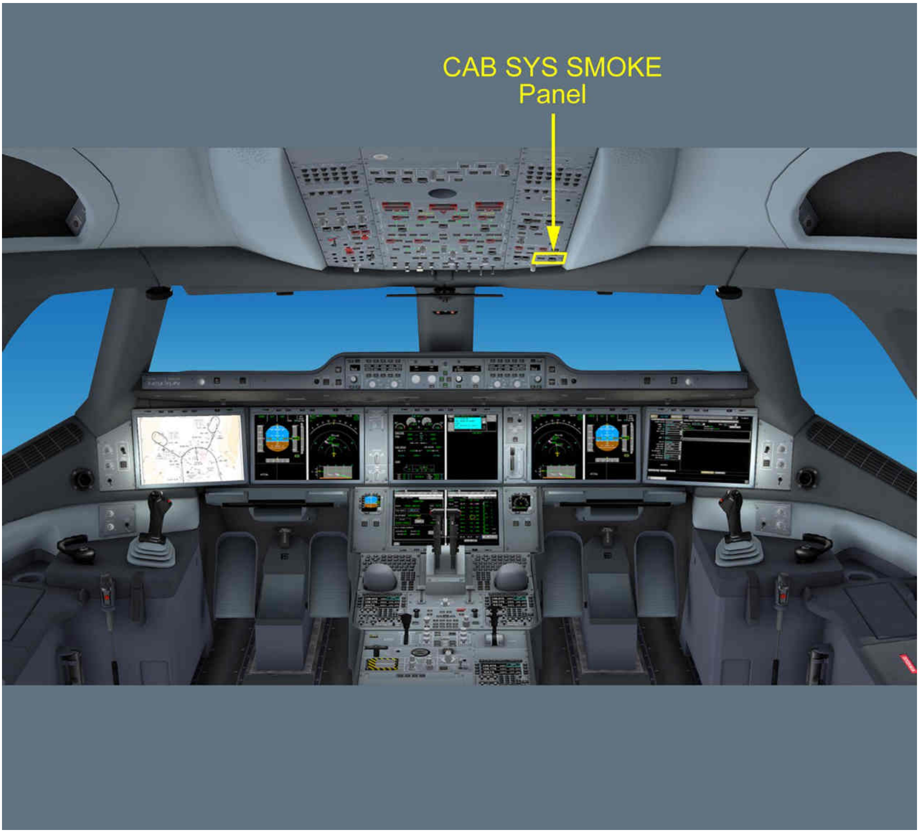
L1 - SMOKE PAX BBAND DET FAULT ◁ .

L2 For more information about the SMOKE PAX BBAND DET FAULT ◁ ECAM procedure, *Refer to procedure*.

Intentionally left blank

COCKPIT VIEW

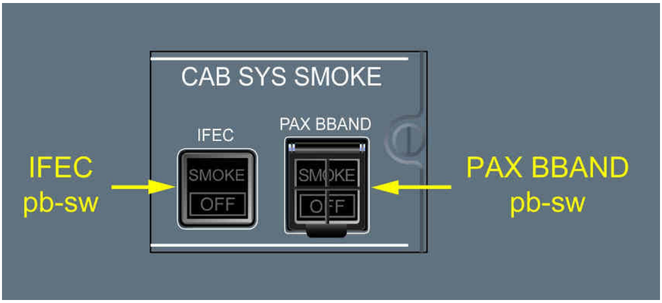
Ident.: DSC-26-90-20-00023592.0001001 / 07 JUL 16
Applicable to: ALL



CAB SYS SMOKE PANEL

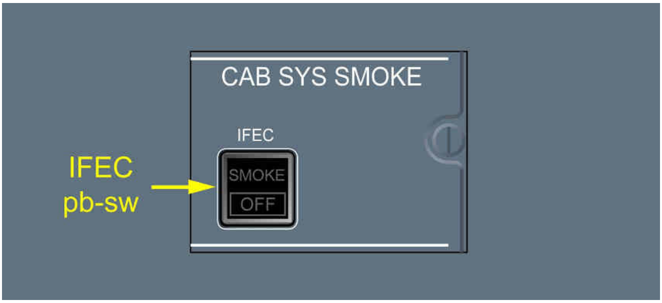
Ident.: DSC-26-90-20-10-00023593.0002001 / 07 JUL 16
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB

CAB SYS SMOKE Panel


CAB SYS SMOKE
IFEC
PAX BBAND
IFEC pb-sw
SMOKE
OFF
SMOKE
OFF
PAX BBAND pb-sw

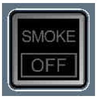
Ident.: DSC-26-90-20-10-00023593.0001001 / 07 JUL 16
Applicable to: ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB

CAB SYS SMOKE Panel


CAB SYS SMOKE
IFEC
IFEC pb-sw
SMOKE
OFF

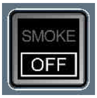
Ident.: DSC-26-90-20-10-00023595.0004001 / 07 NOV 18
Applicable to: ET-ATY, ET-AUA, ET-AUB

IFEC PB-SW



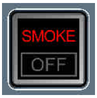
No smoke is detected.

L12



The IFE center is OFF.

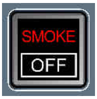
Note: *The passengers cabin connectivity services (Internet) are also deactivated.*



Smoke is detected in the ventilation system of the IFE bay.

L2 Associated with the following ECAM alert: SMOKE IFE BAY SMOKE (*Refer to procedure*).

L12

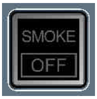


Smoke is detected in the ventilation system of the IFE bay, and the IFE center is OFF.

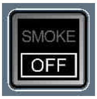
Note: *The passengers cabin connectivity services (Internet) are also deactivated.*

Ident.: DSC-26-90-20-10-00023595.0002001 / 07 JUL 16
Applicable to: ET-ATQ, ET-ATR

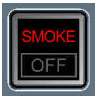
IFEC PB-SW



No smoke is detected.



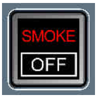
The IFE center is OFF.



Smoke is detected in the ventilation system of the IFE bay.

L2 Associated with the following ECAM alert: SMOKE IFE BAY SMOKE (*Refer to procedure*).

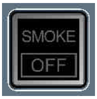
L1



Smoke is detected in the ventilation system of the IFE bay, and the IFE center is OFF.

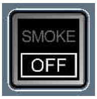
Ident.: DSC-26-90-20-10-00023595.0001001 / 07 JUL 16
Applicable to: ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB

IFEC PB-SW



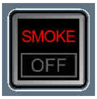
No smoke is detected.

L12



The IFE center is OFF.

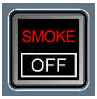
Note: *The cabin connectivity services (OMTS and Internet) are also deactivated.*



Smoke is detected in the ventilation system of the IFE bay.

L2 Associated with the following ECAM alert: SMOKE IFE BAY SMOKE (*Refer to procedure*).

L12

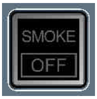


Smoke is detected in the ventilation system of the IFE bay, and the IFE center is OFF.

Note: *The cabin connectivity services (OMTS and Internet) are also deactivated.*

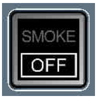
Ident.: DSC-26-90-20-10-00023597.0004001 / 03 JUL 20
Applicable to: ET-ATY, ET-AUA, ET-AUB

1 PAX BBAND PB-SW



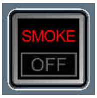
No smoke is detected.

L12



The PAX BBAND is OFF.

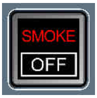
Note: *The cabin connectivity services (OMTS and cabin crew Wi-Fi) are deactivated.*



Smoke is detected in the ventilation system of the PAX BBAND bay.

L2 Associated with the following ECAM alert SMOKE PAX BBAND SMOKE (*Refer to procedure*).

L12

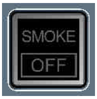


Smoke is detected in the ventilation system of the PAX BBAND bay, and the PAX BBAND is OFF.

Note: *The cabin connectivity services (OMTS ◁✻ and cabin crew Wi-Fi ◁✻) are deactivated.*

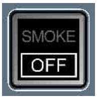
Ident.: DSC-26-90-20-10-00023597.0002001 / 03 JUL 20
Applicable to: ET-ATQ, ET-ATR

2 PAX BBAND PB-SW



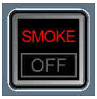
No smoke is detected.

L12



The PAX BBAND is OFF.

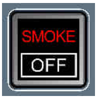
Note: *The cabin connectivity services (OMTS ◁✻ , Internet ◁✻ , and cabin crew WI-FI ◁✻) are deactivated.*



Smoke is detected in the ventilation system of the PAX BBAND bay.

L2 Associated with the following ECAM alert SMOKE PAX BBAND SMOKE (*Refer to procedure*).

L12



Smoke is detected in the ventilation system of the PAX BBAND bay, and the PAX BBAND is OFF.

Note: *The cabin connectivity services (OMTS ◁✻ , Internet ◁✻ , and cabin crew Wi-Fi ◁✻) are deactivated.*

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AIRCRAFT SYSTEMS

27 - FLIGHT CONTROLS

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DSC-27-10 Flight Control System

DSC-27-10-10 System Description

Overview.......A
Architecture.......B
Control Surfaces.......C
Flight Control Computers.......D
Flight Control System.......E
EHA / EBHA.......F
Pitch control.......G
Roll Control.......H
Yaw Control.......I
Speedbrakes, Ground Spoiler and ADHF Control.......J

DSC-27-10-20 Controls and Indicators

Cockpit View.......A
Audio Indicators.......B
F/CTL Panels.......C
F/CTL SD Page.......D
F/CTL Message on FMA.......E
Pitch Trim DISPLAY.......F
PITCH TRIM sw.......G
RUDDER TRIM Panel.......H
Sidesticks.......I
Sidestick Indication on PFD.......J
SIDESTICK PRIORITY light.......K
SPEED BRAKE lever.......L
Slats/Flaps Display.......M
WHEEL SD Page.......N
MEMO.......O

DSC-27-10-30 Normal Law

General.......A
Pitch Control.......B
Lateral Control.......C
Load Alleviation Function.......D

Continued on the following page

Continued from the previous page

DSC-27-10-40 Reconfiguration Control Laws

Reconfiguration Control Laws.. A
Alternate Law.. B
Direct Law.. C
Abnormal Attitude Law.. D
Backup Control.. E

DSC-27-20 Slats/Flaps

DSC-27-20-10 System Description

Overview.. A
Slats/Flaps System.. B

DSC-27-20-20 Configurations

Configurations.. A
Slats/Flaps Extension/Retraction.. B
Slat Alpha/Speed Lock Function.. C
Slats/Flaps Cruise Baulk Function.. D
Differential Flap Setting.. E

DSC-27-20-30 Controls and Indicators

Cockpit View.. A
F/CTL SD Page.. B
FLAPS lever.. C
Slats/Flaps Display.. D
Speeds Placard.. E

DSC-27-20-33 Abnormal Operations

Inhibition of the flap retraction in the case of a spoiler failure.. A

Localization Title	Toc Index	ID	Reason
DSC-27-20-20 Flap Cruise Deployment	E	1	Addition of the information that the flap cruise deployment function for performance is available with all engines operative.
DSC-27-20-30 Flaps - actual position and message	D	1	Enhancement of the wording.
DSC-27-20-33 Inhibition of the flap retraction in the case of a spoiler failure	A	1	Clarification of the spoiler failure cases that lead to flap retraction inhibition.

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OVERVIEW

Ident.: DSC-27-10-10-00001992.0001001 / 06 MAY 15
Applicable to: ALL

The flight control system is a fly-by-wire system.

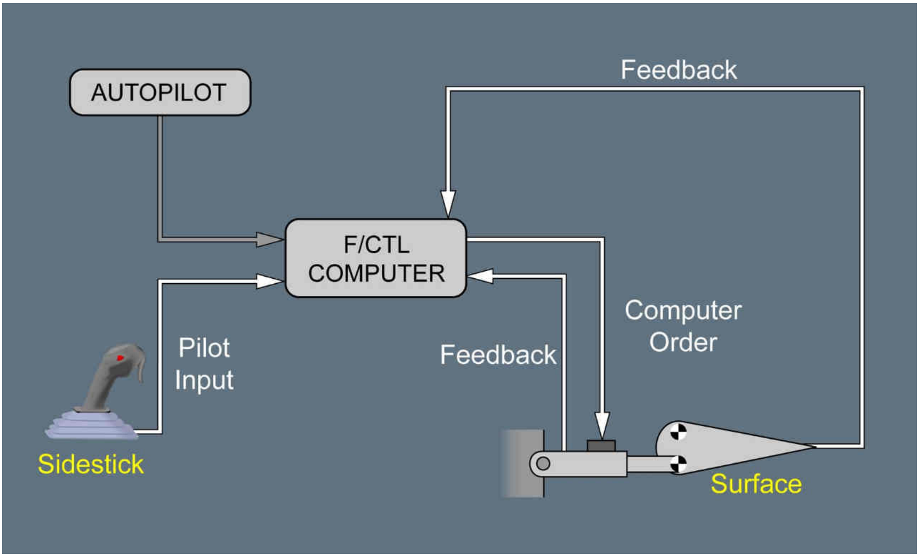
The flight control surfaces are:
- Electrically controlled
- Hydraulically actuated.

L2 The surfaces are actuated by one or both hydraulic systems, or by an independent hydraulic source (EHA/EBHA).*Refer to DSC-27-10-10 EHA / EBHA*.

Note: The slats also have an electrical motor.

L1 The stabilizer has two electric motors.

The PF uses the sidestick to manually fly the aircraft. The flight control computers interpret the pilot's inputs, and order flight control surface movement, as necessary.
Additionally, a PITCH TRIM sw and a RUDDER TRIM selector (with a rudder trim RESET pb) enable the pilot to trim the aircraft when needed.

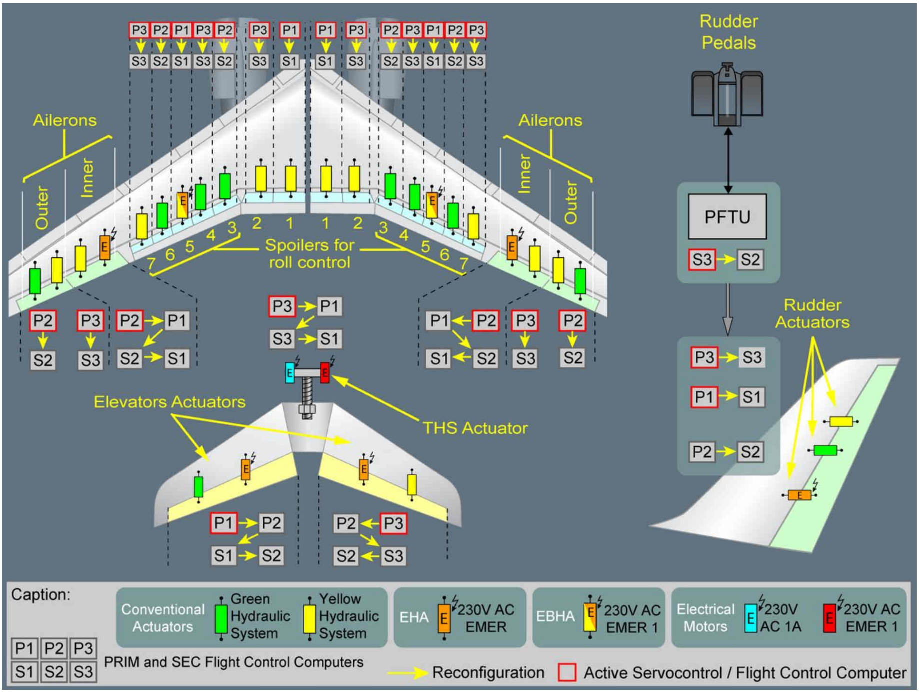


In normal law, regardless of the pilot's input, the flight control computers prevent excessive maneuvers and any exceedance of the safe envelope in pitch, roll and yaw.

ARCHITECTURE

Ident.: DSC-27-10-10-00019062.0001001 / 24 APR 14

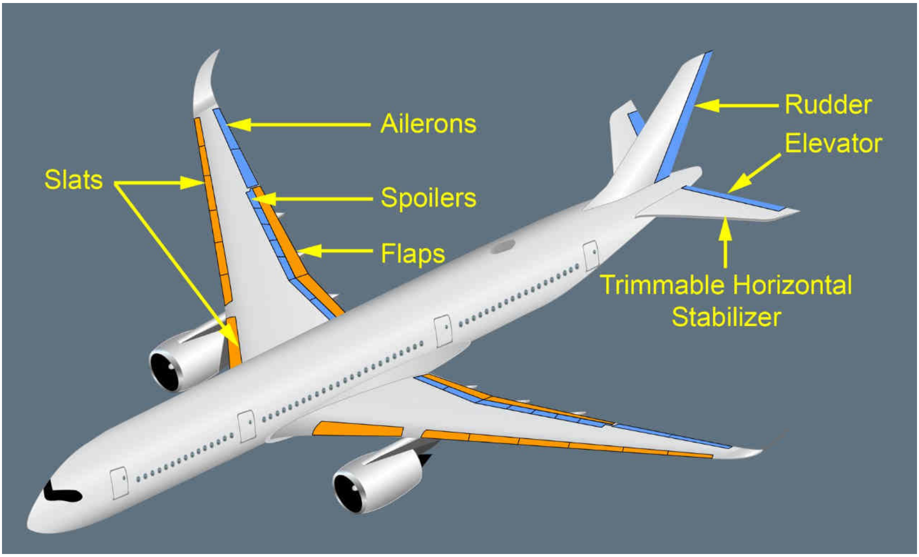
Applicable to: ALL


P3 P2 P1 P3 P2 P3 P1 P1 P3 P2 P3 P1 P2 P3
S3 S2 S1 S3 S2 S3 S1 S1 S3 S2 S3 S1 S2 S3
Rudder Pedals
Ailerons
Outer
Inner
Ailerons
Inner
Outer
E
7 6 5 4 3 2 1 1 2 3 4 5 6 7
Spoilers for roll control
PFTU
S3 → S2
P2 → S2
P3 → S3
P2 → P1
S2 → S1
P3 → P1
S3 → S1
P1 ← P2
S1 ← S2
P3 → S3
P2 → S2
Rudder Actuators
P3 → S3
P1 → S1
P2 → S2
Elevators Actuators
THS Actuator
P1 → P2
S1 → S2
P2 ← P3
S2 ← S3
Caption:
Conventional Actuators
Green Hydraulic System
Yellow Hydraulic System
EHA
230V AC EMER
EBHA
230V AC EMER 1
Electrical Motors
230V AC 1A
230V AC EMER 1
P1 P2 P3
S1 S2 S3
PRIM and SEC Flight Control Computers
Reconfiguration
Active Servocontrol / Flight Control Computer

Flight Controls Architecture

CONTROL SURFACES

Ident.: DSC-27-10-10-00001993.0001001 / 06 MAY 15
Applicable to: ALL


Ailerons
Slats
Spoilers
Flaps
Rudder
Elevator
Trimmable Horizontal Stabilizer

Control surfaces

Pitch control uses:
- Two elevators
- The Trimmable Horizontal Stabilizer (THS)

Roll control uses:
- 4 ailerons
- 10 spoilers

Yaw control uses:
- One rudder

The speed brake and ground spoiler functions use:
- 14 spoilers

Lift augmentation uses:
- 14 slats
- 4 flaps
- 4 ailerons

For more information : *Refer to Slats/Flaps Overview*.

FLIGHT CONTROL COMPUTERS

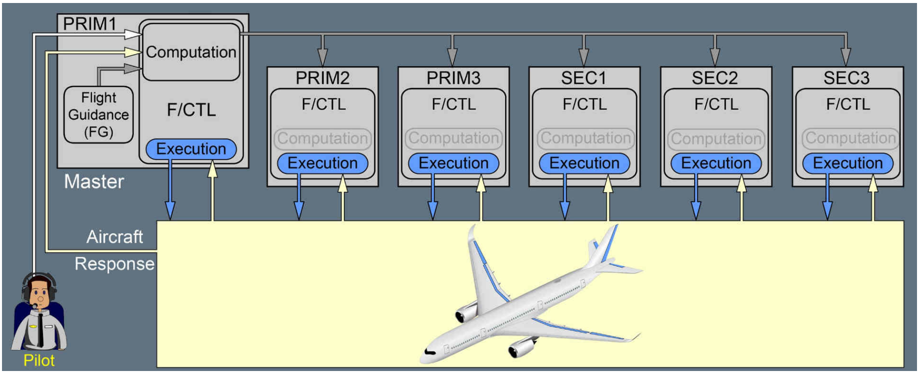
Ident.: DSC-27-10-10-00001994.0001001 / 24 APR 14
Applicable to: ALL

Six flight control computers process pilot and autopilot inputs:
- 3 PRIMs
- 3 SECs

One computer of any type (PRIM or SEC) is able to control the aircraft and ensure safe flight and landing.

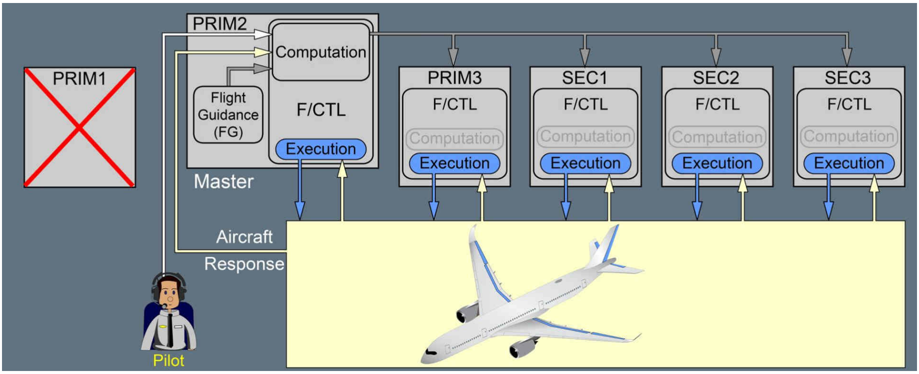
L2 In normal operation, one PRIM computer is the master (usually PRIM 1) and computes the orders. The master computer sends orders to the other computers (PRIMs and SECs) which execute them on their associated actuators.
Each flight control actuator is connected to one PRIM and one SEC. In normal operation, the PRIMs control the actuators. In the case of impossibility for the PRIM to control its actuators, the associated SEC takes over.

PRIM 1 Master


PRIM1
Computation
Flight Guidance (FG)
F/CTL
Execution
Master
PRIM2
F/CTL
Computation
Execution
PRIM3
F/CTL
Computation
Execution
SEC1
F/CTL
Computation
Execution
SEC2
F/CTL
Computation
Execution
SEC3
F/CTL
Computation
Execution
Aircraft Response
Pilot

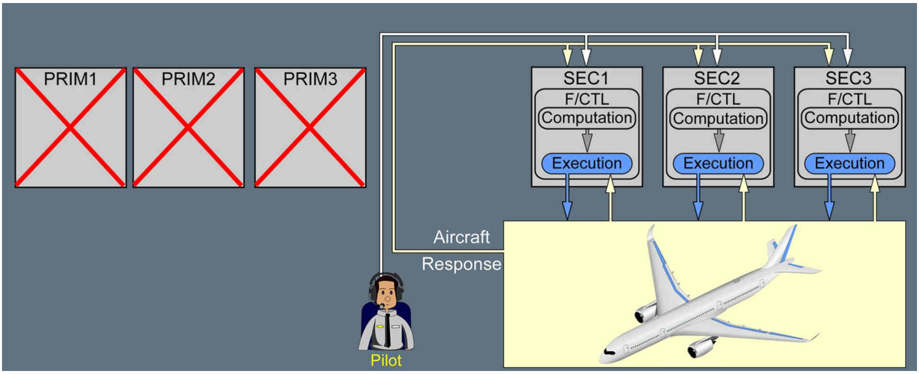
If PRIM 1 fails, PRIM 2 becomes the master.
If PRIM 2 fails, PRIM 3 becomes the master.

PRIM 2 Master


PRIM2
Computation
PRIM1
Flight Guidance (FG)
F/CTL
Execution
Master
PRIM3
F/CTL
Computation
Execution
SEC1
F/CTL
Computation
Execution
SEC2
F/CTL
Computation
Execution
SEC3
F/CTL
Computation
Execution
Aircraft Response
Pilot

If all PRIMs are lost, all the operative SECs compute and perform their orders independently. There is no master SEC.

All PRIMs failed

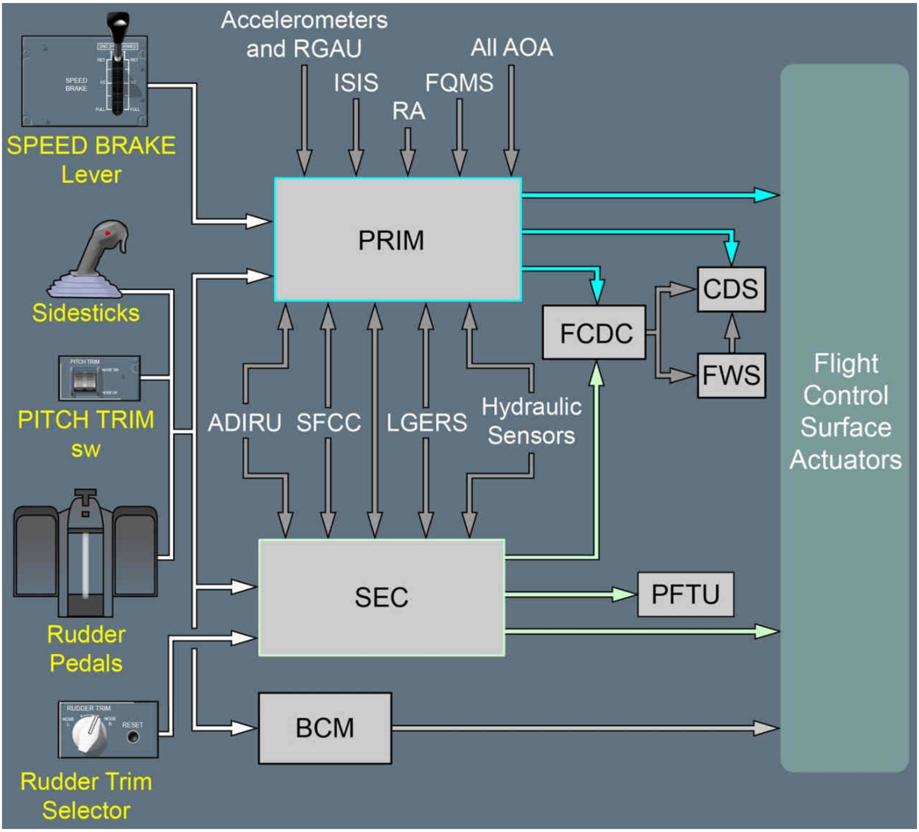

PRIM1
PRIM2
PRIM3
SEC1
F/CTL
Computation
Execution
SEC2
F/CTL
Computation
Execution
SEC3
F/CTL
Computation
Execution
Aircraft Response
Pilot

FLIGHT CONTROL SYSTEM

Applicable to: ALL

Ident.: DSC-27-10-10-10-00001995.0001001 / 24 APR 14

System Architecture


Accelerometers and RGAU
ISIS
RA
FQMS
All AOA
SPEED BRAKE Lever
Sidesticks
PITCH TRIM sw
Rudder Pedals
Rudder Trim Selector
PRIM
ADIRU
SFCC
LGERS
Hydraulic Sensors
FCDC
CDS
FWS
SEC
PFTU
BCM
Flight Control Surface Actuators

Ident.: DSC-27-10-10-10-00002001.0001001 / 06 MAY 15

PRIM

The three PRIMs:
- Compute Normal, Alternate, and Direct control laws
- Command the flight control surfaces : ailerons, spoilers, elevators, THS and rudder
- Compute the Load Alleviation Function (LAF) law

- Host the autopilot, flight director and autothrust functions. For more information, *Refer to Flight Guidance*
- Host the flight envelope protection functions
- Compute the characteristic speeds
- Host various other functions, described in their relevant chapters, out of which:
    - Brake to Vacate (BTV). For more information, *Refer to BTV*.
    - ROW and ROP functions. For more information, *Refer to ROW/ROP*.
    - The inhibition function of the thrust reversers (Third line of defense). For more information: *Refer to DSC-70-10-70-20 Three Lines of Defense*

L2 The PRIMs receive information from the following aircraft systems.

ADIRU

Each PRIM receives data from the three Air Data and Inertial Reference Units (ADIRUs).

L3 Each ADIRU has two parts:
- The Air Data Reference (ADR)
- The Inertial Reference (IR)

When the three IR (ADR) are valid, the used parameter is the median value.
When two IR (ADR) are valid, the used parameter is the average of both outputs.
When only one IR is valid, its data is not used. When only one ADR is valid, its parameters are used, if monitored by the ISIS.

In addition, a fourth AOA is used by the PRIMs in order to:
- Monitor the remaining MFPs in the case of an ADR failure
- Provide additional AOA data order to increase the availability of the flight control laws
- For more information: *Refer to DSC-34-NAV-20-10-20 Architecture*

ISIS

There is one Integrated Standby Instrument System (ISIS). The ISIS uses probes which are independent from the ADIRUs probes.
Each PRIM receives data from the ISIS to monitor the ADIRUs. For more information:*Refer to DSC-34-NAV-20-10-50 ADIRS Monitoring*.
The PRIMs do not use data from the ISIS to compute flight control laws.

L2 **RA**

Each PRIM receives data from the three Radio Altimeters (RAs).
L3 Each PRIM is connected to two RAs and receives third RA data via the other PRIMs.
When the three RAs are valid, the used parameter is the median value.
When two RAs are valid, the used parameter is the average of both outputs.
When only one RA is valid, its value is used.

L2 **FQMS**

The Fuel Quantity and Monitoring System (FQMS) provides the weight and centre of gravity data to the PRIMs.

L3 FQMS 1 sends the weight and CG information to the PRIMs. FQMS 2 takes over if FQMS 1 fails.

L2 **LGERS / BCS**

The Landing Gear Extension Retraction System (LGERS) provides:
- Compressed/not compressed landing gear information
- Extended/retracted landing gear information
- L/G lever position.

The Braking Control System (BCS) provides:
- Wheel speed information
- Brake pedals position.

SFCC

The Slats and Flaps Control Computers provide the slats and flaps position, and FLAPS lever position. For more information: *Refer to DSC-27-20-10 Slat(Flap) Systems*

L3 Any SFCC can provide the position of all the slats and flaps.

ACCELEROMETERS AND GYROMETERS

Several Rate Gyrometer and Accelerometer Units (RGAU) provide information for the computation of the flight control laws:
- Roll rate
- Pitch rate
- Yaw rate
- Longitudinal acceleration
- Lateral acceleration
- Normal acceleration.

HYDRAULIC SENSORS

The hydraulic sensors provide the status of the hydraulic systems and engine driven pumps. This enables flight control reconfiguration in case of hydraulic low pressure, or if only one pump remains available for one system.

Ident.: DSC-27-10-10-10-00002002.0001001 / 24 APR 14

SEC

The three SECs:
- Compute the direct control law when the three PRIMs are failed,
- Control surfaces (ailerons, spoilers, elevators, THS and rudders) in backup to the PRIMs,
- Control the rudder trim (SEC 2 and SEC 3 only).

L2 The SECs receive the same information as the PRIMs from the following systems:
- ADIRU

L3 Each SEC receives data from two ADIRUs:
  - SEC 1 receives data from ADIRUs 1 & 2. In addition SEC 1 receives data from ADIRU 3 via SEC 2 and SEC 3
  - SEC 2 receives data from ADIRUs 2 & 3
  - SEC 3 receives data from ADIRUs 1 & 3.

L2
- SFCC
- LGERS
- FQMS
- RA
- BCS
- Hydraulic sensors.

L3 The direct law, hosted by the SECs, is more simple than the normal and alternate laws, and requires less parameters. Therefore, the SECs are less affected by other aircraft system failures. For more information: *Refer to DSC-27-10-40 Direct Law*

Ident.: DSC-27-10-10-10-00002003.0001001 / 24 APR 14

FLIGHT CONTROL DATA CONCENTRATOR (FCDC)

The two FCDCs acquire data from the PRIMs and SECs for:
- The F/CTL system display
- The Flight Warning System
- L3 The on-board maintenance system
- The flight data recorders
- L1 Weight and Balance Backup Computation (WBBC) which provides backup weight and CG data.

L3 The data from the WBBC is used for flight control law and characteristic speed computation in case of a dual FQMS failure, and to detect any major discrepancy between the FQMS and the WBBC. For more information on the WBBC: *Refer to DSC-28-10 Weight and Balance Backup Computation*

The FCDCs are hosted in the CPIOM-J7 (J71 and J72). For more information: *Refer to DSC-42-10 CPIOM Group J7*

Ident.: DSC-27-10-10-10-00002004.0001001 / 24 APR 14

BACKUP CONTROL MODULE (BCM)

In the event of the temporary loss of all flight computers (PRIMs and SECs), the Backup Control Module (BCM) provides aircraft control and stability. For more information : *Refer to DSC-27-10-40 Backup Control*.

Ident.: DSC-27-10-10-10-00002005.0001001 / 24 APR 14

PEDAL FEEL AND TRIM UNIT (PFTU)

The PFTU has two motors (one controlled by SEC 3, the other controlled by SEC 2) to move the zero-force position of the rudder pedals:

- For rudder trim, in manual flight
- To reflect autopilot rudder trim orders, when the autopilot is engaged.

L3 The autopilot rudder trim orders are sent from the PRIM to the PFTU, via the SEC.

EHA / EBHA

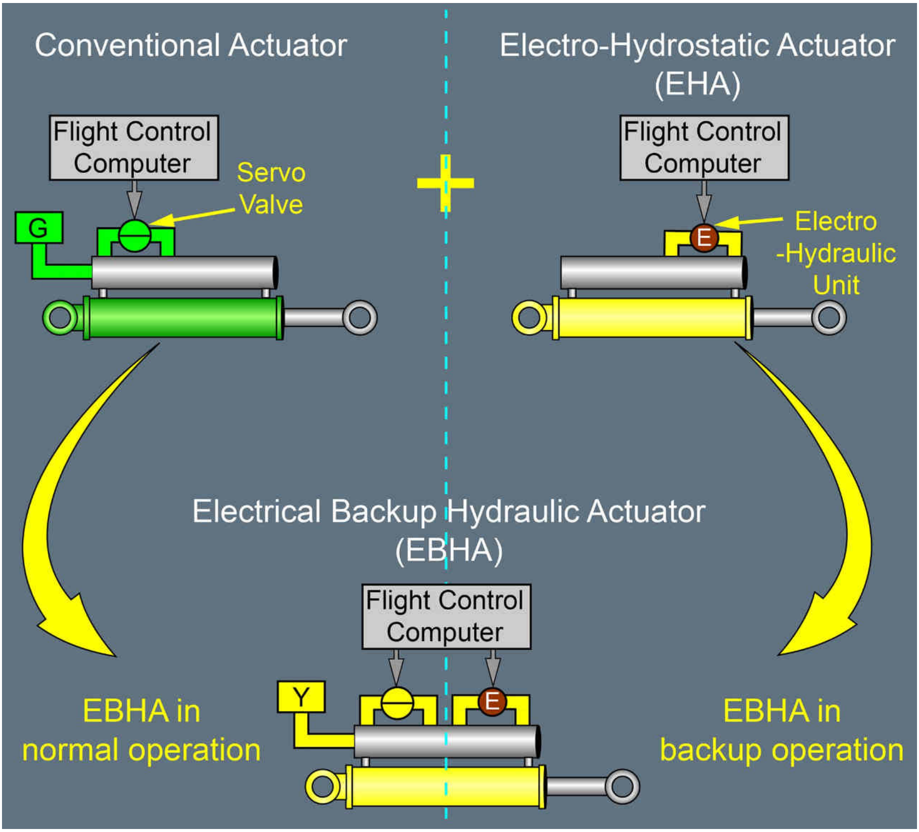
Ident.: DSC-27-10-10-10-00002000.0001001 / 04 MAY 16
Applicable to: ALL

On most civil aircraft, there are at least three hydraulic systems, to ensure sufficient redundancy for flight controls and landing gear systems.
On the A350, to reduce the aircraft weight and maintenance costs, there are only two hydraulic systems. Equivalent redundancy is achieved with electro-hydraulic actuators.
Electro-hydraulic actuators use electrical power to locally generate their own hydraulic pressure to move a flight control surface. Each electro-hydraulic actuator has its own self-contained hydraulic reservoir.

There are two types of electro-hydraulic actuators:

- Electro-Hydrostatic Actuators (EHA)	:	Powered by one electric system
- Electrical Backup Hydraulic Actuators (EBHA)	:	Powered by one electric or one hydraulic system.

EHA / EBHA


Conventional Actuator
Electro-Hydrostatic Actuator (EHA)
Flight Control Computer
Servo Valve
G
Flight Control Computer
E
Electro -Hydraulic Unit
Electrical Backup Hydraulic Actuator (EBHA)
Flight Control Computer
Y
E
EBHA in normal operation
EBHA in backup operation

ELECTRO-HYDROSTATIC ACTUATOR (EHA)

Each surface has one, two, or three actuators. When EHAs are installed, they are the backup to the conventional actuator.

Each EHA has:
- Its own hydraulic reservoir
- An electric hydraulic pump
- A hydraulic actuator.

L2 On ground, when hydraulic power is available, the reservoir of the EHA is automatically refilled, if needed. The hydraulic fluid is taken from the hydraulic systems (green or yellow).

L1 The following surfaces are fitted with an EHA:
- Inner ailerons,
- Rudder,
- Elevators.

ELECTRICAL BACKUP HYDRAULIC ACTUATOR (EBHA)

The EBHA is a combination of a conventional actuator and of an EHA.
When hydraulic power is available, the EBHA behaves like a conventional actuator.
When hydraulic power is lost, the EBHA behaves as an EHA.

Each EBHA has:
- A servo valve for the hydraulic mode
- An electric hydraulic pump for the electric mode
- Its own hydraulic reservoir for the electric mode

L2 *Note:* *The reservoir is filled when hydraulic power is available.*

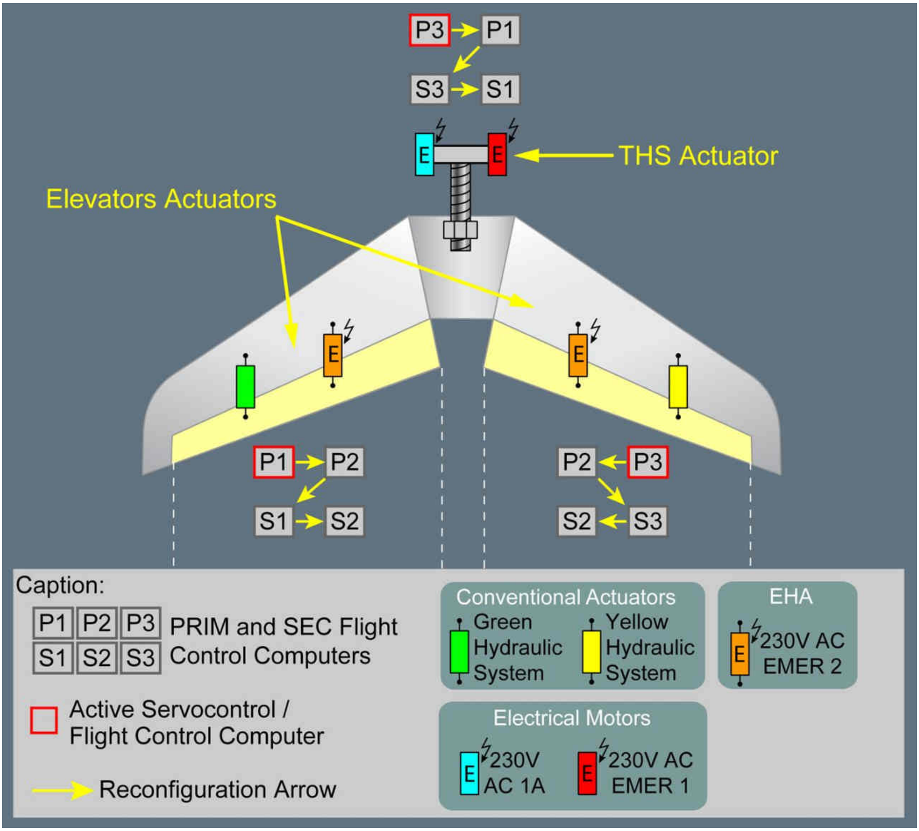
L1
- A hydraulic actuator.

L2 In electric mode, the EBHA is isolated from the hydraulic system.
L1 Only the pair of spoiler 5 is fitted with an EBHA.

PITCH CONTROL

Ident.: DSC-27-10-10-00001996.0001001 / 18 JUN 15
Applicable to: ALL

Two elevators and the trimmable horizontal stabilizer control the aircraft in pitch.


P3
P1
S3
S1
E
E
THS Actuator
Elevators Actuators
E
E
P1
P2
S1
S2
P2
P3
S2
S3
Caption:
P1 P2 P3
S1 S2 S3
PRIM and SEC Flight Control Computers
Active Servocontrol / Flight Control Computer
Reconfiguration Arrow
Conventional Actuators
Green Hydraulic System
Yellow Hydraulic System
EHA
E
230V AC EMER 2
Electrical Motors
E
230V AC 1A
E
230V AC EMER 1

L2 *Note: In the event of an all engine flameout, all EHAs are powered via the 230 V AC EMER 2 busbar.*

L1 ELEVATORS

L3 The maximum elevator deflection is 20 ° down and 30 ° up.

L1 Each elevator has:
- One conventional actuator which is active (it commands the position of the surface)
- One EHA which is in damping mode (it follows the movement of the surface).

L3 Both actuators can be simultaneously active, when a high surface deflection rate or a high force to deflect the surface is required.

L1 **CONTROL**

Only one flight control computer per elevator is active. The others are in stand-by.

L2 When all systems are operative:
- PRIM 1 controls the left-hand elevator
- PRIM 3 controls the right-hand elevator

L1 If a PRIM or a hydraulic system fails, another flight control computer and power source will take over, to ensure maximum elevator availability.
L2 For example: for the left-hand elevator, if PRIM 1 or the green hydraulic system fails, PRIM 2 and the EHA on the AC EMER 2 busbar will takeover.
L1 Both elevators remain available in backup control (*Refer to DSC-27-10-40 Backup Control*).

TRIMMABLE HORIZONTAL STABILIZER (THS)

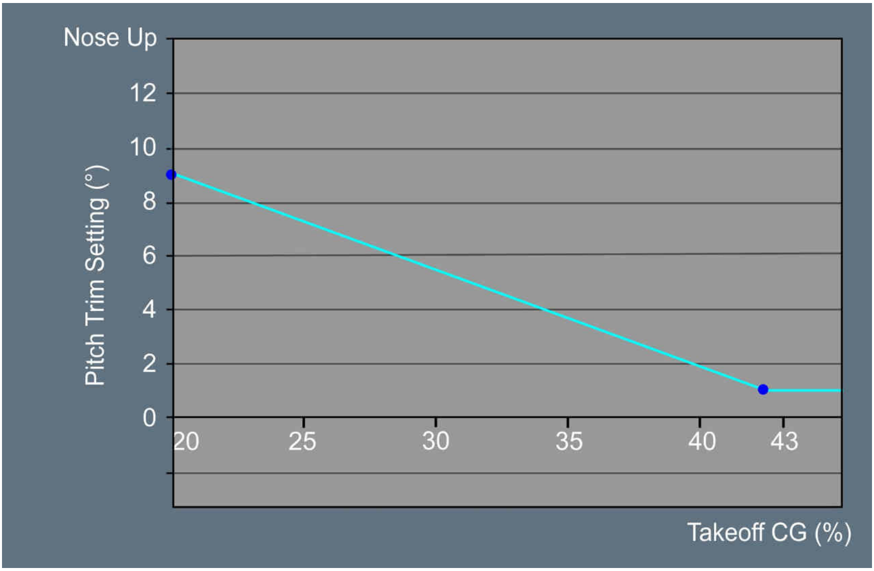
L3 The maximum THS deflection is between 0.8 ° and 13.7 ° nose up.
L1 The THS has two electric motors, a screwjack and a ball nut.
In normal operations, one motor is active, the other one is in stand-by mode. The active motor is switched after each flight to avoid motor wear.
On ground, or in direct law, the THS is directly controlled via the pitch trim switch.
In flight, in normal and alternate law, the THS is controlled by the flight control computers.

AUTOMATIC PITCH TRIM SETTING

The pitch trim is automatically set for takeoff:
- When the first engine is started, or
- When the flight crew arms the ground spoilers.

The pitch trim setting for takeoff is function of the takeoff CG.

Green Band



The takeoff CG used for the pitch trim setting is provided by the FQMS, based on the ZFCG entered by the flight crew in the FMS Fuel & Load page, and on the fuel distribution. It is displayed in the permanent data of the system display.

L2 *Note: In the TAKEOFF panel of the FMS PERF page, the flight crew enters the THS position for takeoff, based on the takeoff CG of the loadsheet. This input is not used for automatic pitch trim setting. It is used to trigger the F/CTL PITCH TRIM/FMS/CG DISAGREE caution, if necessary (For more information: Refer to PRO-ABN-F_CTL F/CTL PITCH TRIM/FMS/CG DISAGREE).*

During a touch and go, the pitch trim will automatically move to the takeoff position, based on the aircraft CG.

L3 The pitch trim will move when:
- Main landing gears are compressed for at least one second
- Aircraft speed is above 80 kt
- One of the following action is performed:
  - Slats/flaps are moved
  - Ground spoilers are disarmed
  - At least one thrust levers is not at idle.

L2 *Note: After landing, the pitch trim will move to 0,8° (maintenance position) when the speed goes below 30 kt.*

L1 **CONTROL**

Only one flight control computer is active. The other is in stand-by.

L2 When all systems are operative:
- PRIM 3 or PRIM 1 controls the pitch trim alternatively. The PRIM in control is switched after each flight.

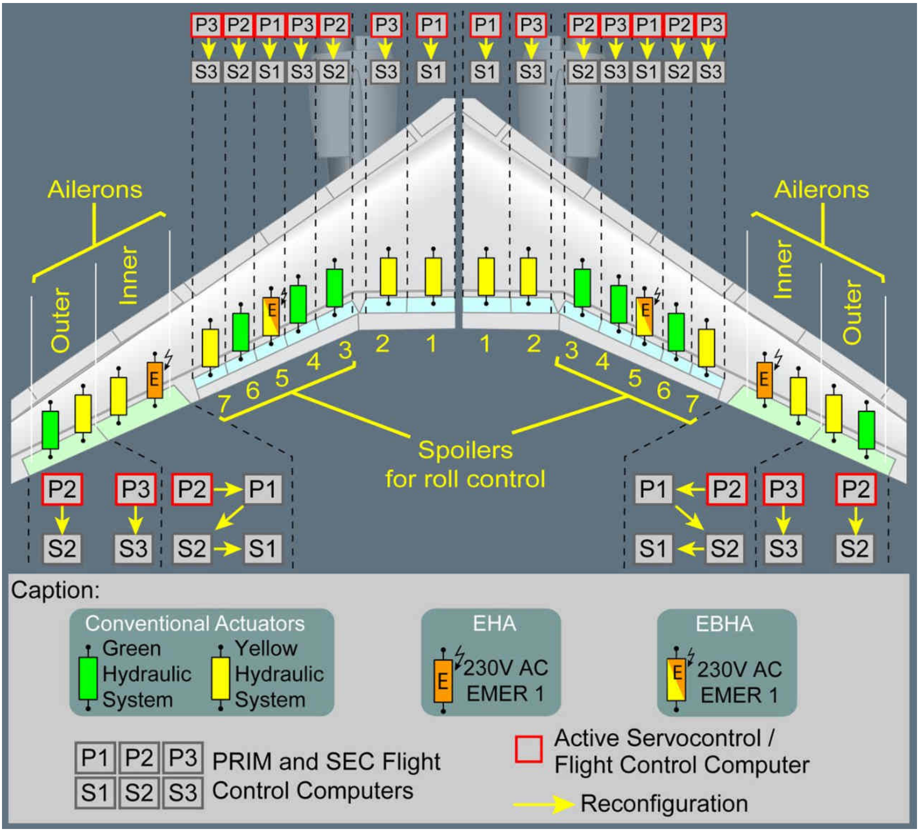
L1 If a PRIM or a electric motor fails, another flight control computer and electric motor will take over, to ensure maximum THS availability.

ROLL CONTROL

Ident.: DSC-27-10-10-00001997.0001001 / 28 APR 17
Applicable to: ALL

On each wing, the 2 ailerons and the spoilers 3 to 7 control the aircraft in roll.

Roll Control


P3 P2 P1 P3 P2 P3 P1 P1 P3 P2 P3 P1 P2 P3
S3 S2 S1 S3 S2 S3 S1 S1 S3 S2 S3 S1 S2 S3
Ailerons
Outer
Inner
Ailerons
Inner
Outer
E
1 2 3 4 5 6 7
Spoilers
for roll control
P2 P3 P2 P1
S2 S3 S2 S1
P1 P2 P3 P2
S1 S2 S3 S2
Caption:
Conventional Actuators
Green Hydraulic System
Yellow Hydraulic System
EHA
230V AC EMER 1
EBHA
230V AC EMER 1
P1 P2 P3 S1 S2 S3 PRIM and SEC Flight Control Computers
Active Servocontrol / Flight Control Computer
Reconfiguration

L2 *Note:* *In the event of an all engine flameout, all EHAs/EBHAs are powered via the 230 V AC EMER 1 busbar.*

L1 AILERONS

L3 The maximum aileron deflection is 20 ° down and 30 ° up.

L1 The outer ailerons have two conventional actuators. Both actuators are active at the same time.
The outer ailerons are not deflected up or down above 250 kt.
The inner ailerons have one conventional actuator and one EHA.

In normal operation, for inner ailerons:
- The conventional actuators are active (they command the position of the surface)
- The EHAs are in damping mode (they follow the movement of the surface).

CONTROL

On inner ailerons, only one flight control computer is active. The others are in standby.
L2 When all systems are operative PRIM 2 controls the yellow actuator.
L1 On outer ailerons, two flight control computers, PRIM 2 and PRIM 3, are active at the same time.
L2 When all systems are operative, PRIM 2 controls the green actuator and PRIM 3 controls the yellow actuator.
L1 If a PRIM or a hydraulic system fails, another flight control computer and power source will take over, to ensure maximum aileron availability.
L2 For example: for the outer ailerons, if PRIM 2 or the green hydraulic system fails, PRIM 3 and the yellow hydraulic are still available. Only one actuator then controls the outer ailerons.
L1 The inner ailerons remain available in backup control (*Refer to DSC-27-10-40 Backup Control*).

SPOILERS

L3 The maximum spoiler deflection for roll control is 45 °.
L1 Each spoiler has one actuator (conventional or EBHA), and two flight control computers.
L2 If the yellow hydraulic system is available, the actuator of spoiler 5 operates as a conventional actuator. If the yellow hydraulic system fails, the actuator of spoiler 5 operates as an EHA, powered by the 230 V AC EMER 1 busbar.

When failed, a spoiler is commanded in the anti-extension mode. When the anti-extension mode is active, the affected spoiler:
- Remains retracted if it was retracted, or
- Remains in its position if it was extended below the balanced position, or
- Retracts to balanced position, if it was extended above its balanced position.

The balanced position is the position where the not commanded surface is free to float. This position will change during the flight depending on speed and aircraft attitude.
Depending on the root cause of the failure, the activation of the anti-extension mode may lead to an upward drift of the affected spoiler up to the balanced position.
As a consequence, the fuel consumption increase due to a failed spoiler may not be immediate but will occur only once the drift is established. Therefore, the fuel consumption increase due to a failed spoiled is indicated on the ECAM through a separate alert: F/CTL SPLRS PARTLY EXTENDED (*Refer to procedure*).

The procedure line related to the fuel consumption increase is indicated in the F/CTL PART(MOST) SPLRS FAULT alert only when the position of the affected spoiler(s) is lost (*Refer to procedure*).

YAW CONTROL

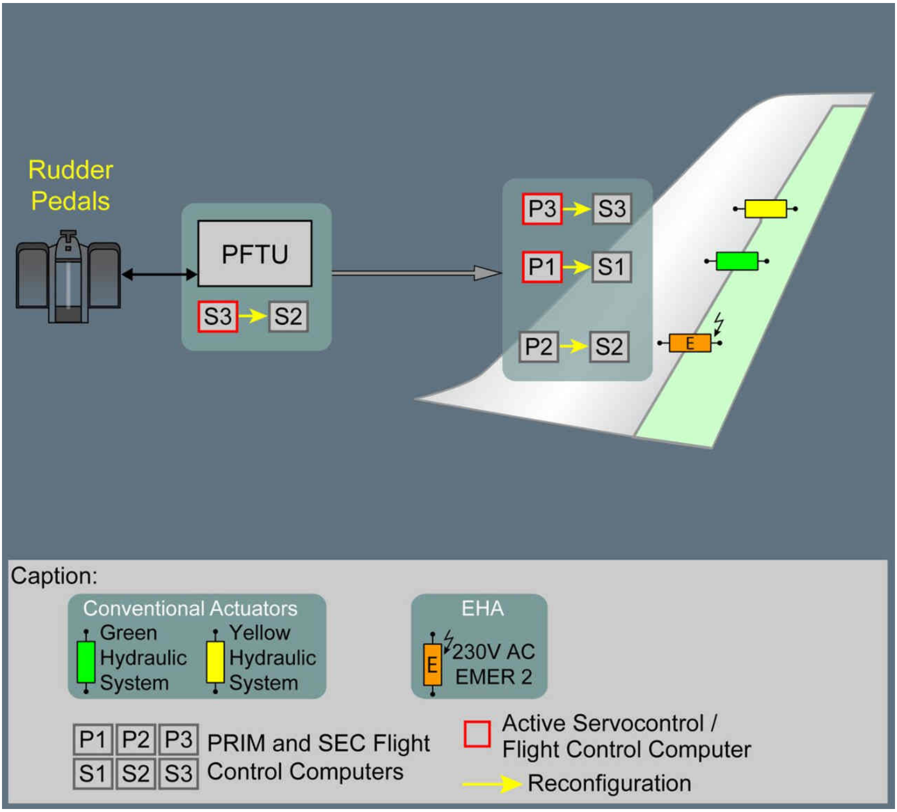
Applicable to: ALL

Ident.: DSC-27-10-10-20-00001998.0001001 / 17 NOV 17

RUDDER

One rudder controls the aircraft in yaw.

Yaw Control


Rudder Pedals
PFTU
S3
S2
P3
S3
P1
S1
P2
S2
E
Caption:
Conventional Actuators
Green Hydraulic System
Yellow Hydraulic System
EHA
E
230V AC EMER 2
P1 P2 P3
S1 S2 S3
PRIM and SEC Flight Control Computers
Active Servocontrol / Flight Control Computer
Reconfiguration

L2 Note: *In the event of an all engine flameout, the EHA is powered via the 230 V AC EMER 2 busbar.*

L1 The rudder has two conventional actuators and one EHA:

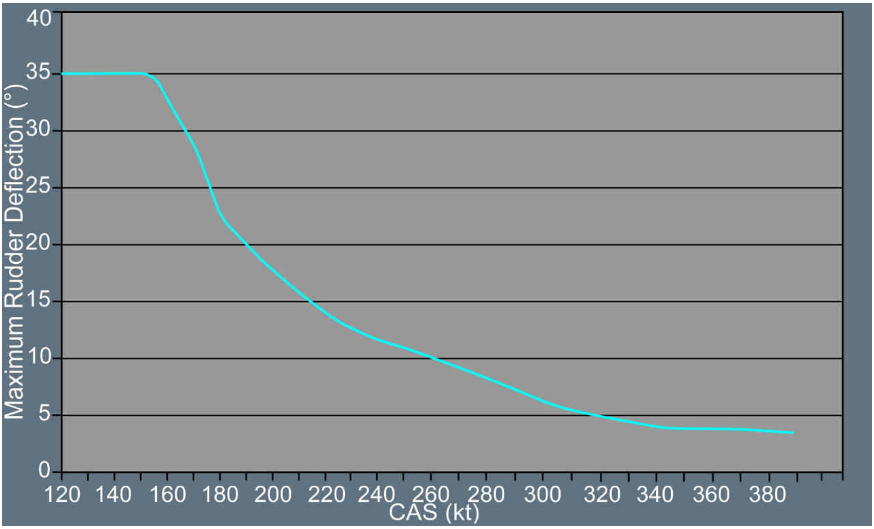
- Both conventional actuators are active at the same time (they command the position of the surface)
- The EHA is in damping mode (it follows the movement of the surface).

If a conventional actuator fails, the EHA is activated and the remaining conventional actuator is in damping mode. If a high rudder deflection rate is required, the remaining conventional actuator is activated in addition to the EHA.

RUDDER TRAVEL LIMITATION

Maximum rudder deflection is limited as a function of the aircraft speed.

Maximum Rudder Deflection



The maximum rudder deflection gradually reduce as the speed increases.
In all cases, the available rudder deflection provides sufficient yaw control within the entire flight envelope. This includes failure cases and maximum asymmetric thrust.

L3 In the case the three ADRs are failed, the maximum rudder deflection is a function of the slats/flaps position. Maximum rudder deflection is available when in CONF FULL.

L1 **RELATIONSHIP BETWEEN SIDESLIP/RUDDER DEFLECTION/RUDDER PEDAL TRAVEL**

Regardless of the aircraft speed, and therefore regardless of the maximum rudder deflection, full rudder pedal travel remains available.
However, above 150 kt, maximum rudder deflection may be achieved before maximum rudder pedal travel is reached.

CONTROL

Two flight control computers, PRIM 3 and PRIM 1 are active at the same time.
L2 When all systems are operative, PRIM 1 controls the green actuator and PRIM 3 controls the yellow actuator.

For example:
- If PRIM 1 fails, SEC 1 will takeover for the green actuator
- If the yellow hydraulic system fails, the EHA is activated, controlled by PRIM 2. The green hydraulic actuator activates in addition to the EHA if a high rudder deflection rate is required.

L1 The rudder remains available in backup control (*Refer to DSC-27-10-40 Backup Control*).

Ident.: DSC-27-10-10-20-00002006.0001001 / 06 MAY 15

RUDDER TRIM

Rudder trim is achieved via the Pedal Feel and Trim Unit (PFTU).

The PFTU has two electric motors (one controlled by SEC 2, the other controlled by SEC 3) to move the zero-force position of the rudder pedals in accordance with the position of the rudder surface:
- For rudder trim in manual flight
  Rudder trim is applied via the RUDDER TRIM selector on the pedestal.
- To reflect autopilot rudder trim orders, when the autopilot is engaged.
  L3 The autopilot orders are sent from the PRIMs, via the SECs.

L1 *Note:* *When the autopilot is engaged, the RUDDER TRIM selector is not active.*

L2 The authority of the rudder trim is 85% of the maximum rudder deflection.

L1 **AUTOMATIC RUDDER TRIM SETTING**

The rudder trim is automatically set at 0 ° for takeoff:
- When the first engine is started, or
- When the flight crew arms the ground spoilers.

SPEEDBRAKES, GROUND SPOILER AND ADHF CONTROL

Applicable to: ALL

Ident.: DSC-27-10-10-30-00001999.0002001 / 01 JUN 17

SPEED BRAKES CONTROL

All the spoilers can be used as speed brakes.
L2 When a speed brake fails on one side, the symmetric one on the other wing is inhibited.
Spoilers 3 to 7 are also used for roll control. The roll control function has priority over the speed brake function. When the sum of a roll order and a simultaneous speed brake order on one surface is above the maximum deflection available in flight, the symmetrical surface is retracted until the difference between the two surfaces is equal to the roll order.
L1 Each spoiler has one actuator (conventional or EBHA), and two flight control computers.
When all systems are operative the PRIMs control the spoilers. If a PRIM fails, a SEC will take over, to ensure maximum spoiler availability.

EXTENSION

The flight crew controls the speed brakes with the SPEED BRAKE lever.
L3 The maximum deflection for spoilers is:

Spoiler	Speed Brakes Maximum Deflection
1	15 °
2	12 °
3	20 °
4	40 °
5	40 °
6	40 °
7	30 °

L1 The speed brakes will automatically extend:

- In the case of VMO/MMO exceedance
  For more information, *Refer to DSC-22-27-20 High Speed Protection*.
- If EMER DES mode automatically engages
  For more information, *Refer to DSC-22-FG-70-60-40 Engagement Conditions*.

L2 The speed brake deflection is a function of

- The position of the SPEED BRAKE lever
  L3 When the SPEED BRAKE lever is at the 1/2 position, the speed brakes are 3/4 extended.
- L2 The configuration of the slats/flaps
  L3 Speed brake deflection is reduced in CONF 1+F, 2, 3, and FULL.
- L2 The load factor
  L3 Maximum deflection is reduced below 0.3 g, and above 1.7 g.

L1 **AUTOMATIC RETRACTION**

If extended, the speedbrakes automatically retract if:
- Alpha protection is activated, or
- A go-around is initiated.

Once retracted, the speedbrakes remain retracted, even if the conditions have disappeared. To extend the speed brakes again, the SPEED BRAKE lever must first be set to the retracted position for at least 5 s .

Ident.: DSC-27-10-10-30-00002007.0001001 / 24 APR 14

GROUND SPOILER CONTROL

All the spoilers and ailerons are also used as ground spoilers.

L2 When a spoiler fails on one side, the symmetric one on the other wing is inhibited.

L1 **ARMING**

The flight crew arms the ground spoilers by pulling the SPEED BRAKE lever into the armed position.

EXTENSION

Landing

If all thrust levers are at idle and the ground spoilers armed, when at least one landing gear is on ground, the ground spoilers partially extend. This partial extension, by decreasing the lift (lift dumping), will ease the touchdown of the aircraft, and will, consequently, lead to the full extension of the ground spoilers.

L3 During a partial extension:
- The deflection of spoilers 1 and 2 is 10 °
- The deflection of spoilers 3 to 7 is 15 °
- The ailerons are not deflected.

The extension rate is 5 °/s.

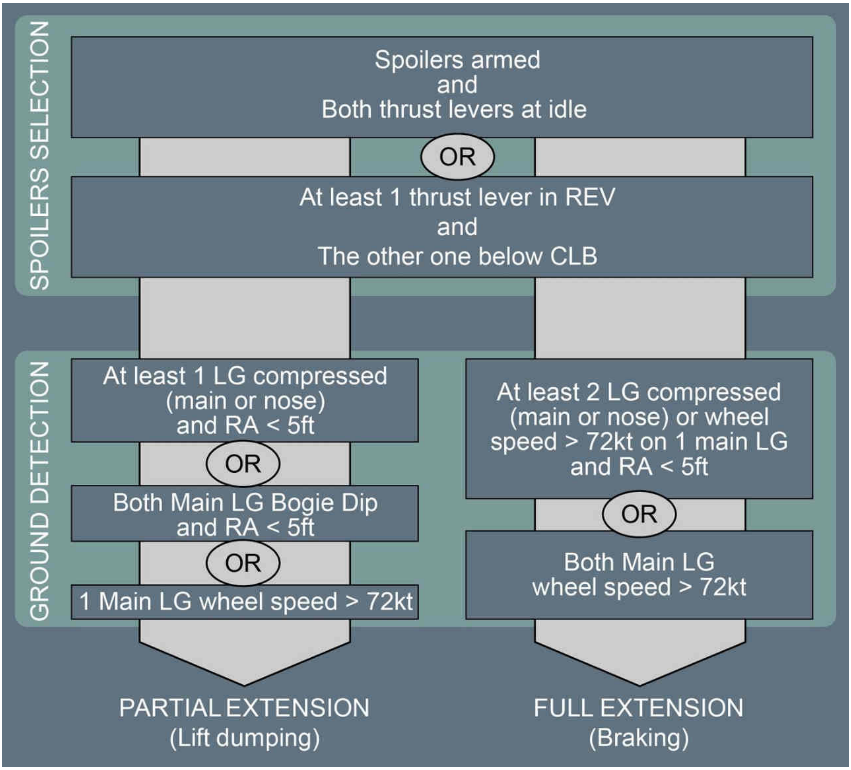
L1 The ground spoilers fully extend when two landing gears are on ground.

Note: *If the ground spoilers are not armed, they will automatically extend when the reversers are selected.*

L3 During a full extension:
- The deflection of spoilers 1 and 2 is 35 °
- The deflection of spoilers 3 to 7 is 50 °
- The deflection of the ailerons is 30 ° up.

The extension rate is 17 °/s.

L2 The roll function of the spoilers is inhibited below 110 kt, when the spoilers are used for the ground spoiler function. Roll control is available through ailerons.


SPOILERS SELECTION
Spoilers armed
and
Both thrust levers at idle
OR
At least 1 thrust lever in REV
and
The other one below CLB
GROUND DETECTION
At least 1 LG compressed
(main or nose)
and RA < 5ft
OR
Both Main LG Bogie Dip
and RA < 5ft
OR
1 Main LG wheel speed > 72kt
At least 2 LG compressed
(main or nose) or wheel
speed > 72kt on 1 main LG
and RA < 5ft
OR
Both Main LG
wheel speed > 72kt
PARTIAL EXTENSION
(Lift dumping)
FULL EXTENSION
(Braking)

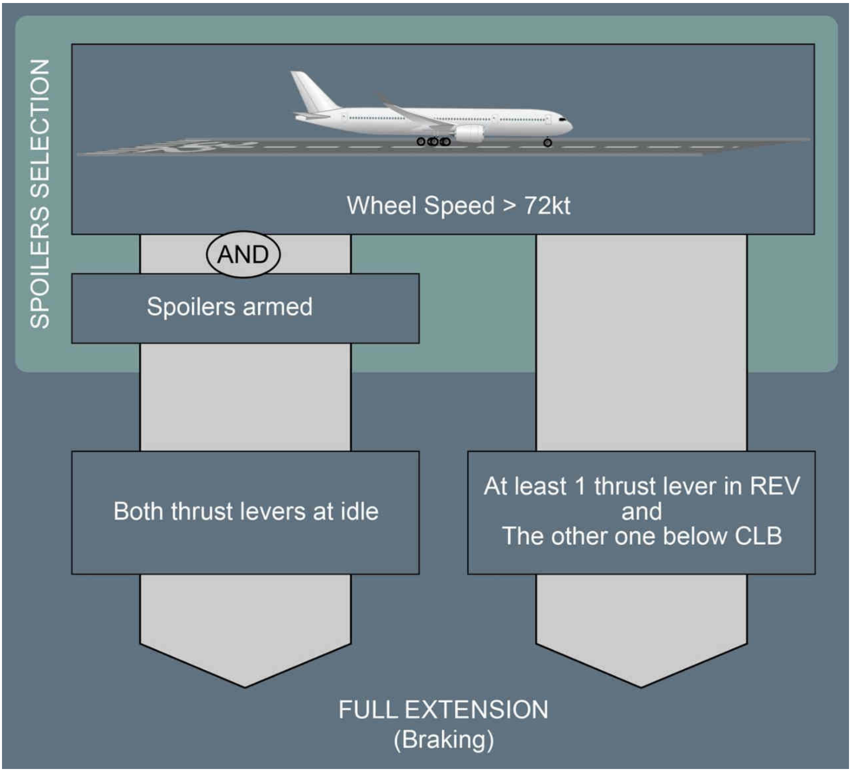
L1 Rejected Takeoff

The ground spoilers fully extend when the thrust levers are at idle and the speed is greater than 72 kt.

Note: *If the ground spoilers are not armed, they will automatically extend when the reversers are selected and the speed is greater than 72 kt.*

L3 During a full extension:
- The deflection of spoilers 1 and 2 is 35 °
- The deflection of spoilers 3 to 7 is 50 °
- The deflection of the ailerons is 30 °.

The extension rate is 17 °/s.


SPOILERS SELECTION
Wheel Speed > 72kt
AND
Spoilers armed
Both thrust levers at idle
At least 1 thrust lever in REV
and
The other one below CLB
FULL EXTENSION
(Braking)

L1

RETRACTION

The retraction occurs when one of the condition for ground spoilers selection is not valid anymore.
For example, the ground spoilers retract when the SPEED BRAKE lever is pushed down.

L3 The retraction rate is 17 °/s.

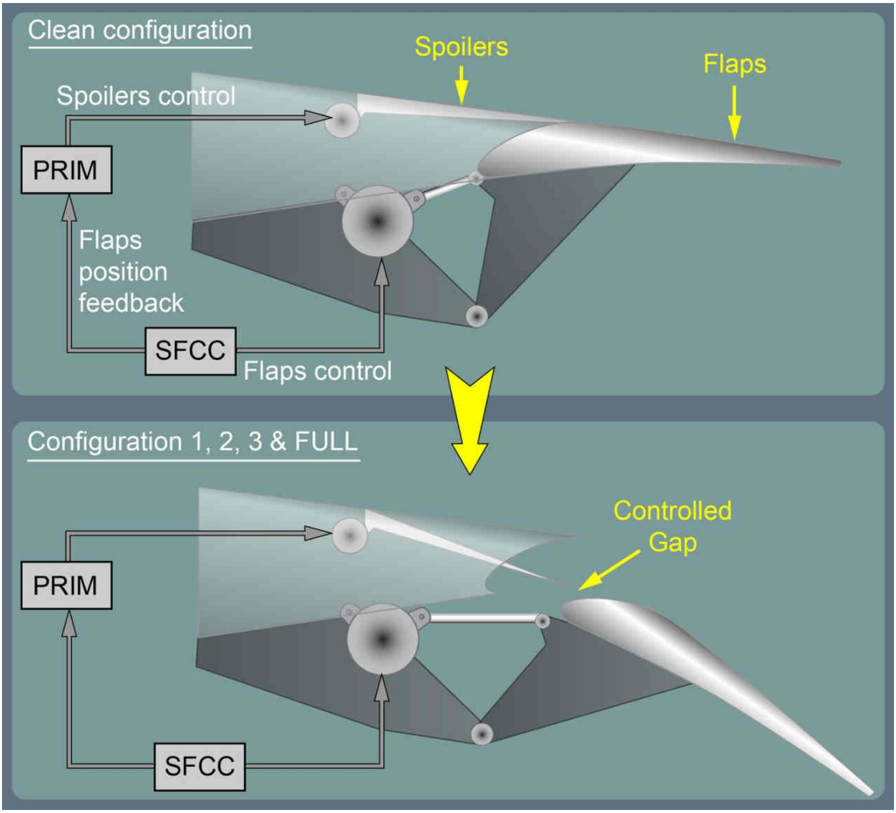
Ident.: DSC-27-10-10-30-00015908.0001001 / 30 APR 14

ADHF CONTROL

In configurations 1, 2, 3 and FULL, the Adaptive Droop Hinge Function (ADHF) improves the aerodynamic performance of the wing by controlling the gap between the spoilers' trailing edge and the flaps' leading edge.
The spoilers are deflected downward to control this gap.

L2 The SFCCs permanently send the position of the flaps to the PRIMs. Then, the PRIMs control the downward movement of the spoilers.

ADHF control

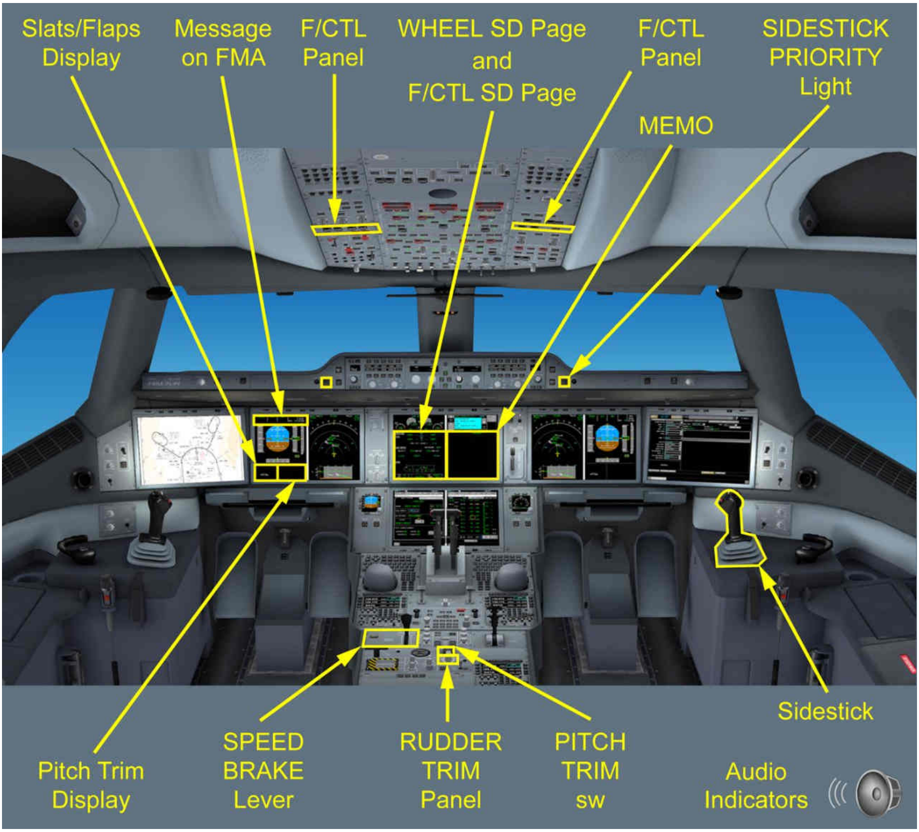

Clean configuration
Spoilers
Flaps
Spoilers control
PRIM
Flaps position feedback
SFCC
Flaps control
Configuration 1, 2, 3 & FULL
Controlled Gap
PRIM
SFCC

In the case of failure of a spoiler, the affected spoiler remains in its position:
- In CONF 1, 2 and 3, the affected spoiler is pushed up by the associated flap surface during flaps retraction
- In CONF FULL, the PRIMs inhibit flaps retraction.

COCKPIT VIEW

Ident.: DSC-27-10-20-00002008.0001001 / 24 APR 14
Applicable to: ALL

Cockpit View


Slats/Flaps Display
Message on FMA
F/CTL Panel
WHEEL SD Page and F/CTL SD Page
F/CTL Panel
MEMO
SIDESTICK PRIORITY Light
Sidestick
Pitch Trim Display
SPEED BRAKE Lever
RUDDER TRIM Panel
PITCH TRIM sw
Audio Indicators

AUDIO INDICATORS

Ident.: DSC-27-10-20-00017489.0001001 / 07 MAY 18
Applicable to: ALL

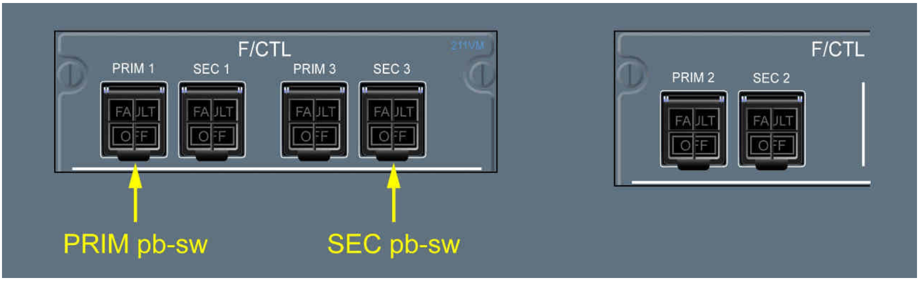
Audio Indicator	Condition or Cause	Duration
Dual Input (Synthetic Voice)	Simultaneous flight crew action on both sidesticks.	Is repeated as long as there is a simultaneous flight crew action on both sidesticks.
Priority Left (Synthetic voice)	Sidestick priority.	Is repeated as long as the captain presses their sidestick pb.
Priority Right (Synthetic voice)	Sidestick priority.	Is repeated as long as the first officer presses their sidestick pb.

F/CTL PANELS

Applicable to: ALL

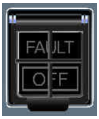
Ident.: DSC-27-10-20-272004-00002015.0001001 / 24 APR 14

F/CTL Panels

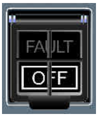


Ident.: DSC-27-10-20-272004-00002025.0001001 / 04 MAY 16

PRIM pb-sw

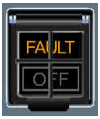


The corresponding PRIM is on.
When pressed, the corresponding PRIM is set to OFF.



The corresponding PRIM is off.
When pressed again, the corresponding PRIM reset.

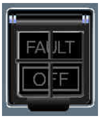
L12



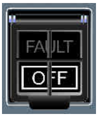
The corresponding PRIM is failed.
Associated with the following ECAM alert: F/CTL PRIM 1(2)(3) FAULT (*Refer to PRO-ABN-F_CTL F/CTL PRIM 1(2)(3) FAULT*).
The FAULT light goes off, when the flight crew sets the pb-sw to OFF.

Ident.: DSC-27-10-20-272004-00002026.0001001 / 04 MAY 16

SEC pb-sw

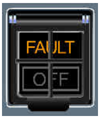


The corresponding SEC is on.
When pressed, the corresponding SEC is set to OFF.



The corresponding SEC is OFF.
When pressed again, the corresponding SEC reset.

L12



The corresponding SEC is failed.

Associated with the following ECAM alert:
- F/CTL SEC 1(2)(3) FAULT(*Refer to PRO-ABN-F_CTL F/CTL SEC 1(2)(3) FAULT*).

The FAULT light goes off, when the flight crew sets the pb-sw to OFF.

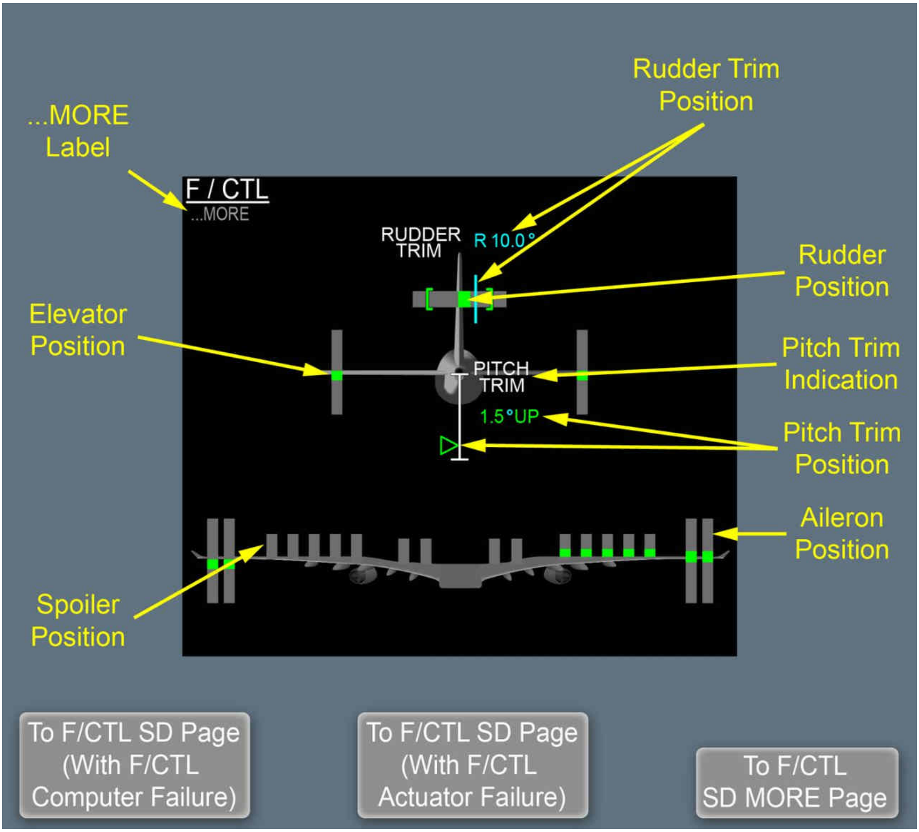
F/CTL SD PAGE

Applicable to: ALL

Ident.: DSC-27-10-20-272001-00002018.0001001 / 06 MAR 15

The primary flight controls appear on the F/CTL SD page as if looking from the rear of the aircraft.

F/CTL SD page


Rudder Trim Position
...MORE Label
F / CTL
...MORE
RUDDER TRIM
R 10.0°
Rudder Position
Elevator Position
PITCH TRIM
Pitch Trim Indication
1.5°UP
Pitch Trim Position
Aileron Position
Spoiler Position
To F/CTL SD Page (With F/CTL Computer Failure)
To F/CTL SD Page (With F/CTL Actuator Failure)
To F/CTL SD MORE Page

Ident.: DSC-27-10-20-272001-00017435.0001001 / 24 APR 14

...MORE LABEL

...MORE	Indicates that more information is available on the F/CTL SD MORE page. In order to display the F/CTL SD MORE page, the flight crew presses the MORE pb on the ECP.

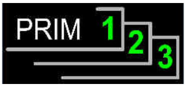
Ident.: DSC-27-10-20-272001-00017436.0001001 / 24 APR 14

MORE LABEL

Indicates that the F/CTL SD MORE page is displayed. The F/CTL SD MORE page displays additional information compared to the F/CTL SD page.
To remove the F/CTL SD MORE page, the flight crew presses the MORE pb on the ECP. Then, the F/CTL SD page appears.

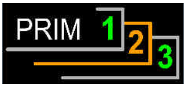
Ident.: DSC-27-10-20-272001-00002027.0001001 / 24 APR 14

FLIGHT CONTROL COMPUTERS



The F/CTL computers operate normally.

L12

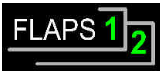


The flight control computer displayed in amber is failed

Associated with one of the following ECAM alerts:
- F/CTL PRIM 1(2)(3) FAULT (*Refer to procedure*), or
- F/CTL SEC 1(2)(3) FAULT (*Refer to procedure*).

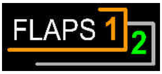
Ident.: DSC-27-10-20-272001-00017650.0001001 / 24 APR 14

SLATS/FLAPS COMPUTERS



The slats/flaps computers operate normally.

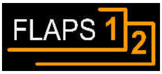
L12



The slats/flaps computer displayed in amber is failed.

Associated with one of the following ECAM alerts:
- F/CTL FLAP SYS 1(2) FAULT (*Refer to procedure*), or
- F/CTL SLAT SYS 1(2) FAULT (*Refer to procedure*).

L12



The slats/flaps surfaces no longer operate

- Both slats(flaps) systems are failed, or

  Associated with one of the following ECAM alerts:
  - F/CTL FLAP SYS 1+2 FAULT (*Refer to procedure*), or
  - F/CTL SLAT SYS 1+2 FAULT (*Refer to procedure*).

- The slats(flaps) are jammed, or

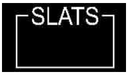
  Associated with one of the following ECAM alerts:
  - F/CTL FLAP SYS 1+2 FAULT (*Refer to procedure*), or
  - F/CTL SLAT SYS 1+2 FAULT (*Refer to procedure*).

- The WTBs lock the slats(flaps).

  Associated with one of the following ECAM alerts:
  - F/CTL FLAPS LOCKED (*Refer to procedure*), or
  - F/CTL SLATS LOCKED (*Refer to procedure*).

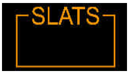
Ident.: DSC-27-10-20-272001-00022606.0001001 / 06 MAR 15

SLATS/FLAPS STATUS



The slats/flaps surfaces operate normally.

L12



The slats surfaces no longer operate:

- Both slats systems are failed, or

  Associated with the following ECAM alerts:
  - F/CTL SLAT SYS 1+2 FAULT (*Refer to procedure*).

- The slats are jammed, or

  Associated with the following ECAM alerts:
  - F/CTL SLAT SYS 1+2 FAULT (*Refer to procedure*).

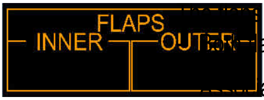
- The WTBs lock the slats, or

  Associated with the following ECAM alerts:
  - F/CTL SLATS LOCKED (*Refer to procedure*).

- There is a combination of the slats system failure and the slats motor failure.

  Associated with one of the following ECAM alerts combination:
  - F/CTL SLAT SYS 1 FAULT (*Refer to procedure*) and ELEC AC EMER 1 BUS 230 V + 115 V FAULT (*Refer to procedure*), or
  - F/CTL SLAT SYS 2 FAULT (*Refer to procedure*) and HYD Y SYS PRESS LO (*Refer to procedure*).

L12



surfaces no longer operate:

aps systems are failed, or

  ated with the following ECAM alerts:
  - F/CTL FLAP SYS 1+2 FAULT (*Refer to procedure*).

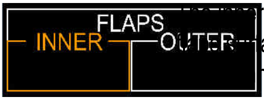
- The flaps are jammed, or

  Associated with the following ECAM alerts:
  - F/CTL FLAP SYS 1+2 FAULT (*Refer to procedure*).

- The WTBs lock the flaps.

  Associated with the following ECAM alerts:
  - F/CTL FLAPS LOCKED (*Refer to procedure*).

L12



flaps surfaces no longer operate. The ADGBs still control the outer aces:

her flaps actuators are failed, or

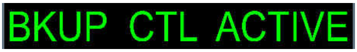
Associated with the following ECAM alerts:
- F/CTL INR FLAPS FAULT (*Refer to procedure*).

- The power supply of the inner flaps actuators is failed.

  Associated with the following ECAM alerts:
  - HYD G+Y SYS PRESS LO (*Refer to procedure*).

Ident.: DSC-27-10-20-272001-00002028.0001001 / 24 APR 14

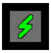
BKUP CTL ACTIVE INDICATION



The backup control is active.

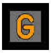
Ident.: DSC-27-10-20-272001-00002029.0001001 / 24 APR 14

RUDDER ACTUATORS



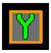
The power supply of the associated actuator is available, and the actuator operates normally.

L12



The power supply of the associated actuator is failed.

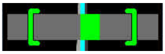
Associated with one of the following ECAM alerts:
- HYD G(Y) SYS PRESS LO (*Refer to procedure*), or
- ELEC AC EMER 2 BUS 230 V + 115V FAULT (*Refer to procedure*).



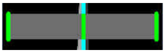
The associated actuator is failed.

Ident.: DSC-27-10-20-272001-00002030.0001001 / 24 APR 14

RUDDER POSITION

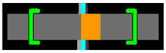


Indicates the position of the rudder.
In flight, the two green square brackets indicate the maximum deflection.



On ground, the two green bars indicate the maximum deflection.
The maximum deflection indicators are used for the flight control check, to be sure that full surface deflection is available.

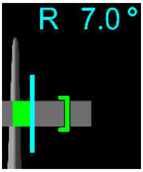
L12



The rudder is failed.
Associated with the following ECAM alert: F/CTL RUDDER FAULT (*Refer to procedure*).

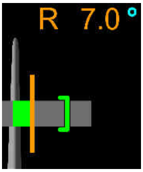
Ident.: DSC-27-10-20-272001-00002022.0001001 / 24 APR 14

RUDDER TRIM POSITION



Indicates the position of the rudder trim.

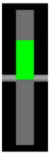
L12



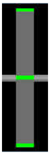
The rudder trim is failed.
Associated with the following ECAM alert: F/CTL RUDDER TRIM 1+2 FAULT (*Refer to procedure*).

Ident.: DSC-27-10-20-272001-00002031.0001001 / 24 APR 14

ELEVATOR POSITION

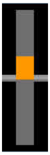


Indicates the position of the associated elevator.



On ground, the two green bars indicate the maximum deflection.
The maximum deflection indicators are used for the flight control check, to be sure that full surface deflection is available.

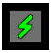
L12



The associated elevator is failed.
Associated with the following ECAM alert: F/CTL L(R) ELEVATOR FAULT (*Refer to procedure*).

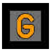
Ident.: DSC-27-10-20-272001-00002032.0001001 / 24 APR 14

ELEVATOR / AILERON ACTUATORS



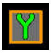
The power supply of the associated actuator is available, and the actuator operates normally.

L12



The power supply of the associated actuator is failed.

Associated with one of the following ECAM alerts:
- HYD G(Y) SYS PRESS LO (*Refer to procedure*), or
- ELEC AC EMER 1 BUS 230V + 115V FAULT (*Refer to procedure*), or
- ELEC AC EMER 2 BUS 230V + 115V FAULT (*Refer to procedure*).

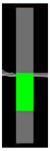


The associated actuator is failed.

Ident.: DSC-27-10-20-272001-00002033.0001001 / 04 MAY 16

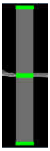
AILERON POSITION

L12



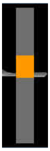
Indicates the position of the associated aileron.

The indication flashes and the F/CTL SD page is automatically displayed in the case of lateral imbalance when:
- The aircraft is in normal law, and
- The roll order commanded by the PRIM to compensate the imbalance is above 16 °, and
- The roll order commanded by the pilot through the sidestick is below 10 °.



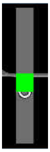
On ground, the two green bars indicate the maximum deflection.
The maximum deflection indicators are used for the flight control check, to be sure that full surface deflection is available.

L12



The associated aileron is failed.
Associated with the following ECAM alert: F/CTL L(R) INR(OUTR) AILERON FAULT (*Refer to procedure*).

L12

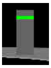


The white round symbol indicates the neutral position (aileron droop).

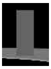
The aileron droop occurs:
- When the flaps are extended for lift augmentation, or
- In cruise for performance optimization.

Ident.: DSC-27-10-20-272001-00002035.0001001 / 24 APR 14

SPOILER POSITION

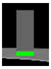


On ground, the green bar indicates the maximum deflection.
The maximum deflection indicator is used for the flight control check, to be sure that full surface deflection is available.



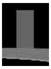
- The flaps are extended
- The associated spoiler is deflected downward.

L12



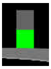
- The flaps are extended
- The associated spoiler is extended.

The indication flashes and the F/CTL SD page is automatically displayed in the case of lateral imbalance when:
- The aircraft is in normal law, and
- The roll order commanded by the PRIM to compensate the imbalance is above 16 °, and
- The roll order commanded by the pilot through the sidestick is below 10 °.



- The flaps are retracted
- The associated spoiler is not extended.

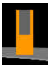
L12



- The flaps are retracted
- The associated spoiler is extended.

The indication flashes and the F/CTL SD page is automatically displayed in the case of lateral imbalance when:
- The aircraft is in normal law, and
- The roll order commanded by the PRIM to compensate the imbalance is above 16 °, and
- The roll order commanded by the pilot through the sidestick is below 10 °.

L12

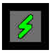


The associated spoiler is failed.
Associated with the following ECAM alert: F/CTL PART(MOST) SPLRS FAULT (*Refer to procedure*).
If the position of the associated spoiler leads to an impact on the fuel consumption, the following alert is displayed on the WD: F/CTL SPLRS PARTLY EXTENDED (*Refer to procedure*). Depending on the failure, this alert may appear immediately or later on during the flight .

The speed brakes position is displayed on the Slats/Flaps display (*Refer to DSC-27-10-20 Spoiler Indications on the Slats/Flaps Display*).

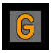
Ident.: DSC-27-10-20-272001-00002034.0001001 / 24 APR 14

SLATS/FLAPS MOTORS



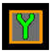
The power supply of the associated slats(flaps) motor is available, and the motor operates normally.

L12



The power supply of the associated motor is failed.

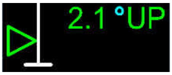
Associated with one of the following ECAM alerts:
- HYD G(Y) SYS PRESS LO (*Refer to procedure*), or
- ELEC AC EMER 1 BUS 230 V + 115V FAULT (*Refer to procedure*), or
- ELEC AC EMER 2 BUS 230 V + 115V FAULT (*Refer to procedure*).



The associated motor is failed.

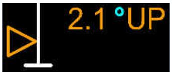
Ident.: DSC-27-10-20-272001-00002036.0001001 / 24 APR 14

PITCH TRIM POSITION



The pitch trim is set to 2.1 ° UP.
The pitch trim position ranges from 0.8 ° UP to 13.7 ° UP.

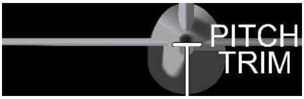
L12



The pitch trim is failed due to electrical power failure.
Associated with the following ECAM alert: F/CTL STABILIZER FAULT (*Refer to procedure*).

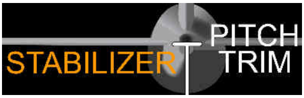
Ident.: DSC-27-10-20-272001-00017637.0001001 / 11 JUN 14

PITCH TRIM INDICATION



Normal operation.

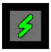
L12



The pitch trim is jammed.
Associated with the following ECAM alert: F/CTL STABILIZER FAULT (*Refer to procedure*).

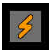
Ident.: DSC-27-10-20-272001-00017638.0001001 / 06 NOV 14

PITCH TRIM ACTUATORS



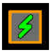
The power supply of the associated actuator is available, and the actuator operates normally.

L12



The power supply of the associated actuator is failed.

Associated with one of the following ECAM alerts:
- ELEC AC EMER 1 BUS 230V + 115V FAULT (*Refer to procedure*), or
- ELEC AC 1A BUS 230V FAULT (*Refer to procedure*).

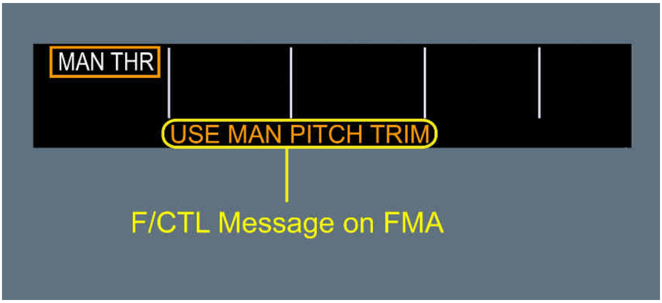


The associated actuator is failed.

F/CTL MESSAGE ON FMA

Ident.: DSC-27-10-20-00019057.0001001 / 06 MAY 15
Applicable to: ALL

Message on FMA



L12

USE MAN PITCH TRIM

The flight controls are in direct law. The automatic pitch trim is lost.

Associated with the one of the following ECAM alert:
- F/CTL DIRECT LAW (PROT LOST) *Refer to procedure*, or
- NAV RA SYS A+B+C FAULT *Refer to procedure*.

For more information on the reconfiguration to direct law, *Refer to Direct Law*.
The message pulses for 9 s then remains steady.

PITCH TRIM DISPLAY

Ident.: DSC-27-10-20-00002017.0001001 / 18 JUN 15
Applicable to: ALL

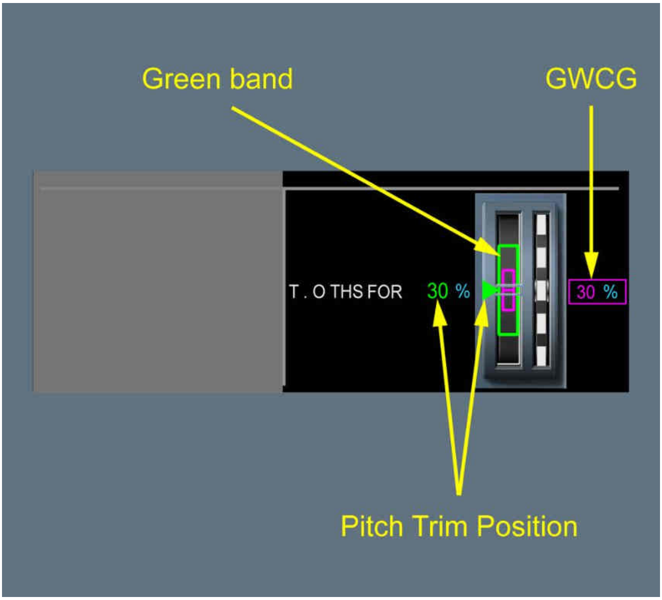
The pitch trim display is displayed on ground, before takeoff and after landing.

L3
- After takeoff, it disappears when the aircraft is 50 ft above the runway.
- After landing, it is displayed when the aircraft speed is below 30 kt

For touch and go, it will be displayed as soon as one of the following occurs:
- The engine levers are moved out of idle
- Spoilers are disarmed
- Flaps are retracted one step
- The flight crew presses the PITCH TRIM sw.

L1 *Note: The pitch trim position is also available on the F/CTL SD page.*

Pitch Trim Display



The following are displayed:

- The Green Band

  The green band is the range of pitch trim positions for which takeoff has been certified, whatever the aircraft's CG inside the takeoff envelope.

  The green band ranges from 20 % to 42.4 %

  L2 This corresponds to a pitch trim position from 1 ° to 9 ° Nose Up.

- L1 The aircraft GWCG

  L2 The GWCG is computed by the FQMS, based on the ZFW and ZFCG entered by the crew, and the FOB.

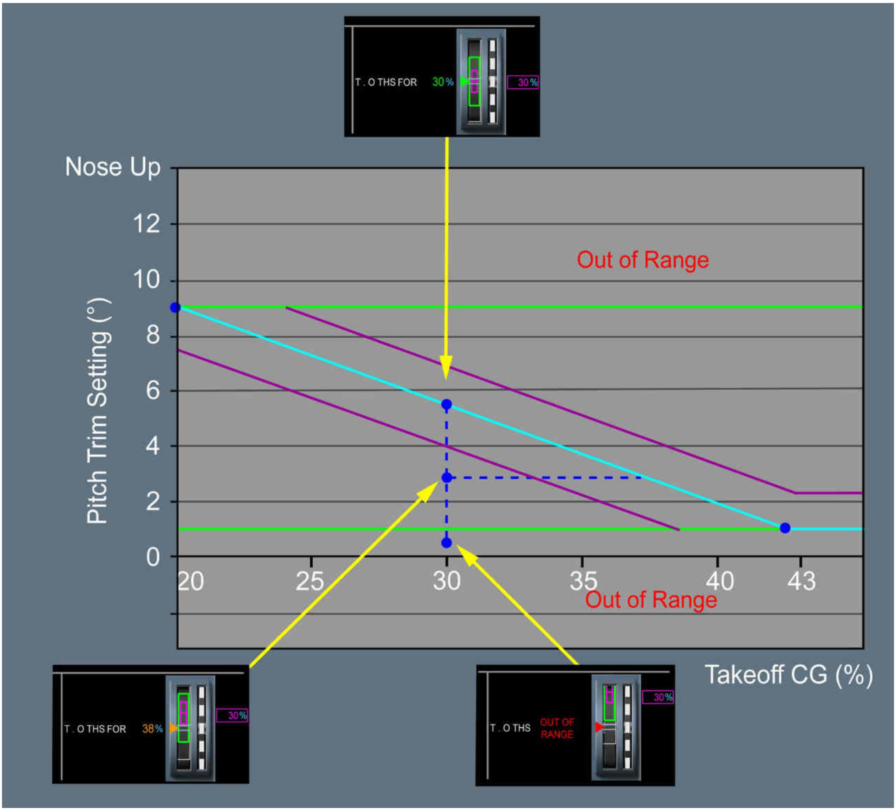
- L1 The position of the pitch trim, and the associated takeoff CG.

  L2 In order to always have the same aircraft behavior at rotation, there is an optimum pitch trim setting for each takeoff CG.

  This optimum pitch trim setting for takeoff is provided in the following graphic.

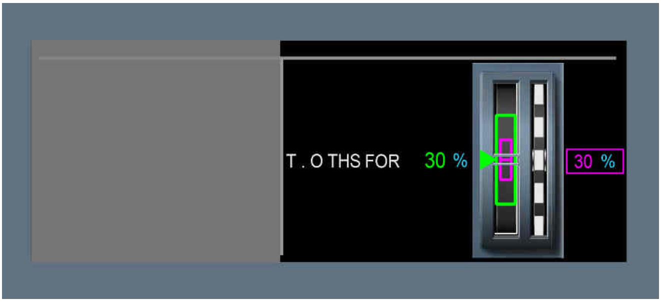
L1 PITCH TRIM SETTING FOR TAKEOFF

The pitch trim is automatically set for takeoff, based on the aircraft's CG (For more information: *Refer to DSC-27-10-10 Pitch control*). The pitch trim display enables to check the correct setting of the pitch trim, prior to takeoff.



PITCH TRIM SETTING AT TAKEOFF TARGET

Pitch Trim Position Indication

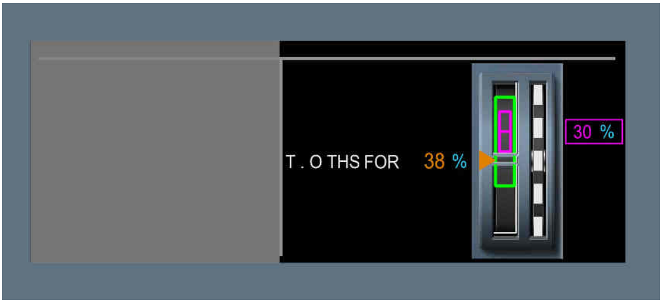


The pitch trim setting for takeoff is correct.

L2 The position of the pitch trim is within 1.5 ° of the optimum pitch trim position for takeoff for the current aircraft GWCG.

L1 PITCH TRIM NOT OPTIMUM

Pitch Trim Not at Target

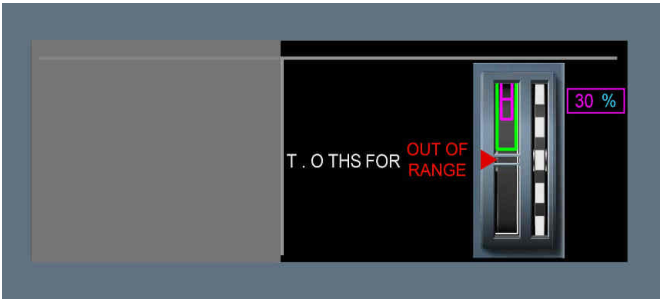


The position of the pitch trim is within the green band, but it is not optimum.

L2 The position of the pitch trim is more than 1.5 ° away from the optimum pitch trim position for takeoff for the current GWCG.
In this example, the target takeoff CG is 30 % and the associated optimum pitch trim setting is 5.5 ° nose up. But the pitch trim is set for a takeoff CG at 38 % i.e. 3 ° nose up, beyond the 1.5 ° margin around the optimum pitch trim setting.
Associated with the following ECAM alert: F/CTL PITCH TRIM/FMS/CG DISAGREE (*Refer to procedure*).

L1 PITCH TRIM OUT OF THE GREEN BAND

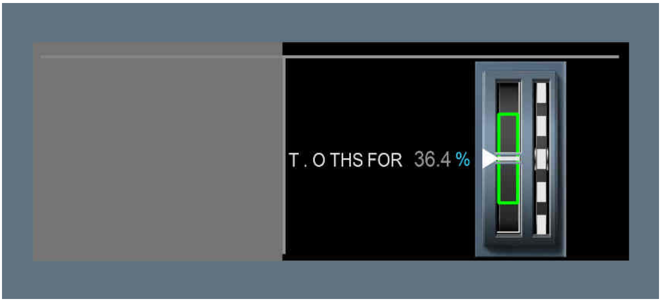
Pitch Trim Out of Green Band



The pitch trim is out of the green band.

L2 Associated with the following ECAM alert: CONFIG PITCH TRIM NOT IN T.O RANGE (*Refer to procedure*).

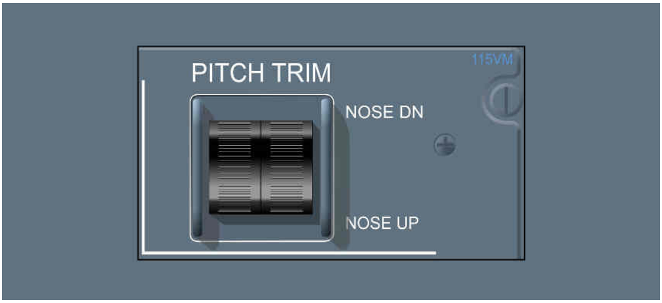
L1 PITCH TRIM AFTER LANDING



Pitch Trim after landing

PITCH TRIM SW

Ident.: DSC-27-10-20-00002010.0001001 / 06 MAY 15
Applicable to: ALL



PITCH TRIM sw

Controls the position of the Trimmable Horizontal Stabilizer (THS).

L3 It moves the THS at the following speed:

- In clean configuration : 0.3 °/s
- With slats/flaps extended : 0.8 °/s
- In the case of emergency electrical configuration : 0.1 °/s

L1 The PITCH TRIM sw is composed of two switches, which are spring loaded to neutral.

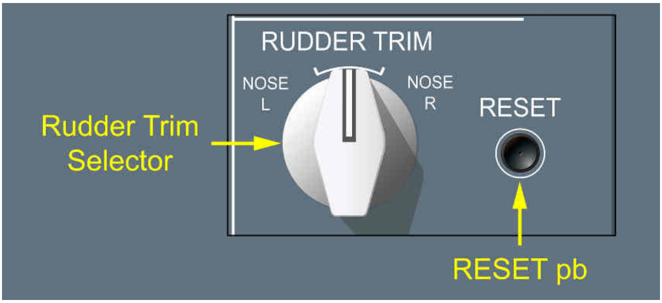
In order to move the pitch trim, both switches must be pressed simultaneously.
On ground, the PITCH TRIM sw has priority over the automatic takeoff trim setting.
The PITCH TRIM sw is inhibited in flight, except in direct law.
In direct law, the auto trim function is lost. The USE MAN PITCH TRIM message is displayed on the PFD.

RUDDER TRIM PANEL

Applicable to: ALL

Ident.: DSC-27-10-20-272003-00002011.0001001 / 30 APR 14

RUDDER TRIM Panel



Ident.: DSC-27-10-20-272003-00002020.0001001 / 24 APR 14

RUDDER TRIM SELECTOR

Controls the rudder trim position.

L3 It moves the neutral point of the artificial feel by an equivalent of:

- In clean configuration	:	0.5 °/s of rudder travel for quick inputs 1.5 °/s for inputs longer than 1.5 s
- With slats/flaps extended	:	1.5 °/s of rudder travel for quick inputs 3 °/s for inputs longer than 1.5 s

L1 *Note:* *The RUDDER TRIM selector is not active with the autopilot engaged.*

Ident.: DSC-27-10-20-272003-00002021.0001001 / 24 APR 14

RESET pb

Resets the rudder trim position.

L2 When pressed, the rudder trim position is ordered to zero at 3 °/s.

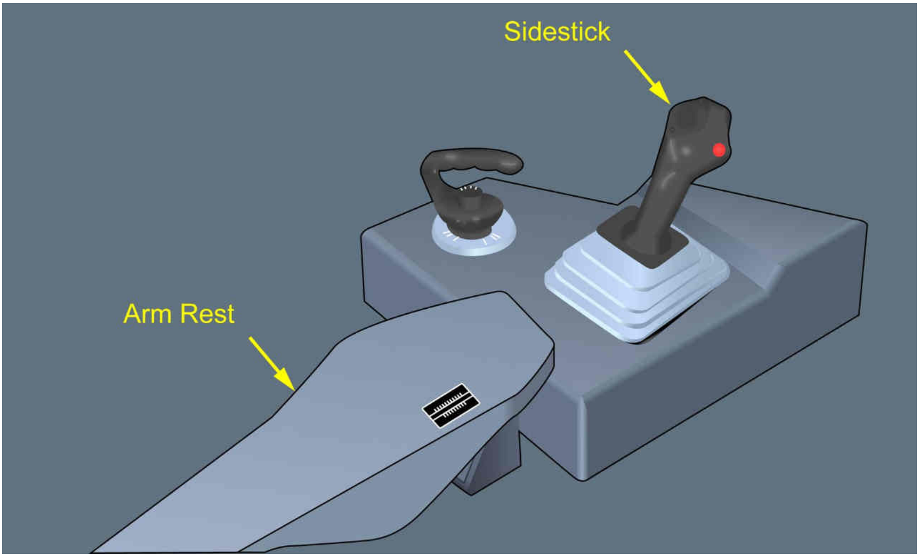
L1 *Note:* *The RESET pb is not active with the autopilot engaged.*

SIDESTICKS

Applicable to: ALL

Ident.: DSC-27-10-20-272002-00002012.0001001 / 24 APR 14

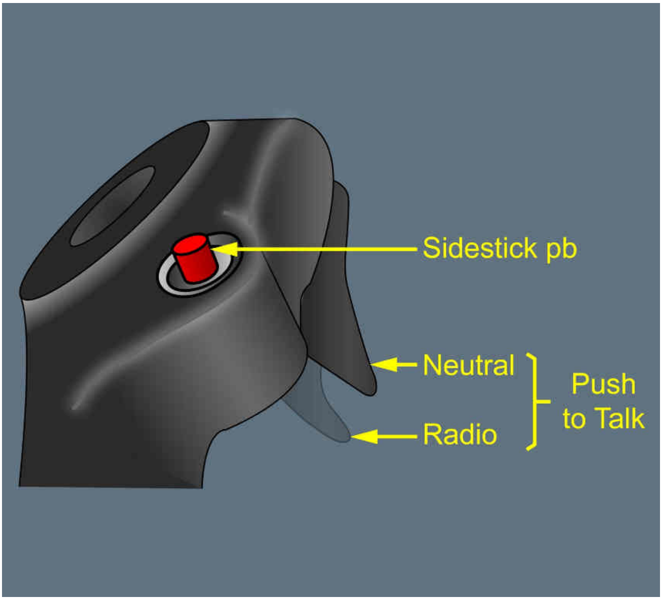
Lateral Console



Ident.: DSC-27-10-20-272002-00002023.0001001 / 07 MAY 18

SIDESTICKS

Sidestick



The sidesticks are springloaded to neutral. They are not mechanically linked, and do not receive feedback from the flight control surfaces.
When the autopilot is engaged, the sidesticks are locked in the neutral position.

If a flight crewmember applies a force above a given threshold:
- The sidesticks unlock
- The autopilot disengages
- The AUTO FLT AP OFF alert triggers.

L3 The autopilot disengages when a pilot applies a force of more than 5 daN in pitch, or 3.5 daN in roll.

L1 *Note:* *This is not the recommended method for autopilot disengagement. For more information, Refer to DSC-22-FG-40-30 Manual Disengagement.*

Each sidestick has two controls:
- The Radio Push To Talk switch
- The sidestick pb, for autopilot disengagement, or sidestick priority.

SIDESTICK PRIORITY LOGIC

At all times, only one flight crew member should fly the aircraft.
However, if both flight crew members use their sidesticks simultaneously, their orders are algebraically added.
L2 The flight control laws limit the combined order to the equivalent of the full deflection of one sidestick.
L1 In this case a DUAL INPUT callout is triggered.
A flight crew member can deactivate the other sidestick and take full control, by pressing and keeping pressed the sidestick pb.
To deactivate the other sidestick, the flight crewmember must press their sidestick pb for 40 s.
The other sidestick is permanently deactivated, until any flight crewmember presses their sidestick pb.
If both flight crew members press their sidestick pb, the last pilot to press gets the priority.
L2 If one sidestick was deactivated on ground, the CONFIG L(R) SIDESTICK FAULT (BY TAKE-OVER) alert is triggered at takeoff power application, or during the TO CONFIG test.
L1 For more information: *Refer to DSC-27-10-20 SIDESTICK PRIORITY light*

Ident.: DSC-27-10-20-272002-00002024.0001001 / 24 APR 14

ARM REST

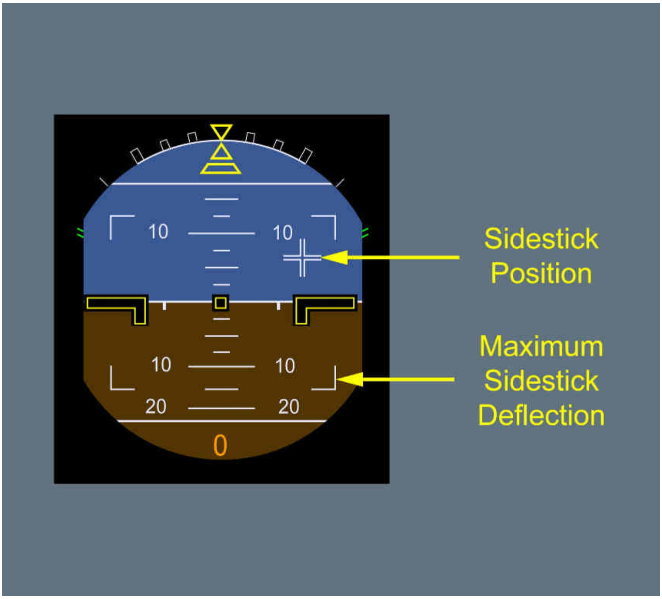
The armrest on the sidestick side of the Captain and F/O seats are adjustable.
Correctly adjusting the seat eases the handling of the sidestick.
For information on how to adjust the armrest: *Refer to DSC-25-10 Flight Crew Seats*.

SIDESTICK INDICATION ON PFD

Ident.: DSC-27-10-20-00002014.0001001 / 24 APR 14
Applicable to: ALL

SIDESTICK INDICATION ON PFD

Sidestick Position Indication


10
10
10
10
20
20
0
Sidestick Position
Maximum Sidestick Deflection

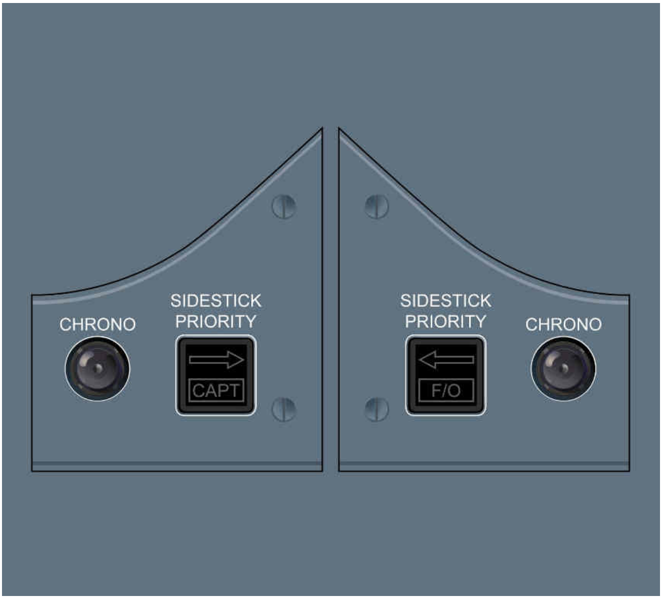
On ground, after the first engine start, the sidestick position indication appears on both PFDs. It corresponds to the sum of both sidestick orders, except if a sidestick has taken the priority. The indication disappears after liftoff.

SIDESTICK PRIORITY LIGHT

Ident.: DSC-27-10-20-00002013.0001001 / 07 MAY 18
Applicable to: ALL

SIDESTICK PRIORITY

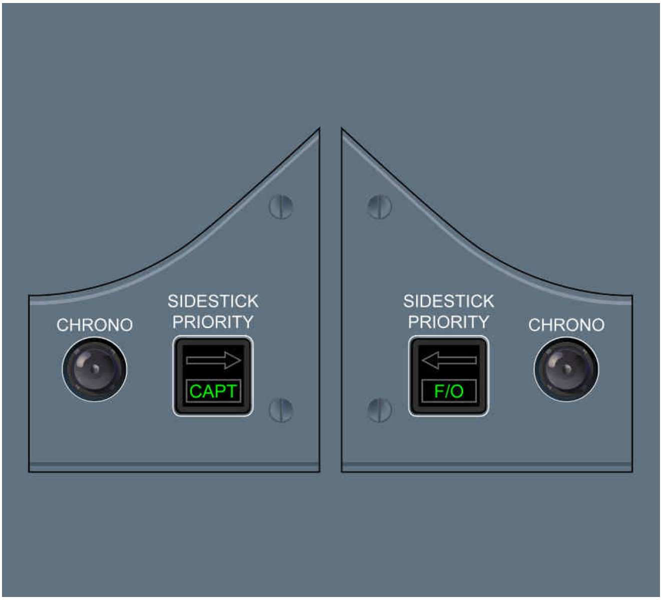
No dual input


CHRONO
SIDESTICK PRIORITY
CAPT
SIDESTICK PRIORITY
F/O
CHRONO

The SIDESTICK PRIORITY lights are on the glareshield.
There is no dual input, and no flight crewmember presses their sidestick pb.

DUAL INPUT

Dual Input

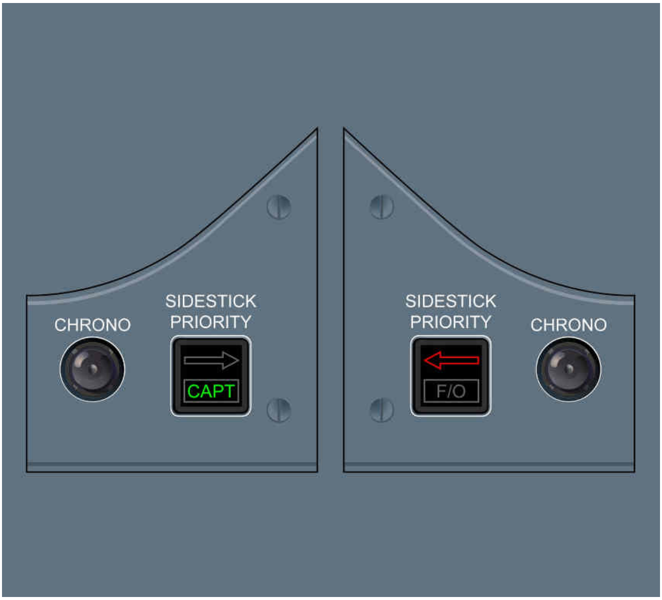

CHRONO
SIDESTICK PRIORITY
CAPT
SIDESTICK PRIORITY
F/O
CHRONO

Both flight crewmembers simultaneously move their sidesticks.
The orders of both sidesticks are algebraically added.
The CAPT and F/O lights flash, and the DUAL INPUT callout is triggered.

Dual Input (Synthetic voice)

PRIORITY LEFT

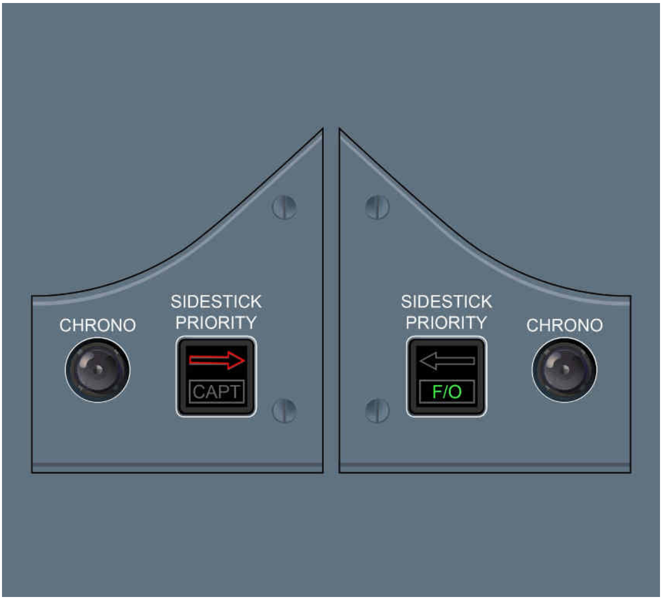
Priority Left


CHRONO
SIDESTICK PRIORITY
CAPT
SIDESTICK PRIORITY
F/O
CHRONO

The Captain presses their sidestick pb. The PRIORITY LEFT callout is triggered.

Priority Left (Synthetic voice)
The CAPT light comes on, only if the First Officer moves their sidestick.

PRIORITY RIGHT


CHRONO
SIDESTICK PRIORITY
CAPT
SIDESTICK PRIORITY
F/O
CHRONO

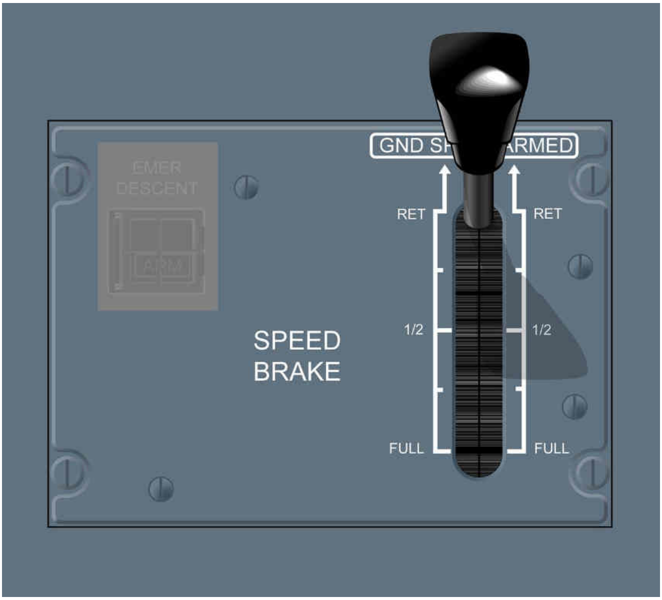
The First Officer presses their sidestick pb. The PRIORITY RIGHT callout is triggered.

Priority Right (Synthetic voice)
The F/O light comes on, only if the Captain moves their sidestick.

SPEED BRAKE LEVER

Ident.: DSC-27-10-20-00002009.0002001 / 01 JUN 17
Applicable to: ALL

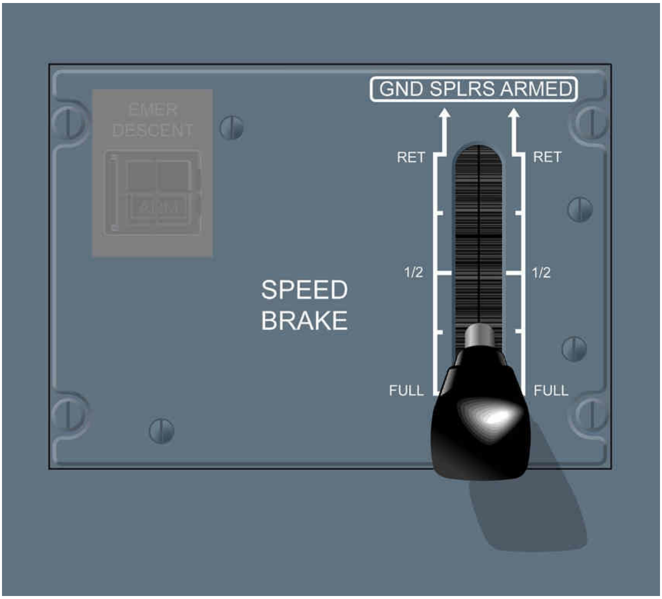
SPEED BRAKE Lever


EMER
DESCENT
ARM
SPEED
BRAKE
GND SP ARMED
RET
RET
1/2
1/2
FULL
FULL

The Speed Brake lever:

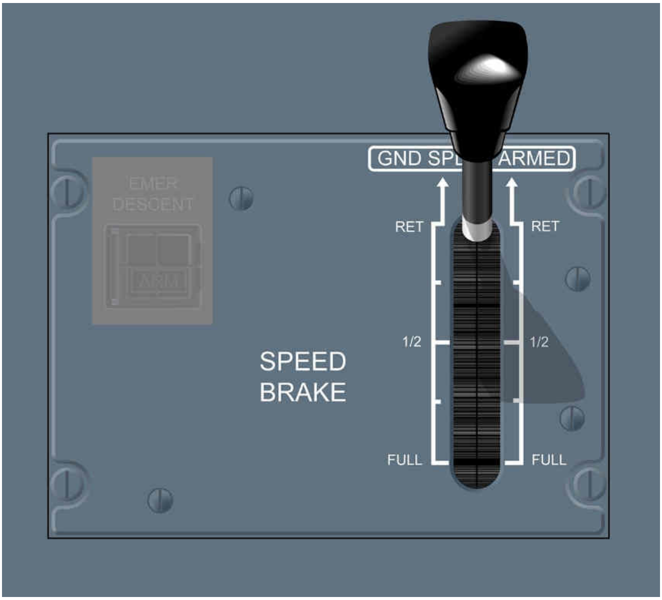
- Controls position of the speed brakes
  The flight crew can set any intermediate position from RETracted to FULL.
  The flight crew must push the lever down to set it at the required position.
  The flight crew can manually engage the EMER DES mode, if previously armed. *Refer to DSC-22-FG-70-60-40 Engagement Conditions*.

Speed Brakes 3/4 EXTENDED



- Arms the ground spoilers
  When the lever is in GND SPLRS ARMED position, the spoilers automatically extend at landing or in the case of a rejected takeoff.
  To arm the ground spoilers, the flight crew must pull the lever when it is in the RET position. A white band appears around the base of the speed brake lever, to indicate that the spoilers are armed.

Ground Spoilers Armed


EMER
DESCENT
ARM
GND SP
ARMED
RET
RET
1/2
1/2
FULL
FULL
SPEED
BRAKE

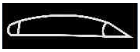
SLATS/FLAPS DISPLAY

Applicable to: ALL

Ident.: DSC-27-10-20-272005-00002016.0001001 / 02 OCT 14

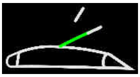
SPOILERS INDICATIONS ON THE SLATS/FLAPS DISPLAY

For slats/flaps position information: *Refer to DSC-27-20-30 Slats/Flaps Display*
For landing gear position information: *Refer to DSC-32-10-20 Slats/Flaps Display*



The SPEED BRAKE lever is in the RET position.

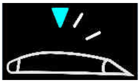
L12



The SPEED BRAKE lever is in the 1/2 position.
The white speed brake scale is displayed as soon as the SPEED BRAKE lever is moved out of the retracted position.

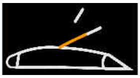
- The first line of the scale corresponds to the 1/2 position
- The second line of the scale represents the FULL position.

Note: *The displayed position is the position of SPEED BRAKE lever. The actual position of the speed brakes is displayed on the F/CTL SD page.*



Ground spoilers are armed.
The blue triangle represents the fully extended position of the ground spoilers.

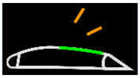
L12



Displayed when one of the following conditions is true:
- In cruise, the speed brakes have been extended for 50 s and at least one engine is not at idle.
- Below 800 ft, the speed brakes have been extended more than 5 s

Associated with the following ECAM alert: F/CTL SPD BRKs STILL EXTENDED (*Refer to procedure*)

L12



In cruise, the position of the speed brakes does not correspond to the position of the SPEED BRAKE lever.
Associated with the following ECAM alert: F/CTL SPD BRKs POSITION/LVR DISAGREE (*Refer to procedure*).

Ident.: DSC-27-10-20-272005-00016628.0001001 / 06 MAY 15

RUDDER TRIM INDICATION ON THE SLATS/FLAPS DISPLAY

The rudder trim position appears:
- When the flight crews moves the rudder trim position via the RUDDER TRIM selector, or
- When the flight crew presses the RESET pb, or

L2 Note: *The indication remains displayed 10 s after the 0 ° trim position is reached.*

L1
- In the case of failure of one engine, or

L2 Note: *The indication remains displayed for the remainder of the flight.*

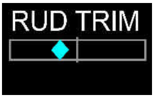
L1 - In flight, or on ground with a speed above 65 kt and when the rudder trim position exceeds +/-1 °, or

L2 Note: *The indication remains displayed 10 s after the position goes below +/-1 °.*

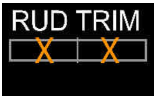
L1 - On ground with a speed below 65 kt, and when the rudder trim position exceeds +/-0.4 °.

L2 Note: *The indication remains displayed until the position goes below +/-0.4 °.*

L1



: The blue diamond represents the position of the rudder trim.

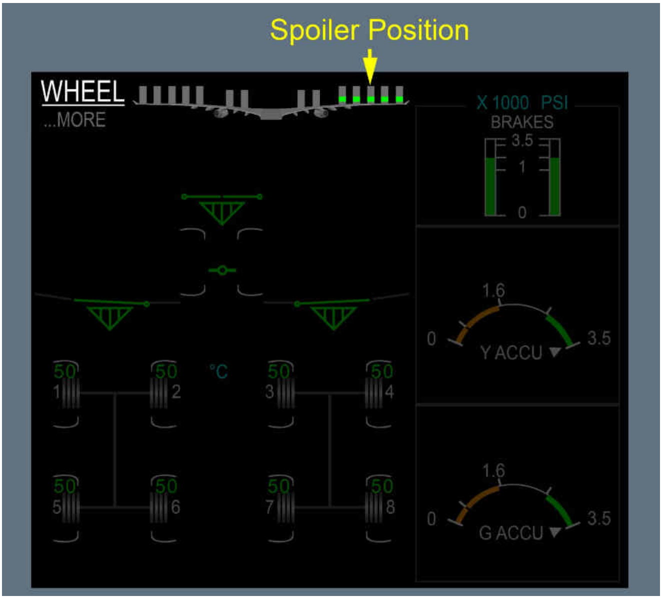


: The rudder trim is failed.

WHEEL SD PAGE

Ident.: DSC-27-10-20-00018334.0001001 / 24 APR 14
Applicable to: ALL

WHEEL SD page


Spoiler Position
WHEEL
...MORE
X 1000 PSI
BRAKES
3.5
1
0
50
1
50
2
°C
50
3
50
4
50
5
50
6
50
7
50
8
1.6
0
3.5
Y ACCU
1.6
0
3.5
G ACCU

During takeoff and landing, the spoilers positions appear on the WHEEL SD page.
The indications are the same as on the F/CTL SD page (*Refer to DSC-27-10-20 Spoiler Position*).

MEMO

Applicable to: ALL

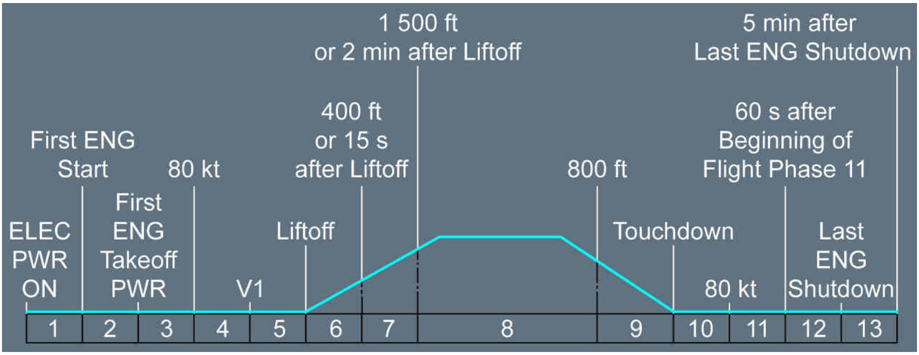
Ident.: DSC-27-10-20-140-00002019.0001001 / 24 APR 14

L12

GND SPLRs ARMED	The ground spoilers are armed. Appears on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

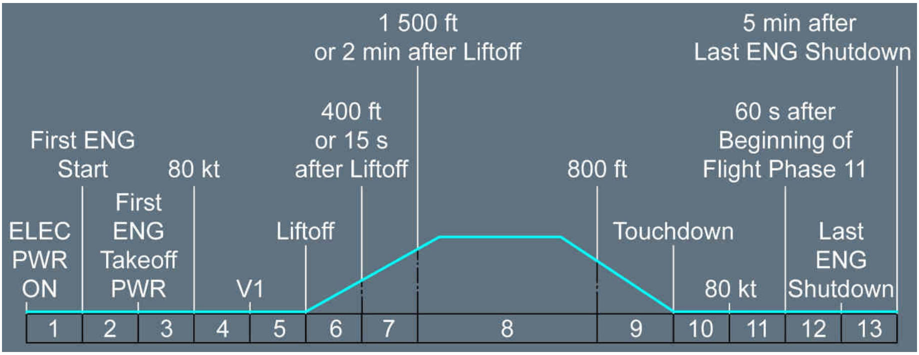
Ident.: DSC-27-10-20-140-00019004.0002001 / 01 JUN 17

L12

SPD BRK AUTO EXT	The speed brakes have extended automatically after one of the following conditions: - Activation of the high speed protection - Automatic engagement of the EMER DES mode. Appears on the PFD and on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

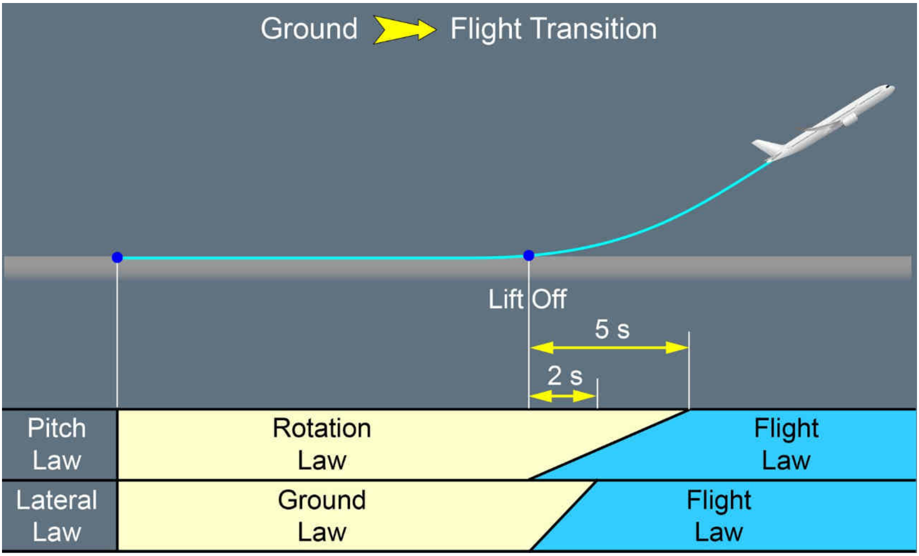
GENERAL

Ident.: DSC-27-10-30-00002037.0001001 / 23 APR 14
Applicable to: ALL

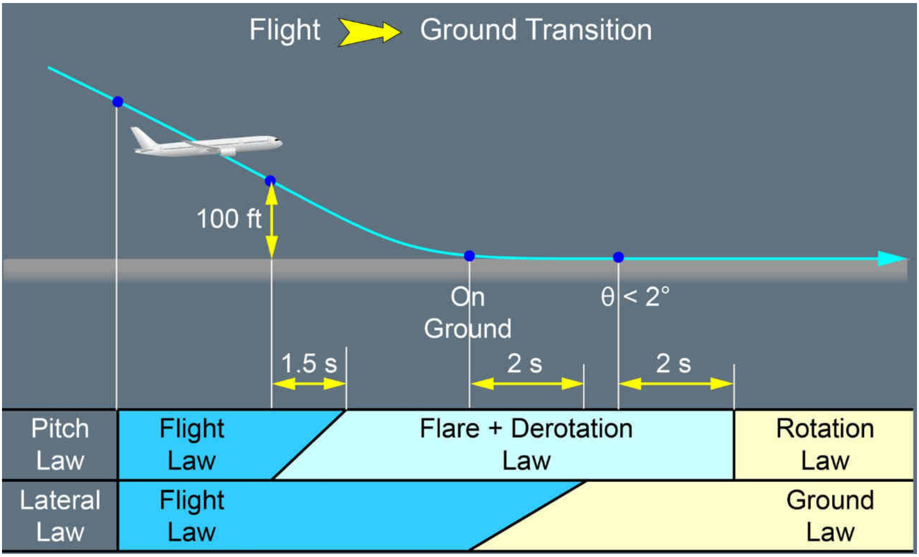
The normal flight control laws provide aircraft control on the 3 axis.

The characteristics of the normal law vary with the flight phase:
- On ground
- In flight
- During flare.

Ground to Flight transition


Ground
Flight Transition
Lift Off
5 s
2 s
Pitch Law
Rotation Law
Flight Law
Lateral Law
Ground Law
Flight Law

Flight to Ground Transition


Flight
Ground Transition
100 ft
1.5 s
On Ground
θ < 2°
2 s
2 s
Pitch Law
Flight Law
Flare + Derotation Law
Rotation Law
Lateral Law
Flight Law
Ground Law

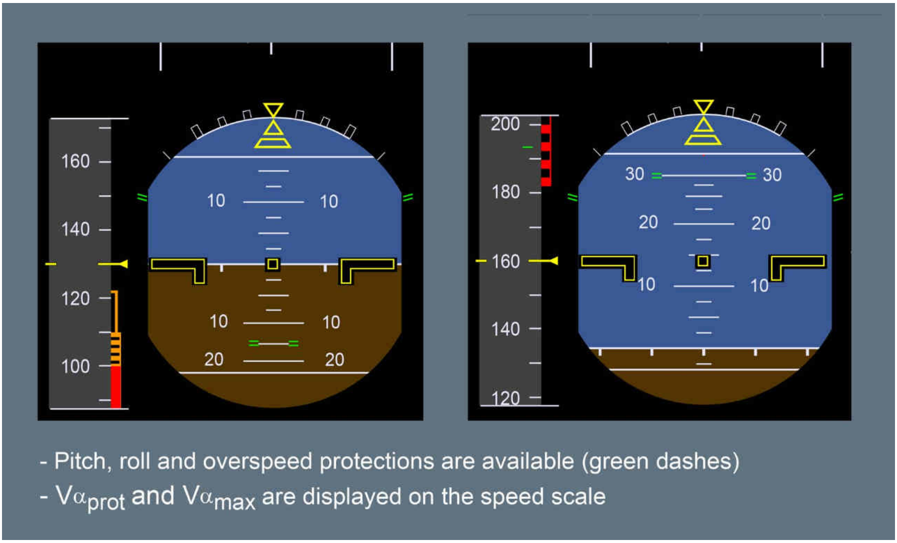
The normal law also provides the following flight envelope protections:

- Load factor protection (For more information: *Refer to DSC-22-27-20 Load Factor Protection*)
- Pitch attitude protection (For more information: *Refer to DSC-22-27-20 Pitch Attitude Protection*)
- Angle of attack protection (For more information: *Refer to DSC-22-27-20 High Angle of Attack Protection*)
- High speed protection (For more information: *Refer to DSC-22-27-20 High Speed Protection*)
- Bank angle protection (For more information: *Refer to DSC-22-27-20 Bank Angle Protection*).

The normal law also provides structural load alleviation, both in maneuver and in turbulence (*Refer to DSC-27-10-30 Load Alleviation Function*).

PFD DISPLAY

PFD Display in Normal Law



- Pitch, roll and overspeed protections are available (green dashes)
- $V\alpha_{prot}$ and $V\alpha_{max}$ are displayed on the speed scale

PITCH CONTROL

Applicable to: ALL

Ident.: DSC-27-10-30-271030A-00002038.0001001 / 08 JUL 19

ROTATION LAW

The objective of the rotation law is to provide an homogeneous rotation for all possible weight, CG and configurations, while minimizing the risk of a tail strike.
The rotation law is a pitch rate demand control law, providing tail strike protection.

L2 The flight crew can override the tail strike protection.

The rotation law depends on:
- The pitch rate
- The tail clearance
- The sidestick position.

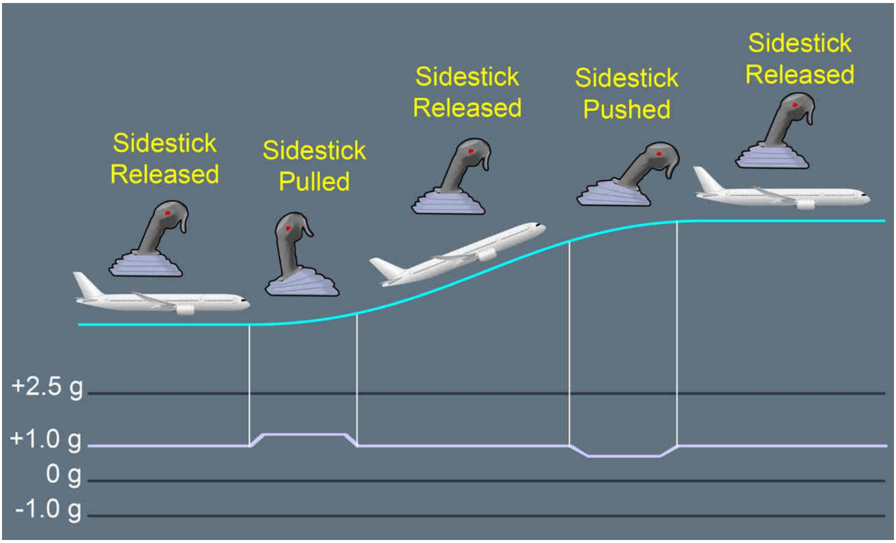
L1 *Note:* *A tail strike indication is also available on the PFD. Refer to DSC-31-CDS-40-20-30 Tail Strike Pitch Limit*

The rotation law is active on ground.

FLIGHT LAW

The normal law in flight is a load factor demand law with auto trim and full flight envelope protection.
In manual flight, the normal law provides elevator and pitch trim control from the sidesticks, to achieve a load factor which is a function of the sidestick deflection, independent of the aircraft speed.
With the sidestick at neutral and the wings level, the flight control system maintains 1g in pitch, corrected for pitch attitude. There is no need for the pilot to trim with speed and configuration changes.
In normal turns (up to 33° of bank), no pitch correction is required once the turn is established.

Pitch Normal Law



L3 The normal flight law is available in flight from 5 s after liftoff, to below 100 ft RA during the approach. (The normal flight law is gradually phased-in during 5 s, 5 s after liftoff).
The transition to the flight law is reduced to 1 s, if the angle of attack protection, or the pitch attitude protection is active.

Ident.: DSC-27-10-30-271030A-00002042.0001001 / 05 NOV 18

FLARE + DEROTATION LAW

The objective of the flare law is to:
- Provide a conventional aircraft behavior during the flare
- Enable a precise control of the vertical speed and touchdown point
- Provide a smooth derotation and avoid hard nose wheel touchdown.

The flare law is a direct law without autotrim, with some damping provided by a pitch rate feedback.
The flare law provides full elevator authority.
The flare law is active below 100 ft RA.

L3 *Note:* *If RA are detected lost, the flare law is active when the gear is down.*

LATERAL CONTROL

Applicable to: ALL

Ident.: DSC-27-10-30-271030B-00002039.0001001 / 02 OCT 14

GROUND LAW

The objective of the lateral ground law is to facilitate aircraft handling on ground.
The lateral ground law is a full authority control law in roll and yaw, with some yaw damping.
However, for small sidestick deflections, the lateral ground law helps the pilot to keep a small bank angle (less than 2 °), using only the ailerons. In particular, when the sidestick is at neutral, the law will aim to keep the wings level.
L2 When rudder pedal deflection is close to maximum, yaw damping is removed.
L1 The ground law is gradually phased in during 2 s after touchdown and phased out 2 s after lift off.

ENGINE FAILURE AT TAKEOFF

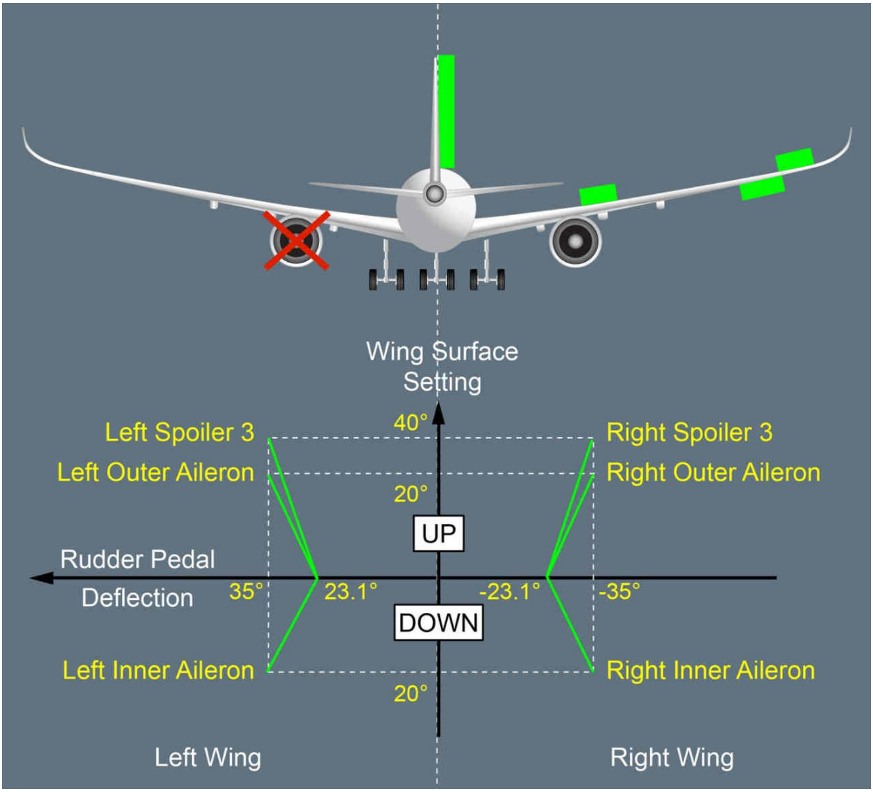
In the case of an engine failure during takeoff, the ailerons and spoiler 3 can be deflected on the wing opposite to the failed engine in order to increase yaw efficiency.

Note: *Increasing yaw efficiency in the case of an engine failure on ground, reduces the VMCG, and therefore improves the takeoff performance.*

The ailerons and spoiler deflection is proportional to the rudder input.

L2 The ailerons and spoiler will be deflected on the remaining engine side, when:
- The aircraft is on ground
- The speed is above 60 kt
- The rudder pedal deflection is more than 2/3 of the maximum rudder pedal deflection (23.1 °).

Engine failure at takeoff


Wing Surface Setting
40°
Left Spoiler 3
Left Outer Aileron
Right Spoiler 3
Right Outer Aileron
20°
UP
Rudder Pedal Deflection
35°
23.1°
-23.1°
-35°
DOWN
Left Inner Aileron
Right Inner Aileron
20°
Left Wing
Right Wing

The inner aileron are deflected downwards.
The outer aileron are deflected upwards.

When the rudder reaches its full deflection (35 °)
- The outer aileron reaches its full upwards deflection (20 °)
- The inner aileron reaches its full downwards deflection (20 °)
- Spoiler 3 reaches 40 ° upwards

L1 An automatic rudder input can also be transiently added to pilot input in order to minimize the effect of the engine failure.

L2 The automatic rudder input is available when:
- The speed is above 100 kt
- The aircraft lateral acceleration is above a defined threshold and is in the same direction as thrust asymmetry.

Note: *The automatic rudder input is proportional to the thrust asymmetry and is adapted to the actual situation. As an example, a large input will be applied for a light aircraft with high thrust close to VMCG. On the opposite, small or no automatic rudder input will be applied for a heavy aircraft with low thrust or at high speed, which ensures that the function will not hide the effect of the engine failure to the flight crew.*

RUDDER DEFLECTION WITH DIFFERENTIAL BRAKING

In order to have adequate directional control in the case of a rudder pedal fault or jammed rudder pedals, differential braking controls the rudder and nosewheel steering.

L3 Differential braking control of the rudder is available when:
- The aircraft is on ground
- The autopilot is not engaged
- The speed is above 50 kt.

L2 When the differential braking is more than 50%, the PRIMs order a rudder deflection, in addition to the brake pedals order.

L3 _Note:_ *The differential braking rudder deflection order is limited when the rudder pedals are not at 0 °.*

Ident.: DSC-27-10-30-271030B-00002043.0001001 / 08 JUL 19

FLIGHT LAW

The normal lateral law in flight:
- Is a roll rate demand law, by using the sidesticks
- Is a sideslip demand law, by using the rudder pedals.

The normal lateral law provides:
- Full flight envelope protection (maximum bank and sideslip angles)
- Turn coordination, and dutch roll damping.

The flight law is available in flight, gradually phased-in during 2 s after liftoff.

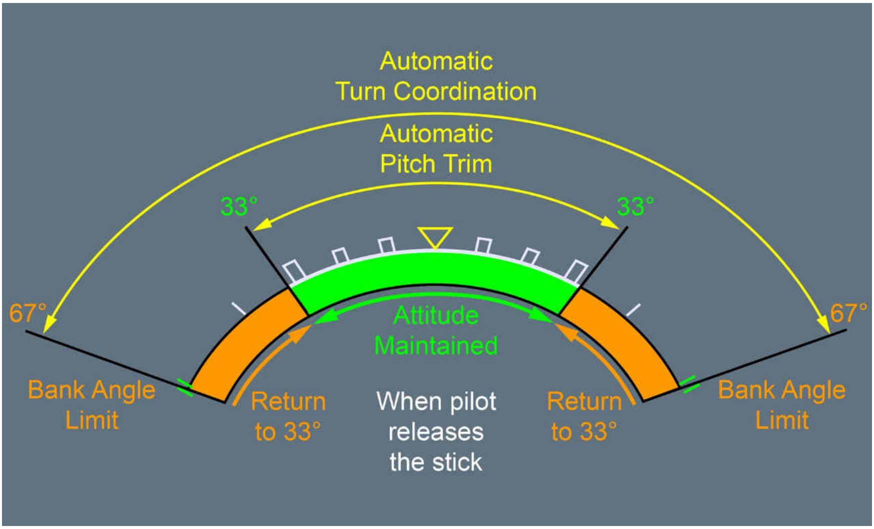
ROLL RATE DEMAND

In manual flight, the normal law provides aileron and spoiler control from the sidesticks, to achieve a roll rate which is proportional to the sidestick deflection, independent of the aircraft speed.

L3 With a full sidestick deflection, the maximum achievable roll rate is 15 °/s.

The maximum roll rate can be limited:
- To 7.5 °/s, if angle of attack protection is active
- Between 7.5 °/s and 15 °/s, in case of an engine failure, depending on the thrust asymmetry.

Bank Angle Protection


Automatic
Turn Coordination
Automatic
Pitch Trim
33°
33°
67°
67°
Attitude
Maintained
Bank Angle
Limit
Return
to 33°
When pilot
releases
the stick
Return
to 33°
Bank Angle
Limit

L1 When the bank angle is less than 33 °, the normal law:
- Maintains a constant bank angle when the sidestick is at neutral (neutral spiral stability)
- Provides automatic pitch trim (turn compensation).

When the bank angle is above 33 °,
- The bank angle returns to 33 ° if the sidestick is at neutral (positive spiral stability is restored)
- Automatic pitch trim is not available (aft pressure on the sidestick is needed to maintain altitude).

The maximum achievable bank angle is:
- 67 ° in clean configuration
- 60 ° in high lift configurations
- 45 ° when the nose down pitch attitude protection is active

- 45 ° when the high speed protection is active (in this case, the bank angle returns to 0 when the sidestick is at neutral)
- Limited by the maximum achievable load factor, when angle of attack protection is active (the maximum achievable bank angle is above 45 °).

SIDESLIP DEMAND

In manual flight, the normal law provides rudder control from the rudder pedals, to achieve a sideslip which is proportional to the pedal deflection, independent of the aircraft speed.
For a given sideslip angle, the aircraft will stabilize at a given roll angle.

L2 Below 100 ft, the aircraft will try to maintain wings level, independently of sideslip demand. This is to assist pilot control in roll during the decrab phase in the case of crosswind conditions.

L1 The sideslip is limited by the flight control computers.

L2 The maximum sideslip is between:
- 2 ° at VMO
- 15 ° in CONF 3 and CONF FULL, at approach speed.

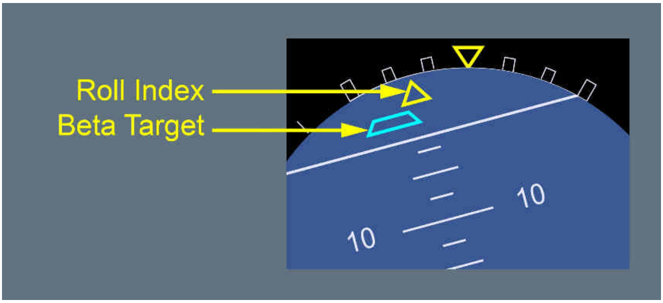
Note: *When maximum sideslip is reached, pushing any further on the rudder pedals will have no effect.*

L1 Engine Failure

In case of an engine failure, the lateral law provides sideslip and bank angle with a slowly diverging heading, as with a conventional aircraft.
During takeoff, the sideslip display is modified to ensure optimum takeoff performance. By centering the blue Beta target, the total aircraft drag is minimized. It results in a compromise between the drag produced by the flight control surfaces deflection and the drag produced by the sideslip of the airframe.

L2 Once the aircraft is in clean configuration with the autopilot engaged, the rudder pedals are automatically commanded to the neutral position.

Beta Target



LOAD ALLEVIATION FUNCTION

Ident.: DSC-27-10-30-00002040.0001001 / 03 DEC 15
Applicable to: ALL

The aim of the Load Alleviation Function (LAF) is to reduce the fatigue and static loads on the wing.
The LAF is part of the normal pitch law.
The LAF is available In normal law and can also be available in alternate law.

The LAF includes:
- The Maneuver Load Alleviation (MLA)
- The Gust Load Alleviation (GLA)
- The Differential Flaps Setting (DFS) for loads reductions purposes.

MANEUVER LOAD ALLEVIATION

The MLA reduces the loads during maneuvers. The MLA modifies the spanwise lift distribution which reduces the wing bending moment. This is done by symmetrically deflecting the ailerons and/or the spoilers.
The deflection of the ailerons and spoilers depends on the aircraft configuration, speed and the load factor.
Flight crew roll orders have priority on MLA.

L3 In clean configuration, the MLA is active above 200 kt:
- For a positive load factor above 1.7 g: only the ailerons are deflected upwards to a maximum of 20 °
- For a negative load factor below -0.5 g: ailerons are deflected downwards and spoilers upwards. The spoilers and outboard ailerons can be deflected to a maximum of 20 ° and the inboard ailerons to a maximum of 10 °.

L1 The MLA is inhibited in configuration FULL.
L2 In configurations 1, 2, 3 only the ailerons are deflected upwards to a maximum of 15 ° for a positive load factor above 1.7 g.

L1 GUST LOAD ALLEVIATION

The GLA reduces the loads in the case of turbulence. The GLA reduces the lift of the outer wing. This is done by symmetrically deflecting the ailerons upwards. The induced pitch effect is compensated with the elevators.
L2 The GLA is active above 200 kt. The deflection of the ailerons depends on the variation of the angle of attack during the last 5 s.
The ailerons can be deflected up to a maximum of 12 ° upwards.
L1 Flight crew roll orders have priority on GLA.

DIFFERENTIAL FLAPS SETTINGS FOR LOAD ALLEVIATION

The DFS modifies the spanwise lift distribution which reduces the wing bending moment for high GW. This is done by deflecting inner flaps down to a maximum of 2 °.

L2 The DFS for load alleviation is available:
- For GW above MTOW - 30 t (66 klb)
- In clean configuration
- In normal law

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RECONFIGURATION CONTROL LAWS

Ident.: DSC-27-10-40-00002044.0003001 / 03 JAN 20
Applicable to: ALL

A single failure cannot lead to the loss of the normal flight control law.
However, a combination of failures may result in a degradation of the flight control laws. The level of degradation will depend on the severity of the failures.
This degradation of the flight control laws is referred to as reconfiguration.

There are two reconfiguration levels:
- Alternate law (*Refer to DSC-27-10-40 Alternate Law*)
- Direct law (*Refer to DSC-27-10-40 Direct Law*).

F/CTL Law	**Ops impact**	**Failure Leading to Reconfiguration**
ALTERNATE LAW	Max Speed: Depending on the position of flaps/slats	F/CTL SLAT SYS 1+2 FAULT
		F/CTL FLAP SYS 1+2 FAULT
		F/CTL INR FLAPS FAULT
		F/CTL SLATS LOCKED
		F/CTL FLAPS LOCKED
	Max Speed: 310 kt	F/CTL L(R) INR(OUTR) AILERON FAULT (if two ailerons are failed)
		NAV RA SYS A+B+C FAULT (During the approach phase)
		F/CTL RUDDER FAULT
		F/CTL L(R) ELEVATOR FAULT
		F/CTL PART SPLRS FAULT (if more than 3 pairs of roll spoilers are failed)
		F/CTL MOST SPLRS FAULT
		F/CTL STABILIZER FAULT
		NAV ADR 1+2+3 FAULT
		HYD G+Y SYS PRESS LO
		ENG ALL ENGINES FAILURE
		ELEC EMER CONFIG

Continued on the following page

Continued from the previous page

F/CTL Law	Ops impact	Failure Leading to Reconfiguration
DIRECT LAW	Max Speed: 310 kt/M .86 APs and FDs not available	F/CTL PRIM 1 FAULT and F/CTL PRIM 2 FAULT and F/CTL PRIM 3 FAULT
		F/CTL SLAT SYS 1+2 FAULT and F/CTL FLAP SYS 1+2 FAULT and The slats and flaps are indicated amber XX on the slats/flaps display and The aircraft is below 22 000 ft
		F/CTL L ELEVATOR FAULT and F/CTL R ELEVATOR FAULT
		Loss of F/CTL Redundancy. (For example when it remains less than 1 inner(outer) aileron and 2 roll spoilers available on each wing.)
		Loss of ground detection information.
		NAV AOA DISAGREE
		Loss of the 3 IRs.
		ZFW/ZFWCG not inserted in FMS before engine start, or inserted less than 10 min after the first engine shutdown.
		Accuracy of GW and CG degraded (above 4 %) on ground.

In addition, the following enable aircraft control, in exceptional conditions:

- Abnormal attitude law, when the aircraft is far outside of the protected envelope (*Refer to DSC-27-10-40 Abnormal Attitude Law*)
- Electrical Backup mode, when all flight control computers are lost (*Refer to DSC-27-10-40 Backup Control*).

ALTERNATE LAW

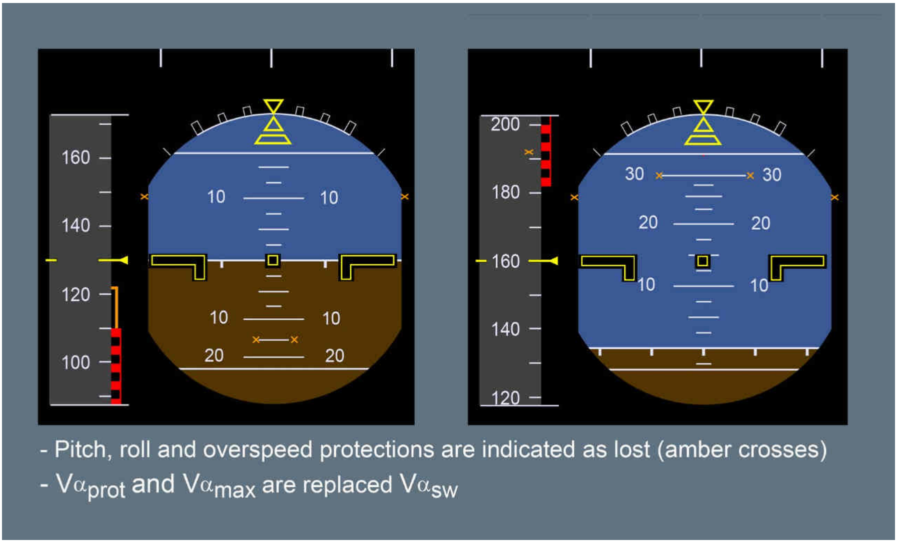
Ident.: DSC-27-10-40-00002045.0001001 / 28 APR 17
Applicable to: ALL

In alternate law the pitch, roll and yaw controls are similar to controls in normal law.
All protections are indicated as lost. However, protections are still available but, depending on the failure, may not be as efficient as in normal laws.
The flight crew should get prepared to experience an aircraft response similar to normal law when approaching flight envelope limits.
As protections may not be as efficient as in normal laws, the flight crew must fly the aircraft more attentively to avoid any inadvertent limit exceedance.
The OVERSPEED and STALL warnings remain available.

The speed is limited to 310 kt to maintain an adequate overspeed margin.

PFD DISPLAY

PFD Display in Alternate Law


160
140
120
100
10
10
10
10
20
20
200
180
160
140
120
30
30
20
20
10
10

- Pitch, roll and overspeed protections are indicated as lost (amber crosses)
- $V\alpha_{prot}$ and $V\alpha_{max}$ are replaced $V\alpha_{sw}$

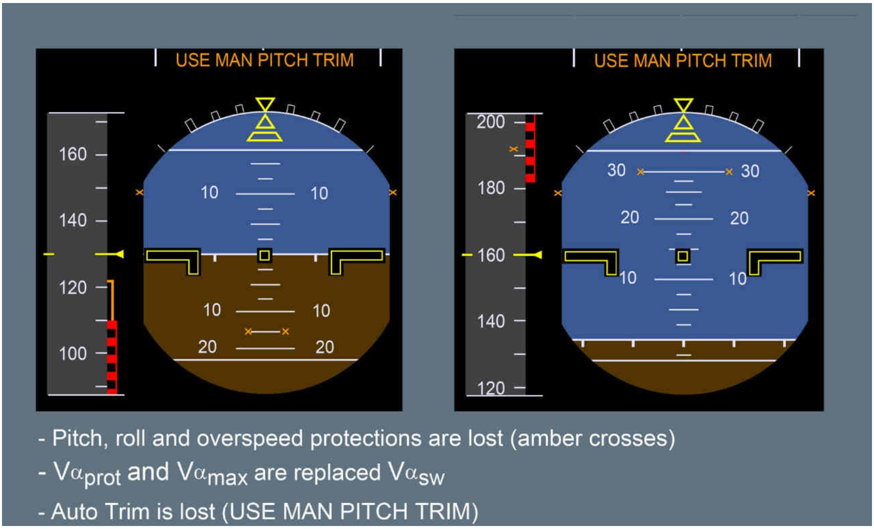
DIRECT LAW

Ident.: DSC-27-10-40-00002046.0001001 / 03 SEP 14
Applicable to: ALL

DIRECT LAW

PFD DISPLAY

PFD Display in Direct Law


USE MAN PITCH TRIM
160
140
120
100
10
10
10
10
20
20
USE MAN PITCH TRIM
200
180
160
140
120
30
30
20
20
10
10

- Pitch, roll and overspeed protections are lost (amber crosses)
- $V\alpha_{prot}$ and $V\alpha_{max}$ are replaced $V\alpha_{sw}$
- Auto Trim is lost (USE MAN PITCH TRIM)

PITCH CONTROL

In direct law, there is a direct relationship between the sidestick position and the elevator position.
There is no autotrim. Pitch trim is adjusted via the PITCH TRIM sw.

The speed is limited to:

- 310 kt, to maintain an adequate overspeed margin
- M .86, to maintain an adequate pitch stability.

LATERAL CONTROL

The lateral control is in direct law:

- Roll direct law.
  L2 There is a direct relationship between the sidestick position and the aileron and spoiler position. If all the roll surfaces are available (i.e. no hydraulic failure), the maximum achievable roll rate is higher than in normal law.
- L1 Yaw direct law
  L2 There is a direct relationship between the rudder pedal position and the rudder position. The yaw direct law provides limited dutch roll damping and turn coordination.

L1 PROTECTIONS

All protections are lost.
The OVERSPEED and STALL warnings remain available.

ABNORMAL ATTITUDE LAW

Ident.: DSC-27-10-40-00002047.0001001 / 09 MAR 16
Applicable to: ALL

If for any reason the aircraft goes far outside the normal flight envelope and reaches an extreme attitude, the flight control law will be modified.
The abnormal attitude law will engage and will provide the PF with maximum efficiency to recover normal attitude.

L2 The abnormal attitude law engages when one of the following values is reached:

- Pitch attitude above 50 ° nose up or 30 ° nose down
- Bank angle above 120 °
- Angle-of-attack above 37.5 °
- Speed above 420 kt or below 70 kt
- Mach above M 0.98 or below M 0.11.

L1 When abnormal attitude law engages:

- The pitch direct law is active with increased authority
- The roll direct law is active
- The yaw direct law is active.

When the aircraft attitude returns within the normal flight envelope, the abnormal attitude law disengages and the alternate law engages with pitch normal law, roll normal law, and yaw normal law for the remainder of the flight.

BACKUP CONTROL

Ident.: DSC-27-10-40-00002048.0001001 / 06 MAY 15
Applicable to: ALL

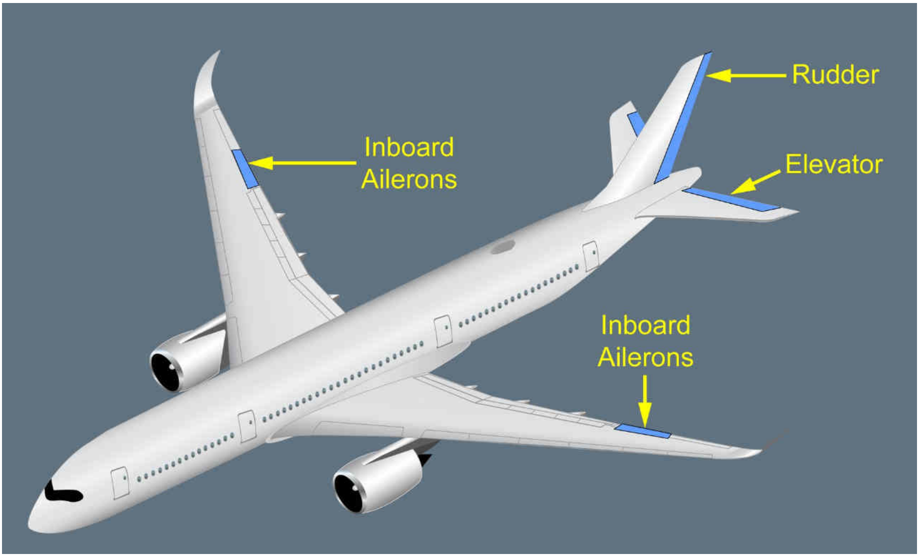
In the unlikely event of the loss of all flight control computers (PRIMs and SECs), the backup control provides control and stability of the aircraft.

The backup control controls the following surfaces:
- Inner ailerons
- Rudder
- Elevators.

When the backup control is active, the flight crew controls the aircraft via:
- The sidesticks
- The rudder pedals
- The pitch trim switch.

L2 When the backup control is active, the control of the stabilizer is lost. The pitch trim switch remains available and controls the elevators.

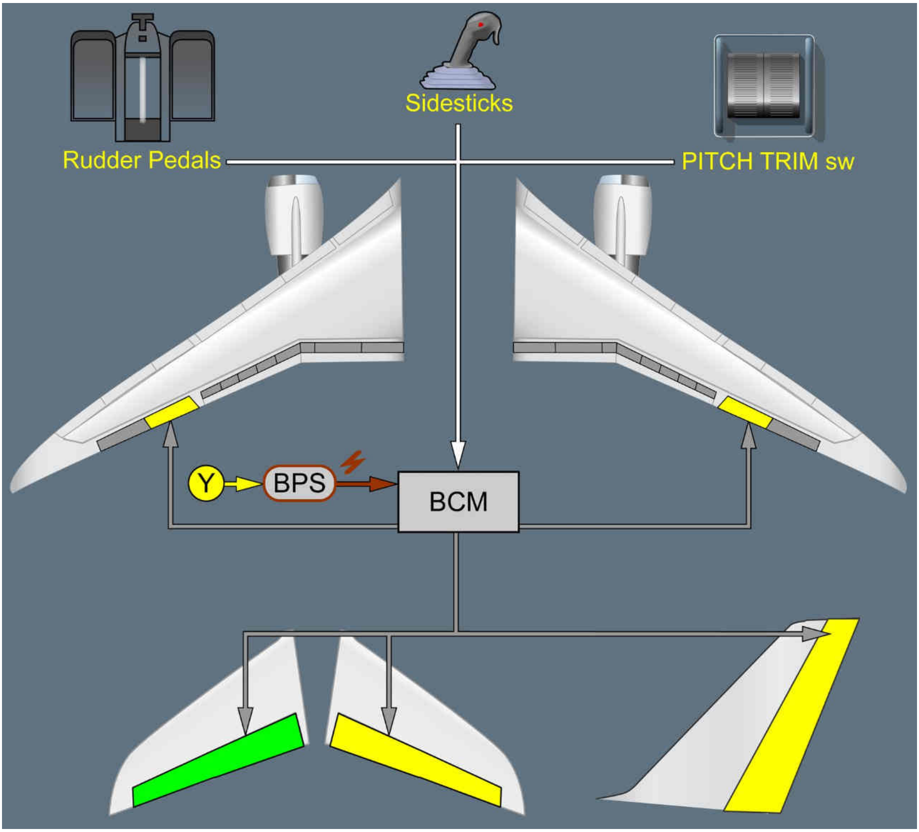
Backup Control Surfaces



The backup control has:

- One backup Power Supply (BPS)
  The BPS is electrical generator, supplied by the yellow hydraulic system. The BPS starts to operate when PRIM 2 and SEC 2 are failed or no longer supplied.
- One Backup Control Module (BCM).
  The BCM is powered by the BPS. It starts to operate when all flight control computers are lost.

Backup Control



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OVERVIEW

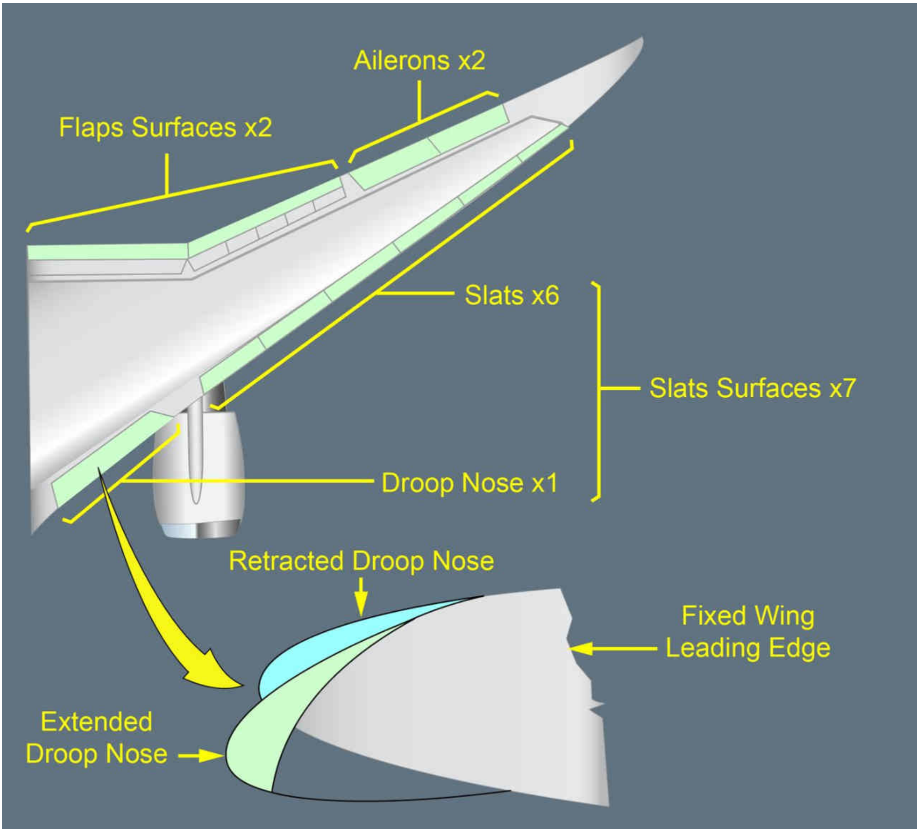
Ident.: DSC-27-20-10-00013626.0001001 / 24 APR 14
Applicable to: ALL

The following surfaces are located on each wing, and provide lift augmentation:

- 7 slats surfaces
  L2 1 of these surfaces is droop nose.
- L1 2 flaps surfaces
- 2 ailerons, via the aileron droop function.

Slats are electrically and hydraulically-actuated.
Flaps are hydraulically-actuated. Outer flaps are also electrically actuated.
The FLAPS lever is used to select the position of the slats and flaps. This lever is located on the center pedestal.

Slats/Flaps Overview

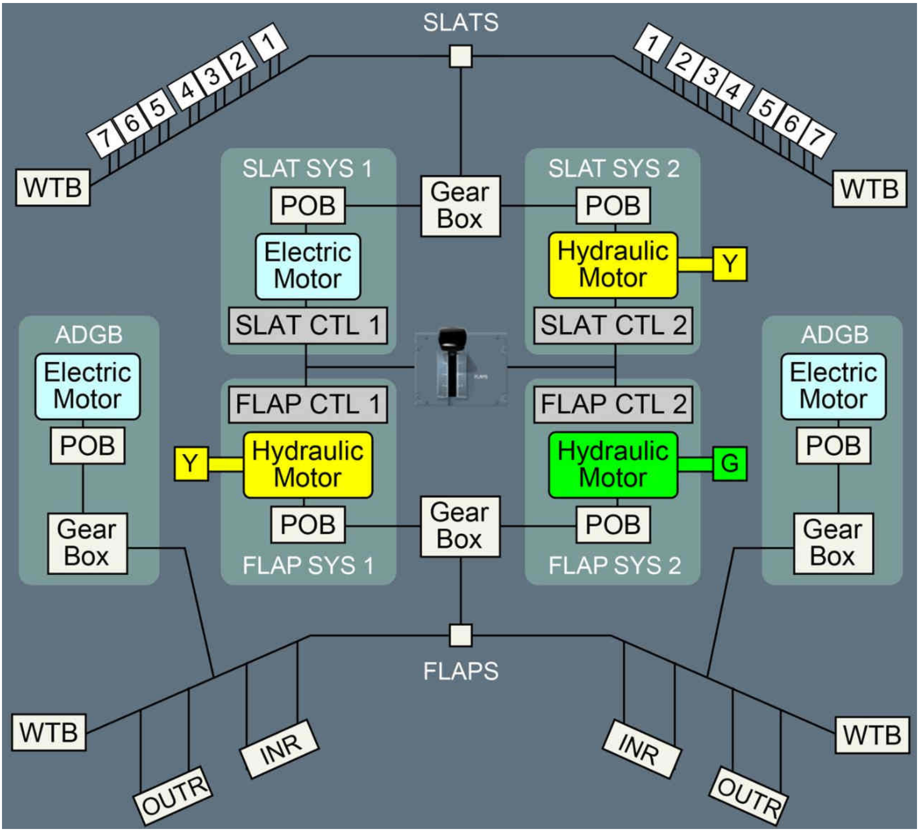

Ailerons x2
Flaps Surfaces x2
Slats x6
Slats Surfaces x7
Droop Nose x1
Retracted Droop Nose
Fixed Wing Leading Edge
Extended Droop Nose

SLATS/FLAPS SYSTEM

Applicable to: ALL

Ident.: DSC-27-20-10-01-00013631.0001001 / 24 APR 14

Slats/Flaps Architecture


SLATS
7 6 5 4 3 2 1
1 2 3 4 5 6 7
WTB
WTB
SLAT SYS 1
POB
Electric Motor
SLAT CTL 1
Gear Box
SLAT SYS 2
POB
Hydraulic Motor
Y
SLAT CTL 2
ADGB
Electric Motor
POB
Gear Box
FLAP CTL 1
Y
Hydraulic Motor
POB
FLAP SYS 1
Gear Box
FLAP CTL 2
Hydraulic Motor
G
POB
FLAP SYS 2
ADGB
Electric Motor
POB
Gear Box
FLAPS
WTB
OUTR
INR
INR
OUTR
WTB

Ident.: DSC-27-20-10-01-00013632.0001001 / 24 APR 14

SLAT (FLAP) SYSTEMS

The slats and flaps are monitored and controlled as follows:
- SLAT SYS 1 and SLAT SYS 2 monitor and control the slats
- FLAP SYS 1 and FLAP SYS 2 monitor and control the flaps.

All four systems each have:
- 1 Slats(Flaps) Control Unit: SLAT(FLAP) CTL 1(2)
- 1 Motor
- 1 Power-Off Brake (POB).

SLAT (FLAP) Ctl

Each SLAT CTL:
- Monitors the slats
  For monitoring purpose, the slats systems are fitted with a set of position sensors used to monitor any malfunction in the slats system. All the sensors are connected to both slats control units.
- Controls the motor of its associated slats system.

Each FLAP CTL:
- Monitors the flaps
  For monitoring purpose, the flaps systems are fitted with a set of position and load sensors used to monitor any malfunction in the flaps system. All the sensors are connected to both flaps control units.
- Controls the motor of its associated flaps system
- Controls the Active Differential GearBox (ADGBs).

SLAT CTL 1(2) and FLAP CTL 1(2) are part of Slat Flap Control Computer (SFCC) 1(2).

MOTOR

Slats are actuated by:
- One electrical motor that SLAT CTL 1 controls
  The AC EMER 1 -230 V busbar supplies the electrical motor part of SLAT SYS 1.

  Note: *On ground, the electrical motor is operative, only when the hydraulic systems are pressurized. This prevents inadvertent slats movement with ground personnel around the aircraft.*
- One hydraulic motor that SLAT CTL 2 controls
  The YELLOW hydraulic system supplies the hydraulic motor part of SLAT SYS 2.

Inner flaps and outer flaps are actuated by:
- One hydraulic motor that FLAP CTL 1 controls
  The YELLOW hydraulic system supplies the hydraulic motor part of FLAP SYS 1.
- One hydraulic motor that FLAP CTL 2 controls
  The GREEN hydraulic system supplies the hydraulic motor part of FLAP SYS 2.

In addition, outer flaps can be actuated by the ADGBs electrical motors. For more information on the ADGB, *Refer to Active Differential Gearbox (ADGB)*.

Ident.: DSC-27-20-10-01-00013633.0001001 / 24 APR 14

L2 GEARBOX

Gearboxes are used to connect the slats(flaps) motors to the transmission shaft.
A gearbox transfers power to the surfaces, using torque-shaft transmission.
The SLAT(FLAP) SYS gearbox adds the speed of the motors of both slats(flaps) systems (speed-summing system). Therefore, the slats(flaps) will operate at half speed, if one motor is lost.
The ADGB gearbox adds the speed of the electrical motor to the transmission shaft to introduce an additional power source for outer flap movement. Therefore, the capability to move only the outer flap is lost when the ADGB electric motor is lost.

Ident.: DSC-27-20-10-01-00013634.0001001 / 24 APR 14

L2 WING TIP BRAKES (WTB)

The WTBs mechanically lock the slats(flaps) transmission shaft, when both SLAT(FLAP) CTL detect:
- A runaway, or asymmetry
- An overspeed.

The WTBs also mechanically lock the flaps transmission shaft when both FLAP CTL detect a flap disconnection.
In all the above cases, when a WTB is set, it cannot be unlocked in flight. Maintenance action is required.
For more information on the associated ECAM procedure: *Refer to PRO-ABN-F_CTL F/CTL FLAPS LOCKED*, or *Refer to PRO-ABN-F_CTL F/CTL SLATS LOCKED*.
When a Differential Flap Setting (DFS) is needed with inner flap movement only, the flaps WTBs are set to block the outer flap movement. In this case, the flaps WTBs can be unlocked when needed.

L3 DC EMER 1 and DC 2 keep the WTBs of the slats unlocked. In case both these busbars fail, the WTBs of the slats will mechanically lock the slats.
DC EMER 2 and DC 1 keep the WTBs of the flaps unlocked. In case both these busbars fail, the WTBs of the flaps will mechanically lock the flaps.

Ident.: DSC-27-20-10-01-00014921.0001001 / 24 APR 14

L2 POWER-OFF BRAKES (POB)

Each motor of the slats (flaps) systems and each ADGB is fitted with a Power-Off Brake (POB).

The POB, when set, mechanically locks the transmission shaft from its associated motor to the gearbox:
- When the slats (flaps) have reached the selected position
- In the case of runaway or asymmetry
- In the case of a power supply failure of a motor.

The SLAT(FLAP) CTL electrically control the POBs.
- Each SLAT(FLAP) CTL controls the POB of its dedicated motor.
- Both FLAP CTL 1 and FLAP CTL 2 control the POB of the ADGBs.

Ident.: DSC-27-20-10-01-00013647.0001001 / 24 APR 14

ACTIVE DIFFERENTIAL GEARBOX (ADGB)

The flaps systems can control the inner and outer flaps independently to enable a Differential Flap Setting (DFS).

L2 For more information on the DFS, *Refer to Differential Flap Setting*.

L1 This is achieved through the installation of two Active Differential Gearboxes (ADGBs).
There is one ADGB per wing, connected to the transmission shaft between the inner flap and the outer flap.

Each ADGB is composed of:
- One electrical motor
  L3 The AC EMER 2 - 230 V busbar supply both electrical motors.
- L2 One POB
  L3 The AC 1A - 230 V busbar and the AC EMER 2 - 230 V busbar supply both POBs.
- L1 One speed summing differential gearbox for the connection to the transmission shaft.

L2 In the case of loss of both hydraulic systems, the capability to move the outer flaps remains available through the ADGBs electric motors.

L1 Both FLAP CTL command the ADGBs:
- The FLAP CTL 2 commands the ADGBs electric motors and POBs
- The FLAP CTL 1 commands the ADGBs POB only.

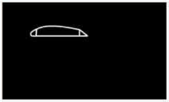
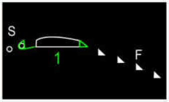
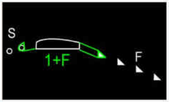
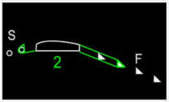
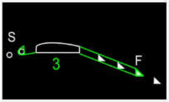
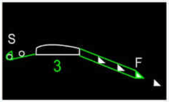
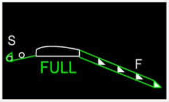
L2 In the case of failure of the FLAP CTL 2, the capability to move the outer flap only is lost.
Nevertheless, the capability of inner flap movement or uniform inner and outer flaps movement is possible from FLAP CTL 1 through the control of the POBs.

CONFIGURATIONS

Ident.: DSC-27-20-20-00013651.0001001 / 14 NOV 17
Applicable to: ALL

The following table provides the configurations and associated surface positions (degrees), for each FLAPS lever position.

Slats/Flaps Configurations

FLAPS Lever Position	SLATS	INNER FLAP	OUTER FLAP	Aileron Droop	Configuration on Slats/Flaps Display	Maximum Speed	Flight Phase
0	0°	0°	0°	0°		VMO/ MMO	Cruise
1	18°	0°	0°	0°		255 kt	Holding/ Approach
	18°	16°	16°	10°		220 kt	Takeoff/ Approach
2	18°	20°	20°	10°		212 kt	Takeoff/ Approach
3	18°	26°	26°	10°		195 kt	Takeoff
	24°	26°	26°	0°		195 kt	Approach/ Landing
FULL	24°	37.5°	37.5°	0°		186 kt	Landing

L3 In order to improve the aerodynamic efficiency in flaps extended configurations, the spoilers are deflected downward to control the gap between the spoilers' trailing edge and the flaps.
The PRIMs and SECs command the spoilers deflection based on the flaps' positions.

Slats/Flaps Configuration	Spoilers 1-4	Spoilers 5-6	Spoiler 7
0	0 °	0 °	0 °
1	0 °	0 °	0 °
1+F	4 °	3 °	3 °
2	5 °	4 °	3.5 °
3	6.5 °	5 °	5 °
FULL	7.5 °	7 °	0 °

The spoilers downward deflection is visible on the F/CTL SD page.
For more information on spoiler position indication on the F/CTL SD page, *Refer to DSC-27-10-20 Spoiler Position*.

L2 If the slats or flaps are jammed, the following table gives the maximum speed (VFE) that is associated with the current abnormal configuration:

VFE ABN CONF (kt)			
	S = 0	0 < S ≤ 1	S > 1
F = 0	255	255	215
0 < F ≤ 1	230	220	215
1 < F ≤ 2	220	212	200
2 < F ≤ 3	215	200	200
F > 3	200	200	200

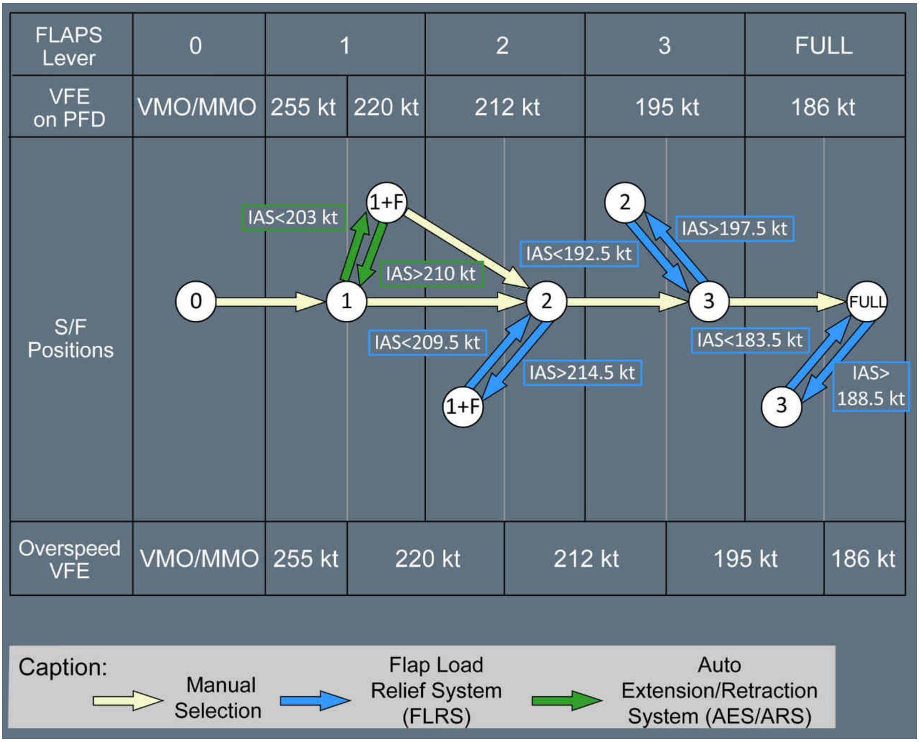
L3 If the slats or flaps are jammed, the VFEs displayed on the PFD and on the ECAM are increased vs. the placard speeds. This is operationally necessary to get a minimum margin between VLS and VFE NEXT, when the slats/flaps are jammed in an intermediate position.
Example: When the slats are jammed at 0 °(S=0) and flap lever is in position 1, the VFE NEXT displayed on the PFD is 230 kt instead of 220 kt.

SLATS/FLAPS EXTENSION/RETRACTION

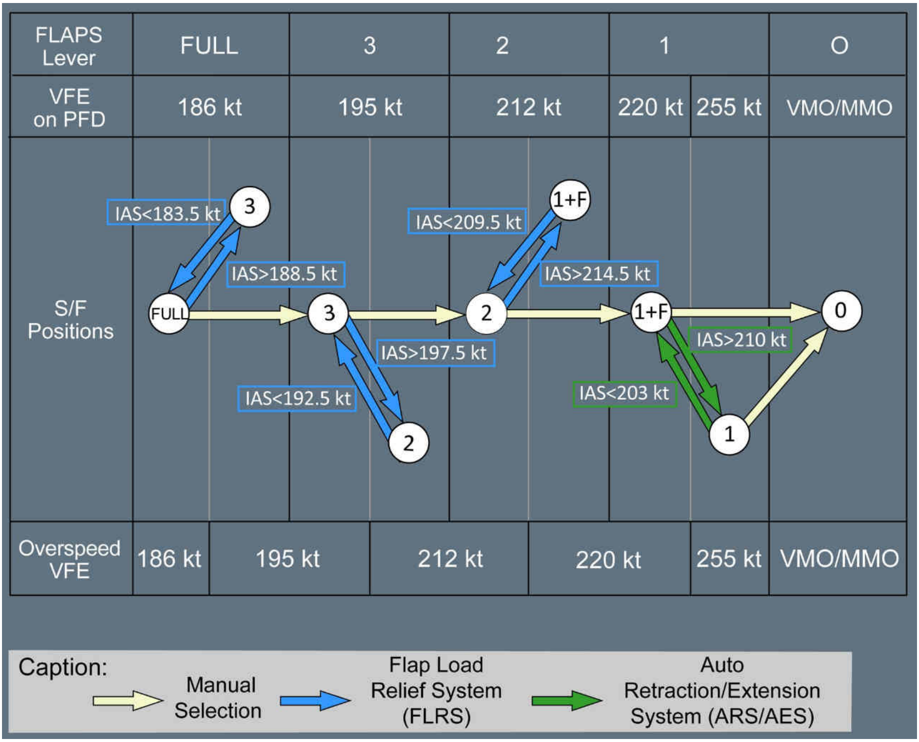
Applicable to: ALL

Ident.: DSC-27-20-20-27-20-20-00013659.0001001 / 07 NOV 16

Slats/Flaps Extension


FLAPS Lever
0
1
2
3
FULL
VFE on PFD
VMO/MMO
255 kt
220 kt
212 kt
195 kt
186 kt
S/F Positions
0
1
1+F
IAS<203 kt
IAS>210 kt
2
IAS<209.5 kt
IAS>214.5 kt
1+F
IAS<192.5 kt
IAS>197.5 kt
3
FULL
IAS<183.5 kt
IAS> 188.5 kt
Overspeed VFE
VMO/MMO
255 kt
220 kt
212 kt
195 kt
186 kt
Caption:
Manual Selection
Flap Load Relief System (FLRS)
Auto Extension/Retraction System (AES/ARS)

Slats/Flaps Retraction


FLAPS Lever
FULL
3
2
1
0
VFE on PFD
186 kt
195 kt
212 kt
220 kt
255 kt
VMO/MMO
S/F Positions
IAS<183.5 kt
3
IAS>188.5 kt
FULL
3
IAS>197.5 kt
IAS<192.5 kt
2
IAS<209.5 kt
1+F
IAS>214.5 kt
2
1+F
0
IAS>210 kt
IAS<203 kt
1
Overspeed VFE
186 kt
195 kt
212 kt
220 kt
255 kt
VMO/MMO
Caption:
Manual Selection
Flap Load Relief System (FLRS)
Auto Retraction/Extension System (ARS/AES)

Ident.: DSC-27-20-20-27-20-20-00013660.0001001 / 24 APR 14

AUTOMATIC RETRACTION SYSTEM (ARS)

In CONF 1+F, the Automatic Retraction System (ARS) automatically retracts the flaps, when needed. The resulting configuration is CONF 1.

L2 The ARS activates when the aircraft reaches a speed of 210 kt, and if still in CONF 1+F.
In the case of high-weight takeoff, the S speed will be above 210 kt. The ARS will activate, as the aircraft accelerates toward S speed. This prevents excessive loads on the flaps, and improve climb performance.

Note: *S can also be above the VFE of CONF 1+F.*

Ident.: DSC-27-20-20-27-20-20-00013661.0001001 / 04 MAY 16

AUTOMATIC EXTENSION SYSTEM (AES)

In CONF 1, the Automatic Extension System (AES) automatically extends the flaps, when needed. The resulting configuration is CONF 1+F.

L2 The AES activates, when the aircraft speed goes below 203 kt, and if still in CONF 1.
In approach, except for high/overweight landing, the S speed will be less than 203 kt. The AES will activate as the aircraft decelerates towards S speed. This improves the deceleration performance during approach.

Ident.: DSC-27-20-20-27-20-20-00013662.0001001 / 24 APR 14

FLAP LOAD RELIEF SYSTEM (FLRS)

The Flap Load Relief System (FLRS) limits the loads on the flaps, in the case of a VFE exceedance. The FLRS is only available in CONF 2, 3, or FULL.

L2 The FLRS automatically retracts the flaps at VFE + 2.5 kt (i.e. before the overspeed warning triggers at VFE + 4 kt).

L1 When the FLRS is active:
- The FLRS retracts the flaps to the next retracted flap position
- A pulsing F RELIEF message appears in the Slat/Flap display of the PFD
- The PFD still indicates the VFE that corresponds to the selected lever position

L2
- The FWS triggers an overspeed warning, if the speed exceeds the VFE of the actual slats/flaps configuration + 4 kt (i.e. the overspeed warning does not consider the selected lever position).

L1 When the VFE is no longer exceeded, the flaps automatically return to their normal (selected) position.

L2 The FLRS automatically extend the flaps at VFE – 2.5 kt.

SLAT ALPHA/SPEED LOCK FUNCTION

Ident.: DSC-27-20-20-00013687.0001001 / 24 APR 14
Applicable to: ALL

The slat alpha/speed lock function inhibits slats retraction to zero at a high Angle-Of-Attack (AOA), and/or at a very low speed.

L2 The slat alpha/speed lock function prevents the aircraft from losing altitude, when the slats are retracted to zero.

L3 The slats and flaps control units use the AOA, or the airspeed, to inhibit slats retraction. The ADIRUs provide this information to the slats and flaps control units.

L2 When the FLAPS lever is set to 0, the slats alpha/speed lock function activates and inhibits slats' retraction, if:

- AOA is above 10.6 °, or
- The speed is less than 140 kt.

Note: *If the FLAPS lever is already set to 0, when either of the above conditions occurs, then the function will not activate.*

L1 If the slat alpha/speed lock function is active:

- A pulsing A. LOCK message appears in the Flap/Slat display of the PFD
- The PFD indicates the VLS that corresponds to the actual slats/flaps position.

L2 Once the slats alpha/speed lock function is active, the slats retract to 0 when:

- AOA is less than 10.3 °, or
- The speed is above 146 kt.

SLATS/FLAPS CRUISE BAULK FUNCTION

Ident.: DSC-27-20-20-00013688.0001001 / 24 APR 14
Applicable to: ALL

If the FLAPS lever is inadvertently moved from 0 to 1 during cruise, the slats/flaps cruise baulk function will maintain the slats and flaps in their fully retracted position. In addition, the ECAM will trigger the F/CTL FLAP LVR NOT ZERO warning.

L2 The slats/flaps cruise baulk function activates, when the indicated airspeed is above 265 kt, or the aircraft is at or above 22 000 ft.

The slats/flaps cruise baulk function is valid only for FLAPS lever position 1. Any other FLAPS lever (2, 3, or FULL) will override the cruise baulk function, and enable slats and flaps extension.

DIFFERENTIAL FLAP SETTING

Applicable to: ALL

Ident.: DSC-27-20-20-27-20-30-00014918.0001001 / 24 APR 14

The Differential Flap Setting (DFS) is made possible through the installation of the 2 ADGBs. The purpose of the DFS is to operate the outer flap independently from the inner flap.

The DFS is used in cruise through the flap cruise deployment function.

L2 In the case of impossibility to perform the DFS in cruise, the FLAP CTL performs a recovery procedure. The purpose of the recovery procedure is to set back the inner and the outer flaps to 0 °.

If the recovery procedure is not successful, the F/CTL DIFF FLAP SETTING FAULT alert is displayed on the WD (*Refer to procedure*).

Ident.: DSC-27-20-20-27-20-30-00013706.0001001 / 03 JUL 20

1 FLAP CRUISE DEPLOYMENT FUNCTION

The flap cruise deployment function performs symmetrical small deflection of the flaps and ailerons (aileron droop) during cruise.

The flap cruise deployment function permits to manage the center of lift of the wing and to adjust the camber of the wing in order to:

- Reduce the drag and therefore slightly improve the aircraft performance

  L2 The flap cruise deployment function for performance is only available with the autopilot engaged and all engines operative.

- L1 Reduce the loads (inner flaps movement only).

L2 The PRIMs command the flap cruise deployment based on aircraft data (e.g. altitude, Mach, FOB, etc.)

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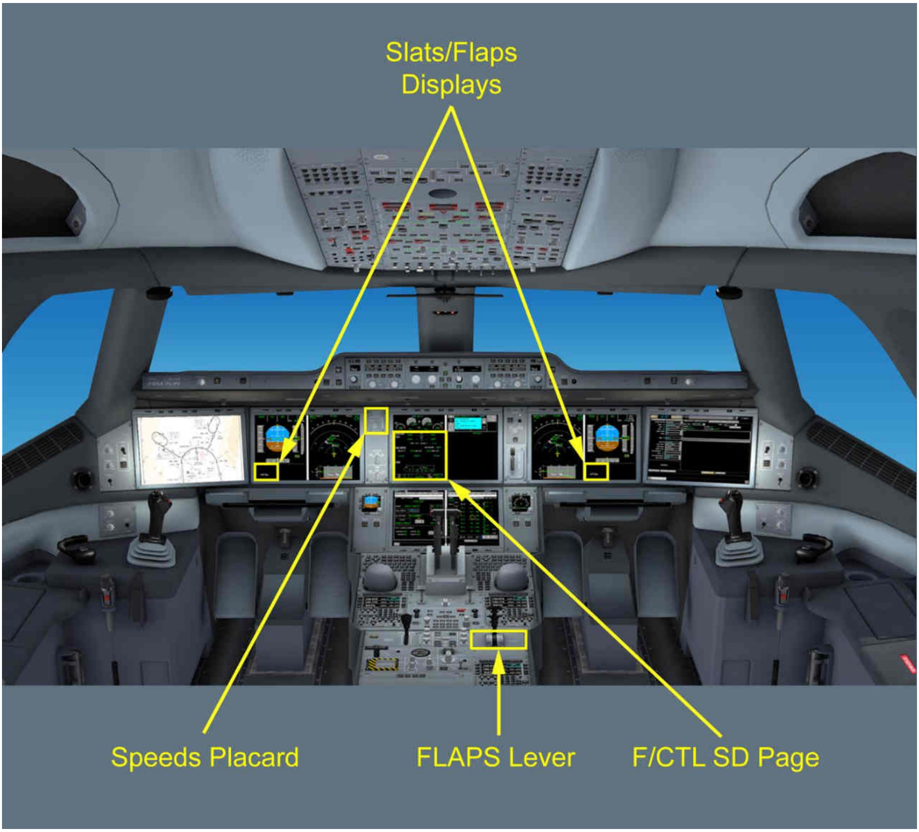
COCKPIT VIEW

Ident.: DSC-27-20-30-00014147.0001001 / 24 APR 14
Applicable to: ALL

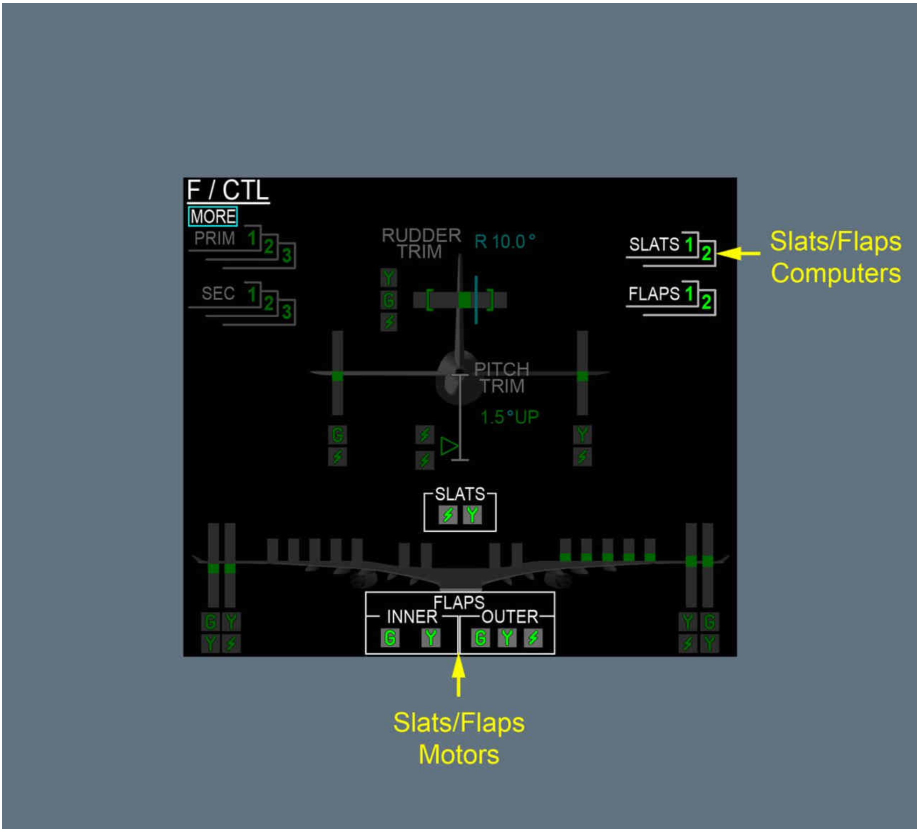
Cockpit View


Slats/Flaps Displays
Speeds Placard
FLAPS Lever
F/CTL SD Page

F/CTL SD PAGE

Ident.: DSC-27-20-30-00017628.0001001 / 24 APR 14
Applicable to: ALL

F/CTL SD page

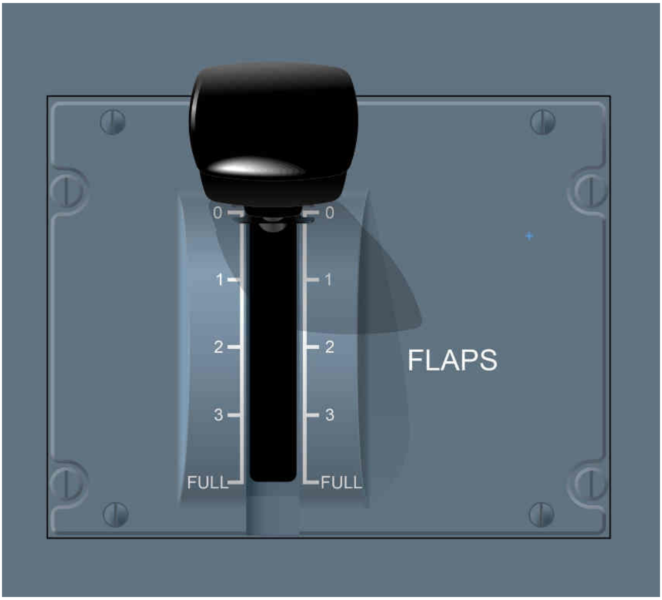

F / CTL
MORE
PRIM 1 2 3
SEC 1 2 3
RUDDER TRIM
R 10.0°
Y
G
SLATS 1 2
FLAPS 1 2
Slats/Flaps Computers
PITCH TRIM
1.5°UP
G
Y
SLATS
Y
FLAPS
INNER
OUTER
G
Y
G
Y
G Y
Y
Y G
Y
Slats/Flaps Motors

Information about the slats/flaps system appear on the F/CTL SD page. For more information, *Refer to DSC-27-10-20 F/CTL SD Page*.

FLAPS LEVER

Ident.: DSC-27-20-30-00014148.0001001 / 24 APR 14
Applicable to: ALL

FLAPS lever



The FLAPS lever controls both the slats and the flaps at the same time.
There are five FLAPS lever positions to select the desired configuration.
For more information, *Refer to DSC-27-20-20 Configurations*.

Note: The FLAPS lever must be pulled out of detent, before it can be set to any position.

L2 The FLAPS lever has a mechanical stop at positions 1 and 3. This prevents inadvertent excessive slats/flaps extension or retraction.
The FLAPS lever cannot be set to an intermediate lever position.

L1 OVERRIDE MECHANISM

The FLAPS lever includes an override mechanism that is used if the FLAPS lever is jammed. The override mechanism allows to extend the slats/flaps by one step (e.g. from 0 to 1, from 3 to FULL). To use the override mechanism, the flight crew moves the lever by one step with a strong force, without pulling the lever out of detent.

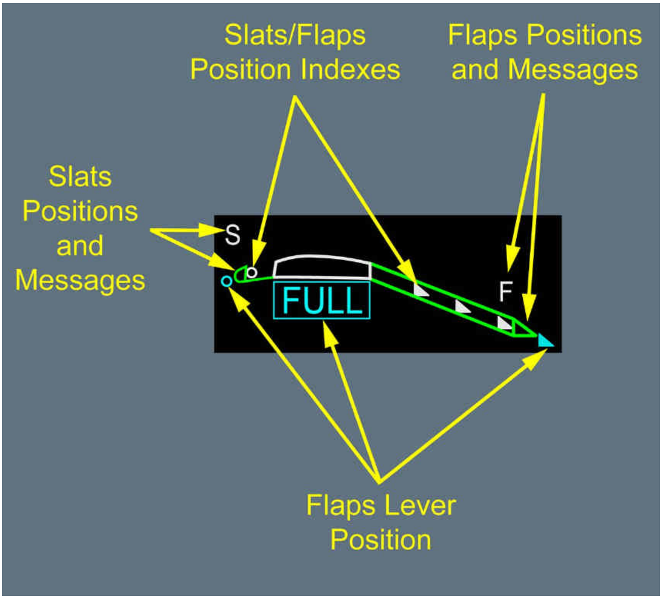
The override mechanism is reversible.

SLATS/FLAPS DISPLAY

Applicable to: ALL

Ident.: DSC-27-20-30-273001-00002116.0001001 / 08 JUL 19

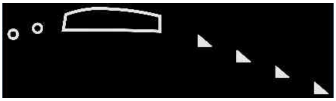
Slats/flaps Display


Slats/Flaps Position Indexes
Flaps Positions and Messages
Slats Positions and Messages
S
F
FULL
Flaps Lever Position

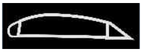
The slats/flaps display is on the bottom left-hand corner of the PFD displays.
Spoilers indications are also available on the slats/flaps display. For more information: *Refer to DSC-27-10-20 Spoiler Indications on the Slats/Flaps Display*
Landing gear indication is also available on the slats/flaps display. For more information: *Refer to DSC-32-10-20 Slats/Flaps Display*

Ident.: DSC-27-20-30-273001-00004072.0001001 / 24 APR 14

SLATS/FLAPS POSITION INDEXES



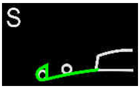
The dots indicate the slats positions that can be selected.
The triangles indicate the flaps positions that can be selected.



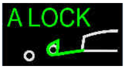
The slats and flaps are fully retracted.

Ident.: DSC-27-20-30-273001-00002117.0001001 / 03 DEC 15

SLATS— POSITIONS AND MESSAGES

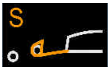


Position of the slats.



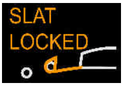
The alpha/speed lock function is active.
Both the green A LOCK message and the green slat index pulse.

L12



The slats are failed.
Associated with the following ECAM alert: F/CTL SLAT SYS 1+2 FAULT (*Refer to procedure*).
May also result from a failure of both the AC EMER 1 - 230 V and YELLOW hydraulic.

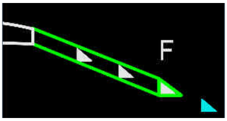
L12



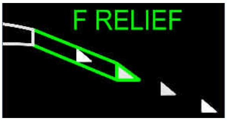
Wing-tip brakes are applied to the slats.
Associated with the following ECAM alert: F/CTL SLATS LOCKED (*Refer to procedure*).

Ident.: DSC-27-20-30-273001-00002118.0001001 / 03 JUL 20

1 FLAPS— POSITIONS AND MESSAGES

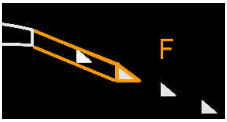


Position of the flaps.
The upper green line shows the position of the outer flaps.
The lower green line shows the position of the inner flaps.



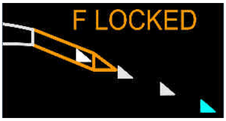
The Flap Load Relief System (FLRS) is active.
Both the green F RELIEF message and the green flap index pulse.

L12



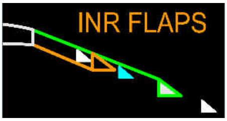
The flaps are failed.
Associated with the following ECAM alert: F/CTL FLAP SYS 1+2 FAULT (*Refer to procedure*).

L12



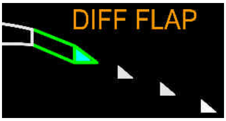
Wing-tip brakes are applied to the flaps.
Associated with the following ECAM alert: F/CTL FLAPS LOCKED (*Refer to procedure*).

L12



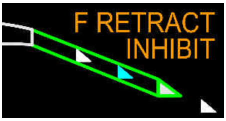
The inner flaps are locked.
Associated with the following ECAM alert: F/CTL INR FLAPS FAULT (*Refer to procedure*).
May also result from a failure of both hydraulic systems.

L12



The DFS function is failed due to a failure in one or both ADGBs, and the FLAP CTL has not been able to realign the inner flap and the outer flap.
Associated with the following ECAM alert: F/CTL DIFF FLAP SETTING FAULT (*Refer to procedure*).

L12

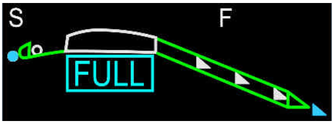


The retraction of the flaps is inhibited by the FLAP CTL due to the failure of one or more spoilers in the downward position.
The amber F RETRACT INHIBIT message appears and the green flap index pulses.

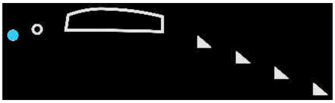
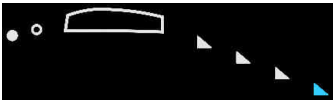
Associated with one of the following ECAM alerts:
- F/CTL PART(MOST) SPLRS FAULT (*Refer to procedure*), or
- F/CTL FLAP RETRACTION INHIBITED (*Refer to procedure*)

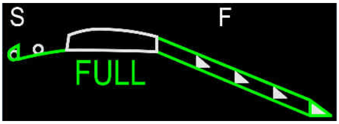
Ident.: DSC-27-20-30-273001-00002119.0001001 / 24 APR 14

FLAPS LEVER POSITION



The slats/flaps move to the selected position.

- FULL Indicates the selected configuration (1, 1+F, 2, 3, or FULL)
-  The blue dot indicates the selected slats position
-  The blue triangle indicates the selected flaps position

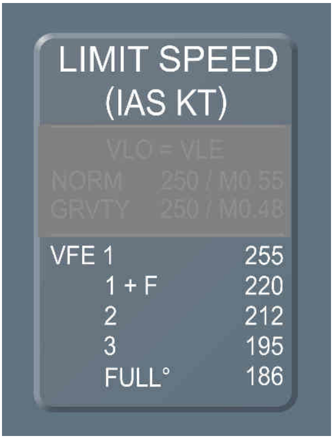


The slats/flaps have reached the selected position.

FULL : Indicates the current configuration.

SPEEDS PLACARD

Ident.: DSC-27-20-30-00016561.0001001 / 06 NOV 14
Applicable to: ALL



LIMIT SPEED
(IAS KT)

VLO = VLE
NORM 250 / M0.55
GRVTY 250 / M0.48

VFE 1 255
1 + F 220
2 212
3 195
FULL° 186

Speeds Placard

The speeds placard is located on the main instrument panel.
The speeds placard provides the crew with the VFE associated with each slats/flaps configuration.

INHIBITION OF THE FLAP RETRACTION IN THE CASE OF A SPOILER FAILURE

Ident.: DSC-27-20-33-00025344.0001001 / 03 JUL 20
Applicable to: ALL

SYSTEM DESCRIPTION

The Adaptative Droop Hinge Function (ADHF) enables the spoilers to be moved downward, in order to control the gap between the spoiler and the flap. For more information, *Refer to DSC-27-10-10 ADHF Control*.

1 INITIAL FAILURE

In the case of a spoiler failure, the system is designed to avoid an interference between the flap and the spoiler. In addition, the F/CTL PART (MOST) SPLRS FAULT ECAM alert (*Refer to procedure*) appears.

L2 The PRIM memorizes the flap retraction inhibition, therefore the F/CTL FLAPS RETRACTION INHIBITED ECAM alert (*Refer to procedure*) is triggered if the spoilers are recovered.

L1 FAILURE ON GROUND

If the failure occurs on the ground, the PRIM inhibits flap retraction, regardless of the spoiler failure case and the flaps position. This inhibition prevents interference between the spoiler and the flap that may cause noise or scratches.

FAILURE IN FLIGHT

The PRIM inhibits flap retraction from FULL in the case of one of the following spoiler failures:
- The spoiler is in a runaway down position and the flaps are in CONF FULL, or
- The spoiler is jammed in a downward position that may cause interference with the flap.

Note: *For other failure cases, aerodynamic forces push the spoilers up and enable to keep the flap retraction available in flight.*

If the actual slats/flaps position is set to FULL when the alert is triggered, the ECAM displays both of the following lines:

FLAP RETRACTION INHIBITED
SLATS AVAIL

If the actual slats/flaps position is not set to FULL when the alert is triggered, the ECAM displays both of the following lines:

FOR LDG : FLAP LVR 3
FOR GA : KEEP S/F CONF

If the flight crew attempts to retract the flaps, the F RETRACT INHIBIT message appears on the Slats/Flaps display.

AFTER LANDING

After landing, the flaps cannot retract and remain in the landing configuration.
If the flight crew attempts to retract the flaps, the F RETRACT INHIBIT message appears on the Slats/Flaps display.

AIRCRAFT SYSTEMS

28 - FUEL

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DSC-28-10 System Description

Overview.........A
Tanks.........B
Engine Feed.........C
APU Feed.........D
Fuel Tank Inerting System.........E
Fuel System Architecture.........F

DSC-28-20 Controls and Indicators

Cockpit View.........A
CRUISE SD Page - Upper Part.........B
EXTERNAL REFUEL Panel.........C
FUEL JETTISON Panel (if installed).........D
FUEL Panel.........E
FUEL SD Page.........F
FUEL SD Page - Indications.........G
FUEL SD Page - Fuel QTY, TEMP, FU and FF.........H
FUEL SD Page - Pumps, Valves and Transfers.........I
Permanent Data.........J
REFUEL Panel (if installed).........K
MEMO.........L

DSC-28-30 Normal Operations

(FOB + FU) - BLOCK.........A

DSC-28-40 Abnormal Operations

Manual Transfer From Wing Tank to Center Tank.........A
FUEL JETTISON ....B
Fuel System in Electrical Emergency Configuration.........C
Fuel Gauging Degradation.........D
Fuel Quantity: Monitoring and Integrity Check.........E
Fuel Leak Detection.........F

DSC-28-50 Ground Operations

DSC-28-50-30 Refuel/Defuel

Refuel/Defuel System.........A
Refuel/Defuel Operations.........B

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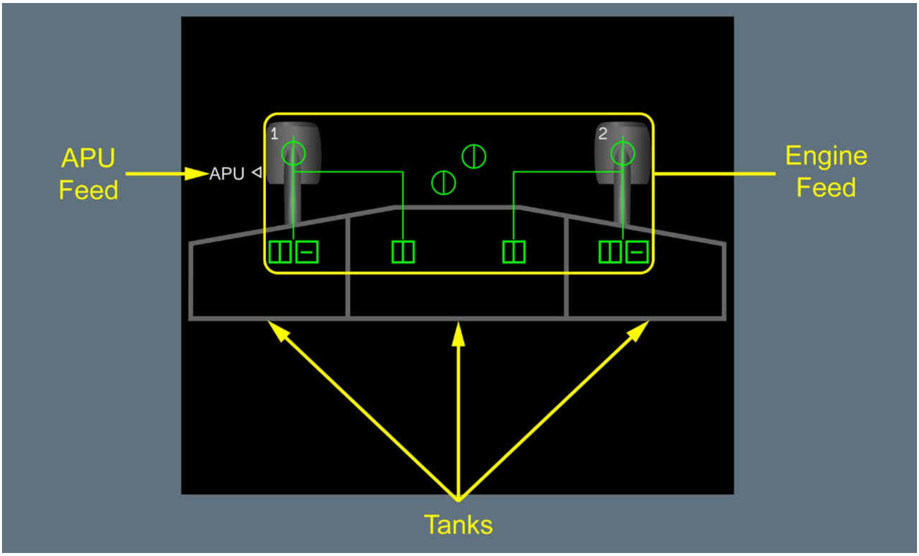
OVERVIEW

Ident.: DSC-28-10-00002600.0001001 / 09 MAR 16
Applicable to: ALL

The fuel system stores fuel and monitors the quantity and temperature of fuel in the tanks to:
- Supply fuel to the engines and to the APU
- Control refueling and defueling
- Enable fuel jettison ◁



TANKS

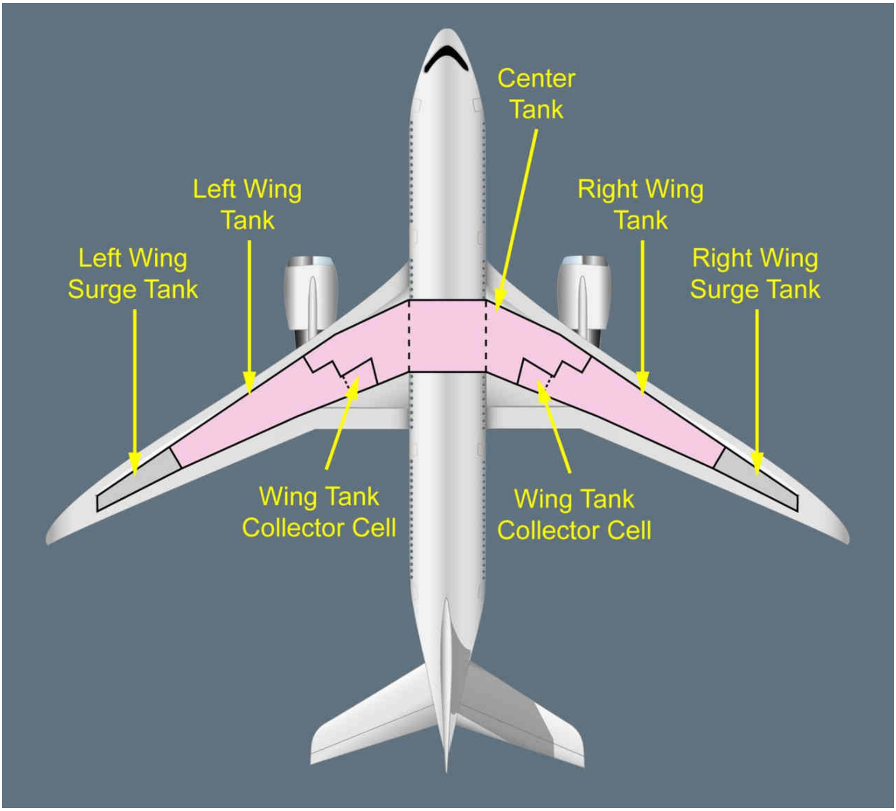
Applicable to: ALL

Ident.: DSC-28-10-DSC2810A-00002601.0001001 / 06 MAR 15

Fuel is stored in the:
- Wings
- Center section of the fuselage.

Fuel tanks, and their components, are symmetrical.

TANK ARRANGEMENT


Center Tank
Left Wing Tank
Right Wing Tank
Left Wing Surge Tank
Right Wing Surge Tank
Wing Tank Collector Cell
Wing Tank Collector Cell

There are three tanks that store fuel:
- 1 tank in each wing
- 1 center tank.

L2 The center tank is divided into three parts:
- The left part is in the inner section of the left wing
- The mid part is the center section of the fuselage
- The right part is in the inner section of the right wing.

Note: *In the center tank, fuel moves freely from part to part.*

L1 Center tank and wing tanks can provide fuel to the engines and the APU.

Each wing tank contains a collector cell that has a fuel capacity of approximately 1 800 kg (3 970 lb).

L2 The collector cell, that is at the lowest point of the wing tank, is permanently filled by gravity to keep the fuel pumps inlets immersed. This design provides low or negative "g" protection to feed the engine.

Note: *Limits between the wing tanks and the center tank are selected so that an engine 1 or 2 rotor burst will not damage the wing tanks.*

Ident.: DSC-28-10-DSC2810A-00002607.0001001 / 06 MAR 15

FUEL TANK QUANTITY

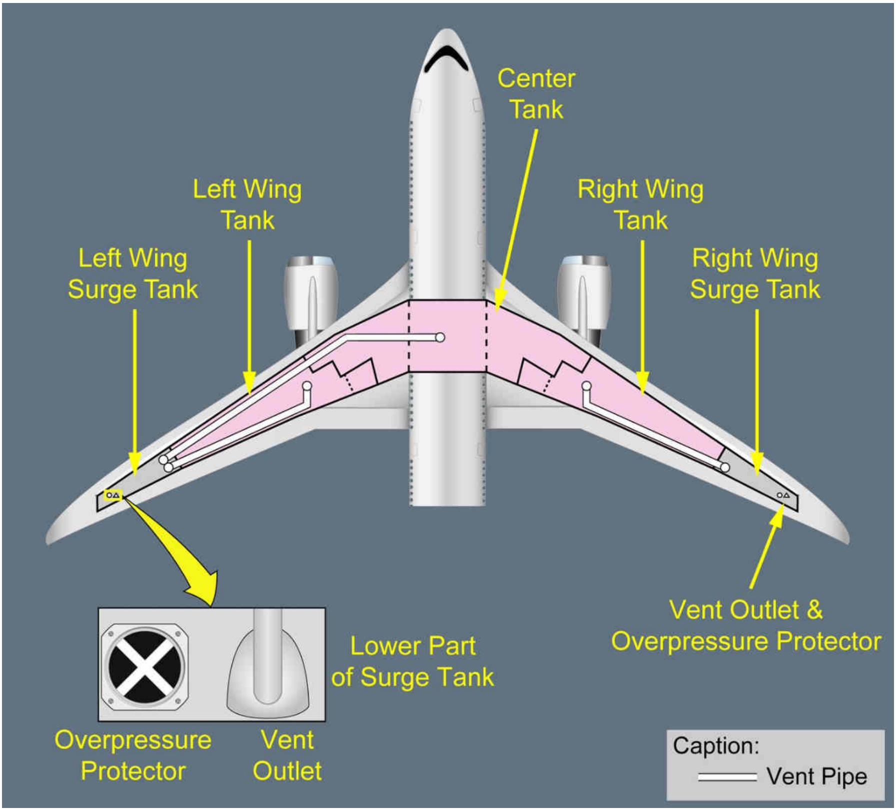
Usable Fuel (Fuel specific density: 0.785 kg/l (6.551 lb/US Gal))			
	Left and Right Wing Tank (each)	Center tank	Total
Volume (approximately)	29 900 l (7 900 US Gal)	80 900 l (21 370 US Gal)	140 700 l (37 170 US Gal)
Weight (approximately)	23 400 kg (51 600 lb)	63 500 kg (140 000 lb)	110 400 kg (243 400 lb)

L2 In cold temperature conditions, the specific density of the fuel can reach a maximum of 0.893 kg/l (7.452 lb/US Gal). With this maximum specific density, the tanks weight is (approximately):
- 26 700 kg (58 860 lb) for the left and right wing tanks (each)
- 72 200 kg (159 200 lb) for the center tank.

L3 Only the quantity of usable fuel appears on the FUEL SD page.
The total quantity of unusable fuel in the fuel system is less than 112 l (30 US Gal) (88 kg (194 lb) for a specific density of 0.785 kg/l (6.551 lb/US Gal)).

L2 SURGE TANK SYSTEM

Surge Tank System


Center Tank
Left Wing Tank
Right Wing Tank
Left Wing Surge Tank
Right Wing Surge Tank
Vent Outlet & Overpressure Protector
Lower Part of Surge Tank
Overpressure Protector
Vent Outlet
Caption:
Vent Pipe

Each wing has a surge tank, between the wing tip and the wing tank.
Each fuel tank connects to the outside atmosphere via these surge tanks. This limits the differential pressure between the tanks and the atmosphere, and maintains the pressure within structural limits.

L3 A vent outlet connects the surge tank with the atmosphere. In the event of over(under-)pressure in the surge tank, an overpressure protector (disc) breaks in the corresponding surge tank. This enables the fuel tanks to be vented into the atmosphere, and maintains the pressure within design limits.

L2 Surge tanks temporarily collect fuel that may overflow from any tank, when the quantity of fuel in that tank is close to the maximum capacity (e.g. If fuel expands by more than 2%, or in case of tight turns during taxi). Fuel that enters the surge tank returns to the wing tank.

L3 Fuel from the surge tank returns to the wing tank, via a dedicated non-return valve.

Ident.: DSC-28-10-DSC2810A-00002609.0001001 / 30 APR 14

L3 WATER MANAGEMENT

WATER SCAVENGING

The water scavenging system includes:
- 1 jet pump in the collector cell of each wing tank associated to the wing tank pumps
- 2 jet pumps associated to each center tank pump in the center tank.

These 6 jet pumps are used to scavenge water from each tank to prevent water from collecting in the tank.

Each jet pump:
- Takes the fuel/water mixture at the low point of the fuel tank
- Redirects the fuel/water mixture to the inlet of its associated engine feed pump.

Note: *The flow of the jet pump is limited in order to meet the maximum water concentration requirements of the engine and the APU.*

WATER DRAINING

The wing tanks and the surge tanks have a water-drain valve at their lowest point. The center tank has two water-drain valves.

These valves are used to:
- For maintenance purpose, sample fuel from the tanks for contamination assessment. This check aims at verifying the correct operation of the water scavenging system.
- Drain water from the tanks.

ENGINE FEED

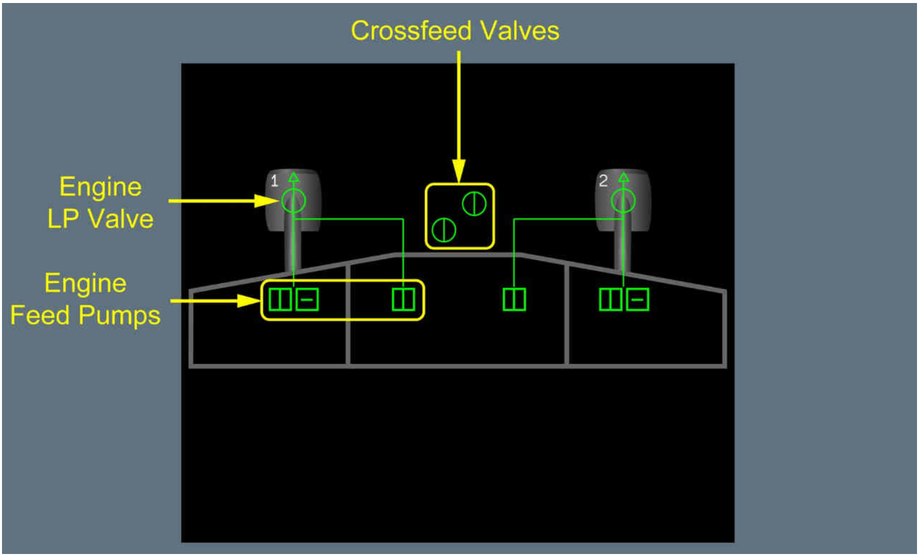
Applicable to: ALL

Ident.: DSC-28-10-DSC2810B-00002603.0001001 / 07 NOV 16

Each wing has two identical fuel pumps (one main and one standby pump). The center tank has two identical pumps (one left and one right pump). Each pump supplies fuel to the onside engine.
If necessary, the crossfeed valves enable any pump to supply fuel to any engine.
Any pump produces enough pressure to supply both engines.

L2 In some cases, engines can be fed by gravity from the associated wing tank, when the aircraft altitude is below the gravity feed ceiling (e.g. FUEL L(R) FEEDLINE BURST *Refer to procedure*).

Engine Feed



Ident.: DSC-28-10-DSC2810B-00002610.0001001 / 05 NOV 18

ENGINE FEED PUMPS

CENTER TANK PUMPS

The center tank pumps produce more pressure within the engine feed gallery than the wing tank pumps. As a result, the center tank pumps preferentially supply fuel to the engines.

L2 In flight, with the two crossfeed valves open and all wing tank pumps running, a single center tank pump preferentially supplies fuel to the two engines

L1 Automatic feed

In normal operation, the CTR TK FEED pb-sw is set to the AUTO position and the FQMS controls the center tank pumps.

The center tank pumps are running when all of the following occur :

- The center tank contains fuel
- The FLAPS lever is set at 0.

L2 After takeoff, the center tank pumps start running a few minutes after the flight crew moves the FLAPS lever to 0.

The fuel in the wing tanks is the last to be used. This provides wing bending moment relief.

L1 Manual feed

As per abnormal procedures, the flight crew can set the CTR TK FEED pb-sw to the MAN position in order to manually control the center tank pumps.

WING TANK PUMPS

The main pumps run continuously.
If a main pump does not deliver sufficient pressure, or is switched off, the corresponding standby pump automatically takes over.
In normal operation, when the center tank is empty, the standby pumps run continuously.

Ident.: DSC-28-10-DSC2810B-00002611.0001001 / 30 APR 14

CROSSFEED VALVES

Two crossfeed valves, that operate in parallel, connect the left and the right side of the engine feed gallery. In normal operation, the two valves are closed.
The two crossfeed valves enable any engine to be fed from any fuel pump, if necessary (e.g. its associated main and standby pumps are off and the center tank is empty).
Crossfeed valves permit the flight crew to manually correct any fuel imbalance in the wing tanks.

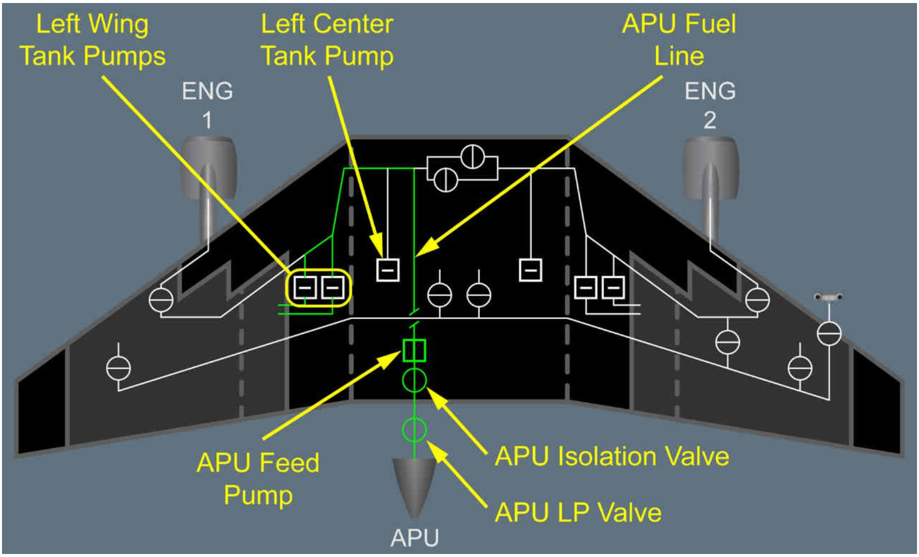
Ident.: DSC-28-10-DSC2810B-00002612.0001001 / 30 APR 14

ENGINE LP VALVES

Each engine has a LP valve, that is used to stop the flow of fuel to the engine.
The ENG MASTER sw controls the LP valve.
The LP valve automatically closes, when the associated ENG FIRE pb is pushed.

APU FEED

Ident.: DSC-28-10-00002604.0001001 / 06 MAY 15
Applicable to: ALL



The engine feed system feeds the APU via its assigned fuel line.

The APU can be fed by:
- The left center tank pump, or
- The main or standby pump of the left wing tank, or
- The right center tank pump, provided that one crossfeed valve is open, or
- The main or standby pump of the right wing tank, provided that one crossfeed valve is open, or
- The APU feed pump, that operates automatically, if required.

L2 The APU feed pump automatically starts to run when the APU is started, and stops when the APU is shutdown.

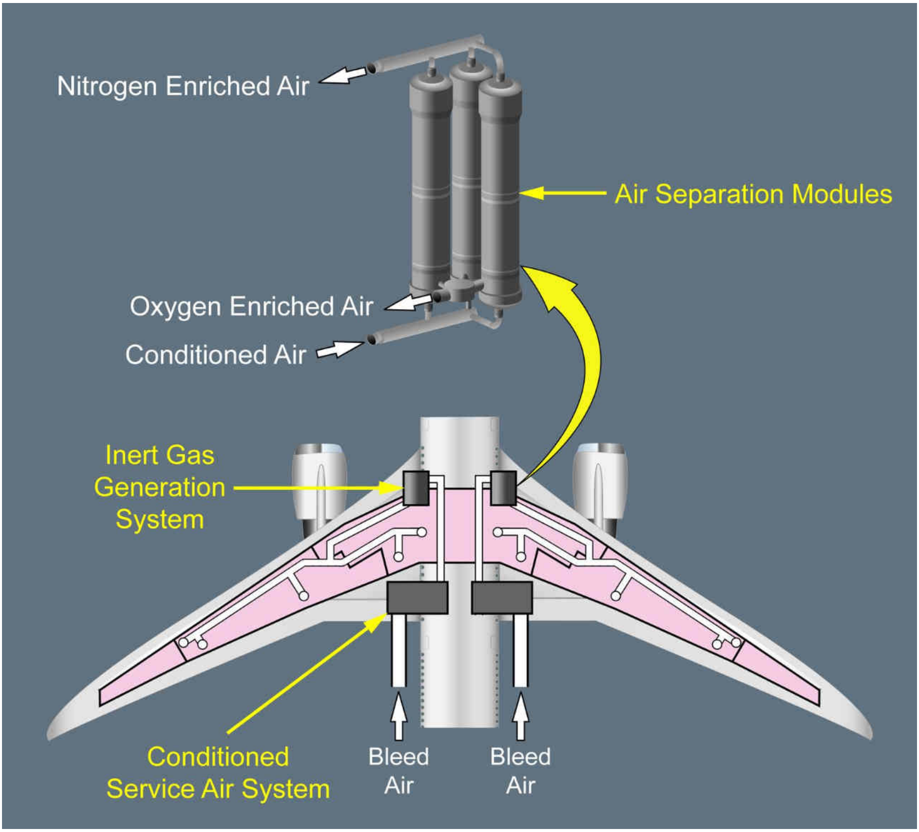
An APU LP valve and an APU isolation valve can isolate the fuel supply to the APU. Both valves close, when the APU FIRE pb is pushed, or when the APU MASTER SW pb-sw is set to off.
If the fuel system detects any damage to the APU feed line, the APU LP valve and APU isolation valve automatically close, to avoid fuel leaks in the fuselage. If running, the APU feed pump is also turned off.

FUEL TANK INERTING SYSTEM

Ident.: DSC-28-10-00011782.0001001 / 05 NOV 18
Applicable to: ALL

The Fuel Tank Inerting System (FTIS) provides a fully automatic protection against fuel tank fire and explosion by creating inert (non-flammable) conditions within the free space of all fuel tanks (i.e. center tank and wing tanks). The objective of the FTIS is to obtain an average oxygen concentration of 12 % or less per tank during all flight phases.

L2 *Note: Standard air contains approximately 21 % of oxygen.*


Nitrogen Enriched Air
Air Separation Modules
Oxygen Enriched Air
Conditioned Air
Inert Gas Generation System
Conditioned Service Air System
Bleed Air
Bleed Air

The Conditioned Service Air System (CSAS) takes bleed air from the engines and supplies pressure and temperature controlled air to the Inert Gas Generation System (IGGS).

The IGGS uses air separation modules to:
- Separate the oxygen from the controlled air provided by the CSAS
- Generate the Nitrogen Enriched Air (NEA), that is a chemically non-reactive gas.

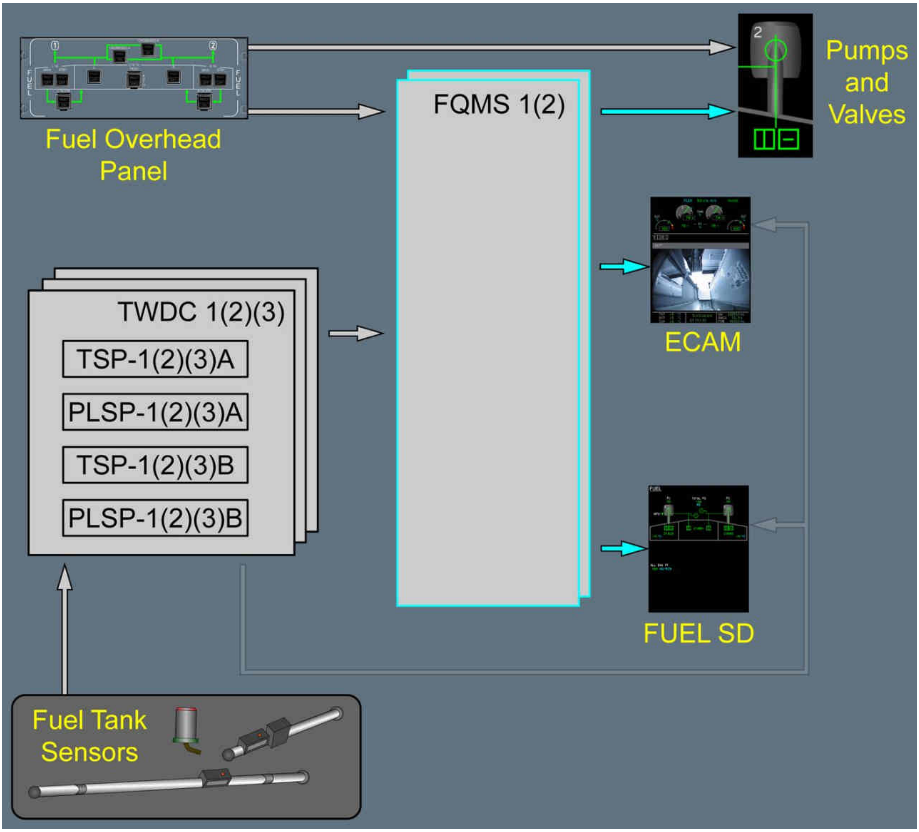
The FTIS provides the NEA to the fuel tanks and discharges the oxygen enriched air overboard.
The IGGS has a symmetrical architecture: The left-hand (right-hand) side of the IGGS takes air from the left-hand (right-hand) CSAS and provides the NEA to the left (right) wing tank and to the center tank.

FUEL SYSTEM ARCHITECTURE

Applicable to: ALL

Ident.: DSC-28-10-DSC2810D-00002606.0001001 / 30 APR 14

Fuel System Architecture


Fuel Overhead Panel
FQMS 1(2)
Pumps and Valves
ECAM
TWDC 1(2)(3)
TSP-1(2)(3)A
PLSP-1(2)(3)A
TSP-1(2)(3)B
PLSP-1(2)(3)B
FUEL SD
Fuel Tank Sensors

Ident.: DSC-28-10-DSC2810D-00002617.0001001 / 09 MAR 16

FUEL QUANTITY MANAGEMENT SYSTEM (FQMS)

L3 There are two FQMS, that control and monitor the fuel system.
The FQMS 1 is hosted on CPIOM H31 and H33.
The FQMS 2 is hosted on CPIOM H32 and H34.

L2 The FQMS:

- Measures the fuel quantity and temperature in the tanks

L3 The FQMS receive fuel tank sensor data, via the Tank Wall Data Concentrators (TWDC). The FQMS compute the fuel quantity in each tank and the fuel temperature in the wing tanks only.

L2
- Computes the GW and the GWCG of the aircraft, based on the ZFW and the ZFCG entered by the flight crew in the FMS
- Monitors the engine feed system
- Controls and monitor the APU feed system
- Monitors manual transfers
- Controls and monitors the fuel jettison system
- Controls and monitors refueling and defueling
- Provide fault detection for the ECAM, and fuel system indication for the FUEL SD page.

L1 One FQMS is active and the other is in standby. If the active FQMS fails, the other takes over.

If both FQMS fail (associated with the following ECAM caution : FUEL FQMS 1+2 FAULT, *Refer to procedure*), the following applies :

- Manual transfers, via the overhead panel, remain available
- Pumps and crossfeed valves control, via the overhead panel, remain available
- All indications on the FUEL SD page, except the fuel quantity, remain available

L2 Depending on the failure case, the fuel quantity may remain available, or be replaced by amber crosses.

L1
- FOB, GW and GWCG display on the Permanent Data remain available

L2 Depending on the failure case: FOB and GW are computed by the CDS, based on the FOB at departure, ZFW and the fuel used. The GWCG is computed by the Weight and Balance Backup Computation (WBBC) function. The FOB, GW and GWCG are displayed with amber dashes.

L1
- Low level, overflow indications remain available
- Fuel usage sequence and lateral imbalance cautions are not available.

Ident.: DSC-28-10-DSC2810D-00002618.0001001 / 30 APR 14

TANK WALL DATA CONCENTRATOR (TWDC)

The TWDC is the interface between the fuel tank sensors and:

- The FQMS
- The FWS (for some system alerts).

There are three TWDCs in the wing tanks and center tank, which collect the following information from in-tank sensors:

- Fuel level
- Fuel density
- Fuel temperature.

L2 FUEL TANK SENSORS

The TWDCs receive information from the following fuel tank sensors:

- Fuel quantity probes

L3 Each fuel tank probe provides the FQMS with the fuel level at a given point in a tank. Fuel quantity probes are installed throughout the wing tanks and the center tank.

L2
- Fuel level sensors

L3 The level sensor determines if the sensor location is in fuel or in air.

The level sensors are:

- In the wing surge tanks, to trigger the following ECAM caution : FUEL L(R) WING TK OVERFLOW (*Refer to procedure*).
- In the wing tanks, to trigger the following ECAM cautions:
  - FUEL L(R) WING TK LEVEL LO,*Refer to procedure*

    Note: The low level caution is totally independent from the fuel quantity that is displayed on the FUEL SD page.

  - FUEL WINGS NOT BALANCED,*Refer to procedure*
  - FUEL FQI FAULT,*Refer to procedure*
  - FUEL AUTO FEED FAULT,*Refer to procedure*
  - FUEL JETTISON FAULT ◁✳ ,*Refer to procedure*.
  - FUEL ABNORM DISTRIBUTION,*Refer to procedure*
- In the center tank, to trigger the following ECAM cautions:
  - FUEL AUTO FEED FAULT,*Refer to procedure*
  - FUEL CTR TK LEVEL LO (when the primary FQI has failed),*Refer to procedure*.

    Note: The low level caution is totally independent from the fuel quantity that is displayed on the FUEL SD page.

  - FUEL ABNORM DISTRIBUTION,*Refer to procedure*

L2 - Fuel Properties Measurement Units (FPMU)

L3 The FPMUs provide fuel density, temperature and electrical characteristics of the uplifted fuel during refuel.
There is one FPMU in the left part of the refuel gallery and one FPMU in the right part of the refuel gallery.

L2 - Probe Dual Temperature (PDT) sensors

L3 When the probe is fully immersed, it provides fuel temperature.
When the probe is partially immersed, it provides fuel level at sensor location.

The PDT sensors are:

- In the wing tanks, to trigger the following ECAM cautions:
  - FUEL TEMP LO,*Refer to procedure*
  - FUEL L(R) WING TK TEMP HI,*Refer to procedure.*
- In the wing tanks and center tank for fuel density computation.

Ident.: DSC-28-10-DSC2810D-00002620.0001001 / 08 JUL 19

WEIGHT AND BALANCE BACKUP COMPUTATION (WBBC)

The WBBC function of each FCDC computes the GW and CG, based on aerodynamic data and on the position of the flight control surfaces.

L2 *Note: The WBBC function computes the GW and CG after slats/flaps retraction. The computation of the CG is no longer available after slats/flaps extension.*

L1 The GW and CG that the WBBC computes are used to:
- Compute flight control laws and characteristic speeds when both FQMS are failed
- Detect differences with the GW and CG that the FQMS computes.

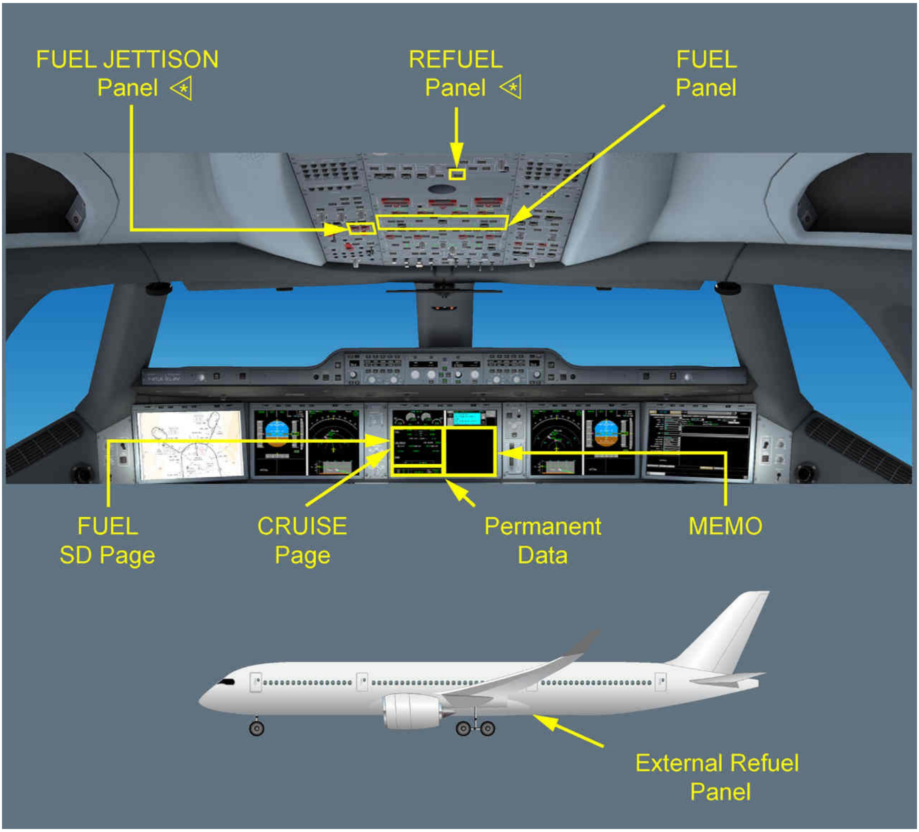
L2 The WBBC uses the following parameters to compute the aircraft GW and CG:
- Altitude
- Mach
- Angle of attack
- The position of the elevators and the trimmable horizontal stabilizer.

L1 In the case of FQMS failure, the GW and GWCG are displayed with amber dashes on the permanent part of the system display.
The primary backup for the display of GW is a CDS computation. If the CDS computation is not available, the GW from the WBBC is used.
The backup for the display of the GWCG is the WBBC computation.
The ECAM indicates the source of the GW and GWCG. For more information *Refer to DSC-28-40 Fuel Gauging Degradation*.

COCKPIT VIEW

Ident.: DSC-28-20-00002645.0001001 / 09 MAR 16
Applicable to: ALL

Cockpit View

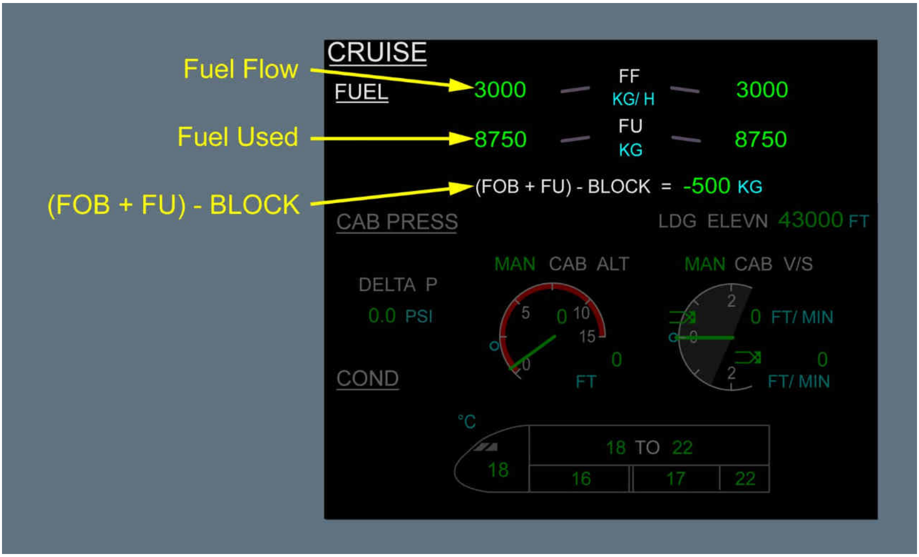

FUEL JETTISON Panel
REFUEL Panel
FUEL Panel
FUEL SD Page
CRUISE Page
Permanent Data
MEMO
External Refuel Panel

CRUISE SD PAGE - UPPER PART

Applicable to: ALL

Ident.: DSC-28-20-DSC2820E-00002654.0001001 / 30 APR 14

CRUISE SD Page — Upper Part


Fuel Flow
Fuel Used
(FOB + FU) - BLOCK
CRUISE
FUEL
3000
FF
KG/ H
3000
8750
FU
KG
8750
(FOB + FU) - BLOCK = -500 KG
CAB PRESS
LDG ELEVN 43000 FT
MAN CAB ALT
MAN CAB V/S
DELTA P
0.0 PSI
5
0 10
15
0
FT
2
0 FT/ MIN
0
2
0
FT/ MIN
COND
°C
18
18 TO 22
16
17
22

Ident.: DSC-28-20-DSC2820E-00002783.0001001 / 03 DEC 15

FUEL FLOW INDICATION

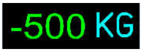
L12

3000	Indicates the fuel flow of each engine. Appears in pounds per hour (lbs/h) with the US unit of weight ◁ option. Appears in multiples of 10 kg/h (10 lb/h).
3~~000~~	The value accuracy is degraded.

Ident.: DSC-28-20-DSC2820E-00002784.0001001 / 05 NOV 18

(FOB + FU) - BLOCK INDICATION

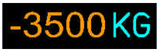
L12



Indicates the difference between:
- The current FOB plus the total fuel used by the two engines and the APU, and
- The BLOCK that is the FOB at second engine start.

Appears in pounds (lbs) with the US unit of weight ◁ option.
Appears in multiples of 50 kg (100 lb).

L12

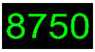


A fuel leak is suspected. The value has diverged sufficiently (between 2.5 t (5 500 lb) and 4 t (8 800 lb) depending on the initial FOB) to suspect a fuel leak.
Associated with the following ECAM alert: FUEL LEAK SUSPECTED (*Refer to procedure*)

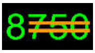
Ident.: DSC-28-20-DSC2820E-00002785.0001001 / 03 DEC 15

FUEL USED (FU) INDICATION

L12



Indicates the fuel used by each engine.
This value automatically resets on ground, at the next engine start.
Appears in pounds (lbs) with the US unit of weight ◁ option.
Appears in multiples of 50 kg (100 lb).



The value accuracy is degraded.

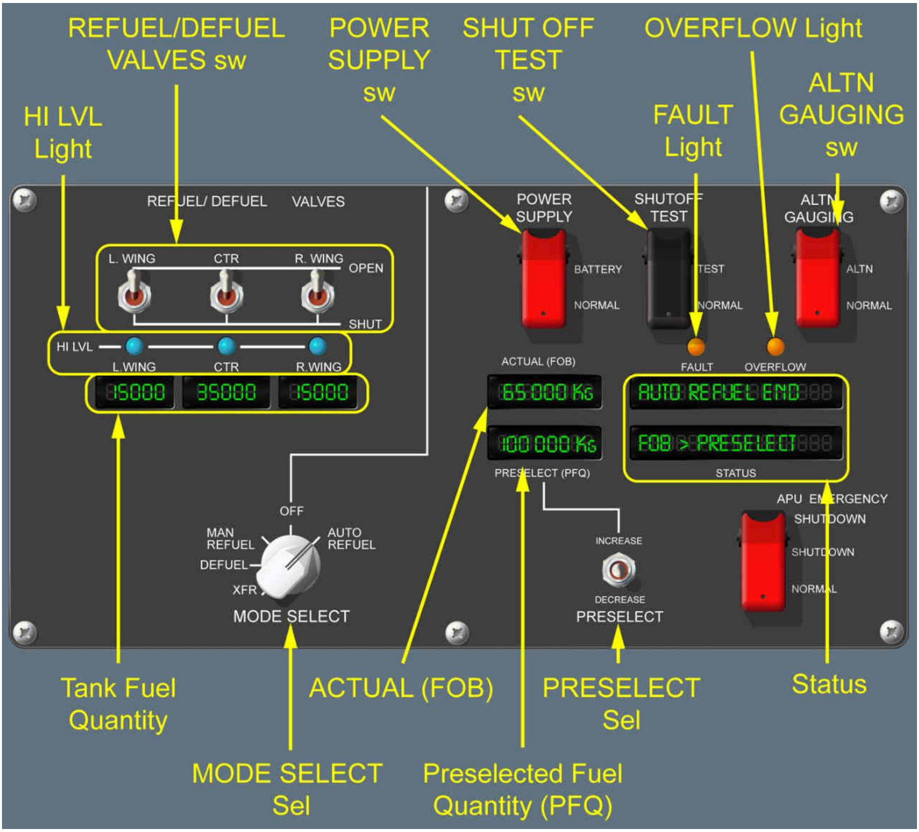
EXTERNAL REFUEL PANEL

Applicable to: ALL

Ident.: DSC-28-20-DSC2820D-00002649.0001001 / 30 APR 14

Refueling can be initiated from the cockpit, or from the External Refuel Panel.
L2 The external refuel panel is on the right-hand side of the belly fairing.

External Refuel Panel


REFUEL/DEFUEL VALVES sw
POWER SUPPLY sw
SHUT OFF TEST sw
OVERFLOW Light
ALTN GAUGING sw
HI LVL Light
FAULT Light
REFUEL/ DEFUEL VALVES
L. WING
CTR
R. WING
OPEN
SHUT
HI LVL
L.WING
CTR
R.WING
15000
35000
15000
POWER SUPPLY
BATTERY
NORMAL
SHUTOFF TEST
TEST
NORMAL
ALTN GAUGING
ALTN
NORMAL
FAULT
OVERFLOW
ACTUAL (FOB)
65 000 KG
100 000 KG
PRESELECT (PFQ)
AUTO REFUEL END
FOB > PRESELECT
STATUS
APU EMERGENCY SHUTDOWN
SHUTDOWN
NORMAL
OFF
MAN REFUEL
AUTO REFUEL
DEFUEL
XFR
MODE SELECT
INCREASE
DECREASE
PRESELECT
Tank Fuel Quantity
ACTUAL (FOB)
PRESELECT Sel
Status
MODE SELECT Sel
Preselected Fuel Quantity (PFQ)

Ident.: DSC-28-20-DSC2820D-00002749.0001001 / 30 APR 14

L3 ACTUAL FOB

Displays the current total fuel quantity on board.

Ident.: DSC-28-20-DSC2820D-00011726.0001001 / 30 APR 14

L3 ALTN GAUGING SW

Provides an alternative and independent type of measurement of the fuel tank quantities on ground.

Ident.: DSC-28-20-DSC2820D-00002751.0001001 / 30 APR 14

L3 FAULT LIGHT

Comes on in amber, if there is an ground operations failure. The STATUS indicator displays the type of the failure.

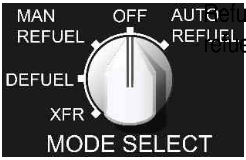
Ident.: DSC-28-20-DSC2820D-00002758.0001001 / 02 MAY 14

L3 HI LVL LIGHT

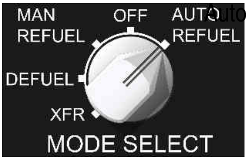
Comes on in blue, when a high fuel level is detected in the corresponding tank.

Ident.: DSC-28-20-DSC2820D-00002756.0001001 / 30 APR 14

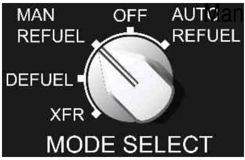
L3 MODE SELECT SEL


MAN REFUEL
OFF
AUTO REFUEL
DEFUEL
XFR
MODE SELECT

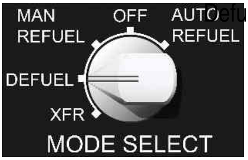
Refueling, defueling or ground transfer is not initiated from the external refuel panel.


MAN REFUEL
OFF
AUTO REFUEL
DEFUEL
XFR
MODE SELECT

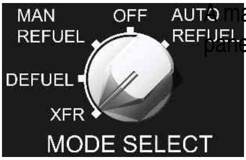
Automatic refueling is initiated and controlled from the external refuel panel.


MAN REFUEL
OFF
AUTO REFUEL
DEFUEL
XFR
MODE SELECT

Manual refueling is initiated and controlled from the external refuel panel.


MAN REFUEL
OFF
AUTO REFUEL
DEFUEL
XFR
MODE SELECT

Defueling is initiated and controlled from the external refuel panel.


MAN REFUEL
OFF
AUTO REFUEL
DEFUEL
XFR
MODE SELECT

A manual ground transfer is initiated and controlled from the external refuel panel.

Note: Automatic refueling can be initiated from the cockpit at any time, whatever the position MODE SELECT selector.

Ident.: DSC-28-20-DSC2820D-00002753.0001001 / 06 MAR 15

L3 OVERFLOW LIGHT

Comes on in amber, if there is more than 700 l (185 US Gal) of fuel in any surge tank.

Ident.: DSC-28-20-DSC2820D-00002750.0001001 / 30 APR 14

L3 POWER SUPPLY SW

During refueling/defueling, the fuel system is powered by the external electrical power or by the APU.
If these electrical sources are not available, the fuel system can also be powered by the batteries, by using the POWER SUPPLY sw.

Ident.: DSC-28-20-DSC2820D-00002755.0001001 / 30 APR 14

L3 PRESELECT SW

Increases or decreases the PFQ.

Ident.: DSC-28-20-DSC2820D-00002748.0001001 / 30 APR 14

L3 PRESELECT (PFQ) INDICATOR

Displays the Preselected Fuel Quantity (PFQ) for automatic refueling.

The PFQ is selected via:
- The PRESELECT sw on the refuel panel, or
- The FMS FUEL&LOAD page.

Ident.: DSC-28-20-DSC2820D-00002757.0001001 / 30 APR 14

L3 REFUEL/DEFUEL VALVES SW

The refuel/defuel valves switches open the inlet valve(s) of the associated tank, during manual refueling, manual ground transfer or defueling (the MODE SELECT selector is set to MAN REFUEL, XFR or DEFUEL).

Ident.: DSC-28-20-DSC2820D-00002752.0001001 / 30 APR 14

L3 SHUTOFF TEST SW

When pressed, the shutoff test is initiated:
1. All the lights and displays come on
2. When released, all the inlet valves close, in the same order as during a refuel abort
3. The result of the test appears on the STATUS indicators.

Ident.: DSC-28-20-DSC2820D-00002754.0001001 / 30 APR 14

L3 STATUS INDICATION

The two lines of the STATUS indication display the status of the refuel, transfer or defuel.
The top line displays the current mode.
The bottom line displays any additional message or failure.

Ident.: DSC-28-20-DSC2820D-00002747.0001001 / 30 APR 14

L3 TANK FUEL QUANTITY INDICATION

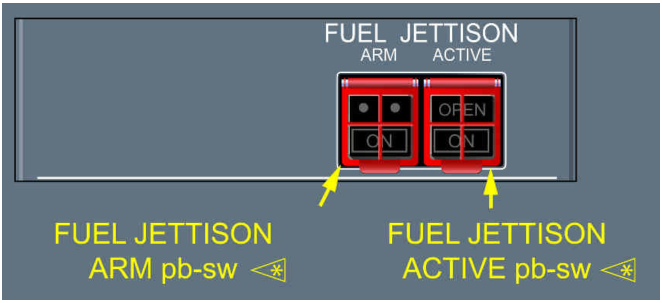
Display the actual fuel quantity in each tank.
The fuel quantity indicators do not display the units. They use the same units that the FQMS uses for cockpit indications (i.e. kg or lbs). Theses units also appear in the ACTUAL and PRESELECT indications on the external refuel panel.

FUEL JETTISON PANEL (IF INSTALLED)

Applicable to: ALL

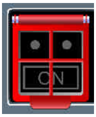
Ident.: DSC-28-20-DSC2820B-00002647.0001001 / 09 MAR 16

FUEL JETTISON Panel

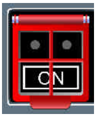


Ident.: DSC-28-20-DSC2820B-00002742.0001001 / 09 MAR 16

FUEL JETTISON ARM PB-SW



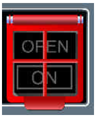
Fuel jettison is not armed.



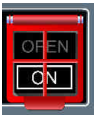
Fuel jettison is armed, and can be activated using the JETTISON ACTIVE pb-sw.

Ident.: DSC-28-20-DSC2820B-00002743.0001001 / 09 MAR 16

FUEL JETTISON ACTIVE PB-SW

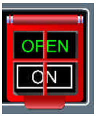


Fuel jettison is not active.



Fuel jettison is selected active. The jettison valves open, if the FUEL JETTISON ARM pb-sw is also ON.

L12



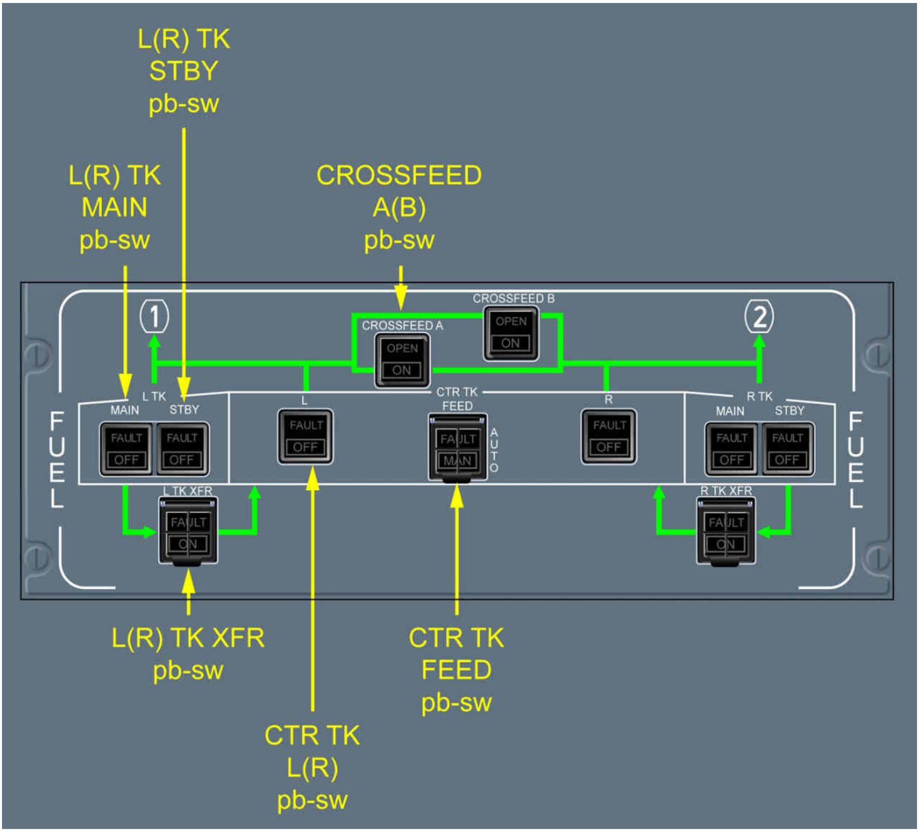
The fuel jettison valves are fully open.
The ON and OPEN lights go off, when the FQMS automatically stops the fuel jettison, or when the flight crew presses the FUEL JETTISON ACTIVE pb-sw or FUEL JETTISON ARM pb-sw again.
For more information: *Refer to DSC-28-40 Fuel Jettison (If Installed)*.

FUEL PANEL

Applicable to: ALL

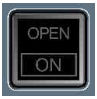
Ident.: DSC-28-20-DSC2820A-00002646.0001001 / 30 APR 14

FUEL Panel

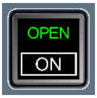

L(R) TK STBY pb-sw
L(R) TK MAIN pb-sw
CROSSFEED A(B) pb-sw
CROSSFEED B
OPEN
ON
CROSSFEED A
OPEN
ON
1
2
L TK
MAIN
STBY
FAULT
OFF
FAULT
OFF
L
FAULT
OFF
CTR TK FEED
FAULT
MAN
AUTO
R
FAULT
OFF
R TK
MAIN
STBY
FAULT
OFF
FAULT
OFF
FUEL
FUEL
L TK XFR
FAULT
ON
R TK XFR
FAULT
ON
L(R) TK XFR pb-sw
CTR TK FEED pb-sw
CTR TK L(R) pb-sw

Ident.: DSC-28-20-DSC2820A-00002741.0001001 / 09 JUL 15

CROSSFEED A(B) PB-SW

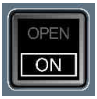


The crossfeed valve is closed.



The CROSSFEED A(B) pb-sw is set to ON and the crossfeed valve is open.

L12

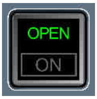


The CROSSFEED A(B) pb-sw is set to ON and the crossfeed valve remains closed.

Associated with one of the following ECAM cautions:
- FUEL CROSSFEED VLV A(B) FAULT (*Refer to procedure*).
- FUEL CROSSFEED VLV A+B FAULT (*Refer to procedure*).

The OPEN /ON lights go off, when the flight crew deselects the CROSSFEED A(B) pb-sw.

L12



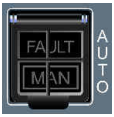
The CROSSFEED A(B) pb-sw is not selected and the crossfeed valve is open.

If the crossfeed valve is abnormally open, this is associated with one of the following ECAM cautions:
- FUEL CROSSFEED VLV A(B) FAULT (*Refer to procedure*).
- FUEL CROSSFEED VLV A+B FAULT (*Refer to procedure*).

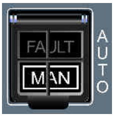
In the case of an electrical emergency configuration, the crossfeed valves can automatically open, without associated alert.

Ident.: DSC-28-20-DSC2820A-00002662.0001001 / 07 NOV 16

CTR TK FEED PB-SW

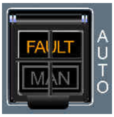


Automatic fuel feeding from the center tank is available.
For more information: *Refer to DSC-28-10 Feed Tank Pumps*



Manual control of the center tank pumps is activated.

L12



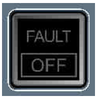
Comes on:
- When the fuel distribution between the center tank and the wing tanks in not correct.
  Associated with the following ECAM alert: FUEL AUTO FEED FAULT (*Refer to procedure*).
- Or, when a low level is detected in one or both of the wing tanks.

  Associated with one of the following ECAM alerts:
  - FUEL L(R) WING TK LEVEL LO (*Refer to procedure*).
  - FUEL L+R WING TK LEVEL LO (*Refer to procedure*).

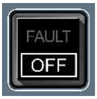
The FAULT light goes off, when the flight crew sets the CTR TK FEED pb-sw to MAN.

Ident.: DSC-28-20-DSC2820A-00002661.0001001 / 09 JUL 15

CTR TK L(R) PB-SW

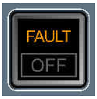


The control of the pump depends on the position of the CTR TK FEED pb-sw:
- If the CTR TK FEED pb-sw is set to AUTO, the pump is automatically commanded.
- If the CTR TK FEED pb-sw is set to MAN, the pump is running.



The pump is off.

L12



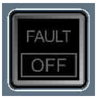
The pump is running at low pressure, or is failed.

Associated with one of the following ECAM alerts:
- FUEL CTR TK L(R) PMP FAULT (*Refer to procedure*)
- FUEL CTR TK L+R PMPS FAULT (*Refer to procedure*)

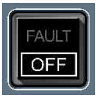
The FAULT light goes off, when the flight crew sets the CTR TK L(R) pb-sw to OFF.

Ident.: DSC-28-20-DSC2820A-00002657.0001001 / 30 APR 14

L(R) TK MAIN PB-SW

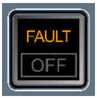


The main pump is running.



The main pump is off.

L12



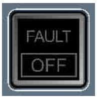
The main pump is running at low pressure.

Associated with one of the following ECAM alerts:
- FUEL L(R) TK MAIN PMP FAULT (*Refer to procedure*)
- FUEL L(R) TK MAIN+STBY PMPS FAULT (*Refer to procedure*)

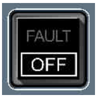
The FAULT light goes off, when the flight crew sets the L(R) TK MAIN pb-sw to OFF.

Ident.: DSC-28-20-DSC2820A-00002658.0001001 / 09 JUL 15

L(R) TK STBY PB-SW

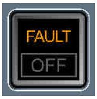


The standby pump runs automatically.



The standby pump is off.

L12



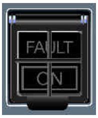
The standby pump is running at low pressure.

Associated with one of the following ECAM alerts:
- FUEL L(R) TK STBY PMP FAULT (*Refer to procedure*)
- FUEL L(R) TK MAIN+STBY PMPS FAULT (*Refer to procedure*)

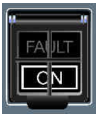
The FAULT light goes off, when the flight crew sets the L(R) TK STBY pb-sw to OFF.

Ident.: DSC-28-20-DSC2820A-00011615.0001001 / 30 APR 14

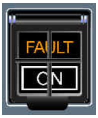
L(R) TK XFR PB-SW



The transfer path between the wing tank and the center tank is closed. Tanks are segregated.



Fuel transfers by gravity from the wing tank to the center tank, via the refuel gallery.



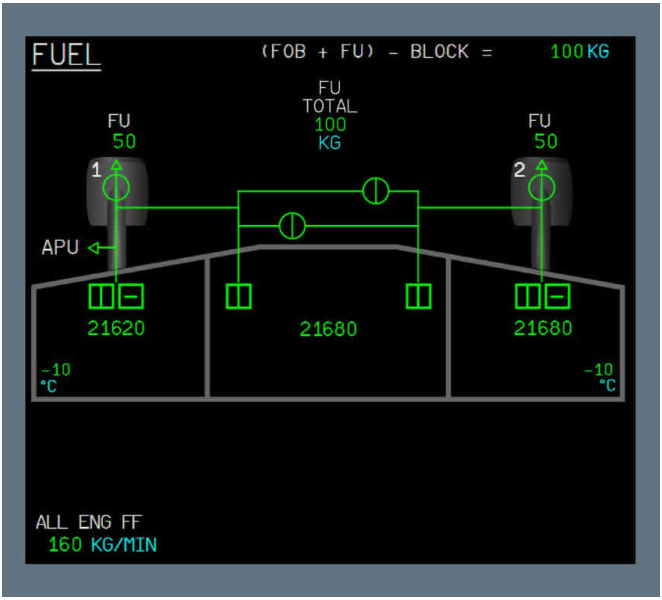
Fuel gravity transfer from the wing tank to the center tank failed.
The FAULT light and the ON light go off, when the flight crew presses the L(R) TK XFR pb-sw.

FUEL SD PAGE

Ident.: DSC-28-20-00002650.0001001 / 28 APR 17
Applicable to: ALL

The FUEL SD page provides the flight crew with information on the fuel system, and indicates the:
- Status of the fuel system components that are in use (e.g.: pumps, transfer paths)
- Fuel temperature in each wing tanks
- Quantity of fuel in each tank
- Quantity of fuel used
- Fuel flow value.

FUEL SD Page


FUEL
(FOB + FU) - BLOCK = 100 KG
FU
TOTAL
100
KG
FU
50
FU
50
1
2
APU
21620
21680
21680
-10
°C
-10
°C
ALL ENG FF
160 KG/MIN

For a description of the FUEL SD Page:

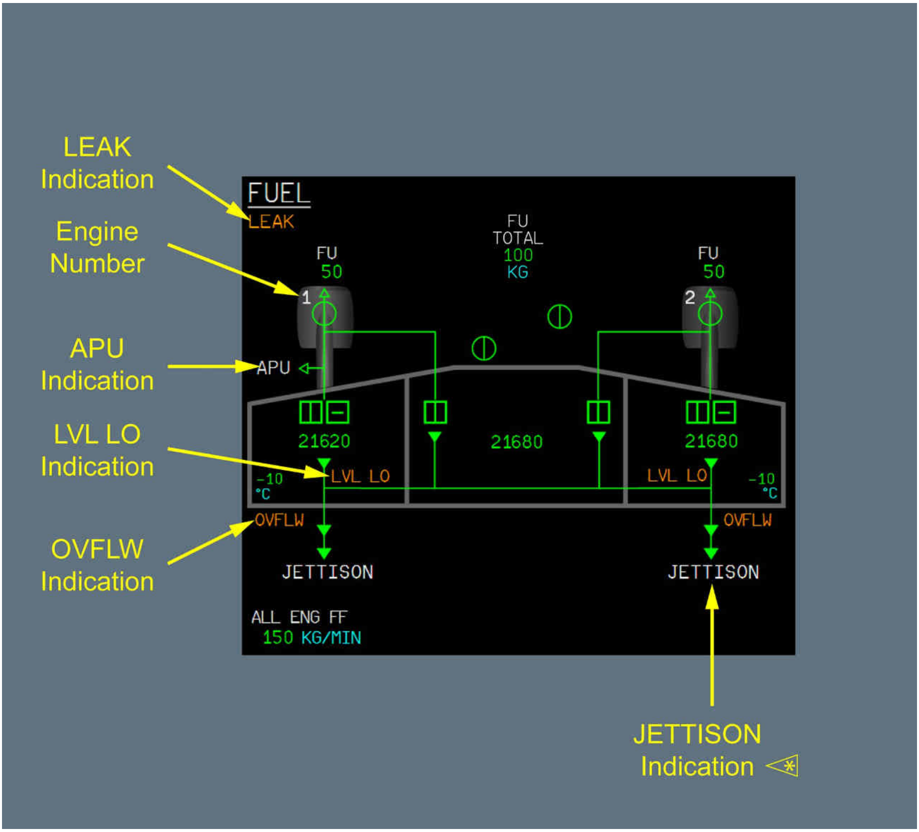
- *Refer to DSC-28-20 FUEL SD Page - Indications*
- *Refer to DSC-28-20 FUEL SD Page - Fuel QTY, TEMP, FU and FF*
- *Refer to DSC-28-20 FUEL SD Page - Pumps, Valves and Transfers*

FUEL SD PAGE - INDICATIONS

Applicable to: ALL

Ident.: DSC-28-20-DSC2820I-00002651.0001001 / 28 APR 17

Fuel SD Page — Indications


LEAK Indication
Engine Number
APU Indication
LVL LO Indication
OVFLW Indication
JETTISON Indication ⊲✳
FUEL
LEAK
FU
50
FU
TOTAL
100
KG
FU
50
1
2
APU
21620
21680
21680
-10 °C
LVL LO
LVL LO
-10 °C
OVFLW
OVFLW
JETTISON
JETTISON
ALL ENG FF
150 KG/MIN

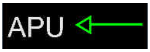
Ident.: DSC-28-20-DSC2820I-00002760.0001001 / 02 MAY 14

APU INDICATION

L12

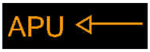
When there is no indication, fuel is not fed to the APU.
The APU LP valve and/or the APU isolation valve are closed.

L12



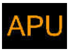
Fuel is fed to the APU.
The APU LP valve and the APU isolation valve are open.

L12



Fuel is abnormally fed to the APU.
The APU LP valve and the APU isolation valve are abnormally open.

L12



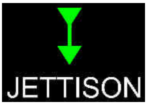
Fuel is abnormally not fed to the APU.

- The APU LP valve and/or the APU isolation valve are abnormally closed,
  Associated with the following ECAM alert: FUEL APU FEED FAULT (*Refer to procedure*).
- Or, the APU feed line is damaged.
  Associated with the following ECAM alert: FUEL APU LINE FAULT (*Refer to procedure*).

Ident.: DSC-28-20-DSC2820I-00002761.0001001 / 09 MAR 16

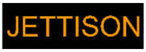
JETTISON INDICATION

When there is no indication, there is no jettison in progress.

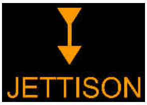


Jettison is active. The jettison valves are open.

L12



Jettison is activated, but the jettison failed.
Associated with the following ECAM alert: FUEL JETTISON FAULT (*Refer to procedure*).



Either jettison valve is abnormally open.

Ident.: DSC-28-20-DSC2820I-00002762.0001001 / 30 APR 14

OVERFLOW INDICATION

L12

OVFLW	Appears when an overflow in the left or right wing surge tank is detected. Associated with the following ECAM alert: FUEL L(R) WING TK OVERFLOW (*Refer to procedure*) The indication disappears, when the overflow is no longer detected. Associated with the following ECAM alert: FUEL OVERFLOW CORRECTED (*Refer to procedure*)

Ident.: DSC-28-20-DSC2820I-00011870.0001001 / 28 APR 17

LVL LO INDICATION

L12

LVL LO	Appears when a low level in the left and/or right wing tank is detected. Associated with one of the following ECAM alerts: - FUEL L(R) WING TK LEVEL LO (*Refer to procedure*) - FUEL L+R WING TK LEVEL LO (*Refer to procedure*)

Ident.: DSC-28-20-DSC2820I-00002763.0001001 / 30 APR 14

ENGINE NUMBER INDICATION

1	Engine 1(2) is running.
1	Engine 1(2) is not running.

Ident.: DSC-28-20-DSC2820I-00002764.0001001 / 30 APR 14

LEAK INDICATION

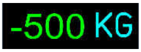
L12

LEAK	Appears when a fuel leak is detected. Associated with the following ECAM alert: FUEL LEAK SUSPECTED (*Refer to procedure*)

Note: *The ECAM will not display the FUEL LEAK SUSPECTED alert if the communication between the FQMS and the FWS is failed. In this case, the flight crew can activate the FUEL LEAK ECAM not-sensed alert.*

(FOB + FU) - BLOCK INDICATION

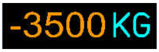
L12



Indicates the difference between:
- The current FOB plus the total fuel used by the two engines and the APU, and
- The BLOCK that is the FOB at second engine start.

Appears in pounds (lbs) with the US unit of weight ◁✱ option.
Appears in multiples of 50 kg(100 lb).

L12



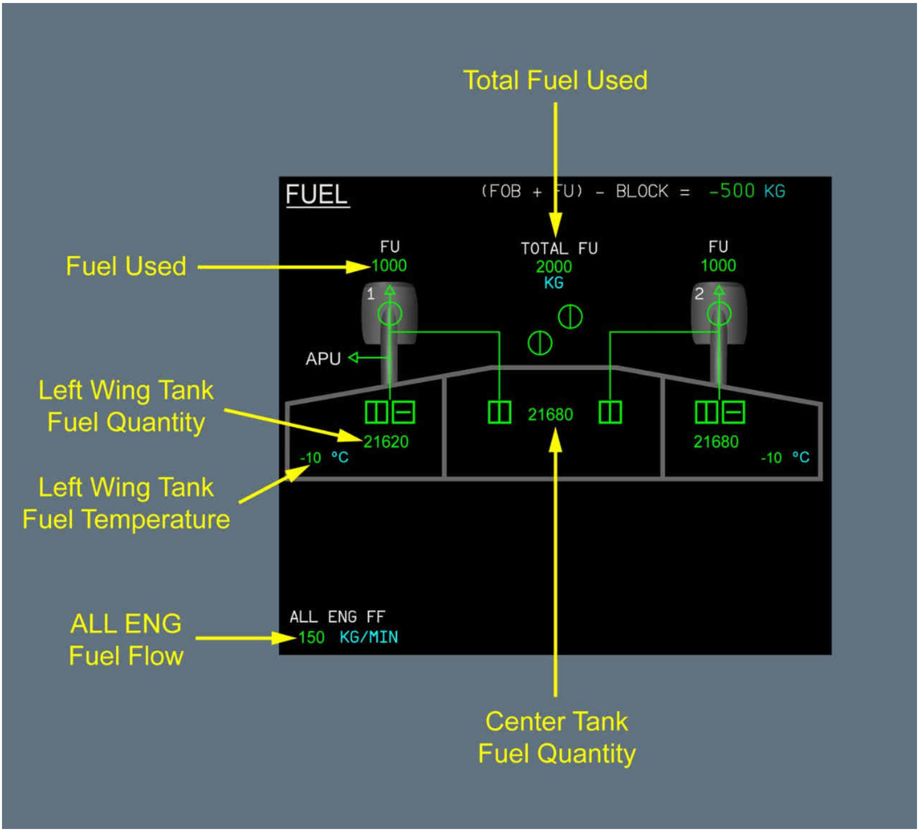
A fuel leak is suspected. The value diverged sufficiently (between 2.5 t (5 500 lb) and 4 t (8 800 lb) depending on the initial FOB) to suspect a fuel leak.
Associated with the following ECAM alert: FUEL LEAK SUSPECTED (*Refer to procedure*)

FUEL SD PAGE - FUEL QTY, TEMP, FU AND FF

Applicable to: ALL

Ident.: DSC-28-20-DSC2820G-00002652.0001001 / 03 NOV 14

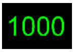
FUEL SD Page — QTY, TEMP, FU and FF


Total Fuel Used
FUEL
(FOB + FU) - BLOCK = -500 KG
Fuel Used
FU
1000
TOTAL FU
2000
KG
FU
1000
1
2
APU
Left Wing Tank
Fuel Quantity
21620
21680
21680
-10 °C
-10 °C
Left Wing Tank
Fuel Temperature
ALL ENG
Fuel Flow
ALL ENG FF
150 KG/MIN
Center Tank
Fuel Quantity

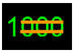
Ident.: DSC-28-20-DSC2820G-00002765.0001001 / 03 DEC 15

FUEL USED (FU) INDICATION

L12


1000

Indicates the fuel used by each engine.
This value automatically resets on ground, at the next engine start.
Appears in pounds (lbs) with the US unit of weight ◁✱ option.
Appears in multiples of 50 kg (100 lb).


1~~000~~

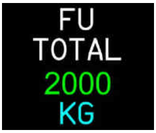
The value accuracy is degraded.

Ident.: DSC-28-20-DSC2820G-00002766.0001001 / 28 APR 17

TOTAL FUEL USED INDICATION

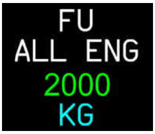
L2 This indication automatically resets on ground, at the first engine start.

L12

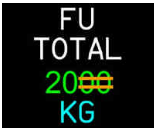

FU
TOTAL
2000
KG

Indicates the total fuel used by the two engines and the APU.
Appears in pounds (lbs) with the US unit of weight ◁✱ option.
Appears in multiples of 50 kg (100 lb).

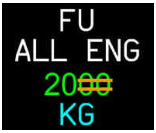
L1


FU
ALL ENG
2000
KG

Indicates the total fuel used by the two engines. The fuel used by the APU is not available.


FU
TOTAL
20~~00~~
KG

The total fuel used accuracy is degraded, because the fuel used accuracy of at least one engine is degraded.

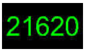

FU
ALL ENG
20~~00~~
KG

The all engine fuel used accuracy is degraded, because the fuel used accuracy of at least one engine is degraded. The fuel used by the APU is not available.

Ident.: DSC-28-20-DSC2820G-00002768.0001001 / 03 JAN 20

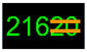
WING TANKS - FUEL QUANTITY INDICATION

L12



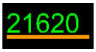
The fuel quantity in the wing tank is within a normal range.
Appears in pounds (lbs) with the US unit of weight ◁ option.
Appears in multiples of 20 kg (50 lb).

L12



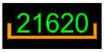
The value accuracy is degraded.
For more information *Refer to DSC-28-40 Fuel Gauging Degradation*.

L12

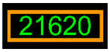


The fuel quantity in the left wing tank is not balanced with the fuel quantity in the right wing tank.
Associated with the following ECAM alert: FUEL WINGS NOT BALANCED (*Refer to procedure*)
When the fuel is balanced, the FUEL IMBALANCE CORRECTED (*Refer to procedure*) caution appears.

L12



Some of the fuel in the wing tank is not usable.
Associated with the following ECAM alert: FUEL L(R) TK MAIN+STBY PMPS FAULT (*Refer to procedure*)

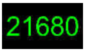


The fuel in the wing tank is not usable.

Ident.: DSC-28-20-DSC2820G-00011872.0001001 / 03 JAN 20

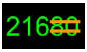
CENTER TANK - FUEL QUANTITY INDICATION

L12



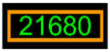
The fuel quantity in the center tank is within a normal range.
Appears in pounds (lbs) with the US unit of weight ◁ option.
Appears in multiples of 20 kg (50 lb).

L12



The value accuracy is degraded.
For more information *Refer to DSC-28-40 Fuel Gauging Degradation*.

L12

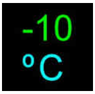


The fuel in the center tank is not usable.
Associated with the following ECAM alert: FUEL CTR TK L+R PMPS FAULT (*Refer to procedure*)

Ident.: DSC-28-20-DSC2820G-00002770.0001001 / 28 APR 17

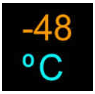
WING TANK - FUEL TEMPERATURE INDICATION

When at least one of the temperature sensors of the wing tank is immersed, the fuel temperature is displayed on the FUEL SD page.


-10
°C

The fuel temperature is within a normal range.

L12


-48
°C

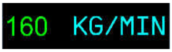
The fuel temperature is above 50 °C, or below -40 °C.

Associated with one of the following ECAM alerts:
- FUEL TEMP LO (*Refer to procedure*)
- FUEL L(R) WING TK TEMP HI (*Refer to procedure*).

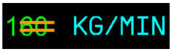
Ident.: DSC-28-20-DSC2820G-00002772.0001001 / 03 DEC 15

ALL ENGINE FUEL FLOW (ALL ENG FF) INDICATION

L12


160 KG/MIN

Indicates the fuel flow of all engines.
Appears in pounds per minute (lbs/min) with the US unit of weight ◁✳ option.
Appears in multiples of 10 kg/min (20 lb/min).


1~~60~~ KG/MIN

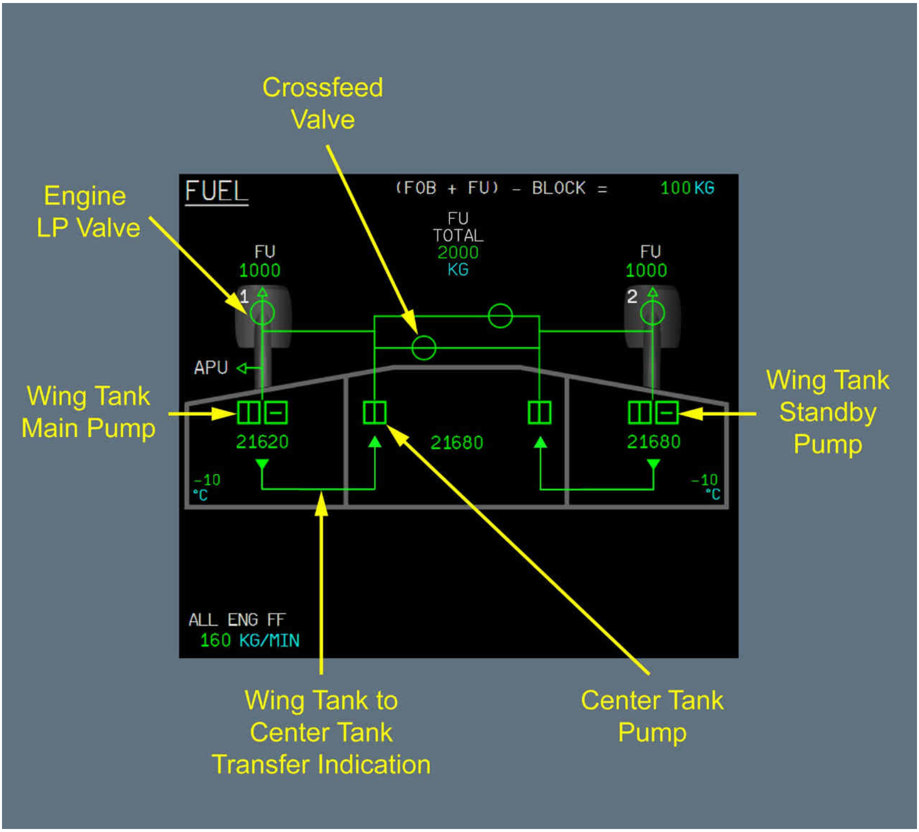
The ALL ENG FF accuracy is degraded, because the fuel flow accuracy of at least one engine is degraded.

FUEL SD PAGE - PUMPS, VALVES AND TRANSFERS

Applicable to: ALL

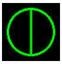
Ident.: DSC-28-20-DSC2820H-00002653.0001001 / 28 APR 17

FUEL SD Page - Pumps, Valves and Transfers


Crossfeed Valve
Engine LP Valve
FUEL
(FOB + FU) - BLOCK = 100 KG
FU TOTAL 2000 KG
FU 1000
FU 1000
1
2
APU
Wing Tank Main Pump
Wing Tank Standby Pump
21620
21680
21680
-10 °C
-10 °C
ALL ENG FF 160 KG/MIN
Wing Tank to Center Tank Transfer Indication
Center Tank Pump

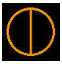
Ident.: DSC-28-20-DSC2820H-00002774.0001001 / 30 APR 14

ENGINE LP VALVE



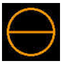
The valve is open.

L12



The valve is abnormally open.
Associated with the following ECAM alert: FUEL ENG 1(2) LP VLV FAULT
(*Refer to procedure*).

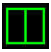
L12



The valve is abnormally closed.
Associated with the following ECAM alert: FUEL ENG 1(2) LP VLV FAULT
(*Refer to procedure*).

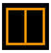
Ident.: DSC-28-20-DSC2820H-00002775.0001001 / 30 APR 14

WING TANK MAIN PUMP



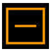
The main pump is running.

L12



The main pump is abnormally running.
Associated with the following ECAM alert: FUEL L(R) TK MAIN PMP FAULT
(*Refer to procedure*)

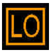
L12



The main pump is failed or is turned off by the flight crew.

Associated with one of the following ECAM alerts:
- FUEL L(R) TK MAIN PMP FAULT (*Refer to procedure*)
- FUEL L(R) TK MAIN+STBY PMPS FAULT (*Refer to procedure*)

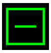
L12



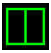
The main pump is on, and the main pump pressure is below normal.
Associated with the following ECAM alert:FUEL L(R) TK MAIN PMP FAULT
(*Refer to procedure*)

Ident.: DSC-28-20-DSC2820H-00002776.0001001 / 09 JUL 15

WING TANK STANDBY PUMP

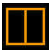


The standby pump is on, but is not running.



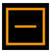
The standby pump is running.

L12



The standby pump is abnormally running.
Associated with the following ECAM alert: FUEL L(R) TK STBY PMP FAULT
(*Refer to procedure*)

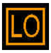
L12



The standby pump is failed or is turned off by the flight crew.

Associated with one of the following ECAM alerts:
- FUEL L(R) TK STBY PMP FAULT (*Refer to procedure*)
- FUEL L(R) TK MAIN+STBY PMPS FAULT (*Refer to procedure*)

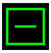
L12



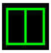
The standby pump is on, and the pump pressure is below normal.
Associated with the following ECAM alert:FUEL L(R) TK STBY PMP FAULT (*Refer to procedure*)

Ident.: DSC-28-20-DSC2820H-00011879.0001001 / 30 APR 14

CENTER TANK PUMP

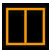


The pump is on, but is not running (e.g. during take-off).



The pump is running.

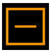
L12



The pump is abnormally running.

Associated with one of the following ECAM alerts:
- FUEL CTR TK L(R) PMP FAULT (*Refer to procedure*)
- FUEL CTR TK L+R PMPS FAULT (*Refer to procedure*)

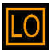
L12



The pump is failed or is turned off by the flight crew.

Associated with one of the following ECAM alerts:
- FUEL CTR TK L(R) PMP FAULT (*Refer to procedure*)
- FUEL CTR TK L+R PMPS FAULT (*Refer to procedure*)

L12

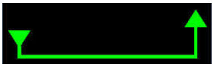


The pump is on, and the pump pressure is below normal.
Associated with the following ECAM alert: FUEL CTR TK L(R) PMP FAULT (*Refer to procedure*)

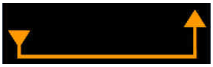
Ident.: DSC-28-20-DSC2820H-00002780.0001001 / 02 MAY 14

WING TANK TO CENTER TANK TRANSFER INDICATION

When there is no indication, there is no fuel transfer in progress.

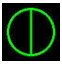


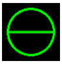
Fuel gravity transfer from the wing tank to the center tank.
The ECAM displays the L(R) TK XFR IN PROGRESS memo.


Abnormal fuel gravity transfer from the wing tank to the center tank.

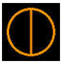
Ident.: DSC-28-20-DSC2820H-00002782.0001001 / 30 APR 14

CROSSFEED VALVE


The crossfeed valve is closed.

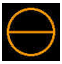

The crossfeed valve is open.
If at least one crossfeed valve is open, the ECAM displays the CROSSFEED OPEN memo.
During takeoff, this memo is in amber.

L12


The crossfeed valve is abnormally closed.

Associated with one of the following ECAM alerts:
- FUEL CROSSFEED VLV A(B) FAULT (*Refer to procedure*).
- FUEL CROSSFEED VLV A+B FAULT (*Refer to procedure*).

L12


The crossfeed valve is abnormally open.

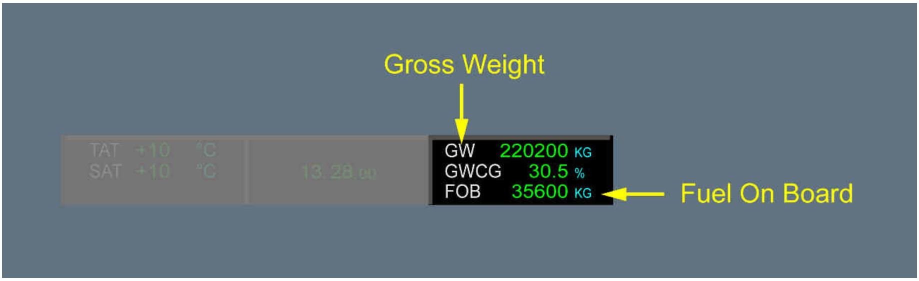
Associated with one of the following ECAM alerts:
- FUEL CROSSFEED VLV A(B) FAULT (*Refer to procedure*).
- FUEL CROSSFEED VLV A+B FAULT (*Refer to procedure*).

PERMANENT DATA

Applicable to: ALL

Ident.: DSC-28-20-DSC2820F-00002655.0001001 / 04 MAY 16

Permanent Data

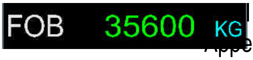


TAT +10 °C
SAT +10 °C
13 28 00
GW 220200 KG
GWCG 30.5 %
FOB 35600 KG

Ident.: DSC-28-20-DSC2820F-00002786.0001001 / 03 DEC 15

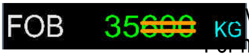
FUEL ON BOARD INDICATION

L12

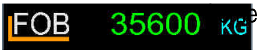


l fuel quantity on board the aircraft.
Appears in pounds (lbs) with the US unit of weight ◁ option.
Appears in multiples of 100 kg (100 lb).

L12



value accuracy is degraded.
For more information, *Refer to DSC-28-40 Fuel Gauging Degradation*

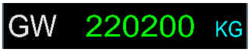


e fuel in at least one tank is not usable.

Ident.: DSC-28-20-DSC2820F-00020982.0001001 / 03 DEC 15

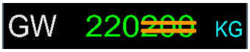
GROSS WEIGHT INDICATION

L12



Gross Weight of the aircraft computed by the FQMS.
Appears in pounds (lbs) with the US unit of weight ◁ option.
Appears in multiples of 100 kg (100 lb).

L12



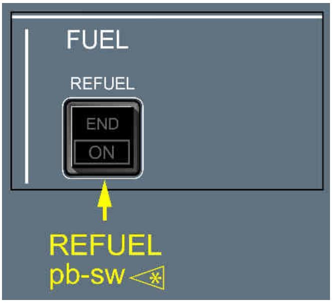
The value accuracy is degraded. The Gross Weight is computed by the CDS or by the WBBC.
For more information, *Refer to DSC-28-40 Fuel Gauging Degradation*

REFUEL PANEL (IF INSTALLED)

Applicable to: ALL

Ident.: DSC-28-20-DSC2820C-00002648.0001001 / 09 MAR 16

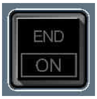
Refuel Panel



Ident.: DSC-28-20-DSC2820C-00002745.0001001 / 09 MAR 16

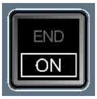
REFUEL PB-SW

The ground crew or the flight crew can use the REFUEL pb-sw in the cockpit, in order to initiate refueling. Refueling from the cockpit has priority over refueling initiated from the external refuel panel.



Refueling from the cockpit is not active.
When pressed, the ON light comes on, and refueling from the cockpit is enabled.

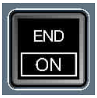
L12



Refueling from the cockpit is enabled.
When pressed, the ON light goes off, and refueling stops.

Note: *The automatic refuel function will uplift the fuel quantity that corresponds to the BLOCK entry field from the ACTIVE/FUEL&LOAD page of the FMS, or to the preselected fuel quantity (PFQ) from the external refuel panel.*

L12



Refueling from the cockpit is completed or aborted.
When pressed, both the END light and the ON light go off.
In the case of an aborted refueling, the END light is associated with the following ECAM alert: FUEL REFUEL FAULT (*Refer to procedure*).

MEMO

Applicable to: ALL

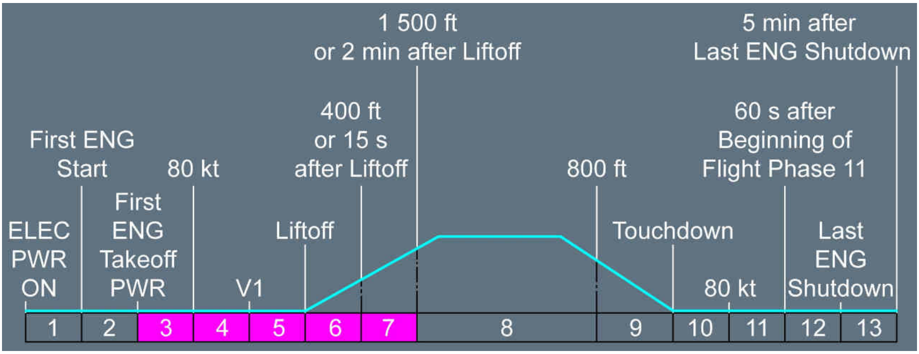
Ident.: DSC-28-20-GMEMO-00002656.0001001 / 30 APR 14

L12

CROSSFEED OPEN	At least one crossfeed valve is open. Appears on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

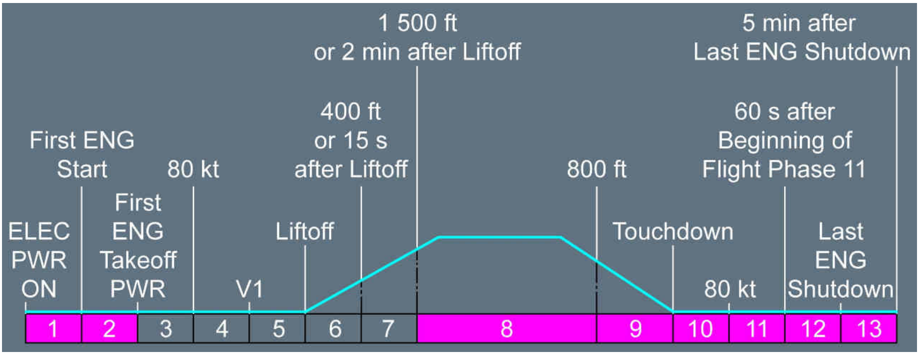
Ident.: DSC-28-20-GMEMO-00002788.0001001 / 30 APR 14

L12

CROSSFEED OPEN	At least one crossfeed valve is open during the takeoff phase. Appears on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

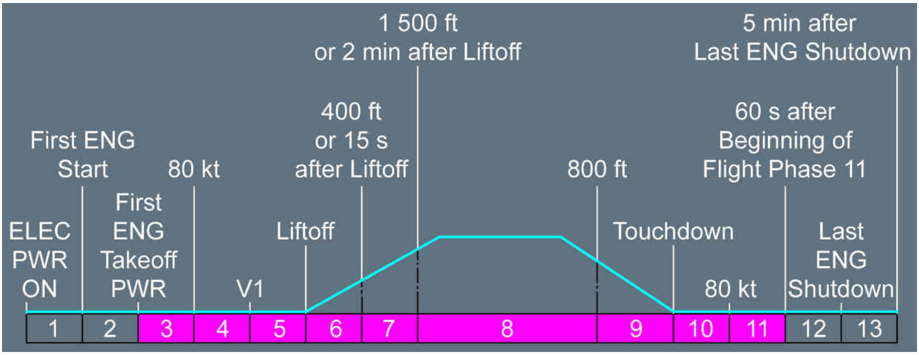
Ident.: DSC-28-20-GMEMO-00002789.0001001 / 30 APR 14

L12

DEFUEL IN PROGRESS	Defueling is in progress. Appears on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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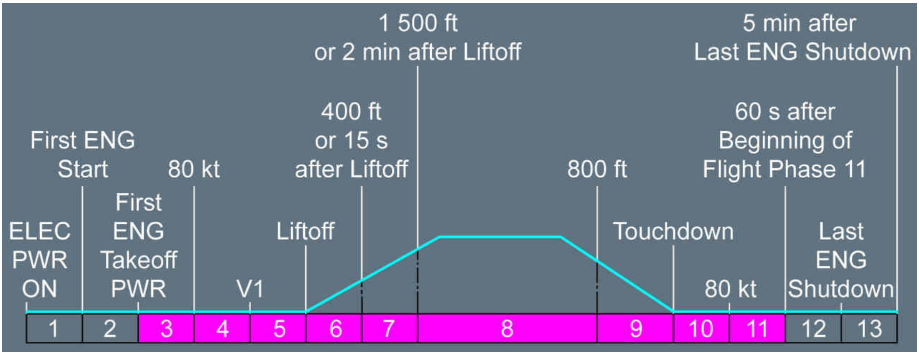
Ident.: DSC-28-20-GMEMO-00002791.0001001 / 30 APR 14

L12

GND XFR IN PROGRESS	Ground transfer is in progress. Appears on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
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80 kt
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Takeoff
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PWR
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Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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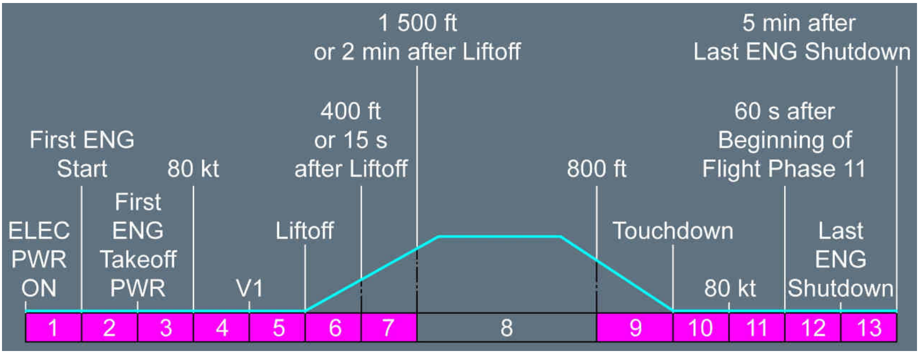
Ident.: DSC-28-20-GMEMO-00002792.0001001 / 09 MAR 16

L12

JETTISON IN PROGRESS	Fuel jettison is in progress. Appears on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
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80 kt
800 ft
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Takeoff
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PWR
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Liftoff
Touchdown
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Shutdown
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80 kt
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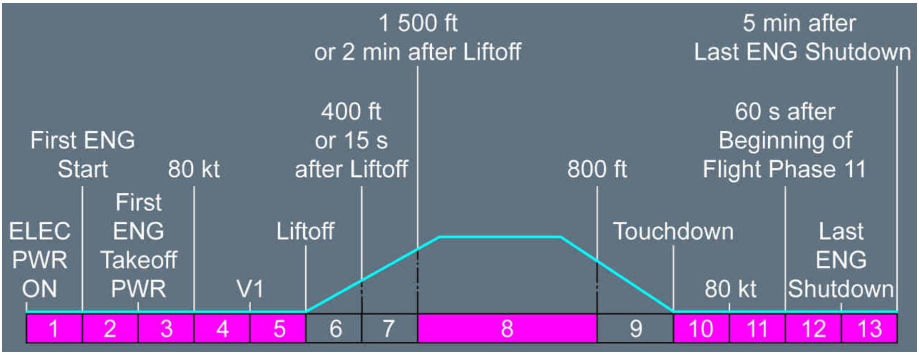
Ident.: DSC-28-20-GMEMO-00011933.0001001 / 09 MAR 16

L12

JETTISON IN PROGRESS	Fuel jettison is in progress during the climb and the approach phases. Appears on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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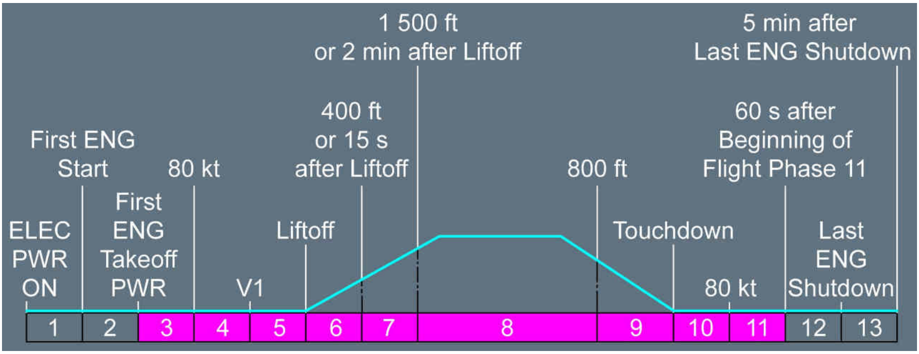
Ident.: DSC-28-20-GMEMO-00002795.0001001 / 30 APR 14

L12

REFUEL IN PROGRESS	Refueling is in progress. Appears on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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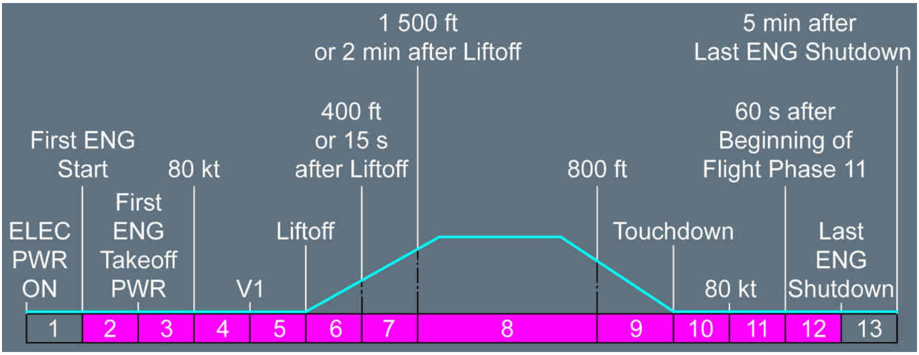
Ident.: DSC-28-20-GMEMO-00002796.0001001 / 30 APR 14

L12

REFUEL PNL DOOR OPEN	The door of the refuel panel is open. Appears on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
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Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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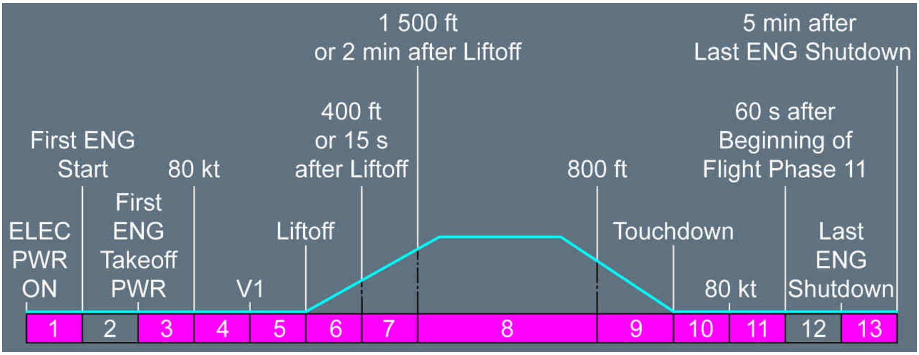
Ident.: DSC-28-20-GMEMO-00002797.0001001 / 30 APR 14

L12

REFUEL PNL DOOR OPEN	The door of the refuel panel is open and an engine is running. Appears on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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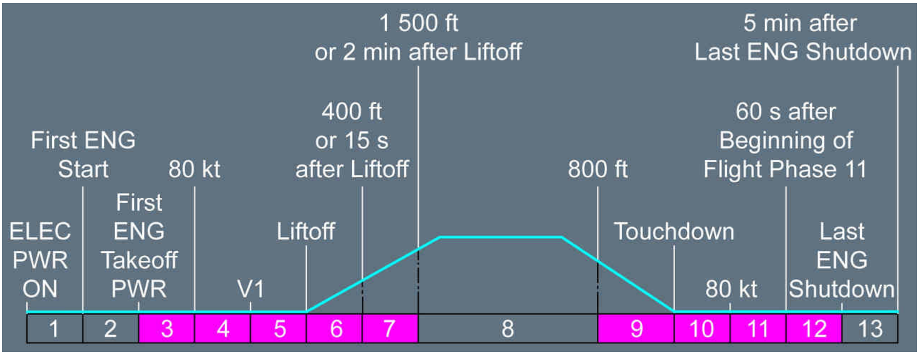
Ident.: DSC-28-20-GMEMO-00011932.0001001 / 30 APR 14

L12

L(R) TK XFR IN PROGRESS	Manual transfer from the left (right) wing tank to the center tank is in progress. Appears on the WD.

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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(FOB + FU) - BLOCK

Ident.: DSC-28-30-00024859.0001001 / 08 JUL 19
Applicable to: ALL

DESCRIPTION

As part of regular fuel checks, the flight crew compares the quantity of fuel used (FU) versus the quantity of fuel that is no longer in the fuel tanks (BLOCK-FOB).
In order to ease this computation, the CDS permanently displays the (FOB + FU) - BLOCK indication on both the CRUISE page and FUEL SD page.

COMPUTATION

The FOB is the current fuel on board, measured by the FQI probes and indicated on the ECAM Permanent Data.
The FU is the total fuel used by the two engines and the APU. The value is computed from the measured fuel flow and initialized after the start of the second engine.
The BLOCK is the FOB that the CDS memorizes at the start of the second engine. The memorization is performed in the Display Unit (DU) that displays the (FOB + FU) - BLOCK indication.

Therefore, the (FOB + FU) - BLOCK indication is not available (displays XX):
- Before the start of the second engine, and
- After the shutdown of the DU that displays the (FOB + FU) - BLOCK indication.

L2 In the case of a DU reset, the (FOB + FU) - BLOCK indication is no longer available. The (FOB + FU) - BLOCK indication is recovered at next start of the second engine, when the CDS memorizes a new BLOCK parameter.

L1 FLUCTUATING VALUE

The flight crew may notice a normal fluctuation of the (FOB + FU) - BLOCK indication (approximately +/- 1 200 kg (2 600 lb)). This fluctuation is due to the combination of the accuracy of the gauging system (used to compute the FOB and the BLOCK) and the accuracy of the fuel flowmeter (used to compute the FU).
If the value is abnormally negative, the flight crew may suspect a fuel leak.
L2 For more information, *Refer to DSC-28-40 Fuel System Leak Detection*.
L1 If the value is abnormally positive, the flight crew may suspect a fuel quantity over reading.

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MANUAL TRANSFER FROM WING TANK TO CENTER TANK

Ident.: DSC-28-40-00002812.0001001 / 06 MAY 15
Applicable to: ALL

In normal operation, fuel transfer from a wing tank to the center tank is not required. However, the flight crew can initiate a manual gravity transfer, via the FUEL overhead panel, as requested by ECAM procedures.

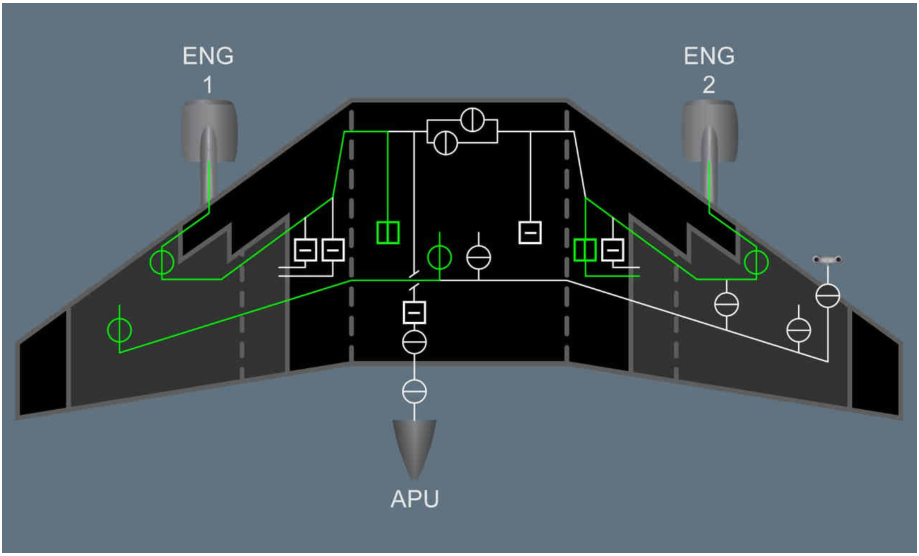
L2 Some failure conditions that induce the loss of all fuel pumps in a wing, require a manual fuel transfer from the affected wing tank to the center tank. This gravity transfer ensures that, for these failure conditions, a large quantity of the wing tank fuel remains available to feed the engines.

Note: 3 000 kg (6 600 lb) of the wing tank fuel cannot be transferred to the center tank.

L1 A manual transfer is only possible from any wing tank to the center tank.

L2 The flight crew initiates the gravity transfer from the left (right) wing tank, by setting the L(R) TK XFR pb-sw to ON.

Manual Gravity Transfer



L3 Fuel :
- Exits the left (right) wing tank via the inlet valve, that is used as an outlet valve
- Transfers by gravity from the left (right) wing tank to the center tank via the refuel gallery
- Enters the center tank via the left (right) inlet valve.

FUEL JETTISON ⩤

Ident.: DSC-28-40-00002813.0001001 / 08 JUL 19
Applicable to: ALL

To rapidly reduce the aircraft gross weight, the jettison system can be used to discharge fuel overboard. The output rate is approximately 60 000 kg/h (132 000 lb/h).
Fuel is jettisoned simultaneously from the wing tanks and the center tank, if the center tank contains fuel.

Note: *The jettison system enables to reduce the aircraft gross weight from MTOW to MLW in less than 60 min.*

JETTISON OPERATION

In accordance with the procedure (*Refer to PRO-ABN-FUEL [ABN] FUEL JETTISON (If Installed)*), to initiate fuel jettison, the flight crew:

- Enters the jettison final gross weight in the FMS FUEL&LOAD page (For information on the FUEL&LOAD page, *Refer to DSC-22-FMS-20-20-20 FUEL&LOAD Page*)
- Presses the JETTISON ARM pb-sw and the JETTISON ACTIVE pb-sw on the FUEL JETTISON panel (*Refer to DSC-28-20 FUEL JETTISON panel (if installed)*).

Note: *Jettison starts as soon as both pushbuttons are pressed, even if no jettison final gross weight has been entered. The jettison final gross weight can be entered or updated at any time.*

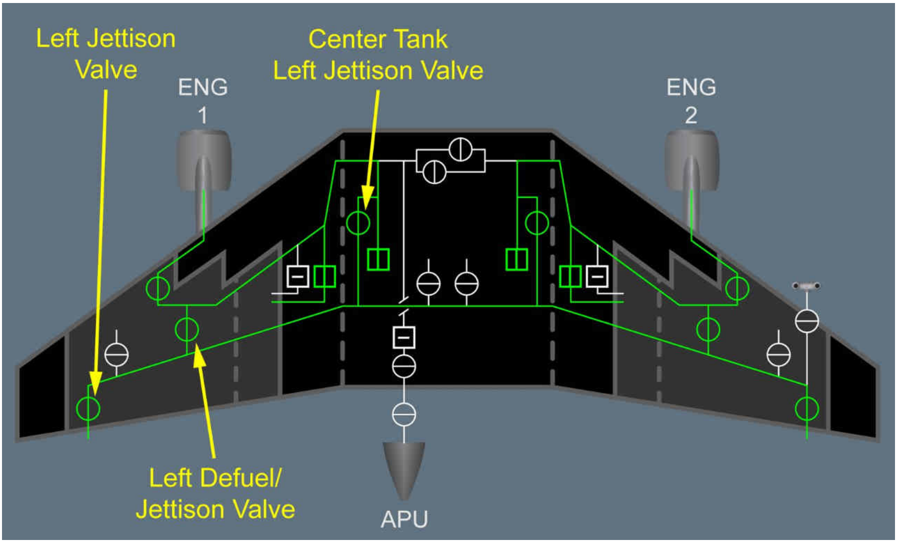
Note: *Jettison cannot be initiated during a manual transfer from a wing tank to the center tank .*

L2 When fuel jettison is initiated:

- The engine feed gallery connects to the refuel gallery via:
  - The defuel/jettison valves in the wing tanks
  - The center tank jettison valves, if the center tank contains fuel
- The jettison valves open.
  There are two jettison valves, that are on the refuel gallery. These jettison valves connect the refuel gallery to two discharge points through which the fuel is jettisoned. There is one discharge point on the trailing edge of each wing.

The FQMS controls and monitors the fuel jettison. All tanks that contain fuel are emptied simultaneously.
L3 For redundancy, each jettison valve has two motors with different electrical supplies.

Fuel Jettison



L1 JETTISON TERMINATION

Jettison stops when one of the following occurs:

- The gross weight reaches the jettison final gross weight that the flight crew entered in the FMS FUEL&LOAD page

L2 The FQMS stops the jettison, and the FUEL JETTISON COMPLETED procedure appears on the ECAM (*Refer to procedure*).

L1
- The flight crew press any of the two JETTISON pushbuttons on the FUEL JETTISON panel
- The FOB reaches 10 000 kg (22 000 lb).

L2 The FQMS stops jettison, and the FUEL JETTISON COMPLETED procedure appears on the ECAM (*Refer to procedure*).

FUEL SYSTEM IN ELECTRICAL EMERGENCY CONFIGURATION

Ident.: DSC-28-40-00002814.0001001 / 08 JUL 19
Applicable to: ALL

The following describes the operation of the fuel pumps and valves, in the event of an electrical emergency configuration (*Refer to PRO-ABN-ELEC ELEC EMER CONFIG*):

- The standby pump of each wing tank and both center tank pumps are inoperative,
- The crossfeed valves remain operative,
- The main pump of each wing tank remain operative.

In addition:
- During slat/flaps extension, or when the speed is lower than 175 kt, the main pump of the right wing tank stops and the crossfeed valves open,
- During landing gear extension, the main pump of each wing tank stop. Fuel is fed by gravity from the wings.

If the electrical emergency configuration is due to a failure of both engines:
- Regardless of the speed, the main pump of the right wing tank stops and the crossfeed valves open,
- During landing gear extension or when the speed is lower than 175 kt, the two main pumps of each wing tank stop. Fuel is fed by gravity from the wings.

FUEL GAUGING DEGRADATION

Ident.: DSC-28-40-00002815.0001001 / 03 JAN 20
Applicable to: ALL

Fuel tank sensors are in all the tanks, for fuel quantity computation.
In normal operations, the FQMS uses the tanks sensors via the TWDCs to compute the fuel tank quantities.

L2 When all tank sensors are available, the accuracy error of the fuel quantity indications on the FUEL SD page is less than ± 1 % of tank capacity (on ground and in flight). During high pitch angle phases (more than 10 ° nose down or more than 15 ° nose up), the fuel gauging accuracy may normally decrease down to ± 3 % of the fuel tank capacity.

L1 FQI DEGRADED

If some tank sensors fail in a tank (e.g. FQI probes), the FQMS is still able to compute the fuel tank quantities, but the accuracy is degraded.

In this case:
- The fuel quantity of the affected tank appears with amber dashes
- FOB, GW and GWCG appear with amber dashes.

If any tank FQI accuracy is degraded, the fuel leak detection is not operative.

L2 Associated with the following ECAM alert: FUEL LEAK DET FAULT (*Refer to procedure*).

L1 The table below provides the accuracy error for each tank:

Affected Tank	Accuracy Error with FQI Degraded (Average Fuel Density)			
	Empty Tank[(1)]		Full Tank[(1)]	
	Additional Error compared to Normal Accuracy[(2)]	Maximum Error[(3)]	Additional Error compared to Normal Accuracy[(2)]	Maximum Error[(3)]
Wing Tank	250 kg (550 lb)	500 kg (1 100 lb)	500 kg (1 100 lb)	1 000 kg (2 200 lb)

Continued on the following page

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Affected Tank	Accuracy Error with FQI Degraded (Average Fuel Density)			
Center Tank A350-900	650 kg (1 400 lb)	1 300 kg (2 850 lb)	1 300 kg (2 850 lb)	2 600 kg (5 700 lb)
Center Tank A350-1000	800 kg (1 750 lb)	1 600 kg (3 500 lb)	1 600 kg (3 500 lb)	3 200 kg (7 050 lb)
Center Tank A350-900 ULR	850 kg (1 850 lb)	1 700 kg (3 750 lb)	1 700 kg (3 750 lb)	3 400 kg (7 500 lb)

(1) *There is a linear evolution of the accuracy values from empty tank to full tank.*

(2) *The degraded FQI causes an additional error compared to normal FQI.*
The flight crew may use this value to estimate the potential over reading that the FQI degraded provides compared to normal FQI.

(3) *The column 'Maximum Error" provides the accuracy error with FQI degraded. This is the absolute value, not compared with normal FQI.*

FQI FAILED

If many tank sensors fail, the FQMS is no longer able to compute the fuel quantity of the affected tank.

In this case:
- The ECAM triggers the FUEL FQI FAULT alert
- The fuel quantity of the affected tank is lost (replaced by amber crosses).
- If the FOB is computed by the CDS, based on the FOB at departure and the Fuel Used, the ECAM displays FOB COMPUTED FROM FU and FOB appears with amber dashes. In all other cases, FOB is lost (replaced by amber crosses).
- If the GW is computed by:
  - The CDS, based on the FOB and the ZFW, the ECAM displays GW COMPUTED FROM FU
  - The WBBC, the ECAM displays GW FROM WBBC

  In theses cases, the GW appears with amber dashes.
  In all other cases, the GW is lost (replaced by amber crosses).
- If the GWCG is computed by the WBBC, the ECAM displays GWCG FROM WBBC and the GWCG indication appears with amber dashes. In all other cases, the GWCG is lost (replaced by amber crosses).

FUEL QUANTITY: MONITORING AND INTEGRITY CHECK

Ident.: DSC-28-40-00023248.0001001 / 14 APR 16
Applicable to: ALL

The fuel system includes all of the following:
- Fuel quantity probes, that compute the fuel quantity in the tanks
- Fuel level sensors, that indicate if there is some fuel in specific areas of the tanks. A fuel level sensor has two states : Either dry or wet.

L2 The following are the approximate fuel quantities that correspond to each fuel level sensor:
- Three levels of detection in each wing tank:
  - 18 000 kg (39 600 lb) of fuel
  - 4 500 kg (9 900 lb) of fuel
  - 1 600 kg (3 500 lb) of fuel.
- In the center tank:
  - 1 850 kg (4 080 lb) of fuel.
- In each surge tank:
  - 550 kg (1 200 lb) of fuel.

L1 In order to check the integrity of the fuel quantity, the fuel system permanently checks that the fuel quantity that is indicated on the FUEL SD page (from the fuel quantity probes) is consistent with the state (dry or wet) of the fuel level sensors. If both inputs disagree, the FUEL FQI FAULT ECAM caution (*Refer to procedure*) is triggered.

The fuel system also uses the fuel level sensors to trigger all of the following ECAM cautions, independently of the fuel quantity that is indicated on the FUEL SD page:
- FUEL L(R) WING TK LEVEL LO (*Refer to procedure*)
- FUEL CTR TK LEVEL LO (*Refer to procedure*)
- FUEL AUTO FEED FAULT (*Refer to procedure*)
- FUEL L(R) WING TK OVERFLOW (*Refer to procedure*).

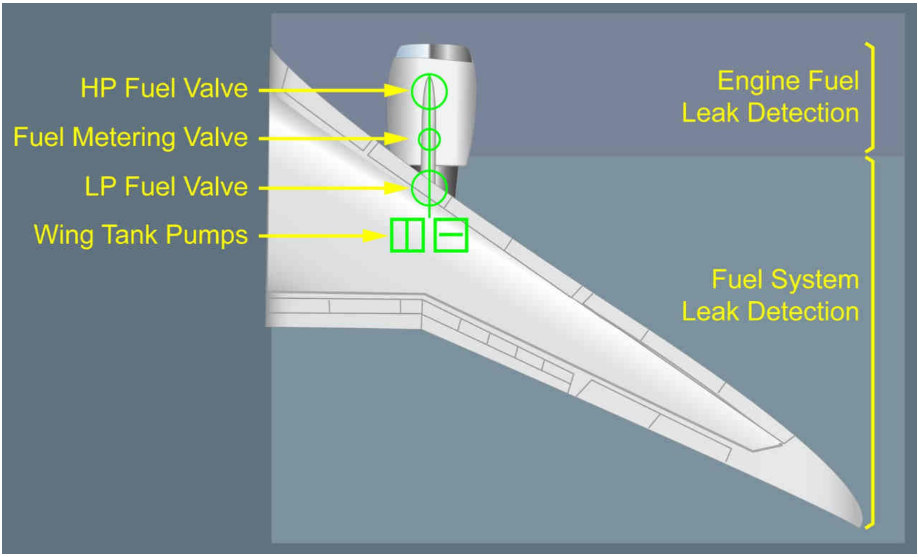
FUEL LEAK DETECTION

Applicable to: ALL

Ident.: DSC-28-40-2840A-00002816.0001001 / 06 MAY 15

Fuel leaks may occur either in the fuel system (e.g. tanks, feedline burst) or in the engine fuel system (i.e. downstream of the fuel metering valve).

Fuel Leak Detection



A leak in the fuel system:
- Is detected by an increasing difference between the BLOCK fuel and the sum of the Fuel On Board (FOB) and the Fuel Used (FU)
- L2 Is detected by the FQMS (*Refer to Fuel System Leak Detection*)
- L1 Triggers the following ECAM caution: FUEL LEAK SUSPECTED (*Refer to procedure*).

A leak in the engine fuel system:
- Is detected by an abnormally high fuel flow on one engine
- L2 Is detected by the Engine Interface Function (*Refer to Engine Fuel Leak Detection*)
- L1 Triggers the following ECAM caution: ENG 1(2) FUEL LEAK SUSPECTED (*Refer to procedure*).

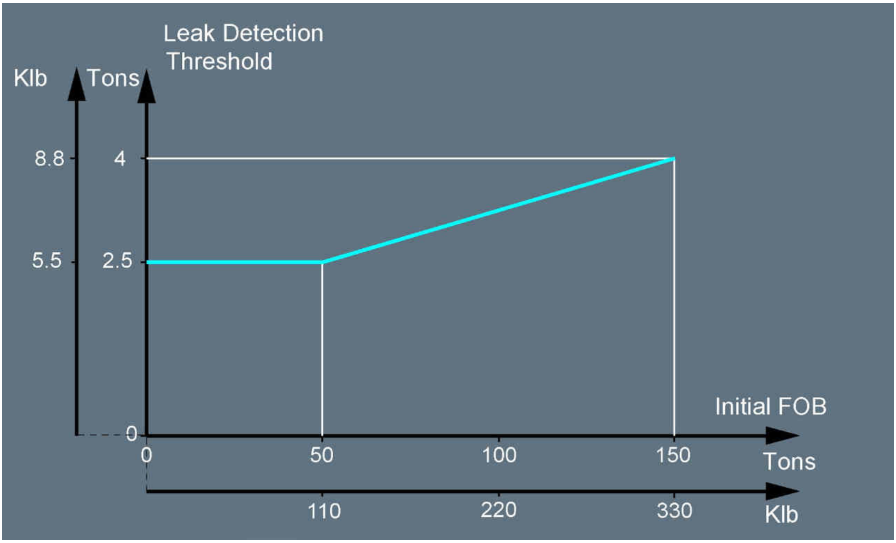
Ident.: DSC-28-40-2840A-00002827.0001001 / 09 MAR 16

L2 FUEL SYSTEM LEAK DETECTION

The FQMS performs the fuel system leak detection.
The leak detection function compares the BLOCK fuel with the sum of the FOB and the Fuel Used (by the engines and the APU). If the difference is above a predefined threshold, the ECAM triggers the FUEL LEAK SUSPECTED alert (*Refer to procedure*).

L3 The predefined threshold takes into account the measurement errors of the fuel quantities and fuel used. The threshold is set at the second engine start and is fixed for the entire flight.

L2 The leak detection threshold is defined as follows:



L3

Initial FOB	Leak Detection Threshold
0 kg	2 500 kg (5 500 lb)
50 000 kg (110 000 lb)	2 500 kg (5 500 lb)
150 000 kg (330 000 lb)	4 000 kg (8 800 lb)

L2 The fuel system leak detection is inhibited for the remainder of the flight in the case of:
- Fuel jettison ⩤ ,
- Loss or degradation of any engine Fuel Used,
- Failed of degraded Fuel Quantity Indications (FQI) of any tank.

When the fuel system leak detection is not available, the ECAM triggers the following alert : FUEL LEAK DET FAULT (*Refer to procedure*).
The fuel system leak detection is temporarily inhibited in the case of an abnormal flight attitude.
The detection is recovered if the aircraft comes back within the normal flight envelope.

Ident.: DSC-28-40-2840A-00002828.0001001 / 06 MAY 15

L2 ENGINE FUEL LEAK DETECTION

The Engine Interface Function (EIF) performs the engine fuel leak detection.
The engine fuel leak detection is based on the comparison between the fuel flows from both engines.

L3 The engine fuel leak detection is available when all of the following occur:
- Both engines are running,
- The aircraft is in climb or cruise phase,
- Both thrust levers are set in the CLB detent,
- The fuel flow measurement of both engines is neither degraded nor lost,
- The aircraft is not in the following situation : below FL 290 and N1 below 44 % on both engines.

L2 DETECTION OF LOW FUEL LEAKS

If one fuel flow is 30 % more than the other fuel flow during a confirmation time, the ECAM triggers the ENG 1(2) FUEL LEAK SUSPECTED alert (*Refer to procedure*). The confirmation time depends on the difference between the fuel flows (the confirmation time decreases when the difference between the fuel flows increases).

DETECTION OF LARGE FUEL LEAKS

If one fuel flow is 3.8 times more than the other fuel flow during 4 min, the ECAM triggers the ENG 1(2) FUEL LEAK SUSPECTED alert (*Refer to procedure*).

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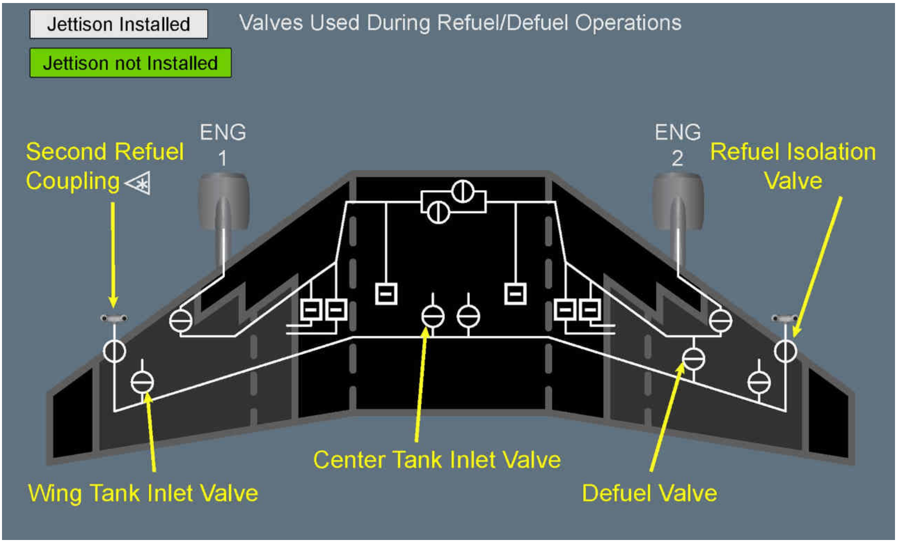
REFUEL/DEFUEL SYSTEM

Ident.: DSC-28-50-30-00023771.0001001 / 07 NOV 16
Applicable to: ALL

REFUEL/DEFUEL SYSTEM

Refuel/Defuel System


Jettison Installed
Jettison not Installed
Valves Used During Refuel/Defuel Operations
ENG 1
ENG 2
Second Refuel Coupling ◁
Refuel Isolation Valve
Wing Tank Inlet Valve
Center Tank Inlet Valve
Defuel Valve

REFUEL COUPLINGS

One refuel coupling is installed under the right wing.
A second refuel coupling ◁ is installed under the left wing.
One or two refueling hoses can be attached to each coupling.
Each refuel coupling is connected to the refuel gallery via the refuel isolation valve.
It takes approximately 25 min to uplift 47 t (103 600 lb) of fuel with two hoses and a refuel pressure of 40 PSI.
L3 It is not possible to achieve gravity refueling.

L1 VALVES INSTALLED WITH THE JETTISON ◁ OPTION

Defuel/Jettison Valves

By default, there is one defuel valve in the right wing that connects the engine feed gallery and the refuel gallery. When the jettison option is installed, this valve is called the defuel/jettison valve. A second defuel/jettison valve is also installed in the left wing.

The defuel/jettison valves open during the defuel and the jettison operations.

Center Tank Jettison Valves

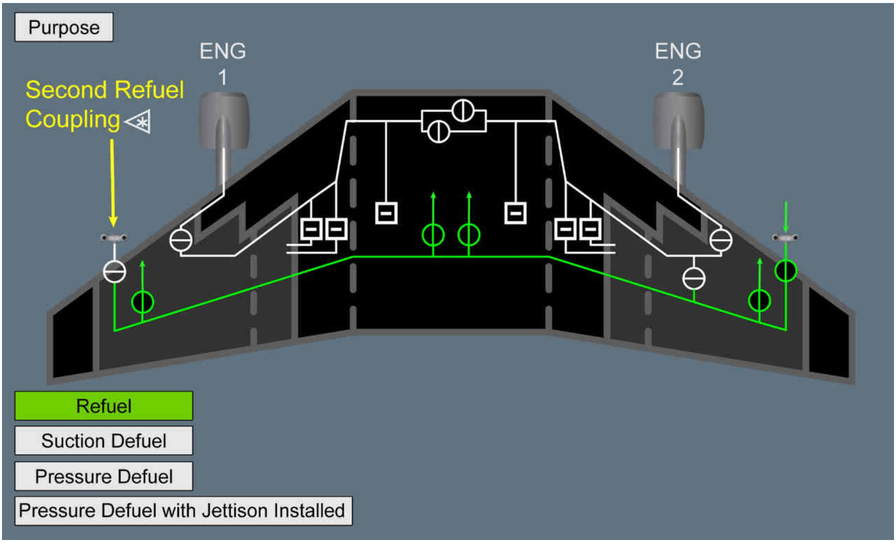
Two center tank jettison valves connect the engine feed gallery and the refuel gallery. The center tank jettison valves open during the defuel and the jettison operations.

REFUEL/DEFUEL OPERATIONS

Ident.: DSC-28-50-30-00023255.0001001 / 07 MAY 18
Applicable to: ALL

REFUEL/DEFUEL OPERATIONS

Refuel/Defuel Operations


Purpose
ENG 1
ENG 2
Second Refuel Coupling
Refuel
Suction Defuel
Pressure Defuel
Pressure Defuel with Jettison Installed

REFUEL

Automatic Refuel

In normal operations, the FQMS controls the refuel operations.
The refuel can be initiated either from the cockpit, or from the External Refuel Panel (ERP).
L2 For aircraft equipped with REFUEL pb-sw ⊲, the Preselect Fuel Quantity (PFQ) is the last entered value between the ERP or the BLOCK value. As a consequence, the PFQ changes if the flight crew updates the BLOCK value of the FMS FUEL & LOAD Page during refueling.

For more information about the automatic refueling procedure,*Refer to PRO-NOR-SUP-SUP-FUEL Automatic Refueling*.

L3 When the refueling is initiated, the FQMS determines the refuel distribution and the refuel isolation valves open. The inlet valves of all the tanks that require refueling open, and all these tanks are refueled simultaneously. The inlet valves close in sequence when the required quantity is reached, or when a high level is detected.
The FQMS automatically stops the refueling when the FOB is equal to the Preselected Fuel Quantity (PFQ) (+/-200 kg (440 lb)). The refuel isolation valves close.

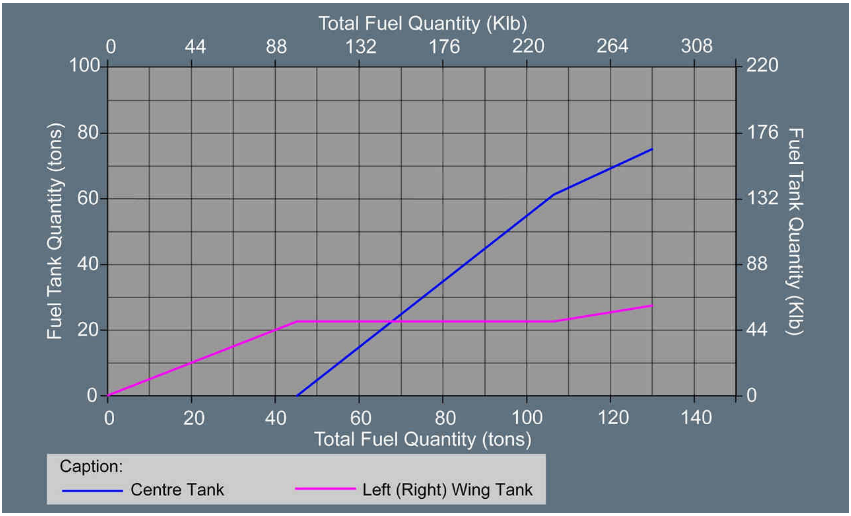
L1 Manual Refuel

The ground crew can perform manual refuel operations from the ERP.

L2 The operator manually opens and closes the refuel inlet valves as per the refuel distribution.

L1 Refuel Distribution

Fuel in the tanks is distributed as follows:



L2

Total fuel quantity (approximately)	Left and Right Wing Tanks (each approximately)	Center tank (approximately)
45 200 kg (99 650 lb)$^{(1)}$	22 600 kg (49 820 lb)	0

Continued on the following page

Continued from the previous page

106 500 kg (234 800 lb) (2)	22 600 kg (49 820 lb)	61 300 kg (135 140 lb)
110 400 kg (243 400 lb) (3)	23 400 kg (51 600 lb)	63 500 kg (140 000 lb)

(1) *This corresponds to full wing tanks, at minimum fuel density*

(2) *This corresponds to full tanks, at minimum fuel density*

(3) *This corresponds to full tanks, at fuel density 0.785 kg/l (6.551 lb/US Gal)*

L1

DEFUEL

Defueling may be necessary for maintenance reasons, or if the fuel in the aircraft is contaminated.
The ground crew can perform defuel operations via the ERP and the FQMS.
The fuel is collected through the refuel coupling(s).

Suction Defuel

Fuel pumps that are outside of the aircraft are used, usually the pumps from the bowser truck.
The operator manually controls the refuel isolation valve(s), the wing tank inlet valves and the center tank inlet valves from the ERP.

Pressure Defuel

The aircraft fuel pumps are used.
The operator manually controls the refuel isolation valve(s) and the defuel valve from the ERP.

L3 The engine feed gallery and the refuel gallery are connected.

L1

Pressure Defuel with Jettison

The aircraft fuel pumps are used.
The operator manually controls the refuel isolation valve(s), the defuel/jettison valves, and the center tank jettison valves.

L3 The engine feed gallery and the refuel gallery are connected.

AIRCRAFT SYSTEMS

29 - HYDRAULIC SYSTEM

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DSC-29-10 System Description

Overview.. A
Hydraulic Generation.. B
Hydraulic Distribution..C

DSC-29-20 Controls and Indicators

Cockpit View.. A
GND HYD Panel..B
HYD Panel...C
HYD SD Page.. D
MEMO.. E

DSC-29-30 Abnormal Operations

Excessive Temperature in the Hydraulic System.. A

DSC-29-40 Temporary Abnormal Behaviors

Discrepancy Between WHEEL SD page and ECAM Alerts in the case of Hydraulic Failure - NORM Indication..... A

Intentionally left blank

Localization Title	Toc Index	ID	Reason
DSC-29-30 Excessive Temperature in the Hydraulic System	A	1	Revision of the abbreviation to be in accordance with the abbreviation list.

Intentionally left blank

OVERVIEW

Ident.: DSC-29-10-00002902.0002001 / 08 NOV 18
Applicable to: ALL

The aircraft has two identical and independent hydraulic systems, referred to as GREEN and YELLOW.

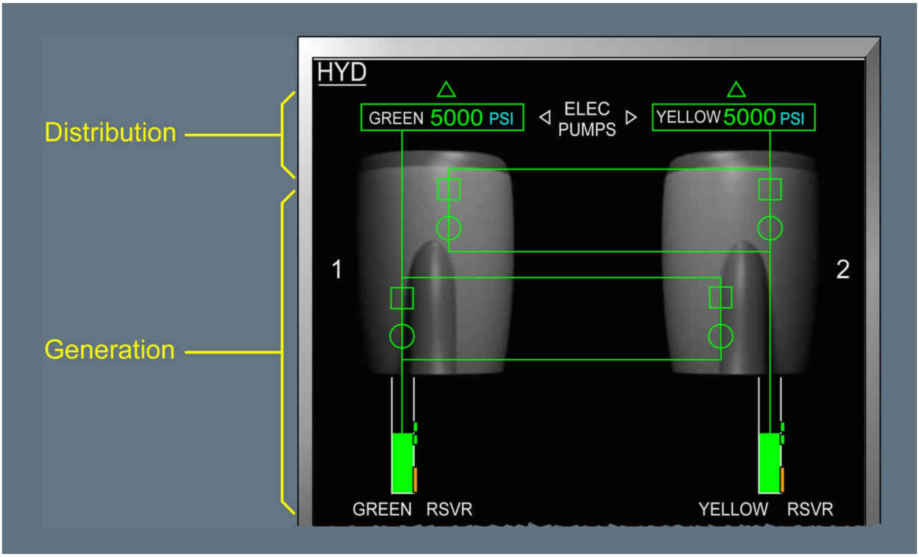
These two systems operate continuously, and power:
- The flight controls surfaces (ailerons, spoilers, elevators and rudder).
- The slats and flaps.
- Landing gears.
- Wheel brakes.
- Nose wheel steering.

L2 Hydraulic fluid cannot be transferred from one system to the other.

L1 The normal operating pressure of each hydraulic system is approximately 5 000 PSI.
Each hydraulic system is monitored and controlled by its associated Hydraulic Monitor & Control (HMC).

The hydraulic systems ensure:
- Hydraulic generation
- Hydraulic distribution.

Hydraulic system


Distribution
Generation
HYD
GREEN 5000 PSI
ELEC
PUMPS
YELLOW 5000 PSI
1
2
GREEN RSVR
YELLOW RSVR

In the case of one or both hydraulic systems fail, the following backups are available:

- For flight controls: The Electro-Hydrostatic Actuators (EHAs) and the Electrical Backup Hydraulic Actuator (EBHA).

L3 For more information on EHAs and EBHAs: *Refer to DSC-27-10-10 EHA / EBHA*.

L1
- For slats: The electric motor.

L3 For more information, *Refer to DSC-27-20-10 Slat(Flap) Systems*.

L1
- For flaps: The outer flaps.

L3 For more information, *Refer to DSC-27-20-10 Active Differential Gearbox (ADGB)*.

L1
- For braking: The braking accumulator.

L3 For more information, *Refer to DSC-32-20-10-30 Accumulator Reinflation*.

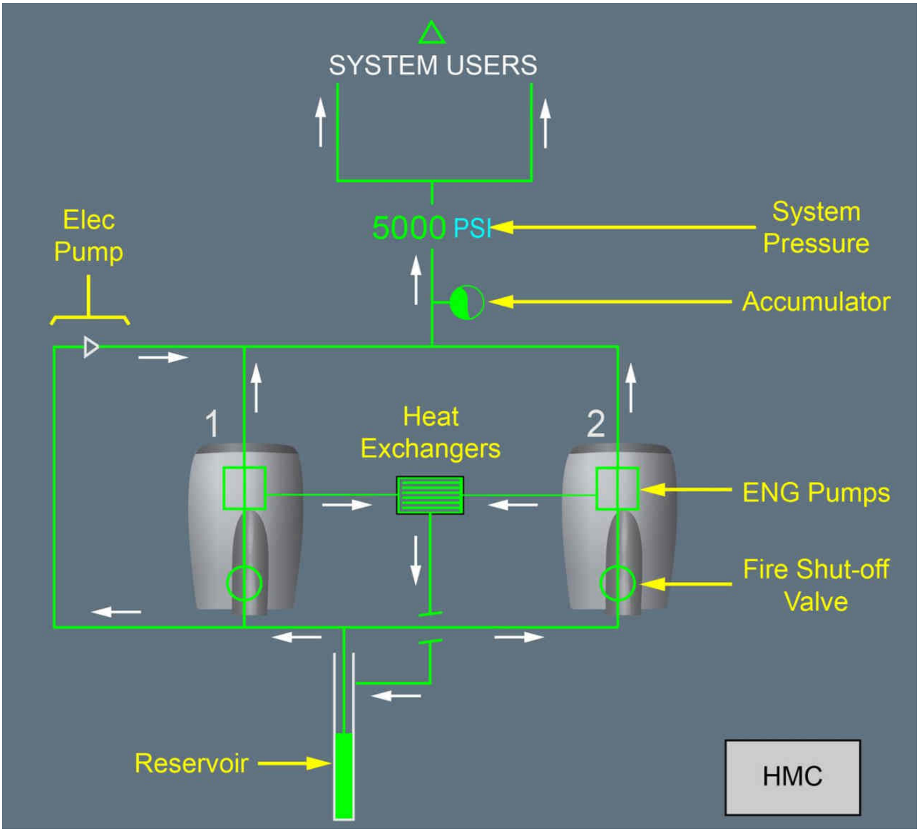
L1
- For steering: the Backup Steering Function (BSF).

L3 For more information, *Refer to DSC-32-30-40 Backup Steering Function*.

HYDRAULIC GENERATION

Ident.: DSC-29-10-DSC2910A-00002903.0001001 / 24 APR 14
Applicable to: ALL

Hydraulic Generation


SYSTEM USERS
5000 PSI
System Pressure
Elec Pump
Accumulator
1
2
Heat Exchangers
ENG Pumps
Fire Shut-off Valve
Reservoir
HMC

The two hydraulic systems are identical. Therefore, only one system is illustrated and described .

Ident.: DSC-29-10-DSC2910A-00002905.0001001 / 24 APR 14
Applicable to: ALL

RESERVOIR

The reservoir provides hydraulic fluid to the system.

L3 The reservoir is self-pressurized to prevent pump cavitation, and incorporates an automatic bleed device that removes entrapped air on ground only.
The GREEN reservoir is located at the rear of the belly fairing.
The YELLOW reservoir is located inside the main landing gear bay.

Ident.: DSC-29-10-DSC2910A-00002906.0002001 / 07 NOV 19
Applicable to: ET-AWP, ET-AYA, ET-AYB

FIRE SHUT-OFF VALVE

There are two fire shutoff valves (FSOVs) per engine, one FSOV per engine driven pump. The fire shutoff valves are between the reservoir and each engine-driven pump.

The FSOVs close, when:
- The ENG FIRE pb-sw is pressed
  L3 In the case of an engine fire, closing the fire shutoff valves will isolate the affected circuit to prevent hydraulic fluid from flowing into, and sustaining, the fire.
- L1 The ENG SUPPLY pb is pressed.
  L3 In the case of hydraulic system overheat, closing the FSOV will prevent a further excessive temperature increase in the fuel heat exchanger installed in the wing fuel tank.
  The flight crew cannot open again the FSOV in flight. Maintenance action is required.

L1 The FSOVs close automatically, when:
- The EDP case drain overheat is detected.

Note: *When the EDP case drain overheat is detected, the system shuts down automatically, associated with the HYD G(Y) SYS PRESS LO ECAM alert.*

Ident.: DSC-29-10-DSC2910A-00002906.0001001 / 07 JUL 16
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO

FIRE SHUT-OFF VALVE

There are two fire shutoff valves (FSOVs) per engine, one FSOV per engine driven pump. The fire shutoff valves are between the reservoir and each engine-driven pump.

The FSOVs close, when:
- The ENG FIRE pb-sw is pressed
  L3 In the case of an engine fire, closing the fire shutoff valves will isolate the affected circuit to prevent hydraulic fluid from flowing into, and sustaining, the fire.
- L1 The ENG SUPPLY pb is pressed.
  L3 In the case of hydraulic system overheat, closing the FSOV will prevent a further excessive temperature increase in the fuel heat exchanger installed in the wing fuel tank.
  The flight crew cannot open again the FSOV in flight. Maintenance action is required.

Ident.: DSC-29-10-DSC2910A-00002907.0001001 / 24 APR 14
Applicable to: ALL

ENG PUMPS

There is one GREEN pump and one YELLOW pump per engine.

L2 If only one engine-driven pump per hydraulic system is operative:
- Flight controls hydraulic motors and spoilers remain available.
- Slats and flaps hydraulic motor remains available.
- Landing gear retraction/extension is available, but retraction time is longer than in normal operation.
- Normal braking and nose wheel steering remain available.

The GREEN and YELLOW pumps can only be disconnected via maintenance action on ground.

Ident.: DSC-29-10-DSC2910A-00002908.0001001 / 07 NOV 16
Applicable to: ALL

ELEC PUMP

There is one electric pump per hydraulic system which can provide hydraulic power only on ground, when all engines are off.

L3 The electric pump is powered with 230 V at a fixed frequency of 400 Hz. Due to the variable frequency of the engine generators, the electric pump is inhibited as soon as one engine is started.

L2
- The YELLOW electric pump operates automatically for cargo door operation or to reinflate the yellow braking accumulator when the ACCU REINFLATE pb is pressed.
- The GREEN electric pump operates automatically to reinflate the green braking accumulator, when the ACCU REINFLATE pb is pressed.

The electric pump reinflates the accumulator to ensure a sufficient pressure on braking.
For maintenance purpose or as per ECAM procedure, the electric pump can also be started manually, via the ELEC PMP AUTO pb-sw on the GND HYD panel.
When the electric pump is started manually , the GREEN or YELLOW hydraulic system power the auxiliary systems and all consumers.

L3 In the case of excessive temperature, overheat, low pressure or low level in the hydraulic system, the Hydraulic Monitoring and Control Application (HMCA) automatically stops the operation of the affected electric pump as long as the hydraulic failure is present.

Ident.: DSC-29-10-DSC2910A-00002909.0003001 / 06 NOV 19
Applicable to: ET-AWP, ET-AYA, ET-AYB

HYDRAULIC MONITORING AND CONTROL (HMC)

Each Hydraulic Monitoring and Control (HMC) monitors and controls its own hydraulic system.

L2 The HMC has two main parts:
- Hydraulic Monitoring and Control Application (HMCA): Performs main control and monitoring functions of the hydraulic system and generates most interface signals to other systems.
- Hydraulic Monitoring and Control Remote Functions (HMCRF): gathers and converts most of analog/discrete sensors signals to digital signals for a transfer to the HMCA.

L3 The HMCAs are hosted on CPIOM:
- HMCA Green 1 on CPIOM-H33
- HMCA Green 2 on CPIOM-H34
- HMCA Yellow 1 on CPIOM-H31
- HMCA Yellow 2 on CPIOM-H32.

The HMCRFs are hosted on CRDC:
- HMCRF Green 1 on CRDC-B11
- HMCRF Green 2 on CRDC-B12
- HMCRF Green 3 on CRDC-B13
- HMCRF Yellow 1 on CRDC-B03
- HMCRF Yellow 2 on CRDC-B04
- HMCRF Yellow 3 on CRDC-B08
- HMCRF Yellow 4 on CRDC-B02
- HMCRF Yellow 5 on CRDC-B12.

The HMCA monitors the:
- EDP status, pressure and the case drain temperature
- Electric pump status and pressure
- System pressure
- Reservoir pressure, level and temperature
- Filter status
- Cockpit pushbutton status

The HMCA controls the:
- EDP depressurization function
- EDP auto depressurization function when fuel level is low or when temp high is detected
- Electric Pump status
- Uncontained Engine Rotor Failure UERF detection
- FSOV
- Hydraulic overhead panel lights

Ident.: DSC-29-10-DSC2910A-00002909.0002001 / 28 MAR 17
Applicable to: ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO

HYDRAULIC MONITORING AND CONTROL (HMC)

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- HMCA Yellow 2 on CPIOM-H32.

The HMCRFs are hosted on CRDC:
- HMCRF Green 1 on CRDC-B11
- HMCRF Green 2 on CRDC-B12
- HMCRF Green 3 on CRDC-B13
- HMCRF Yellow 1 on CRDC-B03
- HMCRF Yellow 2 on CRDC-B04
- HMCRF Yellow 3 on CRDC-B08
- HMCRF Yellow 4 on CRDC-B02
- HMCRF Yellow 5 on CRDC-B12.

The HMCA monitors the:
- EDP status, pressure and the case drain temperature
- Electric pump status and pressure
- System pressure
- Reservoir pressure, level and temperature
- Filter status
- Cockpit pushbutton status

The HMCA controls the:
- EDP depressurization function
- EDP auto depressurization function at low fuel level
- Electric Pump status
- Uncontained Engine Rotor Failure UERF detection
- FSOV
- Hydraulic overhead panel lights

Ident.: DSC-29-10-DSC2910A-00002909.0001001 / 07 NOV 16
Applicable to: ET-ATQ, ET-ATR

HYDRAULIC MONITORING AND CONTROL (HMC)

Each Hydraulic Monitoring and Control (HMC) monitors and controls its own hydraulic system.

L2 The HMC has two main parts:
- Hydraulic Monitoring and Control Application (HMCA): Performs main control and monitoring functions of the hydraulic system and generates most interface signals to other systems.
- Hydraulic Monitoring and Control Remote Functions (HMCRF): gathers and converts most of analog/discrete sensors signals to digital signals for a transfer to the HMCA.

L3 The HMCAs are hosted on CPIOM:
- HMCA Green 1 on CPIOM-H33
- HMCA Green 2 on CPIOM-H34
- HMCA Yellow 1 on CPIOM-H31
- HMCA Yellow 2 on CPIOM-H32.

The HMCRFs are hosted on CRDC:
- HMCRF Green 1 on CRDC-B11
- HMCRF Green 2 on CRDC-B12
- HMCRF Green 3 on CRDC-B13
- HMCRF Yellow 1 on CRDC-B03
- HMCRF Yellow 2 on CRDC-B04.
- HMCRF Yellow 3 on CRDC-B08

The HMCA monitors the:
- EDP status, pressure and the case drain temperature
- Electric pump status and pressure
- System pressure
- Reservoir pressure, level and temperature
- Filter status
- Cockpit pushbutton status

The HMCA controls the:
- EDP depressurization function
- EDP auto depressurization function at low fuel level
- Electric Pump status
- Uncontained Engine Rotor Failure UERF detection
- FSOV
- Hydraulic overhead panel lights

Ident.: DSC-29-10-DSC2910A-00002910.0001001 / 24 APR 14
Applicable to: ALL

ACCUMULATOR

An accumulator helps to maintain a constant delivery pressure to the consumers and compensates for transient demands during normal operation.

Ident.: DSC-29-10-DSC2910A-00002912.0001001 / 24 APR 14
Applicable to: ALL

SYSTEM PRESSURE

The hydraulic system supplies a constant pressure of approximately 5 000 PSI to the applicable system users.

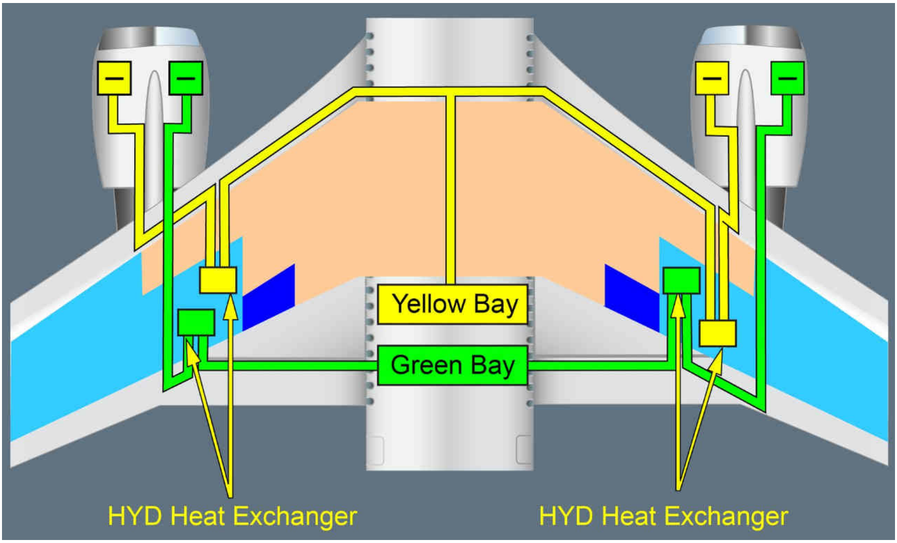
Ident.: DSC-29-10-DSC2910A-00002913.0001001 / 24 APR 14
Applicable to: ALL

HYDRAULIC HEAT EXCHANGERS

Each hydraulic system has its own cooling system, that prevents the overheat and thermal degradation of hydraulic fluid.
Each hydraulic system has one hydraulic heat exchanger in each wing fuel tank.
L3 The temperature of the fluid is controlled by a temperature control valve inside the case-drain filter manifold.

When the fluid temperature is:
- Below 60 °C: The thermal valve bypasses the Hydraulic Heat Exchanger (HHX).
- Between 60 °C and 80 °C: The thermal valve progressively closes and the flow is partially routed through the HHX
- Above 80 °C: The thermal valve closes and the flow is fully routed through the HHX.

Hydraulic Heat Exchanger



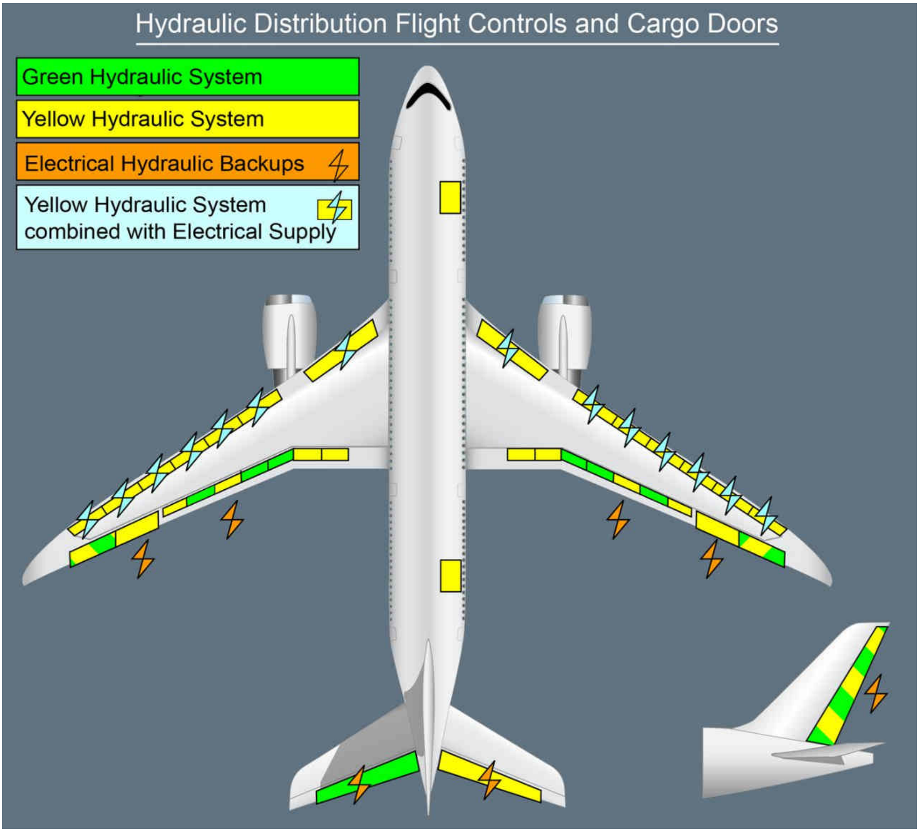
HYDRAULIC DISTRIBUTION

Ident.: DSC-29-10-00002904.0001001 / 24 APR 14
Applicable to: ALL

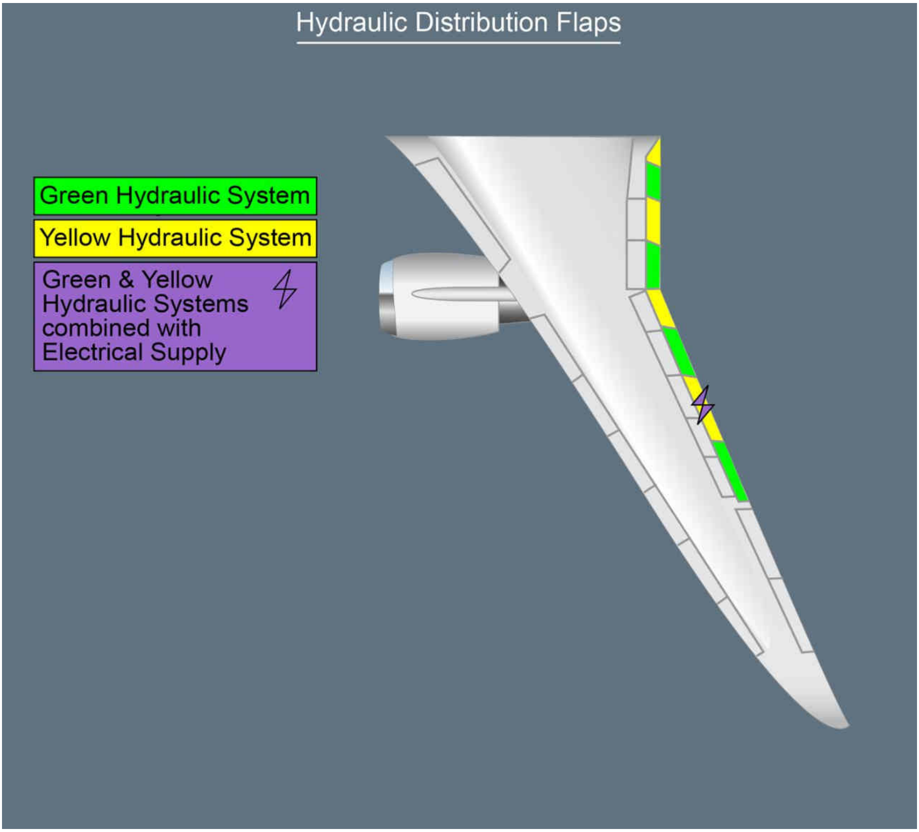
The GREEN and YELLOW hydraulic systems power the following:

1. Flight controls
   - L2 Inboard ailerons (YELLOW)
   - L2 Outboard ailerons (GREEN or YELLOW)
   - L2 Spoilers 1, 2, 5, 7 (YELLOW)
   - L2 Spoilers 3, 4, 6 (GREEN)
   - L2 Rudder (GREEN and YELLOW)
   - L2 Elevators (GREEN or YELLOW)
   - L2 Slats (YELLOW)
   - L2 Flaps (GREEN and YELLOW)
2. L1 Landing gear systems
   - L2 Main landing gear: Actuation (GREEN) and braking (GREEN and YELLOW)
   - L2 Nose landing gear: Actuation and nose wheel steering (YELLOW)
3. L1 Cargo door actuation (YELLOW).

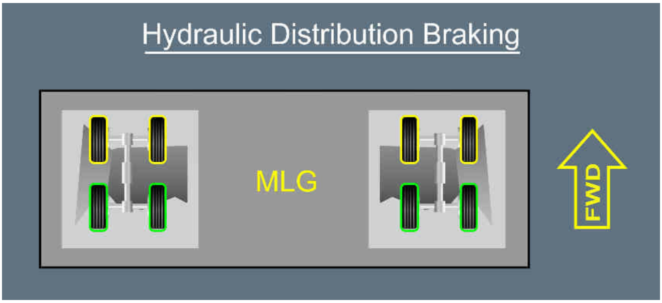
Hydraulic Distribution


Hydraulic Distribution Flight Controls and Cargo Doors
Green Hydraulic System
Yellow Hydraulic System
Electrical Hydraulic Backups
Yellow Hydraulic System combined with Electrical Supply

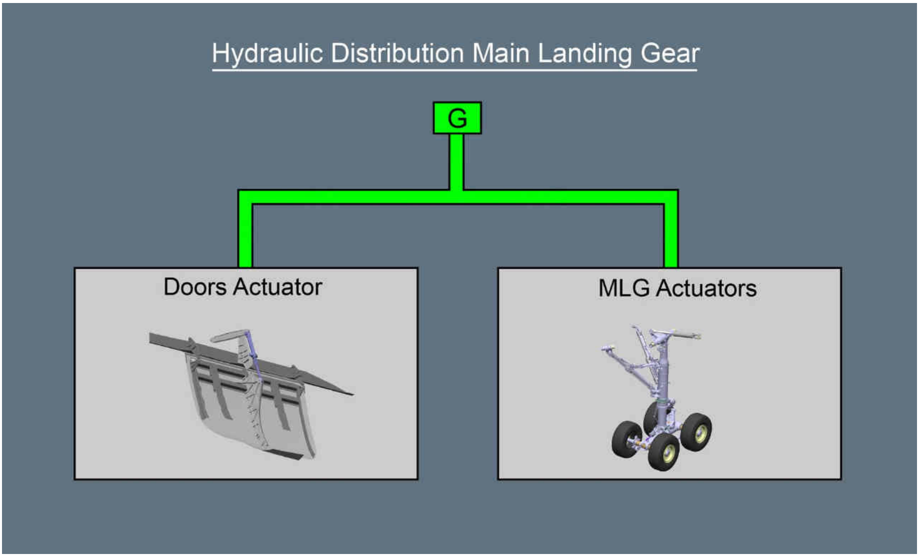
Hydraulic Distribution: Flaps


Hydraulic Distribution Flaps
Green Hydraulic System
Yellow Hydraulic System
Green & Yellow Hydraulic Systems combined with Electrical Supply

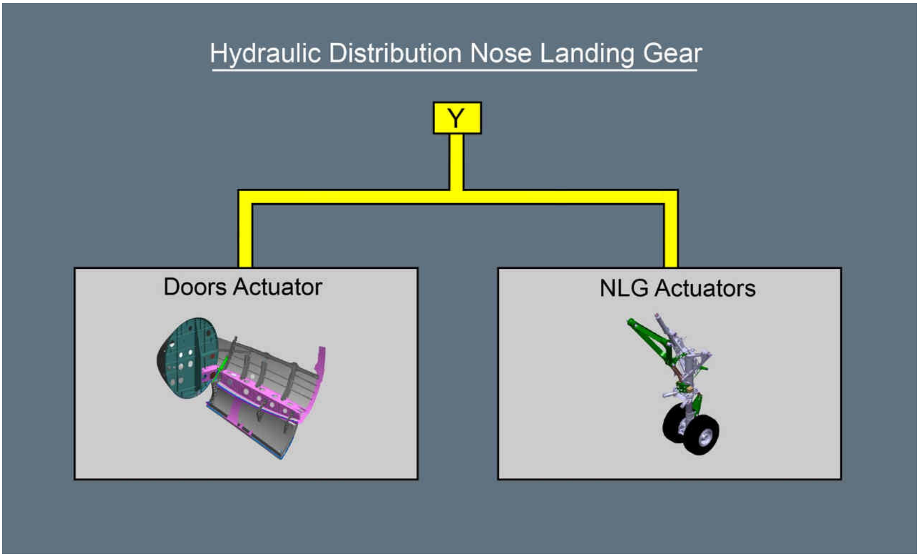
Hydraulic Distribution Braking


Hydraulic Distribution Braking
MLG
FWD

Hydraulic Distribution Main Landing gear


Hydraulic Distribution Main Landing Gear
G
Doors Actuator
MLG Actuators

Hydraulic Distribution Nose Landing gear



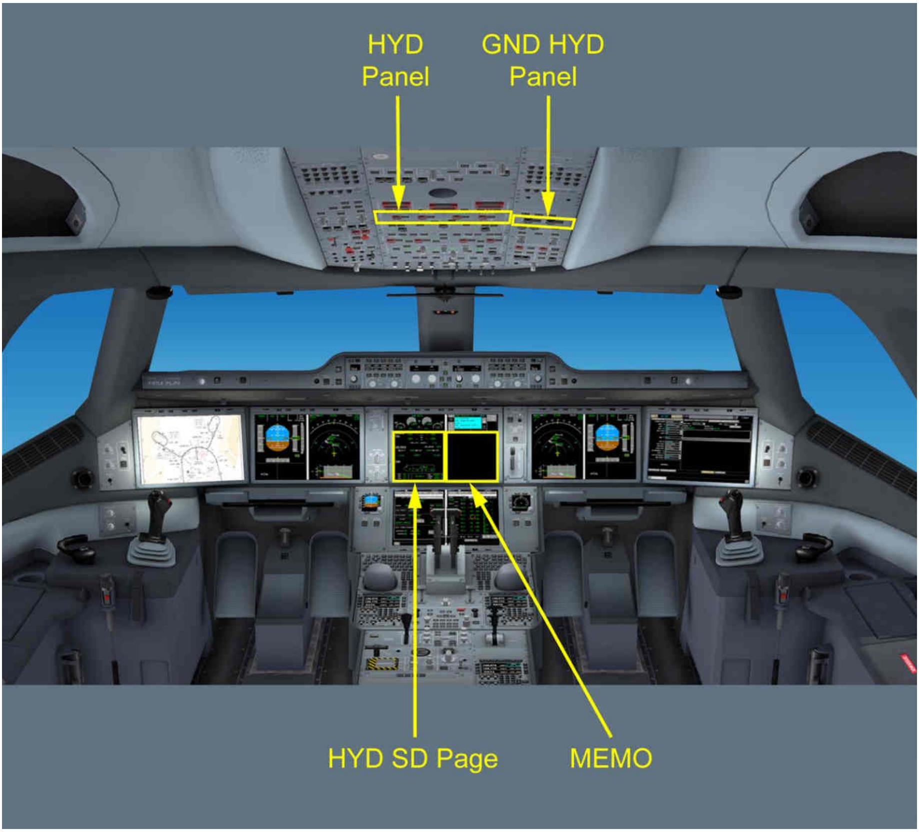
Hydraulic Distribution Nose Landing Gear

Y
Doors Actuator
NLG Actuators

COCKPIT VIEW

Ident.: DSC-29-20-00002914.0001001 / 24 APR 14
Applicable to: ALL

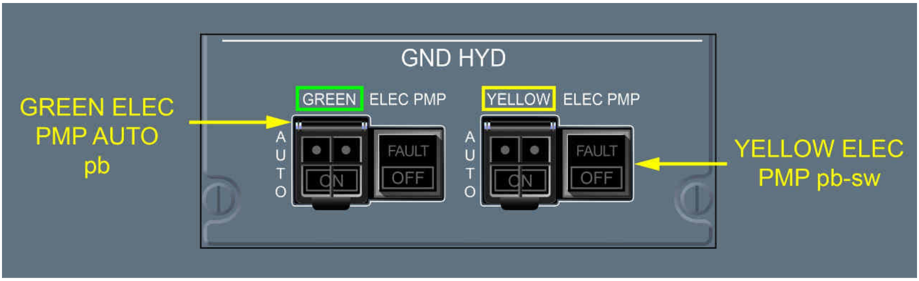
Cockpit View


HYD
Panel
GND HYD
Panel
HYD SD Page
MEMO

GND HYD PANEL

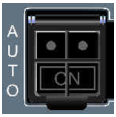
Ident.: DSC-29-20-DSC2920B-00002916.0001001 / 02 APR 15
Applicable to: ALL

GND HYD Panel



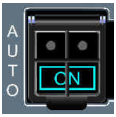
Ident.: DSC-29-20-DSC2920B-00002921.0001001 / 24 APR 14
Applicable to: ALL

GREEN(YELLOW) ELEC PMP AUTO PB



The electric pump is not running.

L12



The electric pump is running, and has either been automatically-controlled or manually-selected.
The electric pump can be manually set to ON, but it is not operationally recommended except when required by ECAM procedure.

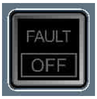
Note: *Associated with the following ECAM alert: HYD G(Y) RSVR PRESS LO (Refer to procedure).*
- *When the electric pump operates in automatic mode, any action on the ELEC PMP AUTO pb is disregarded*
- *When the electric pump operates in manual mode, the automatic mode is disregarded.*

CAUTION	When the pump is manually-selected, the hydraulic system is fully pressurized. Do not pressurize the hydraulic system without clearance from the ground crew.

Ident.: DSC-29-20-DSC2920B-00002922.0002001 / 06 NOV 19
Applicable to: ET-AWP, ET-AYA, ET-AYB

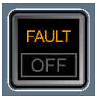
GREEN(YELLOW) ELEC PMP PB-SW

The electric pump is fully automatic and does not require any crew action, unless requested by the ECAM.



The HMC automatically controls the electric pump.

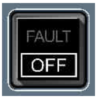
L12



The pump is failed, or the pump must be stopped because of a hydraulic system failure.

Associated with one of the following ECAM alerts:
- HYD G(Y) ELEC PMP FAULT (*Refer to procedure*).
- HYD G(Y) RSVR TEMP HI (*Refer to procedure*).
- HYD G(Y) RSVR OVHT (*Refer to procedure*).
- HYD G(Y) RSVR LEVEL LO (*Refer to procedure*).

The FAULT light goes off, when the flight crew sets the ELEC PMP pb-sw to OFF. However, in the case of an overheat, the FAULT light will remain on, until the fluid high temperature disappears.

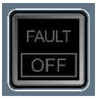


The pump is OFF and inhibited. Neither the flight crew nor the HMC can start the pump.

Ident.: DSC-29-20-DSC2920B-00002922.0001001 / 24 APR 14
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO

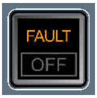
GREEN(YELLOW) ELEC PMP PB-SW

The electric pump is fully automatic and does not require any crew action, unless requested by the ECAM.



The HMC automatically controls the electric pump.

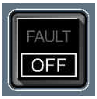
L12



The pump is failed, or the pump must be stopped because of a hydraulic system failure.

Associated with one of the following ECAM alerts:
- HYD G(Y) ELEC PMP FAULT (*Refer to procedure*).
- HYD G(Y) SYS TEMP HI (*Refer to procedure*).
- HYD G(Y) SYS OVHT (*Refer to procedure*).
- HYD G(Y) RSVR LEVEL LO (*Refer to procedure*).

The FAULT light goes off, when the flight crew sets the ELEC PMP pb-sw to OFF. However, in the case of an overheat, the FAULT light will remain on, until the fluid high temperature disappears.

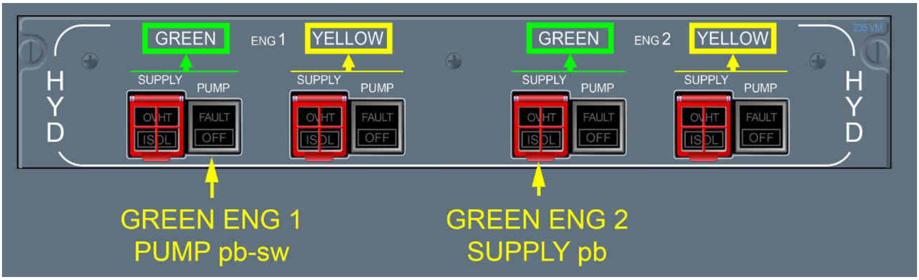


The pump is OFF and inhibited. Neither the flight crew nor the HMC can start the pump.

HYD PANEL

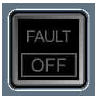
Ident.: DSC-29-20-DSC2920A-00002915.0001001 / 24 APR 14
Applicable to: ALL

HYD Panel

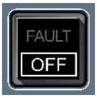

HYD
GREEN
ENG 1
YELLOW
GREEN
ENG 2
YELLOW
HYD
SUPPLY
PUMP
OVHT
ISOL
FAULT
OFF
GREEN ENG 1
PUMP pb-sw
GREEN ENG 2
SUPPLY pb

Ident.: DSC-29-20-DSC2920A-00002919.0002001 / 06 NOV 19
Applicable to: ET-AWP, ET-AYA, ET-AYB

GREEN(YELLOW) ENG 1(2) PUMP PB-SW

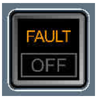


The pump pressurizes its hydraulic system, when the engine is running.



The flight crew pressed the ENG 1(2) PUMP pb-sw and the pump is depressurized.

L12



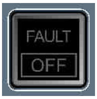
The pump is failed, or an abnormal temperature is detected in the hydraulic system.

Associated with one of the following ECAM alert:
- HYD ENG 1 (2) G(Y) PMP PRESS LO (*Refer to procedure*)
- HYD ENG 1 (2) G(Y) PMP FAULT (*Refer to procedure*)
- HYD G(Y) RSVR TEMP HI (*Refer to procedure*)
- HYD G(Y) RSVR OVHT (*Refer to procedure*)
- HYD G(Y) RSVR LEVEL LO (*Refer to procedure*).

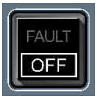
The FAULT light goes off, when the flight crew sets the ENG 1(2) PUMP pb-sw to OFF. However, in the case of an abnormal temperature detection, the FAULT light will remain on, until the abnormal temperature disappears.

Ident.: DSC-29-20-DSC2920A-00002919.0001001 / 26 OCT 17
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO

GREEN(YELLOW) ENG 1(2) PUMP PB-SW

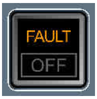


The pump pressurizes its hydraulic system, when the engine is running.



The flight crew pressed the ENG 1(2) PUMP pb-sw and the pump is depressurized.

L12



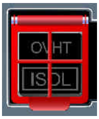
The pump is failed, or an abnormal temperature is detected in the hydraulic system.

Associated with one of the following ECAM alert:
- HYD ENG 1 (2) G(Y) PMP PRESS LO (*Refer to procedure*)
- HYD G(Y) SYS TEMP HI (*Refer to procedure*)
- HYD G(Y) SYS OVHT (*Refer to procedure*)
- HYD G(Y) RSVR LEVEL LO (*Refer to procedure*)

The FAULT light goes off, when the flight crew sets the ENG 1(2) PUMP pb-sw to OFF. However, in the case of an abnormal temperature detection, the FAULT light will remain on, until the abnormal temperature disappears.

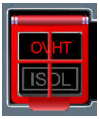
Ident.: DSC-29-20-DSC2920A-00012602.0002001 / 06 NOV 19
Applicable to: ET-AWP, ET-AYA, ET-AYB

GREEN(YELLOW) ENG 1(2) SUPPLY PB



The temperature of the hydraulic circuit is within the normal range and the associated EDP is not isolated.

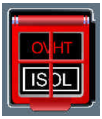
L12



There is an overheat in the affected hydraulic circuit.

Associated with one of the following ECAM alert:
- HYD G(Y) RSVR OVHT (*Refer to procedure*)
- HYD ENG 1(2) G(Y) PMP FAULT (*Refer to procedure*).

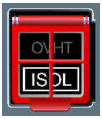
L12



The FSOV is fully-closed and there is still an overheat situation in the affected hydraulic circuit.
The OVHT light will be off only if the temperature decrease below the alert activation threshold.

Associated with one of the following ECAM alert:
- HYD G(Y) RSVR OVHT (*Refer to procedure*)
- HYD ENG 1(2) G(Y) PMP FAULT (*Refer to procedure*).

L123

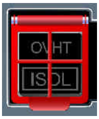


The FSOV is fully closed, and the associated ENG PUMP is isolated.
The isolation is irreversible, the flight crew cannot open again the FSOV.
A maintenance action is required.

Associated with one of the following ECAM alert:
- HYD G(Y) RSVR OVHT (*Refer to procedure*)
- HYD ENG 1(2) G(Y) PMP FAULT (*Refer to procedure*).

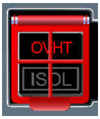
Ident.: DSC-29-20-DSC2920A-00012602.0001001 / 02 MAY 14
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO

GREEN(YELLOW) ENG 1(2) SUPPLY PB



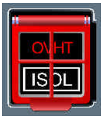
The temperature of the hydraulic circuit is within the normal range and the associated EDP is not isolated.

L12



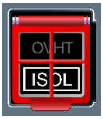
There is an overheat in the affected hydraulic circuit.
Associated with the following ECAM alert: HYD G(Y) SYS OVHT (*Refer to procedure*).

L12



The FSOV is fully-closed and there is still an overheat situation in the affected hydraulic circuit.
The OVHT light will be off only if the temperature decrease below the alert activation threshold.
Associated with the following ECAM alert: HYD G(Y) SYS OVHT (*Refer to procedure).*

L123

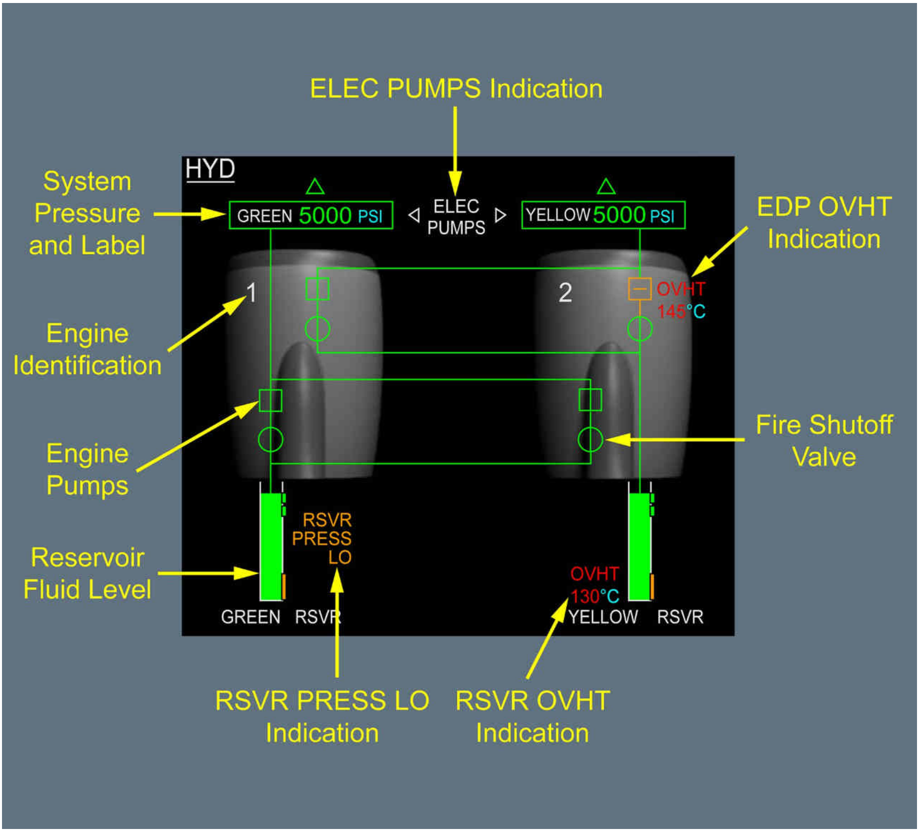


The FSOV is fully closed, and the associated ENG PUMP is isolated.
The isolation is irreversible, the flight crew cannot open again the FSOV.
A maintenance action is required.
Associated with the following ECAM alert: HYD G(Y) SYS OVHT (*Refer to procedure).*

HYD SD PAGE

Ident.: DSC-29-20-DSC2920C-00002917.0002001 / 07 NOV 19
Applicable to: ET-AWP, ET-AYA, ET-AYB

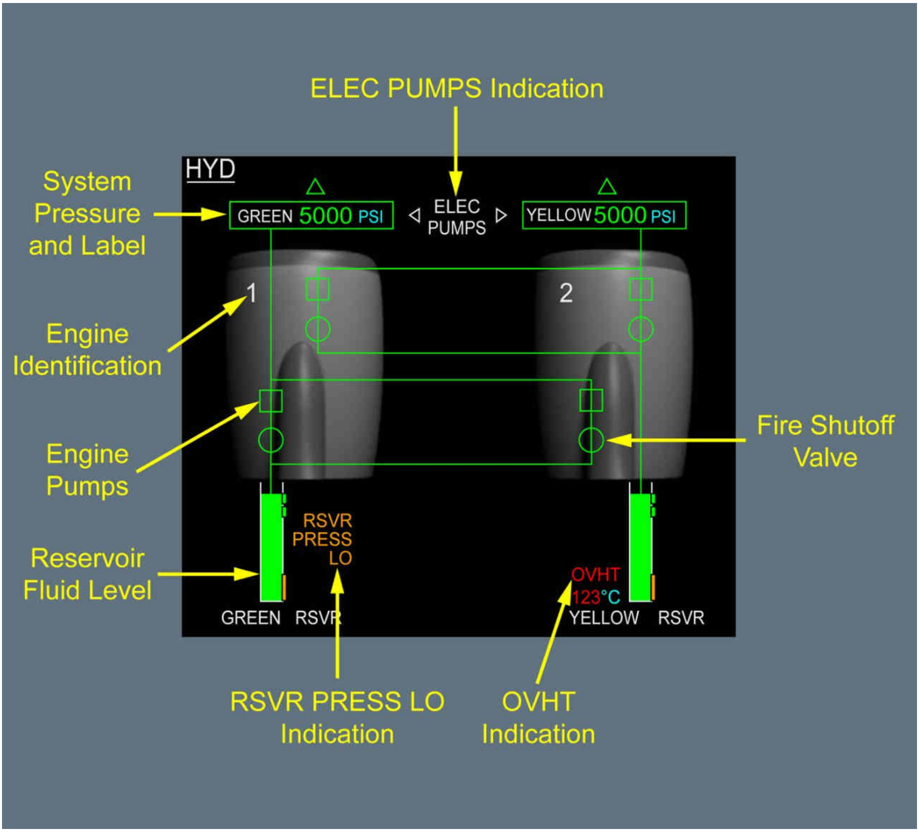
HYD SD page


ELEC PUMPS Indication
HYD
System Pressure and Label
GREEN 5000 PSI
◁ ELEC PUMPS ▷
YELLOW 5000 PSI
EDP OVHT Indication
1
2
OVHT
145°C
Engine Identification
Engine Pumps
Fire Shutoff Valve
RSVR PRESS LO
Reservoir Fluid Level
OVHT
130°C
GREEN RSVR
YELLOW RSVR
RSVR PRESS LO Indication
RSVR OVHT Indication

Ident.: DSC-29-20-DSC2920C-00002917.0001001 / 24 JUN 14

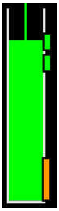
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO

HYD SD page


ELEC PUMPS Indication
System Pressure and Label
Engine Identification
Engine Pumps
Reservoir Fluid Level
Fire Shutoff Valve
RSVR PRESS LO Indication
OVHT Indication
HYD
GREEN 5000 PSI
ELEC PUMPS
YELLOW 5000 PSI
1
2
RSVR PRESS LO
OVHT 123°C
GREEN RSVR
YELLOW RSVR

Ident.: DSC-29-20-DSC2920C-00002923.0001001 / 30 JUN 14
Applicable to: ALL

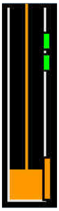
RESERVOIR FLUID LEVEL



The fluid level is within normal range.
The normal filling range is displayed in green on the right hand side of the reservoir.
It is corrected for temperature.

Note: *Intermittent flickering of the hydraulic level indication may be noticed without any operational impact.*

L12

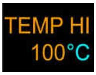


The fluid level is below the low level limit.
Associated with the following ECAM alert: HYD G(Y) RSVR LEVEL LO (*Refer to procedure*).

Ident.: DSC-29-20-DSC2920C-00002924.0002001 / 07 NOV 19
Applicable to: ET-AWP, ET-AYA, ET-AYB

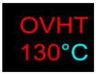
RESERVOIR OVHT INDICATION

L12



An high temperature is detected in the hydraulic reservoir.
For more information about the temperature monitoring, *Refer to DSC-29-30 Excessive Temperature in the Hydraulic System*.
Associated with the following ECAM alert: HYD G(Y) RSVR TEMP HI (*Refer to procedure*).

L12

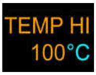


An overheat is detected in the hydraulic reservoir.
For more information about the temperature monitoring, *Refer to DSC-29-30 Excessive Temperature in the Hydraulic System*.
Associated with the following ECAM alert: HYD G(Y) RSVR OVHT (*Refer to procedure*).

Ident.: DSC-29-20-DSC2920C-00002924.0001001 / 04 APR 18
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO

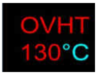
OVHT INDICATION

L12



An high temperature is detected in the hydraulic reservoir or in one EDP.
For more information about the temperature monitoring, *Refer to DSC-29-30 Excessive Temperature in the Hydraulic System*.
Associated with the following ECAM alert: HYD G(Y) SYS TEMP HI (*Refer to procedure*).

L12



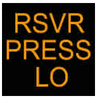
An overheat is detected in the hydraulic reservoir or in one EDP.
For more information about the temperature monitoring, *Refer to DSC-29-30 Excessive Temperature in the Hydraulic System*.
Associated with the following ECAM alert: HYD G(Y) SYS OVHT (*Refer to procedure*).

Note: *The HYD SD page only displays the temperature of the hydraulic reservoir and not the temperature of the associated EDPs. As a consequence, if an abnormal temperature is detected in one EDP, the HYD SD page may display a normal temperature.*

Ident.: DSC-29-20-DSC2920C-00002925.0001001 / 07 MAY 18
Applicable to: ALL

RSVR PRESS LO INDICATION

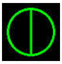
L12



The pressure in the reservoir is below 22 PSI (1.5 bar) before engine start.
Associated with the following ECAM alert: HYD G(Y) RSVR PRESS LO (*Refer to procedure*).

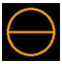
Ident.: DSC-29-20-DSC2920C-00002926.0002001 / 06 NOV 19
Applicable to: ET-AWP, ET-AYA, ET-AYB

FIRE SHUT-OFF VALVE



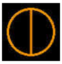
The valve is open.

L12



The valve is closed.

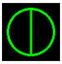
Associated with one of the following ECAM alert:
- ENG 1(2) FIRE (*Refer to procedure*).
- HYD G(Y) RSVR OVHT (*Refer to procedure*).
- HYD ENG 1(2) G(Y) PMP FAULT (*Refer to procedure*).



The valve is set to close but remains abnormally open.

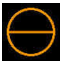
Ident.: DSC-29-20-DSC2920C-00002926.0001001 / 24 APR 14
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO

FIRE SHUT-OFF VALVE



The valve is open.

L12

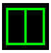


The valve is closed.

Associated with one of the following ECAM alert:
- ENG 1(2) FIRE (*Refer to procedure*).
- HYD G(Y) SYS OVHT (*Refer to procedure*).

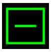
Ident.: DSC-29-20-DSC2920C-00002927.0003001 / 06 NOV 19
Applicable to: ET-AWP, ET-AYA, ET-AYB

EDP



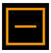
The EDP is on, and the hydraulic pressure is normal.

L12



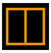
The EDP is automatically depressurized due to a fuel low level in a wing tank. The automatic depressurization can occur in the case of fuel low level in a wing fuel tank and if the temperature of one hydraulic RSVR is above 80 °C, one EDP per hydraulic system (GREEN and YELLOW) is automatically depressurized to minimize heat rejection into the hydraulic system. However before landing or in the case of high hydraulic consumers demand, the depressurized EDP is automatically running.

L12



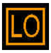
The EDP is manually depressurized and ENG 1(2) PUMP pb-sw is OFF or is automatically depressurized due to high temperature.
When an abnormal temperature is detected in one EDP, the ECAM alert HYD ENG 1(2) G(Y) PMP FAULT is triggered and the EDP is automatically depressurized until the end of the flight. For more information about the temperature threshold, *Refer to DSC-29-30 Excessive Temperature in the Hydraulic System*.

Associated with one of the following ECAM alert:
- HYD G+Y SYS PRESS LO (*Refer to procedure*).
- HYD ENG 1(2) G(Y) PMP PRESS LO (*Refer to procedure*).
- HYD ENG 1(2) G(Y) PMP FAULT (*Refer to procedure*).
- HYD G(Y) RSVR OVHT (*Refer to procedure*).
- HYD G(Y) RSVR TEMP HI (*Refer to procedure*).
- HYD G(Y) RSVR LEVEL LO (*Refer to procedure*).

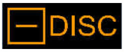


The EDP is set to OFF but remains abnormally pressurized.

L12

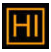


- The EDP is running, and a low hydraulic pressure is detected.
  Associated with the following ECAM alert: HYD ENG 1(2) G(Y) PMP PRESS LO (*Refer to procedure*).
- On ground, the associated engine is not running.



The pump is manually disconnected from the engine accessory gearbox, via the mechanical declutch mechanism.

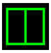
L12



The EDP is running, and a high hydraulic pressure is detected.
Associated with the following ECAM alert: HYD ENG 1(2) G(Y) PMP FAULT (*Refer to procedure*).

Ident.: DSC-29-20-DSC2920C-00002927.0002001 / 26 OCT 17
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO

EDP



The EDP is on, and the hydraulic pressure is normal.

L12 ⊟	The EDP is automatically depressurized due to a fuel low level in a wing tank. The automatic depressurization can occur in the case of fuel low level in a wing fuel tank and if the temperature of one hydraulic RSVR is above 80 °C, one EDP per hydraulic system (GREEN and YELLOW) is automatically depressurized to minimize heat rejection into the hydraulic system. However before landing or in the case of high hydraulic consumers demand, the depressurized EDP is automatically running.
L12 ⊟	The EDP is manually depressurized and ENG 1(2) PUMP pb-sw is OFF or is automatically depressurized due to high temperature. When an abnormal temperature is detected in one EDP or in the associated RSVR, the ECAM alert HYD G(Y) SYS TEMP HI is triggered and the EDP is automatically depressurized until the end of the flight. For more information about the temperature threshold, *Refer to DSC-29-30 Excessive Temperature in the Hydraulic System*. Associated with one of the following ECAM alert: - HYD G+Y SYS PRESS LO (*Refer to procedure*). - HYD ENG 1(2) G(Y) PMP PRESS LO (*Refer to procedure*). - HYD G(Y) SYS OVHT (*Refer to procedure*). - HYD G(Y) SYS TEMP HI (*Refer to procedure*).
◫	The EDP is set to OFF but remains abnormally pressurized.
L12 LO	- The EDP is running, and a low hydraulic pressure is detected. Associated with the following ECAM alert: HYD ENG 1(2) G(Y) PMP PRESS LO (*Refer to procedure*). - On ground, the associated engine is not running.
⊟DISC	The pump is manually disconnected from the engine accessory gearbox, via the mechanical declutch mechanism.

Ident.: DSC-29-20-DSC2920C-00025339.0001001 / 07 NOV 19
Applicable to: ET-AWP, ET-AYA, ET-AYB

EDP OVHT INDICATION

L12

TEMP HI 123°C	An high temperature is detected in the case drain of one EDP. For more information about the temperature monitoring, *Refer to DSC-29-30 Excessive Temperature in the Hydraulic System*. Associated with the following ECAM alert: HYD ENG 1(2) G(Y) PMP FAULT (*Refer to procedure*).

L12

OVHT 145°C	An overheat is detected in the case drain of one EDP. For more information about the temperature monitoring, *Refer to DSC-29-30 Excessive Temperature in the Hydraulic System*. Associated with the following ECAM alert: HYD ENG 1(2) G(Y) PMP FAULT (*Refer to procedure*).

Ident.: DSC-29-20-DSC2920C-00002928.0001001 / 24 APR 14
Applicable to: ALL

ENGINE IDENTIFICATION

1	The engine is running.
1	The engine is not running.

Ident.: DSC-29-20-DSC2920C-00002929.0001001 / 07 NOV 16
Applicable to: ALL

ELECTRIC PUMPS

The electric pump indication is displayed only on ground, when the engines are not running.

▷	The electric pump is not running.

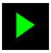
L12

▶	The electric pump is failed and automatically set to OFF. Associated with the following ECAM alert: HYD G(Y) ELEC PMP FAULT (*Refer to procedure*).

L12

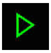
▷	The electric pump is failed and manually set to OFF. Associated with the following ECAM alert: HYD G(Y) ELEC PMP FAULT (*Refer to procedure*).

L12



The electric pump is running with ELEC PUMP pb set to ON.
Associated with the following memo: G(Y) ELEC PMP CTL (*Refer to memo*).

L12



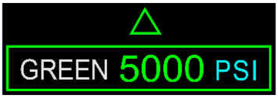
The electric pump is running in automatic mode.
Associated with the following memo:G(Y) ELEC PMP CTL (*Refer to memo*).

Ident.: DSC-29-20-DSC2920C-00002931.0001001 / 24 APR 14
Applicable to: ALL

SYSTEM PRESSURE AND LABEL

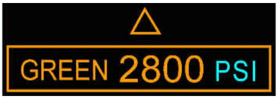
Indicates the actual pressure of the hydraulic system.

L12



The hydraulic pressure indication is normal.
The pressure is above 2 900 PSI.

L12



The hydraulic pressure indication is low.
The pressure is below 2 900 PSI.
Associated with the following ECAM alert: HYD G(Y) SYS PRESS LO (*Refer to procedure*).

MEMO

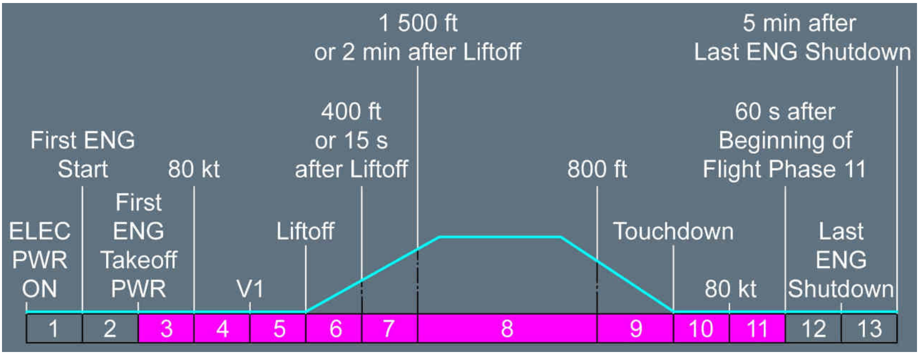
Ident.: DSC-29-20-00002918.0001001 / 24 APR 14
Applicable to: ALL

L12

G(Y) ELEC PMP CTL	The electric pump of the GREEN or the YELLOW hydraulic system is running. Appears on the WD.

L2 Flight Phase Inhibition

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

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EXCESSIVE TEMPERATURE IN THE HYDRAULIC SYSTEM

Ident.: DSC-29-30-00023693.0003001 / 03 JUL 20
Applicable to: ET-AWP, ET-AYA, ET-AYB

The hydraulic system monitors the temperature in the EDP and in the reservoir.

Note: *The case drain temperature in the EDP is monitored by two temperature transducer in each case drain filter manifold and the reservoir temperature is monitored by two temperature transducers in each reservoir.*

EDP

When the hydraulic system detects an abnormal temperature in the EDP, one of the following ECAM alert is triggered:

- HYD ENG 1(2) G(Y) PMP FAULT along with a DUE TO PMP TEMP HI subtitle, or
  L2 For more information, *Refer to procedure*.
- L1 HYD ENG 1(2) G(Y) PMP FAULT along with a DUE TO PMP OVHT subtitle.
  L2 For more information, *Refer to procedure*.

L1 When the abnormal temperature is detected, the TEMP HI or OVHT indication and the associated EDP temperature value is displayed on the HYD SD page in accordance with the ECAM alert.
When the ECAM alert along with a DUE TO PMP TEMP HI subtitle is triggered, the affected EDP is automatically depressurized until the end of the flight.
When the ECAM alert along with a DUE TO PMP OVHT subtitle is triggered, the associated FSOV automatically isolates the affected EDP until the end of the flight.

L2

Fuel condition	EDP TEMP		
	T > 120 °C	T > 135 °C	T > 145 °C
Nominal	HYD ENG 1(2) G(Y) PMP FAULT [DUE TO PMP TEMP HI]	-	HYD ENG 1(2) G(Y) PMP FAULT [DUE TO PMP OVHT]
Fuel low level	-	HYD ENG 1(2) G(Y) PMP FAULT [DUE TO PMP TEMP HI]	

1 L1 RSVR

When the hydraulic system detects an abnormal temperature in the reservoir, one of the following ECAM alert is triggered:

- HYD G(Y) RSVR TEMP HI, or
  L2 For more information, *Refer to procedure*.
- L1 HYD G(Y) RSVR OVHT.
  L2 For more information, *Refer to procedure*.

L1 When the abnormal temperature is detected, the TEMP HI or OVHT indication and the associated RSVR temperature value is displayed on the HYD SD page in accordance with the ECAM alert.
When the ECAM alert HYD G(Y) RSVR TEMP HI is triggered, both EDPs are manually depressurized in accordance with ECAM.
When the ECAM alert HYD G(Y) RSVR OVHT is triggered, the isolation of the affected EDP is performed by closing the FSOV via the red guarded OVHT ISOL pb and will stay in closed position until the end of the flight.

L2

Fuel condition	RSVR TEMP		
	T > 95 °C	T > 115 °C	T > 120 °C
Nominal	HYD G(Y) RSVR TEMP HI	-	HYD G(Y) RSVR OVHT
Fuel low level	-	HYD G(Y) RSVR TEMP HI	

EXCESSIVE TEMPERATURE IN THE HYDRAULIC SYSTEM

Ident.: DSC-29-30-00023693.0002001 / 07 MAY 18
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO

The hydraulic system monitors the temperature in the reservoir and in the EDP.

When the hydraulic system detects an abnormal temperature one of the following ECAM alert is triggered:

- HYD G(Y) SYS TEMP HI, or
L2 For more information, *Refer to procedure*.
L1 - HYD G(Y) SYS OVHT.
L2 For more information, *Refer to procedure*.

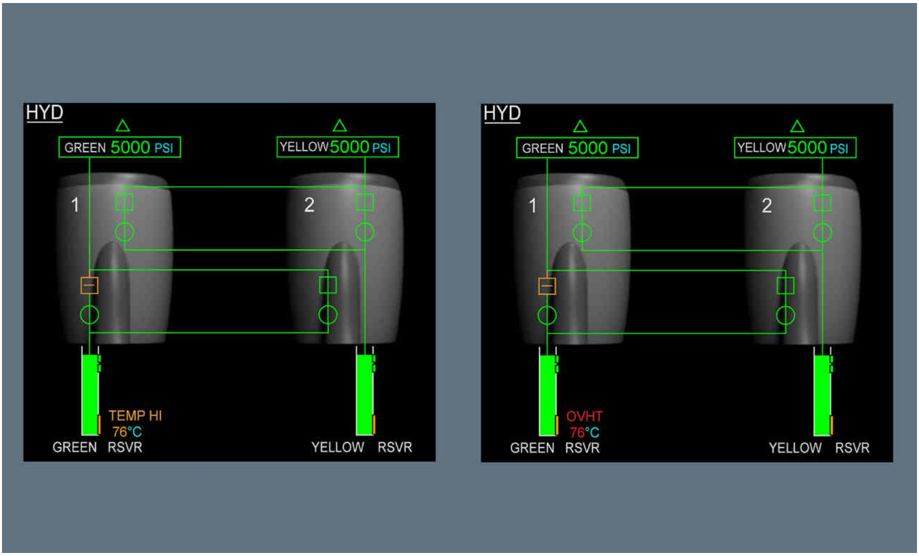
Depending on the temperature detected in the reservoir or in the EDP, the following table indicates the triggered ECAM alert.

RSVR TEMP	EDP TEMP		
	T < 120 °C	120 °C < T < 145 °C	T > 145 °C
T < 95 °C	-	HYD G(Y) SYS TEMP HI	HYD G(Y) SYS OVHT
95 °C < T < 120 °C	HYD G(Y) SYS TEMP HI	HYD G(Y) SYS TEMP HI	HYD G(Y) SYS OVHT
T > 120 °C	HYD G(Y) SYS OVHT		

L3 In the case of low fuel level, the performance of the hydraulic heat exchanger is low and the following table applies.

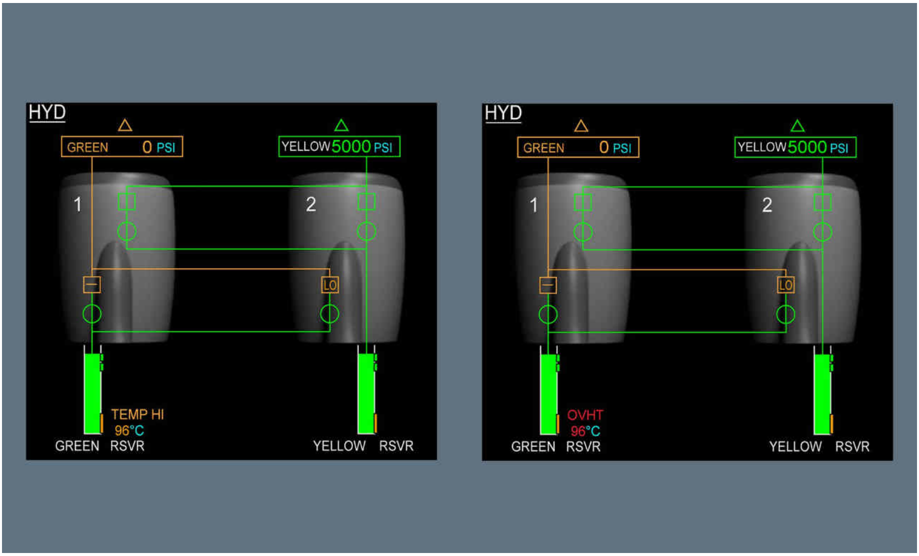
RSVR TEMP	EDP TEMP		
	T < 135 °C	135 °C < T < 145 °C	T > 145 °C
T < 115 °C	-	HYD G(Y) SYS TEMP HI	HYD G(Y) SYS OVHT
115 °C < T < 120 °C	HYD G(Y) SYS TEMP HI	HYD G(Y) SYS TEMP HI	HYD G(Y) SYS OVHT
T > 120 °C	HYD G(Y) SYS OVHT		

L1 When the abnormal temperature is detected, the TEMP HI or OVHT indication and the associated RSVR temperature are displayed on the HYD SD page in accordance with the ECAM alert.
If the abnormal temperature is detected only in the EDP, the RSVR temperature displayed on the HYD SD page may be below 95 °C and the affected EDP is automatically depressurized until the end of the flight.


HYD
GREEN 5000 PSI
YELLOW 5000 PSI
1
2
TEMP HI
76°C
GREEN RSVR
YELLOW RSVR
HYD
GREEN 5000 PSI
YELLOW 5000 PSI
1
2
OVHT
76°C
GREEN RSVR
YELLOW RSVR

If the abnormal temperature is detected in the RSVR, both EDPs are automatically depressurized and the associated hydraulic system is lost until the end of the flight.

L2 In this case, the display on the HYD SD page changes depending on which HMCA status is displayed by the CDS: one EDP is displayed depressurized ⊟ and the second is displayed as low pressure LO.


HYD
GREEN 0 PSI
YELLOW 5000 PSI
1
2
LO
TEMP HI
96°C
GREEN RSVR
YELLOW RSVR
HYD
GREEN 0 PSI
YELLOW 5000 PSI
1
2
LO
OVHT
96°C
GREEN RSVR
YELLOW RSVR

L1 After an automatic depressurization due to an abnormal temperature:

- The recovery of the affected EDP is not possible during the flight, and
- The following ECAM alert is displayed: HYD G(Y) SYS MONITORING FAULT (*Refer to procedure*).

DISCREPANCY BETWEEN WHEEL SD page AND ECAM ALERTS IN THE CASE OF HYDRAULIC FAILURE - NORM INDICATION

Ident.: DSC-29-40-00022167.0001001 / 12 NOV 14
Applicable to: ALL

DESCRIPTION

When HYD G(Y) SYS PRESS LO alert is triggered after landing gear extension, on the WHEEL SD page, NORM indication may be displayed instead of NORM.
However, the HYD G(Y) SYS PRESS LO alert is correct on the WD and PART NORM BRK correctly displayed in the INOP SYS section of the SD STATUS page.

PROCEDURE

If the HYD G(Y) SYS PRESS LO alert is triggered after landing gear extension.
On the WHEEL SD page:Disregard NORM indication.

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AIRCRAFT SYSTEMS

30 - ICE AND RAIN PROTECTION

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DSC-30-20 Ice Protection

DSC-30-20-10 System Description

Overview.......... A
Ice Detection.......... B
Engine Anti-ice.......... C
Wing Anti-ice.......... D
Water/Waste Anti-ice.......... E
Cockpit Window Heating.......... F
Probe Heating.......... G

DSC-30-20-20 Controls and Indicators

Cockpit View.......... A
ANTI ICE Panel.......... B
BLEED SD page.......... C
INT LT Panel.......... D
MEMO.......... E

DSC-30-30 Rain Removal

DSC-30-30-10 System Description

Overview.......... A
Wipers.......... B
Rain Repellent C

DSC-30-30-20 Controls and Indicators

Cockpit View.......... A
DOOR/OXYGEN SD page.......... B
WIPER Panels.......... C

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Localization Title	Toc Index	ID	Reason
DSC-30-PLP-TOC Ice Protection		1	Documentation update: Deletion of the "PP04797 Temporary Abnormal Behavior" table of content entry.
			Documentation update: Deletion of the "00023541.0001001 Wing Anti-Ice Valve Blocked due to Frozen Water" documentary unit.

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OVERVIEW

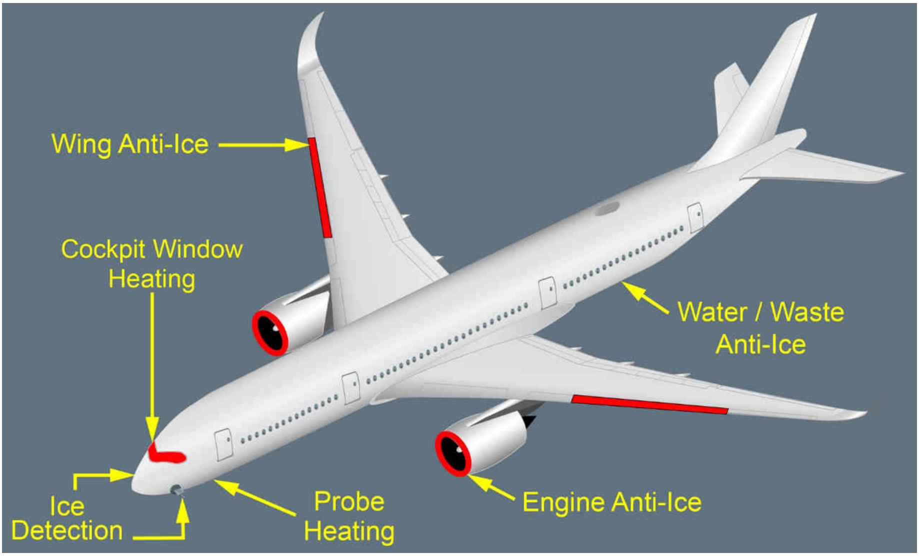
Ident.: DSC-30-20-10-00002949.0001001 / 30 APR 14
Applicable to: ALL

The ice protection system protects the critical areas of the aircraft against ice in order to enable unrestricted operation of the aircraft in icing conditions.

For that purpose, the ice protection system uses:
- Hot bleed air for:
  - Engine anti-ice
  - Wing anti-ice.
- Electrical power for:
  - Window heating
  - Water/Waste drain masts heating
  - Probe heating.

An ice detection system detects when the aircraft is flying in icing conditions and provides this information to the flight crew.

Ice Protection


Wing Anti-Ice
Cockpit Window Heating
Water / Waste Anti-Ice
Ice Detection
Probe Heating
Engine Anti-Ice

ICE DETECTION

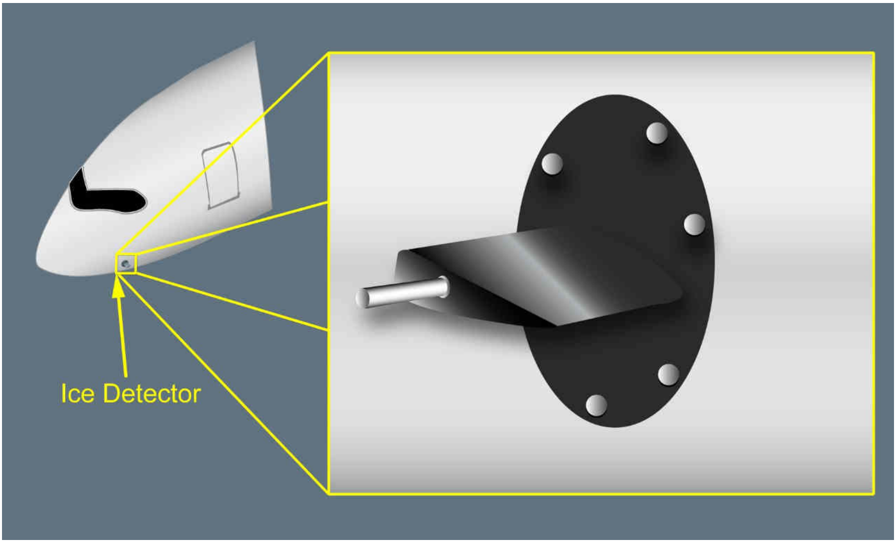
Applicable to: ALL

Ident.: DSC-30-20-10-10-00002951.0001001 / 30 APR 14

ICE DETECTION SYSTEM

The ice detection system has two ice detectors that measure ice accretion. If there is icing, or severe icing conditions, the ice detectors provide this information to the flight crew.
There is one ice detector on each side of the fuselage, on the lower part of the nose fuselage.

Ice detectors



L3 Each ice detector has a probe that measures icing.

L1 - If at least one ice detector detects icing conditions, and if engine anti-ice is off: The ECAM triggers the A-ICE ICE DETECTED alert.

L3 If 0.5 mm of ice builds up on any probe, the ice detection system informs the anti-ice control system of icing conditions.
An internal heating device deices the probes, to permit subsequent ice detection.

L1 - If at least one ice detector subsequently detects severe icing conditions, and if wing anti-ice is off: The ECAM triggers the A-ICE SEVERE ICE DETECTED alert.

L3 If 0.5 mm of ice builds up 7 times on the same probe, the ice detection system informs the anti-ice control system of severe icing conditions. This number of ice detections corresponds to approximately 5 mm of ice accretion on the airframe. The ice detection counter resets to zero, when wing anti-ice is on.

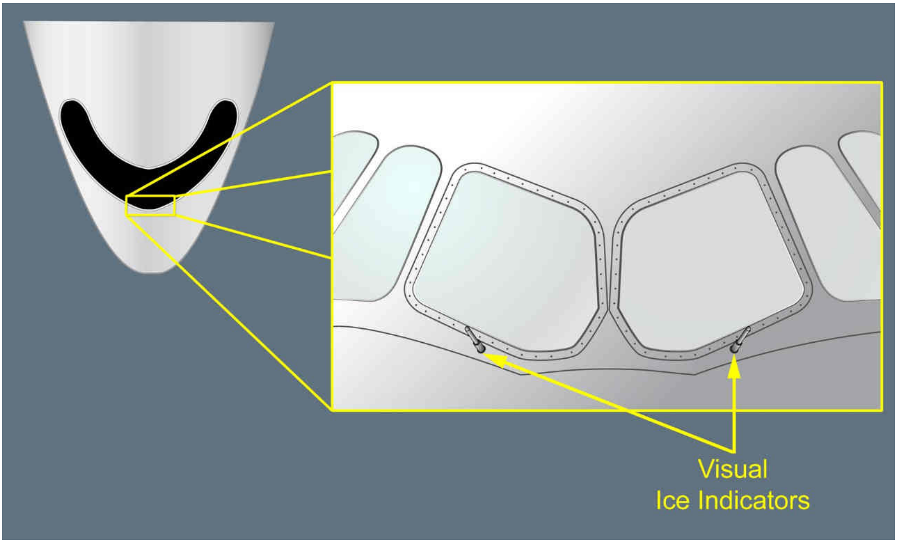
L1 - If icing is not detected for approximately 2 min, and if wing anti-ice and/or engine anti-ice are on: The ECAM displays the ICE NOT DETECTED memo.

Ident.: DSC-30-20-10-10-00002953.0001001 / 30 APR 14

VISUAL ICE INDICATORS

There are two visual ice indicators outside the aircraft, on the lower part of the two windshield frames. They provide the flight crew with evidence of ice accretion.
The visual ice indicators can be illuminated.

Visual Ice Detectors



ENGINE ANTI-ICE

Ident.: DSC-30-20-10-00002952.0001001 / 30 APR 14
Applicable to: ALL

Each engine has its own anti-ice system, with an independent hot bleed air source.

L3 This bleed air comes from the 3rd stage of the High Pressure Compressor to anti-ice the engine air inlet.

L1 Two anti-ice valves on each engine enable the flow of hot air.

L2
- The pressure regulating shutoff valve is closed when the engine anti-ice is off
- The pressure regulating valve regulates the air pressure to the engine air inlet.
  In the case the pressure regulating valve fails in open position, the pressure regulating shutoff valve can regulate the air pressure as a backup regulation means.

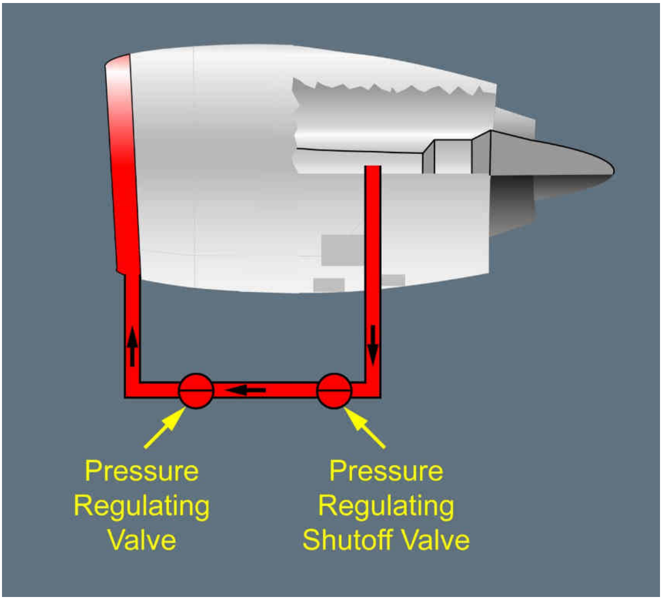
For each engine, two Anti-Ice Control Functions (AICFs) control and monitor the anti-ice valves of the associated engine.

L3 AICF 1 in CPIOM J21 and AICF 3 in CPIOM J23 control and monitor the anti-ice valves of the engine 1.

AICF 2 in CPIOM J22 and AICF 4 in CPIOM J24 control and monitor the anti-ice valves of the engine 2.

Each valve is electrically-controlled and pneumatically-actuated. The valve opens, if it loses its power supply.

Engine anti-ice



L1 When the flight crew sets the applicable ENG ANTI ICE pb to ON, the engine anti-ice valves of the selected engine open.

WING ANTI-ICE

Ident.: DSC-30-20-10-00002954.0001001 / 04 DEC 14
Applicable to: ALL

Hot air from the pneumatic system can be used to prevent ice accretion on slats 3, 4 and 5.
In each wing, a wing anti-ice valve enables the flow of hot air.

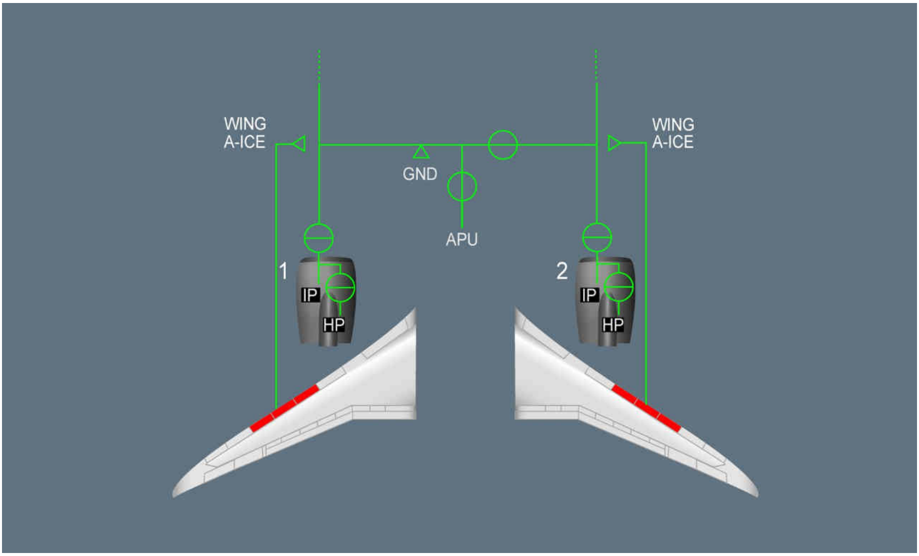
L2 The wing anti-ice system has:
- Two control channels
- Two monitoring channels.

Only one monitoring channel and one control channel is active at a time. The other channel becomes active when the first one fails.

L3 Each control channel has:
- One Wing Ice Protection System (WIPS) application in CPIOM H43 (resp. H44)
- One CRDC.

Each monitoring channel has:
- One Bleed and Overheat Monitoring Unit (BOMU)
- One CRDC.

Wing Anti-Ice



L1 When the flight crew sets the WING ANTI ICE pb to ON, both wing anti-ice valves open.

L2 The wing anti-ice valves automatically close if the SAT is above 30 °C (86 °F).

L1 On ground, when the WING ANTI ICE pb is set to ON, the wing anti-ice valves will open for approximately 20 s (provided that bleed air is available from the engines, the APU or HP ground sources) and then will close. During takeoff, the wing anti-ice valves will then automatically open when the landing gear is no more compressed.

L3 Each valve is electrically-controlled and pneumatically-actuated. The valve closes, if it loses its power supply.

WATER/WASTE ANTI-ICE

Ident.: DSC-30-20-10-00002955.0001001 / 30 APR 14
Applicable to: ALL

The water lines are automatically heated to prevent ice formation, which could lead to damage and/or obstruction of the water lines.

L3 Water lines heating is monitored and controlled by three Ice Protection Control Units (IPCU).

The following areas are heated:
- The drain masts
- The sections of the water/waste lines coming from the galleys and lavatory washbasins, which are located below the cargo compartment floor
- The drain tubes of the waste tanks
- The water servicing panel
- The potable water lines, located close to the potable water tanks, close to the forward drain panel, and inside the wing center section.

Sensors measure the temperature in these areas. For each area, the IPCUs compare the temperature to a reference temperature. When the actual temperature is below the reference temperature, the IPCUs activate the heating in the affected area.

COCKPIT WINDOW HEATING

Ident.: DSC-30-20-10-00002956.0001001 / 30 APR 14
Applicable to: ALL

The cockpit windows (windshield and side windows) are electrically-heated.

L2 The windshields are heated to prevent icing and to defog.
The side windows are heated to defog only.

L1 The heating system is fully automatic, and operates as soon as any engine is started.
However, before engine start, the crew can manually activate the system, via the PROBE & WINDOW HEAT pb-sw.

L2 On each side, a windows heating system monitors and controls the heating of the associated windshield and windows.

L3 Each windows heating system:
- Regulate the cockpit window temperature on its associated side,
- Operate the windshield and side windows heating at normal power, on ground and in flight, on its associated side.

PROBE HEATING

Ident.: DSC-30-20-10-00002957.0002001 / 07 JUN 19
Applicable to: ALL

The MFPs, the static probes, and the fourth AOA probe are automatically heated to prevent ice formation. The pitot probe and the static probes of the ISIS are also automatically heated.
The probe heating system is fully automatic, and operates as soon as any engine is started.
However, before engine start, the flight crew can manually activate the system, via the PROBE & WINDOW HEAT pb-sw.

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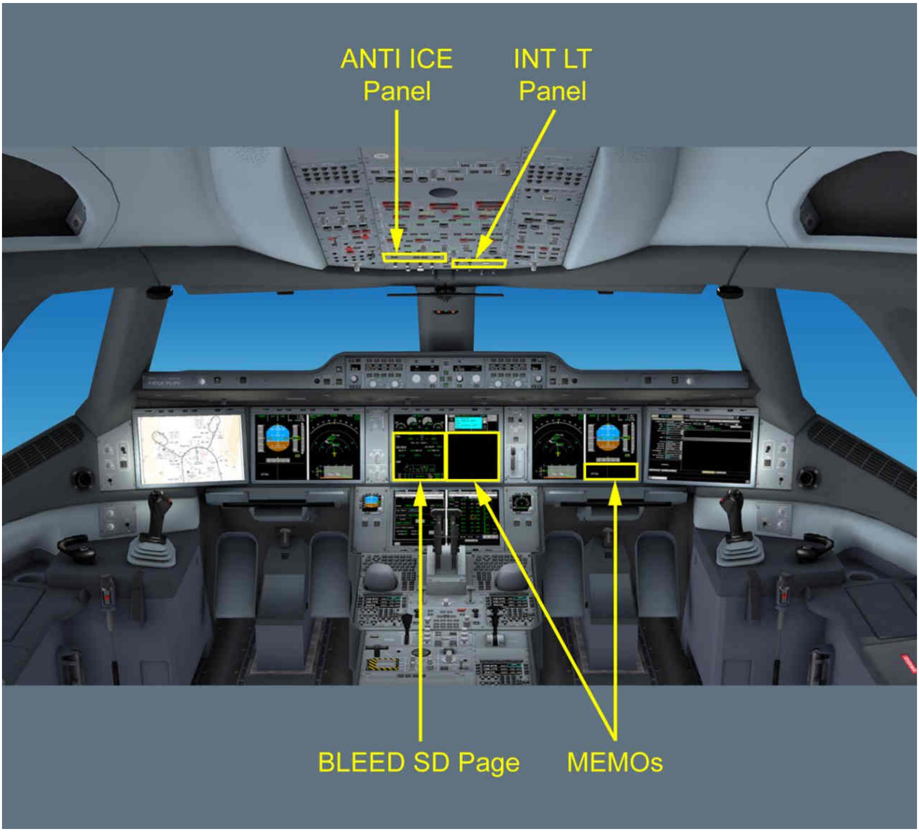
COCKPIT VIEW

Ident.: DSC-30-20-20-00002958.0001001 / 30 APR 14
Applicable to: ALL


ANTI ICE
Panel
INT LT
Panel
BLEED SD Page
MEMOs

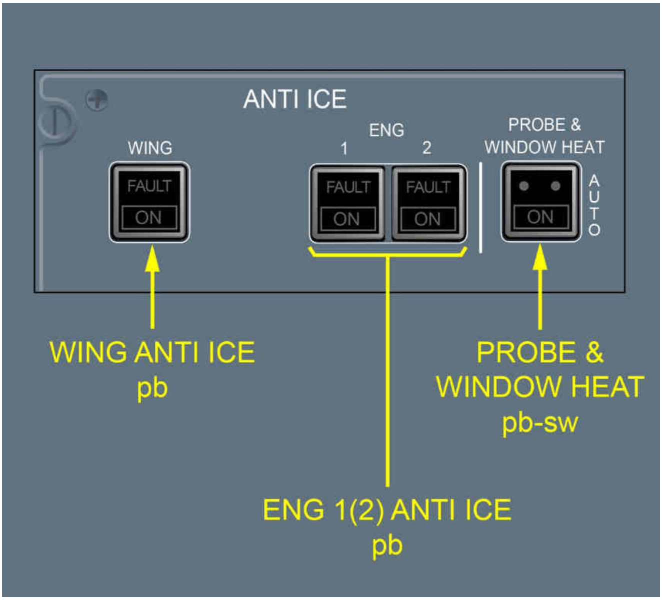
Cockpit View

ANTI ICE PANEL

Applicable to: ALL

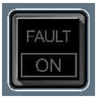
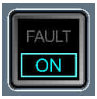
Ident.: DSC-30-20-20-10-00002959.0001001 / 30 APR 14

ANTI ICE Panel

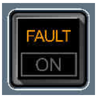

ANTI ICE
WING
ENG
1
2
PROBE &
WINDOW HEAT
FAULT
ON
FAULT
ON
FAULT
ON
ON
AUTO
WING ANTI ICE
pb
PROBE &
WINDOW HEAT
pb-sw
ENG 1(2) ANTI ICE
pb

Ident.: DSC-30-20-20-10-00002963.0002001 / 07 JUL 16

ENG 1(2) ANTI ICE PB

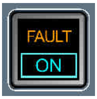
	The anti-ice of the applicable engine is off.
	The anti-ice of the applicable engine is on. The ECAM displays the ENG 1(2)(1+2) A-ICE memo.

L12



The shutoff valve of the engine anti-ice system is abnormally open on the applicable engine.
Associated with the following ECAM alert: A-ICE ENG 1(2) VLV OPEN (*Refer to procedure*)

L12

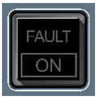


One of the following applies:

- The shutoff valve or the pressure regulating valve of the engine anti-ice system is abnormally closed on the applicable engine
  Associated with the following ECAM alert: A-ICE ENG 1(2) VLV CLOSED (*Refer to procedure*)
- The engine anti-ice system is failed on the applicable engine.

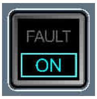
Ident.: DSC-30-20-20-10-00002964.0001001 / 04 DEC 14

WING ANTI ICE PB



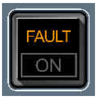
Wing anti-ice is off.

L12



Wing anti-ice is on.
The ECAM displays the WING A-ICE memo.
On ground, the wing anti-ice valves open for approximately 20 s. The valves will then close. If the flight crew does not switch off the wing anti-ice, the ON light will remain on, even though the wing anti-ice valves are closed. The wing anti-ice valves will then reopen during takeoff when the landing gear is no more compressed.

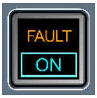
L12



One of the following applies:

- The left or right wing anti-ice valve is abnormally open
  Associated with the following ECAM alert: A-ICE L(R) WING VLV OPEN (*Refer to procedure*)
- The control and the monitoring channels of the wing anti-ice control system are not synchronized
  Associated with the following ECAM alert: A-ICE WING SYS FAULT (*Refer to procedure*)
- A leak is detected in the left or right wing anti-ice bleed duct.
  Associated with the following ECAM alert: AIR L(R) WING A-ICE LEAK (*Refer to procedure*)

L12



One of the following applies:

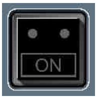
- The left or right wing anti-ice valve is abnormally closed
  Associated with the following ECAM alert: A-ICE L(R) WING VLV CLOSED (*Refer to procedure*)
- The wing anti-ice valves are open, but an abnormal pressure is detected

  Associated with one of the following the following ECAM alerts:
  - A-ICE L(R) WING VLV PRESS LO (*Refer to procedure*)
  - A-ICE L(R) WING VLV PRESS HI (*Refer to procedure*)
- The wing anti-ice control system is faulty.
  Associated with the following ECAM alert: A-ICE WING SYS FAULT (*Refer to procedure*)

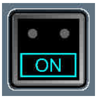
The FAULT light goes off, when the affected wing anti-ice system is recovered, after applying the procedure. If the system cannot be recovered, the FAULT light will remain on for the remainder of the flight.

Ident.: DSC-30-20-20-10-00002960.0001001 / 30 APR 14

PROBE & WINDOW HEAT PB-SW



Probe and window heating is automatic, and will operate as soon as any engine is started.



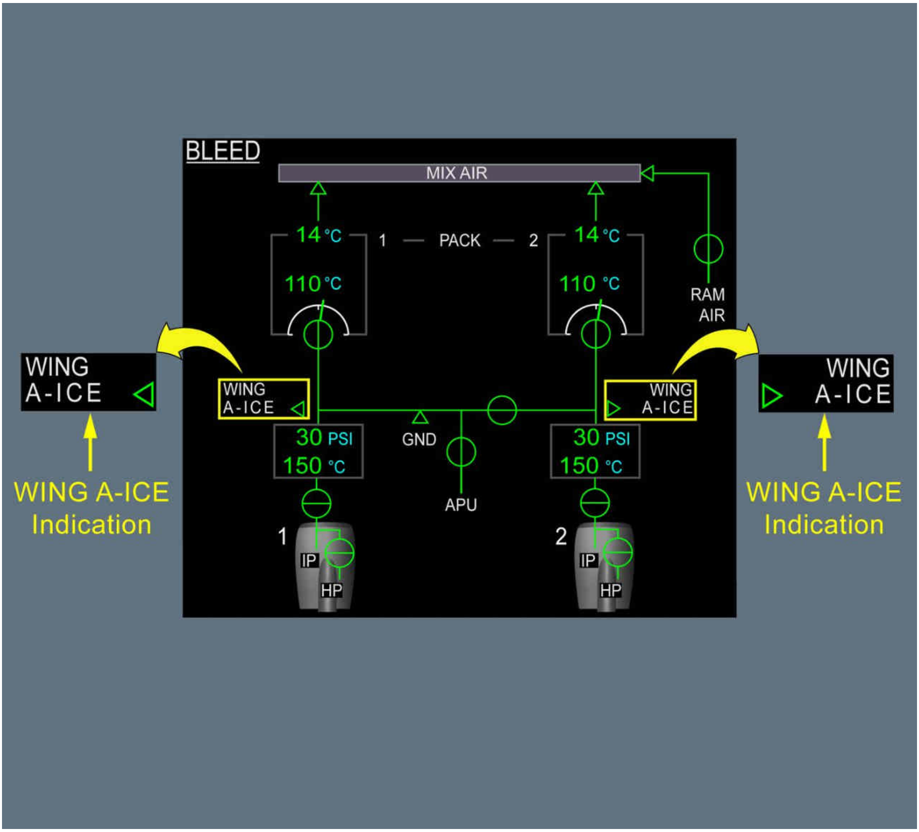
Probe and window heating is selected on.

BLEED SD PAGE

Applicable to: ALL

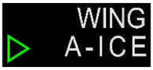
Ident.: DSC-30-20-20-30-00002961.0001001 / 30 APR 14

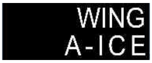
BLEED SD page


BLEED
MIX AIR
14 °C
1 — PACK — 2
14 °C
110 °C
110 °C
RAM
AIR
WING
A-ICE
WING
A-ICE
WING
A-ICE
WING
A-ICE
GND
30 PSI
150 °C
30 PSI
150 °C
APU
WING A-ICE
Indication
WING A-ICE
Indication
1
IP
HP
2
IP
HP

Ident.: DSC-30-20-20-30-00002965.0001001 / 30 APR 14

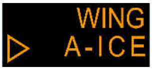
WING A-ICE INDICATION

	When there is no display, the wing anti-ice is off.
	Wing anti-ice is on and is operating.



Wing anti-ice is commanded on but the associated valve remains normally closed.

L12



One of the following applies:
- Wing anti-ice is commanded off but remains on
  Associated with the following ECAM alert: A-ICE L(R) WING VLV OPEN (*Refer to procedure*)
- Wing anti-ice is commanded on but the associated valve remains abnormally closed
  Associated with the following ECAM alert: A-ICE L(R) WING VLV CLOSED (*Refer to procedure*)
- An abnormal pressure is detected.

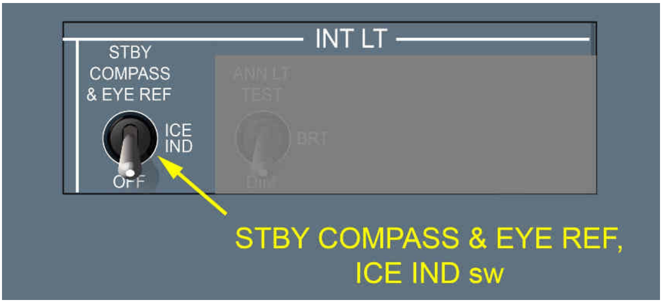
  Associated with one of the following ECAM alerts:
  - A-ICE L(R) WING VLV PRESS HI (*Refer to procedure*)
  - A-ICE L(R) WING VLV PRESS LO (*Refer to procedure*)

INT LT PANEL

Applicable to: ALL

Ident.: DSC-30-20-20-20-00013543.0001001 / 30 APR 14

INT LT Panel


INT LT
STBY
COMPASS
& EYE REF
ICE
IND
OFF
ANN LT
TEST
BRT
DIM
STBY COMPASS & EYE REF,
ICE IND sw

Ident.: DSC-30-20-20-20-00011865.0001001 / 30 APR 14

STBY COMPASS & EYE REF, ICE IND SW

STBY
COMPASS
& EYE REF
ICE
IND
OFF

The ice indicator light is on.

STBY
COMPASS
& EYE REF
ICE
IND
OFF

The ice indicator light is off.

MEMO

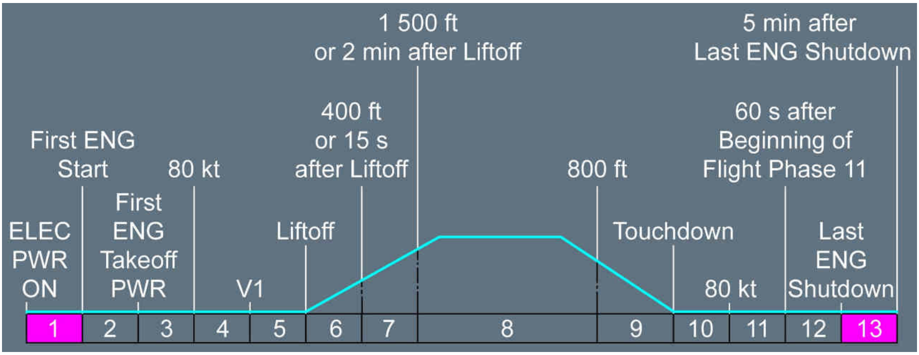
Applicable to: ALL

Ident.: DSC-30-20-20-40-00002962.0002001 / 04 FEB 19

L12	ENG 1(2) A-ICE	Engine 1(2) anti-ice is on and no engine duct burst is detected. Appears on the PFD and on the WD.
L12	ENG 1(2) A-ICE	Engine 1(2) anti-ice valve is failed closed or engine duct burst is detected on affected side. Appears on the PFD and on the WD.
L12	ENG 1+2 A-ICE	Engine 1 and 2 anti-ice are on and no engine duct burst is detected. Appears on the PFD and on the WD.
L12	ENG 1+2 A-ICE	Engine 1 and 2 anti-ice valves are failed closed or engine duct burst is detected on both sides. Appears on the PFD and on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

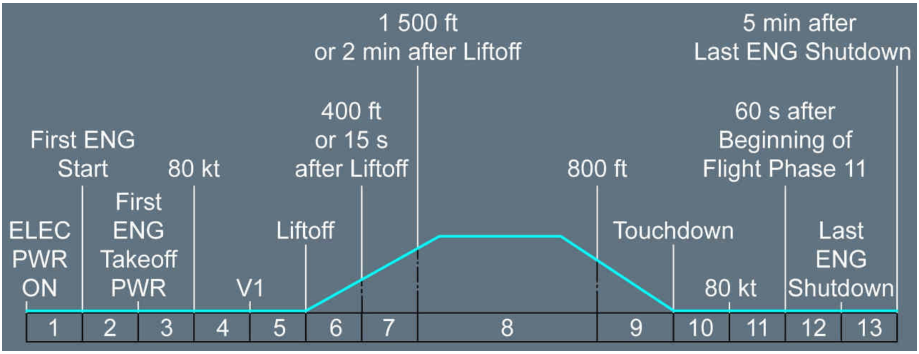
Ident.: DSC-30-20-20-40-00000576.0002001 / 07 JUL 16

L12

WING A-ICE	Wing anti-ice is on. Appears on the PFD and on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

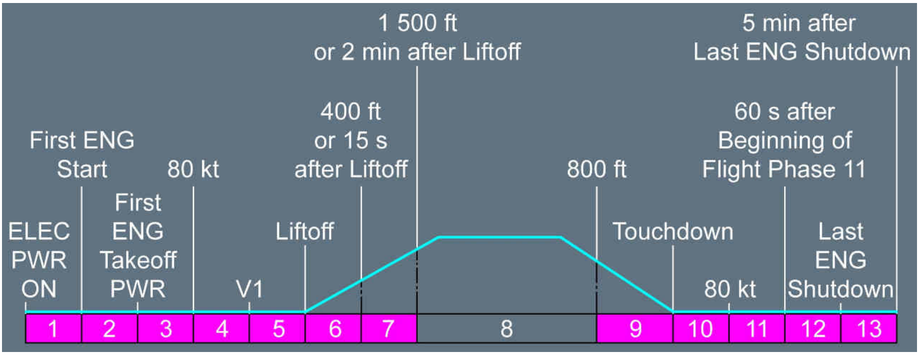
Ident.: DSC-30-20-20-40-00000697.0001001 / 30 APR 14

L12

ICE NOT DETECTED	Wing anti-ice and/or engine anti-ice are on, and the ice detectors have not detected any ice for approximately 2 min. Appears on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

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OVERVIEW

Ident.: DSC-30-30-10-00011293.0001001 / 26 JUL 17
Applicable to: ALL

The rain removal system has:
- Two wipers
- A rain repellent system ◁ .

WIPERS

Ident.: DSC-30-30-10-00002988.0001001 / 30 APR 14
Applicable to: ALL

The Captain and First Officer windshields each has a five-speed electric wiper, including three intermittent speed settings.
Each windshield wiper is controlled by its assigned WIPER selector.

L2 The heating system of the cockpit windows does not cover the surface where the wipers are stored (central frame between the windshields). Therefore, the use of the window heating system will not unfreeze the wipers if they are blocked by ice. Manual deicing is required in this case.

L3 The vertical storage of the wipers (when they are not in use) prevents vibration and noise that could be generated by the wiper blades.

RAIN REPELLENT ◁

Ident.: DSC-30-30-10-00002989.0001001 / 26 JUL 17
Applicable to: ALL

The rain repellent improves visibility in heavy rain conditions. This is done by spraying rain repellent fluid on the surface of the windshield.

L3 When sprayed on the windshield, rain repellent fluid increases the surface tension of the water. This removes the film of water from the windshield, and improves visibility. Only water droplets remain. However, these droplets easily dissipate with airspeed.

L1 A RAIN RPLNT pb, on the left and on the right sides of the overhead panel, controls the application of repellent fluid on the respective Captain or First Officer's windshield.

L2 The rain repellent system is operative, when the engines are running.

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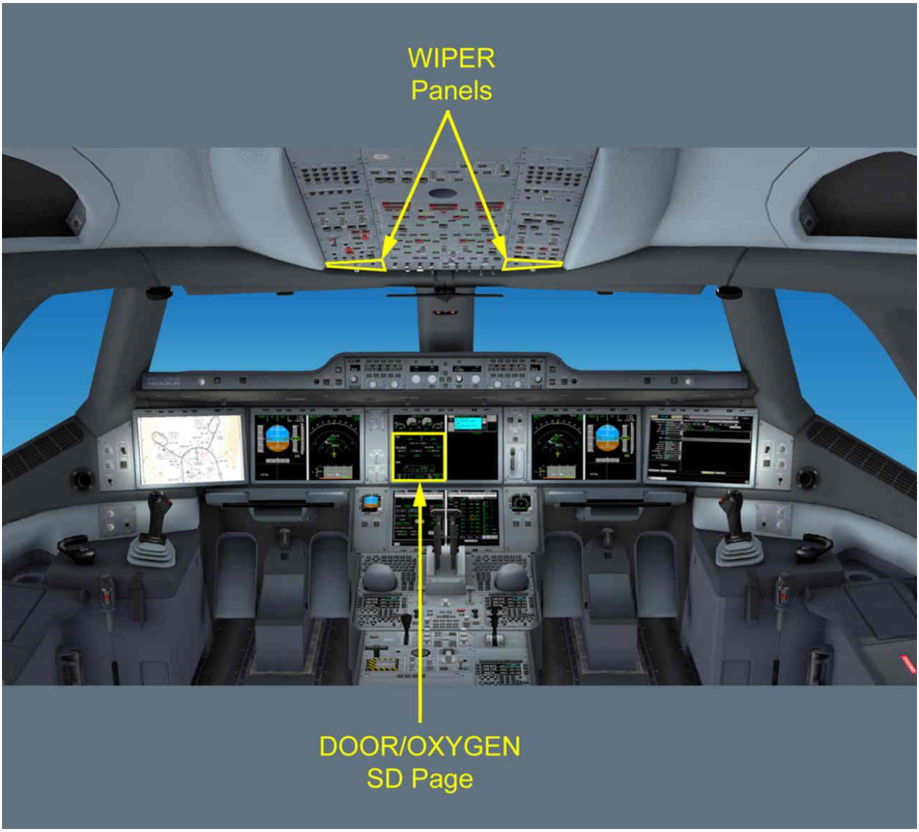
COCKPIT VIEW

Ident.: DSC-30-30-20-00002990.0001001 / 30 APR 14

Applicable to: ALL

Cockpit View

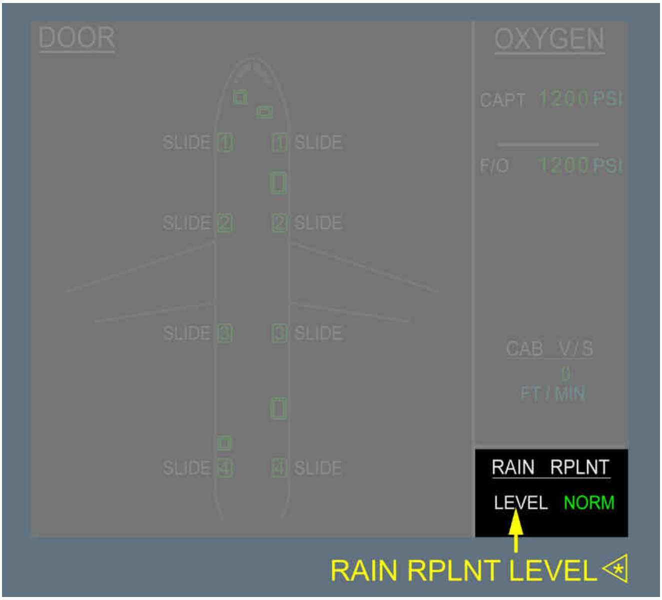

WIPER
Panels
DOOR/OXYGEN
SD Page

DOOR/OXYGEN SD PAGE

Applicable to: ALL

Ident.: DSC-30-30-20-20-00002992.0001001 / 26 JUL 17

DOOR/OXYGEN SD page


DOOR
SLIDE 1
1 SLIDE
SLIDE 2
2 SLIDE
SLIDE 3
3 SLIDE
SLIDE 3
4 SLIDE
OXYGEN
CAPT 1200 PSI
F/O 1200 PSI
CAB V/S
0
FT / MIN
RAIN RPLNT
LEVEL NORM
RAIN RPLNT LEVEL

Ident.: DSC-30-30-20-20-00002995.0001001 / 26 JUL 17

RAIN RPLNT LEVEL ⊲

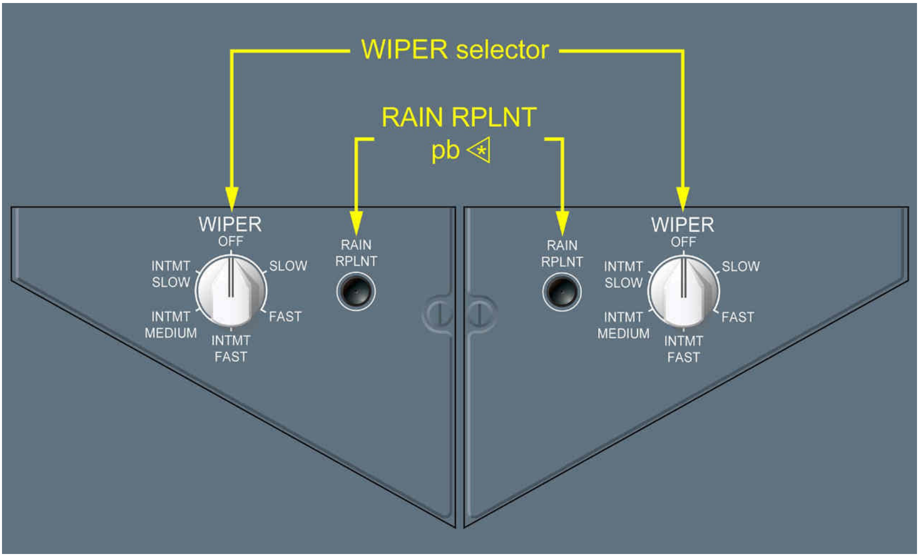
NORM	Rain repellent fluid level is normal.
LO	Rain repellent fluid level is low.

WIPER PANELS

Applicable to: ALL

Ident.: DSC-30-30-20-10-00002991.0001001 / 26 JUL 17

WIPER Panels


WIPER selector
RAIN RPLNT
pb ◁
WIPER
OFF
INTMT SLOW
SLOW
INTMT MEDIUM
FAST
INTMT FAST
RAIN RPLNT
RAIN RPLNT
WIPER
OFF
INTMT SLOW
SLOW
INTMT MEDIUM
FAST
INTMT FAST

Ident.: DSC-30-30-20-10-00002993.0001001 / 06 AUG 14

WIPER SELECTOR

Each windshield wiper is controlled by its own WIPER selector, that has a SLOW and FAST speed setting, and three intermittent speed settings.
The wipers should not be used when the speed is more than 230 kt.

L2 If a wiper is blocked when commanded on, the wiper actuator command is stopped, in order to preserve the wiper motor. The normal use of the wiper is recovered by switching the WIPER selector off then on again when the wiper is unblocked.

Ident.: DSC-30-30-20-10-00002994.0001001 / 26 JUL 17

RAIN RPLNT PB ◁

A RAIN RPLNT pb, on the left and on the right sides of the overhead panel, controls the application of repellent fluid on the respective Captain or First Officer's windshield.
Pressing the RAIN RPLNT pb applies some repellent fluid on the windshield. More fluid can be added, by releasing the pushbutton, and pressing it again.

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AIRCRAFT SYSTEMS

31 - CONTROL AND DISPLAY SYSTEM

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DSC-31-CDS-30 Display Units

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Display Unit - user interface rules........C

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DSC-31-CDS-40 EFIS

DSC-31-CDS-40-10 Overview

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DSC-31-CDS-40-20 PFD

DSC-31-CDS-40-20-10 Overview

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RA Height........A

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DSC-31-CDS-40-20-90 Heading/Track

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DSC-31-CDS-40-40-140 Airport Navigation

Airport Navigation........A

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Vertical Speed........A

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Heading/Track........A

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Localization Title	Toc Index	ID	Reason
DSC-31-CDS-PLP-TOC General Airspeed Indications		1	Documentation update: Deletion of the "00000779.0001001 General Airspeed Indications" documentary unit.
DSC-31-CDS-40-20-40 General Airspeed Indications	B	1	Documentation update: Addition of "General Airspeed Indications" documentary unit
DSC-31-CDS-40-20-110 G/S or F-G/S Deviation	B	1	Update of the G/S excessive deviation condition. The G/S deviation scale and symbol flash when the G/S deviation is more than one dot.
DSC-31-CDS-40-20-110 Lateral Deviation	C	2	Addition of the information that the LDEV scale and index flash is only available during approach phase.
DSC-31-CDS-40-20-110 Vertical Deviation	C	3	Typo error correction.
DSC-31-CDS-40-40-20 VOR Pointer	A	1	Change of the sentence from "the VOR pointer appears in magenta, and is corrected for magnetic variation" to "the VOR pointer appears in magenta, and is not corrected for magnetic variation", to indicate that there is no VOR pointer correction in ARC mode.
DSC-31-CDS-40-40-40 VOR Pointer	A	1	Change of the sentence from "the VOR pointer appears in magenta, and is corrected for magnetic variation" to "the VOR pointer appears in magenta, and is not corrected for magnetic variation", to indicate that there is no VOR pointer correction in ROSE-NAV mode.
DSC-31-CDS-40-40-50 VOR Pointers	A	1	Change of the sentence from "the VOR pointer appears in magenta, and is corrected for magnetic variation" to "the VOR pointer appears in magenta, and is not corrected for magnetic variation", to indicate that there is no VOR pointer correction in ROSE-VOR mode.
DSC-31-CDS-40-40-60 VOR Pointer	A	1	Change of the sentence from "the VOR pointer appears in magenta, and is corrected for magnetic variation" to "the VOR pointer appears in magenta, and is not corrected for magnetic variation", to indicate that there is no VOR pointer correction in ROSE-LS mode.
DSC-31-CDS-40-40-90 BACKUP TRAJ	A	1	Deletion of information for better understanding. Documentation update: Deletion of information.
DSC-31-CDS-50-30-110 Lateral Deviation	C	1	Addition of the information that the LDEV scale and index flash is only available during approach phase.
DSC-31-CDS-50-70 How to Deploy the HCU	B	1	Documentation update: Deletion of information.
DSC-31-CDS-50-70 How to Deploy the HCU	B	2	Removal of information related to the HCU red protective cover as not certified aircraft part: Text and illustration updated.
DSC-31-CDS-50-70 How to Deploy the HCU	B	3	Removal of information related to the HCU red protective cover as not certified aircraft part: Text and illustration updated.
DSC-31-CDS-50-70	C	4	Documentation update: Deletion of information.

Continued on the following page

Continued from the previous page

Localization Title	Toc Index	ID	Reason
How to Stow the HCU			
DSC-31-CDS-50-70 How to Stow the HCU	C	5	Removal of information related to the HCU red protective cover as not certified aircraft part: Text and illustration updated.
DSC-31-CDS-50-70 How to Stow the HCU	C	6	Removal of information related to the HCU red protective cover as not certified aircraft part: Text and illustration updated.
			Documentation update: Deletion of information.
DSC-31-CDS-60-20 RCL LAST pb	D	1	Correction of a typo: "has" instead of "as".

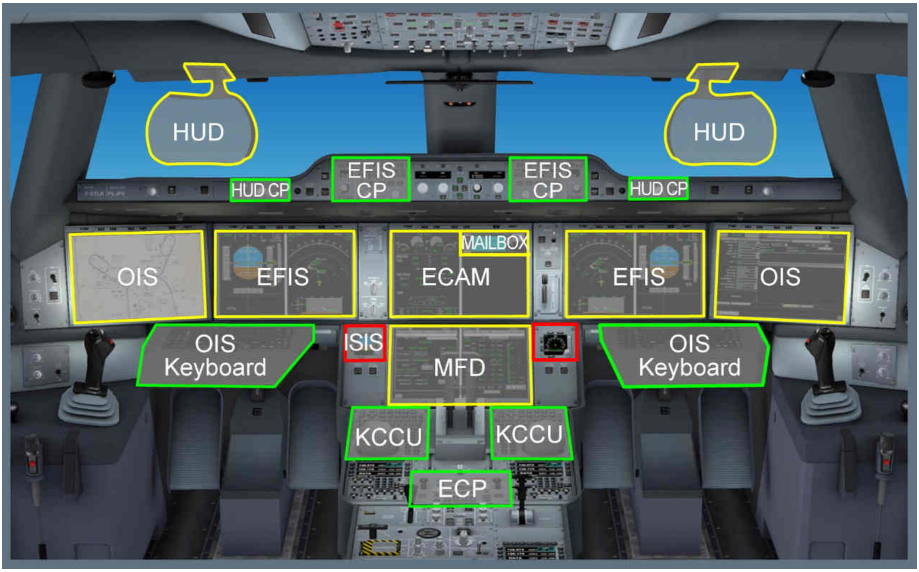
OVERVIEW

Ident.: DSC-31-CDS-10-00000078.0001001 / 10 MAY 19
Applicable to: ALL

The Control and Display System (CDS) provides the flight crew with the information necessary to safely and accurately operate the aircraft.
The CDS has 6 identical and interchangeable Display Units (DUs).
L2 For more information, *Refer to DSC-31-CDS-30-10 Display Units*

L1 The CDS enables the flight crew to perform all of the following:
- Fly and navigate the aircraft, via all of the following:
  - The Electronic Flight Instrument System (EFIS)
  - The Head Up Display (HUD) ◁
  - The Multifunction Display (MFD)
  - The Integrated Standby Instrument System (ISIS)
  - The Radio Management Panel (RMP).
- Communicate, via both of the following:
  - The Radio Management Panel, for voice and datalink communication.
    L2 For more information, *Refer to DSC-23-10-10 Introduction*
  - L1 The MFD and the Mailbox, for datalink communication.
- Manage the aircraft systems, via:
  - The Electronic Centralized Aircraft Monitoring (ECAM).
- Manage the mission, via both of the following:
  - The MFD
  - The Onboard Information System (OIS).

Overview


HUD
HUD
HUD CP
EFIS CP
EFIS CP
HUD CP
MAILBOX
OIS
EFIS
ECAM
EFIS
OIS
OIS Keyboard
ISIS
MFD
OIS Keyboard
KCCU
KCCU
ECP

EFIS

The EFIS displays flight parameters and navigation data on both of the following displays:
- The Primary Flight Display (PFD), for short-term flight information
- The Navigation Display (ND), for medium and long-term flight information.

L2 For more information, *Refer to DSC-31-CDS-40-10 Overview*.

L1 HUD

The HUD displays flight parameters and guidance information in the flight crew's field of vision.

MFD

The MFD provides an interface with all of the following systems:
- The FMS, *Refer to DSC-22-FMS-10-10 Overview*
- The ATC Datalink System, *Refer to DSC-46-ATC-20-20 MFD Overview*
- The SURV, *Refer to DSC-34-SURV-10 Overview*
- The ECAM NORM C/L, *Refer to DSC-31-CDS-60-10-30 MFD Overview*
- The FCU Backup function for the AFS, *Refer to DSC-31-CDS-40-60 MFD - FCU BKUP Pages*.

L2 For more information, *Refer to DSC-31-CDS-70-10 MFD*.

ISIS

The ISIS provides a backup of flight parameters and navigation data in the case of loss of EFIS.
For more information, *Refer to DSC-34-NAV-30-10 Overview*.

ECAM

The ECAM enables the flight crew to monitor and manage aircraft systems during normal and abnormal operations.
For more information, *Refer to DSC-31-CDS-60-10-00 General*.

OIS

The OIS provides the flight crew with operating manuals, performance computation, and mission management information.
For more information, *Refer to DSC-31-CDS-80 OIS*.

MAILBOX

The mailbox enables the flight crew to establish a datalink communication with the active ATC Center.
For more information, *Refer to DSC-31-CDS-90-10 Mailbox*.

VIDEO

The CDS can display all of the following video sources:

- The External and Taxiing Aid Camera System (ETACS) ◁✳
  For more information, *Refer to DSC-31-CDS-110-10 Overview*
- The Airport Navigation Function (ANF)
  For more information, *Refer to DSC-34-NAV-80-10 General*
- The Cockpit Door Surveillance System (CDSS) ◁✳
  For more information, *Refer to DSC-31-CDS-110-10 Overview*
- The Cabin Video Monitoring System (CVMS) ◁✳
  For more information, *Refer to DSC-31-CDS-110-10 Overview*
- The Lower Deck Surveillance Function ◁✳ .
  For more information, *Refer to DSC-31-CDS-110-10 Overview*.

CONTROLS

In order to interact with the various displays and functions, the flight crew uses all of the following:

- An EFIS Control Panel (EFIS CP), *Refer to DSC-31-CDS-110-20 EFIS CP*
- An HUD Control Panel ◁✳
- An ECAM Control Panel (ECP), *Refer to DSC-31-CDS-60-20 ECP*
- A Keyboard and Cursor Control Unit (KCCU), *Refer to DSC-31-CDS-100-10 General*

- An OIS Keyboard and pointing device, *Refer to DSC-46-OIS-20-100 Overview*
- Both of the following DUs controls:
    - Brightness, Contrast, Reset, *Refer to DU Controls*
    - DU Master Brightness knob, *Refer to DU MASTER BRT knob*.

ARCHITECTURE

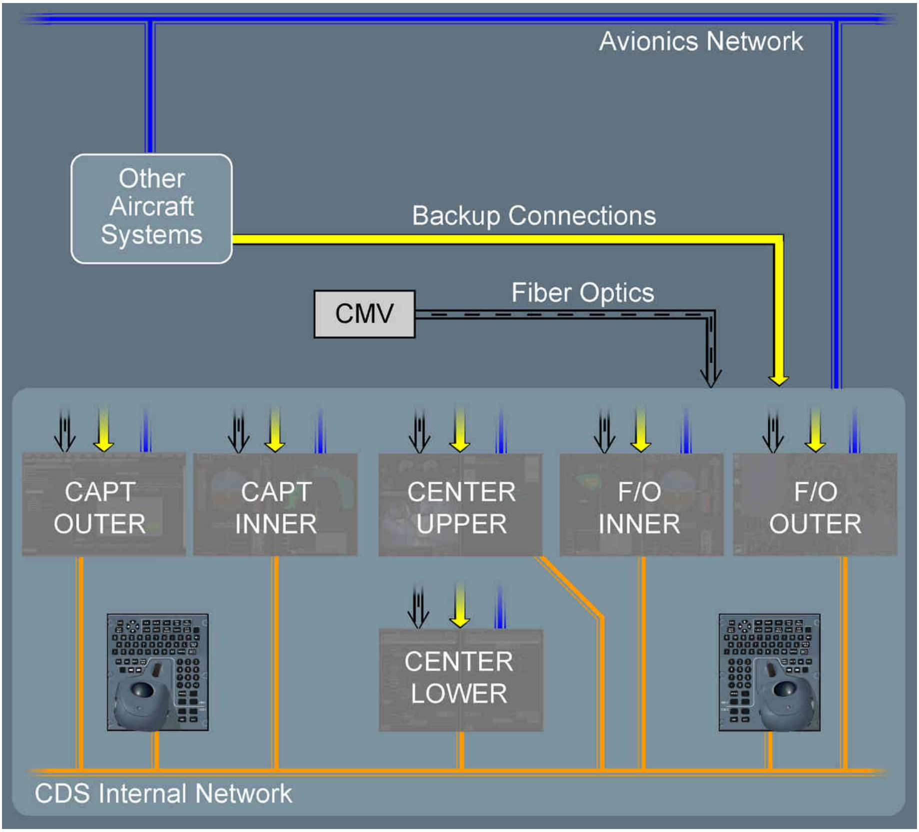
Applicable to: ALL

Ident.: DSC-31-CDS-20-10-00000083.0001001 / 04 MAY 16

Each DU is able to process all the available functions and displays:
- EFIS
- ECAM
- MFD
- OIS
- Mailbox
- Videos

L3 Each DU can receive and display:
- Aircraft parameters, via the avionics network
- Essential parameters, via a backup connection instead of the avionics network, if the avionics network is lost
- Video images, from the 2 Concentrators and Multiplexer for Videos (CMV), via fiber optic connection
- The CDS internal network, to enable interactivity between the DUs and the various controls (KCCUs, OIS Keyboards etc...).

Architecture


Avionics Network
Other Aircraft Systems
Backup Connections
CMV
Fiber Optics
CAPT OUTER
CAPT INNER
CENTER UPPER
F/O INNER
F/O OUTER
CENTER LOWER
CDS Internal Network

DISPLAY UNITS

Ident.: DSC-31-CDS-30-10-00000086.0001001 / 10 MAY 19
Applicable to: ALL

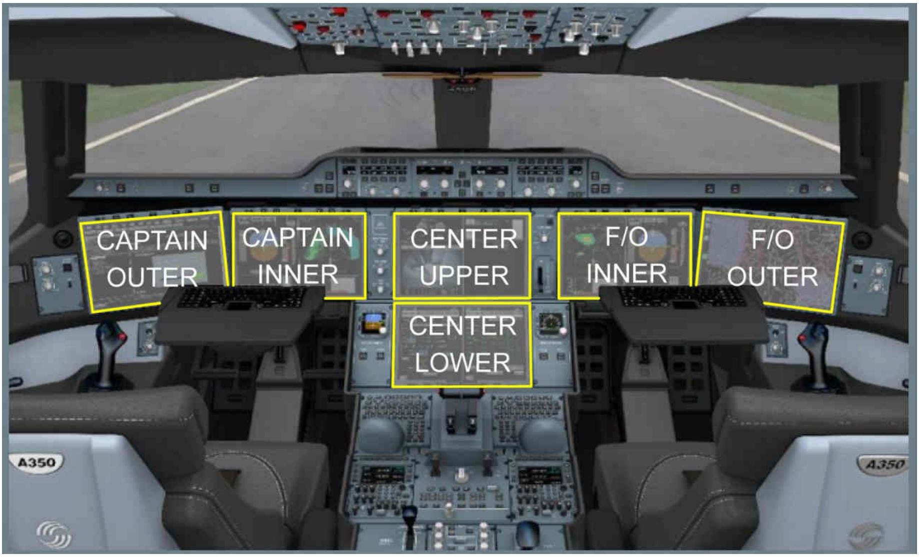
CAUTION	The cleaning of the display units must be performed by the maintenance personnel. An incorrect application of the cleaning procedure may cause permanent damage to the screen.

The CDS has 6 identical and interchangeable Display Units (DUs).

L2 Each DU is based on Liquid Crystal Display (LCD) technology and has a large horizontal display area.

L1 The 6 DUs are referred to as (from left to right):
- Captain outer DU
- Captain inner DU
- Center upper DU
- Center lower DU
- First Officer inner DU
- First Officer outer DU.

Display Unit Arrangement



Each DU is able to process all of the following functions:
- EFIS
- ECAM
- MFD
- OIS
- Mailbox
- Videos.

L3 The DU can directly display the function, or process the function for another DU.

L1 In normal operations, each DU is assigned to display one of the above functions. However, for operational needs, the flight crew can manually reconfigure the DUs. *Refer to DSC-31-CDS-30-30 Normal Operations*.

In abnormal operations, in the case of a DU failure, automatic or manual DU reconfigurations enable the flight crew to display any relevant information on the remaining DUs. *Refer to DSC-31-CDS-30-40 Overview*.

DISPLAY UNIT MONITORING

Ident.: DSC-31-CDS-30-10-00000749.0001001 / 08 JUL 19
Applicable to: ALL

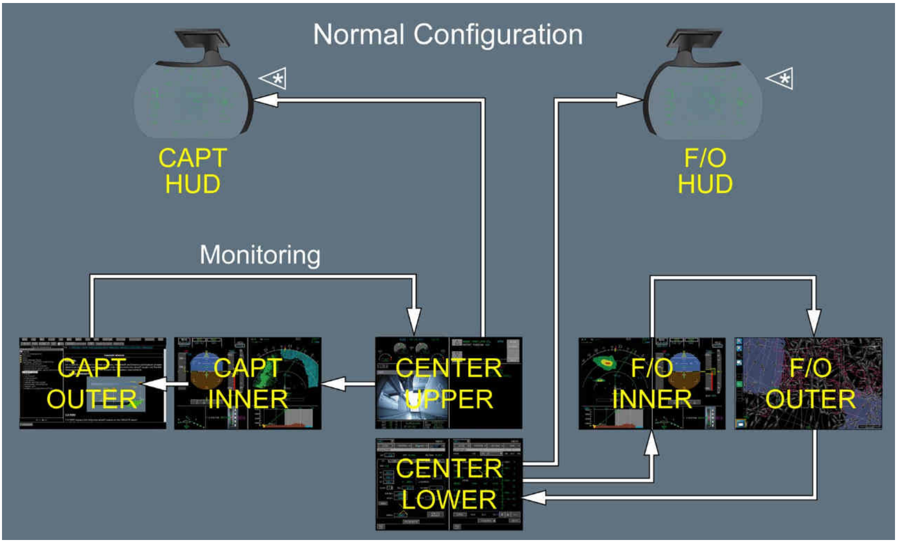
DU MONITORING

Each DU has a display unit monitoring function, which detects erroneous display of the following indications:
- On the PFD
  - The pitch,
  - The roll,
  - The altitude,
  - The airspeed,
  - The heading,
  - The FD bars,
  - The FPV,
  - The FPD.
- On the ND
  - The runway condition,
  - The runway length.

- On the ED
  - The thrust,
  - The N1,
  - The EGT,
- The Fuel On Board (FOB) on the permanent data
- On the SD pages
  - The N2, N3 and the fuel flow, on the ENG SD page,
  - The fuel flow, on the CRUISE SD page,
  - The fuel temperatures and the fuel quantities on the FUEL SD page.

L2 A DU monitors another DU, which in turn monitors another DU. This makes a monitoring "loop". There are two independent feedback-monitoring loops, and each loop has three DUs.

Normal Configuration



L3 Aircraft systems send data including critical parameters to the CDS. Each DU performs a display process with an image signature sent to the adjacent DU. This adjacent DU performs a reversion of the display process in order to compare critical parameters with those sent by the aircraft systems.

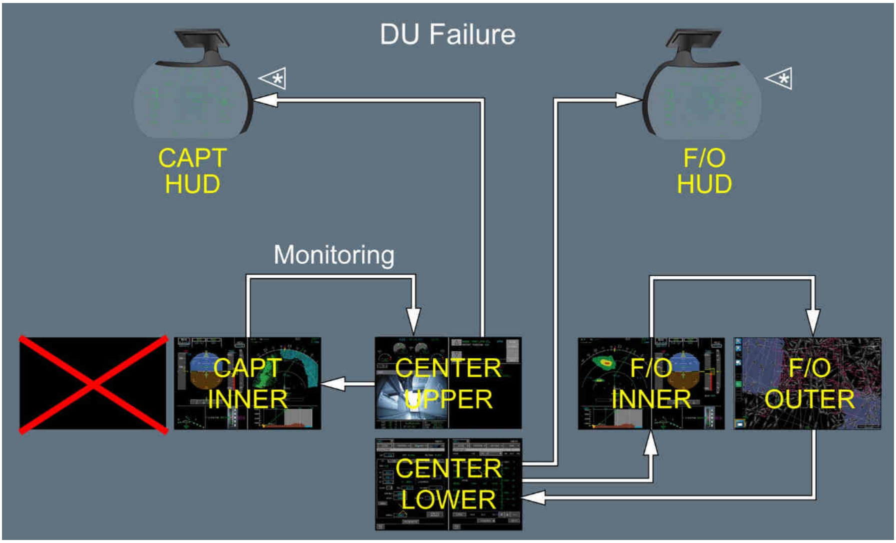
L1 If a DU detects a discrepancy between the data that it receives from a given system and the data displayed on another DU, the ECAM will trigger the following alert: CDS DISPLAY DISAGREE.

DU MONITORING IN CASE OF DU FAILURE

If a DU fails, the DU monitoring loops are automatically reconfigured.

For example:
- If the CAPT OUTER DU fails, the CAPT INNER DU monitors the CENTER UPPER DU.
- If the F/O INNER DU fails, the CENTER LOWER DU monitors the F/O OUTER DU.

DU Failure


DU Failure
CAPT HUD
F/O HUD
Monitoring
CAPT INNER
CENTER UPPER
F/O INNER
F/O OUTER
CENTER LOWER

DISPLAY UNIT - USER INTERFACE RULES

Ident.: DSC-31-CDS-30-10-00000748.0001001 / 03 JUL 14
Applicable to: ALL

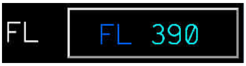
ENTRY FIELD

The flight crew uses the entry field to select and change data.

The entry field may:
- Be blank for free text: Data entry is optional
- Contains - -: Data entry is optional
- Contains ▯▯: Data entry is mandatory.

When applicable, the entry field also contains the unit of measurement.

Entry Field with Unit



FL

FL 390

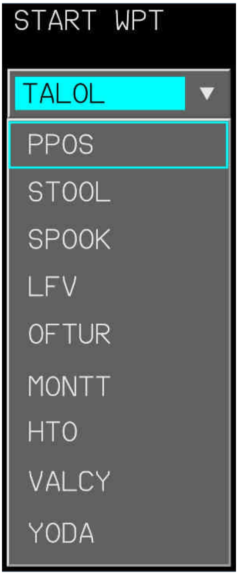
The flight crew can edit an entry field, by moving the cursor over the field. When the blue box appears, it is possible to modify the data, without first pressing the Validation pb.
When the data is entered, the flight crew presses the Validation pb, and the cursor jumps to the field that is most likely to be used next.

Note: *While an entry field is under edition, the flight crew can press the ENT key or the Validation pb to validate an entry. The flight crew can also press the ESC key to cancel the entry and recover the cursor.*

OPTION-LIST

The flight crew can select one of the listed items, by using the following controls of the Keyboard and Cursor Control Unit (KCCU):
- The scroll wheel, or
- The trackball, or
- The four direction arrow keys.

Option-List



START WPT

TALOL ▼

PPOS
STOOL
SPOOK
LFV
OFTUR
MONTT
HTO
VALCY
YODA

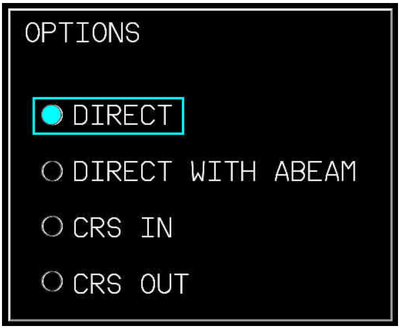
When the item is selected, the flight crew presses the Validation pb, or the ENT key, and the cursor moves to the field that is most likely to be used next.

Note: *For some option-lists, the flight crew can type in data, other than those listed. When the data is typed, the list disappears.*

BULLETED ITEM

The flight crew can select only one of the options in a bulleted list, by clicking on the option.

Selection Bullet



OPTIONS

● DIRECT

○ DIRECT WITH ABEAM

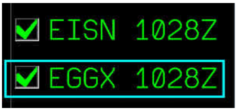
○ CRS IN

○ CRS OUT

TICK-BOX

The flight crew can select/deselect one or more of the items listed in a tick-box, by clicking on the applicable item(s).
When selected, a tick appears next to the applicable item.

Tick-box



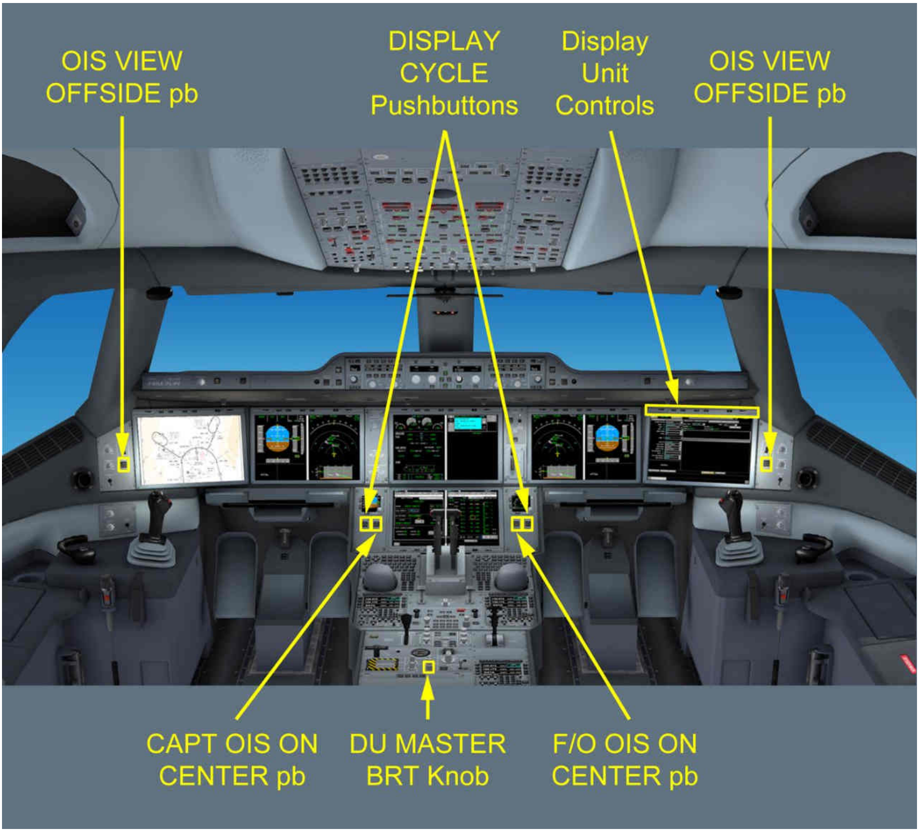
☑ EISN 1028Z

☑ EGGX 1028Z

COCKPIT VIEW

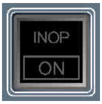
Ident.: DSC-31-CDS-30-20-00000093.0001001 / 17 APR 14
Applicable to: ALL

Cockpit View

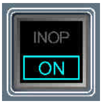

OIS VIEW OFFSIDE pb
DISPLAY CYCLE Pushbuttons
Display Unit Controls
OIS VIEW OFFSIDE pb
CAPT OIS ON CENTER pb
DU MASTER BRT Knob
F/O OIS ON CENTER pb

CAPT(F/O) OIS ON CENTER pb

Ident.: DSC-31-CDS-30-20-00011272.0001001 / 17 APR 14
Applicable to: ALL

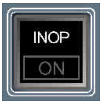


The CAPT(F/O) OIS is displayed on the CAPT(F/O) outer DU.



The CAPT(F/O) OIS is displayed on the center lower DU.

L12



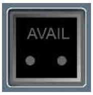
The CAPT(F/O) OIS cannot be displayed on the center lower DU.

The OIS ON CENTER function is not available because:
- The ECAM is displayed on the center lower DU, or
- The center lower DU is failed, or
- The outer and inner DUs are failed on both CAPT and F/O side.

L2 For more information about display reconfiguration, *Refer to DSC-31-CDS-30-30 Normal Operations*

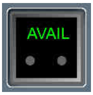
DISPLAY CYCLE pb

Ident.: DSC-31-CDS-30-20-00011274.0001001 / 17 APR 14
Applicable to: ALL



The flight crew cannot change the display configuration of the DU, except via the CAPT(F/O) OIS ON CENTER pb.

L12



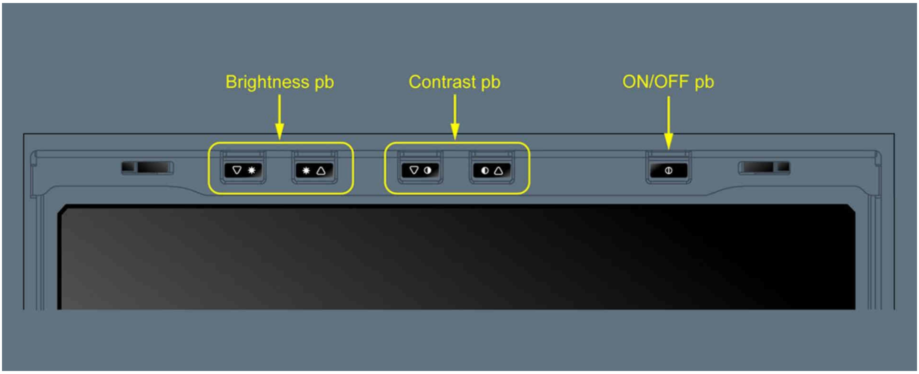
Due to a change in the standard display configuration, the flight crew can change the display of one of the onside DU.
If two DUs or more are failed, several displays can be possible on a single DU. In this case, the flight crew presses the DISPLAY CYCLE pb several times to cycle the available displays.
For more information, *Refer to DSC-31-CDS-30-30 Normal Operations*.

DISPLAY UNIT CONTROLS

Applicable to: ALL

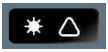
Ident.: DSC-31-CDS-30-20-GDUCO-00001030.0001001 / 17 APR 14

Display Unit Controls

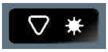


Ident.: DSC-31-CDS-30-20-GDUCO-00001048.0001001 / 17 APR 14

BRIGHTNESS PB



When pressed, increases the brightness of the associated DU.



When pressed, decreases the brightness of the associated DU.

Note: *The brightness is also automatically tuned (in a limited range) according to the ambient light in the cockpit, via the two light sensors that are located at the bottom of each DU.*

Ident.: DSC-31-CDS-30-20-GDUCO-00001049.0001001 / 28 APR 17

CONTRAST PB

The contrast pb enables the flight crew to modify the contrast of:

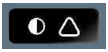
- The weather radar background on the ND
- The terrain background on the ND

L2 In the case of a terrain alert, the background lighting is set to 75 % of the overall lighting. After the alert, the lighting returns to its default value.

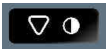
L1
- The general contrast of the OIS
- The general contrast of the System Page, or System Display page (SD).

L2 *Note:* *When pressed, the contrast pb has no effect on the display of MFD session.*

L1



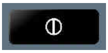
When pressed, increases the contrast of the associated DU.



When pressed, decreases the contrast of the associated DU.

Ident.: DSC-31-CDS-30-20-GDUCO-00001051.0001001 / 17 APR 14

ON/OFF PB

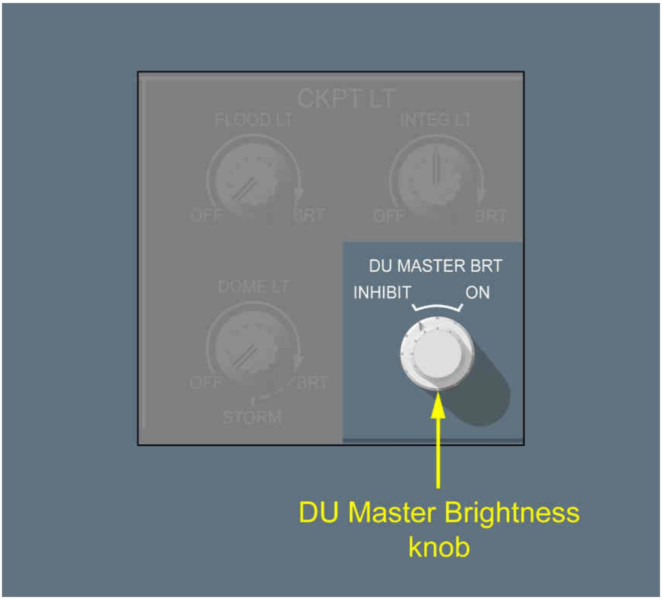


When pressed, turns on or off the DU.

DU MASTER BRT KNOB

Ident.: DSC-31-CDS-30-20-00009722.0001001 / 17 APR 14

Applicable to: ALL


CKPT LT
FLOOD LT
INTEG LT
OFF
BRT
OFF
BRT
DOME LT
OFF
BRT
STORM
DU MASTER BRT
INHIBIT
ON
DU Master Brightness knob

The DU MASTER BRT knob is used in order to increase or decrease the brightness of the 6 DUs simultaneously.

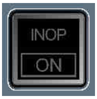
The external ring of the DU MASTER BRT knob enables the flight crew to switch ON/OFF the brightness control of all the display units.

The internal ring of the DU MASTER BRT knob enables the flight crew to adjust the brightness of all the display units with the respective difference that is set on each display unit.

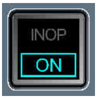
L2 One increment of +/-1 of the internal ring is similar to a press on a DU Brightness pb.
The difference in brightness among the display units is kept during brightness setting.

OIS VIEW OFFSIDE pb

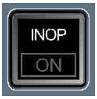
Ident.: DSC-31-CDS-30-20-00011275.0001001 / 17 APR 14
Applicable to: ALL



The CAPT(F/O) OIS displays the CAPT(F/O) OIS on the onside DU.



The onside outer DU displays the offside OIS.



The OIS VIEW OFFSIDE pb is not available because:
- The other flight crewmember sets the OIS VIEW OFFSIDE to ON, or
- The other flight crewmember selects the CAPT(F/O) OIS ON CENTER to ON, or
- The function is not available due to an automatic display reconfiguration on the outer DU.

L2 For more information about display reconfiguration, *Refer to DSC-31-CDS-30-30 Normal Operations*.

Intentionally left blank

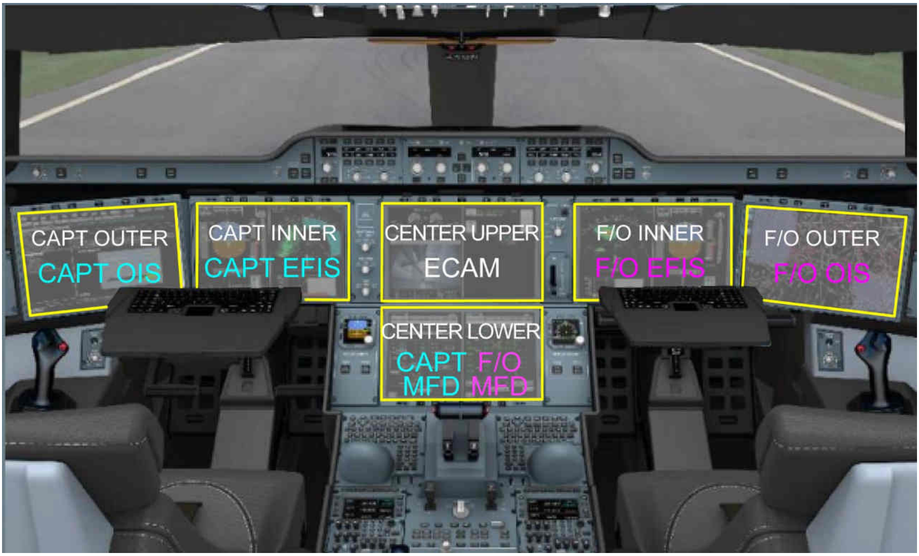
NORMAL OPERATIONS

Ident.: DSC-31-CDS-30-30-00000092.0001001 / 07 MAY 18
Applicable to: ALL

In normal operations:

- CAPT outer DU displays the CAPT OIS
- CAPT inner DU displays the CAPT EFIS
- Center upper DU displays the ECAM and the Mailbox
- Center lower DU displays the CAPT and F/O MFDs
- F/O inner DU displays the F/O EFIS
- F/O outer DU displays the F/O OIS

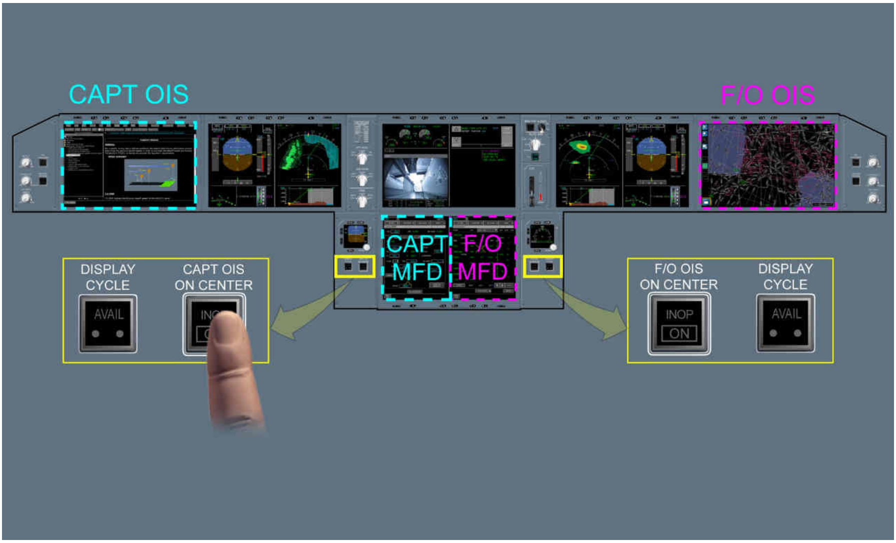
Normal Configuration


CAPT OUTER
CAPT OIS
CAPT INNER
CAPT EFIS
CENTER UPPER
ECAM
F/O INNER
F/O EFIS
F/O OUTER
F/O OIS
CENTER LOWER
CAPT F/O
MFD MFD

OIS ON CENTER

For operational needs, the flight crew can display either the CAPT or F/O OIS on the center lower DU via the CAPT(F/O) OIS ON CENTER pb.

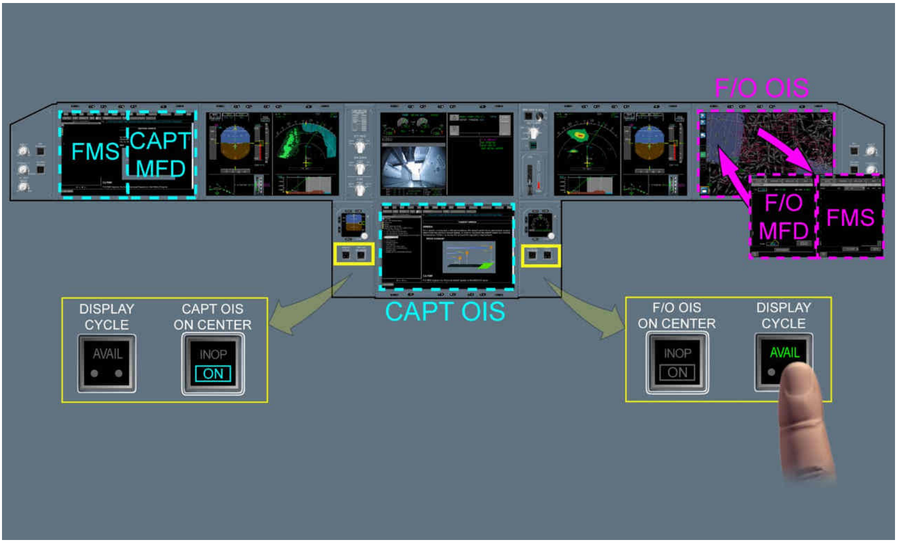
Normal Display


CAPT OIS
F/O OIS
CAPT MFD
F/O MFD
DISPLAY CYCLE
AVAIL
CAPT OIS ON CENTER
INOP
ON
F/O OIS ON CENTER
INOP
ON
DISPLAY CYCLE
AVAIL

In the above example, the CAPT presses on the CAPT OIS ON CENTER pb in order to display the CAPT OIS on the center lower DU.
Consequently, the CAPT MFD is automatically transferred to the CAPT outer DU.
When the MFD is transferred to an outer DU, this outer DU also displays a second MFD. This second MFD can only provide FMS functions.

The F/O can use the DISPLAY CYCLE pb, which is AVAIL, in order to display on the F/O outer DU:
- Either the F/O OIS
- Or, the F/O MFD and an additional secondary MFD dedicated to the FMS.

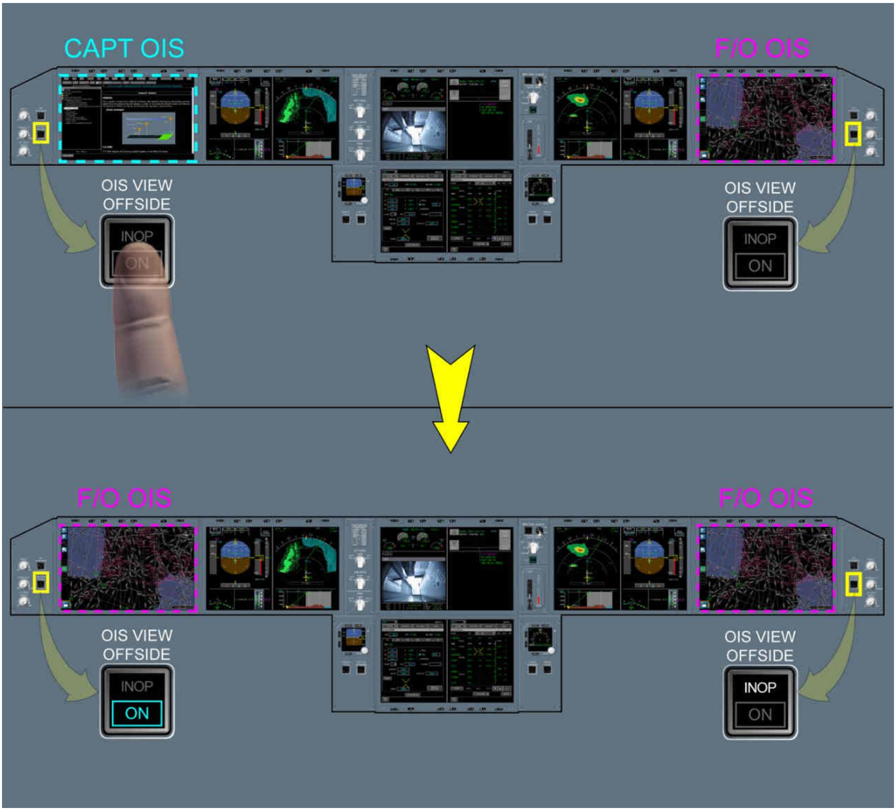
CAPT OIS on Lower Center


F/O OIS
FMS
CAPT MFD
F/O MFD
FMS
CAPT OIS
DISPLAY CYCLE
AVAIL
CAPT OIS ON CENTER
INOP
ON
F/O OIS ON CENTER
INOP
ON
DISPLAY CYCLE
AVAIL

OIS VIEW OFFSIDE

The OIS VIEW OFFSIDE pb enables the CAPT or the F/O to see, on the onside OIS, what is displayed on the offside OIS.

OIS VIEW OFFSIDE


CAPT OIS
F/O OIS
OIS VIEW
OFFSIDE
INOP
ON
OIS VIEW
OFFSIDE
INOP
ON
F/O OIS
F/O OIS
OIS VIEW
OFFSIDE
INOP
ON
OIS VIEW
OFFSIDE
INOP
ON

OVERVIEW

Ident.: DSC-31-CDS-30-40-00000087.0001001 / 17 APR 14
Applicable to: ALL

When one or more DUs fail, DUs reconfigurations enable the flight crew to display all the relevant information on the remaining DUs.

The CDS has two types of reconfigurations:
- Automatic reconfiguration: The CDS automatically reconfigures the DUs in order to display by order of priority:
  - The EFIS and the ECAM
  - The MFD
  - The OIS

  Note: *The priorities of the automatic reconfigurations are always applicable regardless of which DU is able to display the EFIS, ECAM, MFD or OIS.*

  Refer to Automatic Reconfiguration.
- Manual reconfiguration: Following an automatic reconfiguration, the flight crew can recover the missing information via a manual reconfiguration.
  Refer to Manual Reconfiguration.

AUTOMATIC RECONFIGURATION

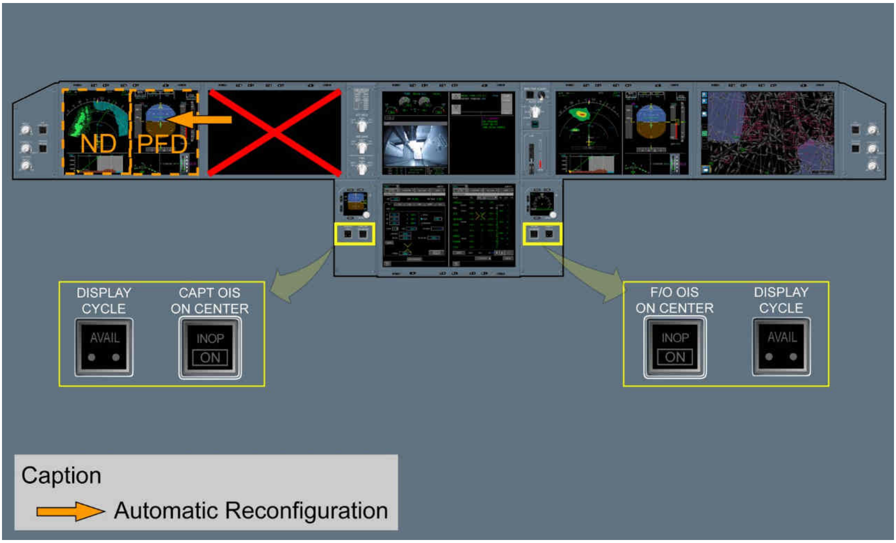
Ident.: DSC-31-CDS-30-40-00005111.0001001 / 17 APR 14
Applicable to: ALL

Two functions and displays are considered as more important for continuing the flight: The EFIS and the ECAM.
- The EFIS is displayed on the CAPT inner DU and the F/O inner DU
- The ECAM is displayed on the center upper DU

In the case of failure of a DU that displays the EFIS or the ECAM, the CDS automatically reconfigures the remaining DUs.

IF CAPT(F/O) INNER DU FAILS

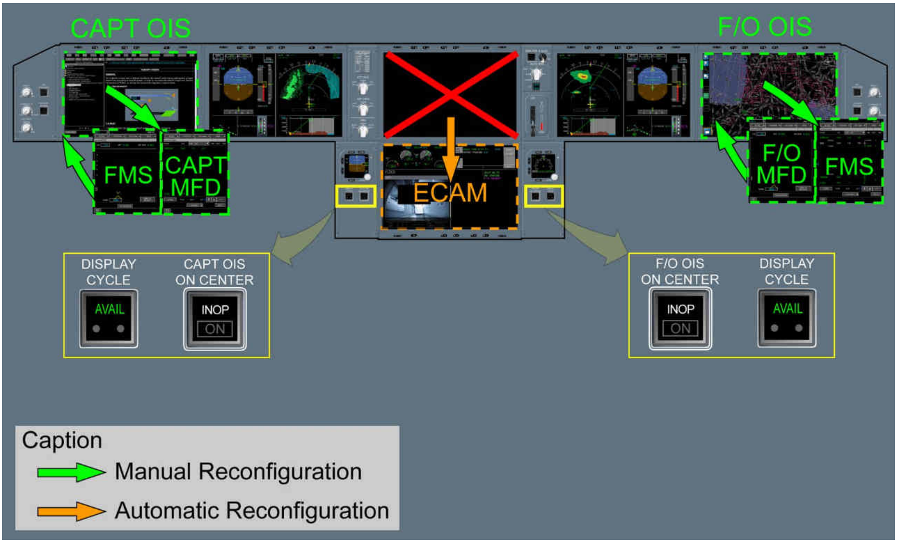
If the CAPT(F/O) inner DU fails, the CDS automatically displays the EFIS on the CAPT(F/O) outer DU.


ND
PFD
DISPLAY CYCLE
AVAIL
CAPT OIS ON CENTER
INOP
ON
F/O OIS ON CENTER
INOP
ON
DISPLAY CYCLE
AVAIL
Caption
Automatic Reconfiguration

Note: *The CDS automatically swaps the PFD and ND so that the PFD remains in front of the CAPT or the F/O.*

IF CENTER UPPER DU FAILS

If the center upper DU fails, the CDS automatically displays the ECAM on the center lower DU.

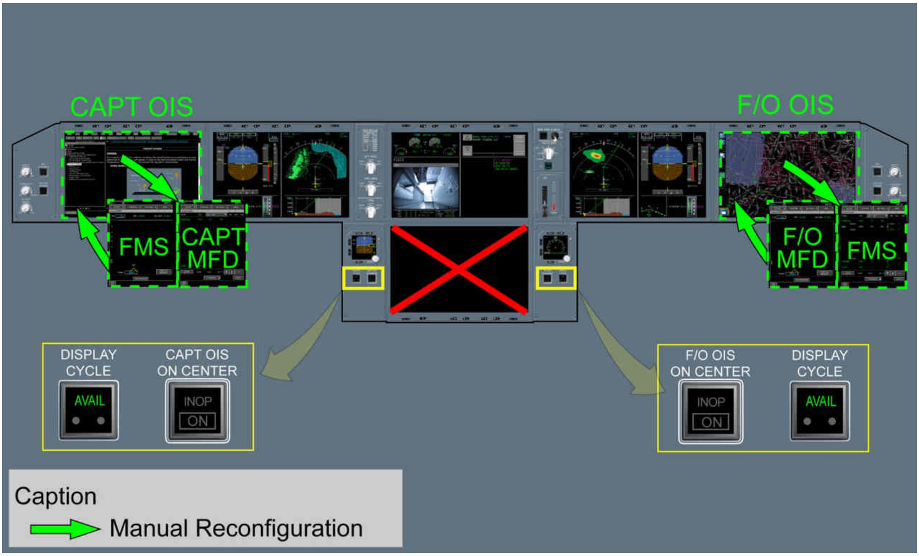

CAPT OIS
F/O OIS
FMS
CAPT MFD
ECAM
F/O MFD
FMS
DISPLAY CYCLE
AVAIL
CAPT OIS ON CENTER
INOP
ON
F/O OIS ON CENTER
INOP
ON
DISPLAY CYCLE
AVAIL
Caption
Manual Reconfiguration
Automatic Reconfiguration

In this case, the flight crew cannot display the OIS on the center lower DU because the ECAM has priority.
The OIS ON CENTER pb indicates INOP.
The CAPT or the F/O can manually select either the MFD or the OIS on the outer DU via the DISPLAY CYCLE pb.

MANUAL RECONFIGURATION

Ident.: DSC-31-CDS-30-40-00005112.0001001 / 04 SEP 17
Applicable to: ALL

Following a DU failure and/or an automatic reconfiguration, the CAPT or the F/O can manually recover the missing information as soon as the DISPLAY CYCLE pb indicates AVAIL.


CAPT OIS
F/O OIS
FMS
CAPT MFD
F/O MFD
FMS
DISPLAY CYCLE
AVAIL
CAPT OIS ON CENTER
INOP
ON
F/O OIS ON CENTER
INOP
ON
DISPLAY CYCLE
AVAIL
Caption
Manual Reconfiguration

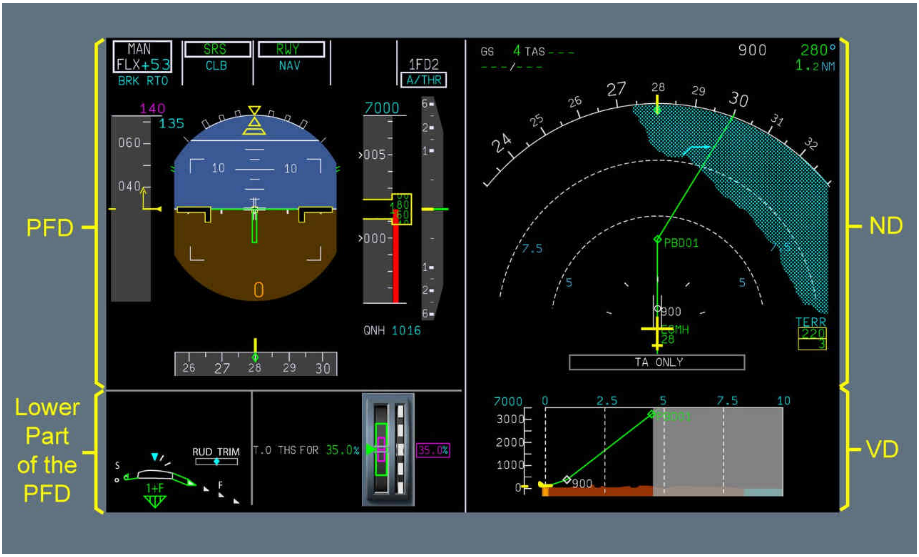
L2 During a manual reconfiguration, if at least one MFD page is not displayed, the NAV RNP AR CAPABILITY DOWNGRADED alert and associated dispatch message appear on the ECAM.

OVERVIEW

Ident.: DSC-31-CDS-40-10-00000079.0001001 / 03 SEP 14
Applicable to: ALL

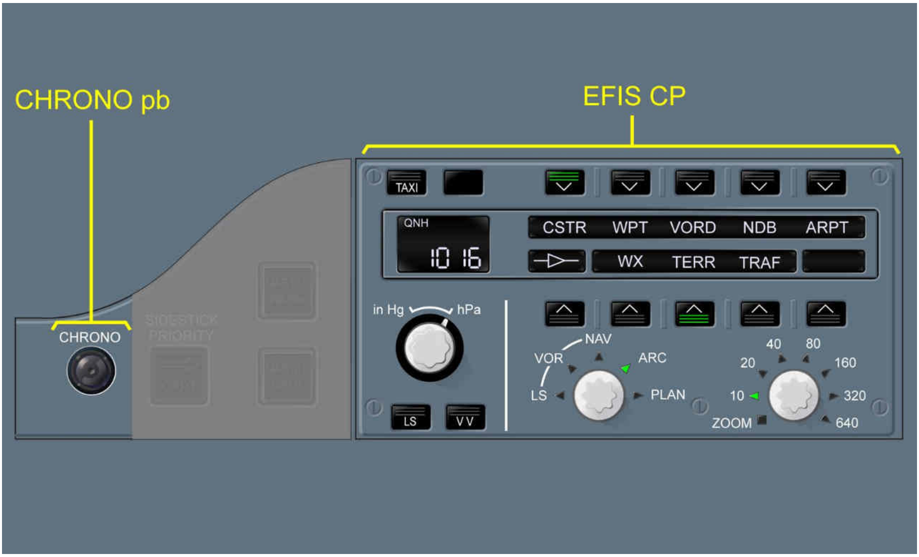
The EFIS displays flight parameters and navigation data on:
- The Primary Flight Display (PFD), for primary flight parameters necessary to handle the aircraft
- The lower part of the PFD, for information about the configuration of the aircraft and trim settings
- The Navigation Display (ND), for the horizontal situation of the aircraft
- The Vertical Display (VD), for the vertical situation of the aircraft.

Overview


PFD
Lower Part of the PFD
ND
VD
MAN FLX+53
SRS
CLB
RWY
NAV
BRK RTO
1FD2
A/THR
140
135
7000
QNH 1016
RUD TRIM
T.O THS FOR 35.0%
35.0%
GS 4 TAS
900
280°
1.2NM
PBD01
TA ONLY
TERR
7000
3000
2000
1000
0
2.5
5
7.5
10

The EFIS controls include:
- The EFIS CP that enables the flight crew to manage the various display capabilities of the EFIS
- The CHRONO pb that controls the chronometer displayed on the bottom left part of the ND.

CAPT EFIS CP

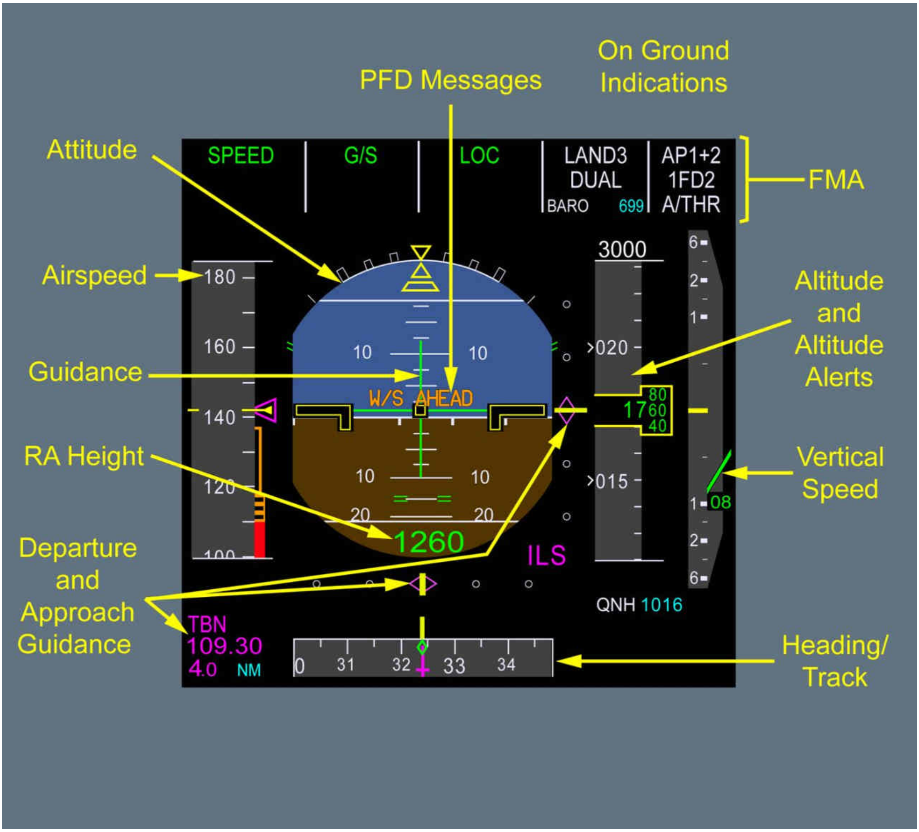

CHRONO pb
EFIS CP
CHRONO
TAXI
QNH
1016
CSTR
WPT
VORD
NDB
ARPT
WX
TERR
TRAF
in Hg
hPa
LS
VV
VOR
NAV
ARC
LS
PLAN
40
80
20
160
10
320
ZOOM
640

Overview

OVERVIEW

Ident.: DSC-31-CDS-40-20-10-00000661.0001001 / 22 APR 14
Applicable to: ALL

PFD Overview


On Ground Indications
PFD Messages
Attitude
SPEED
G/S
LOC
LAND3
DUAL
BARO 699
AP1+2
1FD2
A/THR
FMA
Airspeed
180
160
140
120
100
3000
020
015
Altitude and Altitude Alerts
Guidance
W/S AHEAD
10
20
1760
80
40
RA Height
1260
ILS
Vertical Speed
08
Departure and Approach Guidance
TBN
109.30
4.0 NM
QNH 1016
Heading/ Track
31
32
33
34

Intentionally left blank

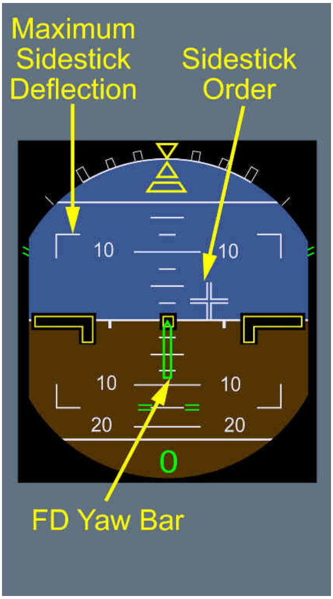
On Ground Indications

ON GROUND INDICATIONS

Applicable to: ALL

Ident.: DSC-31-CDS-40-20-20-10-00002641.0001001 / 22 APR 14

On Ground Indications

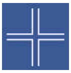


Ident.: DSC-31-CDS-40-20-20-10-00002642.0001001 / 22 APR 14

SIDESTICK ORDER

L3 The FCDC provides the sidestick order.

L1



Indicates the sum of the sidestick orders of the Captain and the First Officer. Appears on ground, after the start of at least one engine.

Note: *The flight crew must not use the sidestick order indication for the flight controls check, because this indication does not show the actual position of the flight control surfaces.*

Ident.: DSC-31-CDS-40-20-20-10-00002643.0001001 / 03 DEC 15

MAXIMUM SIDESTICK DEFLECTION

On ground, the maximum sidestick deflection zone appears on the PFD after the first engine start.

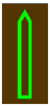
L2 The maximum sidestick deflection is 18 ° pitch up or down, and 20 ° in roll left or right.

Ident.: DSC-31-CDS-40-20-20-10-00002644.0001001 / 22 APR 14

FD YAW BAR

L3 The PRIMs provide the FD yaw bar orders.

L1



Indicates the required rudder input in order to maintain the aircraft on the runway centerline.

Appears when:
- The FD is engaged
- A Localizer (LOC) signal is available
- One of the following modes is active: RWY, FLARE, or ROLL OUT.

For more information about the FD yaw bar, *Refer to DSC-22-FG-30-20 FD Display*.

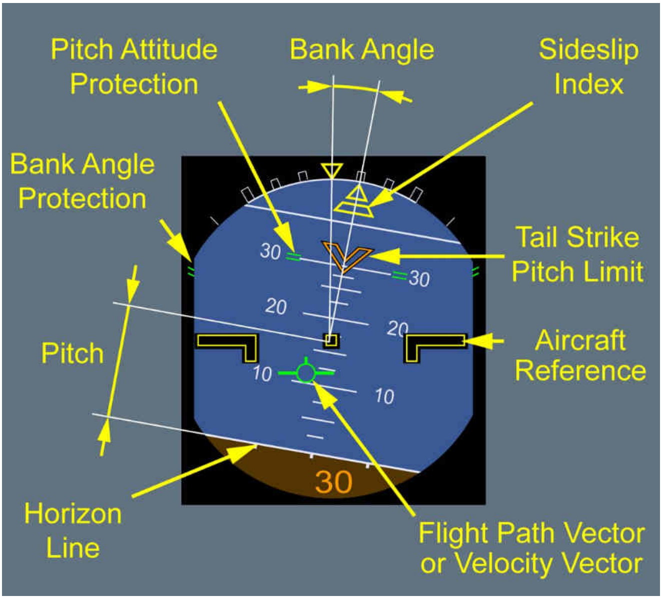
Attitude

ATTITUDE

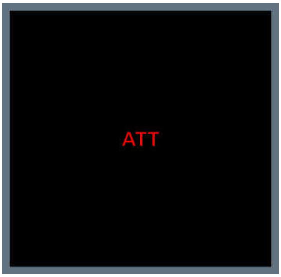
Applicable to: ALL

Ident.: DSC-31-CDS-40-20-30-10-00002688.0001001 / 06 NOV 14

Attitude Indications

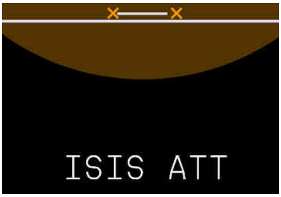

Pitch Attitude Protection
Bank Angle
Sideslip Index
Bank Angle Protection
Tail Strike Pitch Limit
Pitch
Aircraft Reference
Horizon Line
Flight Path Vector or Velocity Vector
30
20
10
30
20
10
30

L12



No attitude data is available. The attitude and guidance indications no longer appear.
Temporarily flashes, then remains steady.

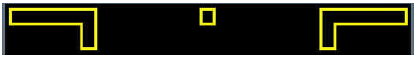
L12



Appears when the attitude data is based on the ISIS.
The automatic monitoring rejected the inertial data of the three IRs.
For more information about the ADIRS monitoring, *Refer to DSC-34-NAV-20-10-50 ADIRS Monitoring*.

Ident.: DSC-31-CDS-40-20-30-10-00002689.0001001 / 22 APR 14

AIRCRAFT REFERENCE



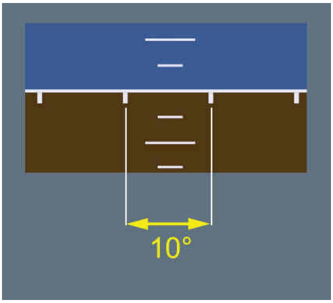
Indicates the fixed reference position of the aircraft.

Ident.: DSC-31-CDS-40-20-30-10-00003746.0001001 / 01 JUL 14

HORIZON LINE

L3 The ADIRS provide pitch and roll data that is necessary for the display of the horizon line.

L12



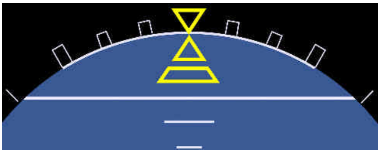
The horizon line has heading markers every 10 °.
The heading markers are not displayed when the ISIS inertial data is displayed.
For more information about the display of the ISIS inertial data on the PFD, *Refer to DSC-34-NAV-20-30 Display of ISIS Inertial Data*.

Ident.: DSC-31-CDS-40-20-30-10-00002690.0001001 / 01 JUL 14

BANK ANGLE

L2 The IRs provide the bank angle information.
In the case of a failure or a rejection of all IRs, the ISIS provides the bank angle information. For more information, *Refer to DSC-34-NAV-20-30 Display of ISIS Inertial Data*.

L1



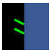
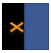
The scale has markers at 0 °, 10 °, 20 °, 30 ° and 45 ° of bank.

Ident.: DSC-31-CDS-40-20-30-10-00002691.0001001 / 03 DEC 15

BANK ANGLE PROTECTION

L3 The FCDC provides the bank angle protection.

L1

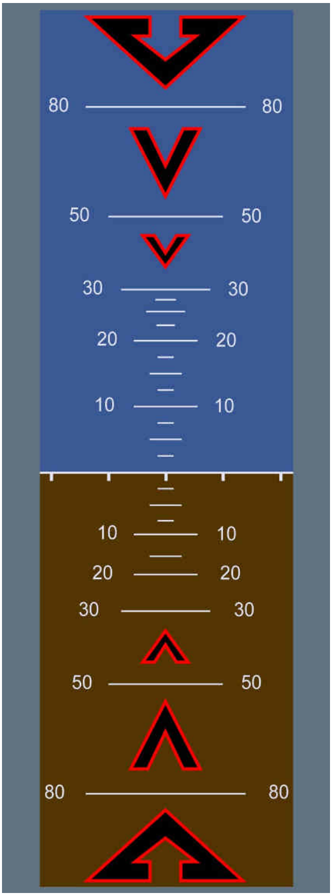
	Indicates the bank angle protection in normal law. Appears at 67 ° of bank. For more information about the bank angle protection in normal law, *Refer to DSC-27-10-30 Flight Law*.
	The bank angle protection is lost. The flight controls are in alternate or direct law.

Ident.: DSC-31-CDS-40-20-30-10-00002692.0001001 / 01 JUL 14

PITCH

L2 The IRs provide the pitch attitude and the FPA information.
In the case of a failure or a rejection of all IRs, the ISIS provides the pitch attitude information. For more information, *Refer to DSC-34-NAV-20-30 Display of ISIS Inertial Data*.

L1 The scale, associated with the aircraft reference and the Flight Path Vector (FPV), indicates the pitch attitude and the Flight Path Angle (FPA) of the aircraft.



The pitch scale has markers:

- Every 2.5 °, between 10 ° pitch down and 30 ° pitch up
- Every 5 °, between 10 ° pitch down and 20 ° pitch down
- At 30 °, 50 °, and 80 ° pitch up or down.

Numeric values are also displayed at 10 °, 20 °, 30 °, 50 °, and 80 ° pitch up or down.

The V-shaped symbols indicate that the pitch attitude of the aircraft is excessive. These symbols also indicate the direction of the pitch correction required.

Ident.: DSC-31-CDS-40-20-30-10-00002693.0001001 / 22 APR 14

PITCH ATTITUDE PROTECTION

L3 The FCDC provides the pitch attitude protection.

L1

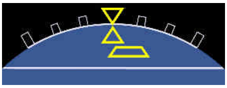
=	Indicates the limit of the pitch attitude protection in normal law. For more information about the pitch attitude protection in normal law, *Refer to DSC-27-10-30 Rotation Law*.
×	Indicates that the pitch attitude protection is lost. The flight controls are in alternate or direct law.

Ident.: DSC-31-CDS-40-20-30-10-00002694.0001001 / 07 NOV 16

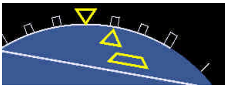
SIDESLIP INDEX

L3 The ADIRS provide the sideslip angle of the aircraft and the lateral acceleration.

L1

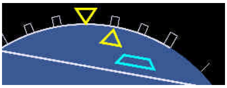


On ground, indicates the lateral acceleration of the aircraft.



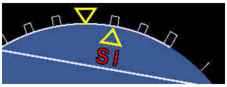
In flight, indicates the sideslip of the aircraft.

L13



The PRIMs provide the beta target information.
Appears if one engine fails during takeoff or go-around. The sideslip index becomes the beta target.
For more information about the beta target, *Refer to DSC-27-10-30 Flight Law*.

L12



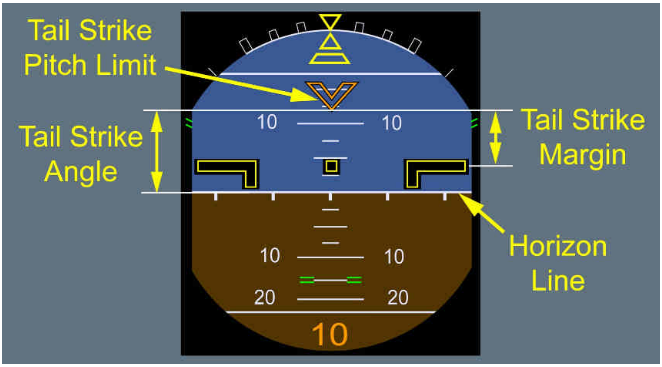
The sideslip and the lateral acceleration indications are not valid.
Temporarily flashes, then remains steady.

Ident.: DSC-31-CDS-40-20-30-10-00002695.0002001 / 08 APR 19

TAIL STRIKE PITCH LIMIT

L3 The PRIMs provide the tail strike pitch limit.

Tail Strike Pitch Limit



L1 Indicates the maximum pitch attitude, in order to avoid a tail strike during landing.

L2 The indication appears when the aircraft is below 400 ft RA height, at a fixed value corresponding to the pitch limit with the main landing gear compressed.

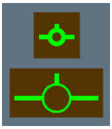
The indication no longer appears:
- When the ground speed is less than 50 kt, or
- 4 s after a go-around is initiated.

Ident.: DSC-31-CDS-40-20-30-10-00000809.0002001 / 09 MAR 18

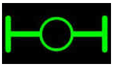
FLIGHT PATH VECTOR (FPV) OR VELOCITY VECTOR (VV)

L3 The ADIRS provide the flight path angle required to display the FPV or the VV.

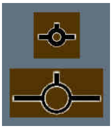
L1 The FPV(VV) indicates the lateral (i.e. track), and vertical (i.e. flight path angle) aircraft trajectory with respect to the ground, taking into account the wind effect.
With the TRK-FPA flying reference, the symbol is called FPV.
With the HDG-V/S flying reference, the symbol is called VV.



The FPV appears when the flight crew selects TRK-FPA via the HDG-V/S / TRK-FPA pb on the AFS CP.
If the FDs are not engaged, the size of the symbol increases.

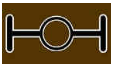


Appears when the FPV uses inertial data from ISIS.
The FPV is horizontally locked (no drift).



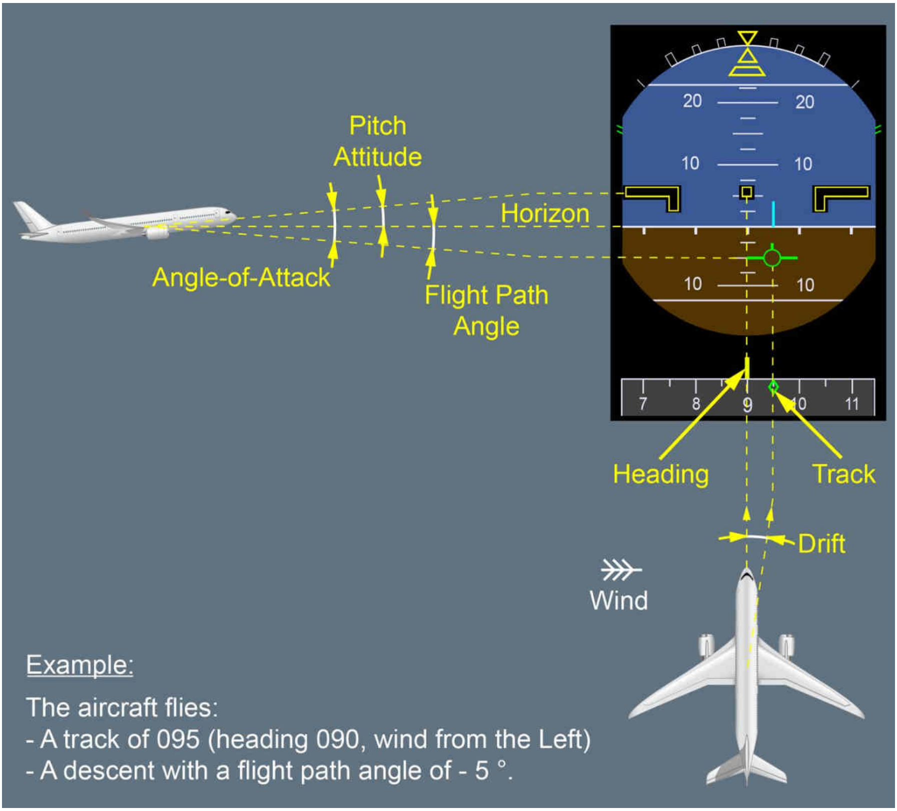
The VV appears when the flight crew:
- Selects HDG-V/S via the HDG-V/S / TRK-FPA pb on the AFS CP
- Presses the VV pb on the EFIS CP.

If the FDs are not engaged, the size of the symbol increases.



Appears when the VV uses inertial data from ISIS.
The VV is horizontally locked (no drift).

FPV(VV)


Pitch
Attitude
Horizon
Angle-of-Attack
Flight Path
Angle
20
20
10
10
10
10
7
8
9
10
11
Heading
Track
Drift
Wind

Example:

The aircraft flies:
- A track of 095 (heading 090, wind from the Left)
- A descent with a flight path angle of - 5 °.

L12

FPV	Appears in TRK-FPA mode, when the FPV is not available. Temporarily flashes, then remains steady.

Intentionally left blank

Airspeed

AIRSPEED

Ident.: DSC-31-CDS-40-20-40-00000778.0001001 / 22 APR 14
Applicable to: ALL

The following general airspeed indications appear during all flight phases:
- The speed reference line
- The airspeed target
- The speed trend arrow
- The Mach number (over the crossover altitude)
- Green dot speed (in clean configuration only).

For more information, *Refer to DSC-31-CDS-40-20-40 General Airspeed Indications*.

The following airspeed indications appear during specific flight phases:
- During takeoff:
  - V1
  - VR
  - V2
  - The short term managed speed
  - VFE next
  - F speed
  - S speed
  - The automatic retraction speed.

  For more information, *Refer to DSC-31-CDS-40-20-40 Airspeed Indications During Takeoff*.
- During descent:
  - VFE next
  - F speed
  - S speed
  - The short term managed speed
  - Lower and upper speed range limits.

  For more information, *Refer to DSC-31-CDS-40-20-40 Airspeed Indications During Descent*.
- After touchdown:
  - The DECEL indication.

  For more information, *Refer to DSC-31-CDS-40-20-40 Airspeed Indications After Touchdown*.

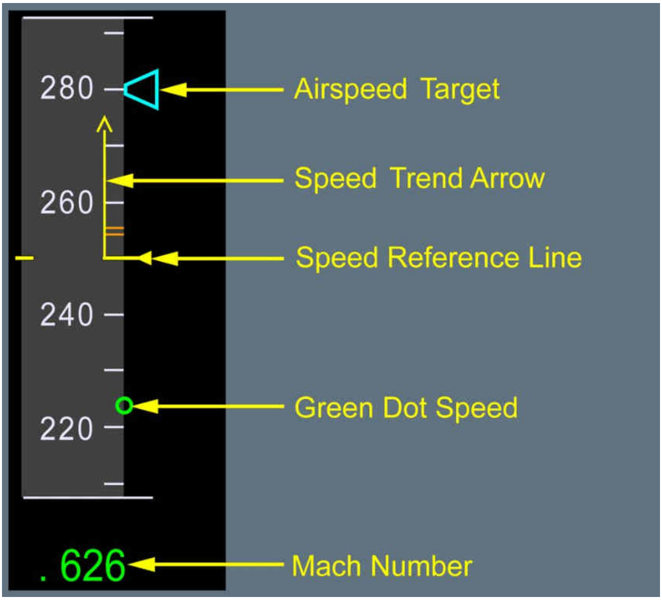
During flight, the airspeed scale also displays the following protection speeds:
- VMAX and the high speed protection indication
- VLS
- $V\alpha_{prot}$ (in normal law)
- $V\alpha_{max}$ (in normal law)
- $V\alpha_{sw}$ (in alternate and direct law).
  For more information, *Refer to DSC-31-CDS-40-20-40 Airspeed Protections*.

GENERAL AIRSPEED INDICATIONS

Applicable to: ALL

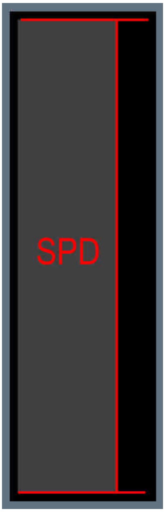
1 Ident.: DSC-31-CDS-40-20-40-10-00000779.0002001 / 03 JUL 20

General Airspeed Indications


280
260
240
220
.626
Airspeed Target
Speed Trend Arrow
Speed Reference Line
Green Dot Speed
Mach Number

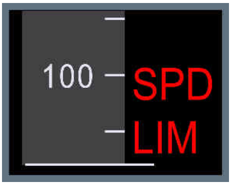
The airspeed scale starts at 30 kt with markers every 10 kt. In addition, numeric values are displayed every 20 kt and start at 40 kt.

L12



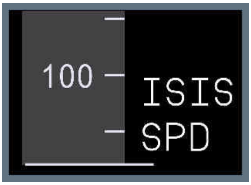
Appears instead of the airspeed scale if no speed information is available.
Temporarily flashes, then remains steady.

L12



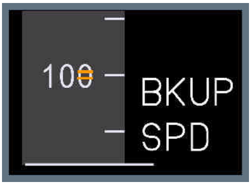
Appears when the minimum reference speed (VLS) or the maximum reference speed (VMAX) is lost.
Temporarily flashes, then remains steady.

L12



Appears when the ISIS speed indication is displayed on the PFD.
For more information about the display of the ISIS speed on the PFD, *Refer to DSC-34-NAV-20-30 Display of ISIS Speed and Altitude Indications*.

L12



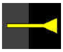
Appears when the backup speed indication (from FADECs and AOA probes) is displayed on the PFD.
The accuracy of the speed is degraded, and the speed appears with a precision of ±10 kt.
For more information about the backup speed indications, *Refer to DSC-34-NAV-20-30 Backup Speed and Backup Altitude Indications*.

Ident.: DSC-31-CDS-40-20-40-10-00019284.0001001 / 22 APR 14

SPEED REFERENCE LINE

L3 The ADRs provide the current airspeed value.

L1



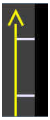
Indicates the current airspeed of the aircraft in knots.

Ident.: DSC-31-CDS-40-20-40-10-00019285.0001001 / 22 APR 14

SPEED TREND ARROW

L3 The PRIMs provide the speed trend information.

L12



Indicates the airspeed that the aircraft will reach in 10 s, if the current acceleration(deceleration) remains constant.
Appears when the speed trend exceeds 2 kt.
Disappears when the speed trend is less than 1 kt.

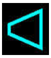
Ident.: DSC-31-CDS-40-20-40-10-00019286.0001001 / 22 APR 14

AIRSPEED TARGET

L3 The PRIMs provide the airspeed target information. If all three PRIMs are lost, the FCU backup provides the airspeed target information.

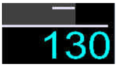
L1 Indicates the airspeed target on the airspeed scale.

L12



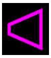
The airspeed target is selected.
The airspeed target is manually selected on the AFS CP, or manually entered in the FMS.
The selected airspeed target is within the airspeed scale.

L12



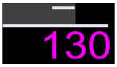
The airspeed target is selected.
The airspeed target is manually selected on the AFS CP, or manually entered in the FMS.
The selected airspeed target is outside the airspeed scale.

L12



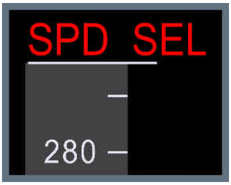
The airspeed target is managed.
The airspeed target is computed by the FMS.
The airspeed target is within the airspeed scale.

L12



The airspeed target is managed.
The airspeed target is computed by the FMS.
The airspeed target is outside the airspeed scale.

L12



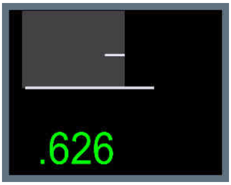
The airspeed selected on the AFS CP is not available.
Temporarily flashes, then remains steady.

Ident.: DSC-31-CDS-40-20-40-10-00019287.0001001 / 01 JUL 14

MACH NUMBER

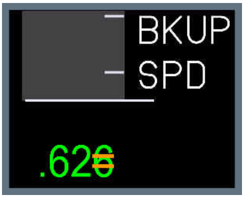
L3 The ADRs provide the Mach number information.

L1



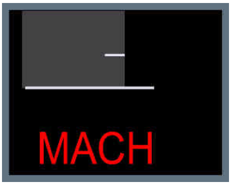
Appears below the airspeed scale, when the Mach number exceeds M 0.5.
Disappears when the Mach number is less than M 0.45.

L12



Appears when the backup speed indication (from FADECs and AOA probes) is displayed on the PFD.
The accuracy of the Mach number is degraded, and the Mach number appears with a precision of ±M 0.03.
For more information about the backup speed indications, *Refer to DSC-34-NAV-20-30 Backup Speed and Backup Altitude Indications*.

L12



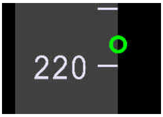
The Mach number is not available.
Temporarily flashes, then remains steady.

Ident.: DSC-31-CDS-40-20-40-10-00019654.0001001 / 22 APR 14

GREEN DOT SPEED

L3 The PRIMs provide the green dot speed.

L1



Appears in clean configuration only.
For more information about the green dot speed, *Refer to DSC-22-27-10-20 GREEN DOT*.

AIRSPEED INDICATIONS DURING TAKEOFF

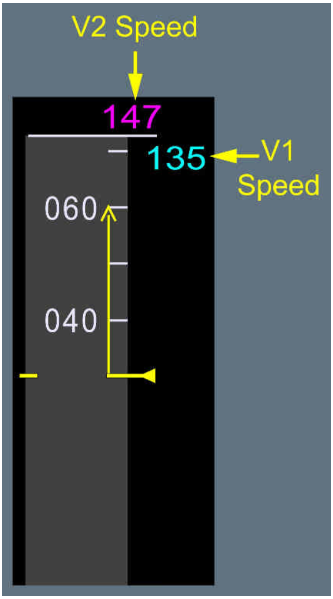
Applicable to: ALL

Ident.: DSC-31-CDS-40-20-40-20-00000780.0001001 / 22 APR 14

BEFORE LIFTOFF

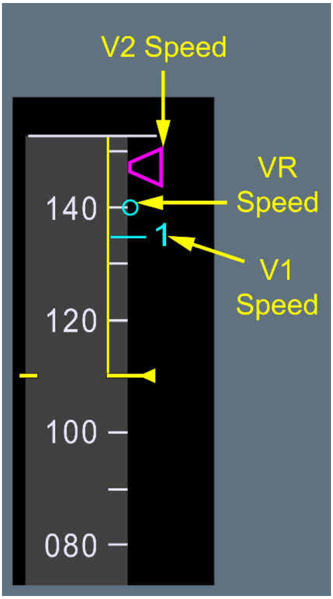
L3 The FMS provides the values of V1, VR, and V2 that the flight crew entered.

L1



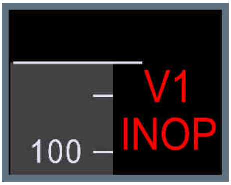
Until the aircraft reaches a sufficient speed, V1 and V2 are outside the airspeed scale. Only the values are displayed at the top of the airspeed scale.
For more information about V1, *Refer to DSC-22-27-10-20 V1*.
For more information about V2, *Refer to DSC-22-27-10-20 V2*.

L12



When V1, VR, and V2 are within range of the airspeed scale, they are displayed as markers and located in accordance with the values that the flight crew entered in the T.O panel of the FMS ACTIVE/PERF page.
For more information about VR, *Refer to DSC-22-27-10-20 VR*.
V1 and VR no longer appear after liftoff.

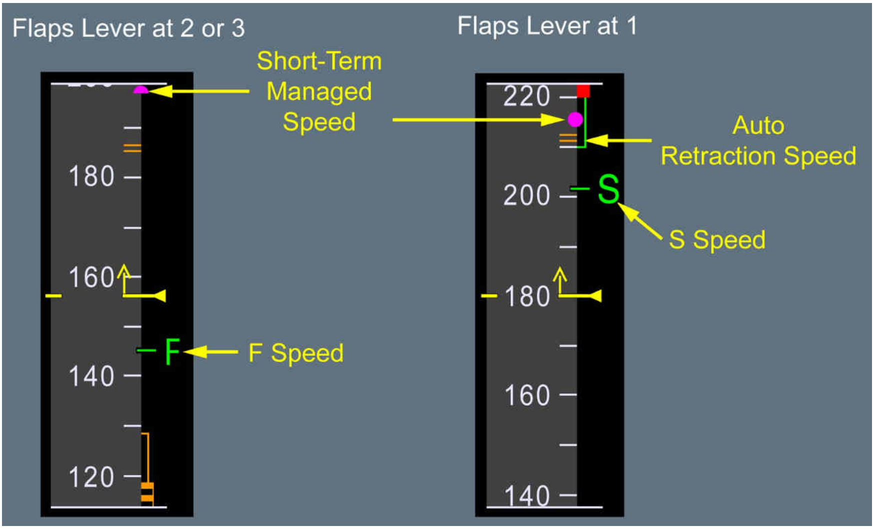
L12



V1 is not valid.
Temporarily flashes, then remains steady.

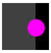
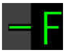
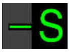
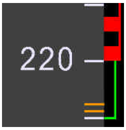
AFTER LIFTOFF

FLAPS LEVER AT 1, 2, OR 3

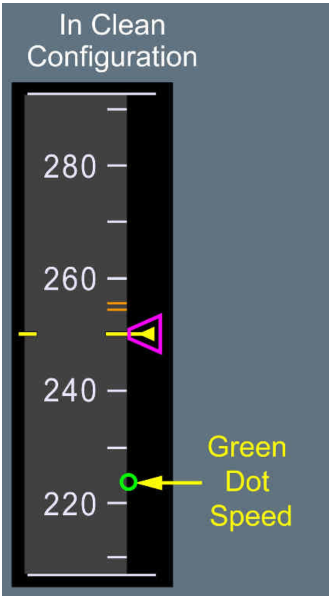

Flaps Lever at 2 or 3
Short-Term Managed Speed
180
160
F
F Speed
140
120
Flaps Lever at 1
220
Auto Retraction Speed
200
S
S Speed
180
160
140

L3 The PRIM provides these speeds.

L1

	Indicates the short-term managed speed, when the speed is either managed or selected. For more information about the short-term managed speed, *Refer to DSC-22-FG-60-20 Short-Term Managed Speed*.
	Appears when the FLAPS lever is set to 2 or 3, also referred to as F speed. For more information about the F speed, *Refer to DSC-22-27-10-20 F*.
	Appears when the FLAPS lever is set to 1, also referred to as S speed. For more information about the S speed, *Refer to DSC-22-27-10-20 S*.
	When the FLAPS lever is set to 1 (CONF 1+F), the green line indicates the activation zone of the ARS . For more information about the ARS, *Refer to DSC-27-20-20 Automatic Retraction System*.

IN CLEAN CONFIGURATION

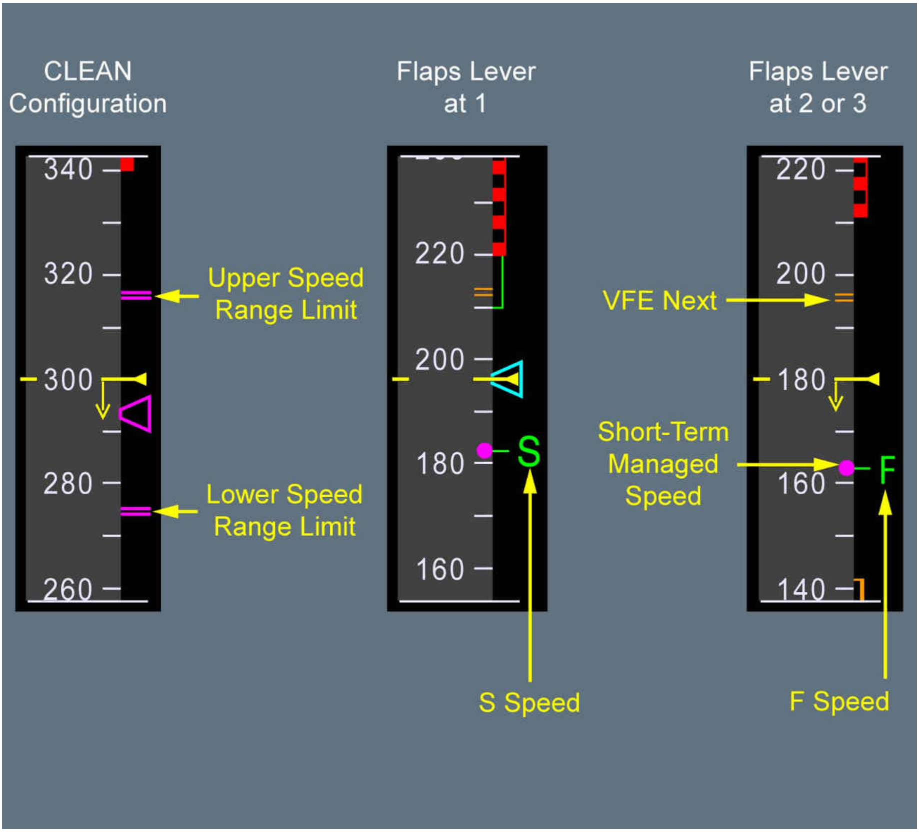

In Clean Configuration
280
260
240
220
Green Dot Speed

In clean configuration:
- The S speed no longer appears
- The green dot speed appears.

AIRSPEED INDICATIONS DURING DESCENT

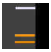
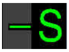
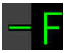
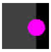
Ident.: DSC-31-CDS-40-20-40-00000781.0001001 / 22 APR 14
Applicable to: ALL

Airspeed Indications During Descent


CLEAN
Configuration
Flaps Lever
at 1
Flaps Lever
at 2 or 3
340
320
300
280
260
Upper Speed
Range Limit
Lower Speed
Range Limit
220
200
180
160
S
S Speed
220
200
180
160
140
VFE Next
Short-Term
Managed
Speed
F
F Speed

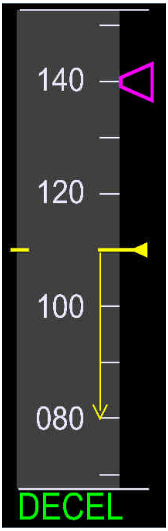
L13

The PRIMs provide the speed range limits.
Indicates the range of aircraft speeds that permits to maintain an appropriate vertical trajectory.
Appears during a managed descent only.
For more information about the speed range limits, *Refer to DSC-22-FG-60-20 FMS Speed/Mach Target*.

	When the aircraft is below 20 000 ft, indicates the speed limit of the next flap configuration, also referred to as VFE next. For more information about VFE next, *Refer to DSC-22-27-10-20 VFE NEXT*.
	Appears when the FLAPS lever is set to 1, also referred to as S speed. For more information about the S speed, *Refer to DSC-22-27-10-20 S*.
	Appears when the FLAPS lever is set to 2 or 3, also referred to as F speed. For more information about the F speed, *Refer to DSC-22-27-10-20 F*.
	Indicates the short-term managed speed, when the speed is either managed or selected. For more information about the short-term managed speed, *Refer to DSC-22-FG-60-20 Short-Term Managed Speed*.

AIRSPEED INDICATIONS AFTER TOUCHDOWN

Ident.: DSC-31-CDS-40-20-40-00000782.0001001 / 22 APR 14
Applicable to: ALL



After touchdown, the only indications that appear on the airspeed scale are:
- The current airspeed
- The speed trend arrow
- The selected or managed speed before touchdown.

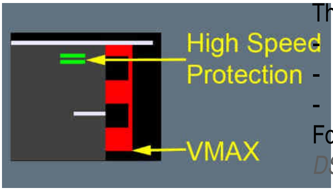
DECEL	The autobrake is active, and the aircraft decelerates. Appears below the speed scale, when the aircraft deceleration rate reaches at least 80 % of the selected deceleration. No longer appears when the aircraft deceleration rate is less than 70 % of the selected deceleration. *Note:* *On a slippery runway, the A-SKID may be activated before the aircraft reaches the selected deceleration. Therefore, the DECEL indication may not appear, even if the autobrake is active.*

AIRSPEED PROTECTIONS

Ident.: DSC-31-CDS-40-20-40-00000783.0001001 / 04 MAY 16
Applicable to: ALL

L3 The PRIMs provide the speed protection information. If all three PRIMs are lost, the ADRs provide the VMO/MMO information.

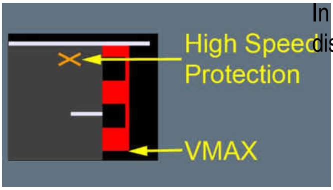
L1 MAXIMUM SPEED



The VMAX is the lowest of the following speeds:
- VMO/MMO
- VLE
- VFE.

For more information about the VMAX definition, *Refer to DSC-22-27-10-20 VMAX*.

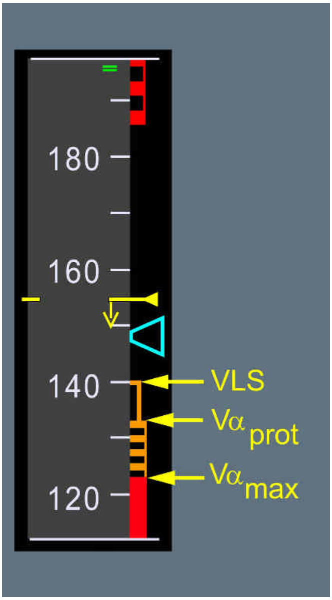
In normal law, the symbol = indicates that the high speed protection is available.
For more information about the high speed protection, *Refer to DSC-22-27-20 High Speed Protection*.



In alternate or direct law, the VMAX indication remains displayed, but the high speed protection is not available.

MINIMUM SPEEDS

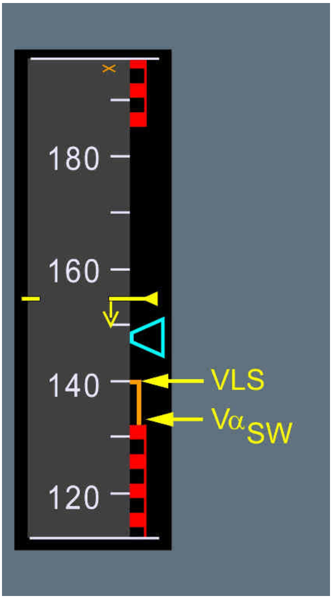
MINIMUM SPEEDS IN NORMAL LAW



The protection speeds in normal law are:

- The minimum selectable speed, also referred to as VLS
  For more information about VLS, *Refer to DSC-22-27-10-20 VLS*.
- The alpha protection speed, also referred to as $V\alpha_{prot}$
  For more information about $V\alpha_{prot}$, *Refer to DSC-22-27-10-20 V alpha prot*.
- The alpha max speed, also referred to as $V\alpha_{max}$.
  For more information about $V\alpha_{max}$, *Refer to DSC-22-27-10-20 V alpha Max*.

MINIMUM SPEEDS IN ALTERNATE OR DIRECT LAW



The protection speeds in alternate or direct law are:

- VLS
- The stall warning speed, also referred to as $V\alpha_{sw}$. For more information about $V\alpha_{sw}$, *Refer to DSC-22-27-10-20 V alpha sw*.

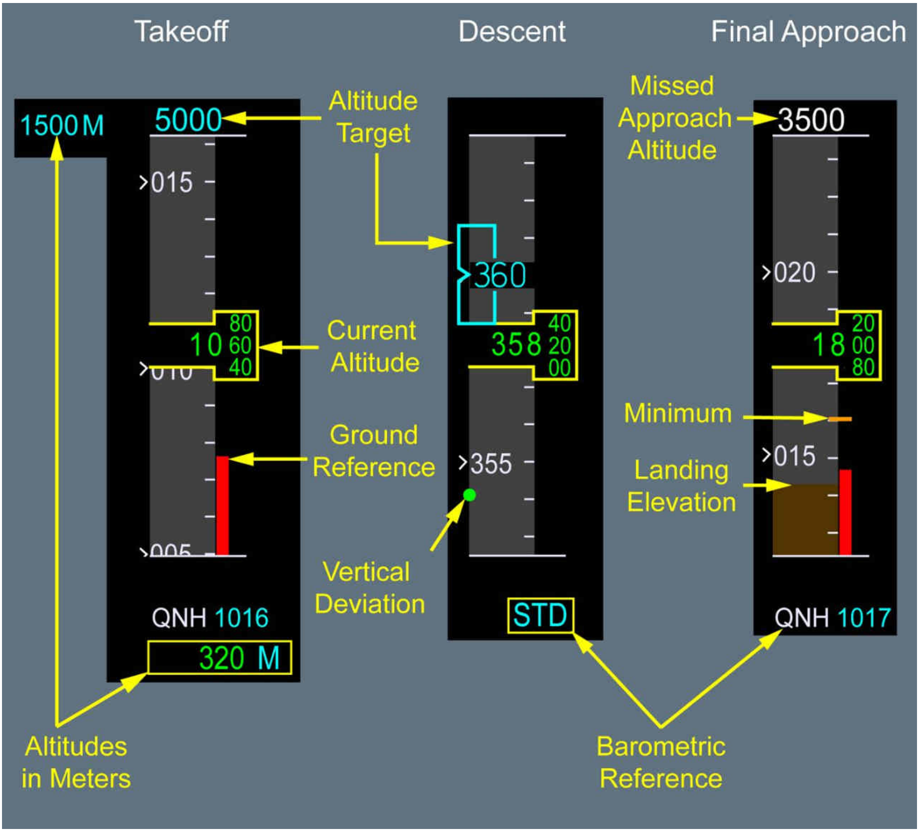
Altitude

ALTITUDE

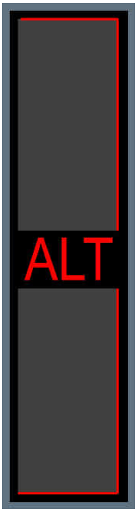
Applicable to: ALL

Ident.: DSC-31-CDS-40-20-50-10-00000786.0001001 / 06 NOV 14

Altitude Indications

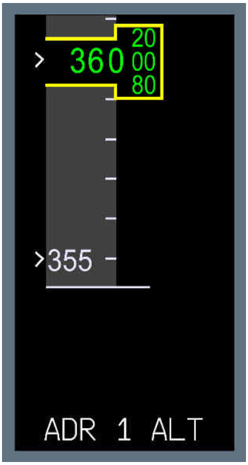

Takeoff
Descent
Final Approach
1500 M
5000
Altitude Target
>015
80
10 60
40
>010
>005
Current Altitude
Ground Reference
QNH 1016
320 M
Altitudes in Meters
360
40
358 20
00
>355
Vertical Deviation
STD
Missed Approach Altitude
3500
>020
20
18 00
80
Minimum
>015
Landing Elevation
QNH 1017
Barometric Reference

L12



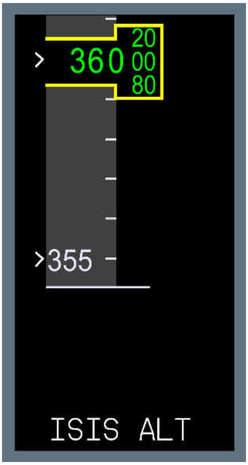
Appears instead of the altitude scale, if the altitude data, with the reference selected on the AFS CP, is not available.
Temporarily flashes, then remains steady.

L12



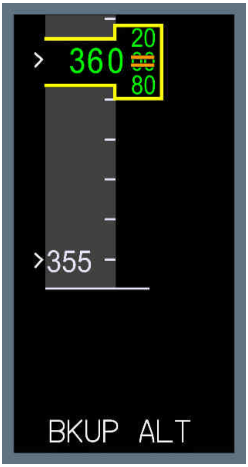
Appears on both PFDs when the altitude is based on only one ADR. The automatic monitoring rejected the other ADRs for altitude data. The required equipment for RVSM is not operative.
For more information about RVSM, *Refer to PRO-SPO-RVSM Required Equipment and Functions*.
For more information about the ADIRS monitoring, *Refer to DSC-34-NAV-20-10-50 ADIRS Monitoring*.

L12



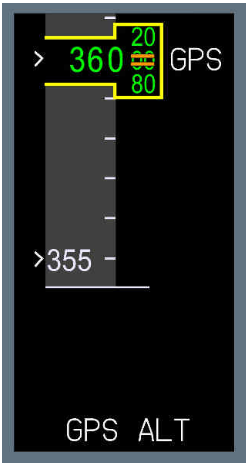
Appears when the ISIS altitude indication is displayed on the PFD. The required equipment for RVSM is not operative.
For more information about RVSM, *Refer to PRO-SPO-RVSM Required Equipment and Functions*.
For more information about the display of the ISIS altitude indication on the PFD, *Refer to DSC-34-NAV-20-30 Display of ISIS Speed and Altitude Indications*.

L12



Appears when the backup altitude indication (from FADECs) is displayed on the PFD. The required equipment for RVSM is not operative.
For more information about RVSM, *Refer to PRO-SPO-RVSM Required Equipment and Functions*.
For more information about the backup altitude indications, *Refer to DSC-34-NAV-20-30 Backup Speed and Backup Altitude Indications*.

L123



Appears when the ADRs, the ISIS, and the backup altitude (from FADECs) no longer provide the altitude. The backup GPS altitude is displayed on the PFD.
The backup GPS altitude remains available via the PRIMs.
The required equipment for RVSM is not operative.
For more information about RVSM, *Refer to PRO-SPO-RVSM Required Equipment and Functions*.

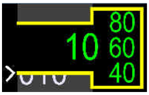
Ident.: DSC-31-CDS-40-20-50-10-00000787.0001001 / 04 DEC 14

CURRENT ALTITUDE

L3 The ADRs provide the current altitude information.
If the automatic monitoring of air data rejects the altitude of the three ADRs, the ISIS provides the current altitude information. For more information about the ADIRS monitoring, *Refer to DSC-34-NAV-20-10-50 ADIRS Monitoring*.

L1 The altitude scale has markers every 100 ft.

L12

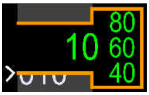


Indicates the current altitude in feet.

Pulses, when the difference between the current altitude and the selected altitude:
- Decreases
- Is between 200 ft and 750 ft.

For more information about altitude alerts, *Refer to DSC-31-CDS-40-20-60 Altitude Alerts*.

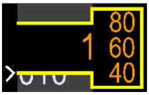
L12



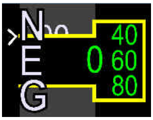
Indicates the current altitude in feet.

Flashes, when the difference between the current altitude and the selected altitude:
- Increases
- Is above 200 ft.

For more information about altitude alerts, *Refer to DSC-31-CDS-40-20-60 Altitude Alerts*.

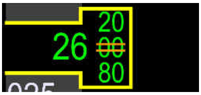


The current altitude is equal to, or below the minimum entered in the FMS PERF page.



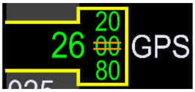
The current altitude is negative.

L12



The ADRs and the ISIS no longer provide the altitude. The backup altitude (from FADECs) is displayed.
The accuracy of the altitude is degraded, and the altitude appears with a precision of ±500 ft.
For more information about the display of the backup altitude, *Refer to DSC-34-NAV-20-30 Backup Speed and Backup Altitude Indications*.

L13



The ADRs, the ISIS, and the backup altitude (from FADECs) no longer provide the altitude.
The backup GPS altitude remains available via the PRIMs.
The displayed GPS altitude is different from the barometric altitude.

Ident.: DSC-31-CDS-40-20-50-10-00000788.0001001 / 18 JUN 15

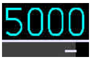
ALTITUDE TARGET

L3 The PRIMs provide the altitude target. If all three PRIMs are lost, the FCU backup provides the altitude target.

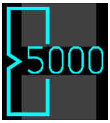
L1 The altitude target indicates:
- An altitude, when the selected barometric reference is QNH, or
- A FL, when the selected barometric reference is STD.

L2 Appears on top of the altitude scale if the selected altitude is above the current altitude.
Appears below the altitude scale if the selected altitude is below the current altitude.

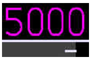
L1



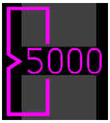
Indicates the AFS CP selected altitude when the vertical guidance is either selected or managed.
The altitude target is outside the altitude scale.



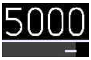
Indicates the AFS CP selected altitude when the vertical guidance is either selected or managed.
The altitude target is within the altitude scale.



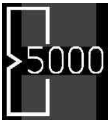
Indicates an altitude constraint when the vertical guidance is managed.
The altitude constraint is outside the altitude scale.



Indicates an altitude constraint when the vertical guidance is managed.
The altitude constraint is within the altitude scale.

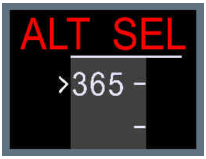


Indicates the AFS CP selected altitude when a vertical approach mode is engaged (G/S, G/S*, F-G/S, F-G/S*, APP-DES, LAND, FLARE, or ROLL OUT).
The aircraft disregards this altitude target when a vertical approach mode is engaged.
The altitude target is outside the altitude scale.



Indicates the AFS CP selected altitude when a vertical approach mode is engaged (G/S, G/S*, F-G/S, F-G/S*, APP-DES, LAND, FLARE, or ROLL OUT).
The aircraft disregards this altitude target when a vertical approach mode is engaged.
The altitude target is within the altitude scale.

L12



Appears if the following information cannot be displayed:
- The altitude that the flight crew selected on the AFS CP
- The altitude that the flight crew selected on the FCU backup pages of the MFD
- The altitude constraints from the FMS.

Temporarily flashes, then remains steady.

Ident.: DSC-31-CDS-40-20-50-10-00000789.0001001 / 06 NOV 14

VERTICAL DEVIATION

L3 The FMS provides the vertical deviation.

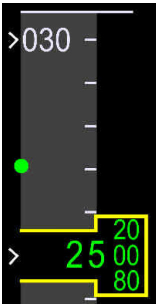
L1 The vertical deviation is the difference between the current altitude of the aircraft and the theoretical vertical profile of the FMS.

L2 The vertical deviation symbol appears when:

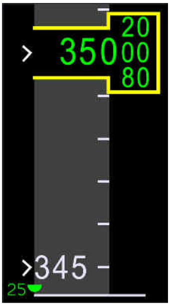
- The aircraft reaches the Top of Descent (T/D), or
- The FMS flight phase is descent, or approach.

The vertical deviation (VERT DEV) also appears on the DES and APPR panels of the FMS PERF page.
If the backup altitude is manually or automatically selected, the vertical deviation is not displayed.
For more information about the display of the backup altitude, *Refer to DSC-34-NAV-20-30 Backup Speed and Backup Altitude Indications*.

L1



When the vertical deviation is less than 540 ft, the vertical deviation symbol is a green disk, located at the theoretical FMS altitude.



When the vertical deviation exceeds 540 ft, the vertical deviation symbol is a green half disk, located at the altitude scale limits. In this case, it is associated with the numerical value displayed on two digits, in hundreds of feet.

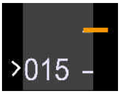
L2 *Note:* *When the aircraft is in a holding pattern, the vertical deviation is the difference between the altitude of the aircraft and the altitude of the holding exit. For more information, Refer to DSC-22-FMS-10-40-20 Controls and Indicators.*

Ident.: DSC-31-CDS-40-20-50-10-00000790.0001001 / 06 NOV 14

MINIMUM

L3 The FMS provides the minimum entered in the BARO(RADIO) entry field of the APPR panel of the FMS PERF page.

L12



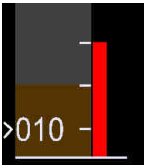
The amber dash along the altitude scale indicates the minimum entered in the FMS PERF page. For more information, *Refer to DSC-22-FMS-20-20-20 BARO/RADIO Entry Fields*.
Appears when the difference between the current aircraft altitude and the minimum entered in the BARO field of the APPR panel of the FMS PERF page is less than 570 ft.
Not displayed if the backup altitude is manually or automatically selected.
For more information about the display of the backup altitude, *Refer to DSC-34-NAV-20-30 Backup Speed and Backup Altitude Indications*.

Ident.: DSC-31-CDS-40-20-50-10-00000791.0001001 / 06 NOV 14

LANDING ELEVATION

L3 The FMS provides the landing elevation information.

L12



The brown area indicates the landing elevation of the destination airport of the flight plan.

Appears when:
- The barometric reference is QNH
- The aircraft is:
  - In final approach, or
  - On ground, with a ground speed above 80 kt.
- The difference between the landing elevation and the current aircraft altitude is less than 570 ft.

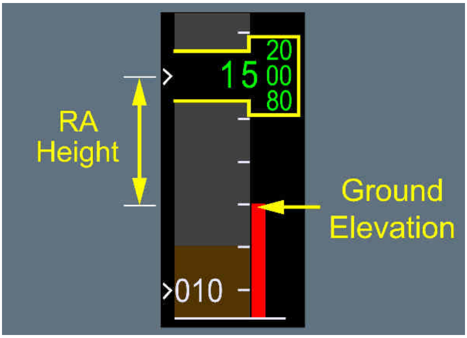
If the backup altitude is manually or automatically selected, the landing elevation is not displayed. For more information about the display of the backup altitude, *Refer to DSC-34-NAV-20-30 Backup Speed and Backup Altitude Indications*.

Ident.: DSC-31-CDS-40-20-50-10-00000792.0001001 / 22 APR 14

GROUND REFERENCE

L3 The radio altimeters provide the ground reference information.

L1



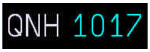
The vertical red line indicates the ground elevation. Appears when the aircraft is below 570 ft RA.

Ident.: DSC-31-CDS-40-20-50-10-00000793.0001001 / 04 MAY 16

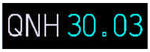
BAROMETRIC REFERENCE

L3 The ADRs provide the selected barometric reference.

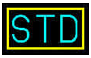
L1


QNH 1017

The flight crew sets the barometric reference to QNH and selected the barometric unit in hPa.


QNH 30.03

The flight crew sets the barometric reference to QNH and selected the barometric unit in inches of mercury.


STD

The flight crew sets the barometric reference to STD.

L2 Flashes when the flight crew selected:

- QNH on the EFIS CP, and the aircraft is in climb above the transition altitude, or
- STD on the EFIS CP, and the aircraft is in approach below the transition flight level.

Note: *If the transition altitude(level) is not available from the FMS, the default transition altitude(level) is automatically set to 2 500 ft RA height.*

L1 For more information about the barometric reference controls of the EFIS CP, *Refer to DSC-31-CDS-40-60 Barometric Reference*.

L2 If the automatic monitoring of air data rejects the altitude of the three ADRs, the barometric reference is no longer displayed on the PFD.
The flight crew can still set the barometric reference via the set/sel knob of the ISIS.

If the backup altitude is manually or automatically selected, only the STD barometric reference is available.

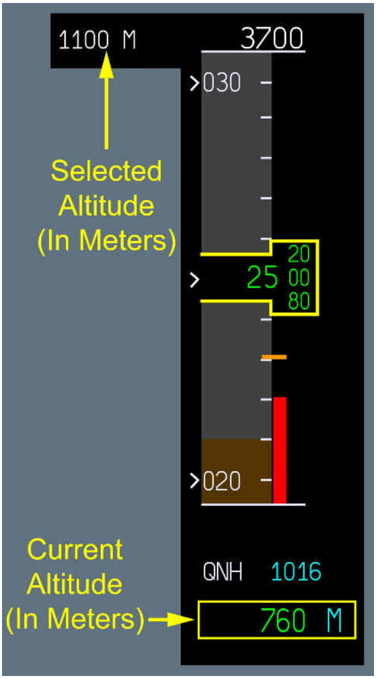
For more information about the display of the backup altitude, *Refer to DSC-34-NAV-20-30 Backup Speed and Backup Altitude Indications*.

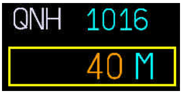
Ident.: DSC-31-CDS-40-20-50-10-00000794.0001001 / 04 DEC 14

ALTITUDES IN METERS

L3 The PRIMs provide the altitudes in meters.

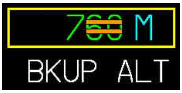
L1 The selected altitude and the current aircraft altitude indications appear in meters, when the flight crew presses the METER pb on the AFS CP.


1100 M
3700
030
Selected Altitude (In Meters)
20
25 00
80
020
QNH 1016
Current Altitude (In Meters)
760 M


QNH 1016
40 M

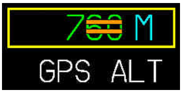
The flight crew pressed the METER pb on the AFS CP.
Appears in amber(green) when the current altitude is below(above) the minimum entered in the FMS PERF page.

L12


760 M
BKUP ALT

The ADRs and the ISIS no longer provide the altitude. The backup altitude (from FADECs) is displayed.
The accuracy of the altitude is degraded, and the altitude appears with a precision of ±500 ft.
For more information about the display of the backup altitude, *Refer to DSC-34-NAV-20-30 Backup Speed and Backup Altitude Indications*.

L13



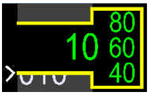
The ADRs, the ISIS, and the backup altitude (from FADECs) no longer provide the altitude.
The backup GPS altitude remains available via the PRIMs.
The displayed GPS altitude is different from the barometric altitude.

Intentionally left blank

Altitude Alerts

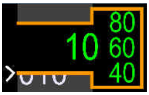
ALTITUDE ALERTS

Ident.: DSC-31-CDS-40-20-60-00000795.0001001 / 22 APR 14
Applicable to: ALL



When the aircraft approaches the selected altitude or flight level:
- The altitude frame pulses in yellow on the PFD
- The FWS generates a C chord sound for 1.5 s if the AP is not engaged.

L12



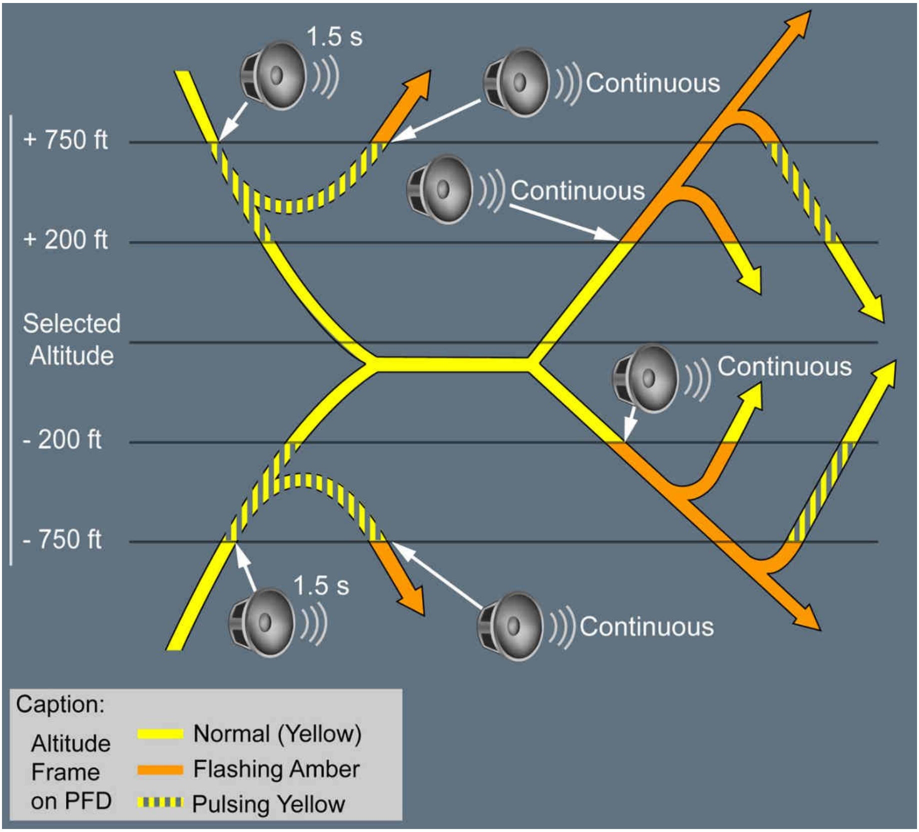
When the aircraft significantly deviates from the selected altitude or flight level:
- The altitude frame flashes in amber on the PFD
- The FWS generates a permanent C chord sound.

The C chord sound is no longer emitted when:
- The flight crew selects a new altitude target, or
- The flight crew presses the MASTER WARN pb, or
- The aircraft returns to the selected altitude.

C Chord Sound

L3 Altitude alerts are triggered when the altitude that the ADRs provide is different from the altitude selected on the AFS CP.

Altitude Alerts


1.5 s
Continuous
+ 750 ft
Continuous
+ 200 ft
Selected Altitude
Continuous
- 200 ft
- 750 ft
1.5 s
Continuous
Caption:
Altitude Frame on PFD
Normal (Yellow)
Flashing Amber
Pulsing Yellow

L2 Altitude alerts are inhibited:

- In approach, when the aircraft captures the glideslope, or
- When the landing gear lever is set to DOWN, and the slats are extended, or
- When the landing gear is locked down, or
- When the AP/FD TCAS mode engages upon a Resolution Advisory order.

L3 If an altitude alert is triggered just after the aircraft is clear of conflict, and the AP is engaged, the C chord sound is inhibited.

If an altitude alert is triggered just after the aircraft is clear of conflict, and the AP is not engaged, a C chord sound is generated during 1.5 s.

RA Height

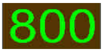
RA HEIGHT

Ident.: DSC-31-CDS-40-20-70-00000796.0001001 / 22 APR 14
Applicable to: ALL

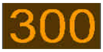
The RA height appears on the PFD when the aircraft height is less than 2 500 ft.

L3 The RA height value changes:
- Every 10 ft above 50 ft
- Every 5 ft between 5 ft and 50 ft
- Every foot below 5 ft.

L1

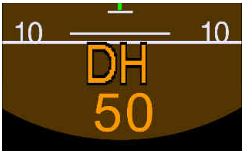


The aircraft is above:
- The minimum entered in the FMS PERF page +100 ft, or
- 400 ft, if the flight crew did not enter a minimum in the FMS PERF page.



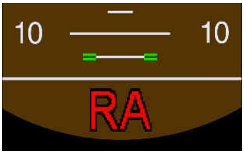
The aircraft is below:
- The minimum entered in the FMS PERF page +100 ft, or
- 400 ft, if the flight crew did not enter a minimum in the FMS PERF page.

L12



Appears above the RA indication, when the aircraft is below the minimum entered in the RADIO field of the FMS PERF page.
Temporarily flashes, then remains steady.
Does not appear when the backup altitude (from FADECs) is manually or automatically selected. For more information, *Refer to DSC-34-NAV-20-30 Backup Speed and Backup Altitude Indications*.

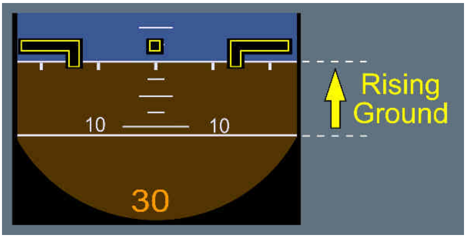
L12



Appears if:
- The three radio altimeters (i.e. RA A, RA B, and RA C) are failed
- The aircraft is below the transition altitude.

Note: *The ground reference indication no longer appears on the altitude scale.*

Temporarily flashes, then remains steady.



When the aircraft approaches the ground, the white line indicates the ground.
This line translates toward the horizon until the aircraft touches down.

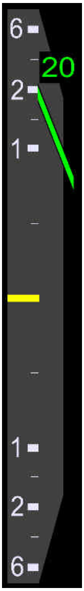
Vertical Speed

VERTICAL SPEED

Ident.: DSC-31-CDS-40-20-80-00000797.0002001 / 18 AUG 17
Applicable to: ALL

L3 The vertical speed information is based on barometric data from the ADRs, and on inertial data from the IRs.

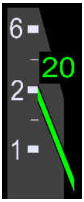
L12



The vertical speed scale has a range between ± 6 000 ft/min.

The scale has markers:
- Every 500 ft/min, between -2 000 ft/min and 2 000 ft/min
- Every 2 000 ft/min:
  - Between -6 000 ft/min and -2 000 ft/min
  - Between 2 000 ft/min and 6 000 ft/min.

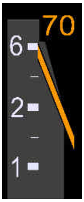
L12



The vertical speed of the aircraft is within the scale.

Note: *The digital indication only appears when the vertical speed:*
- *Exceeds 200 ft/min, or*
- *Is less than -200 ft/min.*

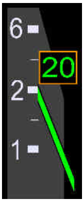
L1



The vertical speed of the aircraft appears in amber if the vertical speed:

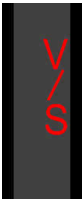
- Exceeds 6 000 ft/min(below -6 000 ft/min), or
- Is less than -2 000 ft/min, and the aircraft RA height is between 1 000 ft and 2 500 ft, or
- Is less than -1 200 ft/min, and the aircraft RA height is below 1 000 ft.

L12



- The vertical speed is based on ADRs data only, and no longer combined with IRs data, or
  There is a time lag between the vertical speed that appears on the PFD, and the actual vertical speed of the aircraft.
- The vertical speed is based on baro inertial data from the backup sources.

L12



The vertical speed information is not available.
Temporarily flashes, then remains steady.

For more information about TCAS indications on the vertical scale, *Refer to DSC-34-SURV-40-20 Vertical Speed Scale*.

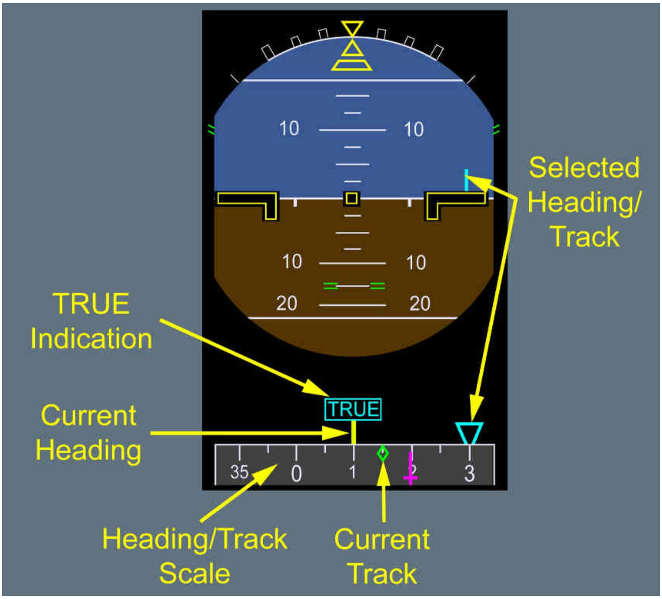
Heading/Track

HEADING/TRACK

Applicable to: ALL

Ident.: DSC-31-CDS-40-20-90-10-00000798.0001001 / 22 APR 14

Heading/Track Indications


10
10
10
10
20
20
Selected
Heading/
Track
TRUE
Indication
TRUE
Current
Heading
35
0
1
2
3
Heading/Track
Scale
Current
Track

Ident.: DSC-31-CDS-40-20-90-10-00019843.0002001 / 26 JUL 17

HEADING/TRACK SCALE

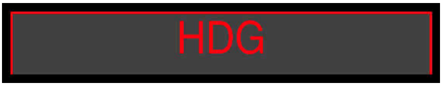
L3 The ADIRS provide the heading information.

L1 Appears on the horizon line, in the MAG or TRUE reference.
Headings are marked every 5 ° with a numeric value every 10 °.

L2 The heading/track scale is in the TRUE reference:
- When the flight crew presses the TRUE/MAG pb, on the AFS CP
- At high latitudes, when the ADIRS automatically change the MAG North reference to the TRUE North reference.

For more information about the polar navigation, *Refer to DSC-22-FMS-10-30-30 Introduction*.

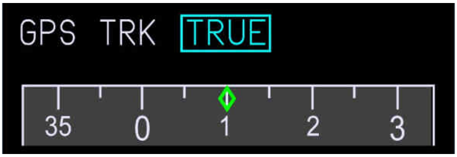
L12



Appears instead of the heading scale if the heading information is not available. Temporarily flashes, then remains steady.

L1 GPS TRK MESSAGE

L12



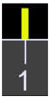
Appears when the GPS track replaces the heading symbol.
The track symbol is always centered on the scale.
ISIS provide inertial data for the current GPS true track.

Ident.: DSC-31-CDS-40-20-90-10-00000802.0001001 / 22 APR 14

CURRENT HEADING

L3 The ADRs provide the heading value.

L1



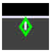
Indicates the current heading of the aircraft, on the heading scale.
The heading value refers to true or magnetic North, depending on the MAG/TRUE pb selection.

Ident.: DSC-31-CDS-40-20-90-10-00000803.0001001 / 22 APR 14

CURRENT TRACK

L3 The IRS provides the current track information.

L1



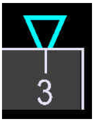
Indicates the current track of the aircraft, on the heading scale.

Ident.: DSC-31-CDS-40-20-90-10-00000804.0001001 / 22 APR 14

SELECTED HEADING(TRACK)

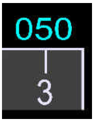
L3 If all three PRIMs are lost, the FCU backup provides the selected heading(track) information. In all other cases, the PRIMs provide the selected heading(track) information.

L12



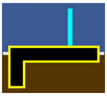
Indicates the heading(track) that the flight crew selected on the AFS CP.
Appears when the HDG/TRACK mode is engaged.

L1



The selected heading(track) is outside the display area. The numeric value appears instead of the symbol on the right(left) side of the heading/track scale.

L12

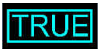


The heading(track) bar appears on the horizon line of the PFD, when the FDs are off.
The heading scale of the PFD has markers every 10 °.

Ident.: DSC-31-CDS-40-20-90-10-00000805.0001001 / 22 APR 14

TRUE INDICATION

L12



The heading refers to true North.
When the slats extend, temporarily flashes, then remains steady.
When the aircraft approaches high latitudes, the SELECT TRUE NORTH REF message appears on the ND, and requests the flight crew to select the TRUE North reference.

L3 This message appears:
- Above 82 ° North, or
- Above 73 ° North, with a longitude between 120 ° West, and 90 ° West, or
- Below 60 ° South.

L1 To change the North reference, the flight crew can press the TRUE/MAG pb on the AFS CP. When the aircraft reaches high latitudes, the ADIRS automatically changes the MAG North reference to the TRUE North reference.

L3 The aircraft is at high latitudes:
- Above 82.5 ° North, or
- Above 73.5 ° North, with a longitude between 117.5 ° West, and 92.5 ° West, or
- Below 60.5 ° South.

L2 For more information about polar navigation, *Refer to DSC-22-FMS-10-30-30 Introduction*.

Intentionally left blank

Guidance

FD GUIDANCE

Ident.: DSC-31-CDS-40-20-100-00000808.0002001 / 05 NOV 15
Applicable to: ALL

L3 The PRIMs provide the FD guidance information.

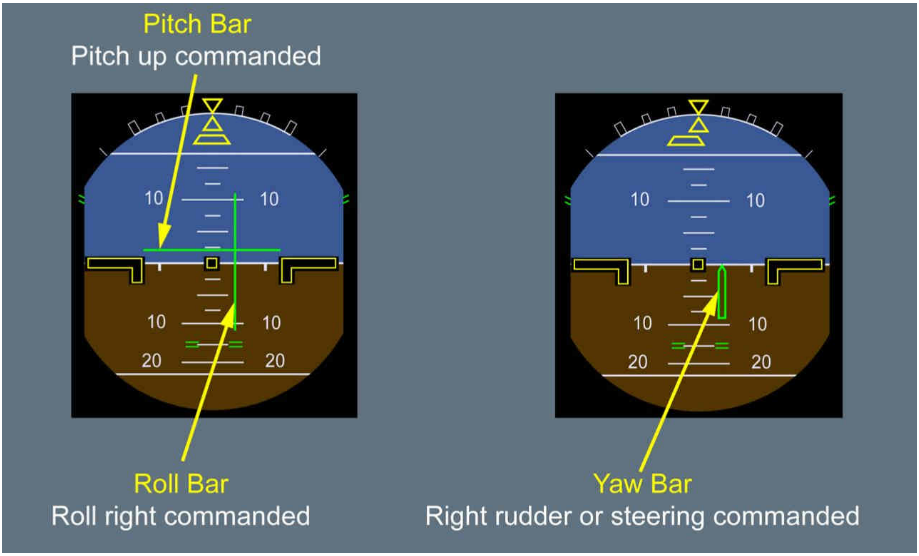
L1 When the FDs are engaged, the display conditions of the guidance orders are:
- For lateral guidance orders:
  The yaw bar is displayed during takeoff or landing roll. Otherwise, the roll bar is displayed when a lateral mode is engaged.

L2 The yaw bar only appears in RWY and ROLL OUT.

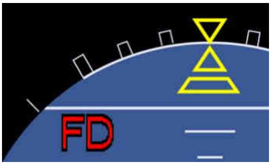
L1
- For vertical guidance orders:
  The pitch bar is displayed after liftoff when the tail strike pitch limit disappears, and when a vertical mode is engaged.

L2 With the AP on, the pitch bar disappears in ROLL OUT.
With the AP off, the pitch bar disappears below 50 ft RA.

L1 For more information about the FDs, *Refer to DSC-22-FG-30-10 General*.


Pitch Bar
Pitch up commanded
10
10
10
10
20
20
10
10
10
10
20
20
Roll Bar
Roll right commanded
Yaw Bar
Right rudder or steering commanded

L12



Indicates that at least one guidance order (i.e. roll, pitch, or yaw) is not valid.
Temporarily flashes, then remains steady.

Departure and Approach Guidance

DEPARTURE AND APPROACH GUIDANCE

Ident.: DSC-31-CDS-40-20-110-00000810.0001001 / 13 MAY 14
Applicable to: ALL

The approach guidance indications on the PFD differ, when the aircraft performs:
- xLS approaches (*Refer to DSC-31-CDS-40-20-110 xLS Approaches*), or
- RNP AR/RNAV(RNP) approaches and RNAV departures (*Refer to DSC-31-CDS-40-20-110 RNP AR/RNAV(RNP) Departures and Approaches*).

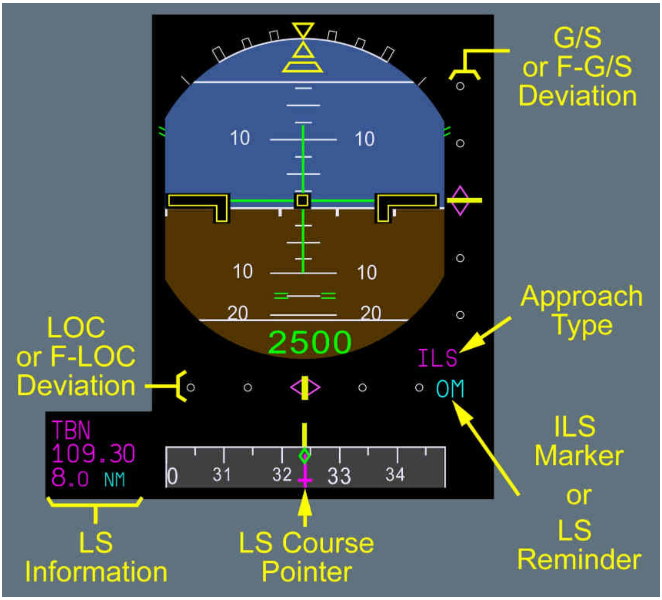
For more information about the different approaches included in the xLS and RNP AR/RNAV(RNP) categories, *Refer to PRO-NOR-SOP-180-A Cross-Reference Table*.

XLS APPROACHES

Applicable to: ALL

Ident.: DSC-31-CDS-40-20-110-10-00019054.0001001 / 22 APR 14

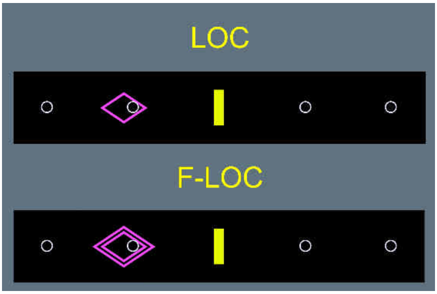
xLS Approach


G/S or F-G/S Deviation
10
10
10
10
20
20
2500
Approach Type
ILS
LOC or F-LOC Deviation
OM
TBN
109.30
8.0 NM
0
31
32
33
34
ILS Marker or LS Reminder
LS Information
LS Course Pointer

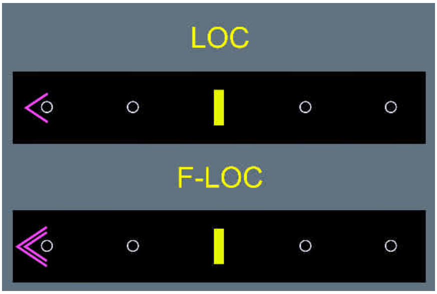
LOC OR F-LOC DEVIATION

L3 The MMR provides the LOC and the F-LOC deviations.

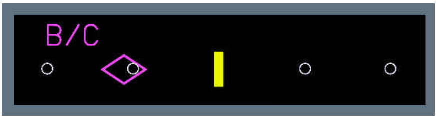
L1



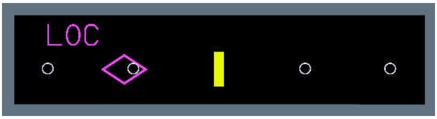
The LOC and F-LOC deviations are within the scale.



The LOC and F-LOC deviations are outside the scale.



The flight crew selected a back beam approach or a LOC back course departure.



The flight crew selected a LOC approach compatible with the FLS function.

If the deviation exceeds a quarter deflection, the deviation scale flashes and the LOC deviation symbol flashes when:
- The aircraft is below 1 000 ft down to 15 ft
- LAND1, LAND2, or LAND3 appears on the FMA
- LOC, LAND, or FLARE is engaged.

L2 For more information about the conditions of excessive deviation, *Refer to DSC-22-FG-100-20 Excessive Deviation Indication*.

L1 If the LOC transmitter fails:
- The LOC indexes disappear on both PFDs
- The LOC scales temporarily flash on both PFDs.

L2 The detection of the LOC transmitter failure is available between 1 000 ft and 15 ft, when the LOC mode is engaged.
For more information about the LS transmitter failure, *Refer to DSC-22-FG-100-20 Failure of the LS Transmitter*.

L12

LOC	Appears instead of the LOC scale, if the LOC deviation is not valid. Temporarily flashes, then remains steady. For more information, *Refer to DSC-22-FG-100-20 Failure of one LS Receiver*.

L123

F-LOC	Appears instead of the F-LOC scale, if the F-LOC deviation is not valid. The F-LOC deviation is not available when the FLS function of the MMR on the same side is lost. Temporarily flashes, then remains steady. For more information, *Refer to DSC-22-FG-100-20 Failure of one LS Receiver*.

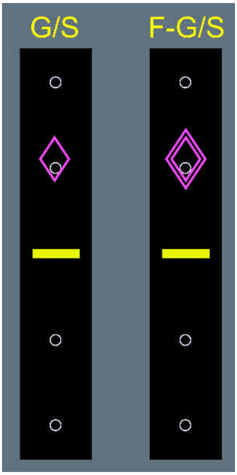
L1 Note: *During a LOC or LOC B/C approach flown with the FLS function, the lateral deviation symbol is a single diamond, as for an ILS approach.*

Ident.: DSC-31-CDS-40-20-110-10-00019060.0001001 / 03 JUL 20

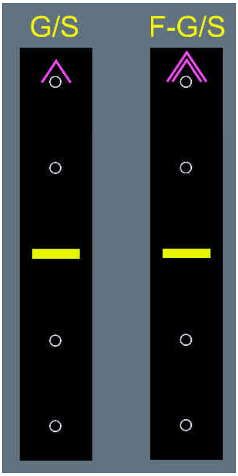
1 G/S OR F-G/S DEVIATION

L3 The MMR provides the G/S and F-G/S deviations.

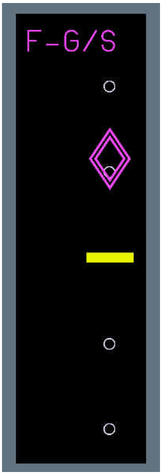
L1



The G/S and F-G/S deviations are within the scale.



The G/S and F-G/S deviations are outside the scale.



The flight crew selected a LOC or LOC B/C approach compatible with the FLS function.

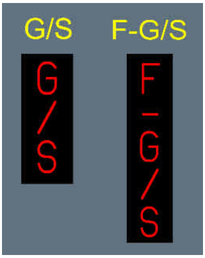
If the deviation is more than one dot, the deviation scale flashes and the G/S deviation symbol flashes when:
- The aircraft is below 1 000 ft down to 100 ft
- LAND1, LAND2, or LAND3 appears on the FMA
- G/S, LAND, or FLARE is engaged.

L2 For more information about the conditions of excessive deviation, *Refer to DSC-22-FG-100-20 Excessive Deviation Indication*.

L1 If the G/S transmitter fails:
- The G/S indexes disappear on both PFDs
- The G/S scales temporarily flash on both PFDs.

L2 The detection of the G/S transmitter failure is available between 1 000 ft and 100 ft, when the G/S mode is engaged.
For more information about the LS transmitter failure, *Refer to DSC-22-FG-100-20 Failure of the LS Transmitter*.

L1



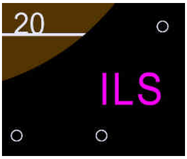
The G/S or F-G/S deviation is not valid.

Ident.: DSC-31-CDS-40-20-110-10-00019903.0002001 / 09 MAR 16

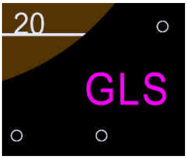
APPROACH TYPE

L3 The MMR and the FMS provide the approach type.

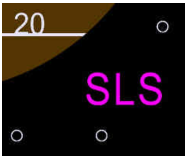
L1



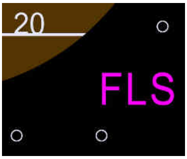
Appears when:
- The flight crew selected an ILS approach
- The LS pb is set to on.



Appears when:
- The flight crew selected an GLS ◁* approach
- The LS pb is set to on.



Appears when:
- The flight crew selected an approach compatible with the SLS ◁* function
- The LS pb is set to on.



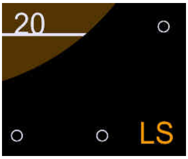
Appears when:
- The flight crew selected an approach compatible with the FLS function
- The LS pb is set to on.

Ident.: DSC-31-CDS-40-20-110-10-00019072.0001001 / 22 APR 14

LS REMINDER

L3 The MMR and the FMS provide the LS reminder information.

L12



Appears if:
- The flight crew selected an xLS approach
- The LS pb is set to off after the approach mode was armed or engaged.

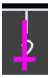
Temporarily flashes, then remains steady.

Ident.: DSC-31-CDS-40-20-110-10-00019061.0002001 / 22 APR 14

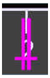
LS COURSE POINTER

L3 The MMR and the PRIM provide the LS course pointer information.

L1



Indicates the LOC course of the selected approach, on the heading scale.



Indicates the F-LOC course of the selected approach, on the heading scale.

L2 Appears, when the LS pb is set to on, for more information *Refer to DSC-31-CDS-40-60 LS pb*.

Ident.: DSC-31-CDS-40-20-110-10-00019063.0001001 / 22 APR 14

ILS MARKER

L2 Appears when:
- The flight crew selected an ILS approach
- The LS pb is set to on
- The aircraft flies over a marker beacon.

L1

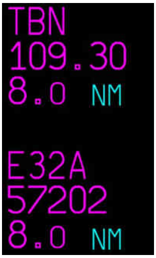
OM	The aircraft is over the outer marker of the ILS approach.
MM	The aircraft is over the middle marker of the ILS approach.
IM	The aircraft is over: - The inner marker of the ILS approach, or - An airway marker.

Ident.: DSC-31-CDS-40-20-110-10-00019065.0001001 / 28 APR 17

LS INFORMATION

L3 The MMR, the DME, and the FMS provide the LS information.

L13



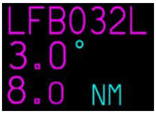
TBN
109.30
8.0 NM

E32A
57202
8.0 NM

Indicates the following information about the ILS, GLS ◁, or an approach compatible with the SLS ◁ function:

- The ILS, GLS, or SLS identification
  The MMR decodes the ILS, GLS, or SLS identification.
- The ILS frequency or the channel of the GLS or the approach compatible with the SLS function
- The DME distance (if any), or the distance to the threshold in the case of a GLS or an approach compatible with the SLS approach.

L13

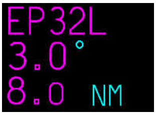


LFB032L
3.0°
8.0 NM

Indicates:

- The FLS anchor point identification, when the anchor point is on the runway threshold
- The FLS beam slope
- The distance to the anchor point.
  The FMS computes this distance.

L13



EP32L
3.0°
8.0 NM

Indicates:

- The end point
  The anchor point is called end point when it is not located on the runway threshold.
- The FLS beam slope
- The distance to the end point.
  The FMS computes this distance.

L12

ILS

Appears during an ILS approach, if one of the following is not available:

- The LOC signal, or
- The G/S signal.

Temporarily flashes, then remains steady.

L12

GLS

Appears during a GLS ◁ approach, if one of the following is not available:

- The computed LOC signal, or
- The computed G/S signal.

Temporarily flashes, then remains steady.

L12	SLS	Appears during an approach compatible with the SLS ◁* function, if one of the following is not available: - The computed LOC signal, or - The computed G/S signal. Temporarily flashes, then remains steady.
L12	FLS	Appears if one of the following is not available: - The FLS function, or - The computed F-LOC signal, or - The computed F-G/S signal, or - The distance to the anchor point. Temporarily flashes, then remains steady.
L12	LOC/FLS	Appears if one of the following is not available: - The FLS function, or - The LOC signal, or - The computed F-G/S signal, or - The distance to the anchor point. Temporarily flashes, then remains steady.
L12	LS	Appears if the MMR sends inconsistent information. Temporarily flashes, then remains steady.
L12	DME	Appears if: - The ILS is paired with a DME - The DME distance is not available. Temporarily flashes, then remains steady.

RNP AR/RNAV(RNP) DEPARTURES AND APPROACHES

Applicable to: ALL

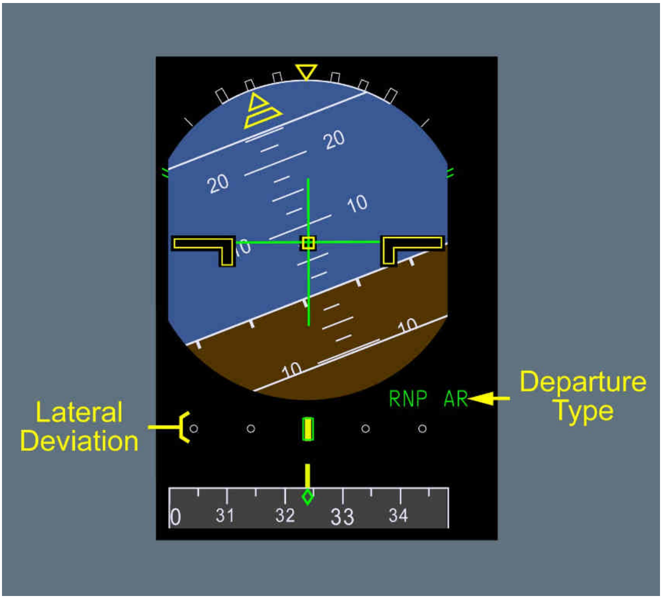
Ident.: DSC-31-CDS-40-20-110-20-00019056.0001001 / 22 APR 14

To perform an RNAV(RNP) departure, the flight crew must:
- Select an RNAV(RNP) departure on the FMS DEPARTURE page
- Set the LS pb to off on the EFIS CP.

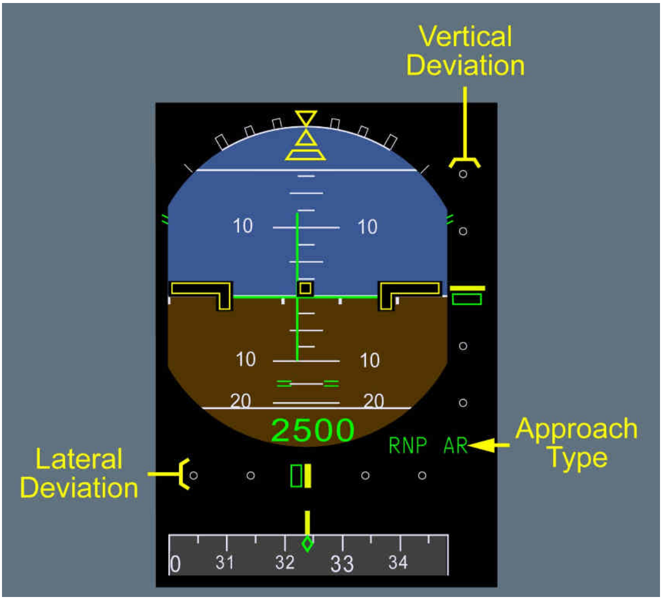
To perform an RNP AR/RNAV(RNP) approach, the flight crew must:
- Select an RNP AR/RNAV(RNP) approach on the FMS ARRIVAL page
- Set the APPR pb to on
- Set the LS pb to off on the EFIS CP.

Note: *The display enables to perform the RNAV(RNP) missed approach procedure associated with the RNP AR/RNAV(RNP) approach.*

RNAV(RNP) Departure


20
20
10
10
10
10
RNP AR
Departure Type
Lateral Deviation
0
31
32
33
34

RNP AR/RNAV(RNP) Approach

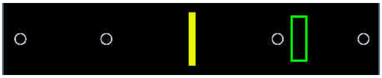

Vertical
Deviation
10
10
10
10
20
20
2500
RNP AR
Approach
Type
Lateral
Deviation
0
31
32
33
34

Ident.: DSC-31-CDS-40-20-110-20-00019086.0001001 / 03 JUL 20

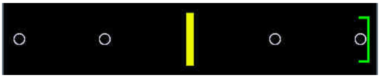
2 LATERAL DEVIATION

L3 The FMS provides the lateral deviation (LDEV).

L1 Indicates the deviation relative to the lateral F-PLN profile.



The LDEV is within the scale.



The LDEV is outside the scale.

One dot on the lateral deviation scale corresponds to a deviation of 0.1 NM.

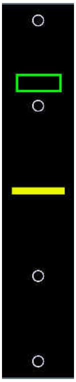
L2 During approach, the LDEV scale and index flash when the FMS detects an excessive deviation that exceeds 1 x RNP of the current leg. There is no LDEV and index flash on departure or go-around.

Ident.: DSC-31-CDS-40-20-110-20-00019085.0001001 / 03 JUL 20

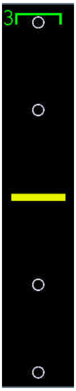
3 VERTICAL DEVIATION

L3 The FMS provides the vertical deviation (VDEV).

L1 Indicates the deviation relative to the vertical F-PLN profile.



The VDEV is within the scale.



The VDEV is outside the scale.
The value of the deviation is written aside the deviation symbol. In this case, the aircraft is 300 ft below the vertical profile.

One dot on the vertical deviation scale corresponds to a deviation of 100 ft.

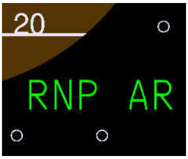
L2 The VDEV scale and index flash when the FMS detects an excessive deviation of 3/4 dot (75 ft) below the vertical profile.

Ident.: DSC-31-CDS-40-20-110-20-00019200.0001001 / 22 APR 14

DEPARTURE/APPROACH TYPE

L3 The FMS provides the RNP AR/RNAV(RNP) reminder information.

L1



Appears when:
- The flight crew selected an RNAV(RNP) departure or an RNP AR/RNAV(RNP) approach
- The LS pb is set to off.

Intentionally left blank

Flight Mode Annunciator (FMA)

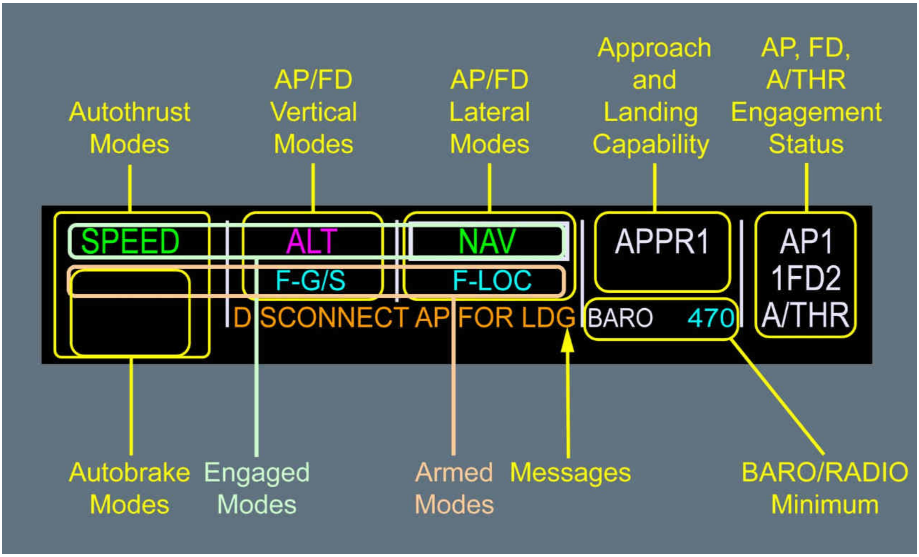
FLIGHT MODE ANNUNCIATOR (FMA)

Ident.: DSC-31-CDS-40-20-120-00000816.0001001 / 22 APR 14
Applicable to: ALL

The Flight Mode Annunciator (FMA) indicates:
- The A/THR modes
- The AP/FD vertical and lateral modes
- The approach and landing capability
- The AP/FD and A/THR engagement status
- The autobrake arming status.

Messages from the flight guidance, the flight controls, and the FMS can also appear on the last line of the FMA.
For more information about the FMA, *Refer to DSC-22-FG-90-80 Overview*.

FMA


Autothrust Modes
AP/FD Vertical Modes
AP/FD Lateral Modes
Approach and Landing Capability
AP, FD, A/THR Engagement Status
SPEED
ALT
NAV
APPR1
AP1
F-G/S
F-LOC
1FD2
DISCONNECT AP FOR LDG
BARO 470
A/THR
Autobrake Modes
Engaged Modes
Armed Modes
Messages
BARO/RADIO Minimum

Intentionally left blank

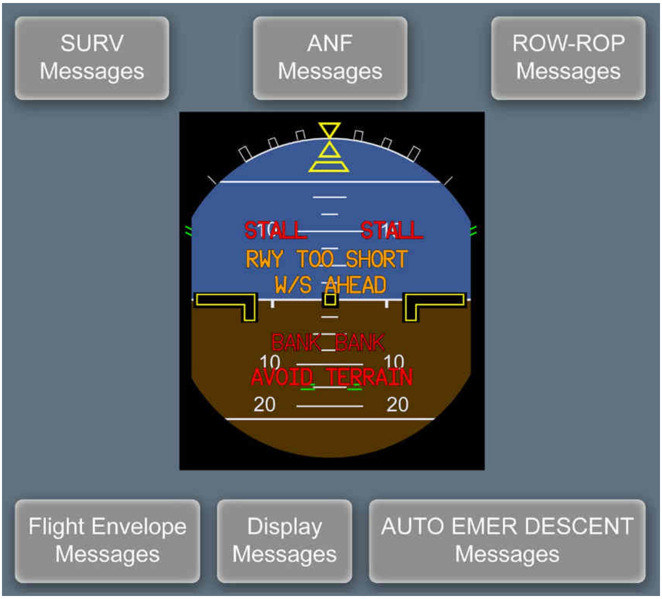
PFD Messages

PFD MESSAGES

Applicable to: ALL

Ident.: DSC-31-CDS-40-20-130-10-00019304.0002001 / 01 JUN 17

PFD Messages


SURV Messages
ANF Messages
ROW-ROP Messages
STALL STALL
RWY TOO SHORT
W/S AHEAD
BANK BANK
10 10
AVOID TERRAIN
20 20
Flight Envelope Messages
Display Messages
AUTO EMER DESCENT Messages

Ident.: DSC-31-CDS-40-20-130-10-00019769.0001001 / 22 APR 14

DISPLAY MESSAGES

L12

CHECK ATT	Attitude data displayed on the two PFDs differ by more than 5 ° in pitch or roll. Temporarily flashes, then remains steady. For more information about the warning and the procedure associated with the CHECK ATT message, *Refer to PRO-ABN-NAV NAV CAPT & F/O ATT DISAGREE*

L12

CHECK CAPT(F/O) INR DU	The CDS detects erroneous data displayed on the CAPT(F/O) inner DU. Temporarily flashes, then remains steady.

L12

CHECK CAPT(F/O) OUTR DU	The CDS detects erroneous data displayed on the CAPT(F/O) outer DU. Temporarily flashes, then remains steady.

L12

CHECK CTR LWR DU	The CDS detects erroneous data on the center lower DU. Temporarily flashes, then remains steady.

L12

CHECK CTR LWR DU & F/O HUD	The CDS detects a discrepancy between the data displayed on the center lower DU and the F/O HUD. Temporarily flashes, then remains steady.

L12

CHECK CTR UPPR DU	The CDS detects erroneous data displayed on the center upper DU. Temporarily flashes, then remains steady.

L12

CHECK CTR UPPR DU & CAPT HUD	The CDS detects a discrepancy between the data displayed on the center upper DU and the data displayed on the CAPT HUD. Temporarily flashes, then remains steady.

L12

CHECK HDG	The CDS detects a discrepancy between the heading parameters of the CAPT EFIS and the F/O EFIS. Appears on the heading scale of the PFD. The CDS detects a discrepancy, if the difference between the two headings exceeds: - 5 ° in TRUE reference - 7 ° in MAG reference. Temporarily flashes, then remains steady. For more information about the warning and the procedure associated with the CHECK HDG message, *Refer to PRO-ABN-NAV NAV CAPT & F/O HDG DISAGREE*.

L12

DISPLAY SYSTEM VERSIONS DISAGREE	Appears if: - The aircraft is on ground, before engine start or after landing - The software of the display units are different. Temporarily flashes, then remains steady.

Ident.: DSC-31-CDS-40-20-130-10-00019767.0001001 / 22 APR 14

ROW-ROP MESSAGES

MAX BRAKING	For more information, *Refer to DSC-34-32-20-20-60 ROW/ROP Messages*.
MAX REVERSE	For more information, *Refer to DSC-34-32-20-20-60 ROW/ROP Messages*.
RWY TOO SHORT	For more information, *Refer to DSC-34-32-20-20-60 ROW/ROP Messages*.
RWY TOO SHORT	For more information, *Refer to DSC-34-32-20-20-60 ROW/ROP Messages*.

Ident.: DSC-31-CDS-40-20-130-10-00019765.0002001 / 30 JAN 17

SURV MESSAGES

AVOID OBSTACLE	For more information, *Refer to DSC-34-SURV-20-20 TAWS Messages*.
AVOID TERRAIN	For more information, *Refer to DSC-34-SURV-20-20 TAWS Messages*.
DON'T SINK	For more information, *Refer to DSC-34-SURV-20-20 TAWS Messages*.
GLIDE SLOPE	For more information, *Refer to DSC-34-SURV-20-20 TAWS Messages*.
PULL UP	For more information, *Refer to DSC-34-SURV-20-20 TAWS Messages*.
SINK RATE	For more information, *Refer to DSC-34-SURV-20-20 TAWS Messages*.
TERRAIN	For more information, *Refer to DSC-34-SURV-20-20 TAWS Messages*.
TOO LOW FLAPS	For more information, *Refer to DSC-34-SURV-20-20 TAWS Messages*.

TOO LOW GEAR	For more information, *Refer to DSC-34-SURV-20-20 TAWS Messages*.
TOO LOW TERRAIN	For more information, *Refer to DSC-34-SURV-20-20 TAWS Messages*.
WIND SHEAR	For more information, *Refer to DSC-22-27-20 Reactive Windshear Detection*.
W/S AHEAD	For more information, *Refer to DSC-34-SURV-30-20 Windshear Messages*.
W/S AHEAD	For more information, *Refer to DSC-34-SURV-30-20 Windshear Messages*.

Ident.: DSC-31-CDS-40-20-130-10-00019768.0001001 / 22 APR 14

FLIGHT ENVELOPE MESSAGES

BANK BANK	For more information, *Refer to DSC-22-27-20 Bank Angle Protection*.
STALL STALL	For more information, *Refer to DSC-22-27-10-20 V alpha sw*.

Ident.: DSC-31-CDS-40-20-130-10-00019766.0001001 / 22 APR 14

ANF MESSAGES

RWY AHEAD	For more information, *Refer to DSC-34-NAV-80-20 PFD*.

Ident.: DSC-31-CDS-40-20-130-10-00023949.0001001 / 01 JUN 17

AUTO EMER DESCENT MESSAGES

EMER DESCENT ARMED	The AUTO EMER DESCENT function is manually armed. For more information, *Refer to DSC-22-FG-70-60-40 Arming Conditions*.
L12 AUTO EMER DES IN XX S	The AUTO EMER DESCENT function is automatically armed. For more information, *Refer to DSC-22-FG-70-60-40 Arming Conditions*. A 15 s countdown starts after the automatic arming of the AUTO EMER DESCENT function.
AUTO EMER DES ENGAGED	The EMER DES mode is automatically engaged. For more information, *Refer to DSC-22-FG-70-60-40 Engagement Conditions*.

L12

AUTO EMER DES COMPLETED	The AUTO EMER DESCENT is completed. For more information, *Refer to DSC-22-FG-70-60-40 Disengagement Conditions*. The AUTO EMER DES COMPLETED message remains displayed until the flight crew either: - Changes any AFS CP target, or - Selects another AFS mode, or - Voluntarily disconnects the AP.

Intentionally left blank

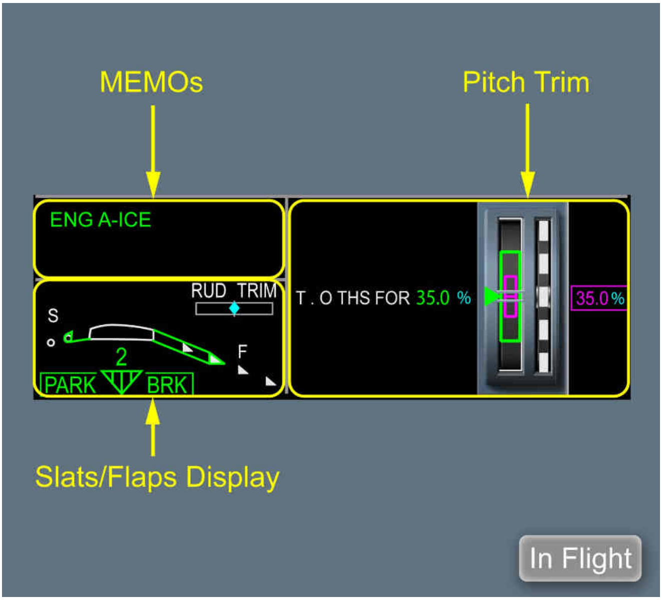
LOWER PART OF THE PFD

Applicable to: ALL

Ident.: DSC-31-CDS-40-30-10-00019046.0001001 / 07 NOV 16

The information displayed on the lower part of the PFD differs according to the flight phase.

Lower Part of the PFD


MEMOs
Pitch Trim
ENG A-ICE
RUD TRIM
S
F
2
PARK
BRK
T . O THS FOR 35.0 %
35.0 %
Slats/Flaps Display
In Flight

Ident.: DSC-31-CDS-40-30-10-00000820.0001001 / 02 OCT 14

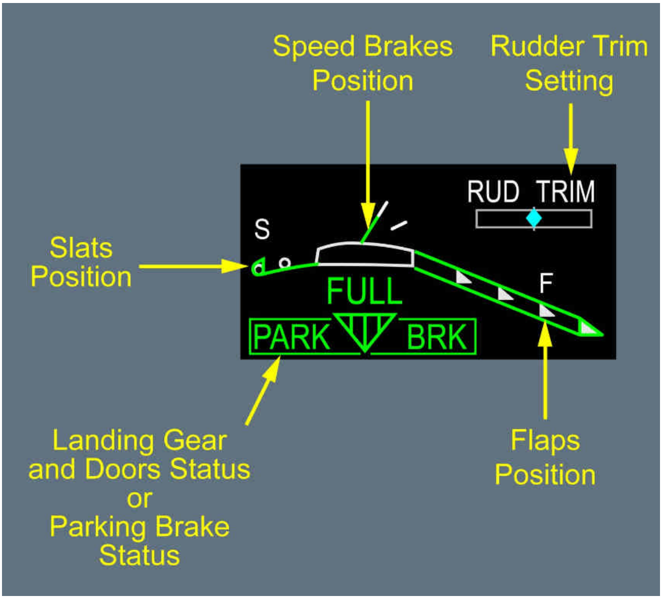
SLATS/FLAPS DISPLAY

The slats/flaps display contains information about:

- The slats and flaps position
  For more information, *Refer to DSC-27-20-30 Slats/Flaps Display*.
- The speed brakes position
  For more information, *Refer to DSC-27-10-20 Spoiler Indications on the Slats/Flaps Display*.
- The landing gear and doors status
  For more information, *Refer to DSC-32-10-20 Slats/Flaps Display*.

- The parking brake status
  For more information, *Refer to DSC-32-20-20 Slats/Flaps Display*.
- The rudder trim setting.
  For more information, *Refer to DSC-27-10-20 Rudder Trim Indication on the Slats/Flaps Display*.

Slats/Flaps Display

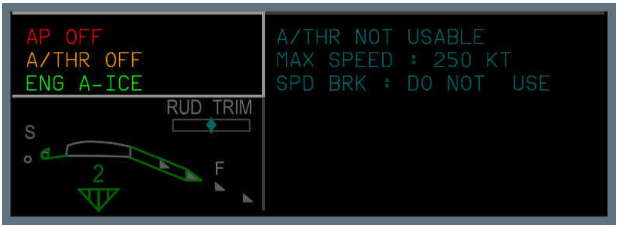

Speed Brakes Position
Rudder Trim Setting
RUD TRIM
S
Slats Position
F
FULL
PARK
BRK
Landing Gear and Doors Status or Parking Brake Status
Flaps Position

Ident.: DSC-31-CDS-40-30-10-00000821.0001001 / 22 APR 14

MEMOS

A maximum of three memos can be displayed simultaneously on the lower part of the PFD. From the top row, memos are displayed in descending order of importance.

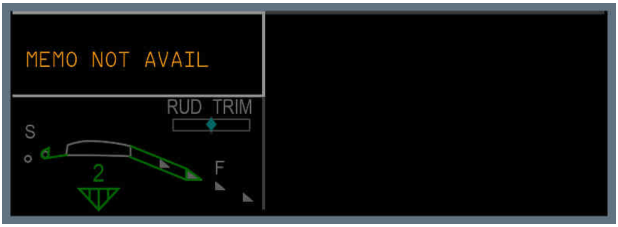
MEMOs


AP OFF
A/THR OFF
ENG A-ICE

A/THR NOT USABLE
MAX SPEED : 250 KT
SPD BRK : DO NOT USE

Memos also appear on the WD. For more information about the memos displayed on the WD, *Refer to DSC-31-CDS-60-10-40 Memos*.

L2 The MEMO NOT AVAIL message appears if the PFD is unable to display the memos.

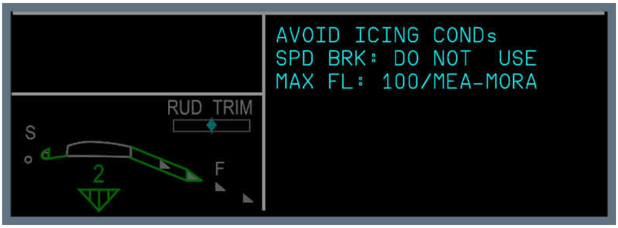

MEMO NOT AVAIL

Ident.: DSC-31-CDS-40-30-10-00000822.0001001 / 07 NOV 16

LIMITATIONS

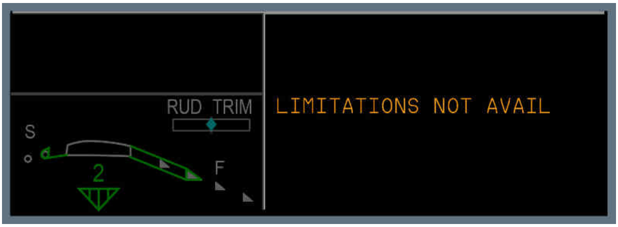
In flight, the lower part of the PFD displays the limitations that have a direct impact on the performance of the aircraft.
From the top row, limitations are displayed in descending order of importance.

Limitations


AVOID ICING CONDs
SPD BRK: DO NOT USE
MAX FL: 100/MEA-MORA

L2 The LIMITATIONS NOT AVAIL message appears if the PFD is unable to display limitations.

Limitations Not Avail

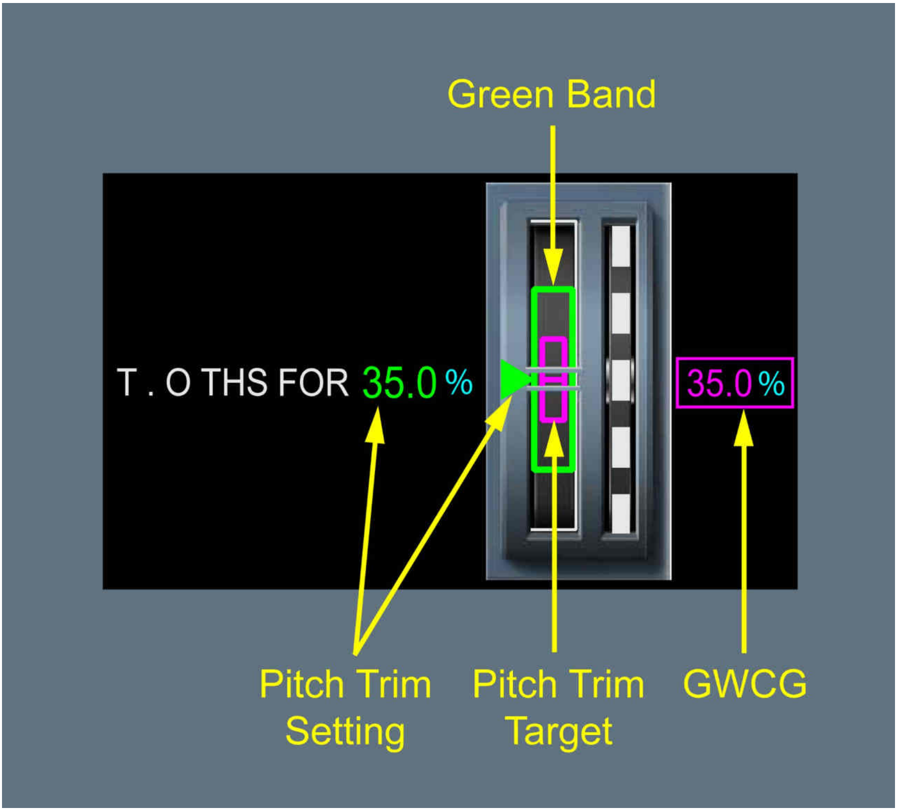


LIMITATIONS NOT AVAIL

Ident.: DSC-31-CDS-40-30-10-00023837.0001001 / 07 NOV 16

PITCH TRIM

At takeoff and after landing, the pitch trim indications appear on the lower part of the PFD.
For more information about the pitch trim display, *Refer to DSC-27-10-20 Pitch Trim Display*.


Green Band
T . O THS FOR 35.0 %
35.0 %
Pitch Trim Setting
Pitch Trim Target
GWCG

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Overview

OVERVIEW

Ident.: DSC-31-CDS-40-40-10-00000823.0001001 / 09 MAR 16
Applicable to: ALL

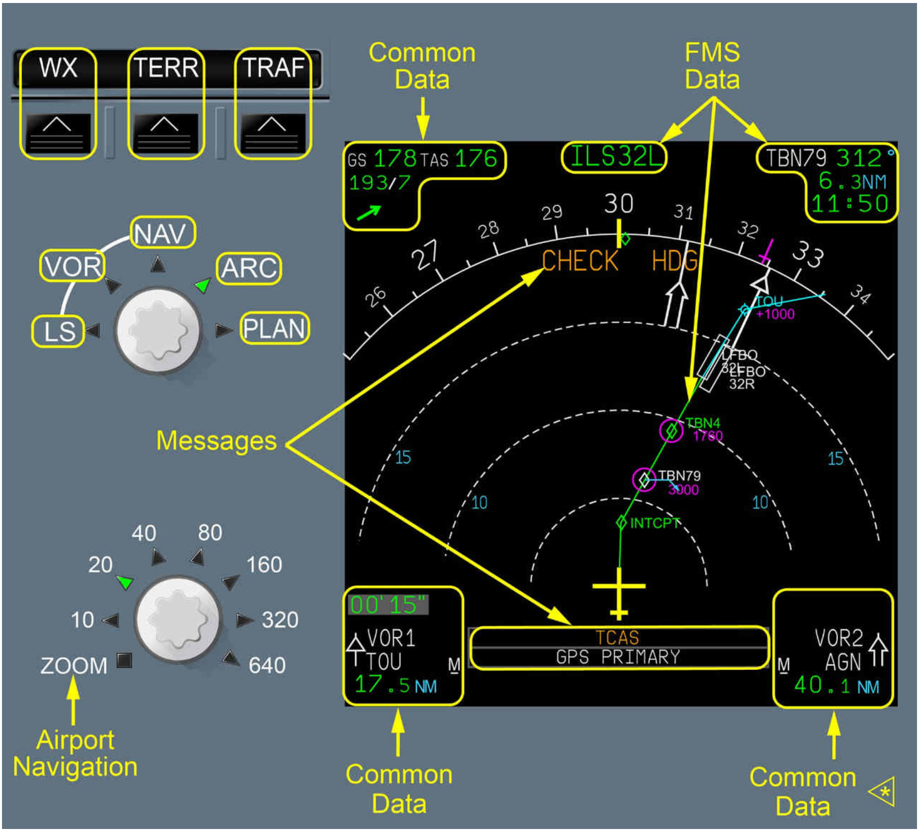
The Navigation Display (ND) provides the flight crew with lateral navigation data, relative to:
- The flight plan
- The navigation database data (waypoints, navaids, and airports).

The flight crew can change some items of the flight plan directly from the ND. For more information about the ND interactivity, *Refer to DSC-31-CDS-40-40-100 Interactive ND Overview*.

The ND also displays:
- Data from the weather radar, the terrain profile, or information about traffic collision avoidance
- Data from the Airport Navigation Function (ANF). For more information about the ANF, *Refer to DSC-34-NAV-80-10 General*.

For navigation purposes, the flight crew can select one of the following ND modes:
- ARC
  For more information, *Refer to DSC-31-CDS-40-40-20 ARC Mode Overview*.
- PLAN
  L2 In PLAN mode, it is not possible to display data from the weather radar, the terrain profile, or traffic collision avoidance.
  L1 For more information, *Refer to DSC-31-CDS-40-40-30 PLAN Mode Overview*.
- ROSE-NAV
  For more information, *Refer to DSC-31-CDS-40-40-40 ROSE-NAV Mode Overview*.
- ROSE-VOR
  For more information, *Refer to DSC-31-CDS-40-40-50 ROSE-VOR Mode Overview*.
- ROSE-LS.
  For mode information, *Refer to DSC-31-CDS-40-40-60 ROSE-LS Mode Overview*.

Overview


WX
TERR
TRAF
Common Data
FMS Data
GS 178 TAS 176
193/7
ILS32L
TBN79 312°
6.3NM
11:50
NAV
VOR
ARC
LS
PLAN
CHECK HDG
TOU +1000
LFBO 32L
LFBO 32R
TBN4 1760
TBN79 3000
INTCPT
15
10
Messages
40
80
20
160
10
320
ZOOM
640
00'15"
VOR1 TOU
17.5 NM
M
TCAS
GPS PRIMARY
VOR2 AGN
40.1 NM
Airport Navigation
Common Data
Common Data

ARC Mode

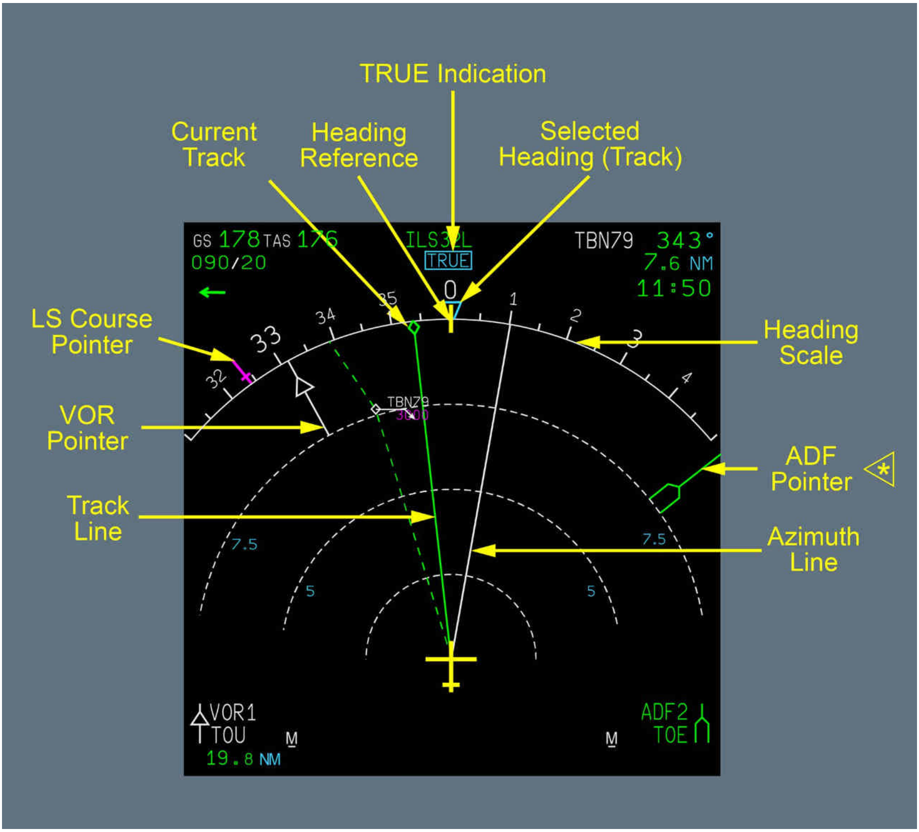
ARC MODE

Applicable to: ALL

Ident.: DSC-31-CDS-40-40-20-10-00000824.0001001 / 09 MAR 16

In ARC mode, the ND displays a heading scale in the form of an arc of a circle.

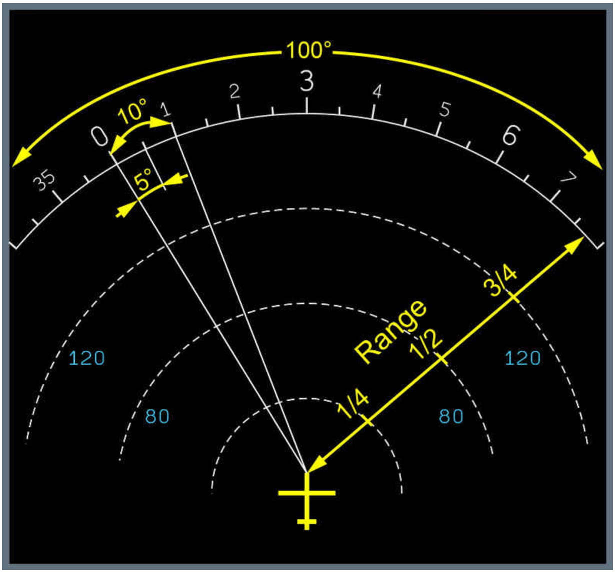
ARC Mode Overview


TRUE Indication
Current Track
Heading Reference
Selected Heading (Track)
GS 178 TAS 176
090/20
ILS32L
TRUE
TBN79 343°
7.6 NM
11:50
33
34
35
0
1
2
3
4
32
LS Course Pointer
Heading Scale
VOR Pointer
TBN79
3000
ADF Pointer
Track Line
7.5
7.5
Azimuth Line
5
5
VOR1
TOU
19.8 NM
M
M
ADF2
TOE

Ident.: DSC-31-CDS-40-40-20-10-00000825.0001001 / 22 APR 14

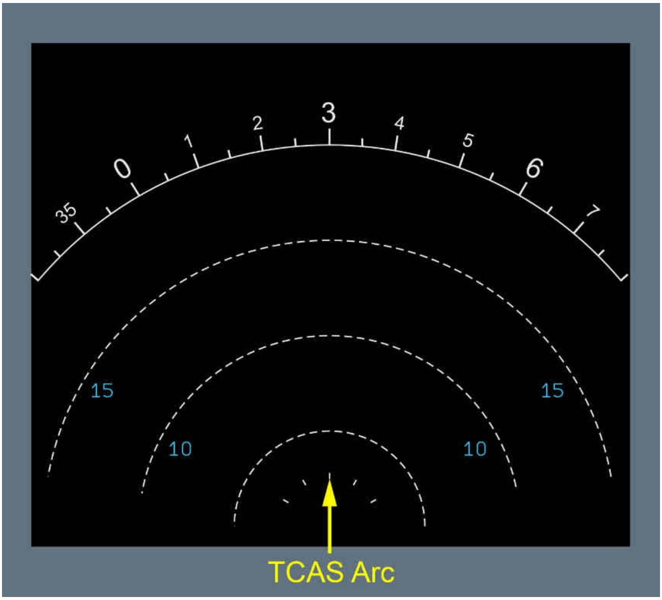
HEADING SCALE

The heading scale is an arc of a circle of 100 °. Headings are marked every 5 °, with a numerical value every 10 °.
The radius of the heading scale corresponds to the range that the flight crew selected on the EFIS CP.
Dotted arcs are drawn at a quarter, a half, and three quarters of the selected range.
Range values are displayed at three quarters and at a half of the selected range.
For more information about the ND range selection, *Refer to DSC-31-CDS-40-60 ND Range Sel*.



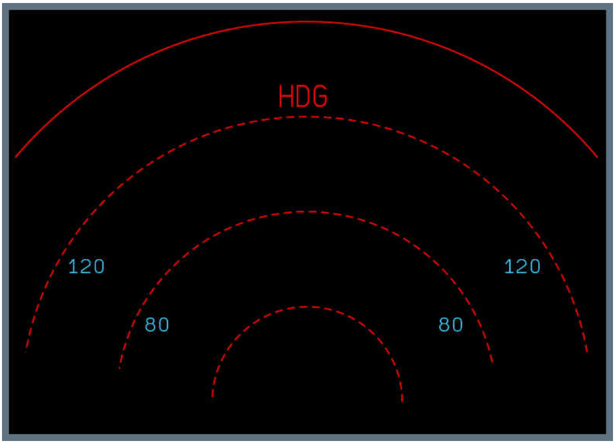
The TCAS arc corresponds to a distance of 2.5 NM, and appears when:
- The selected range is less than, or equal to, 20 NM
- The flight crew presses the TRAF pb on the EFIS CP, or a TCAS alert is triggered.

TCAS Arc


35
0
1
2
3
4
5
6
7
15
15
10
10
TCAS Arc

L2 If the aircraft heading is not valid, the ND displays the heading scale in red.

Heading Scale Not Valid

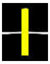

HDG
120
120
80
80

Ident.: DSC-31-CDS-40-40-20-10-00000826.0001001 / 22 APR 14

HEADING REFERENCE

L3 The ADIRS provides the heading value.

L1



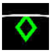
Indicates the current aircraft heading on the heading scale.
The heading refers to true North or magnetic North, depending on the MAG/TRUE pb selection on the AFS CP.

Ident.: DSC-31-CDS-40-40-20-10-00000827.0001001 / 22 APR 14

CURRENT TRACK

L3 The ADIRS provides the aircraft track.

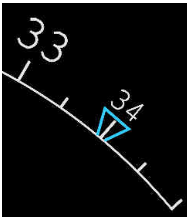
L1



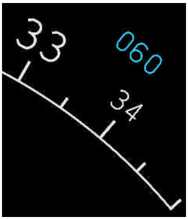
Indicates the current aircraft track on the heading scale.
The track refers to true North or magnetic North, depending on the MAG/TRUE pb selection on the AFS CP.

Ident.: DSC-31-CDS-40-40-20-10-00000828.0001001 / 22 APR 14

SELECTED HEADING(TRACK)



Indicates the heading(track) that the flight crew selects on the AFS CP.
Appears when the HDG(TRACK) mode is engaged.



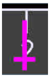
When the flight crew selects a heading(track) outside the arc scale, a numerical value appears instead of the heading bug.
Appears when the HDG(TRACK) mode is engaged.

Ident.: DSC-31-CDS-40-40-20-10-00000829.0001001 / 22 APR 14

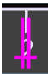
LS COURSE POINTER

L3 The MMR and the PRIM provide the LS course pointer information.

L1



Indicates the LOC course of the selected approach, on the heading scale.

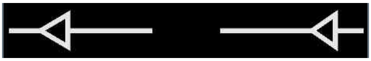


Indicates the F-LOC course of the selected approach, on the heading scale.

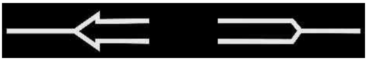
L2 Appears, when the LS pb is set to on, for more information *Refer to DSC-31-CDS-40-60 LS pb*.

Ident.: DSC-31-CDS-40-40-20-10-00000830.0002001 / 03 JUL 20

1 VOR POINTERS



Indicates the bearing of the selected VOR1.
Appears when the flight crew presses the VOR1 pb on the EFIS CP.

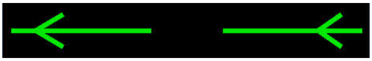


Indicates the bearing of the selected VOR2 ◁ .
Appears when the flight crew presses the VOR2 pb ◁ on the EFIS CP.

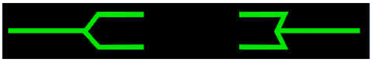
L3 If the VOR North reference stored in the FMS database is different from the current aircraft North reference, the VOR pointer appears in magenta, and is not corrected for magnetic variation.

Ident.: DSC-31-CDS-40-40-20-10-00019203.0002001 / 09 MAR 16

ADF POINTERS ◁



Indicates the bearing of the selected NDB1 ◁ .
Appears when the flight crew presses two times the VOR1/ADF1 pb ◁ on the EFIS CP.



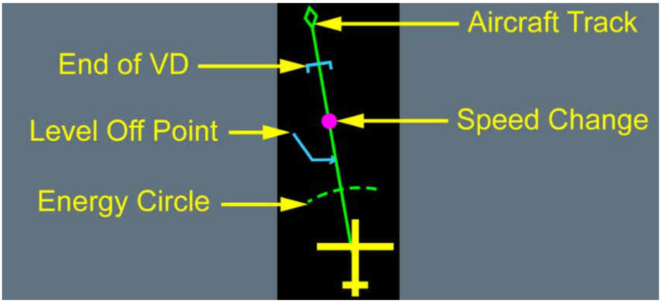
Indicates the bearing of the selected NDB2 ◁ .
Appears when the flight crew presses two times the VOR2 ◁ /ADF2 pb ◁ on the EFIS CP.

Ident.: DSC-31-CDS-40-40-20-10-00000832.0001001 / 22 APR 14

TRACK LINE

The track line and associated symbols appear on the ND.
The track line corresponds to the predicted track of the aircraft.

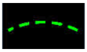
Track Line



ENERGY CIRCLE

L3 The FMS provides the energy circle.

L12

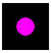


Indicates the minimum distance required to descend, decelerate, and land at the destination airport elevation.
Appears on the ND, when in HDG(TRACK) mode.
Appears when the aircraft is within 180 NM of the destination airport, in cruise, descent, or approach.

L1 SPEED CHANGE

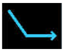
L3 The FMS provides the location of the speed change.

L1

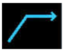


Indicates the point at which the flight crew must change the aircraft speed, in order to comply with a speed target.
Appears on the ND, when in HDG(TRACK) mode.

LEVEL OFF POINT

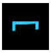


The aircraft is in descent.
Indicates the point at which the aircraft will reach the altitude target that is selected on the AFS CP.
Appears on the ND, when in HDG(TRACK) mode.



The aircraft is in climb.
Indicates the point at which the aircraft will reach the altitude target that is selected on the AFS CP.
Appears on the ND, when in HDG(TRACK) mode.

END OF VD

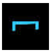


Indicates the end of the VD on the aircraft track line.
Appears on the ND, when in HDG(TRACK) mode.
The VD range is limited to 160 NM. Therefore, in ARC mode, the end of VD symbol appears on the track line when the ND range is more than 160 NM.
For more information, *Refer to DSC-31-CDS-40-50 Range*.

Ident.: DSC-31-CDS-40-40-20-10-00000833.0001001 / 22 APR 14

AZIMUTH LINE

A white line indicates the azimuth that is used for the computation of the vertical cut of the VD. For more information, *Refer to DSC-31-CDS-40-50 VD*.
The flight crew can select the VD AZIM mode via the VD AZIM knob, on the SURV panel. For more information, *Refer to DSC-34-SURV-30-20 VD AZIM Knob*.

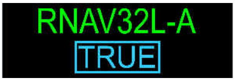


Indicates the end of the VD on the azimuth line.
The VD range is limited to 160 NM. Therefore, in ARC mode, the end of VD symbol appears on the azimuth line when the ND range is more than 160 NM.

Ident.: DSC-31-CDS-40-40-20-10-00000834.0001001 / 22 APR 14

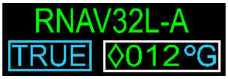
TRUE INDICATION

L12



The heading refers to true North, and the latitude of the aircraft is less than 65 ° North or South.
When the slats extend, the TRUE message temporarily flashes, then remains steady.

L12



The heading refers to true North, and the latitude of the aircraft is strictly more than 65 ° North or South.
The grid track indicates the true track of the aircraft.
When the slats extend, the TRUE message temporarily flashes, then remains steady.

When the aircraft approaches high latitudes, the SELECT TRUE NORTH REF message requests the flight crew to manually select the TRUE North reference.

L3 This message appears:
- Above 82 ° North, or
- Above 73 ° North, with a longitude between 120 ° West, and 90 ° West, or
- Below 60 ° South.

L1 To change the North reference, the flight crew can press the TRUE/MAG pb on the AFS CP.

When the aircraft reaches high latitudes, the ADIRS automatically changes the MAG North reference to the TRUE North reference.

L3 The aircraft is at high latitudes:
- Above 82.5 ° North, or
- Above 73.5 ° North, with a longitude between 117.5 ° West, and 92.5 ° West, or
- Below 60.5 ° South.

L1 *Note:* *The BTV also displays messages in the same area, and has priority over the TRUE indication. When a BTV message is displayed, the TRUE indication appears under the TAS indication, on the third line. For more information about BTV messages, Refer to DSC-34-32-30-20-60 ND.*

L2 For more information about polar navigation, *Refer to DSC-22-FMS-10-30-30 Introduction*.

PLAN Mode

PLAN MODE

Applicable to: ALL

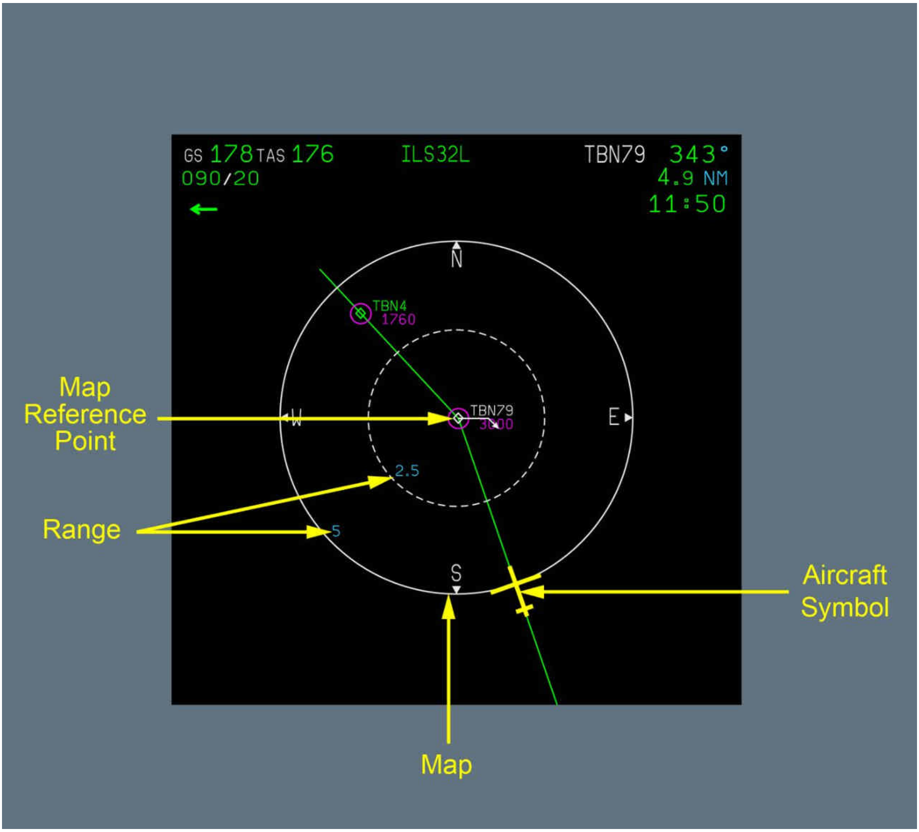
Ident.: DSC-31-CDS-40-40-30-10-00000835.0001001 / 22 APR 14

The PLAN mode shows the flight plan route on a fixed map oriented with North at the top.

L2 Raw navigation station data is not available in this mode.

L1 In PLAN mode, the flight crew can scroll through and display the entire flight plan.

PLAN Mode Overview


GS 178 TAS 176
090/20
ILS32L
TBN79 343°
4.9 NM
11:50
N
W
E
S
TBN4
1760
TBN79
3000
2.5
5
Map Reference Point
Range
Aircraft Symbol
Map

Ident.: DSC-31-CDS-40-40-30-10-00000836.0001001 / 22 APR 14

MAP

The map is aligned with true North. The map is centered on the Map Reference Point (MRP), that the flight crew selects on the MFD.

Ident.: DSC-31-CDS-40-40-30-10-00000837.0001001 / 22 APR 14

RANGE

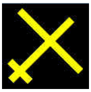
The diameter of the outer circle corresponds to the range that the flight crew selects on the EFIS CP.
Range values are displayed at a quarter and at a half of the selected range.

Ident.: DSC-31-CDS-40-40-30-10-00000838.0001001 / 22 APR 14

AIRCRAFT SYMBOL

L3 The FMS provides the aircraft position, and the ADIRS provides the aircraft heading.

L1



Indicates the aircraft position in relation to the flight plan. The aircraft symbol orientation indicates the aircraft heading with reference to true North.

Ident.: DSC-31-CDS-40-40-30-10-00000839.0001001 / 22 APR 14

MAP REFERENCE POINT

In PLAN mode, the map is centered on the Map Reference Point (MRP) that corresponds to:
- The waypoint displayed on the second line of the flight plan, when the MFD displays a flight plan page (if a pseudo waypoint is displayed on the second line of the flight plan, the MRP is the next waypoint), or
- The TO waypoint of the active flight plan or of any secondary flight plan, when the MFD does not display a flight plan page, or
- The current aircraft position, when there is no waypoint in the flight plan.

ROSE-NAV Mode

ROSE-NAV MODE

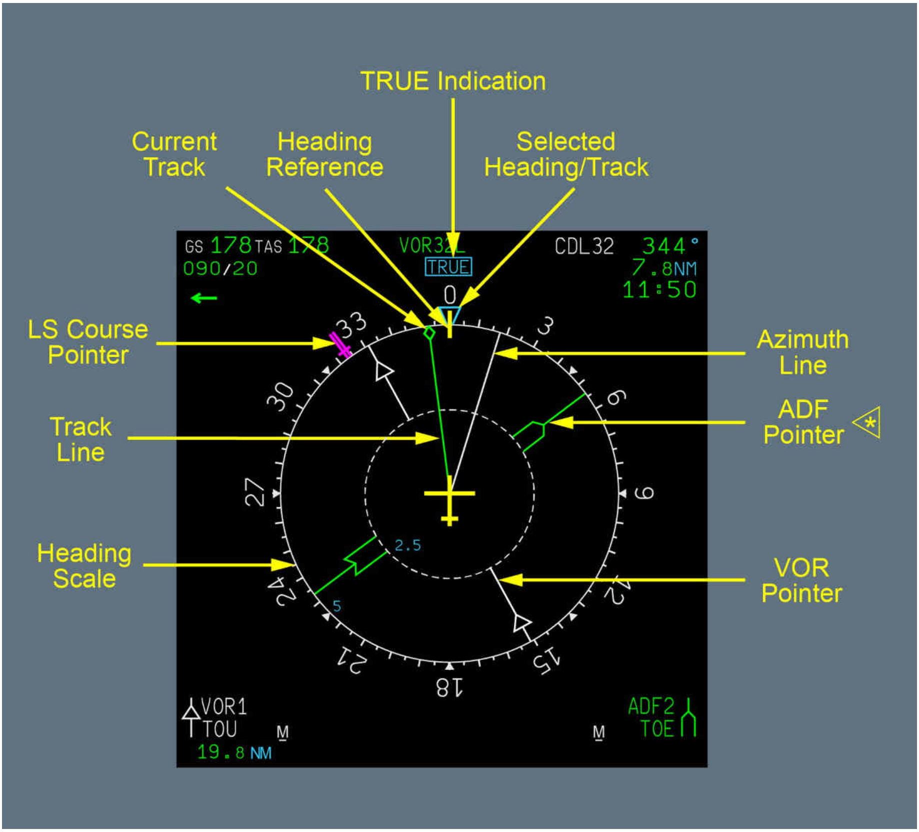
Applicable to: ALL

Ident.: DSC-31-CDS-40-40-40-10-00000840.0001001 / 09 MAR 16

The ROSE-NAV mode provides the same information as the ARC mode, but on a full rose display. The rose rotates around the aircraft symbol so that the aircraft heading remains at the top.

L2 If the ND mode or the ND range is not valid, the ND displays the ROSE-NAV mode by default, with a range of 80 NM.

ROSE-NAV Mode Overview

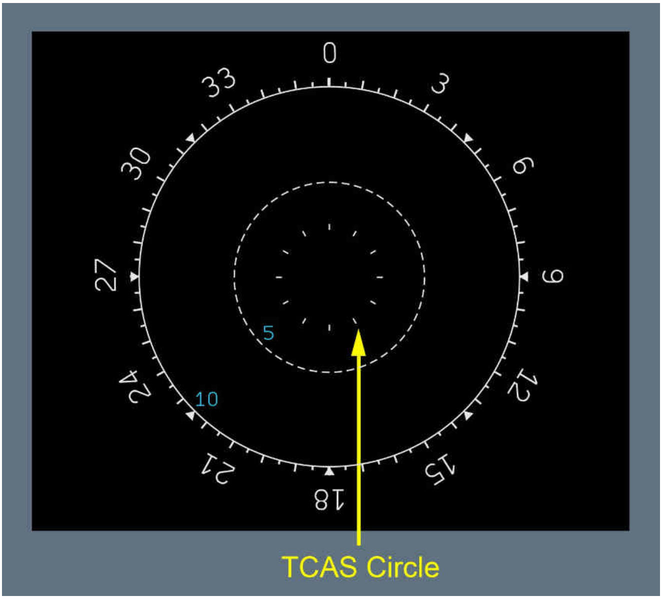

TRUE Indication
Current Track
Heading Reference
Selected Heading/Track
GS 178 TAS 178
090/20
VOR32L
TRUE
CDL32
344°
7.8NM
11:50
0
33
3
LS Course Pointer
Azimuth Line
30
6
ADF Pointer
Track Line
27
9
Heading Scale
2.5
24
12
VOR Pointer
5
21
18
15
VOR1
TOU
19.8 NM
M
M
ADF2
TOE

HEADING SCALE

The heading scale corresponds to a full rose of 360 °. Headings are marked every 5 °, with a numerical value every 30 °.
The diameter of the heading scale corresponds to the range that the flight crew selects on the EFIS CP.
A dotted circle is drawn at a half of the selected range.
Range values are displayed at a quarter and at a half of the selected range.

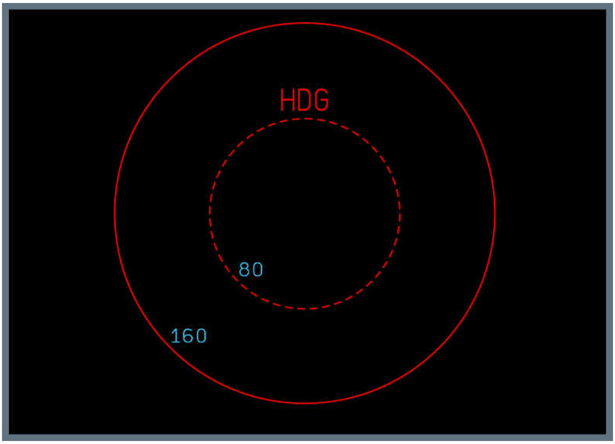
The TCAS circle corresponds to 2.5 NM, and appears when:
- The selected range is less than, or equal to, 20 NM
- The flight crew presses the TRAF pb on the EFIS CP, or a TCAS alert is triggered.

TCAS Circle



L2 When the aircraft heading is not valid, the ND displays the heading scale in red.

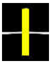
Heading Scale Not Valid



Ident.: DSC-31-CDS-40-40-40-10-00000844.0001001 / 22 APR 14

HEADING REFERENCE

L3 The ADIRS provides the heading value.

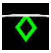
L1 

Indicates the current aircraft heading on the heading scale.
The heading refers to true North or magnetic North, depending on the MAG/TRUE pb selection on the AFS CP.

Ident.: DSC-31-CDS-40-40-40-10-00000845.0001001 / 22 APR 14

CURRENT TRACK

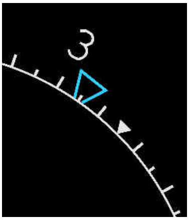
L3 The ADIRS provides the aircraft track.

L1 

Indicates the current aircraft track on the heading scale.
The track refers to true North or magnetic North, depending on the MAG/TRUE pb selection on the AFS CP.

Ident.: DSC-31-CDS-40-40-40-10-00000846.0001001 / 22 APR 14

SELECTED HEADING(TRACK)



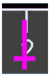
Indicates the heading(track) that the flight crew selects on the AFS CP.
Appears when the HDG(TRACK) mode is engaged.

Ident.: DSC-31-CDS-40-40-40-10-00000847.0001001 / 22 APR 14

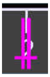
LS COURSE POINTER

L3 The MMR and the PRIM provide the LS course pointer information.

L1



Indicates the LOC course of the selected approach, on the heading scale.

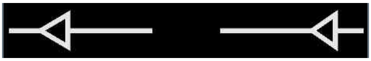


Indicates the F-LOC course of the selected approach, on the heading scale.

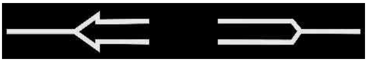
L2 Appears, when the LS pb is set to on, for more information *Refer to DSC-31-CDS-40-60 LS pb*.

Ident.: DSC-31-CDS-40-40-40-10-00000848.0002001 / 03 JUL 20

1 VOR POINTERS



Indicates the bearing of the selected VOR1.
Appears when the flight crew presses the VOR1 pb on the EFIS CP.

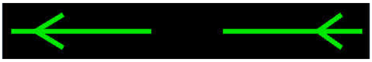


Indicates the bearing of the selected VOR2 ◁ .
Appears when the flight crew presses the VOR2 pb ◁ on the EFIS CP.

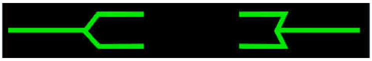
L3 If the VOR North reference stored in the FMS database is different from the current aircraft North reference, the VOR pointer appears in magenta, and is not corrected for magnetic variation.

Ident.: DSC-31-CDS-40-40-40-10-00019204.0002001 / 09 MAR 16

ADF POINTERS ◁



Indicates the bearing of the selected NDB1 ◁ .
Appears when the flight crew presses two times the VOR1/ADF1 ◁ pb on the EFIS CP.



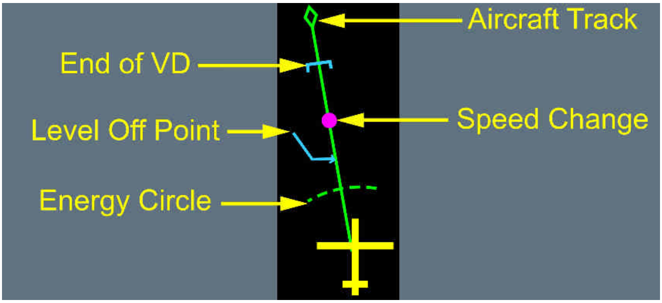
Indicates the bearing of the selected NDB2 ◁ .
Appears when the flight crew presses two times the VOR2 ◁ / ADF2 pb ◁ on the EFIS CP.

Ident.: DSC-31-CDS-40-40-40-10-00000851.0001001 / 22 APR 14

TRACK LINE

The track line and associated symbols appear on the ND.
The track line corresponds to the predicted track of the aircraft.

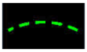
Track Line



ENERGY CIRCLE

L3 The FMS provides the energy circle.

L12

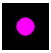


Indicates the minimum distance required to descend, decelerate, and land at the destination airport elevation.
Appears on the ND, when in HDG(TRACK) mode.
Appears when the aircraft is within 180 NM of the destination airport, in cruise, descent, or approach.

L1 SPEED CHANGE

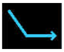
L3 The FMS provides the location of the speed change.

L1

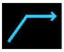


Indicates the point at which the flight crew must change the aircraft speed, in order to comply with a speed target.
Appears on the ND, when in HDG(TRACK) mode.

LEVEL OFF POINT

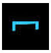


The aircraft is in descent.
Indicates the point at which the aircraft will reach the altitude target that is selected on the AFS CP.
Appears on the ND, when in HDG(TRACK) mode.



The aircraft is in climb.
Indicates the point at which the aircraft will reach the altitude target that is selected on the AFS CP.
Appears on the ND, when in HDG(TRACK) mode.

END OF VD

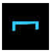


Indicates the end of the VD on the aircraft track line.
Appears on the ND, when in HDG(TRACK) mode.
The VD range is limited to 160 NM. Thus, in ROSE-NAV mode, the End of VD symbol appears on the track line when the ND range is more than 320 NM.
For more information, *Refer to DSC-31-CDS-40-50 Range*.

Ident.: DSC-31-CDS-40-40-40-10-00000850.0001001 / 22 APR 14

AZIMUTH LINE

A white line indicates the azimuth that is used for the computation of the vertical cut of the VD. For more information, *Refer to DSC-31-CDS-40-50 VD*.
The flight crew can manually select the VD AZIM mode via the VD AZIM knob, on the SURV panel. For more information, *Refer to DSC-34-SURV-30-10 Manual Azimuth Mode*.

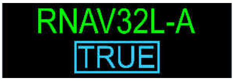


Indicates the end of the VD on the azimuth line.
The VD range is limited to 160 NM. Therefore, in ROSE-NAV mode, the end of VD symbol appears on the azimuth line when the ND range is more than 320 NM.

Ident.: DSC-31-CDS-40-40-40-10-00000852.0001001 / 22 APR 14

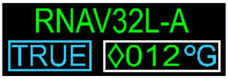
TRUE INDICATION

L12



The heading refers to true North, and the latitude of the aircraft is less than 65 ° North or South.
When the slats extend, the TRUE message temporarily flashes, then remains steady.

L12



The heading refers to true North, and the latitude of the aircraft is strictly more than 65 ° North or South.
The grid track indicates the true track of the aircraft.
When the slats extend, the TRUE message temporarily flashes, then remains steady.
When the aircraft approaches high latitudes, the SELECT TRUE NORTH REF message requests the flight crew to manually select the TRUE North reference.

L3 This message appears:
- Above 82 ° North, or
- Above 73 ° North, with a longitude between 120 ° West, and 90 ° West, or
- Below 60 ° South.

L1 To change the North reference, the flight crew can press the TRUE/MAG pb on the AFS CP. When the aircraft reaches high latitudes, the ADIRS automatically changes the MAG North reference to the TRUE North reference.

L3 The aircraft is at high latitudes:
- Above 82.5 ° North, or
- Above 73.5 ° North, with a longitude between 117.5 ° West, and 92.5 ° West, or
- Below 60.5 ° South.

L1 Note: *The BTV also displays messages in the same area, and has priority over the TRUE indication. When a BTV message is displayed, the TRUE indication appears under the TAS indication, on the third line. For more information about BTV messages, Refer to DSC-34-32-30-20-60 ND.*

L2 For more information about polar navigation, *Refer to DSC-22-FMS-10-30-30 Introduction*.

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ROSE-VOR Mode

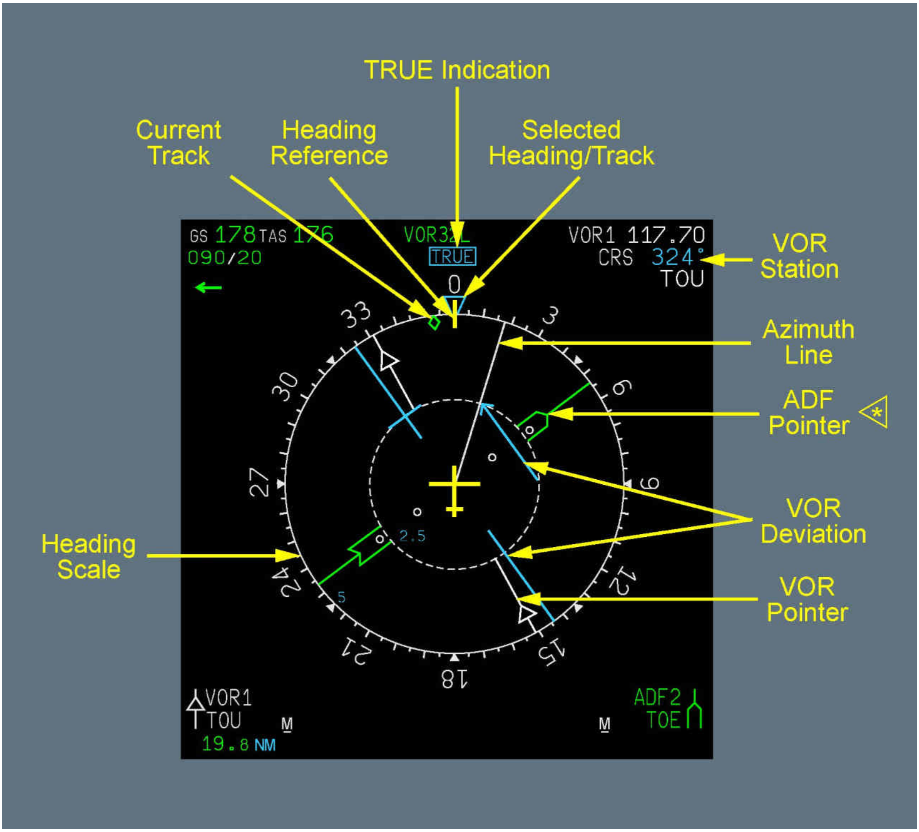
ROSE-VOR MODE

Applicable to: ALL

Ident.: DSC-31-CDS-40-40-50-10-00000853.0004001 / 09 MAR 16

The ROSE-VOR mode shows the position of the aircraft, in relation to the tuned VOR.
The rose rotates around the aircraft symbol so that the aircraft heading remains at the top.
In addition to the usual VOR pointer (*Refer to DSC-31-CDS-40-40-50 VOR Pointer*), the ROSE-VOR mode uses a VOR course pointer in combination with a lateral deviation bar, both displayed in blue.

ROSE-VOR Overview

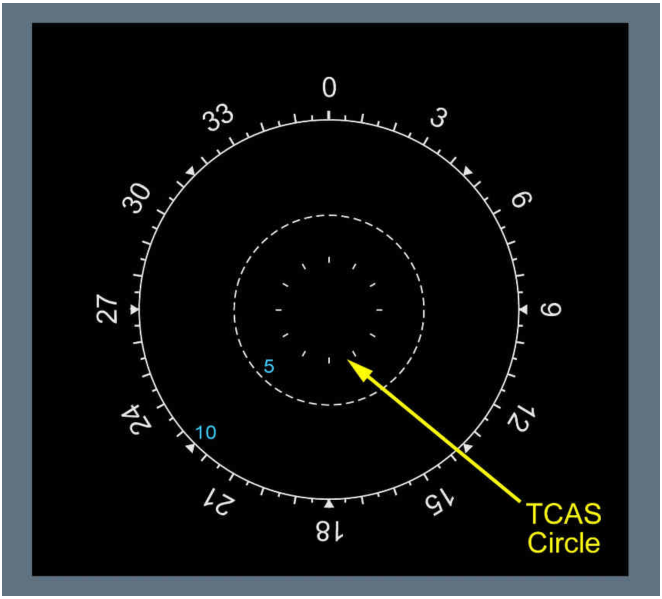

TRUE Indication
Current Track
Heading Reference
Selected Heading/Track
GS 178 TAS 176
090/20
VOR32L
TRUE
VOR1 117.70
CRS 324°
TOU
VOR Station
0
3
6
9
12
15
18
21
24
27
30
33
Azimuth Line
ADF Pointer
VOR Deviation
VOR Pointer
Heading Scale
2.5
5
VOR1
TOU
19.8 NM
M
M
ADF2
TOE

HEADING SCALE

The heading scale corresponds to a full rose of 360 °. Headings are marked every 5 °, with a numerical value every 30 °.
The diameter of the heading scale corresponds to the range that the flight crew selects on the EFIS CP.
A dotted circle is drawn at a half of the selected range.
Range values are displayed at a quarter and at a half of the selected range.

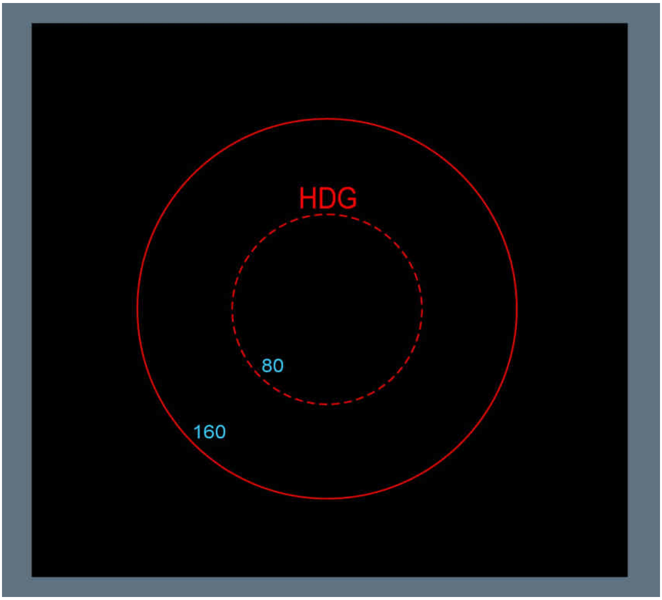
The TCAS circle corresponds to 2.5 NM, and appears when:
- The selected range is less than, or equal to, 20 NM
- The flight crew presses the TRAF pb on the EFIS CP, or a TCAS alert is triggered.

TCAS Circle



L2 When the aircraft heading is not valid, the ND displays the heading scale in red.

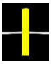
Heading Scale Not Valid



Ident.: DSC-31-CDS-40-40-50-10-00000855.0001001 / 22 APR 14

HEADING REFERENCE

L3 The ADIRS provides the heading value.

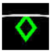
L1 

Indicates the current aircraft heading on the heading scale.
The heading refers to true North or magnetic North, depending on the MAG/TRUE pb selection on the AFS CP.

Ident.: DSC-31-CDS-40-40-50-10-00000856.0001001 / 22 APR 14

CURRENT TRACK

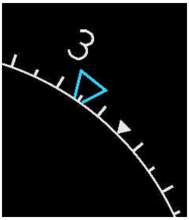
L3 The ADIRS provides the aircraft track.

L1 

Indicates the current aircraft track on the heading scale.
The track refers to true North or magnetic North, depending on the MAG/TRUE pb selection on the AFS CP.

Ident.: DSC-31-CDS-40-40-50-10-00000857.0001001 / 22 APR 14

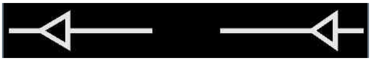
SELECTED HEADING(TRACK)



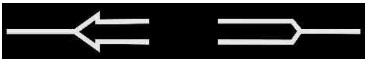
Indicates the heading(track) that the flight crew selects on the AFS CP.
Appears when the HDG(TRACK) mode is engaged.

Ident.: DSC-31-CDS-40-40-50-10-00000858.0002001 / 03 JUL 20

1 ## VOR POINTERS



Indicates the bearing of the selected VOR1.
Appears when the flight crew presses the VOR1 pb on the EFIS CP.

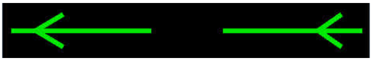


Indicates the bearing of the selected VOR2 ◁ .
Appears when the flight crew presses the VOR2 pb ◁ on the EFIS CP.

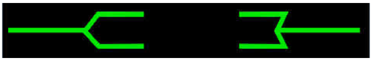
L3 If the VOR North reference stored in the FMS database is different from the current aircraft North reference, the VOR pointer appears in magenta, and is not corrected for magnetic variation.

Ident.: DSC-31-CDS-40-40-50-10-00019205.0002001 / 09 MAR 16

ADF POINTERS ◁



Indicates the bearing of the selected NDB1 ◁ .
Appears when the flight crew presses two times the VOR1/ADF1 ◁ pb on the EFIS CP.

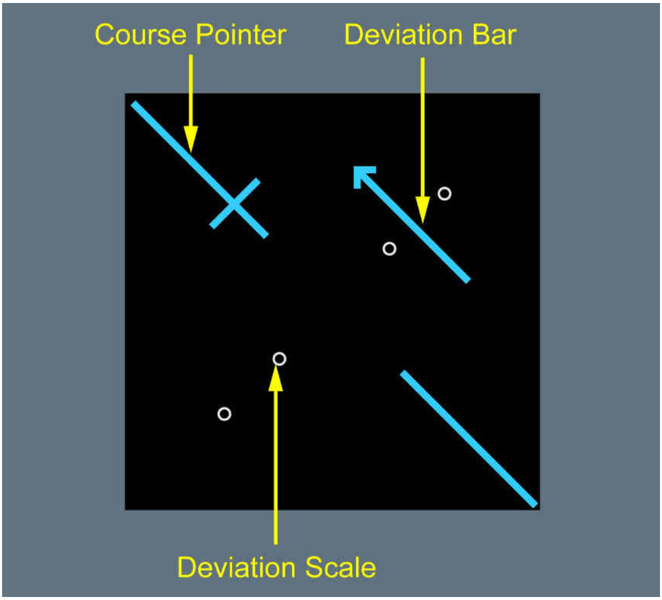


Indicates the bearing of the selected NDB2 ◁ .
Appears when the flight crew presses two times the VOR2 ◁ /ADF2 pb ◁ on the EFIS CP.

Ident.: DSC-31-CDS-40-40-50-10-00000860.0001001 / 22 APR 14

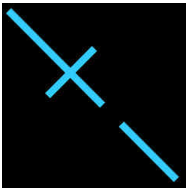
VOR DEVIATION

VOR Deviation



COURSE POINTER

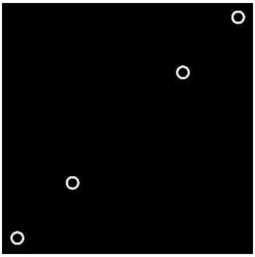
L12



Indicates the VOR course set in the POSITION/NAVAIDS page of the FMS.
For more information about the tuning of navaids via the FMS, *Refer to DSC-22-FMS-20-20-20 POSITION/NAVAIDS Page*.
If the VOR course or the aircraft heading is not valid, the course pointer remains vertical.

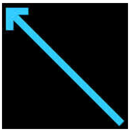
DEVIATION SCALE

L12



The deviation scale has 4 dots. The maximum deviation is 10 ° either side.
The scale flashes if the VOR deviation becomes excessive.

DEVIATION BAR



Indicates the aircraft deviation in relation to the selected VOR course.
The arrow on the deviation bar corresponds to the TO/FROM indication.

VOR FLAG

L12

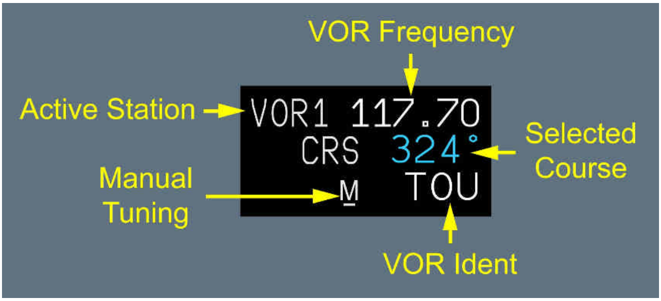
VOR	The VOR bearing is not valid. Temporarily flashes, then remains steady.

Ident.: DSC-31-CDS-40-40-50-10-00000861.0002001 / 09 MAR 16

VOR STATION

The ND displays the characteristics of the selected VOR station. For more information about the tuning of navaids via the FMS, *Refer to DSC-22-FMS-20-20-20 POSITION/NAVAIDS Page*.

VOR Station


VOR Frequency
Active Station
VOR1 117.70
CRS 324°
M TOU
Selected Course
Manual Tuning
VOR Ident

ACTIVE STATION

VOR1	Indicates the VOR receiver currently displayed on the ND. The CAPT ND displays the VOR1 and the F/O ND displays the VOR2 ◁✻ .
VOR1	The VOR bearing is not valid.

VOR FREQUENCY

117.70	Indicates the frequency of the selected VOR in MHz.
---.--	The VOR frequency is not valid.

SELECTED COURSE

CRS 324°	Indicates the selected course in degrees.
CRS XX°	The selected course is not valid.
CRS ---°	The course is not computed.

VOR IDENT

TOU	Indicates the VOR ident.

MANUAL TUNING

R	The flight crew manually tuned the NAVAID via the RMP.
M	The flight crew manually tuned the NAVAID via the MFD.

Ident.: DSC-31-CDS-40-40-50-10-00000862.0001001 / 22 APR 14

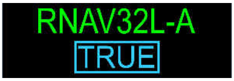
AZIMUTH LINE

A white line indicates the azimuth that is used for the computation of the vertical cut of the VD. For more information, *Refer to DSC-31-CDS-40-50 VD*.
The flight crew can manually select the VD AZIM mode via the VD AZIM knob, on the SURV panel. For more information, *Refer to DSC-34-SURV-30-10 Manual Azimuth Mode*.

Ident.: DSC-31-CDS-40-40-50-10-00000863.0001001 / 22 APR 14

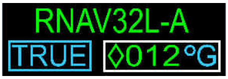
TRUE INDICATION

L12



The heading refers to true North, and the latitude of the aircraft is less than 65 ° North or South.
When the slats extend, the TRUE message temporarily flashes, then remains steady.

L12



The heading refers to true North, and the latitude of the aircraft is strictly more than 65 ° North or South.
The grid track indicates the true track of the aircraft.
When the slats extend, the TRUE message temporarily flashes, then remains steady.

When the aircraft approaches high latitudes, the SELECT TRUE NORTH REF message requests the flight crew to manually select the TRUE North reference.

L3 This message appears:
- Above 82 ° North, or
- Above 73 ° North, with a longitude between 120 ° West, and 90 ° West, or
- Below 60 ° South.

L1 To change the North reference, the flight crew can press the TRUE/MAG pb on the AFS CP. When the aircraft reaches high latitudes, the ADIRS automatically changes the MAG North reference to the TRUE North reference.

L3 The aircraft is at high latitudes:
- Above 82.5 ° North, or
- Above 73.5 ° North, with a longitude between 117.5 ° West, and 92.5 ° West, or
- Below 60.5 ° South.

L1 *Note:* *The BTV also displays messages in the same area, and has priority over the TRUE indication. When a BTV message is displayed, the TRUE indication appears under the TAS indication, on the third line. For more information about BTV messages, Refer to DSC-34-32-30-20-60 ND.*

L2 For more information about polar navigation, *Refer to DSC-22-FMS-10-30-30 Introduction*.

ROSE-LS Mode

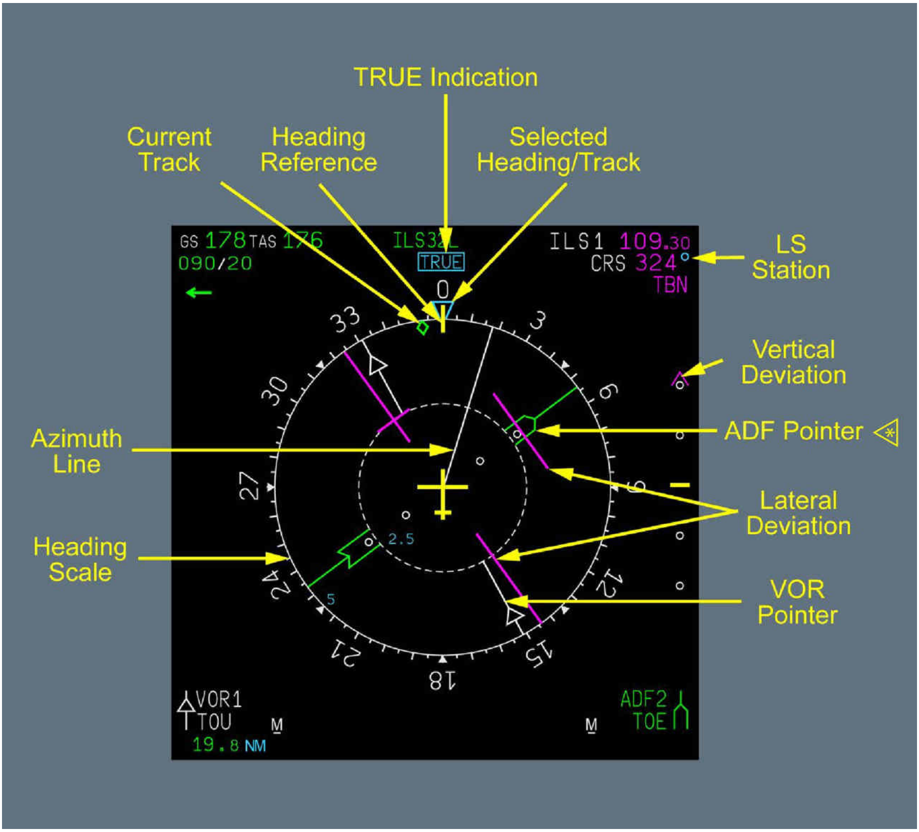
ROSE-LS MODE

Applicable to: ALL

Ident.: DSC-31-CDS-40-40-60-10-00000864.0001001 / 09 MAR 16

The ROSE-LS mode shows the position of the aircraft in relation to the LOC, F-LOC, G/S, and F-G/S indications.
The rose rotates around the aircraft symbol so that the aircraft heading remains at the top.

ROSE-LS Mode Overview


TRUE Indication
Current Track
Heading Reference
Selected Heading/Track
LS Station
Vertical Deviation
ADF Pointer
Azimuth Line
Lateral Deviation
Heading Scale
VOR Pointer
GS 178 TAS 176
090/20
ILS32L
TRUE
ILS1 109.30
CRS 324°
TBN
0
3
6
9
12
15
18
21
24
27
30
33
2.5
5
VOR1
TOU
19.8 NM
M
M
ADF2
TOE

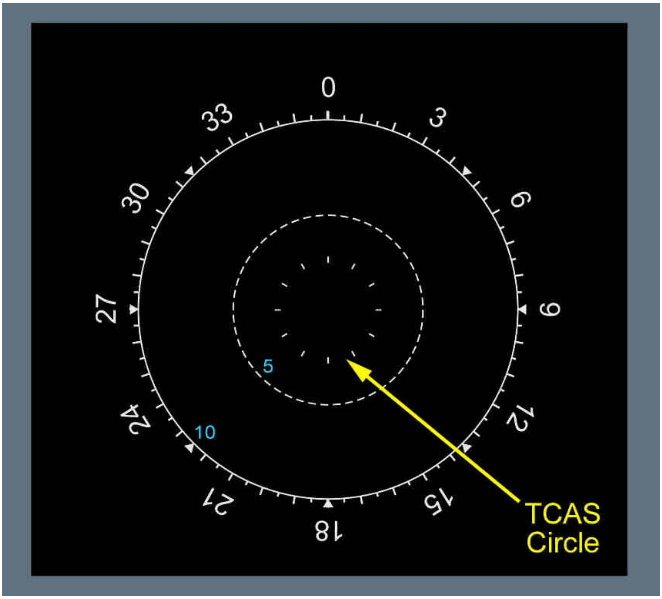
Ident.: DSC-31-CDS-40-40-60-10-00000865.0001001 / 22 APR 14

HEADING SCALE

The heading scale corresponds to a full rose of 360 °. Headings are marked every 5 °, with a numerical value every 30 °.
The diameter of the heading scale corresponds to the range that the flight crew selects on the EFIS CP.
A dotted circle is drawn at a half of the selected range.
Range values are displayed at a quarter and at a half of the selected range.

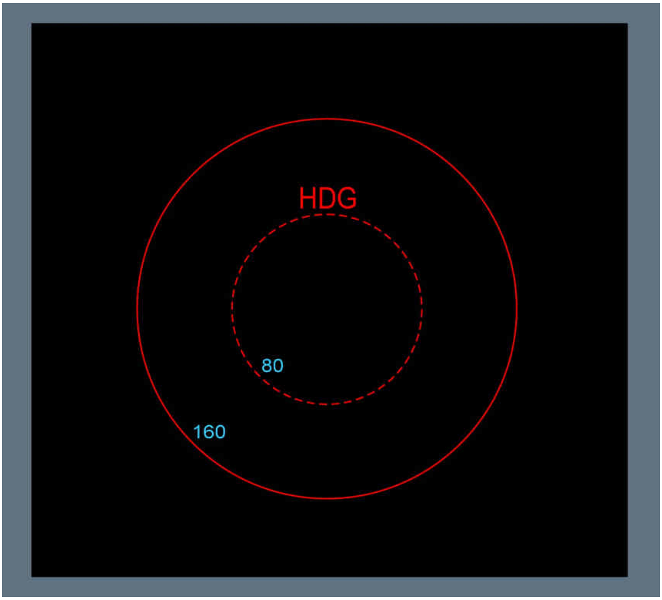
The TCAS circle corresponds to 2.5 NM, and appears when:
- The selected range is less than, or equal to, 20 NM
- The flight crew presses the TRAF pb on the EFIS CP, or a TCAS alert is triggered.

TCAS Circle



L2 When the aircraft heading is not valid, the ND displays the heading scale in red.

Heading Scale Not Valid

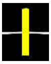


Ident.: DSC-31-CDS-40-40-60-10-00000866.0001001 / 22 APR 14

HEADING REFERENCE

L3 The ADIRS provides the heading value.

L1



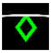
Indicates the current aircraft heading on the heading scale.
The heading refers to true North or magnetic North, depending on the MAG/TRUE pb selection on the AFS CP.

Ident.: DSC-31-CDS-40-40-60-10-00000867.0001001 / 22 APR 14

CURRENT TRACK

L3 The ADIRS provides the aircraft track.

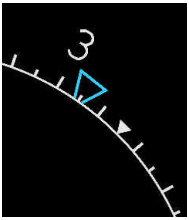
L1



Indicates the current aircraft track on the heading scale.
The track refers to true North or magnetic North, depending on the MAG/TRUE pb selection on the AFS CP.

Ident.: DSC-31-CDS-40-40-60-10-00000868.0001001 / 22 APR 14

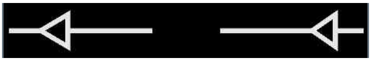
SELECTED HEADING(TRACK)



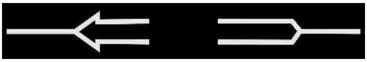
Indicates the heading(track) that the flight crew selects on the AFS CP.
Appears when the HDG(TRACK) mode is engaged.

Ident.: DSC-31-CDS-40-40-60-10-00000869.0002001 / 03 JUL 20

1 ## VOR POINTERS



Indicates the bearing of the selected VOR1.
Appears when the flight crew presses the VOR1 pb on the EFIS CP.

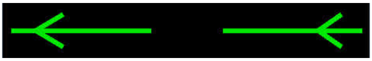


Indicates the bearing of the selected VOR2 ◁ .
Appears when the flight crew presses the VOR2 pb ◁ on the EFIS CP.

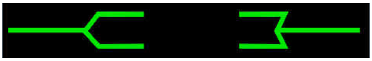
L3 If the VOR North reference stored in the FMS database is different from the current aircraft North reference, the VOR pointer appears in magenta, and is not corrected for magnetic variation.

Ident.: DSC-31-CDS-40-40-60-10-00019206.0002001 / 09 MAR 16

ADF POINTERS ◁



Indicates the bearing of the selected NDB1 ◁ .
Appears when the flight crew presses two times the VOR1/ADF1 ◁ pb on the EFIS CP.

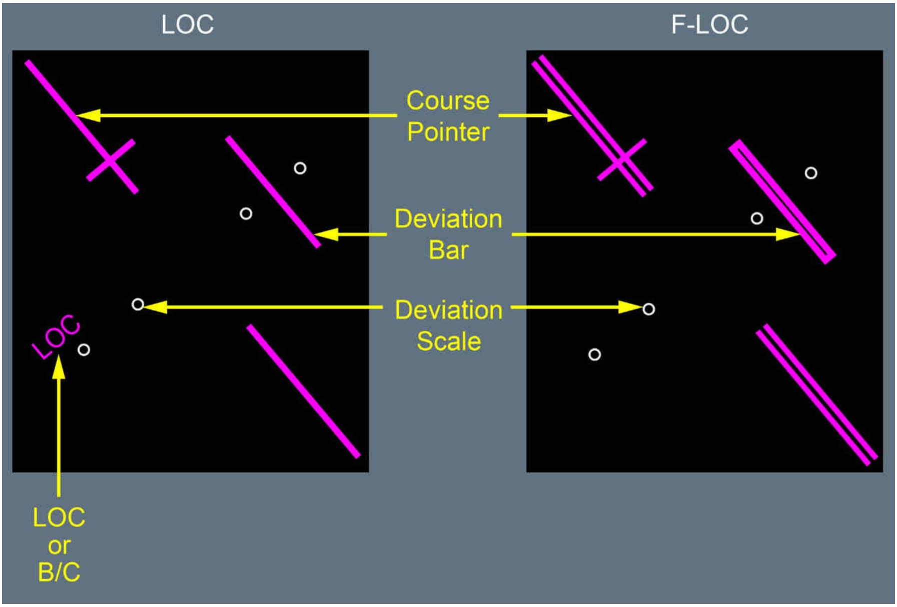


Indicates the bearing of the selected NDB2 ◁ .
Appears when the flight crew presses two times the VOR2 ◁ /ADF2 pb ◁ on the EFIS CP.

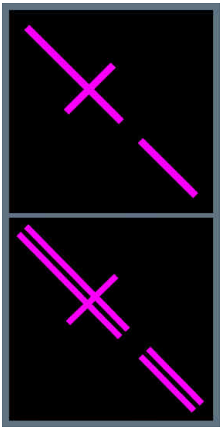
Ident.: DSC-31-CDS-40-40-60-10-00000871.0001001 / 09 MAR 16

LATERAL DEVIATION

Lateral Deviation


LOC
F-LOC
Course Pointer
Deviation Bar
Deviation Scale
LOC
LOC or B/C

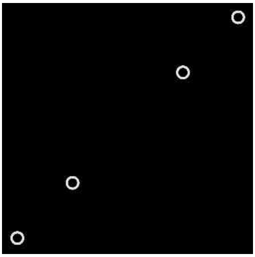
COURSE POINTER



Indicates the course of the selected approach. Appears when the selected approach is an ILS, GLS , an approach compatible with the SLS function, LOC, or LOC B/C approach.
During an approach flown with the FLS function (except LOC and LOC B/C), the course pointer appears doubled.

DEVIATION SCALE

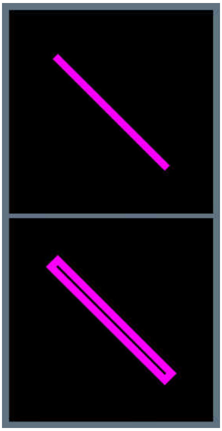
L12



The deviation scale consists in 4 dots. The maximum deviation is 2.5 ° either side.
The scale flashes when the lateral deviation becomes excessive. For more information, *Refer to DSC-31-CDS-40-20-110 LOC or F-LOC Deviation*.

DEVIATION BAR

L12



Indicates the aircraft lateral deviation in relation to the LS course.
The deviation bar flashes when the lateral deviation becomes excessive. For more information, *Refer to DSC-31-CDS-40-20-110 LOC or F-LOC Deviation*.
During an approach flown with the FLS function (except LOC and LOC B/C), the deviation bar appears doubled.

LOC OR B/C

LOC	The flight crew selected a LOC approach compatible with the FLS.
B/C	The flight crew selected a LOC B/C approach compatible with the FLS.

LS FLAGS

L12

LOC	The LOC deviation is not valid. Temporarily flashes, then remains steady.

L12

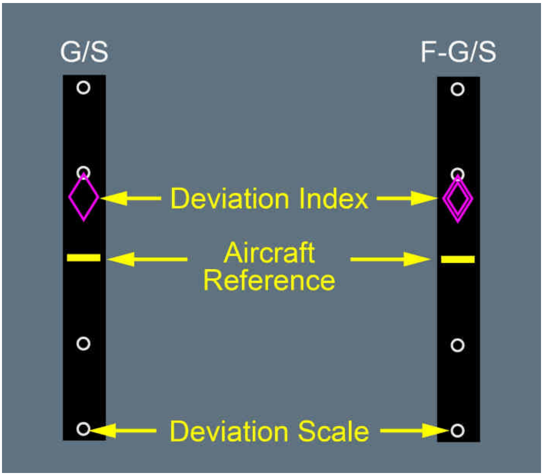
F-LOC	The F-LOC deviation is not valid. Temporarily flashes, then remains steady.

VERTICAL DEVIATION

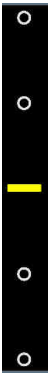
Indicates the vertical deviation of the aircraft from the glide slope or the FMS glide slope, during the approach phase.

L2 Appears when:
- The flight crew selected an approach on the FMS
- The distance to the destination airport is less than 250 NM.

Vertical Deviation

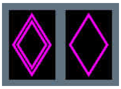


L1 DEVIATION SCALE

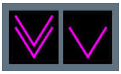


The deviation scale consists in 4 dots. The maximum deviation is 0.7 ° up or down.
The scale and the aircraft reference flash when the deviation becomes excessive.
For more information, *Refer to DSC-31-CDS-40-20-110 G/S or F-G/S Deviation*.

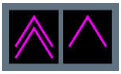
DEVIATION INDEX



The F-G/S or G/S deviation is within the scale.

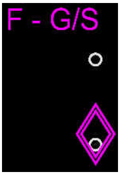


The F-G/S or G/S deviation is outside the scale.
The aircraft is above the G/S or F-G/S.



The F-G/S or G/S deviation is outside the scale.
The aircraft is below the G/S or F-G/S.

F-G/S LABEL

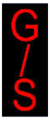


The flight crew selected an ILS G/S out, LOC, or LOC B/C approach, compatible with the FLS.

LS FLAGS

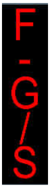
If the glide slope data is not valid, the ND displays the following flags, instead of the glide slope deviation:

L12



The flight crew selected an ILS, GLS ◁ , or an approach compatible with the SLS ◁ function, and the glide slope deviation is not valid.
Temporarily flashes, then remains steady.

L12



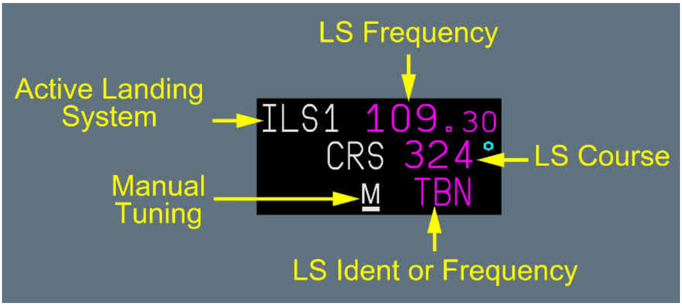
The flight crew selected an approach compatible with the FLS, and the F-G/S deviation is not valid.
Temporarily flashes, then remains steady.

Ident.: DSC-31-CDS-40-40-60-10-00000872.0002001 / 09 MAR 16

LS STATION

The ND displays the selected LS station information.

LS Station



ACTIVE LANDING SYSTEM

Landing guidance from MMR 1 is displayed on the CAPT PFD and on the F/O ND.
Landing guidance from MMR 2 is displayed on the CAPT ND and on the F/O PFD.

	ILS1	Indicates the active approach type (ILS, GLS ◁ , SLS ◁ , FLS, or LOC/FLS) and the source of the data (MMR 1 or MMR 2).
L2	ILS1	Indicates a malfunction of the active approach mode: - The glide slope deviation is not valid, or - The localizer deviation is not valid, or - The applicable MMR is not active, or - The distance to the runway threshold is not valid, in the case of an approach compatible with the FLS, a GLS ◁ , or an approach compatible with the SLS ◁ .
	LS1	The applicable MMR (MMR 1 or MMR 2) is not valid, or two approach modes are simultaneously selected from the MMR.

L1

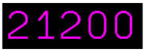
LS FREQUENCY(CHANNEL)(SLOPE)

ILS Approach

	109.30	Indicates the ILS frequency in MHz.
L2	XX	The ILS frequency is not valid.
L23	---.--	The ILS frequency is not computed, or the frequency is outside the correct range. The range of the ILS frequency is between 108.10 MHz and 111.95 MHz.

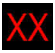
L1

GLS Approach



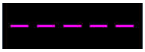
Indicates the GLS channel.

L2



The GLS channel is not valid.

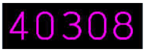
L23



The GLS channel is not computed, or the channel is not in the GLS range.
The range of the GLS channel is between 20001 and 39999.

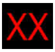
L1

Approach Compatible with the SLS



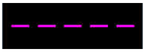
Indicates the SLS channel.

L2



The SLS channel is not valid.

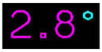
L23



Appears if:
- The SLS trajectory check is failed, or
  The MMR check of the SLS trajectory detects a discrepancy with the FMS database.
- The SLS channel is not computed
- The channel is not in the correct range.
  The range of the SLS channel is between 40000 and 99999.

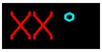
L1

Approach Compatible with the FLS

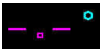


Indicates the slope of an approach compatible with the FLS, in degrees.

L2



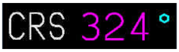
The FLS slope is not valid.



The FLS slope is not computed.

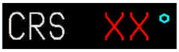
L1

LS COURSE

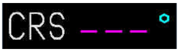


Indicates the LS course in degrees.

L2



The selected course is not valid, or two approach modes are simultaneously selected from the MMR.



The course is not computed.

L1 **LS IDENT OR FREQUENCY**

The ND displays the identifier of the approach mode:

- The ILS station identifier for an ILS approach

L2 The ILS station identifier is also displayed for an ILS G/S out, LOC, or LOC B/C approach, if they are flown without the FLS.

If the ILS ident is not valid, the ND displays the ILS frequency instead.

L1 - The identifier code for a GLS ◁ , SLS ◁ , or an approach compatible with the FLS.

MANUAL TUNING

R	The flight crew manually tuned the NAVAID via the RMP.
M	The flight crew manually tuned the NAVAID via the MFD.

Ident.: DSC-31-CDS-40-40-60-10-00000873.0001001 / 22 APR 14

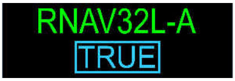
AZIMUTH LINE

A white line indicates the azimuth that is used for the computation of the vertical cut of the VD. For more information, *Refer to DSC-31-CDS-40-50 VD*.
The flight crew can manually select the VD AZIM mode via the VD AZIM knob, on the SURV panel. For more information, *Refer to DSC-34-SURV-30-10 Manual Azimuth Mode*.

Ident.: DSC-31-CDS-40-40-60-10-00000874.0001001 / 22 APR 14

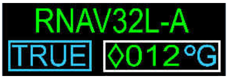
TRUE INDICATION

L12



The heading refers to true North, and the latitude of the aircraft is less than 65 ° North or South.
When the slats extend, the TRUE message temporarily flashes, then remains steady.

L12



The heading refers to true North, and the latitude of the aircraft is strictly more than 65 ° North or South.
The grid track indicates the true track of the aircraft.
When the slats extend, the TRUE message temporarily flashes, then remains steady.

When the aircraft approaches high latitudes, the SELECT TRUE NORTH REF message requests the flight crew to manually select the TRUE North reference.

L3 This message appears:
- Above 82 ° North, or
- Above 73 ° North, with a longitude between 120 ° West, and 90 ° West, or
- Below 60 ° South.

L1 To change the North reference, the flight crew can press the TRUE/MAG pb on the AFS CP. When the aircraft reaches high latitudes, the ADIRS automatically changes the MAG North reference to the TRUE North reference.

L3 The aircraft is at high latitudes:
- Above 82.5 ° North, or
- Above 73.5 ° North, with a longitude between 117.5 ° West, and 92.5 ° West, or
- Below 60.5 ° South.

L1 *Note:* *The BTV also displays messages in the same area, and has priority over the TRUE indication. When a BTV message is displayed, the TRUE indication appears under the TAS indication, on the third line. For more information about BTV messages, Refer to DSC-34-32-30-20-60 ND.*

L2 For more information about polar navigation, *Refer to DSC-22-FMS-10-30-30 Introduction*.

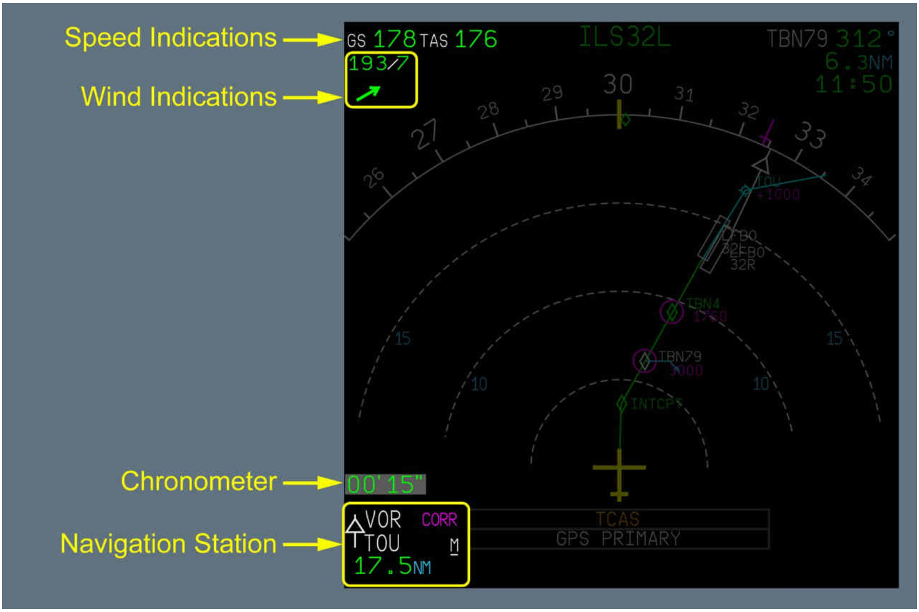
Common Data

COMMON DATA

Applicable to: ALL

Ident.: DSC-31-CDS-40-40-70-10-00000876.0001001 / 22 APR 14

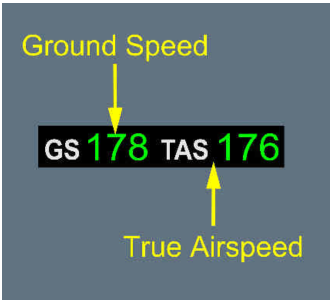
Common Data Overview


Speed Indications
Wind Indications
Chronometer
Navigation Station
GS 178 TAS 176
193/7
ILS32L
TBN79 312°
6.3NM
11:50
00'15"
VOR CORR
TOU M
17.5NM
TCAS
GPS PRIMARY
INTCPT
TBN79
TBN4
CFB0
32R

Ident.: DSC-31-CDS-40-40-70-10-00000877.0001001 / 22 APR 14

SPEED INDICATIONS

Speed Indications



Indicates the ground speed (GS) and the true airspeed (TAS) of the aircraft, in knots.

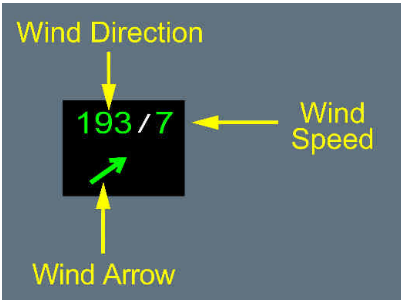
L3 The ADIRS provide the GS and the TAS. The ADIRS use the GPS and the IRS data for the GS computation.

Ident.: DSC-31-CDS-40-40-70-10-00000878.0001001 / 22 APR 14

WIND INDICATIONS

L3 The ADIRS provides the wind direction and speed.

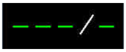
Wind Indications



L1 Indicates the wind direction in degrees, and the wind speed in knots. The numerical value of the wind direction is given relative to true North.

When the wind speed exceeds 2 kt, the ND displays a green arrow that indicates the wind direction relative to the selected North reference (TRUE or MAG).

L13



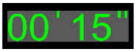
The wind data is not computed.

Note: *The wind data is not computed when the TAS is below 100 kt.*

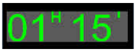
Ident.: DSC-31-CDS-40-40-70-10-00000879.0001001 / 22 APR 14

CHRONOMETER

To display the elapsed time, the flight crew can press the onside CHRONO pb on the EFIS CP. For more information, *Refer to DSC-31-CDS-40-60 CHRONO Pb*.



Indicates the elapsed time in minutes and seconds.

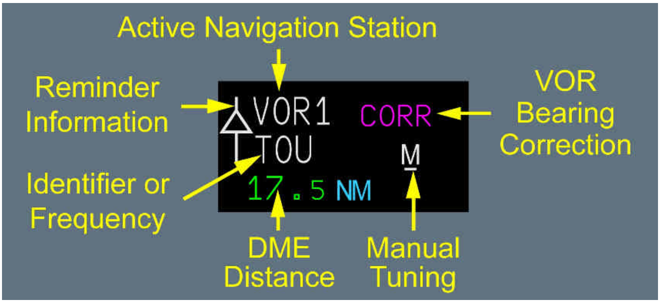


Indicates the elapsed time in hours and minutes.

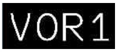
Ident.: DSC-31-CDS-40-40-70-10-00000880.0004001 / 09 MAR 16

NAVIGATION STATIONS

Navigation Stations

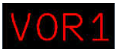

Active Navigation Station
Reminder Information
Identifier or Frequency
VOR Bearing Correction
DME Distance
Manual Tuning
VOR1
CORR
TOU
M
17.5 NM

ACTIVE NAVIGATION STATION



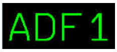
Indicates the VOR receiver currently displayed on the ND.
The flight crew can display the VOR1 or the VOR2 ◁ via the EFIS CP. For more information, *Refer to DSC-31-CDS-40-60 ND Data Display pb*.

L2



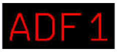
The VOR bearing is not valid.
Temporarily flashes, then remains steady.

L1



Indicates the ADF ◁ receiver currently displayed on the ND.
The flight crew can display the ADF1 ◁ or the ADF2 ◁ via the EFIS CP.
For more information, *Refer to DSC-31-CDS-40-60 ND Data Display pb*.

L2



The NDB ◁ bearing is not valid.
Temporarily flashes, then remains steady.

L1 **IDENTIFIER OR FREQUENCY**

L12

TOU	Indicates the VOR ident. If the VOR ident is not valid, the ND displays the following elements (if valid) instead, by order of priority: - The DME ident, or - The VOR frequency, or - The DME frequency.

L12

TOE	Indicates the NDB ◁ ident. If the NDB ident is not valid, the ND displays the NDB frequency instead.

MANUAL TUNING

R	The flight crew manually tuned the navaids via the RMP.
M	The flight crew manually tuned the navaids via the MFD.

L2 When the navaid is automatically selected by the FMS, no indication is displayed.

L1 **VOR BEARING CORRECTION**

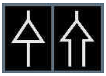
Indicates the VOR bearing correction, when the VOR reference from the FMS database (TRUE or MAG) is different from the current aircraft flying reference (TRUE or MAG).

CORR	When in ARC or ROSE-NAV mode, the VOR bearing is corrected for magnetic variation.
MAG	When in ROSE-VOR or ROSE-LS mode, the VOR reference is MAG. No correction is applied to the bearing.
TRUE	When in ROSE-VOR or ROSE-LS mode, the VOR reference is TRUE. No correction is applied to the bearing.

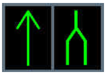
REMINDER INFORMATION

The reminder information enables to identify the pointer associated with a navaid currently displayed on the ND.

L12



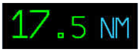
Indicates the pointer associated with the VOR 1 or the VOR 2 ◁ .
In ARC or ROSE-NAV mode, when the VOR North reference (TRUE or MAG) is different from the current aircraft North reference (TRUE or MAG), the ND displays the VOR pointer in magenta.



Indicates the pointer associated with the ADF 1 ◁ or the ADF 2 ◁ .

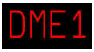
DME DISTANCE

The DME distance only appears when the selected navaid is a VOR/DME.

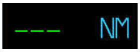


Indicates the DME distance of the aircraft.

L2



The DME distance is not valid.
Temporarily flashes, then remains steady.



The DME distance is not computed.

Intentionally left blank

FMS Data

FMS DATA

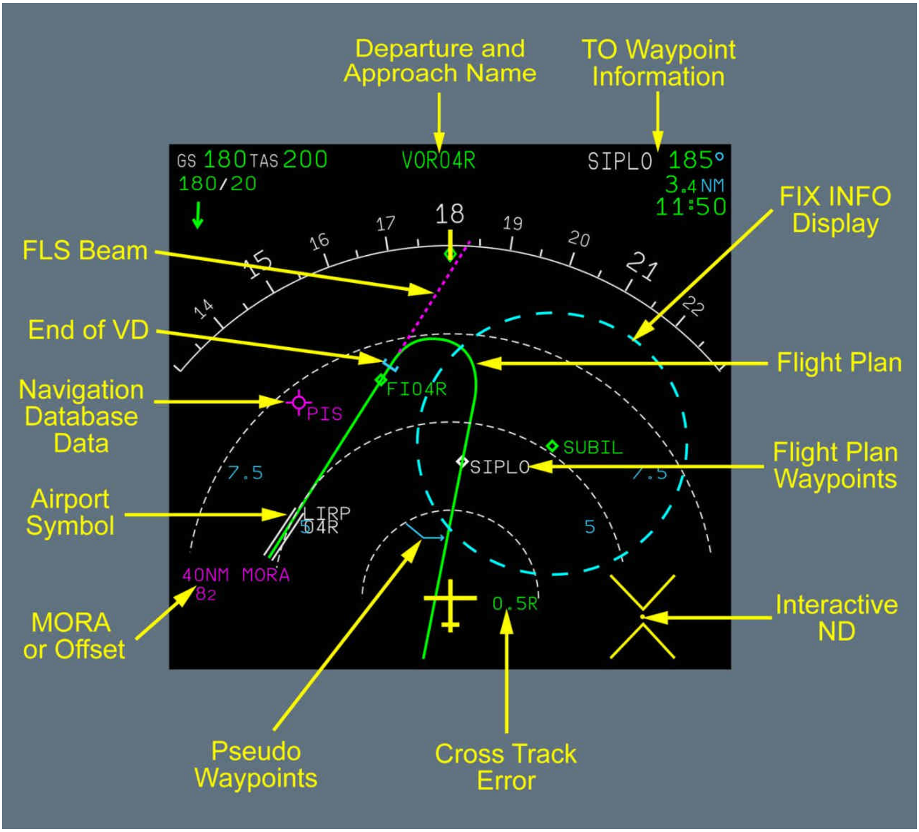
Applicable to: ALL

Ident.: DSC-31-CDS-40-40-80-10-00000881.0001001 / 22 APR 14

The ND displays the flight plan information when the flight crew selects:

- The ARC, PLAN, or ROSE-NAV mode
- An ND range that is more, or equal to, 10 NM.

FMS Data Overview

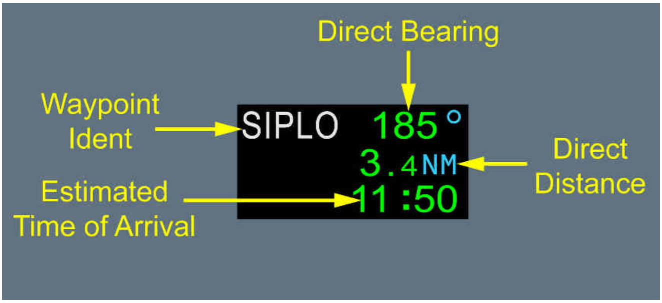

Departure and Approach Name
TO Waypoint Information
GS 180 TAS 200
180/20
VOR04R
SIPLO 185°
3.4 NM
11:50
FIX INFO Display
FLS Beam
End of VD
Flight Plan
Navigation Database Data
FI04R
PIS
SUBIL
SIPLO
Flight Plan Waypoints
7.5
7.5
5
5
Airport Symbol
LIRP
04R
40NM MORA
82
0.5R
MORA or Offset
Interactive ND
Pseudo Waypoints
Cross Track Error
14
15
16
17
18
19
20
21
22

Ident.: DSC-31-CDS-40-40-80-10-00000882.0001001 / 22 APR 14

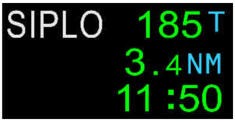
TO WAYPOINT INFORMATION

Indicates the next waypoint to be overflown.

Active Waypoint Information


Direct Bearing
Waypoint Ident
SIPLO
185 °
3.4NM
11 :50
Direct Distance
Estimated Time of Arrival

Note: *The indicated Estimated Time of Arrival (ETA) is based on the assumption that the aircraft will fly the shortest route from its present position to the TO waypoint, at its current ground speed.*


SIPLO
185T
3.4NM
11 :50

The aircraft flies in the polar zone.
Indicates the bearing to the TO waypoint, with reference to true North.

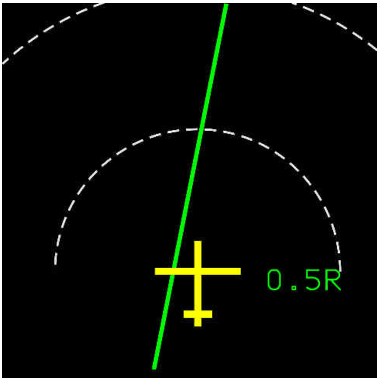
Ident.: DSC-31-CDS-40-40-80-10-00000883.0001001 / 22 APR 14

CROSS TRACK ERROR

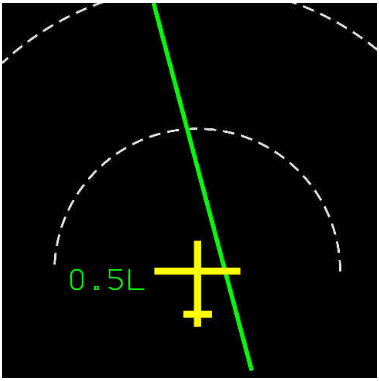
Indicates the lateral deviation of the aircraft from the active flight plan route, in nautical miles.
The precision of the cross track error is 0.1 NM and is increased to 0.01 NM during an RNP AR procedure with an RNP below 0.3.

L2 The cross track error pulses when the deviation exceeds 1 x RNP.

L1



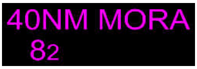
The aircraft is 0.5 NM right of the active flight plan.



The aircraft is 0.5 NM left of the active flight plan.

Ident.: DSC-31-CDS-40-40-80-10-00000884.0001001 / 22 APR 14

MORA

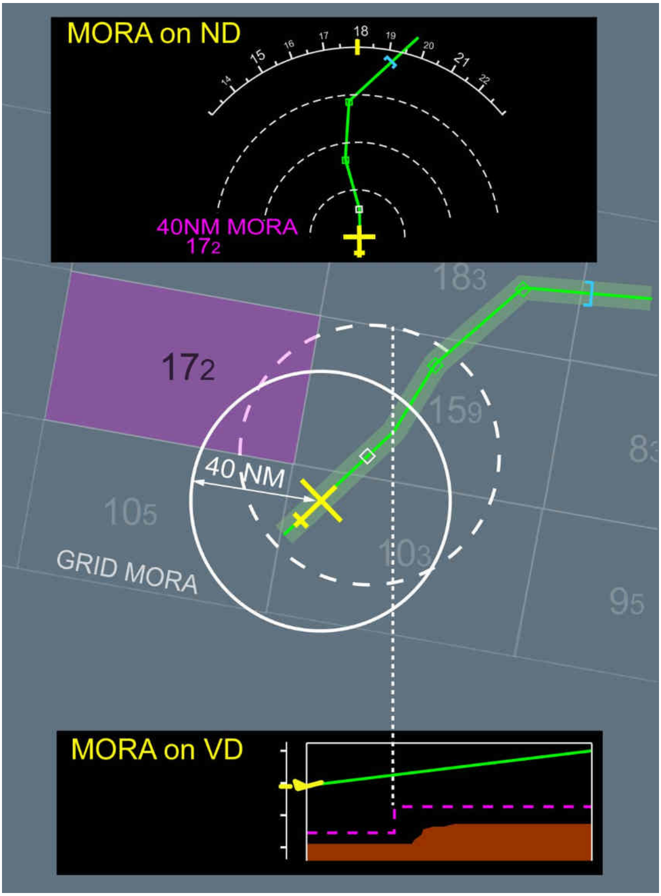


Indicates that the highest grid Minimum Off Route Altitude (MORA), in a circular area of 40 NM radius around the aircraft, is 8 200 ft.

Appears when the flight crew:
- Presses the CSTR pb, on the EFIS CP
- Selects an ND range that is above, or equal to, 40 NM.

The VD also displays safety altitudes. However, the VD displays the highest grid MORA or the MSA, along the aircraft trajectory and in the VD range. For more information, *Refer to DSC-31-CDS-40-50 Safety Altitude*.

Safety Altitudes - Grid MORA


MORA on ND
14
15
16
17
18
19
20
21
22
40NM MORA
172
183
172
159
83
40 NM
105
103
GRID MORA
95
MORA on VD

OFFSET

OFST
L5

Indicates the offset side and distance, when:

- The aircraft flies the offset trajectory, or
- The offset trajectory is on standby in the temporary flight plan.

The offset distance is displayed in the same color as the flight plan route. The MORA display has priority over the OFFSET.

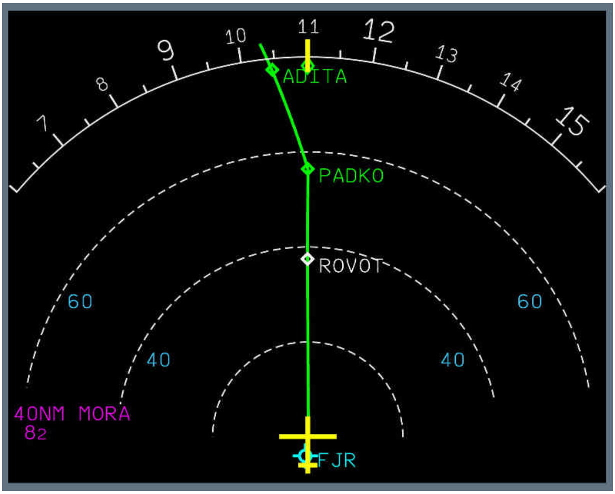
FLIGHT PLAN

The ND displays the following flight plans:

- The active flight plan (in green): When NAV mode is engaged, and the aircraft is on this flight plan route

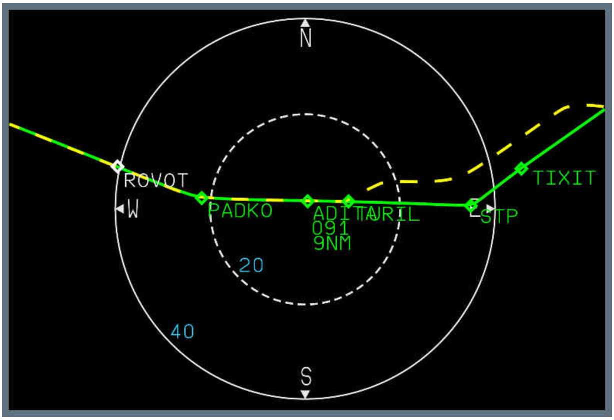
  The active flight plan is associated with:
  - The FROM waypoint
  - The waypoints ahead of the aircraft.

Active Flight Plan



- The temporary flight plan (in dashed yellow), in addition to the active flight plan

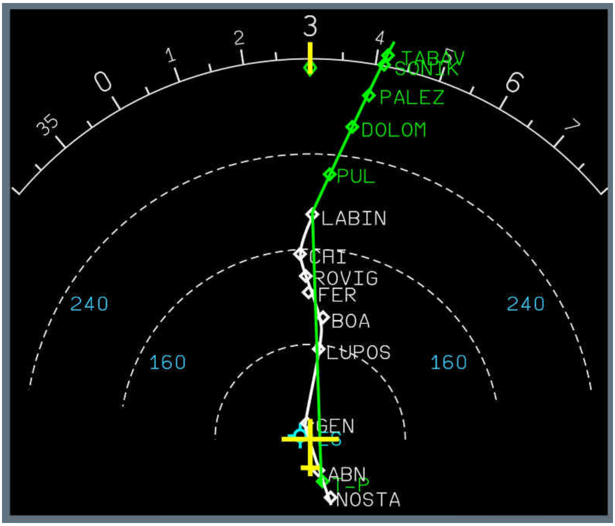
Temporary Flight Plan


N
ROVOT
W
PADKO
ADITA
TURIL
091
9NM
E
STP
TIXIT
20
40
S

- Any of the three secondary flight plans (in white), in addition to the active flight plan. Appears when the flight crew selects a SEC page on the onside MFD.

L2 Only the legs of the secondary flight plan that differ from the active flight plan are visible on the ND and displayed in white.

Secondary Flight Plan


35
0
1
2
3
4
6
7
TABAV
SONIK
PALEZ
DOLOM
PUL
LABIN
CHI
ROVIG
FER
BOA
LUPOS
GEN
ABN
T-P
NOSTA
240
240
160
160

L1 In PLAN mode, when the first leg of the secondary flight plan and the active leg are different, the ND only displays the secondary flight plan.

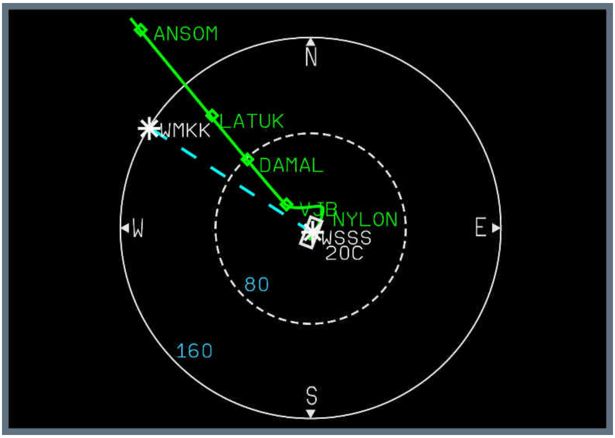
ALTERNATE FLIGHT PLAN

The ND displays the alternate flight plan as a dashed blue line.

Appears when:
- In ARC or ROSE-NAV mode, at least one waypoint of the alternate flight plan is displayed on the FMS F-PLN page of the onside MFD
- In PLAN mode, the Map Reference Point (MRP) is one of the waypoints of the alternate flight plan.

For more information, *Refer to DSC-22-FMS-10-40-20 Purpose*.

Alternate Flight Plan

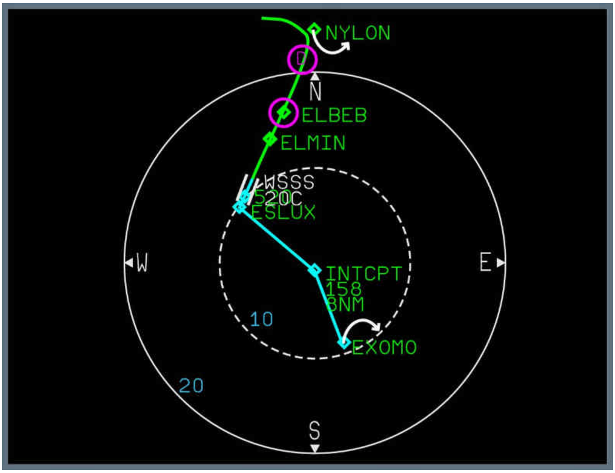


MISSED APPROACH

The ND displays the missed approach path as a solid blue line.

Appears when:
- In ARC or ROSE-NAV mode, at least one waypoint of the missed approach is on the onside MFD
- In PLAN mode, the MRP is one of the waypoints of the missed approach.

Missed Approach



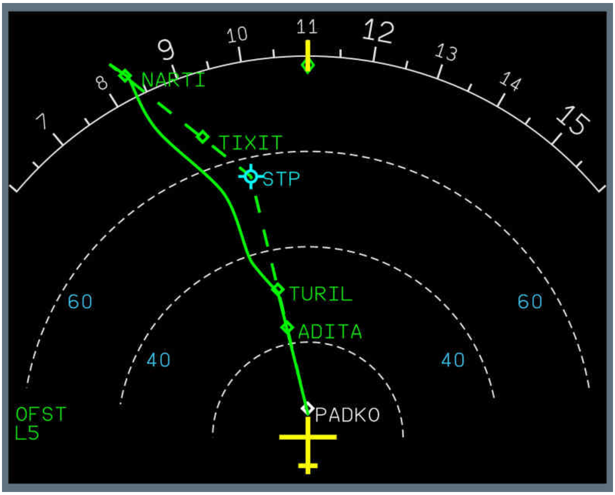
OFFSET PATH

The offset path is parallel to the initial lateral flight plan. For more information, *Refer to DSC-22-FMS-10-40-20 Purpose*.

In the active (or secondary) flight plan, the ND displays:
- The offset path as a solid line
- The initial path as a dashed line.

Both the offset and the initial paths are of the same color as the flight plan route.
In the temporary flight plan, the ND displays the offset and the initial paths as dashed yellow lines.
The offset path is not associated with any waypoint. The ND only displays the waypoints that are on the initial path.

Offset Path

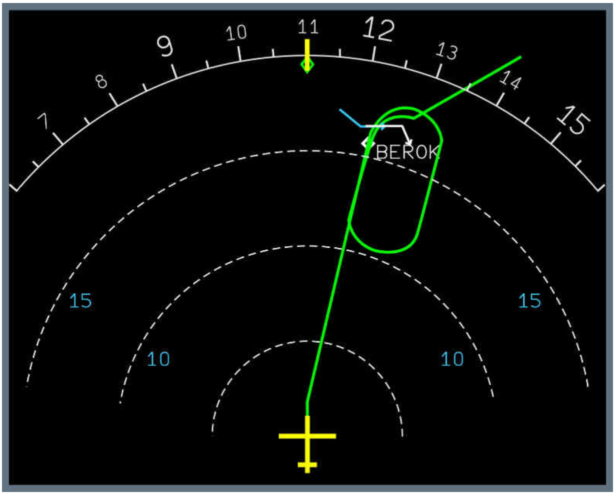

7
8
9
10
11
12
13
14
15
NARTI
TIXIT
STP
TURIL
ADITA
PADKO
60
60
40
40
OFST
L5

HOLDING PATTERN

The ND displays the entire holding pattern and its entry trajectory, only when:

- The ND range is 80 NM or less, and
- The TO waypoint is the hold entry fix.

Holding Pattern



ABN In all other cases, the ND displays the holding pattern symbol.

ENGINE-OUT STANDARD INSTRUMENT DEPARTURE (EOSID)

If an engine failure occurs before the diversion point, the ND displays the Engine-Out Standard Instrument Departure (EOSID) as a temporary flight plan (dashed yellow line), until:
- The aircraft sequences the diversion point, or
- The flight crew inserts or clears the EOSID.

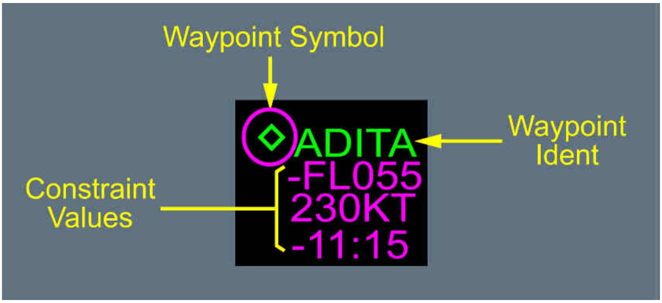
The ND displays a solid yellow line, instead of a dashed yellow line, if:
- An engine failure occurs after the diversion point, or
- An engine failure occurs before the diversion point, and the flight crew erased the temporary flight plan that contains the EOSID.
- The EOSID is displayed in PLAN mode (even with all engines operating).

For more information, *Refer to DSC-22-FMS-10-40-20 Purpose*.

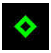
Ident.: DSC-31-CDS-40-40-80-10-00000886.0001001 / 09 MAR 16

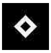
FLIGHT PLAN WAYPOINTS

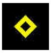
Flight Plan Waypoints

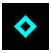


WAYPOINT SYMBOL

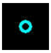

Indicates a waypoint that is part of the active flight plan.

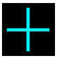

Indicates:
- The TO waypoint in the active flight plan, or
- Any secondary flight plan waypoint.

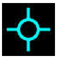

Indicates a waypoint that is part of the temporary flight plan.

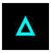

Indicates:
- Any alternate flight plan waypoint, or
- Any waypoint that is part of the missed approach procedure.

If the flight plan waypoint is a tuned navaid, the following blue navaid symbols appear instead of the waypoint symbol:


Indicates a DME only or a TACAN.

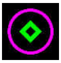
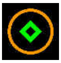
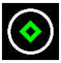

Indicates a VOR.


Indicates a VORTAC, a collocated or non-collocated VOR/DME, or a non-collocated VORTAC.


Indicates an NDB ◁ .

When an altitude constraint is associated with the active flight plan waypoint, the ND displays a circle around the waypoint symbol.

Note: *The ND displays a circle that indicates an altitude constraint, even if the flight crew did not press the CSTR pb on the EFIS CP.*

	The FMS predicts that the aircraft will comply with the altitude constraint at the waypoint.
	The FMS predicts that the aircraft will not comply with the altitude constraint at the waypoint. An altitude constraint is not satisfied, when the predicted altitude differs from the constraint altitude by 250 ft at least.
	The FMS predicts that the aircraft will not take into account the altitude constraint at the waypoint.

WAYPOINT IDENT

The ND displays the waypoint ident in the same color as the associated flight plan, except for:
- The TO waypoint, that is in white, or
- The FIX INFO reference, that is in green, or
- The tuned navaids or NDBs ⊲✳ , that are in blue.

For more information, *Refer to DSC-22-FMS-20-20-20 Waypoint Ident*.

CONSTRAINT VALUES

When the flight crew presses the CSTR pb on the EFIS CP, the ND displays the constraints values below the waypoint ident.

If there are several constraints for the same waypoint, the ND displays the constraints in the following order of priority:
- The altitude constraint

L2 The ND displays the altitude constraint value:
- In FL, when the altitude is above the transition altitude or the barometric setting is set to STD
- In feet in all other cases.

L1 - The speed constraint

L2 The ND displays the speed constraint value in knots or as a Mach number.

L1 - The time constraint.

Note: *For ILS approaches, the ND only displays speed and time constraints at the FAF waypoint up to destination.*

The constraint value and the constraint symbol have identical color coding.

Note: *In PLAN mode, and at the MRP waypoint, the ND also displays the track and the distance to the next waypoint.*

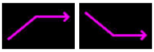
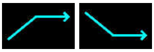
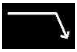
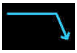
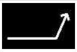
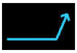
Ident.: DSC-31-CDS-40-40-80-10-00000887.0003001 / 01 SEP 16

PSEUDO WAYPOINTS

Pseudo waypoints indicate vertical flight plan events in the active flight plan.

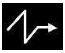
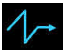
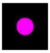
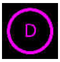
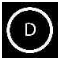
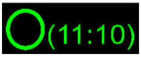
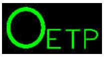
L2 The ND displays pseudo waypoints according to the following color coding system:
- Blue indicates what the aircraft will do, without any required flight crew action
- White indicates that a flight crew action is required, in order to follow the vertical flight plan
- Magenta indicates what the aircraft will do, in order to comply with an FMS constraint, without any required flight crew action
- Green indicates an information
- Amber indicates that the conditions associated with the pseudo waypoint are not satisfied.

L12

Pseudo Waypoint	Definition
	Indicates the point at which the aircraft will reach the level that is defined by an altitude constraint. Appears when NAV mode is engaged, and: - CLB, or DES, mode is armed, or - CLB, OP CLB, DES, OP DES, V/S, or FPA mode is engaged.
	Indicates the point at which the aircraft will reach the target altitude that is selected on the AFS CP. Appears when NAV mode is engaged, and: - CLB, or DES, mode is armed, or - CLB, OP CLB, DES, OP DES, V/S, or FPA mode is engaged.
	Indicates the predicted Top of Descent (TOD), regardless of the active guidance mode.
	Indicates the predicted TOD. Appears when NAV mode is engaged, and: - DES mode is armed, and ALT mode is engaged, or - CLB, DES, OP DES, V/S, or FPA mode is engaged.
	Indicates the predicted start of climb. Appears when NAV mode is engaged, and CLB mode is not armed.
	Indicates the predicted start of climb. Appears when NAV mode is engaged, and: - CLB mode is armed, and ALT mode is engaged, or - CLB, OPEN CLB, V/S, or FPA mode is engaged, and the pseudo waypoint that indicates that the aircraft reaches the level of an altitude constraint is displayed.

Continued on the following page

Continued from the previous page

Pseudo Waypoint	Definition
	Indicates the point at which the aircraft will intercept the FMS predicted descent or approach path, before the AFS CP selected altitude. Appears when NAV mode is engaged, and V/S or FPA mode is engaged.
	Indicates the point at which the aircraft will intercept the FMS predicted descent or approach path, before the AFS CP selected altitude. Appears when NAV mode is engaged, and DES or CLB mode is armed or engaged.
	In NAV mode and managed speed modes, indicates the starting point of an acceleration or deceleration segment, as computed by the FMS.
	In HDG/TRACK and managed speed modes, indicates the point at which the flight crew must change the speed due to the speed limit, while maintaining the selected track.
	Indicates the predicted start of an automatic deceleration, for an approach in a managed speed mode. Appears when: - NAV mode is engaged, or - NAV mode is armed, and the FMS predicts NAV mode engagement before the deceleration point.
	Indicates the predicted point at which the flight crew should start the deceleration, for an approach in a selected speed mode.
	Indicates the predicted location of the time marker along the F-PLN route. For more information about time markers, *Refer to DSC-22-FMS-10-80 Time Function*.
	Indicates the location of the Equi-Time Point (ETP) along the F-PLN route.

Ident.: DSC-31-CDS-40-40-80-10-00000888.0001001 / 06 NOV 14

FIX INFO DISPLAY

The flight crew uses the FIX INFO revision to compute the intersection of the flight plan and:
- A radial from a specified reference point, and/or
- A circle with a specified reference point as center, and/or

Note: The FMS searches only for the first intersection down-path the flight plan.

- The abeam line from a specified reference point.

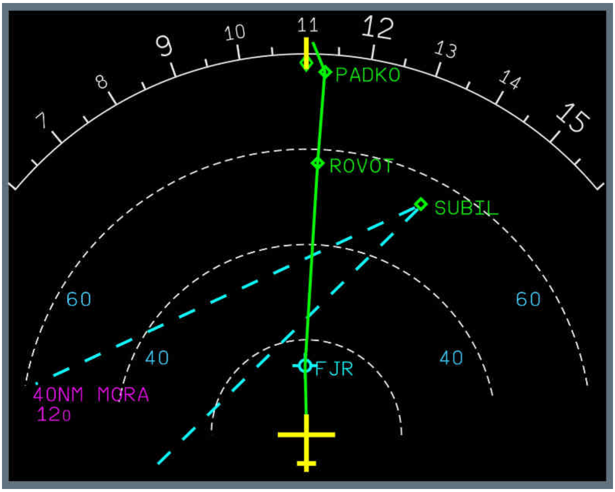
If the flight crew inserts the intercept point in the temporary flight plan:
- The radial(circle)(abeam line) no longer appears
- The intercept point appears in yellow.

If the flight crew inserts the temporary flight plan, the intercept point appears in green, or in white if it is the TO waypoint.
For more information, *Refer to DSC-22-FMS-10-40-20 Purpose*.

RADIAL INTERCEPT

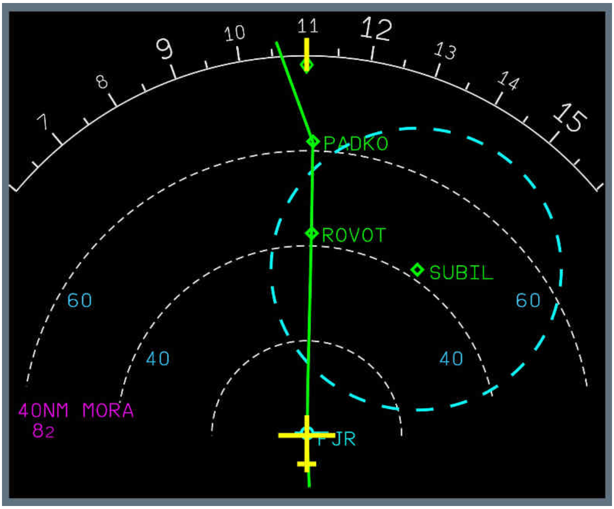
The ND displays the radial as a dashed blue line, if an intersection with the flight plan exists or not.

Radial Intercept Point


7
8
9
10
11
12
13
14
15
PADKO
ROVOT
SUBIL
60
60
40
40
FJR
40NM MORA
120

CIRCLE INTERCEPT

The ND displays the circle intercept as a dashed blue circle, whether an intersection with the flight plan exists, or not.


7
8
9
10
11
12
13
14
15
PADKO
ROVOT
SUBIL
60
60
40
40
40NM MORA
82
FJR

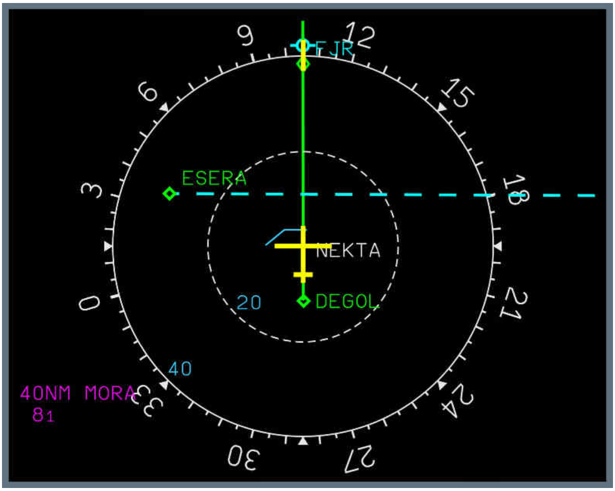
Circle Intercept Point

Note: *For large radius, the display of the dashed blue circle may be distorted and may not pass through the intersection points. The display, the time of arrival, the distance from P.POS and the altitude predictions of the intersection points are correct.*

ABEAM INTERCEPT

The ND displays the abeam radial as a dashed blue line, only when an intersection with the flight plan exists.

Abeam Intercept Point

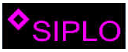


Ident.: DSC-31-CDS-40-40-80-10-00000889.0001001 / 09 MAR 16

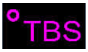
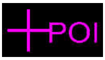
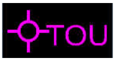
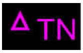
NAVIGATION DATABASE DATA

The complete navigation database and all the pilot stored elements are available for display on the ND.

WAYPOINTS

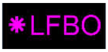
	Indicates a waypoint that is not part of the flight plan. Appears when the flight crew presses the WPT pb on the EFIS CP.

NAVAIDS

	Indicates a DME or a TACAN station. Appears when the flight crew presses the VORD pb on the EFIS CP.
	Indicates a VOR station. Appears when the flight crew presses the VORD pb on the EFIS CP.
	Indicates a VORTAC, a collocated or non-collocated VOR/DME, or a non-collocated VORTAC station. Appears when the flight crew presses the VORD pb on the EFIS CP
	Indicates an NDB ◁ station. Appears when the flight crew presses the NDB pb on the EFIS CP.

Note: The ND displays the tuned navaids in blue.

AIRPORT

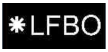


Indicates an airport different from the departure and destination airports of the flight plan.
Appears when the flight crew presses the ARPT pb on the EFIS CP.

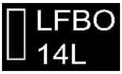
Ident.: DSC-31-CDS-40-40-80-10-00000890.0001001 / 22 APR 14

AIRPORT SYMBOL

The ND displays the departure and destination airports for the active, temporary, and secondary flight plans.

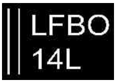


The departure or the destination waypoint is an airport, and the runway is not specified.



The departure or the destination waypoint is a runway, and the flight crew selected an ND range that is more, or equal to, 160 NM.
The ND orientates the runway symbol according to the actual runway magnetic heading.

L12



The departure or the destination waypoint is a runway, and the flight crew selected an ND range that is less than 160 NM.
The ND orientates the runway symbol according to the actual runway magnetic heading.
The dimension of the runway symbol is proportional to the actual runway length, and is adjusted according to the selected ND range.

Ident.: DSC-31-CDS-40-40-80-10-00000891.0001001 / 22 APR 14

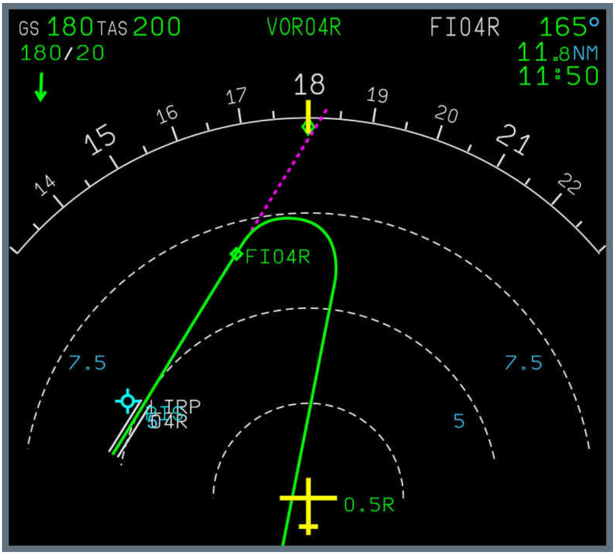
FLS BEAM

Indicates the FLS beam of an approach compatible with the FLS.

L2 Appears when the flight crew:
- Selected an approach compatible with the FLS in the active flight plan
- Pressed the LS pb on the EFIS CP
- Selected an ND range that is less than, or equal to:
  - 80 NM in ARC or PLAN mode, or
  - 160 NM in ROSE-NAV mode.

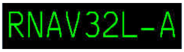
L1 If the anchor point does not correspond to the runway threshold, the FMS displays the anchor point ident in magenta.
For more information about the FLS beam, *Refer to DSC-22-FMS-10-30-40 FLS Beam on ND*.

FLS Beam

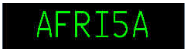


Ident.: DSC-31-CDS-40-40-80-10-00019854.0001001 / 22 APR 14

DEPARTURE AND APPROACH NAME


RNAV32L-A

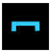
Indicates the type and the name of the approach procedure, when the approach exists in the flight plan, and:
- The active flight phase is DES, APPR, or GA, or
- The active flight phase is CRZ, and the along track distance to destination is less than 250 NM.


AFRI5A

Indicates the name of the departure procedure (SID name), when the departure exists in the flight plan, and:
- The active flight phase is PREFLIGHT, or
- The active flight phase is T.O or CLB, and the aircraft flies the departure as defined in the FMS.

Ident.: DSC-31-CDS-40-40-80-10-00000892.0001001 / 22 APR 14

END OF VD



Indicates the end of the VD, when the aircraft follows a flight plan route.

Note: *When the destination airport is in the VD range, the end of VD symbol indicates the end of the active flight plan.*

For more information, *Refer to DSC-31-CDS-40-50 Range*.

Ident.: DSC-31-CDS-40-40-80-10-00000893.0001001 / 22 APR 14

INTERACTIVE ND

The flight crew can use the KCCU to modify the flight plan directly from the ND. For more information, *Refer to DSC-31-CDS-40-40-100 Interactive ND Overview*.

BACKUP TRAJ

BACKUP TRAJ

Ident.: DSC-31-CDS-40-40-90-00019325.0001001 / 03 JUL 20
Applicable to: ALL

The BACKUP TRAJ function is active if:

- The two active FMCs fail (in a short period of time), or

  For more information, *Refer to DSC-22-FMS-40 Failure of Two FMCs (SINGLE Mode)*.
- The three FMCs fail, or

  For more information, *Refer to DSC-22-FMS-40 Failure of All FMCs (Backup Navigation)*.
- The PRIMs reject the data from the two active FMCs during an RNP AR procedure.

  For more information, *Refer to DSC-22-FMS-40 FMC Data Not Valid during a RNP AR Procedure*.

If the BACKUP TRAJ function is active, the BACKUP TRAJ message appears at the top of the ND, and the following elements remain available:

- The active flight plan trajectory and waypoints

  The active flight plan trajectory is displayed as a dashed green line. The TO waypoint is displayed in green instead of white.
- The temporary flight plan

  The temporary flight plan trajectory is displayed as a dashed yellow line.
- The offset trajectory
- The missed approach trajectory and waypoints

  The missed approach trajectory is displayed as a dashed blue line.
- Constraint values, only if CSTR was selected on the EFIS CP at the moment of the failure.

The BACKUP TRAJ function enables the recovery of data within a circular area of 80 NM radius around the aircraft. However, all data related to a terminal area procedure is recovered, regardless of the distance.

When in BACKUP TRAJ, the flight crew can still change the ND mode and range.

Note: *The BACKUP TRAJ function automatically deactivates when at least one FMC provides a valid flight plan to the CDS. During a RNP AR procedure, the BACKUP TRAJ function deactivates only if, above safety altitude, the flight crew revises the active flight plan at aircraft present position (i.e. DIR TO).*

Intentionally left blank

Interactive ND

INTERACTIVE ND OVERVIEW

Ident.: DSC-31-CDS-40-40-100-00000894.0001001 / 22 APR 14
Applicable to: ALL

The flight crew can perform the following FMS tasks, via the interactive functions of the ND:
- Direct to: FROM P.POS DIR TO or DIR TO (*Refer to DSC-31-CDS-40-40-100 DIRECT TO*)
- Insert a waypoint: INSERT NEXT WPT (*Refer to DSC-31-CDS-40-40-100 INSERT NEXT WPT*)
- Delete a waypoint: DELETE (*Refer to DSC-31-CDS-40-40-100 DELETE - Purpose*)
- Select an airport for data consultation: DATA (*Refer to DSC-31-CDS-40-40-100 DATA - Purpose*)
- Insert or delete/undo a temporary flight plan (*Refer to DSC-31-CDS-40-40-100 INSERT or ERASE TMPY - Purpose*).

The interactive functions of the ND are only available in ARC, PLAN, or ROSE-NAV mode.
In PLAN mode, the flight crew can scroll through the entire flight plan with the KCCU wheel.

ACCESS

To move the cursor to the ND with the KCCU, the flight crew can:
- Press the ND key ND, or
- Press the navigation key ◀◀ ▶▶ .

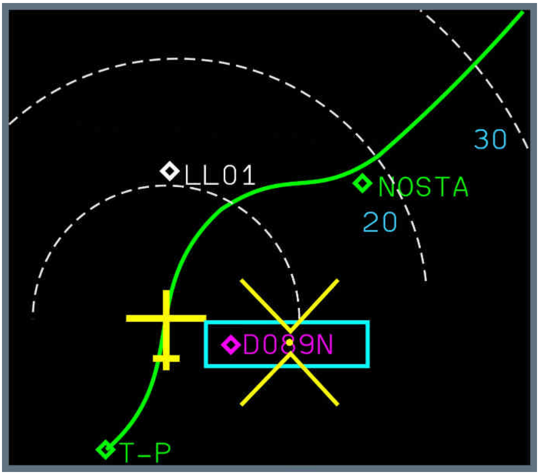
INTERACTIVE ELEMENTS

The flight crew can use the cursor to click on:
- The aircraft symbol
- The flight plan waypoints
- The navigation database waypoints, airports, and navaids.

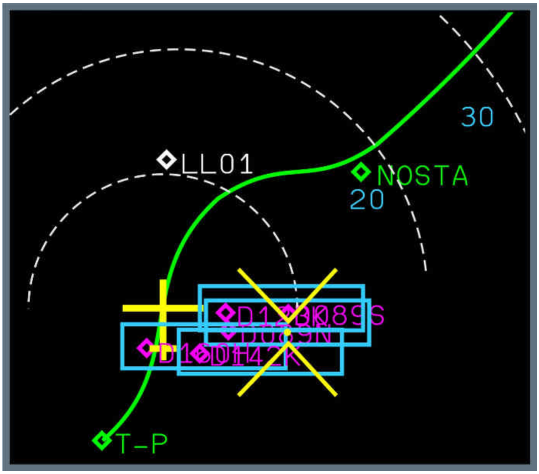
L2 If the ND displays a DIR TO temporary flight plan, no FMS revision is available via the interactive ND.
If the ND displays a secondary flight plan, the interactive functions are only available for the optional airports.

L1 Blue rectangles highlight the interactive areas around a selected element.

Interactive Area

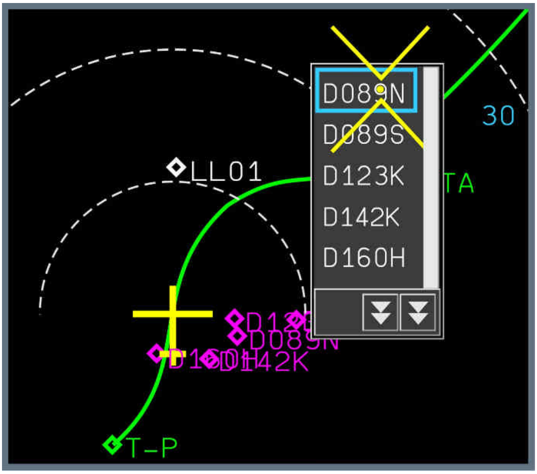


L2 When several interactive elements are available in the same area, they are all highlighted with blue rectangles.



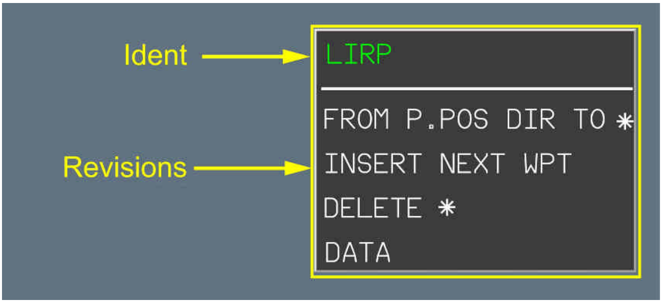
When the flight crew clicks on one of the highlighted elements, a declutter menu appears. This menu lists all the interactive elements available in the area of the cursor, and enables the flight crew to choose the element they want to interact with.

Dialog Box


D089N
D089S
D123K
D142K
D160H
LL01
30
TA
D123K
D089N
D160H
D142K
T-P

L1 When the flight crew clicks on an interactive element, the ND displays the list of revisions available for the selected element.

Revisions List


Ident
Revisions
LIRP
FROM P.POS DIR TO ✱
INSERT NEXT WPT
DELETE ✱
DATA

IDENT

Indicates the ident of the selected element.

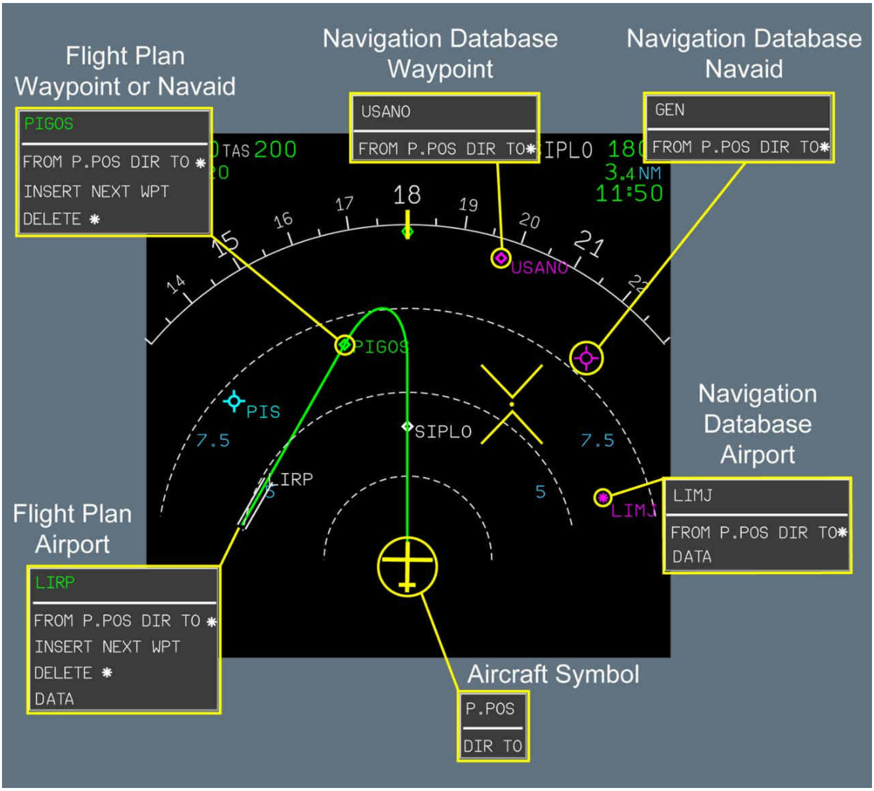
Appears:
- In green, when the selected element is a waypoint or an airport of the active flight plan
- In yellow, when the selected element is a waypoint or an airport of the temporary flight plan
- In white, in all other cases.

When the selected element is the aircraft symbol, the ident is P.POS.

REVISIONS

The revisions available depend on the type of the selected element.

Interactive Areas and Revisions

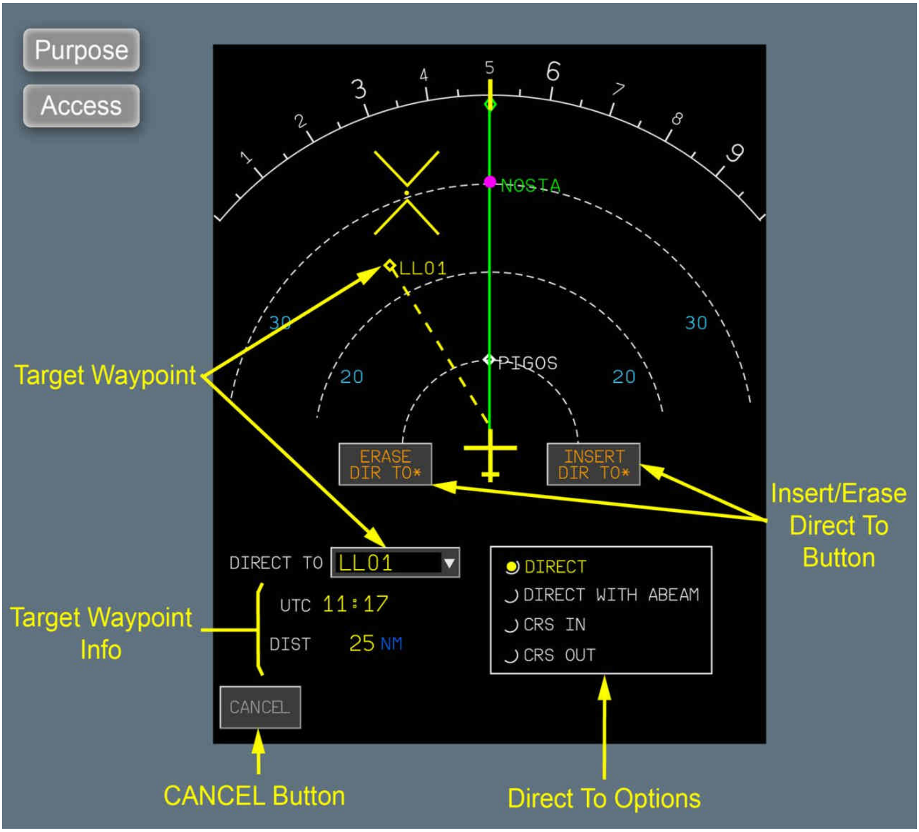

Flight Plan Waypoint or Navaid
PIGOS
FROM P.POS DIR TO ✱
INSERT NEXT WPT
DELETE ✱
Navigation Database Waypoint
USANO
FROM P.POS DIR TO✱
Navigation Database Navaid
GEN
FROM P.POS DIR TO✱
TAS 200
IPLO 180
3.4 NM
11:50
14
15
16
17
18
19
20
21
22
USANO
PIGOS
PIS
SIPLO
7.5
7.5
IRP
5
5
LIMJ
Navigation Database Airport
LIMJ
FROM P.POS DIR TO✱
DATA
Flight Plan Airport
LIRP
FROM P.POS DIR TO ✱
INSERT NEXT WPT
DELETE ✱
DATA
Aircraft Symbol
P.POS
DIR TO

DIRECT TO

Applicable to: ALL

Ident.: DSC-31-CDS-40-40-100-10-00000895.0001001 / 22 APR 14

DIRECT TO


Purpose
Access
NOSIA
LL01
PIGOS
30
30
20
20
ERASE DIR TO*
INSERT DIR TO*
Target Waypoint
Insert/Erase Direct To Button
Target Waypoint Info
CANCEL Button
Direct To Options
CANCEL

DIRECT TO LL01

UTC 11:17

DIST 25 NM

● DIRECT

○ DIRECT WITH ABEAM

○ CRS IN

○ CRS OUT

Ident.: DSC-31-CDS-40-40-100-10-00000910.0001001 / 22 APR 14

PURPOSE

The DIRECT TO page enables the flight crew to insert:

- A DIRECT TO leg (DIRECT)
- A DIRECT TO leg, with the projection of the intermediate waypoints on the direct trajectory to the target waypoint (DIRECT WITH ABEAM)

- A DIRECT TO leg, with the interception of a specific inbound radial (CRS IN)
- A DIRECT TO leg, with the interception of a specific outbound radial (CRS OUT).

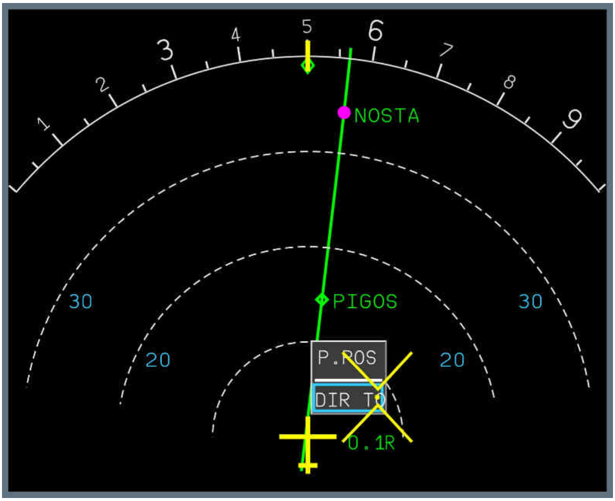
The DIRECT TO page is only available for the active flight plan.
For more information about the DIRECT TO function, *Refer to DSC-22-FMS-10-40-20 Purpose*.

ACCESS

The flight crew can access the DIRECT TO revision of the ND when they select:

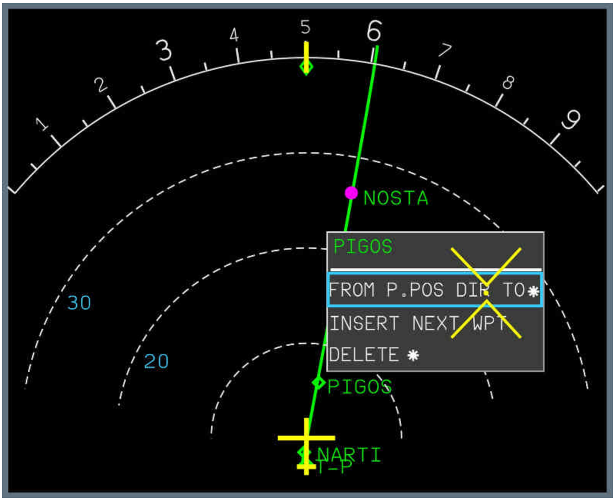
- DIR TO, from the aircraft symbol, or

DIR TO Revision


1
2
3
4
5
6
7
8
9
NOSTA
30
PIGOS
30
20
P.POS
20
DIR TO
0.1R

- FROM P.POS DIR TO *, from any other interactive element.

DIR TO Revision


3
4
5
6
7
8
9
2
1
NOSTA
PIGOS
FROM P.POS DIR TO ✱
INSERT NEXT WPT
DELETE ✱
30
20
PIGOS
NARTI
T-P

Ident.: DSC-31-CDS-40-40-100-10-00000912.0001001 / 22 APR 14

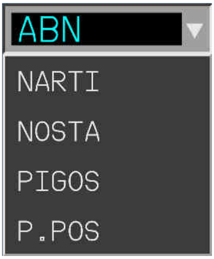
TARGET WAYPOINT

To select a target waypoint, the flight crew can:

- Click on the waypoint they want to use as a target, and choose the option FROM P. POS DIR TO
- Click on the aircraft mock-up, and use the DIRECT TO option

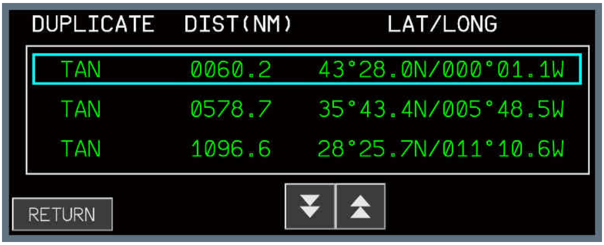
  Then, the flight crew can click on any element displayed on the ND to use it as a target. It is also possible to click on a blank area of the ND to create a target waypoint.

- Choose an element from the target waypoint list displayed in the lower part of the ND



- Type the ident of the target waypoint in the entry field displayed in the lower part of the ND. If several elements have the same ident, the flight crew can choose the appropriate target waypoint from a list that indicates the latitude and longitude of each element.

DUPLICATE Page



DUPLICATE	DIST(NM)	LAT/LONG
TAN	0060.2	43°28.0N/000°01.1W
TAN	0578.7	35°43.4N/005°48.5W
TAN	1096.6	28°25.7N/011°10.6W

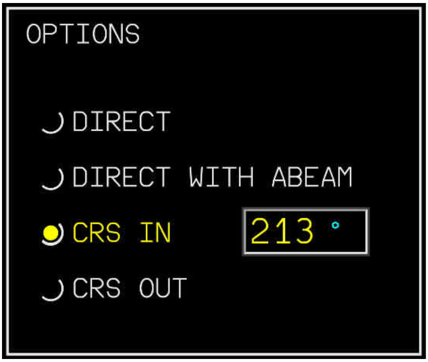
Ident.: DSC-31-CDS-40-40-100-10-00000913.0001001 / 22 APR 14

OPTIONS

L2 The default DIRECT TO option is DIRECT, or DIRECT WITH ABEAM, depending on the Operator's choice. The AMI file defines the default DIRECT TO option (*Refer to DSC-22-FMS-10-20 Airline Modifiable Information (AMI) File*).

L1 When the flight crew selects the CRS IN or the CRS OUT option, an entry field appears.

CRS ENTRY FIELD



OPTIONS

○ DIRECT

○ DIRECT WITH ABEAM

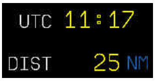
● CRS IN 213 °

○ CRS OUT

If the DIRECT TO target waypoint is a flight plan waypoint, the FMS sets the inbound(outbound) course to a default value.
The default CRS IN is a direct course from the waypoint that precedes the target waypoint.
The default CRS OUT is a direct course to the waypoint that follows the target waypoint.
For more information about the entry format of the course, *Refer to DSC-22-FMS-20-80 CRS IN(OUT)*.

Ident.: DSC-31-CDS-40-40-100-10-00000914.0001001 / 22 APR 14

TARGET WAYPOINT INFO



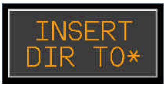
UTC 11:17
DIST 25 NM

Indicates the UTC time of arrival at the target waypoint, and the distance to the target waypoint.

Ident.: DSC-31-CDS-40-40-100-10-00000916.0001001 / 22 APR 14

INSERT DIRECT TO BUTTON

L12

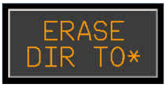


When clicked, inserts the temporary flight plan. For more information about the F-PLN page of the FMS, *Refer to DSC-22-FMS-20-20 F-PLN Page*.

The ND displays the INSERT DIRECT TO button, when:
- A DIR TO temporary flight plan exists
- The cursor is in the ND window.

ERASE DIRECT TO BUTTON

L12



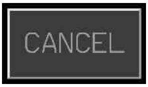
When clicked, erases the temporary flight plan. For more information about the F-PLN page of the FMS, *Refer to DSC-22-FMS-20-20-20 F-PLN Page*.

The ND displays the ERASE DIRECT TO button, when:
- A DIR TO temporary flight plan exists
- The cursor is in the ND window.

Ident.: DSC-31-CDS-40-40-100-10-00000917.0001001 / 22 APR 14

CANCEL BUTTON

L12



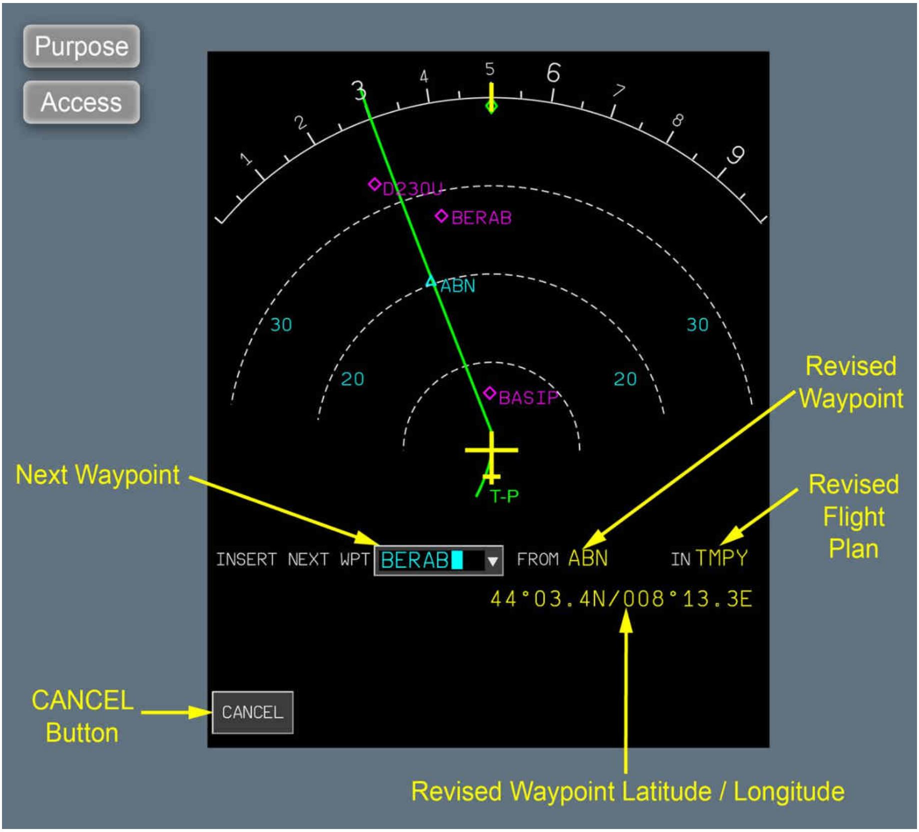
When clicked, closes the DIRECT TO ND page, and displays the flight plan on the ND.
Appears when no temporary flight plan is on standby.

INSERT NEXT WPT

Applicable to: ALL

Ident.: DSC-31-CDS-40-40-100-20-00000903.0001001 / 22 APR 14

INSERT NEXT WPT


Purpose
Access
1
2
3
4
5
6
7
8
9
D230U
BERAB
ABN
30
30
20
20
BASIP
T-P
Next Waypoint
Revised Waypoint
Revised Flight Plan
CANCEL Button
CANCEL
Revised Waypoint Latitude / Longitude

INSERT NEXT WPT BERAB FROM ABN IN TMPY

44°03.4N/008°13.3E

Ident.: DSC-31-CDS-40-40-100-20-00000919.0001001 / 22 APR 14

PURPOSE

The flight crew uses the insert next waypoint (INSERT NEXT WPT) revision to insert a waypoint after a revised waypoint.

The flight crew can insert:
- A flight plan waypoint
- Any navigation database waypoint, airport, or navaid
- A latitude/longitude (LL), a Place/Bearing/Distance (PBD), a Place-Bearing/Place-Bearing (PB/PB), or a Place/Distance (PD) waypoint.

L2 *Note:*
- *A PD waypoint, with a negative distance (example: LMG/-15), is inserted "before" the revised waypoint*
- *The "place" waypoint must be the revised waypoint*
- *The distance to the PD waypoint is limited, so that the PD waypoint cannot be located before(after) the waypoint that precedes(follows) the revised waypoint.*

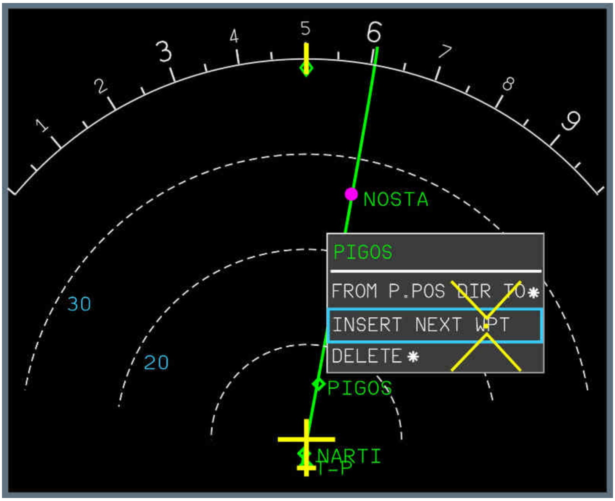
L1 For more information about the INSERT NEXT WPT function, *Refer to DSC-22-FMS-10-40-20 Purpose*.

Ident.: DSC-31-CDS-40-40-100-20-00000921.0001001 / 22 APR 14

ACCESS

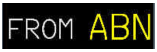
The flight crew can access the INSERT NEXT WPT revision of the ND with the selection of the INSERT NEXT WPT option from any interactive element of the flight plan.

INSERT NEXT WPT Revision



Ident.: DSC-31-CDS-40-40-100-20-00000922.0001001 / 22 APR 14

REVISED WAYPOINT



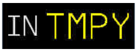
FROM ABN

Indicates the waypoint from which the flight crew selected the INSERT NEXT WPT revision.

Appears:
- In green, when the waypoint is part of the active flight plan, or
- In yellow, when the waypoint is part of the temporary flight plan.

Ident.: DSC-31-CDS-40-40-100-20-00000923.0001001 / 22 APR 14

REVISED FLIGHT PLAN

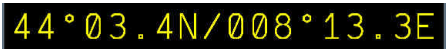


IN TMPY

Indicates that the revised waypoint is part of the temporary flight plan. Appears when the revised flight plan is the temporary flight plan.

Ident.: DSC-31-CDS-40-40-100-20-00000924.0001001 / 22 APR 14

REVISED WAYPOINT LATITUDE/LONGITUDE



44°03.4N/008°13.3E

Indicates the latitude and longitude of the revised waypoint, unless the revised waypoint is the FROM waypoint.

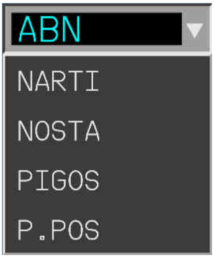
Appears:
- In green, when the waypoint is part of the active flight plan, or
- In yellow, when the waypoint is part of the temporary flight plan.

Ident.: DSC-31-CDS-40-40-100-20-00000926.0001001 / 22 APR 14

NEXT WAYPOINT

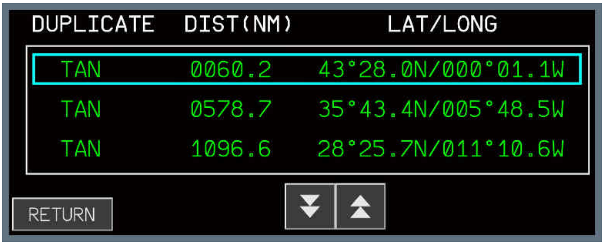
To select the next waypoint, the flight crew can:

- Click on any element displayed on the ND, or on a blank area of the ND to create a latitude/longitude waypoint
- Choose an element from the next waypoint list displayed in the lower part of the ND



- Type the ident of the target waypoint in the entry field displayed in the lower part of the ND. If several elements have the same ident, the flight crew can choose the appropriate target waypoint from a list that indicates the latitude and longitude of each element.

DUPLICATE Page



DUPLICATE	DIST(NM)	LAT/LONG
TAN	0060.2	43°28.0N/000°01.1W
TAN	0578.7	35°43.4N/005°48.5W
TAN	1096.6	28°25.7N/011°10.6W

Ident.: DSC-31-CDS-40-40-100-20-00000927.0001001 / 22 APR 14

CANCEL BUTTON

L12

When clicked, closes the DIRECT TO ND page, and displays the flight plan on the ND.
Appears when no temporary flight plan is on standby.

DELETE

Applicable to: ALL

Ident.: DSC-31-CDS-40-40-100-30-00000904.0001001 / 22 APR 14

PURPOSE

The flight crew uses the DELETE revision:

- To remove a waypoint from the flight plan
- To insert a discontinuity.

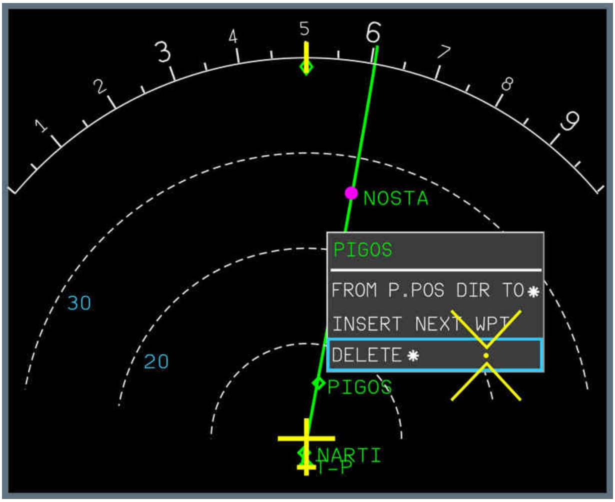
For more information about the DELETE function, *Refer to DSC-22-FMS-10-40-20 Purpose*.

Ident.: DSC-31-CDS-40-40-100-30-00000928.0001001 / 22 APR 14

ACCESS

The flight crew can access the DELETE revision of the ND with the selection of the DELETE * option from any interactive element of the flight plan.

DELETE Revision


1
2
3
4
5
6
7
8
9
NOSTA
30
20
PIGOS
FROM P.POS DIR TO ✱
INSERT NEXT WPT
DELETE ✱
PIGOS
NARTI
T-P

DATA

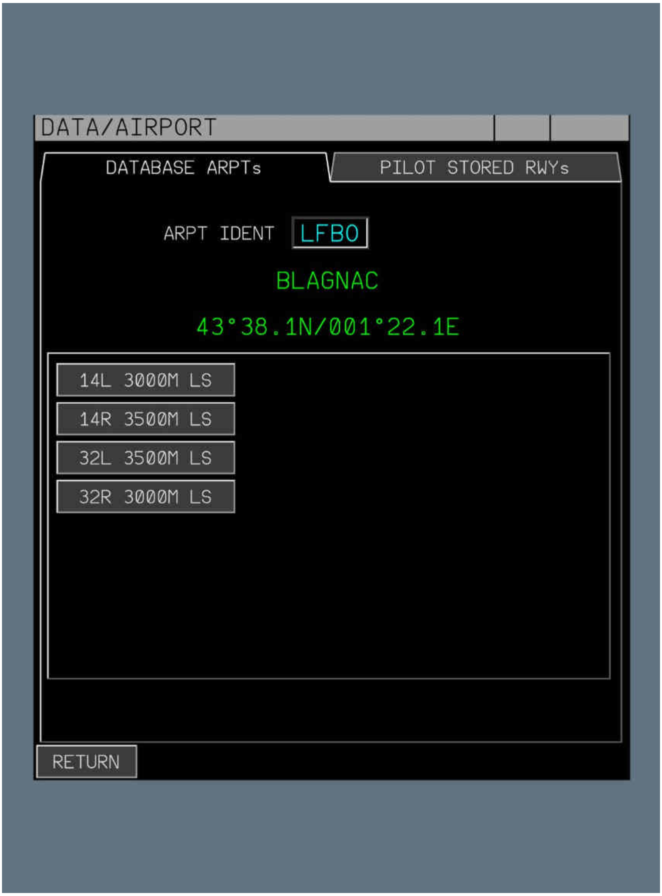
Applicable to: ALL

Ident.: DSC-31-CDS-40-40-100-40-00000906.0001001 / 22 APR 14

PURPOSE

The flight crew can display the DATA/AIRPORT page on the MFD with the selection of the DATA option from any airport in the flight plan, or in the navigation database.

ARPTs Panel of the DATA/AIRPORT Page



DATA/AIRPORT

DATABASE ARPTs
PILOT STORED RWYs

ARPT IDENT LFBO

BLAGNAC

43°38.1N/001°22.1E

14L 3000M LS
14R 3500M LS
32L 3500M LS
32R 3000M LS
RETURN

For more information about the DATA/AIRPORT page of the FMS, *Refer to DSC-22-FMS-20-20-20 DATA/AIRPORT Page*.

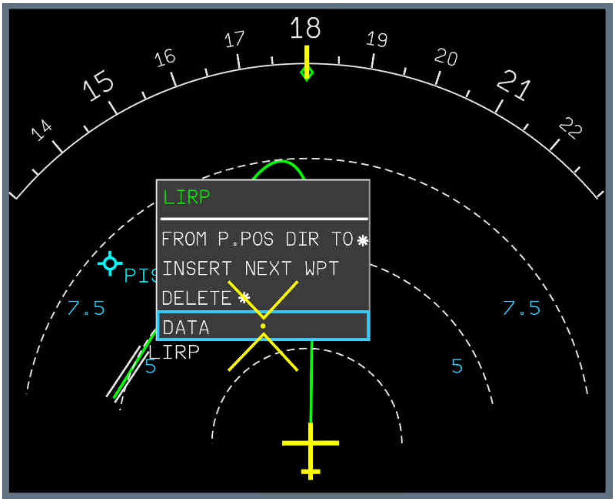
Ident.: DSC-31-CDS-40-40-100-40-00000929.0001001 / 22 APR 14

ACCESS

The flight crew can access the DATA option of the ND with the selection of the DATA option from any airport in:

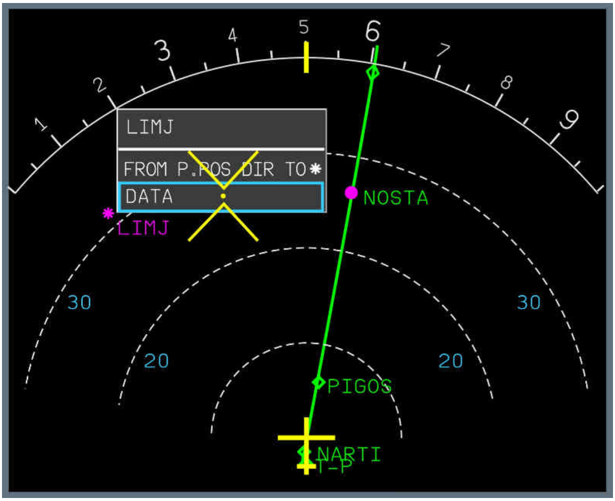
- The flight plan, or

Flight Plan Airport


14
15
16
17
18
19
20
21
22
LIRP
FROM P.POS DIR TO ✱
INSERT NEXT WPT
DELETE ✱
DATA
PIS
LIRP
7.5
5
7.5
5

- The navigation database.

Navigation Database Airport


3
4
5
6
7
8
9
1
2
LIMJ
FROM P.POS DIR TO✱
DATA
✱LIMJ
NOSTA
30
30
20
20
PIGOS
NARTI
T-P

INSERT OR ERASE TMPY

Applicable to: ALL

Ident.: DSC-31-CDS-40-40-100-50-00000907.0001001 / 22 APR 14

PURPOSE

The flight crew can insert or erase the temporary flight plan that is displayed on the ND.

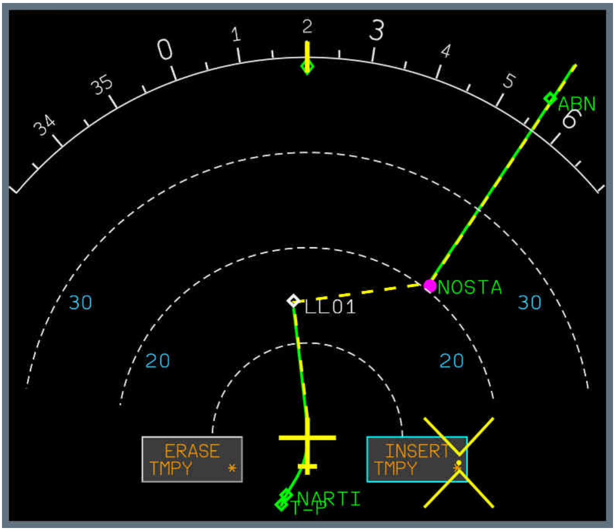
Note: *The ND displays the INSERT and ERASE buttons only when the cursor is in the ND.*

Ident.: DSC-31-CDS-40-40-100-50-00000930.0001001 / 22 APR 14

ACCESS

The flight crew can use the INSERT or ERASE functions with a click on the appropriate button.

INSERT or ERASE TMPY


34
35
0
1
2
3
4
5
6
ABN
30
30
NOSTA
LL01
20
20
ERASE TMPY *
INSERT TMPY *
NARTI
T-P

Intentionally left blank

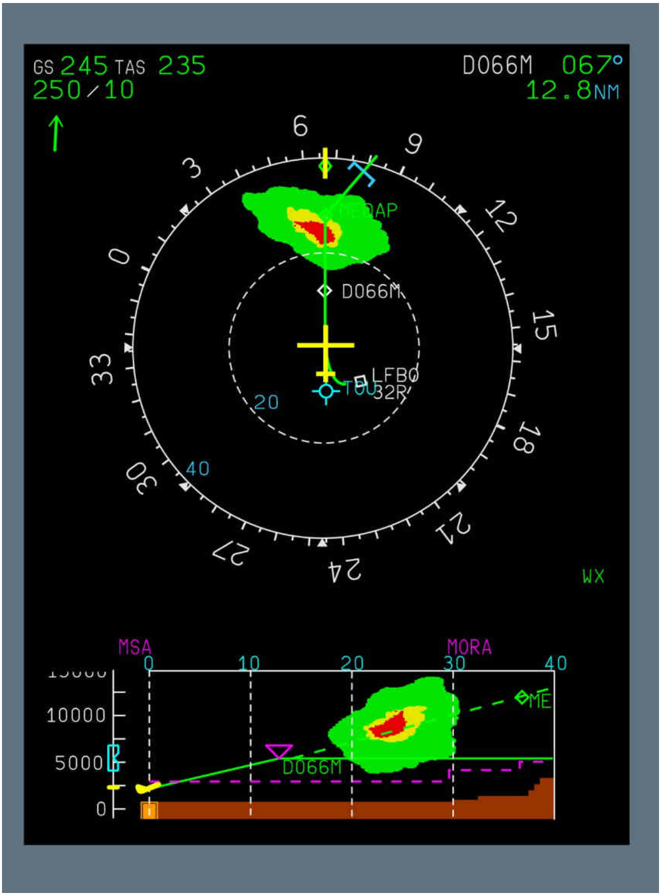
Weather

WEATHER

Ident.: DSC-31-CDS-40-40-110-00000978.0001001 / 22 APR 14
Applicable to: ALL

The ND displays weather information, when the flight crew sets the WX pb to on via the EFIS CP.
The weather display on the ND is available in ARC mode and in all ROSE modes.
For more information, *Refer to DSC-34-SURV-30-20 ND*.

Weather Display


GS 245 TAS 235
250 / 10
D066M 067°
12.8NM
6
9
3
12
0
15
33
18
30
21
27
24
MEDAP
D066M
LFBO
TOU
32R
20
40
WX
MSA
MORA
0
10
20
30
40
15000
10000
5000
0
D066M
ME

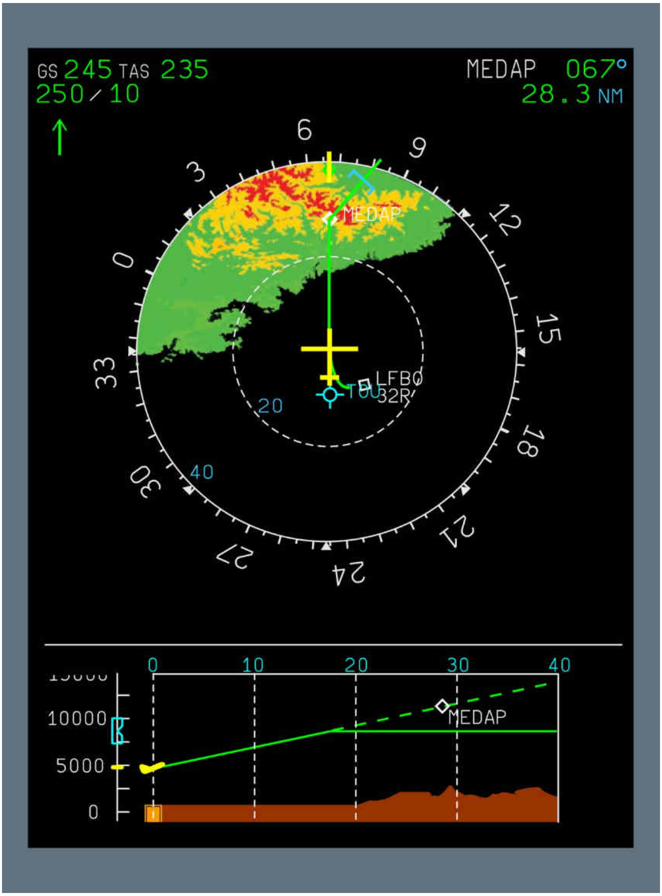
Terrain

TERRAIN

Ident.: DSC-31-CDS-40-40-120-00000979.0001001 / 22 APR 14
Applicable to: ALL

The ND displays terrain information, when the flight crew presses the TERR pb on the EFIS CP. For more information about the TAWS, *Refer to DSC-34-SURV-20-20 ND*.

Terrain Display


GS 245 TAS 235
250 / 10
MEDAP 067°
28.3 NM
6
9
3
12
0
15
33
18
30
21
27
24
MEDAP
LFBO
TOU
32R
20
40
0
10
20
30
40
10000
5000
0
MEDAP

Intentionally left blank

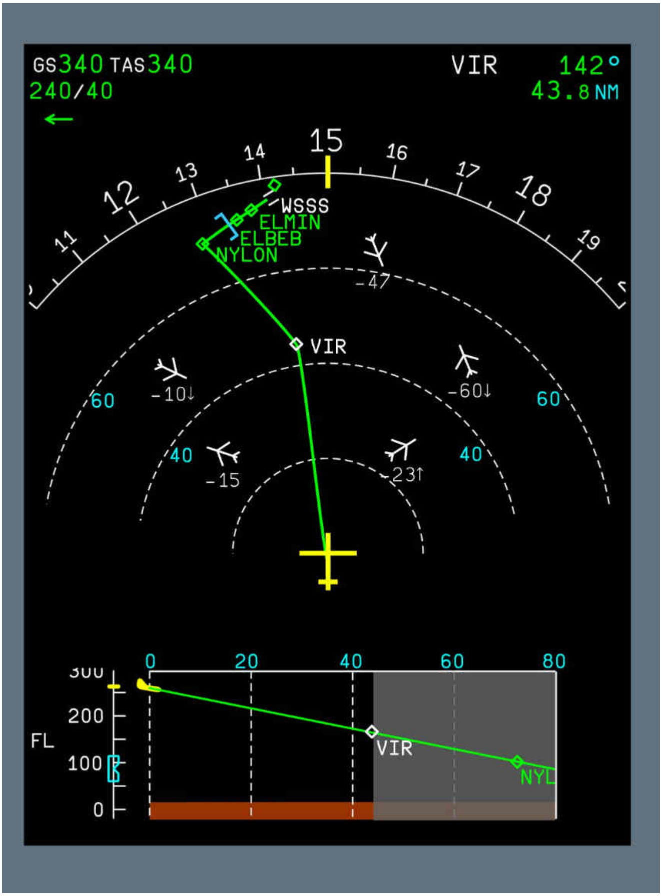
Traffic

TRAFFIC

Ident.: DSC-31-CDS-40-40-130-00000981.0001001 / 22 APR 14
Applicable to: ALL

The ND displays traffic information, when the flight crew presses the TRAF pb on the EFIS CP. For more information, *Refer to DSC-34-SURV-40-20 ND*.

Traffic Display


GS340 TAS340
240/40
VIR
142°
43.8NM
11
12
13
14
15
16
17
18
19
WSSS
ELMIN
ELBEB
NYLON
-47
VIR
-10↓
-60↓
60
60
40
40
-15
-23↑
300
200
FL
100
0
0
20
40
60
80
VIR
NYL

Intentionally left blank

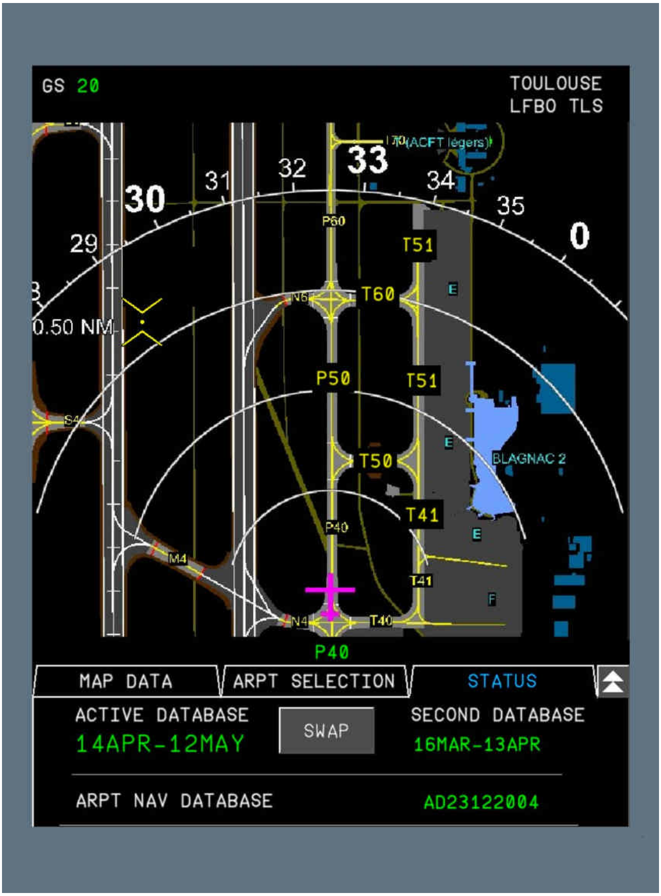
Airport Navigation

AIRPORT NAVIGATION

Ident.: DSC-31-CDS-40-40-140-00000982.0001001 / 22 APR 14
Applicable to: ALL

The Airport Navigation Function (ANF) provides the flight crew with a better awareness of the aircraft location in the airport area. The ND displays the airport moving map when the flight crew sets the range selector to ZOOM on the EFIS CP. The flight crew uses the keyboard and the KCCU to interact with the airport navigation display. For more information, *Refer to DSC-34-NAV-80-10 General*.

Airport Navigation


GS 20
TOULOUSE
LFBO TLS
29
30
31
32
33
34
35
0
3
0.50 NM
(ACFT légers)
P60
T51
T60
N6
P50
T51
S4
T50
E
E
E
BLAGNAC 2
T41
P40
M4
T41
F
N4
T40
P40
MAP DATA
ARPT SELECTION
STATUS
SWAP

ACTIVE DATABASE 14APR-12MAY

SECOND DATABASE 16MAR-13APR

ARPT NAV DATABASE AD23122004

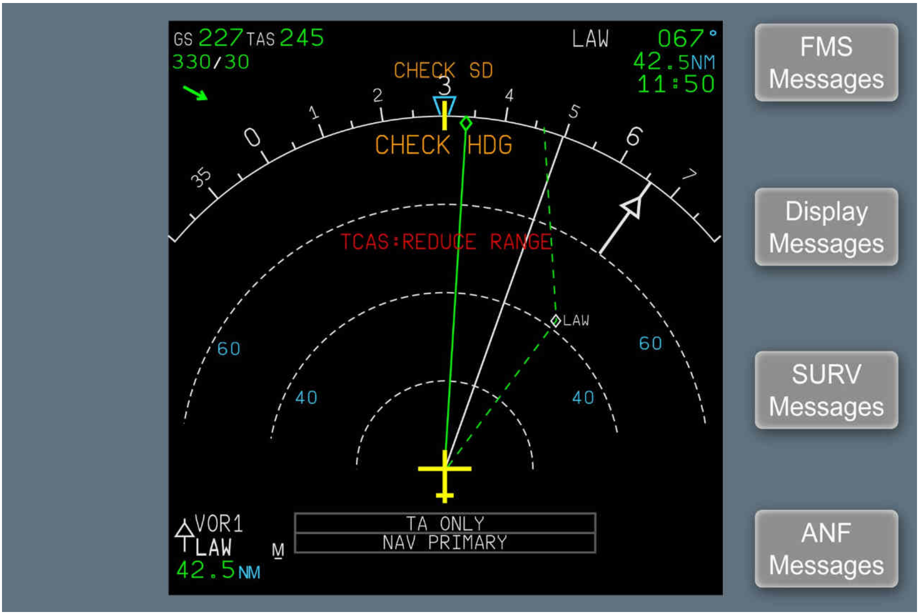
ND Messages

ND MESSAGES

Applicable to: ALL

Ident.: DSC-31-CDS-40-40-150-10-00019170.0001001 / 22 APR 14

ND Messages


GS 227 TAS 245
330/30
LAW
067°
42.5NM
11:50
CHECK SD
CHECK HDG
TCAS:REDUCE RANGE
LAW
60
60
40
40
VOR1
LAW
42.5NM
M
TA ONLY
NAV PRIMARY
FMS Messages
Display Messages
SURV Messages
ANF Messages

Ident.: DSC-31-CDS-40-40-150-10-00019820.0001001 / 22 APR 14

FMS MESSAGES

AREA RNP X.XX	Appears during an RNP AR approach if: - There is no RNP value stored in the navigation database for the current leg - The flight crew did not manually enter an RNP value for the current leg. In this case, the RNP value is the FMS default RNP value.
CHECK NORTH REF	For more information, *Refer to DSC-22-FMS-20-90 CHECK NORTH REF*.

FMS PAGE NOT AVAIL	At least one active FMC failed or the two FMS operate in independent mode during an RNP AR approach. Appears instead of the FMS dialog box, at the bottom of the ND page. For more information about the display conditions of this message, *Refer to DSC-22-FMS-40 Abnormal Operation*.
LEG RNP X.XX	Appears during an RNP AR approach when: - The RNP value for the current leg is available in the navigation database - The flight crew did not manually enter an RNP value for the current leg.
MAN RNP X.XX	Appears during an RNP AR approach when the flight crew manually entered an RNP value for the current leg.

L12

MAP PARTLY DISPLAYED	Appears in ARC, ROSE-NAV, or PLAN mode: - If the data transmission between the FMS and the CDS is not complete, or - If the CDS cannot provide the entire map. The FMS or the CDS provides the MAP PARTLY DISPLAYED message.
NAV ACCUR DOWNGRADED	For more information, *Refer to DSC-22-FMS-20-90 NAV ACCUR DOWNGRADED*.
NAV ACCUR UPGRADED	For more information, *Refer to DSC-22-FMS-20-90 NAV ACCUR UPGRADED*.
NAV PRIMARY	For more information, *Refer to DSC-22-FMS-20-90 NAV PRIMARY*.
NAV PRIMARY LOST	For more information, *Refer to DSC-22-FMS-20-90 NAV PRIMARY LOST*.
RNP AR CAPABILITY LOST	The two FMS operate in independent mode during an RNP AR approach. For more information, *Refer to DSC-22-FMS-40 INDEPENDENT Mode*.
SELECT TRUE NORTH REF	For more information, *Refer to DSC-22-FMS-20-90 SELECT TRUE NORTH REF*.
SPECIF VOR-D NOT AVAIL	For more information, *Refer to DSC-22-FMS-20-90 SPECIF VOR-D NOT AVAIL*.

Ident.: DSC-31-CDS-40-40-150-10-00019821.0001001 / 29 JUL 14

DISPLAY MESSAGES

BACKUP TRAJ	Indicates that the BACKUP TRAJ is active. Appears when the CDS required inputs from at least two FMCs are lost. For more information about the BACKUP TRAJ activation condition, *Refer to DSC-22-FMS-40 Abnormal Operation*. For more information about the ND display when in BACKUP TRAJ, *Refer to DSC-31-CDS-40-40-90 BACKUP TRAJ*.
L12	
CHECK CAPT(F/O) INR DU	The CDS detects erroneous data displayed on the CAPT(F/O) inner DU. Temporarily flashes, then remains steady.
L12	
CHECK CAPT(F/O) OUTR DU	The CDS detects erroneous data displayed on the CAPT(F/O) outer DU. Temporarily flashes, then remains steady.
L12	
CHECK CTR LWR DU	The CDS detects erroneous data on the center lower DU. Temporarily flashes, then remains steady.
L12	
CHECK CTR LWR DU & F/O HUD	The CDS detects a discrepancy between the data displayed on the center lower DU and the F/O HUD. Temporarily flashes, then remains steady.
L12	
CHECK CTR UPPR DU	The CDS detects erroneous data displayed on the center upper DU. Temporarily flashes, then remains steady.
L12	
CHECK CTR UPPR DU & CAPT HUD	The CDS detects a discrepancy between the data displayed on the center upper DU and the data displayed on the CAPT HUD. Temporarily flashes, then remains steady.

L12

CHECK HDG	Appears in ARC or ROSE mode, if the CDS detects a discrepancy between the heading parameters of the CAPT EFIS and the F/O EFIS. The CDS detects a discrepancy, if the difference between the two headings exceeds: - 5 ° in TRUE North reference - 7 ° in MAG North reference. Temporarily flashes, then remains steady. For more information about the warning and the procedure associated with the CHECK HDG message, *Refer to PRO-ABN-NAV NAV CAPT & F/O HDG DISAGREE*.
MAP NOT AVAIL	Appears if: - ND MODE CHANGE or ND RANGE CHANGE appears for more than 6 s, or - The aircraft true heading is not valid, or - One active FMC or two FMCs failed. For more information about the display conditions of this message related to an FMC failure, *Refer to DSC-22-FMS-40 Abnormal Operation*.
ND MODE CHANGE	Appears when the flight crew changes the ND mode, and the new display is being prepared.
ND RANGE CHANGE	Appears when the flight crew changes the ND range, and the new display is being prepared.

L12

NO AZIM IN PLAN	Appears when: - The flight crew selects the manual AZIM mode of the SURV system - The ND is in PLAN mode. *Note:* *The AZIM mode is not available in PLAN mode.*
OFFSIDE FM CONTROL	Appears in ARC, ROSE-NAV, or PLAN mode, when the offside FMS supplies the ND. When the FMS selector is set to BOTH ON 1(2), the active FMC on the CAPT(F/O) side provides data to the flight management interfaces of both sides. For more information about the display when BOTH ON1(2) is selected, *Refer to DSC-22-FMS-20-70 FMS Selector*.

Ident.: DSC-31-CDS-40-40-150-10-00019822.0001001 / 17 NOV 17

SURV MESSAGES

AUTO RANGE / MODE	For more information about this message in the case of a TAWS alert, *Refer to DSC-34-SURV-20-20 AUTO RANGE/MODE Message*. For more information about this message in the case of a WXR alert, *Refer to DSC-34-SURV-30-20 WXR and RANGE/MODE Messages*.
ELEVN FLXXX	For more information, *Refer to DSC-34-SURV-30-20 WXR Messages*.
GAIN XXX%	For more information, *Refer to DSC-34-SURV-30-20 WXR Messages*.
MAP	For more information, *Refer to DSC-34-SURV-30-20 WXR Messages*.
OBST	For more information, *Refer to DSC-34-SURV-20-20 TAWS Messages*.
OBST	For more information, *Refer to DSC-34-SURV-20-20 TAWS Messages*.
OBST AHEAD	For more information, *Refer to DSC-34-SURV-20-20 TAWS Messages*.
OBST AHEAD	For more information, *Refer to DSC-34-SURV-20-20 TAWS Messages*.
PRED W/S	For more information, *Refer to DSC-34-SURV-30-20 WXR Messages*.
TA ONLY	For more information, *Refer to DSC-34-SURV-40-20 TCAS Messages*.
TCAS	For more information, *Refer to DSC-34-SURV-40-20 TCAS Messages*.
TCAS:CHANGE MODE	For more information, *Refer to DSC-34-SURV-40-20 ND Setting Messages*.
TCAS:CHANGE MODE	For more information, *Refer to DSC-34-SURV-40-20 ND Setting Messages*.
TCAS:INCREASE RANGE	For more information, *Refer to DSC-34-SURV-40-20 ND Setting Messages*.
TCAS:INCREASE RANGE	For more information, *Refer to DSC-34-SURV-40-20 ND Setting Messages*.

TCAS:REDUCE RANGE	For more information, *Refer to DSC-34-SURV-40-20 ND Setting Messages*.
TCAS:REDUCE RANGE	For more information, *Refer to DSC-34-SURV-40-20 ND Setting Messages*.
TCAS STBY	For more information, *Refer to DSC-34-SURV-40-20 TCAS Messages*.
TCAS STBY	For more information, *Refer to DSC-34-SURV-40-20 TCAS Messages*.
TCAS TEST	For more information, *Refer to DSC-34-SURV-40-20 TCAS Messages*.
TERR	For more information, *Refer to DSC-34-SURV-20-20 TAWS Messages*.
TERRAIN	For more information, *Refer to DSC-34-SURV-20-20 TAWS Messages*.
TERRAIN	For more information, *Refer to DSC-34-SURV-20-20 TAWS Messages*.
TERRAIN AHEAD	For more information, *Refer to DSC-34-SURV-20-20 TAWS Messages*.
TERRAIN AHEAD	For more information, *Refer to DSC-34-SURV-20-20 TAWS Messages*.
TERR:CHANGE MODE	For more information, *Refer to DSC-34-SURV-20-20 ND Setting Messages*.
TERR:CHANGE MODE	For more information, *Refer to DSC-34-SURV-20-20 ND Setting Messages*.
TERR:INCREASE RANGE	For more information, *Refer to DSC-34-SURV-20-20 ND Setting Messages*.
TERR:INCREASE RANGE	For more information, *Refer to DSC-34-SURV-20-20 ND Setting Messages*.
TERR INOP	For more information, *Refer to DSC-31-SURV-20-20 TAWS Messages*.
TERR:REDUCE RANGE	For more information, *Refer to DSC-34-SURV-20-20 ND Setting Messages*.
TERR:REDUCE RANGE	For more information, *Refer to DSC-34-SURV-20-20 ND Setting Messages*.
TERR SYS OFF	For more information, *Refer to DSC-34-SURV-20-20 TAWS Messages*.

TERR TST	For more information, *Refer to DSC-34-SURV-20-20 TAWS Messages*.
TILT ±XX.X°	For more information, *Refer to DSC-34-SURV-30-20 WXR Messages*.
TURB	For more information, *Refer to DSC-34-SURV-30-20 WXR Messages*.
WEATHER AHEAD	For more information, *Refer to DSC-34-SURV-30-20 WXR and RANGE/MODE Messages*.
WX	For more information, *Refer to DSC-34-SURV-30-20 WXR Messages*.
WX GND CLUT	Appears if the WXR anticlutter function is not available.
WXR DEGRADED	For more information, *Refer to DSC-34-SURV-30-20 WXR Messages*.
WXR INOP	For more information, *Refer to DSC-34-SURV-30-20 WXR Messages*.
WXR OFF	For more information, *Refer to DSC-34-SURV-30-20 WXR Messages*.
W/S:CHANGE MODE	For more information, *Refer to DSC-34-SURV-30-20 ND Setting Messages*.
W/S:CHANGE MODE	For more information, *Refer to DSC-34-SURV-30-20 ND Setting Messages*.
W/S:INCREASE RANGE	For more information, *Refer to DSC-34-SURV-30-20 ND Setting Messages*.
W/S:INCREASE RANGE	For more information, *Refer to DSC-34-SURV-30-20 ND Setting Messages*.
W/S:SET RNG 10 NM	For more information, *Refer to DSC-34-SURV-30-20 ND Setting Messages*.
W/S:SET RNG 10 NM	For more information, *Refer to DSC-34-SURV-30-20 ND Setting Messages*.
WXR TEST	For more information, *Refer to DSC-34-SURV-30-20 WXR Messages*.

Ident.: DSC-31-CDS-40-40-150-10-00019823.0001001 / 22 APR 14

ANF MESSAGES

RWY AHEAD	For more information, *Refer to DSC-34-NAV-80-20 Runway Approaching Advisory*.

Intentionally left blank

VD

Applicable to: ALL

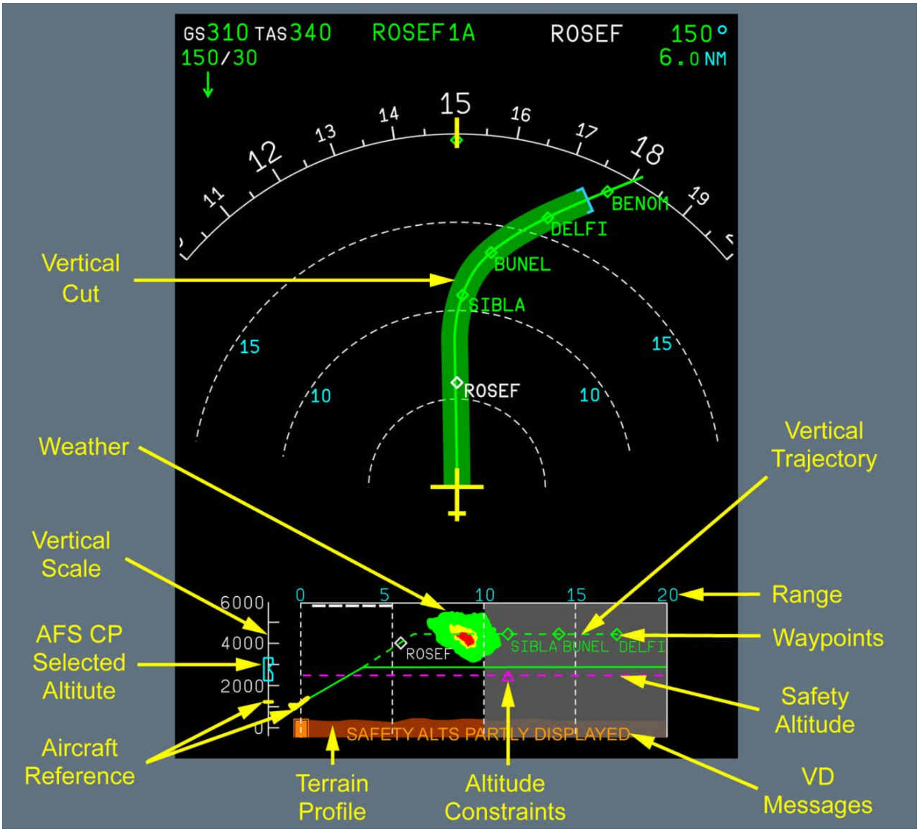
Ident.: DSC-31-CDS-40-50-10-00000985.0001001 / 02 OCT 14

The Vertical Display (VD) provides the flight crew with an overview of the vertical position of the aircraft. The VD is a secondary means of navigation, that increases the flight crew's awareness of the aircraft vertical location.
The VD is located below the Navigation Display (ND).
The VD is only available in ARC and ROSE-NAV modes.
When the flight crew sets the EFIS CP RANGE selector to ZOOM, the Airport Navigation Function (ANF) appears on the ND and covers the vertical display area too. For more information about the ANF, *Refer to DSC-34-NAV-80-10 General*.

The VD provides the current aircraft position, in relation to:
- The predicted vertical trajectory (with its associated waypoints and altitude constraints)
- Safety altitudes
- The weather
- The terrain profile.

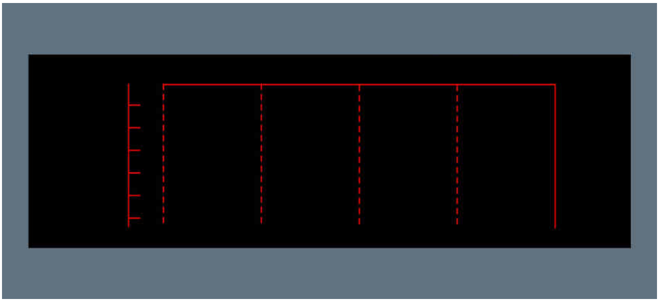
L2 *Note:* *The VD update occurs after the computations of the FMS, and may last a few seconds longer than the ND update.*

Vertical Display


GS310 TAS340
ROSEF1A
ROSEF
150°
150/30
6.0NM
11
12
13
14
15
16
17
18
19
BENOM
DELFI
BUNEL
SIBLA
ROSEF
15
10
10
15
Vertical Cut
Weather
Vertical Scale
AFS CP Selected Altitute
Aircraft Reference
Vertical Trajectory
Range
Waypoints
Safety Altitude
VD Messages
Terrain Profile
Altitude Constraints
6000
4000
2000
0
0
5
10
15
20
ROSEF
SIBLA
BUNEL
DELFI
SAFETY ALTS PARTLY DISPLAYED

If the input data that the VD requires is not valid, the VD frame is displayed in red:

Data not Valid



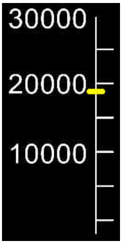
Ident.: DSC-31-CDS-40-50-10-00000987.0001001 / 22 APR 14

VERTICAL SCALE

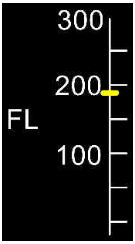
The FMS defines the origin of the vertical scale, in order to display:

- The aircraft symbol
- Most of the aircraft trajectory.

The altitude increment and the magnitude of the vertical scale depend on the selected horizontal range. The unit of the vertical scale values depends on the barometric reference in use (QNH or STD). For more information about the barometric reference selection, *Refer to DSC-31-CDS-40-60 Barometric Reference*.



The vertical scale is displayed in feet (ft) when the flight crew selects a QNH barometric setting.



The vertical scale is displayed in flight levels (FL) when the flight crew selects a STD barometric setting.

L3 The magnitude of the vertical scale cannot exceed 70 000 ft or FL 700, and cannot be less than 1 500 ft.
The vertical scale is associated with the ND range that the flight crew selects on the EFIS CP. The diagonal of the VD is equal to a 4 ° slope.

Ident.: DSC-31-CDS-40-50-10-00000989.0001001 / 02 OCT 14

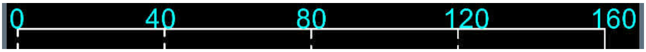
RANGE

The VD range is adjusted in accordance with the ND range that the flight crew selects on the EFIS CP.

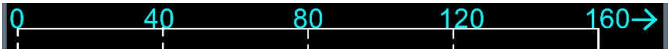
The VD range is limited to 160 NM and:
- In ARC mode, the VD range is equal to the ND range
- In ROSE-NAV mode, the VD range is half the ND range, because the VD only shows the area ahead of the aircraft.

For more information about the ND range selection, *Refer to DSC-31-CDS-40-60 ND Range Sel*.
The aircraft mock-up is the origin of the horizontal scale.

For example:
- In ARC mode, the flight crew selects 160 NM, via the ND range selector, or
- In ROSE-NAV mode, the flight crew selects 320 NM, via the ND range selector.



- In ARC mode, the flight crew selects 320 NM or 640 NM, via the ND range selector, or
- In ROSE-NAV mode, the flight crew selects 640 NM via the ND range selector.

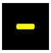


Ident.: DSC-31-CDS-40-50-10-00000990.0001001 / 22 APR 14

AIRCRAFT REFERENCE

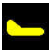
L3 The CDS computes the aircraft reference.
L1 The aircraft reference indicates the current barometric altitude of the aircraft.

ALTITUDE SYMBOL



Indicates the aircraft altitude on the vertical scale.

AIRCRAFT MOCK-UP



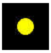
Appears when the flight crew selects the AUTO AZIM mode of the SURV system.
The aircraft mock-up is adjusted in accordance with the pitch attitude of the aircraft, the angle-of-attack, and the flight path angle.

L2 *Note:* *The aircraft mock-up may no longer appear on the VD scale, when the aircraft descends, and the altitude target set on the AFS CP is too high.*

L1

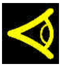
PITCH ATTITUDE NOT VALID

L12



Indicates the aircraft altitude on the vertical scale, when the pitch attitude of the aircraft is not valid. In addition, the ATT flag appears in the middle of the VD.
The ATT flag temporarily flashes, then remains steady.

MANUAL AZIM MODE

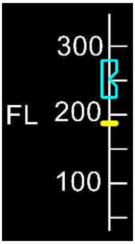


Appears when the flight crew selects the MANUAL AZIM mode of the SURV system.

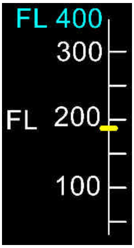
Ident.: DSC-31-CDS-40-50-10-00000992.0001001 / 22 APR 14

AFS CP SELECTED ALTITUDE

The altitude target that the flight crew selects on the AFS CP also appears on the vertical scale of the VD. For more information about the altitude target selection, *Refer to DSC-22-FG-90-20 Vertical Control*.

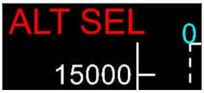


The altitude target that the flight crew selected on the AFS CP is within the vertical scale.



The altitude target that the flight crew selected on the AFS CP is outside the vertical scale.
In this case, the VD displays a numerical value instead. This value appears either at the top or at the bottom of the scale.

L12



The selected altitude is not available.
The ALT SEL message temporarily flashes, then remains steady.

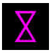
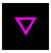
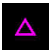
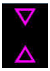
Ident.: DSC-31-CDS-40-50-10-00000993.0001001 / 22 APR 14

ALTITUDE CONSTRAINTS

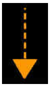
The VD displays altitude constraints that are defined in the active flight plan. For more information about altitude constraints, *Refer to DSC-22-FMS-10-40-30 Purpose*.

INDICATIONS IN THE DISPLAY ZONE

The VD displays the altitude constraints that will be complied with, with the following symbols:

-  The FMS predicts that the aircraft will comply with the constraint at this altitude.
-  The FMS predicts that the aircraft will comply with the constraint at or below this altitude.
-  The FMS predicts that the aircraft will comply with the constraint at or above this altitude.
-  The FMS predicts that the aircraft will comply with the constraint between these two altitudes.

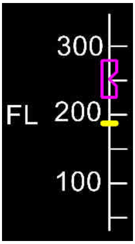
The same symbols appear in white, when the altitude constraint is ignored.
In selected mode, the FMS can no longer predict if the aircraft will comply with the altitude constraints. In this case, the VD displays the constraint symbol in white.



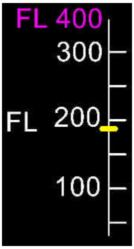
The FMS predicts that the aircraft will not comply with the constraint.
The constraint symbol is prolonged with a dotted amber line. This helps the flight crew to identify the missed constraint, even when the symbol is not in the VD window.

INDICATIONS ALONG THE VERTICAL SCALE

Altitude constraints are also indicated along the vertical scale of the VD, when the ALT CST*or ALT CST mode is engaged. The next altitude constraint that the aircraft will encounter is indicated as follows:

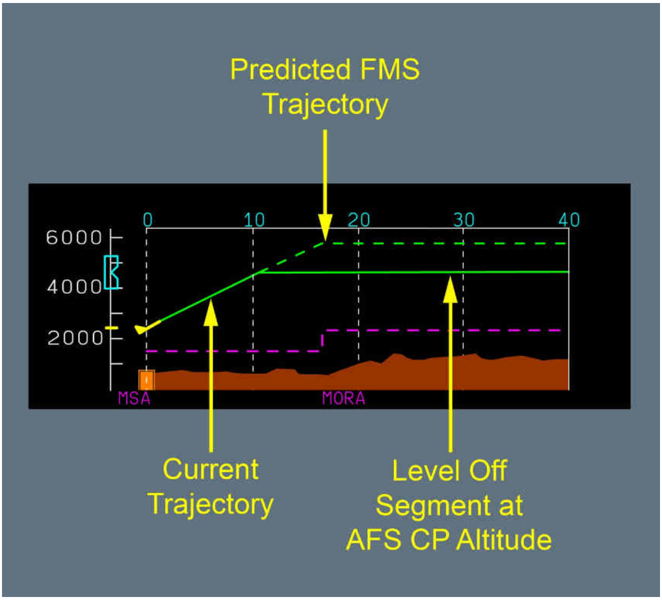


The altitude constraint is within the scale.



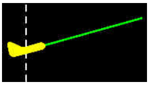
The altitude constraint is outside the scale. The value of the constraint is displayed instead of the symbol, at the top, or at the bottom of the scale.

VERTICAL TRAJECTORY


Predicted FMS Trajectory
0
10
20
30
40
6000
4000
2000
MSA
MORA
Current Trajectory
Level Off Segment at AFS CP Altitude

Vertical Trajectory

L123



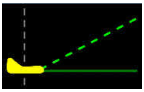
Indicates the trajectory the aircraft will fly, without any further action from the flight crew.

Appears when:
- The aircraft flies in managed mode, and follows the flight plan or the LS beam, or
- The aircraft flies with a selected vertical mode.

If the flight crew selects an altitude target on the AFS CP, the solid green line is intercepted by a level-off segment at this altitude, except in final descent, when G/S*, F-G/S*, G/S, or F-GS mode is engaged.

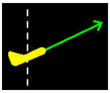
Note: *If the V/S mode is engaged, the solid green line takes into account the V/S value selected on the AFS CP. The FMS does not determine if the aircraft can achieve this vertical speed.*

L12



Indicates the predicted FMS trajectory that the aircraft will follow, if managed vertically.

Note: *On the ND, the green dotted line indicates the initial path, when the flight crew created an offset in the flight plan.*

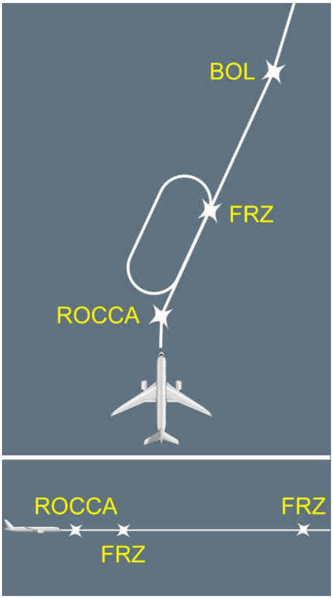


Indicates the current flight path angle of the aircraft.

Appears when:
- The aircraft does not follow the FMS trajectory or the selected trajectory, or
- The FMS predictions cannot be computed.

HOLDING PATTERN

L12

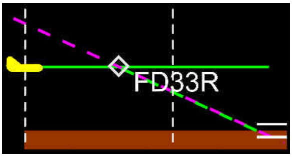


When the FMS takes into account the holding pattern in its predictions, the VD unfolds the holding trajectory.

FMS predictions take into account the holding pattern when:
- The deceleration point is flown in managed speed, or
- The entry fix is sequenced in selected speed mode.

FLS BEAM

L12



The magenta dashed line indicates the FLS beam.

Appears when:
- The flight crew selected an approach compatible with the FLS in the FMS
- The flight crew pressed the LS pb on the AFS CP
- The vertical cut is defined along the flight plan or along the LS axis
- The flight crew selected an ND range that is less than or equal to:
  - 80 NM in ARC mode, or
  - 160 NM in ROSE-NAV mode.

When the destination temperature entered in the APPR panel of the ACTIVE/PERF page of the MFD, is below the ISA temperature, the FLS beam is corrected.

If the anchor point is located at the runway threshold, the FMS displays the anchor point ident in magenta.

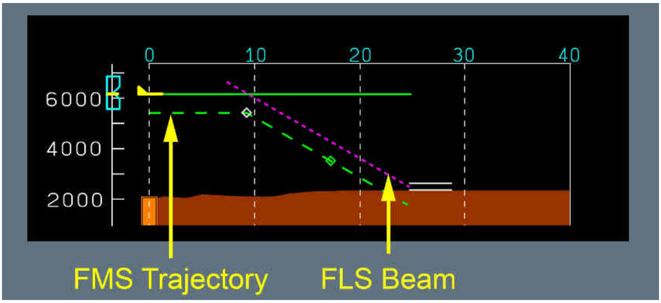
COLD WEATHER DISPLAY

In cold weather, the following information on the VD may not be consistent until the G/S* or the F-G/S* mode is engaged.

Before Glide Capture

When the destination temperature (entered in the APPR panel of the MFD PERF page) is below ISA, the FMS vertically offsets the FLS beam and runway symbols to maintain the vertical clearance with the ground. However, the FMS predicted path is not corrected for temperature deviation below ISA. As a consequence, the FMS descent path (in green) and the FLS beam (in magenta) will not be superimposed on the VD.
In addition, as per procedure, the flight crew is also requested to increase the altitude of the aircraft according to the temperature deviation below ISA. As a consequence, the VD will show a solid green line (corresponding to the corrected path of the aircraft) above the FMS predicted trajectory.

Cold Weather with FLS Function



After Glide Capture

During the glide capture, the FMS vertical trajectory is corrected according to the outside temperature. The FLS beam (if any), the FMS trajectory, the terrain, and the runway are correctly displayed.

Ident.: DSC-31-CDS-40-50-10-00000996.0001001 / 03 SEP 14

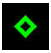
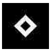
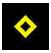
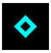
WAYPOINTS

The VD displays waypoints that are part of the active flight plan.

L2 If the G/S*, F-G/S*, G/S, or F-G/S mode is engaged, the FMS corrects the altitude of the destination waypoint according to the destination temperature that the flight crew enters in the APPR panel of the ACTIVE/PERF page.

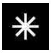
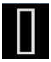
If the flight crew defines an offset in the flight plan, the VD displays the waypoints that are associated with the initial flight path (i.e. the flight path that is displayed in green dashes on the ND). However, the vertical cut considers the green solid line of the ND that is associated with the active flight plan.

L1 FLIGHT PLAN WAYPOINTS

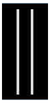
	Indicates a waypoint that is part of the active flight plan.
	Indicates: - The TO waypoint in the active flight plan, or - Any secondary flight plan waypoint.
	Indicates a waypoint that is part of the temporary flight plan.
	Indicates: - Any alternate flight plan waypoint, or - Any waypoint that is part of the missed approach procedure.

L2 At the destination airport, the VD displays the destination symbol instead of the waypoint symbol.
If the FMS predicts a waypoint and an altitude constraint to be at the same altitude, the VD only displays the altitude constraint symbol.

L1 ORIGIN AND DESTINATION WAYPOINTS

	The origin or destination waypoint is an airport, and the flight crew did not select a runway.
	The origin or destination waypoint is a runway, and the flight crew selected an ND range above, or equal to 160 NM.

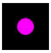
L12

	The origin or destination waypoint is a runway, and the flight crew selected an ND range below 160 NM. The dimension of the runway symbol is proportional to the actual runway length, and is adjusted according to the selected ND range.

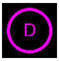
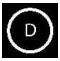
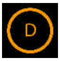
L2 The FMS corrects the altitude of the destination waypoint, in accordance with the destination temperature that the flight crew enters on the APPR panel of the ACTIVE/PERF page.

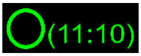
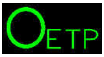
L1 PSEUDO WAYPOINTS

The VD displays the following types of pseudo waypoints:

	In NAV and managed speed modes, indicates the starting point of an acceleration or deceleration segment, as computed by the FMS. In HDG/TRACK and managed speed modes, indicates the point at which the flight crew must change the speed due to the speed limit, while maintaining the selected track.

L12

	Indicates the predicted start of an automatic deceleration, for an approach in a managed speed mode. Appears when: - NAV mode is engaged, or - NAV mode is armed, and the FMS predicts NAV mode engagement before the deceleration point.
	Indicates the predicted point at which the flight crew should start the deceleration, for an approach in a selected speed mode.
	The aircraft speed and/or altitude are too high to enable deceleration at the location of this point, while maintaining the approach vertical profile.

	Indicates the predicted location of the time marker along the F-PLN route. For more information about time markers, *Refer to DSC-22-FMS-10-80 Time Function*.
	Indicates the location of the Equi-Time Point (ETP) along the F-PLN route.

Ident.: DSC-31-CDS-40-50-10-00019829.0001001 / 02 OCT 14

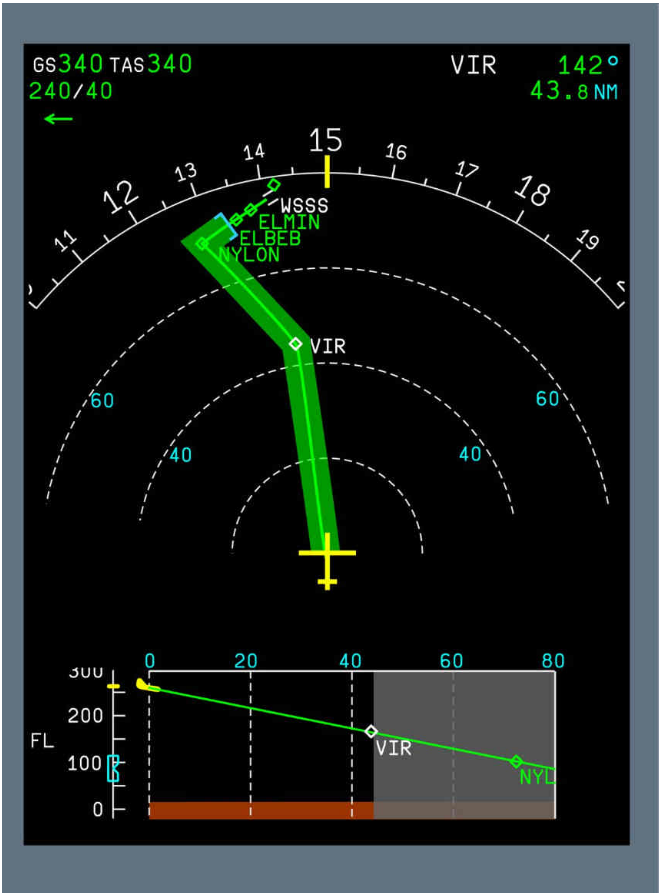
VERTICAL CUT

The vertical display takes into account a vertical cut along the aircraft trajectory or a selected azimuth, in order to display terrain, weather, and safety altitudes.

The vertical cut runs along:

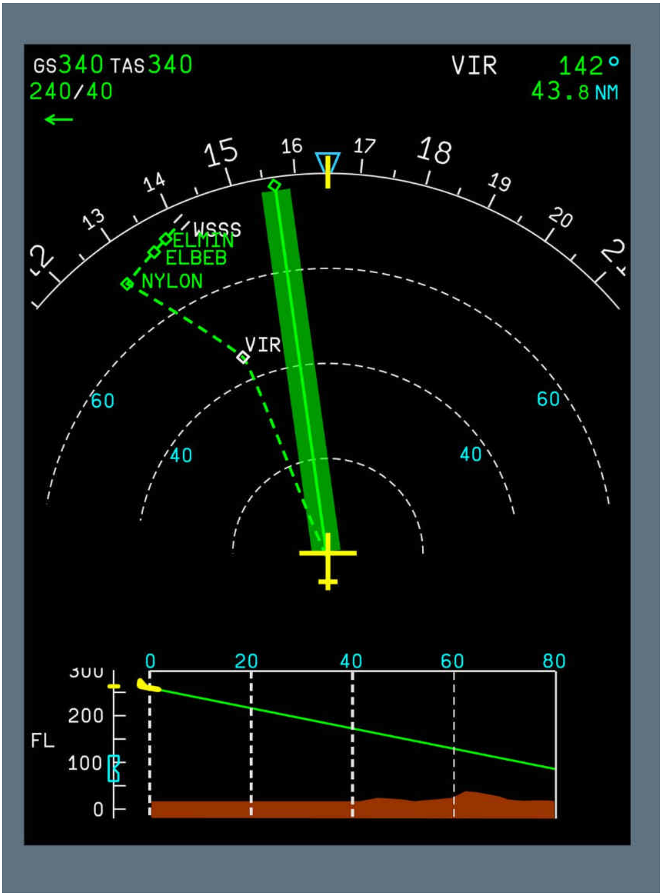
- The active flight plan or the LS beam, if the aircraft is in a managed mode, or

Vertical Cut Along the Flight Plan


GS340 TAS340
240/40
VIR 142°
43.8 NM
11
12
13
14
15
16
17
18
19
WSSS
ELMIN
ELBEB
NYLON
VIR
60
60
40
40
0
20
40
60
80
300
200
FL
100
0
VIR
NYL

- The current track, if the aircraft is in a selected mode or manually flown, or if the aircraft deviates from the flight plan, or

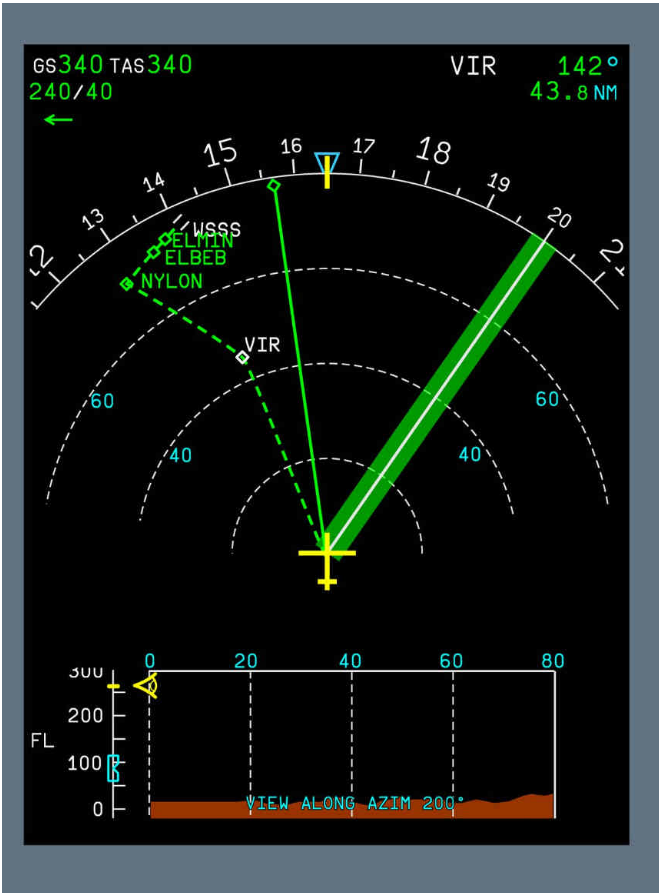
Vertical Cut Along the Track


GS340 TAS340
240/40
VIR
142°
43.8 NM
12
13
14
15
16
17
18
19
20
21
WSSS
ELMIN
ELBEB
NYLON
VIR
60
40
60
40
300
200
FL
100
0
0
20
40
60
80

- The azimuth line, if the flight crew selected the manual AZIM mode of the SURV system. For more information about the azimuth selection, *Refer to DSC-34-SURV-30-20 VD AZIM Knob*.

L2 In this case, the weather and the terrain displayed on the VD are limited to a range of 160 NM.

Vertical Cut Along the Selected Azimuth


GS340 TAS340
240/40
VIR
142°
43.8 NM
12
13
14
15
16
17
18
19
20
21
WSSS
ELMIN
ELBEB
NYLON
VIR
60
40
60
40
300
200
FL
100
0
0
20
40
60
80
VIEW ALONG AZIM 200°

There are different ways of determining the width of the vertical cut, for the terrain display and the safety altitudes:

- If the vertical cut is defined along the active flight plan, the width used for the safety altitudes and the terrain display is equal to:
  - Two times the maximum EPU or FMS RNP, on the active leg
  - Two times the predicted RNP, on the other legs of the flight plan.
- If the vertical cut is defined along the aircraft track, the width is equal to:
  - Two times the TAWS RNP, for the terrain display
  - Two times the maximum EPU or FMS RNP, for the safety altitudes display.
- If the vertical cut is defined along an azimuth, the width is equal to two times the TAWS RNP, for the terrain display.

L3 For more information about the EPU and the FMS RNP, *Refer to DSC-34-NAV-20-10-60 Position Accuracy and Navigation Accuracy*.

L2 The width of the vertical cut for the terrain display cannot exceed 10 NM.
For the weather display, the WXR system considers a zero-width vertical cut.

Ident.: DSC-31-CDS-40-50-10-00000997.0001001 / 22 APR 14

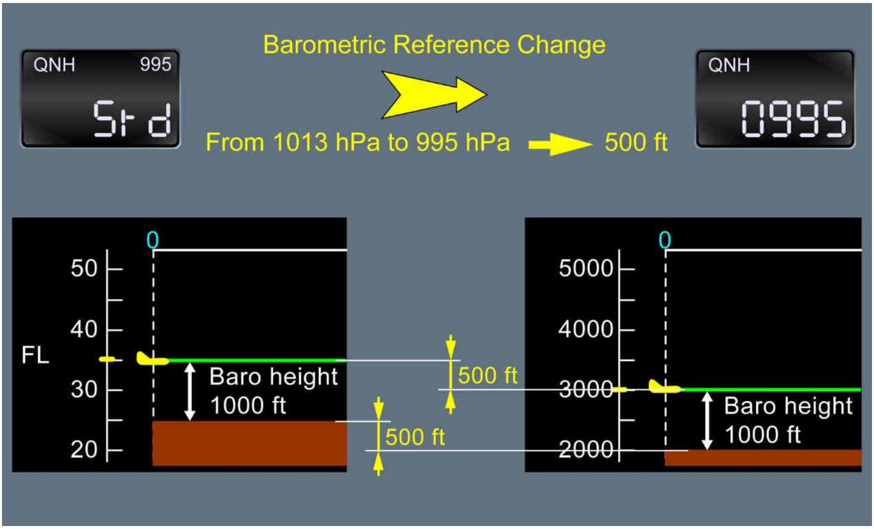
TERRAIN PROFILE

L3 The TAWS computes the terrain elevation profile, along the vertical cut.

L1 BAROMETRIC HEIGHT

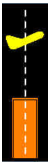
When the flight crew changes the barometric reference, the terrain profile is moved vertically, in order to keep the barometric height constant between the aircraft reference and the terrain profile.

Barometric Height


Barometric Reference Change
QNH 995
Std
From 1013 hPa to 995 hPa
500 ft
QNH
0995
0
50
40
FL
30
20
Baro height
1000 ft
500 ft
500 ft
0
5000
4000
3000
2000
Baro height
1000 ft

L2 *Note: In polar zones, the TAWS cannot compute the terrain profile.*

L1 **RADIO HEIGHT**



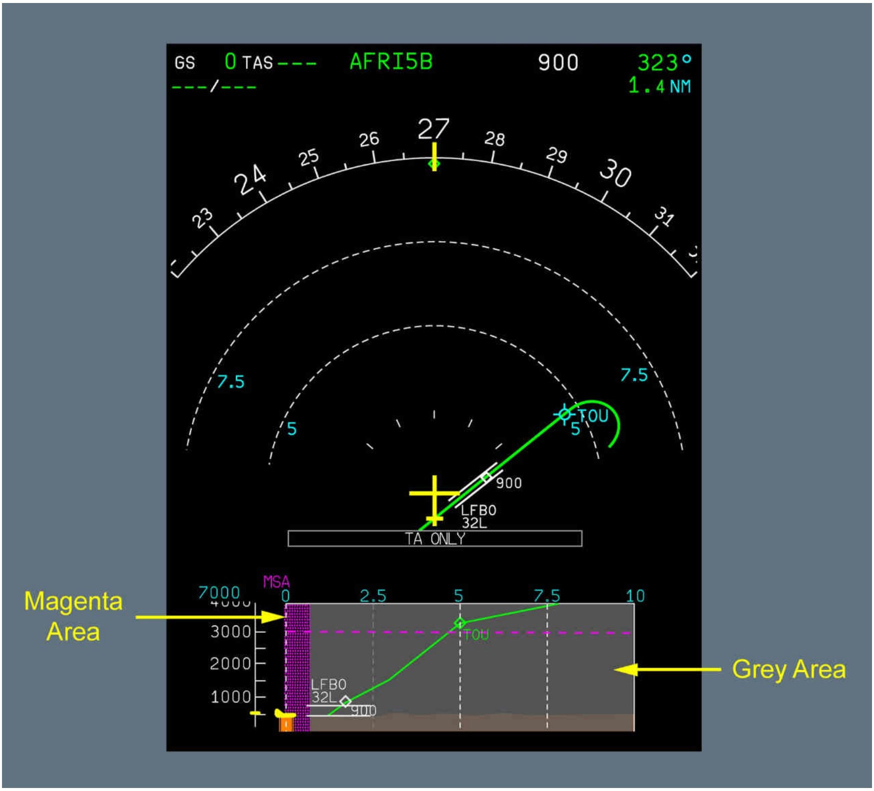
Indicates the actual height of the aircraft above ground, as measured by the RA.
Appears when the aircraft RA height is less than 5 000 ft.

GREY AND MAGENTA AREAS

When the aircraft follows the active flight plan, and the direction of the route differs from the current heading by more than 3 °, the corresponding area of the VD is greyed over. The terrain displayed in this grey area does not correspond to the terrain that is located directly ahead of the aircraft.
The magenta area indicates the area where the TAWS stops displaying the terrain on the VD.

L2 In some cases, the FMS may not be able to compute a continuous trajectory for the display on the ND. This creates a gap (sometimes not visible) on the flight plan that is displayed on the ND. However, this has no impact on the guidance. In this case, the SURV stops displaying the terrain and the weather on the VD ahead of the gap, up to the destination runway.

Grey and Magenta Areas


GS 0 TAS ---
---/---
AFRI5B
900
323°
1.4 NM
23
24
25
26
27
28
29
30
31
7.5
5
7.5
TOU
5
900
LFBO
32L
TA ONLY
Magenta Area
Grey Area
MSA
7000
0
2.5
5
7.5
10
3000
2000
1000
TOU
LFBO
32L
900

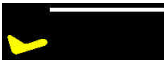
Ident.: DSC-31-CDS-40-50-10-00000998.0001001 / 15 MAY 14

WEATHER DISPLAY

L3 The WXR/PWS computes the weather display, along the vertical cut.

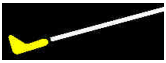
L1 The flight crew can press the WX pb on the EFIS CP to display the weather on the VD and the ND. The colors of the weather display are the same on the VD and the ND. The colors indicate the intensity of the precipitation (black, green, yellow, and red). Magenta indicates areas of turbulence, however these areas are not displayed on the VD. For more information about the color coding of the weather display, *Refer to DSC-34-SURV-30-20 ND*.

The flight crew can display the weather on the ND, according to a horizontal or oblique cut that is indicated on the VD as follows:



Indicates the altitude of the horizontal cut.

To select this altitude, the flight crew can:
- Pull the ELEVN knob on time on the WXR panel, or
- Use the ELEVN option on the CONTROLS page of the MFD.



Indicates the angle of the oblique cut.

To select this angle, the flight crew can:
- Pull the ELEVN knob two times on the ELEVN panel
- Use the TILT option on the CONTROLS page of the MFD.

L2 *Note: In polar zones, the WXR is not able to compute the weather display.*

Ident.: DSC-31-CDS-40-50-10-00000994.0001001 / 22 APR 14

SAFETY ALTITUDE

Safety altitudes are the minimum altitudes above which the aircraft can be safely operated.

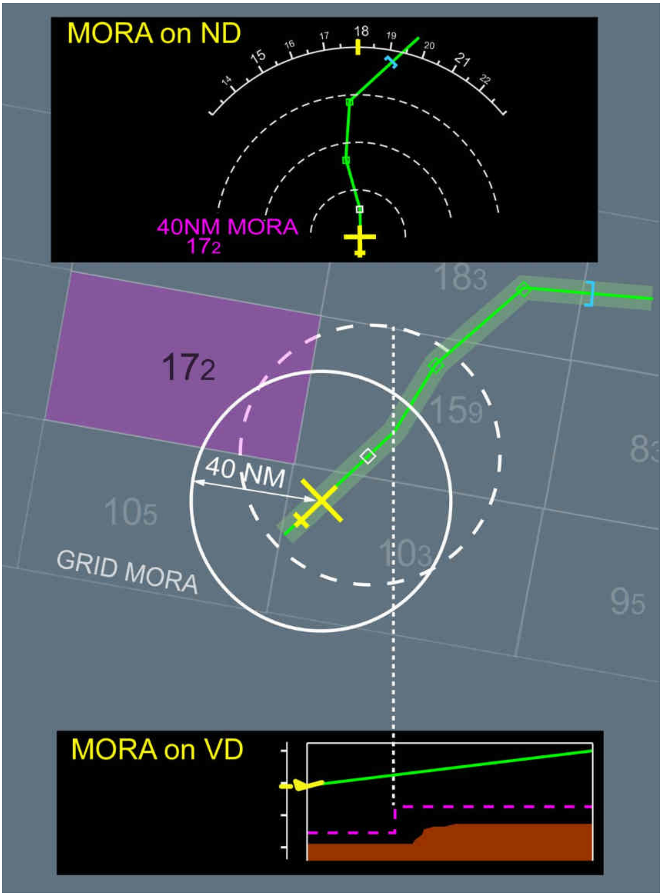
The FMS database provides the following safety altitudes:
- Grid MORAs, or
- MSAs.
  MSAs are only displayed when the flight crew selects a departure, or an arrival procedure (SID, TRANS, or APPR) in the FMS.

The FMS computes the safety altitudes along the aircraft trajectory, up to the VD range.

Note: Grid MORAs on the VD and on the charts may be slightly different, due to the fact that the grid used in the FMS navigation database may be smaller than the grid in the charts.

L2 Grid MORAs are also displayed on the ND. However, the ND displays the highest grid MORA within a circular area of 40 NM radius around the aircraft. For more information, *Refer to DSC-31-CDS-40-40-80 MORA or Offset*.

Safety Altitudes - Grid MORA


MORA on ND
14
15
16
17
18
19
20
21
22
40NM MORA
172
183
172
159
83
40 NM
105
103
GRID MORA
95
MORA on VD

L1 **SAFETY ALTITUDE PROFILE**

When the safety altitude value is within the vertical scale of the VD, the safety altitude profile is displayed on the VD, as a dashed magenta line.

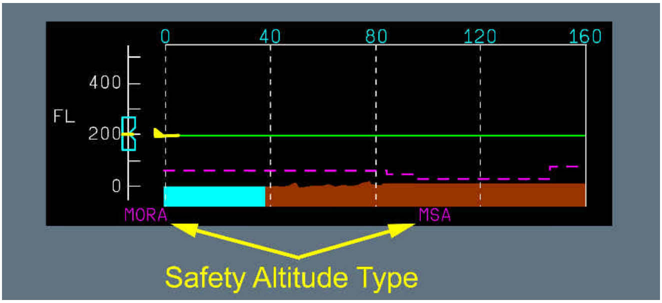
L2 When the barometric reference is STD, the safety altitude profile is only available when:
- The aircraft is within 100 NM of the departure airport, or
- The aircraft is within 100 NM of the destination airport, and the flight crew entered a QNH value in the FMS PERF/APPR page, or
- The aircraft is within 200 NM of the destination airport in DES or APPR phase, and the flight crew entered a QNH value in the FMS PERF/APPR page.

Safety altitudes are not available in manual AZIM mode, because they are only related to the flight path of the aircraft.

L1 Labels are displayed along the VD range in order to identify the type of safety altitude currently displayed (MORA or MSA).

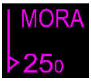
The MORA or MSA labels appear:
- At the top of the VD, when the aircraft is below the safety altitude, or
- At the bottom of the VD, when the aircraft is above the safety altitude.

Safety Altitude Type



When a part of the safety altitude profile goes beyond the vertical scale of the VD, the corresponding segments are not displayed. Only the value of the highest safety altitude is displayed instead.

SAFETY ALTITUDES OUTSIDE THE VD VERTICAL RANGE



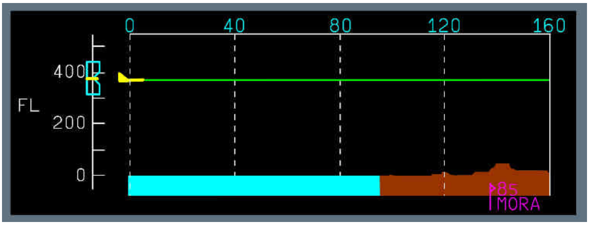
Appears when none of the safety altitudes is within the vertical scale of the VD.
Indicates the type and the value of the highest safety altitude along the VD range.

Appears on the:
- Upper part of the VD, when the aircraft is below the highest safety altitude, or
- Lower part of the VD, when the aircraft is above the highest safety altitude.

When the barometric reference is STD, the numerical value of the highest safety altitude is given in FL.

When the barometric reference is QNH, the numerical value of the highest safety altitude is given:
- In feet, when the safety altitude is an MSA, or
- In hundreds of feet, when the safety altitude is a MORA.

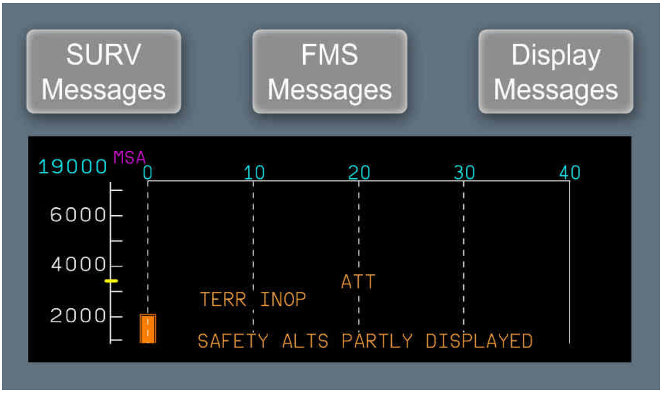
Safety Altitudes Outside the VD Vertical Range



Ident.: DSC-31-CDS-40-50-10-00019832.0001001 / 02 OCT 14

VD MESSAGES

VD Messages



ATT

TERR INOP

SAFETY ALTS PARTLY DISPLAYED

SURV MESSAGES

NO TERR AND WX DATA AVAILABLE	For more information, *Refer to DSC-34-SURV-20-20 TAWS Messages* or *Refer to DSC-34-SURV-30-20 WXR Messages*.
TERR INOP	For more information, *Refer to DSC-34-SURV-20-20 TAWS Messages*.
VIEW ALONG AZIM XXX	For more information, *Refer to DSC-34-SURV-20-20 TAWS Messages* or *Refer to DSC-34-SURV-30-20 WXR Messages*.
WXR INOP	For more information, *Refer to DSC-34-SURV-30-20 WXR Messages*.

FMS MESSAGES

SAFETY ALTS PARTLY DISPLAYED	Appears when the safety altitude type and/or numeric values are not available.
TRAJ NOT AVAIL	Appears when: - The VD MODE CHANGE or the VD RANGE CHANGE message is displayed for more than 6 s, or - The ground speed is not valid, or - The FMS trajectory is not available.

DISPLAY MESSAGES

L12

ATT	Appears if one of the following parameters is not valid: - The angle of attack, or - The flight path angle, or - The pitch angle. Temporarily flashes, then remains steady.
VD MODE CHANGE	Appears when the flight crew changes the ND mode, and the new display is being prepared.
VD RANGE CHANGE	Appears when the flight crew changes the ND range, and the new display is being prepared.

L13

VIEW ALONG ACFT TRK	Appears when the vertical cut for the VD is defined along the aircraft track, but the ND does not display a track line.

Note: *Appears:*

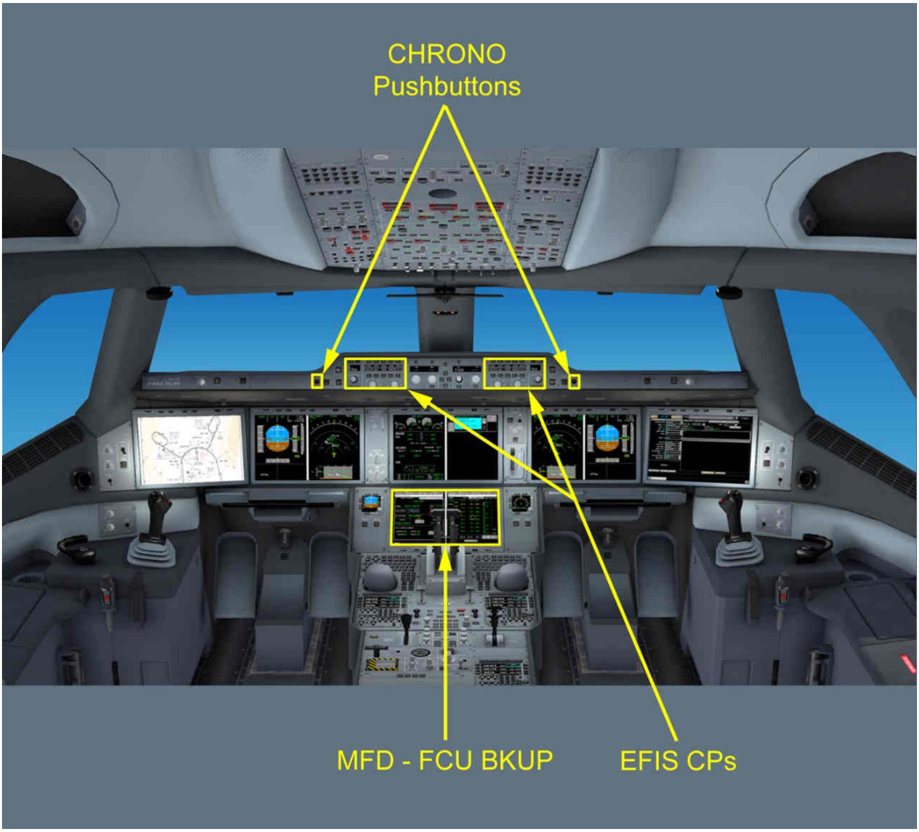
- *In managed mode, when the aircraft deviates from the flight plan or from the LS beam, or*
- *During the transition from HDG to LOC mode, or*
- *When the GA TRK mode is engaged, or*
- *When the aircraft flies a manual leg, or*
- *At takeoff, when there is no ILS associated with the runway.*
  In this case, the RWY mode does not engage, and the VD also displays the flight path arrow. The VD recovers the flight plan trajectory after a few seconds, when NAV, RWY, TRACK, or HDG mode is engaged.

Intentionally left blank

COCKPIT VIEW

Ident.: DSC-31-CDS-40-60-00001026.0001001 / 22 APR 14
Applicable to: ALL

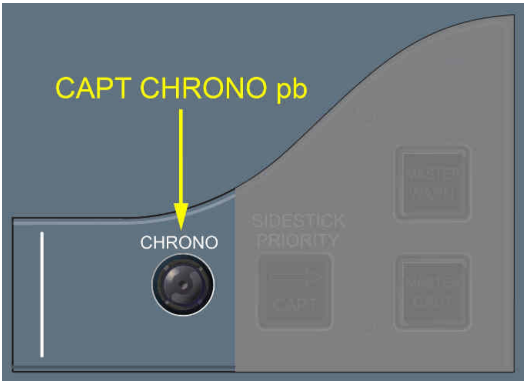
Cockpit View



The flight crew can access the EFIS CP backup from the MFD, at any moment, or if an EFIS CP failure occurs. For more information, *Refer to DSC-31-CDS-40-70 EFIS CP Backup Function*.

CHRONO PB

Ident.: DSC-31-CDS-40-60-00001028.0001001 / 22 APR 14
Applicable to: ALL



When pressed one time, the ND displays and starts the chronometer.
When pressed two times, the chronometer stops.
When pressed three times, the ND resets the chronometer, and the ND no longer displays the time.

EFIS CP

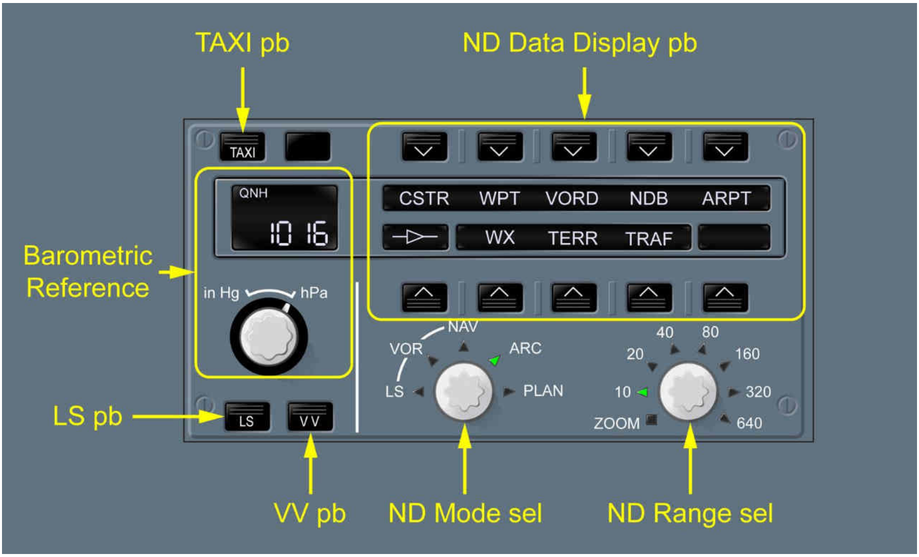
Applicable to: ALL

Ident.: DSC-31-CDS-40-60-10-00001027.0001001 / 03 SEP 14

There are two EFIS Control Panels (EFIS CPs):
- One on the Captain side
- One on the First Officer side.

Each EFIS CP is associated with the onside PFD and ND.

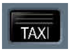
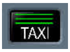
CAPT EFIS CP


TAXI pb
ND Data Display pb
TAXI
QNH
10 16
CSTR
WPT
VORD
NDB
ARPT
WX
TERR
TRAF
Barometric Reference
in Hg
hPa
NAV
VOR
ARC
LS
PLAN
40
80
20
160
10
320
ZOOM
640
LS pb
LS
V V
VV pb
ND Mode sel
ND Range sel

In the case of abnormal operations of the EFIS CP, the flight crew should use the FCU backup on the MFD. For more information, *Refer to DSC-31-CDS-40-70 EFIS CP Backup Function*.

Ident.: DSC-31-CDS-40-60-10-00001035.0001001 / 22 APR 14

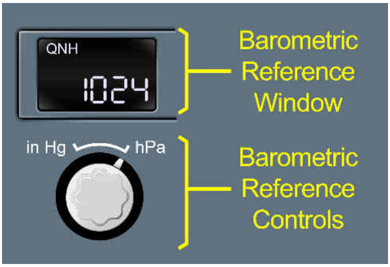
TAXI PB

	The onside PFD does not display the ETACS videos.
	The onside PFD displays the ETACS videos.

Ident.: DSC-31-CDS-40-60-10-00001036.0001001 / 22 APR 14

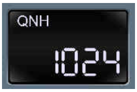
BAROMETRIC REFERENCE

Barometric Reference

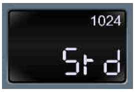

QNH
1024
in Hg
hPa
Barometric Reference Window
Barometric Reference Controls

BAROMETRIC REFERENCE WINDOW

L12



The barometric reference is set to QNH and the QNH value is 1 024 hPa.
The minimum QNH value that can be selected is 745 hPa (22.00 inHg) and the maximum is 1 100 hPa (32.48 inHg).

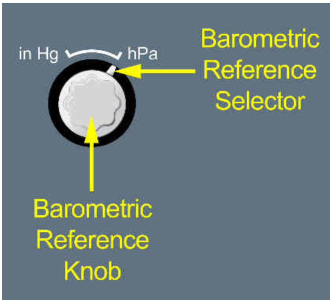


The barometric reference is set to STD.
If the flight crew selects the QNH barometric reference, the QNH is automatically set to the preset value, i.e. 1 024 hPa.

BAROMETRIC REFERENCE CONTROLS

The barometric reference controls have an outer selector, and an inner knob.

Barometric Reference Controls


in Hg
hPa
Barometric Reference Selector
Barometric Reference Knob

The flight crew uses the barometric reference selector to select the barometric unit (hectoPascal or inches of mercury).

L2 *Note: The PFDs and the VDs do not display the selected barometric unit.*

L1 The flight crew turns the barometric reference knob to select the QNH value.
The flight crew pulls or pushes the barometric reference knob to select the barometric reference (QNH or STD).
When the flight crew pushes the barometric reference knob, the barometric reference is set to STD. When in STD, the flight crew can turn the barometric reference knob to preset a QNH value.
When the flight crew pulls the barometric reference knob, the barometric reference is set to QNH.

L2 *Note: The selected QNH value appears in the barometric reference window, and under the altitude scale on the PFD.*

At the EFIS CP power-up, the barometric reference is QNH and the QNH value is set to 1 013 hPa or 29.92 inHg, depending on the selected barometric unit.

Ident.: DSC-31-CDS-40-60-10-00001038.0001001 / 07 MAY 18

VV PB

	The CAPT(F/O) PFD displays the Velocity Vector (VV).
	The CAPT(F/O) PFD does not display the VV.

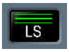
When TRK-FPA is selected, both PFDs automatically display the Flight Path Vector (FPV).
L3 When TRK-FPA is selected, pressing the VV pb has no effect: Both PFDs continue to display the FPV, and the VV light remains on.
L1 When HDG-V/S is selected, the PFDs do not automatically display the VV. However, to display the VV on their PFD, the Captain(First Officer) can press the VV pb.

The PFDs no longer display the FPV(VV), when:
- The flight crew changes from TRK-FPA to HDG-V/S
  For more information about the HDG-V/S / TRK-FPA selection, *Refer to DSC-22-FG-70-30-20 HDG-V/S / TRK-FPA Selection*.
- The flight crew performs a go-around.

Ident.: DSC-31-CDS-40-60-10-00001040.0001001 / 22 APR 14

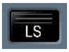
LS PB

L12



The CAPT(F/O) PFD displays the following landing system data in accordance with the approach selected on the FMS ARRIVAL page: Deviation scales, deviation signals, course pointer, information.
For more information about the landing system data, *Refer to DSC-31-CDS-40-20-110 Departure and Approach Guidance*.
If the flight crew selected an approach compatible with the FLS, the FMA displays the FLS capability, if the flight phase is descent or approach.
The FLS capability does not appear, if the NO FLS FOR THIS APPR message appeared on the MFD.

Note:
1. *If the direct distance to the destination airport is more than 300 NM, only the deviation scales appear.*
2. *The LS light automatically comes on when LOC, LOC B/C or F-LOC arms.*

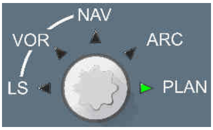


The CAPT(F/O) PFD does not display the landing system data.

Ident.: DSC-31-CDS-40-60-10-00001042.0001001 / 22 APR 14

ND MODE SEL

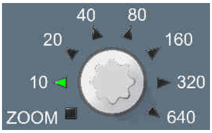
L12



For navigation purposes, the flight crew can select one of the following display modes:
- PLAN mode
  For more information, *Refer to DSC-31-CDS-40-40-30 PLAN Mode Overview*.
  If the flight crew selects the PLAN mode, the ND does not display terrain, weather, or traffic information.
- ARC mode
  For more information, *Refer to DSC-31-CDS-40-40-20 ARC Mode Overview*.
- ROSE-NAV mode
  For more information, *Refer to DSC-31-CDS-40-40-40 ROSE-NAV Mode Overview*.
- ROSE-VOR mode
  For more information, *Refer to DSC-31-CDS-40-40-50 ROSE-VOR Mode Overview*.
- ROSE-LS mode.
  For more information, *Refer to DSC-31-CDS-40-40-60 ROSE-LS Mode Overview*.

Ident.: DSC-31-CDS-40-60-10-00001044.0001001 / 22 APR 14

ND RANGE SEL



The ND range selector enables the flight crew to select the range of the ND and the VD.
For more information about the VD range, *Refer to DSC-31-CDS-40-50 Range*.

L2

In ARC mode, the ND range corresponds to the radius of the arc. In all ROSE modes and PLAN mode, the range corresponds to the diameter of the outer circle.

Thus, in order to keep constant the distance displayed ahead of the aircraft mock-up:
- The ND range is doubled when the flight crew changes the ND mode from ARC mode, to any ROSE mode or PLAN mode
- The ND range is divided by two when the flight crew changes the ND mode from any ROSE mode or PLAN mode, to ARC mode.

When the flight crew sets the ND range selector to ZOOM, the ND displays the airport moving map, and the VD is no longer available. For more information, *Refer to DSC-34-NAV-80-10 General*.

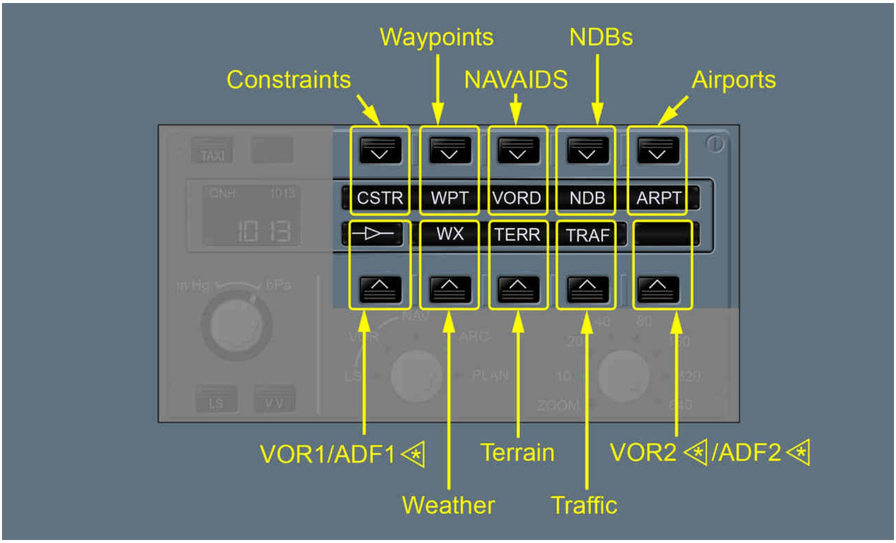
The ND can display the weather up to a range of 320 NM in ARC mode, and 640 NM in all ROSE modes.

Ident.: DSC-31-CDS-40-60-10-00001046.0004001 / 09 MAR 16

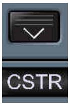
ND DATA DISPLAY

The flight crew can use the following pushbuttons to display the associated optional data on the ND and/or on the VD:

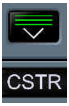
CAPT EFIS CP - ND Data Display


Waypoints
NDBs
Constraints
NAVAIDS
Airports
CSTR
WPT
VORD
NDB
ARPT
WX
TERR
TRAF
VOR1/ADF1
Terrain
VOR2/ADF2
Weather
Traffic

CONSTRAINTS



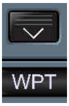
The ND does not display constraints.



The ND displays:

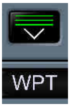
- The constraints associated with the flight plan waypoints
  Constraints consist in speed, altitude and time limitations. For more information, *Refer to DSC-31-CDS-40-40-80 Flight Plan Waypoints*.
- The Minimum Off Route Altitudes (MORA).
  When the flight crew selects a range that is less than 40 NM, the MORA value is no longer displayed on the ND. For more information, *Refer to DSC-31-CDS-40-40-80 MORA or Offset*.

WAYPOINTS



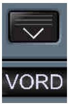
The ND does not display waypoints.

L12



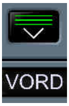
The ND displays all the waypoints stored in the navigation database and the pilot stored database.
The flight crew can only select one display at a time (WPT, VORD, or NDB ◁).

NAVAIDS



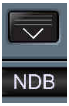
The ND does not display VORs and DMEs.

L12



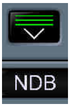
The ND displays all the VORs and DMEs stored in the navigation database and all the pilot stored navaids.
The flight crew can only select one display at a time (WPT, VORD, or NDB ◁).

NDBS ◁



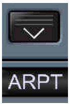
The ND does not display non-directional beacons.

L12

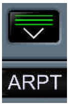


The ND displays all the NDBs stored in the navigation database.
The flight crew can only select one display at a time (WPT, VORD, or NDB).

AIRPORTS

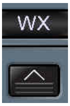


The ND does not display airports.



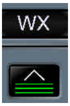
The ND displays all the airports stored in the navigation database, other than the origin or destination airports.

WEATHER



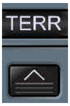
Neither the ND, nor the VD displays weather information.

L12



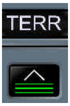
Both the ND and the VD display the weather.
The flight crew cannot display the weather and the terrain at the same time.
For more information, *Refer to DSC-34-SURV-30-20 ND*

TERRAIN



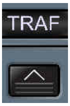
The ND does not display the terrain profile and the TAWS messages.

L12

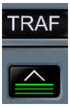


The ND displays the terrain profile and the TAWS messages.
The flight crew cannot display the weather and the terrain at the same time.
For more information, *Refer to DSC-34-SURV-20-20 ND*.

TRAFFIC

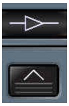


The ND does not display surrounding aircraft.

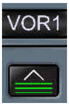


The ND displays all surrounding aircraft fitted with a transponder.
For more information, *Refer to DSC-34-SURV-40-20 ND*.

VOR1/ADF1 ◁

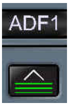


The ND does not display the VOR1 indications, nor the ADF1 indications.



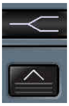
The ND displays the following elements associated with the selected VOR1:
- The VOR1 pointer
- The VOR1 station characteristics, on the lower left corner of the ND.

When pressed, the ND displays the ADF1 indications.

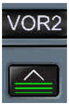


The ND displays the following elements associated with the selected NDB1:
- The ADF1 pointer
- The NDB1 station characteristics, on the lower left corner of the ND.

VOR2 ◁ /ADF2 ◁

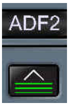


The ND does not display the VOR2 indications, nor the ADF2 indications.



The ND displays the following elements associated with the selected VOR2:
- The VOR2 pointer
- The VOR2 station characteristics, on the lower right corner of the ND.

When pressed, the ND displays the ADF2 indications.



The ND displays the following elements associated with the selected NDB2:
- The ADF2 pointer
- The NDB2 station characteristics, on the lower right corner of the ND.

MFD - AFS CONTROL PANEL PAGE

Ident.: DSC-31-CDS-40-60-00011337.0001001 / 22 APR 14
Applicable to: ALL

For more information, *Refer to DSC-22-FG-90-50 AFS CONTROL PAGE*.

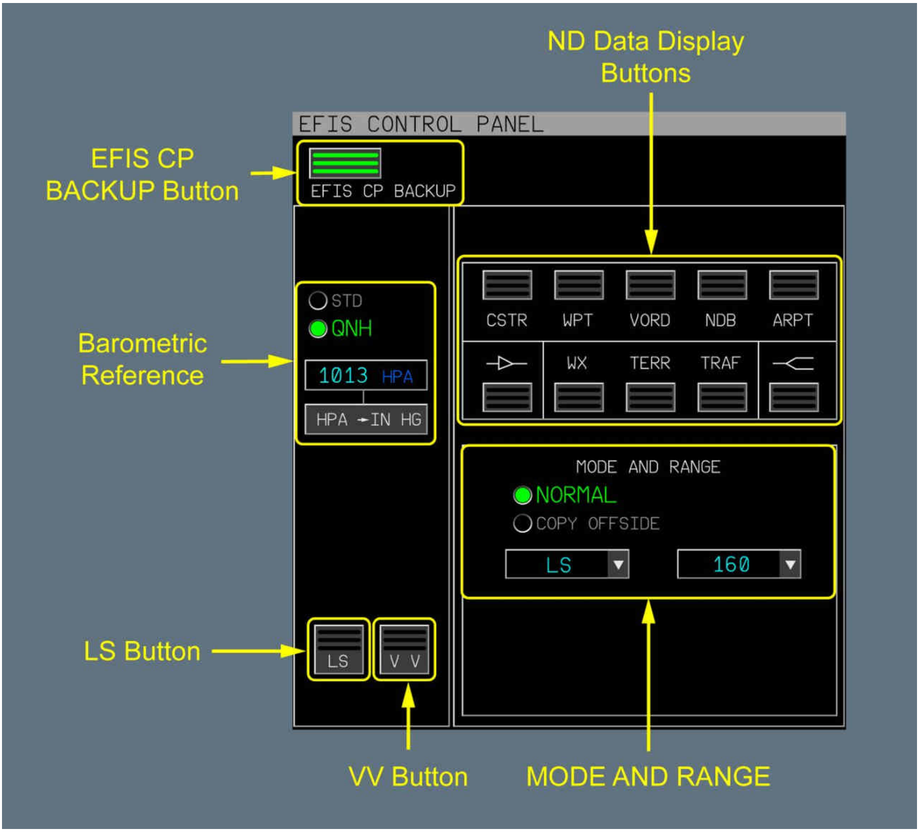
MFD - EFIS CONTROL PANEL PAGE

Applicable to: ALL

Ident.: DSC-31-CDS-40-60-30-00011335.0001001 / 22 APR 14

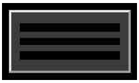
L2 The flight crew can access the EFIS CONTROL PANEL page of the FCU BKUP even if the EFIS CP is operative. The ND mode, ND range, and the barometric setting on the EFIS CP page are continuously updated in accordance with changes made on the EFIS CP.

EFIS CONTROL PANEL Page Overview


ND Data Display Buttons
EFIS CONTROL PANEL
EFIS CP BACKUP Button
EFIS CP BACKUP
○ STD
● QNH
1013 HPA
HPA ←IN HG
Barometric Reference
CSTR
WPT
VORD
NDB
ARPT
WX
TERR
TRAF
MODE AND RANGE
● NORMAL
○ COPY OFFSIDE
LS ▼
160 ▼
LS Button
LS
V V
VV Button
MODE AND RANGE

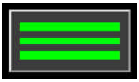
Ident.: DSC-31-CDS-40-60-30-00011555.0001001 / 22 APR 14

EFIS CP BACKUP BUTTON



The EFIS backup function is not active.
This is the default status.

L12



The CAPT(F/O) EFIS backup function is active.

- The CAPT(F/O) pressed the EFIS CP BACKUP, or
- The CAPT(F/O) pressed the FCU button (D6) on the left CKPT EQPT POWER SUPPLY, or
- The CAPT(F/O)'s EFIS CP is failed.

  Associated with one of the following alerts:
  - CDS CAPT (F/O) EFIS CTL PNL FAULT , when the CAPT(F/O) EFIS CP is failed
  - CDS CAPT+F/O EFIS CTL PNL FAULT, when both EFIS CPs are failed.

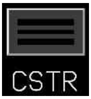
When the EFIS backup function is active:

- The last valid selections and values of the EFIS CP are recovered
- The corresponding CAPT(F/O) EFIS CP is not available, and the display is blank.

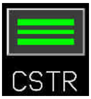
Ident.: DSC-31-CDS-40-60-30-00011557.0004001 / 09 MAR 16

ND DATA DISPLAY BUTTONS

CONSTRAINTS



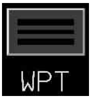
The ND does not display constraints.



The ND displays:

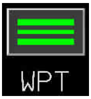
- The constraint associated with the flight plan waypoints
  Constraints are speed, altitude and time limitations. For more information, *Refer to DSC-31-CDS-40-40-80 Flight Plan Waypoints*.
- The Minimum Off Route Altitudes (MORA).
  If the flight crew selects a range that is less than 40 NM, the MORA value is no longer displayed on the ND. For more information, *Refer to DSC-31-CDS-40-40-80 MORA or Offset*.

WAYPOINTS



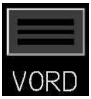
The ND does not display waypoints.

L12



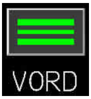
The ND displays all the waypoints that are stored in the navigation database and in the pilot stored database.
The flight crew can only select on display at a time (WPT, VORD, or NDB ◁✻).

NAVAIDS



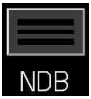
The ND does not display VORs and DMEs.

L12



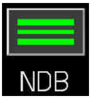
The ND displays all the VORs and DMEs of the navigation database and all the pilot stored NAVAIDS.
The flight crew can only select on display at a time (WPT, VORD, or NDB ◁✻).

NDB ◁✻



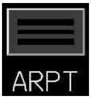
The ND does not display non-directional beacons.

L12

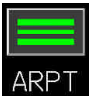


The ND displays all the non-directional beacons of the navigation database.
The flight crew can only select on display at a time (WPT, VORD, or NDB).

ARPT

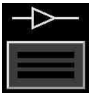


The ND does not display airports.

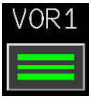


The ND displays all the airports of the navigation database, other than the origin or destination airports.

VOR1/ADF1 ◁

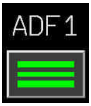


The ND does not display the VOR1 indications, nor the ADF1 indications.



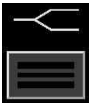
The ND displays the following VOR1 indications:
- The VOR1 pointer, on the heading scale
- The VOR1 station characteristics, on the lower left corner of the ND.

When pressed, the ND displays the ADF1 indications.

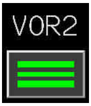


The ND displays the following ADF1 indications:
- The ADF1 pointer, on the heading scale
- The NDB1 station characteristics, on the lower left corner of the ND.

VOR2 ◁ /ADF2 ◁

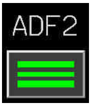


The ND does not display the VOR2 indications, nor the ADF2 indications.



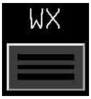
The ND displays the following VOR2 indications:
- The VOR2 pointer, on the heading scale
- The VOR2 station characteristics, on the lower right corner of the ND.

When pressed, the ND displays the ADF2 indications.



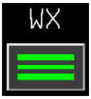
The ND displays the following ADF2 indications:
- The ADF2 pointer, on the heading scale
- The NDB2 station characteristics, on the lower left corner of the ND.

WEATHER



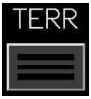
Neither the ND, nor the VD displays weather information.

L12



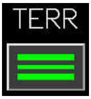
Both ND and VD display weather information.
The flight crew cannot display weather information and terrain at the same time.
For more information, *Refer to DSC-34-SURV-30-20 ND*.

TERRAIN



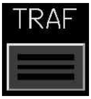
The ND does not display the terrain profile and the TAWS messages.

L12

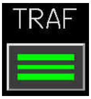


The ND displays the terrain profile and the TAWS messages.
The flight crew cannot display weather information and terrain at the same time.

TRAFFIC



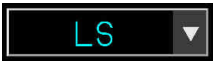
The ND does not display surrounding aircraft.



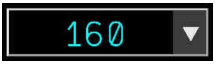
The ND displays all surrounding aircraft fitted with a transponder.
For more information, *Refer to DSC-34-SURV-40-20 ND*.

Ident.: DSC-31-CDS-40-60-30-00011558.0001001 / 22 APR 14

ND MODE AND RANGE



Indicates that the current ND mode is ROSE-LS.
The flight crew can select the ND mode via this field.



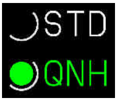
Indicates that the current ND range is 160 NM.
The flight crew can select the ND range via this field.

Ident.: DSC-31-CDS-40-60-30-00011560.0001001 / 22 APR 14

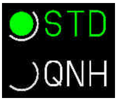
BAROMETRIC REFERENCE

L2 Contrary to the EFIS CP, the barometric reference preset is not available on the EFIS CONTROL PANEL page.

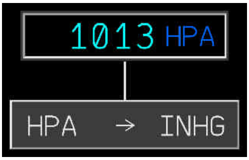
L1



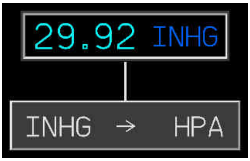
The barometric reference is set to QNH.



The barometric reference is set to STD.



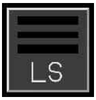
The barometric reference (QNH) is in hectopascal (HPA).
When pressed, changes to inches of mercury (INHG).



The barometric reference (QNH) is in inches of mercury (INHG).
When pressed, changes to hectopascal (HPA).

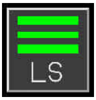
Ident.: DSC-31-CDS-40-60-30-00011563.0001001 / 22 APR 14

LS BUTTON



The CAPT(F/O) PFD does not display the landing system data.

L12

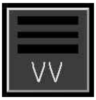


The CAPT(F/O) PFD displays the following landing system data in accordance with the approach selected on the FMS ARRIVAL page: Deviation scales, deviation signals, course pointer, information.
For more information about the landing system data, *Refer to DSC-31-CDS-40-20-110 Departure and Approach Guidance*.
If the flight crew selected an approach compatible with the FLS, the FMA display the FLS capability, if the flight phase is descent or approach.
The FLS capability does not appear if the NO FLS FOR THIS APPR message appeared on the MFD.

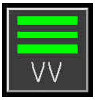
Note: 1. *If the direct distance to the destination airport is more than 300 NM, only the deviation scales appear.*
2. *The LS light automatically comes on when LOC, LOC B/C or F-LOC arms.*

Ident.: DSC-31-CDS-40-60-30-00011564.0001001 / 22 APR 14

VV BUTTON



The CAPT(F/O) PFD does not display the Velocity Vector (VV).



The CAPT(F/O) PFD displays the Velocity Vector (VV).

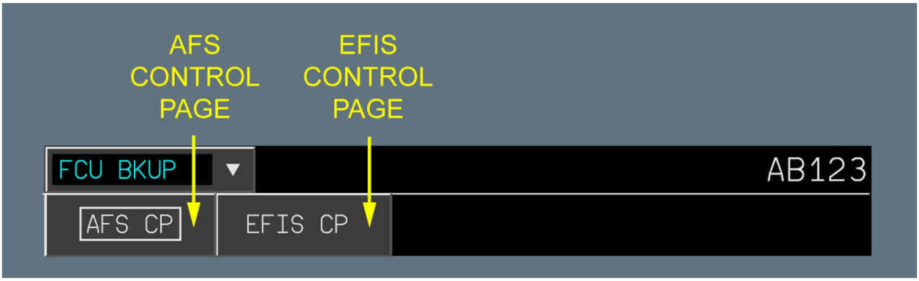
MFD - FCU BKUP PAGES

Ident.: DSC-31-CDS-40-60-00011339.0001001 / 22 APR 14
Applicable to: ALL

The FCU BKUP on the MFD has two pages:

- The AFS CP page
  The AFS CP page enables the recovery of all the AFS CP controls and indicators.
- The CAPT(F/O) EFIS CP.
  The CAPT(F/O) EFIS CP page enables the recovery of most of the CAPT(F/O) EFIS CP controls and indicators. However, the airport navigation function, the ETACS, and the preset barometric setting are no longer available.

FCU BKUP Pages



L2 When the flight crew selects the FCU BKUP via the MFD system menu, the FCU BKUP displays :

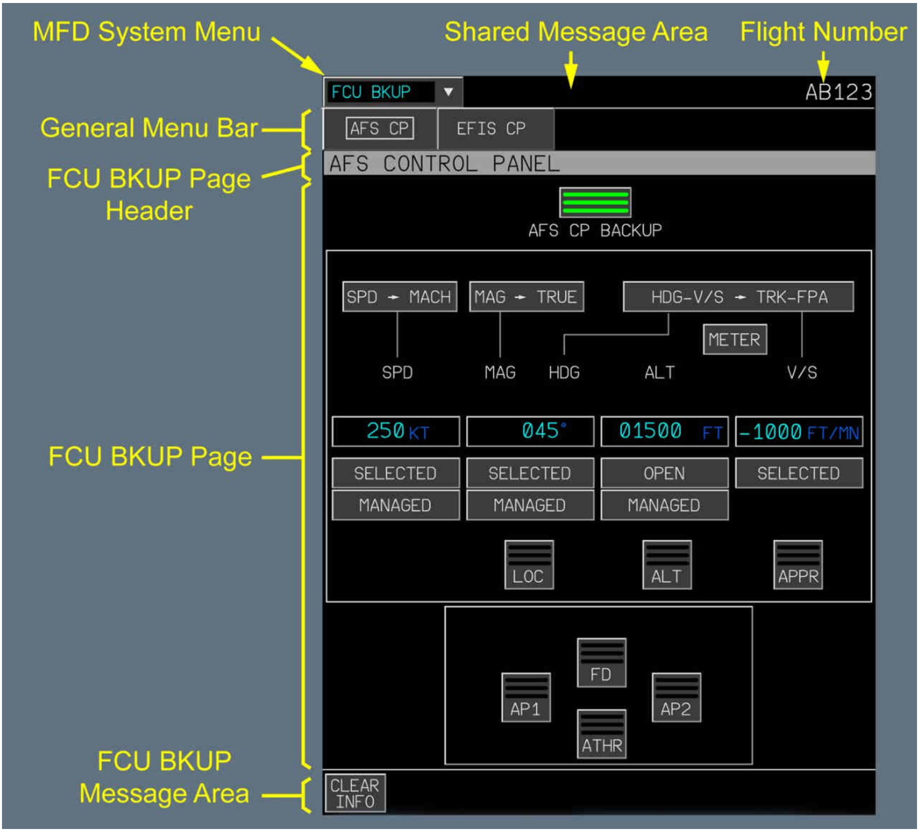
- The AFS CONTROL PANEL page, if the AFS CP backup function is active
- The EFIS CONTROL PANEL page, if the EFIS CP backup function is active on the onside MFD
- The AFS CONTROL PANEL page, if both the AFS CP backup function and the EFIS CP backup function are active on the onside MFD.

MFD OVERVIEW

Applicable to: ALL

Ident.: DSC-31-CDS-40-60-20-00011336.0001001 / 13 MAY 14

MFD - Overview

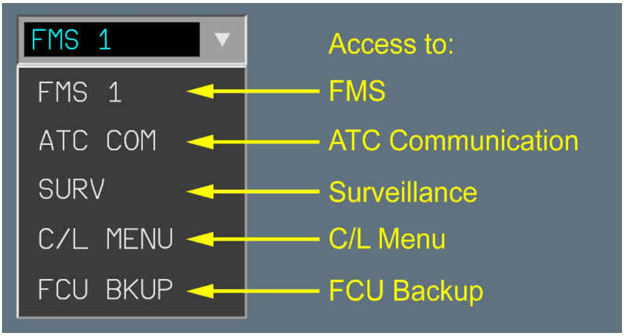

MFD System Menu
Shared Message Area
Flight Number
FCU BKUP
AB123
General Menu Bar
AFS CP
EFIS CP
FCU BKUP Page Header
AFS CONTROL PANEL
AFS CP BACKUP
SPD → MACH
MAG → TRUE
HDG-V/S → TRK-FPA
METER
SPD
MAG
HDG
ALT
V/S
250 KT
045°
01500 FT
-1000 FT/MN
SELECTED
SELECTED
OPEN
SELECTED
MANAGED
MANAGED
MANAGED
FCU BKUP Page
LOC
ALT
APPR
FD
AP1
AP2
ATHR
FCU BKUP Message Area
CLEAR INFO

Ident.: DSC-31-CDS-40-60-20-00011338.0001001 / 22 APR 14

SYSTEM MENU

Indicates which system is currently displayed on the MFD.
The MFD system menu lists the systems that can be displayed on the MFD.

MFD System Menu



Ident.: DSC-31-CDS-40-60-20-00011340.0001001 / 22 APR 14

SHARED MESSAGE AREA

The shared message area displays messages in order to inform the flight crew about an event that is related to the FMS or ATC communication.
The shared message area displays the following messages:

D-ATIS RECEIVED	Indicates that a new ATIS report is received. Only appears if the MFD displays a page that is not an ATC COM page. Disappears when the flight crew accesses an ATC COM page.
D-ATIS GROUND MSG	Indicates that an ATIS FSM message is received. Only appears if the MFD displays a page that is not an ATC COM page. Disappears when the flight crew accesses an ATC COM page.
D-ATIS NO REPLY	Appears when the time-out (7.5 min) is reached and that no ATIS was received. Only appears if the MFD displays a page that is not an ATC COM page. Disappears when the flight crew accesses an ATC COM page.

D-ATIS SEND FAIL	Appears when an ATIS request failed for one of the following reasons: - The sending of the ATIS request failed, or - The time-out (6 min) for acknowledgement is reached, or - A negative answer for the ATIS request is received. Only appears if the MFD displays a page that is not an ATC COM page. Disappears when the flight crew accesses an ATC COM page.
CHECK FMS MESSAGE	Indicates that the FMS triggered an amber FMS message. Only appears if the MFD displays a page that is not an FMS page. Disappears when the flight crew accesses an FMS page.
L12	
IND	Indicates that both FMS operate in INDEPENDENT mode. For information about the INDEPENDENT mode, *Refer to DSC-22-FMS-40 INDEPENDENT Mode*.

L2 *Note:* *The shared message area displays only one message at a time. However, the IND message can appear in addition to another message.*

Ident.: DSC-31-CDS-40-60-20-00011341.0001001 / 22 APR 14

FLIGHT NUMBER

Indicates the flight number that the flight crew entered on the FMS ACTIVE/INIT page (*Refer to DSC-22-FMS-20-20-20 INIT Page*).

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EFIS CP BACKUP FUNCTION

Ident.: DSC-31-CDS-40-70-00003190.0001001 / 23 APR 14
Applicable to: ALL

When an EFIS CP fails, the flight crew can use the EFIS CONTROL PANEL page of the MFD as a backup.
When the EFIS CONTROL PANEL page becomes active, the page displays the last selections that were made on the onside EFIS CP.
For more information about the EFIS CONTROL PANEL page, *Refer to DSC-31-CDS-40-60 MFD - Overview*.

AUTOMATIC EFIS CP BACKUP ACTIVATION

If the CAPT(F/O) EFIS CP fails:
- The CDS CAPT (F/O) EFIS CTL PNL FAULT alert is triggered
- The CAPT(F/O) EFIS CP backup automatically activates.

If both EFIS CPs fail:
- The CDS CAPT+F/O EFIS CTL PNL FAULT alert is triggered
- The CAPT and F/O EFIS CP backups automatically activate.

MANUAL EFIS CP BACKUP ACTIVATION

If the flight crew detects a failure of an EFIS CP, the flight crew can activate the associated EFIS backup function via:
- The EFIS CP BACKUP button on the EFIS CONTROL PANEL page of the MFD
- The FCU button (D6) on the left CKPT EQPT POWER SUPPLY panel.

Intentionally left blank

OVERVIEW

Ident.: DSC-31-CDS-50-10-00018140.0001001 / 05 AUG 15
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB

The Head-Up Display (HUD) provides flight data and guidance information in the flight crew's field of view. The flight data is superimposed on the outside view. As a result, the flight crew can adapt the flight to the external parameters (terrain, runway surface, clouds, etc.).
The HUD provides the flight crew with the same level of information as the information provided by the PFD.

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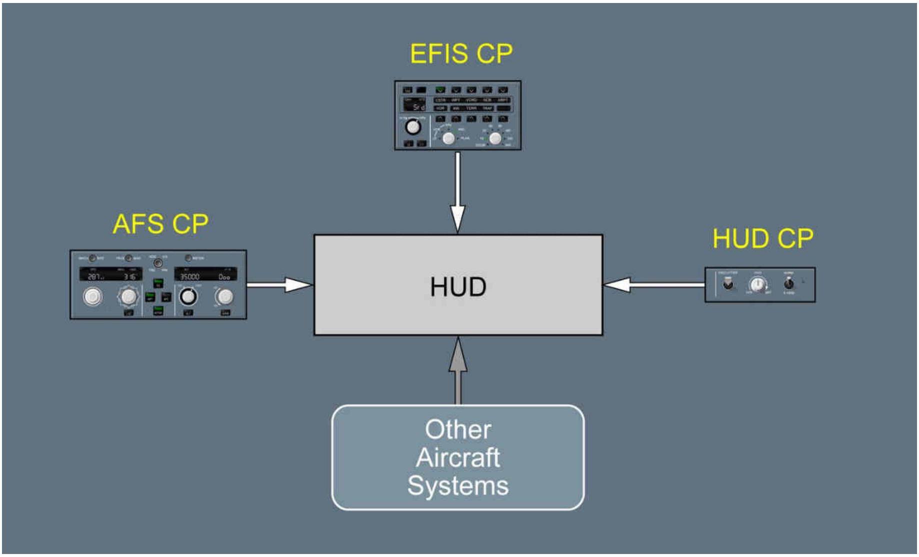
ARCHITECTURE

Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB

Ident.: DSC-31-CDS-50-20-10-00018141.0001001 / 24 APR 14

Architecture

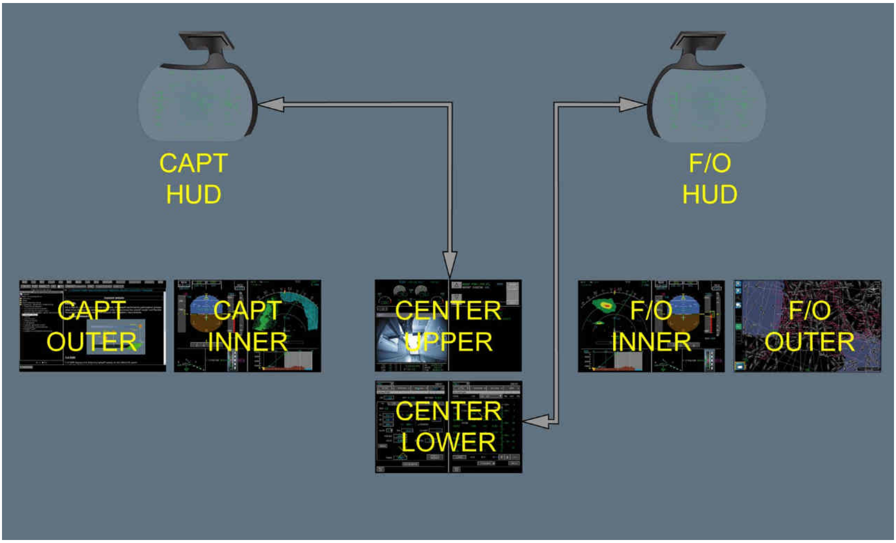


Ident.: DSC-31-CDS-50-20-10-00018577.0001001 / 30 JAN 17

ARCHITECTURE

The CDS manages and hosts the software for the HUDs:

- The center upper DU hosts the HUD software and manages the image for the HUD of the Captain
- The center lower DU hosts the HUD software and manages the image for the HUD of the First Officer.

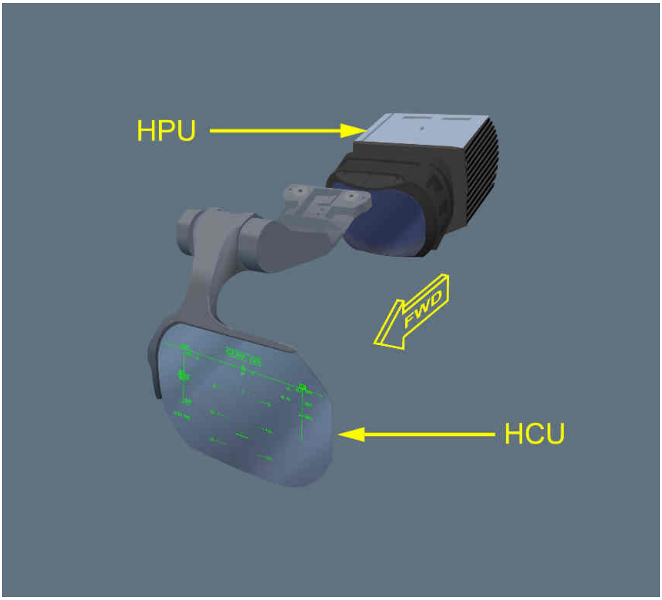

CAPT
HUD
F/O
HUD
CAPT
OUTER
CAPT
INNER
CENTER
UPPER
F/O
INNER
F/O
OUTER
CENTER
LOWER

HUD

There are two HUDs: One for the Captain and one for the First Officer.
Both HUDs are independent.

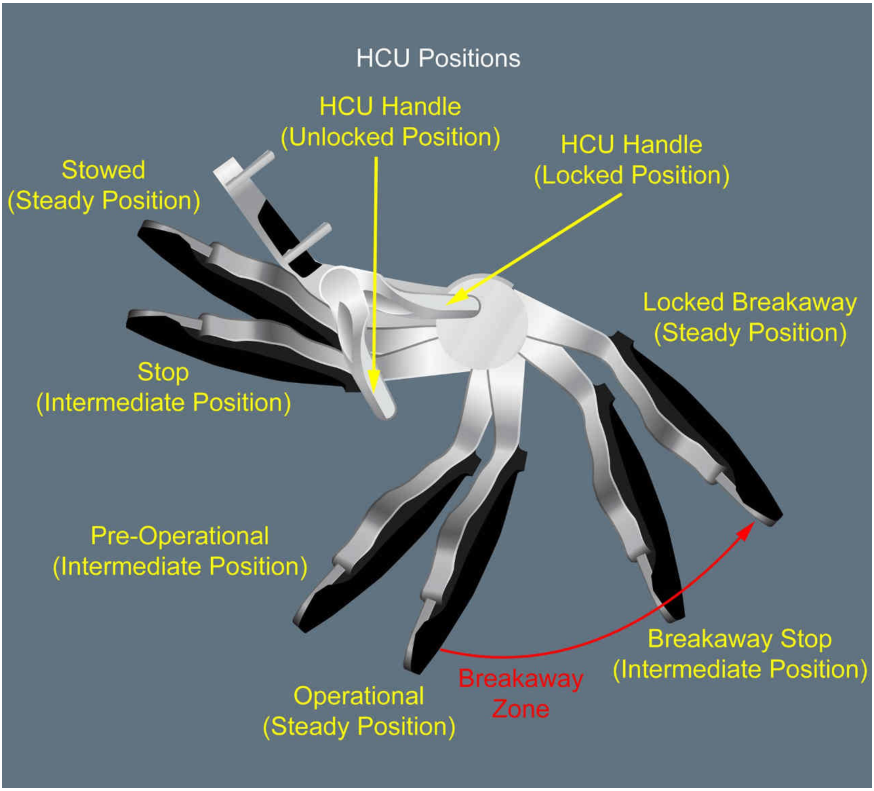
Each HUD includes all of the following:
- An HUD software that generates and manages the display of symbols
- A Head-up Projection Unit (HPU) that projects the symbols on the Head-up Combiner Unit (HCU)
- An HCU that superimposes the symbols on the outside view.

HUD Overview

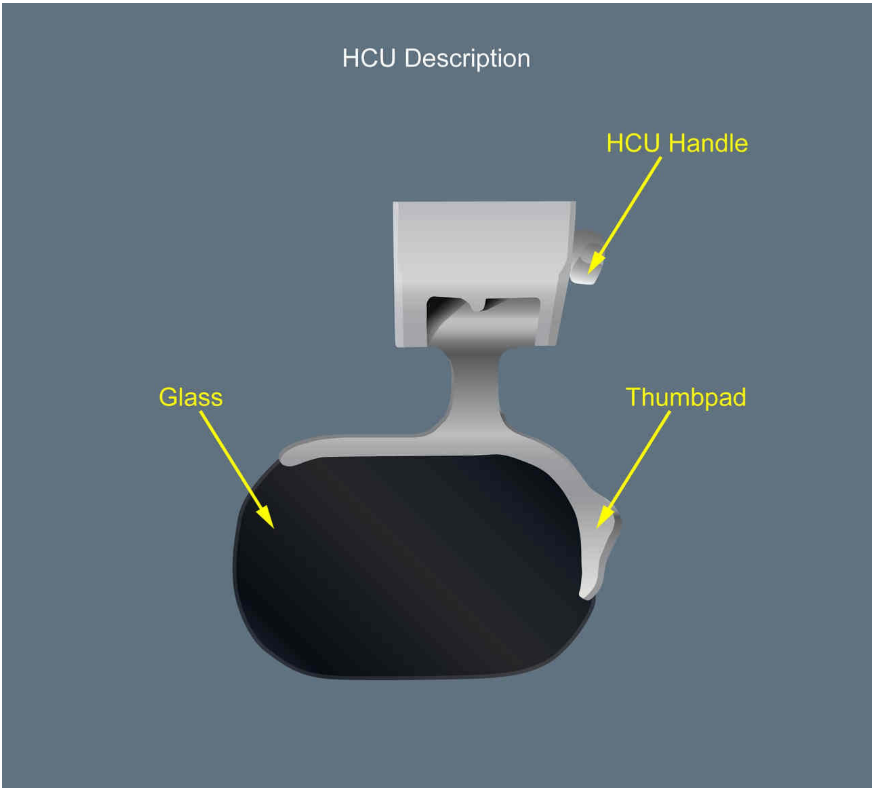


HCU POSITIONS AND DESCRIPTION

HCU Positions


HCU Positions
HCU Handle
(Unlocked Position)
HCU Handle
(Locked Position)
Stowed
(Steady Position)
Locked Breakaway
(Steady Position)
Stop
(Intermediate Position)
Pre-Operational
(Intermediate Position)
Breakaway Stop
(Intermediate Position)
Breakaway
Zone
Operational
(Steady Position)

HCU Description



The HCU handle enables the flight crew to unlock or lock the HCU.

The HCU has all of the following positions:
- Stowed (steady position)
- Stop (intermediate position)
- Pre-operational (intermediate position)
- Operational (steady position)
- Breakaway stop (intermediate position)
- Locked breakaway (steady position).

The flight crew can see the flight data that appear on the HCU only if all of the following apply:

- The HCU is in the operational position
- The HCU handle is in the locked position
- The HUD is on.

Ident.: DSC-31-CDS-50-20-10-00018151.0001001 / 24 APR 14

HUD CP

The flight crew uses the HUD CP to adapt the HUD display to the flight conditions.
For more information, *Refer to DSC-31-CDS-50-40 HUD Control Panel*.

Ident.: DSC-31-CDS-50-20-10-00018152.0001001 / 24 APR 14

AFS CP

The flight crew uses the AFS CP for the flight guidance management.
For more information, *Refer to DSC-22-FG-90-20 Overview*.

Ident.: DSC-31-CDS-50-20-10-00018153.0001001 / 24 APR 14

EFIS CP

The flight crew uses the EFIS CP in order to:

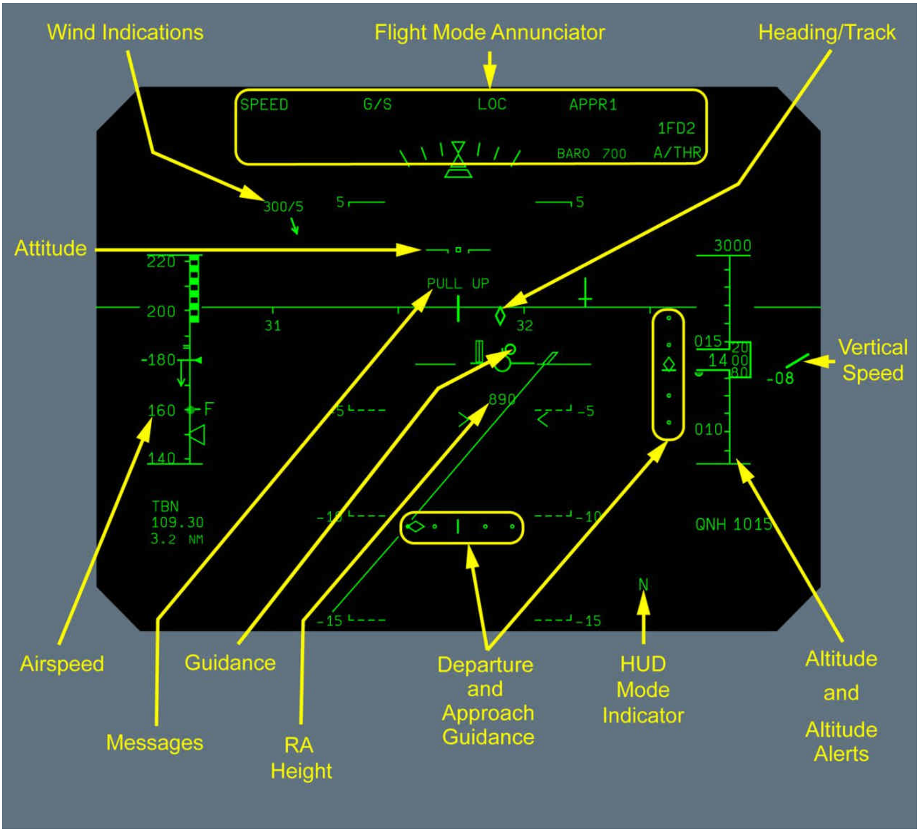
- Display the landing system data via the LS pb
- Select the barometric reference
- Display the navaid information.

For more information, *Refer to DSC-31-CDS-40-60 EFIS CP*.

Overview

OVERVIEW

Ident.: DSC-31-CDS-50-30-10-00018142.0001001 / 24 APR 14
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB


Wind Indications
Flight Mode Annunciator
Heading/Track
SPEED
G/S
LOC
APPR1
1FD2
BARO 700
A/THR
300/5
5
5
Attitude
220
200
-180
160
F
140
3000
PULL UP
31
32
015
20
14 00
80
010
-08
Vertical Speed
890
-5
-5
TBN
109.30
3.2 NM
-10
-10
QNH 1015
N
-15
-15
Airspeed
Guidance
Departure and Approach Guidance
HUD Mode Indicator
Altitude and Altitude Alerts
Messages
RA Height

Some indications only appear on ground. For more information, *Refer to DSC-31-CDS-50-30-20 On Ground Indications*.

The flight crew can adapt the display to:

- The information they want to see, via the use of the declutter modes
  For more information, *Refer to DSC-31-CDS-50-30-150 Declutter Modes*.
- The wind conditions, via the use of the crosswind mode.
  For more information, *Refer to DSC-31-CDS-50-30-150 Crosswind Mode*.

On Ground Indications

ON GROUND INDICATIONS

Ident.: DSC-31-CDS-50-30-20-00018144.0001001 / 24 APR 14
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB

The HUD automatically adapts the symbols to the following flight phases:

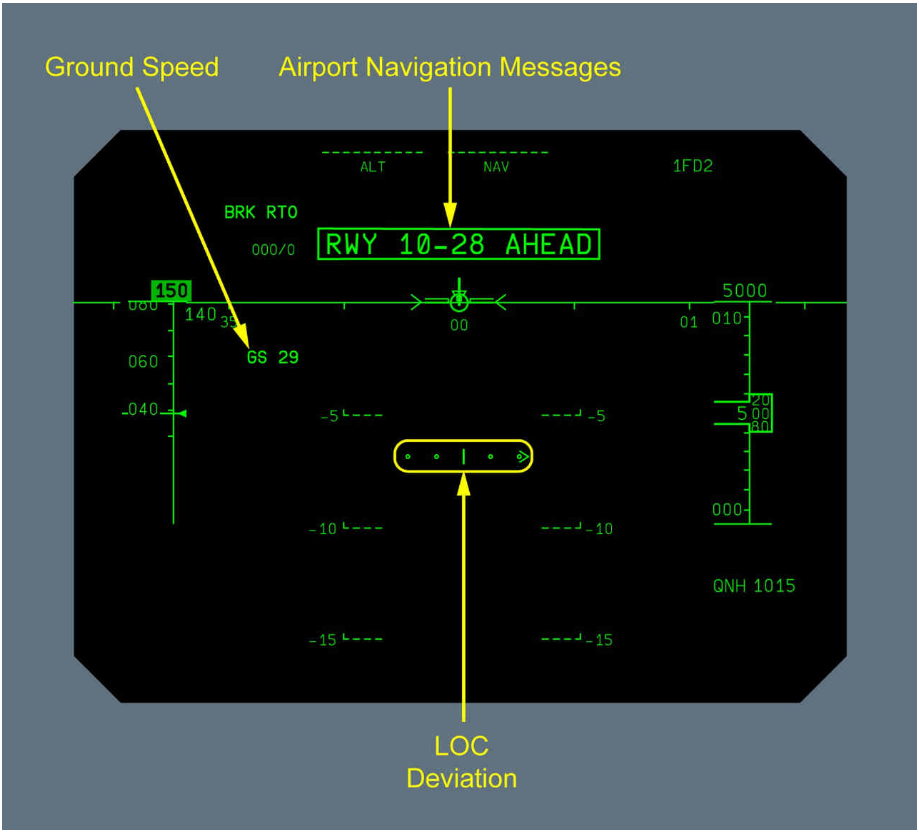
- Taxi
  For more information, *Refer to DSC-31-CDS-50-30-20 Taxi Mode*.
- Takeoff
  For more information, *Refer to DSC-31-CDS-50-30-20 Takeoff Mode*.
- Rollout or rejected takeoff.
  For more information, *Refer to DSC-31-CDS-50-30-20 Rollout and Rejected Takeoff Mode*.

TAXI MODE

Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB

Ident.: DSC-31-CDS-50-30-20-10-00018155.0001001 / 02 OCT 14

Taxi Mode


Ground Speed
Airport Navigation Messages
ALT
NAV
1FD2
BRK RTO
000/0
RWY 10-28 AHEAD
150
080
140
35
00
5000
01
010
GS 29
060
040
-5
-5
20
5 00
80
-10
-10
000
QNH 1015
-15
-15
LOC
Deviation

When the aircraft is taxiing, the HUD displays:
- Less information, for better visibility of the external environment
- Additional information useful for aircraft lining up on the runway and Airport Navigation Function (ANF).

L2 The taxi mode appears, when the aircraft is on ground, and at a speed less than 40 kt.

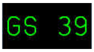
L1 During taxi, the crosswind mode is not available.

Ident.: DSC-31-CDS-50-30-20-10-00018156.0001001 / 24 APR 14

GROUND SPEED

L3 The ADIRS use the GNSS/GPS and the IRS data for GS computation.

L1

	Indicates the current Ground Speed (GS) in knots.

Ident.: DSC-31-CDS-50-30-20-10-00018157.0001001 / 02 OCT 14

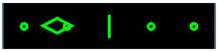
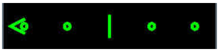
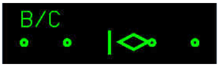
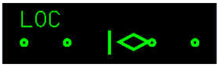
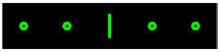
LOC DEVIATION

Indicates the LOC deviation related to the selected ILS.

Enables the flight crew to check that:
- The aircraft lined up on the selected runway in the FMS
- The lateral guidance is available.

L3 The MMR provides the LOC deviation information.

L1

	The LOC deviation is within the scale.
	The LOC deviation is outside the scale.
	The flight crew selected a LOC back course departure.
	The flight crew selected a LOC departure compatible with the FLS function.
	The MMR is on standby.

L12

LOC	Appears, instead of the LOC scale, if the LOC scale is not available. Temporarily flashes, then remains steady.

L12

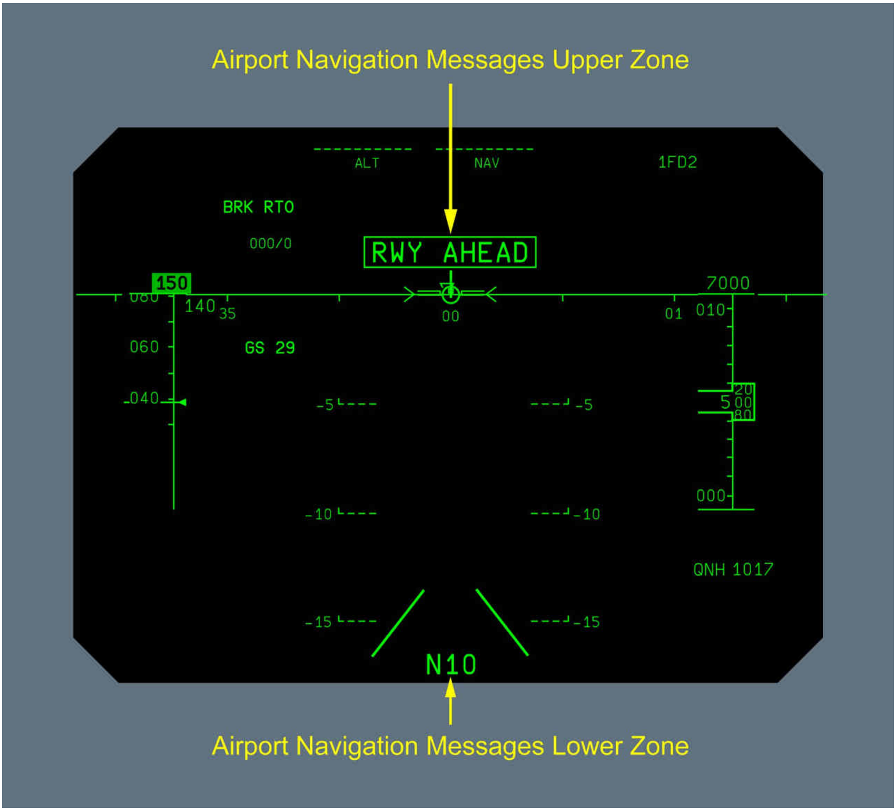
LOC F-LOC	Appears, instead of the LOC scale, if the MMR sends inconsistent information. Temporarily flashes, then remains steady.

Ident.: DSC-31-CDS-50-30-20-10-00018364.0002001 / 01 MAR 17

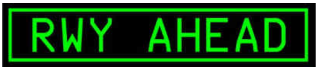
AIRPORT NAVIGATION FUNCTION

The HUD displays the Airport Navigation Function (ANF) messages even if the ANF is not displayed on the associated ND.
The ANF messages appear on the upper and lower parts of the HUD.

Airport Navigation Messages

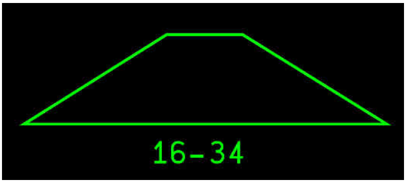

Airport Navigation Messages Upper Zone
ALT
NAV
1FD2
BRK RTO
000/0
RWY AHEAD
150
080
140
35
00
01
7000
010
060
GS 29
040
-5
-5
20
5 00
80
-10
-10
000
QNH 1017
-15
-15
N10
Airport Navigation Messages Lower Zone

AIRPORT NAVIGATION MESSAGES UPPER ZONE

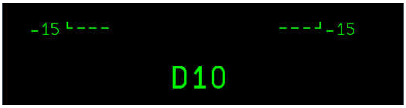


Indicates that the aircraft reaches an intersection or a threshold of a runway.

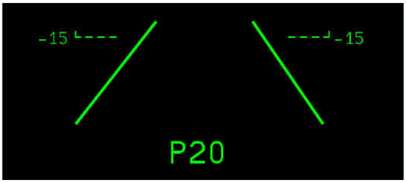
AIRPORT NAVIGATION MESSAGES LOWER ZONE



Indicates that the aircraft is lined up on the runway 16-34.
The runway threshold must be confirmed with the current aircraft heading.



Indicates that the aircraft is on the parking D10.



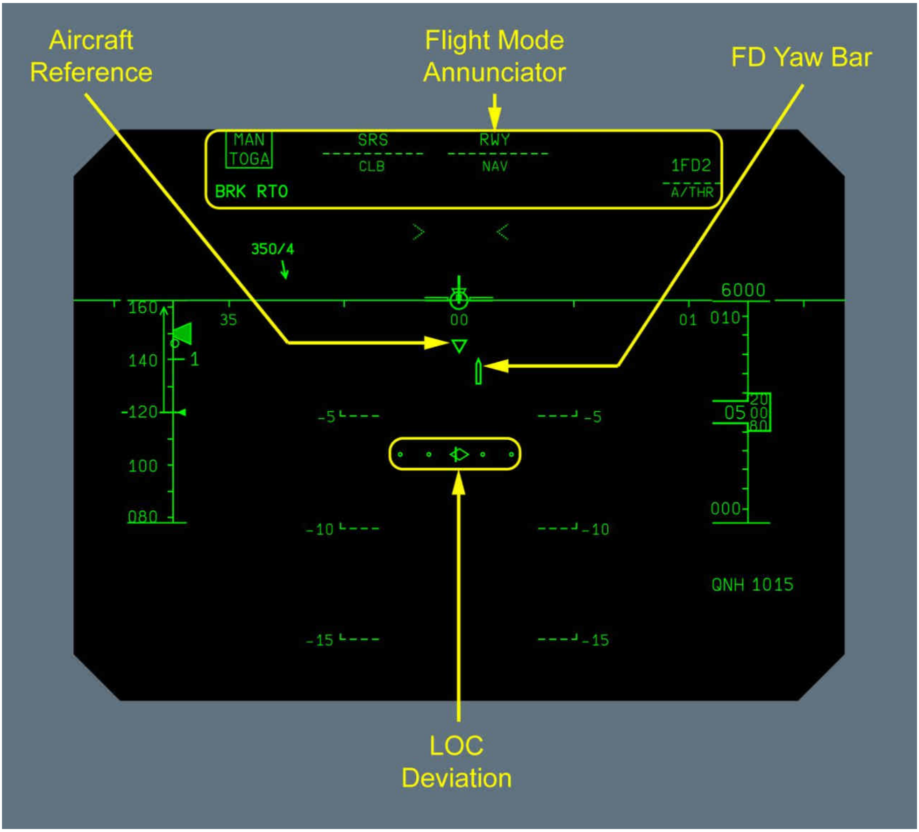
Indicates that the aircraft is on the taxiway P20.

TAKEOFF MODE

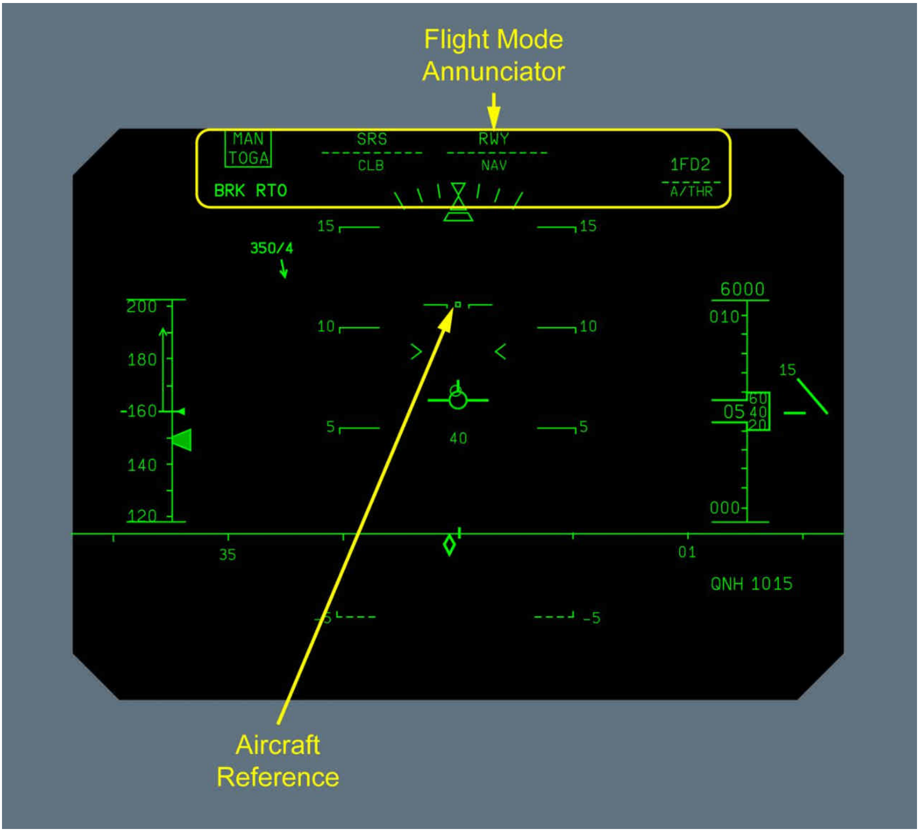
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB

Ident.: DSC-31-CDS-50-30-20-20-00018159.0001001 / 02 OCT 14

Takeoff Mode Before Liftoff


Aircraft Reference
Flight Mode Annunciator
FD Yaw Bar
MAN TOGA
SRS
CLB
RWY
NAV
1FD2
A/THR
BRK RTO
350/4
160
140
-120
100
080
1
35
00
01
6000
010
20
05 00
80
000
QNH 1015
-5
-10
-15
LOC Deviation

Takeoff Mode After Liftoff

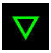

Flight Mode Annunciator
MAN TOGA
SRS
RWY
CLB
NAV
1FD2
A/THR
BRK RTO
15
15
350/4
200
180
-160
140
120
10
10
5
5
40
6000
010
15
60
05 40
20
000
35
01
QNH 1015
-5
-5
Aircraft Reference

On ground, the takeoff mode provides useful information for the lateral control of the aircraft in low visibility conditions.
As soon as the flight crew sets the takeoff thrust, the takeoff mode appears on the HUD, regardless of the previous mode.
In the takeoff mode, the flight crew cannot use neither the crosswind mode nor the declutter mode.
L2 The takeoff mode disappears, when the aircraft is above 50 ft RA.

Ident.: DSC-31-CDS-50-30-20-20-00018161.0001001 / 24 APR 14

AIRCRAFT REFERENCE

L12



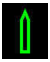
Indicates the aircraft axis, as a reference for the yaw bar.
Appears on the ground, when the flight crew engages the FD.

Ident.: DSC-31-CDS-50-30-20-20-00018162.0001001 / 24 APR 14

FD YAW BAR

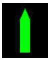
L3 The PRIMs provide the FD yaw orders.

L1



Indicates the required rudder input in order to maintain the aircraft on the runway centerline.

Appears when:
- The FD is engaged
- A Localizer (LOC) signal is available
- The mode RWY is active.



Indicates, if one engine fails during the takeoff, the required rudder input to maintain the aircraft on the runway centerline.

Ident.: DSC-31-CDS-50-30-20-20-00018163.0001001 / 02 OCT 14

LOC DEVIATION

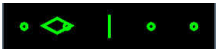
Indicates the LOC deviation related to the selected ILS.

Enables the flight crew to check that:
- The lateral guidance is available in accordance with the tuned ILS
- The aircraft maintains the centerline of the runway selected in the FMS.

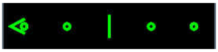
L2 Appears only when the LOC is aligned with the runway heading.

L3 The MMR provides the LOC deviation information.

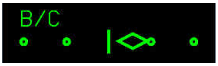
L1



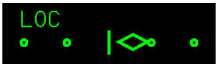
The LOC deviation is within the scale.



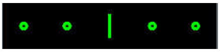
The LOC deviation is outside the scale.



The flight crew selected a LOC back course departure.



The flight crew selected a LOC departure compatible with the FLS function.

	The MMR is on standby.

L12

LOC	Appears, instead of the LOC scale, if the LOC scale is not available. Temporarily flashes, then remains steady.

L12

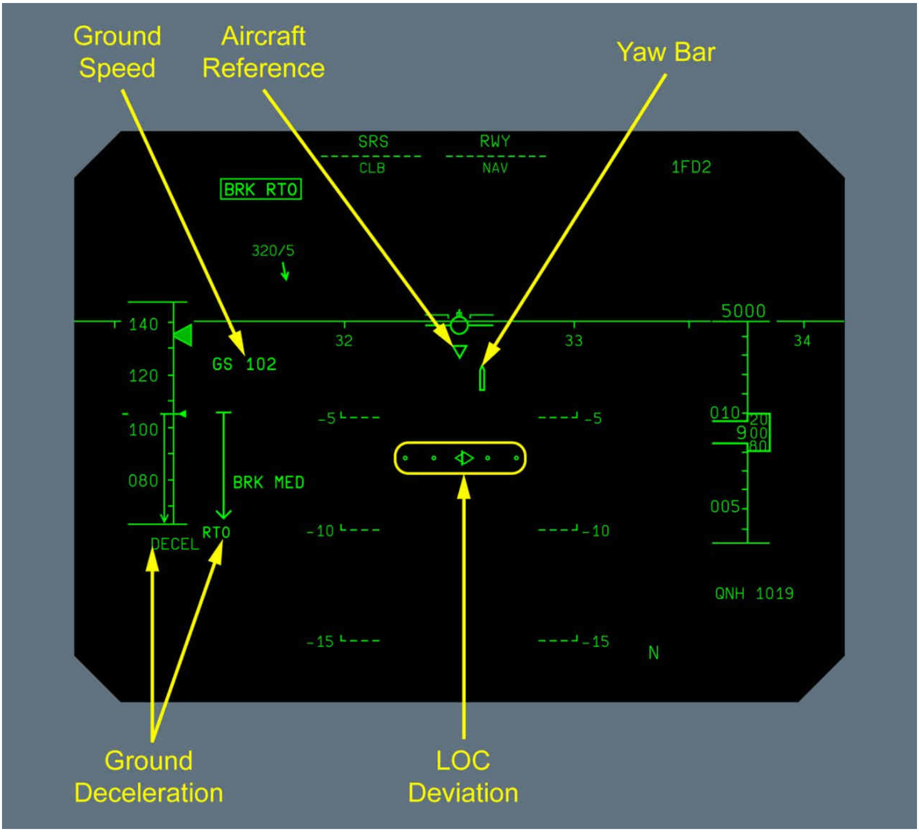
LOC F-LOC	Appears, instead of the LOC scale, if the MMR sends inconsistent information. Temporarily flashes, then remains steady.

ROLLOUT AND REJECTED TAKEOFF MODE

Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB

Ident.: DSC-31-CDS-50-30-20-30-00018167.0001001 / 02 OCT 14

Rollout and Rejected Takeoff Mode


Ground Speed
Aircraft Reference
Yaw Bar
SRS
RWY
CLB
NAV
1FD2
BRK RTO
320/5
140
120
100
080
GS 102
32
33
34
5000
010
20
900
80
005
-5
-10
-15
BRK MED
DECEL
RTO
QNH 1019
N
Ground Deceleration
LOC Deviation

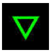
L2 The rollout or rejected takeoff mode appears, when:
- The aircraft is on ground at a speed above 40 kt
- The thrust levers are not set to TOGA or FLX/MCT detent.

L1 In the rollout or rejected takeoff mode, the flight crew cannot use neither the declutter mode nor the crosswind mode.

Ident.: DSC-31-CDS-50-30-20-30-00018168.0001001 / 24 APR 14

AIRCRAFT REFERENCE

L12



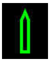
Indicates the aircraft axis, as a reference for the yaw bar.
Appears on the ground, when the flight crew engages the FD.

Ident.: DSC-31-CDS-50-30-20-30-00018169.0001001 / 24 APR 14

YAW BAR

L3 The PRIMs provide the yaw orders.

L1



Indicates the required rudder input in order to maintain the aircraft on the runway centerline.

Appears when:
- The FD is engaged
- A Localizer (LOC) signal is available
- The modes FLARE or ROLL OUT are active.

Ident.: DSC-31-CDS-50-30-20-30-00018170.0001001 / 02 OCT 14

LOC DEVIATION

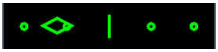
Indicates the LOC deviation related to the selected ILS.

Enables the flight crew to check that:
- The lateral guidance is available in accordance with the tuned ILS
- The aircraft maintains the center line of the runway selected in the FMS.

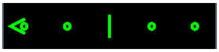
L2 Appears only when the LOC is aligned with the runway heading.

L3 The MMR provides the LOC deviation information.

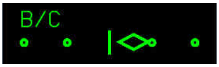
L1



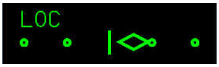
The LOC deviation is within the scale.



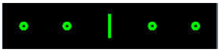
The LOC deviation is outside the scale.



The flight crew selected a LOC back course departure.



The flight crew selected a LOC departure compatible with the FLS function.



The MMR is on standby.

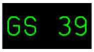
L12	
LOC	Appears, instead of the LOC scale, if the LOC scale is not available. Temporarily flashes, then remains steady.
L12	
LOC F-LOC	Appears, instead of the LOC scale, if the MMR sends inconsistent information. Temporarily flashes, then remains steady.

Ident.: DSC-31-CDS-50-30-20-30-00018171.0001001 / 24 APR 14

GROUND SPEED

L3 The ADIRS use the GNSS and the IRS data for Ground Speed (GS) computation.

L1



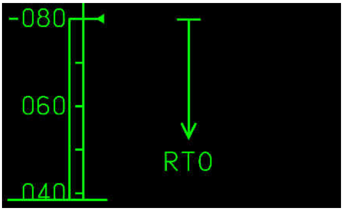
Indicates the current Ground Speed (GS) in knots.

Ident.: DSC-31-CDS-50-30-20-30-00018172.0003001 / 27 FEB 17

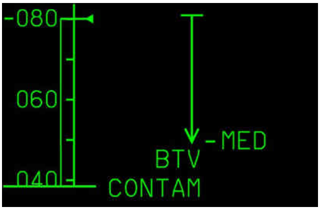
GROUND DECELERATION

L3 The IRS provide the ground deceleration information, based on the longitudinal deceleration of the aircraft. The BRAKES CTL provides the selected autobrake mode.

L1 When the aircraft decelerates, the deceleration arrow appears.
The length of the deceleration arrow varies with the current deceleration of the aircraft.
Below is a description of the additional information that appears when the flight crew selects an A/BRK mode.

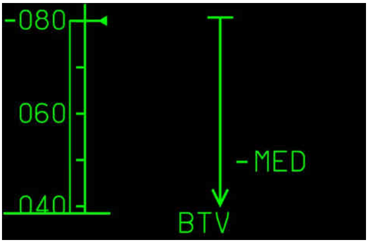


When the RTO mode is activated, RTO appears at the end of the deceleration arrow.



When the BTV CONTAM mode is activated:
- BTV CONTAM appears at the end of the deceleration arrow
- MED appears.

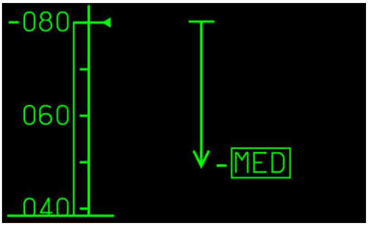
The MED indication can be used as a scale gradation to monitor the deceleration.



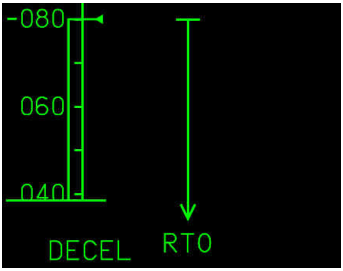
When the BTV mode is activated:

- BTV appears at the end of the deceleration arrow
- MED appears.

The MED indication can be used as a scale gradation to monitor the deceleration.



When the basic mode of the A/BRK is armed or activated, MED appears boxed.



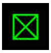
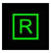
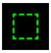
When the deceleration reaches 80 % of the selected A/BRK mode (RTO, basic autobrake, or BTV), DECEL appears.

Note: *On a slippery runway, the A-SKID may be activated before the aircraft reaches the selected deceleration. Therefore, the DECEL indication may not appear, even if the autobrake is active.*

Ident.: DSC-31-CDS-50-30-20-30-00024907.0001001 / 08 JUL 19

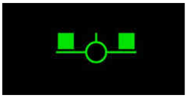
ENGINE REVERSER

The engine reverser symbol indicates the reverser status during rejected takeoff and rollout.

	Indicates the engine reverser is failed or not available.
	Indicates the engine reverser is fully deployed and operative.
	Indicates the transition phase between the engine reverser selection and the engine reverser availability.

Ident.: DSC-31-CDS-50-30-20-30-00024908.0001001 / 08 JUL 19

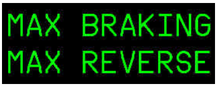
GROUND SPOILERS



Indicates the ground spoilers extension during rejected takeoff and rollout.

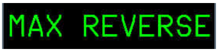
Ident.: DSC-31-CDS-50-30-20-30-00018429.0003001 / 27 FEB 17

MESSAGES



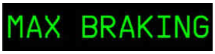
MAX BRAKING
MAX REVERSE

The MAX BRAKING and the MAX REVERSE messages appear simultaneously. For more information, *Refer to DSC-34-32-20-20-60 ROW/ROP Messages*.



MAX REVERSE

Only the MAX REVERSE message appears. For more information, *Refer to DSC-34-32-20-20-60 ROW/ROP Messages*.



MAX BRAKING

Only the MAX BRAKING message appears. For more information, *Refer to DSC-34-32-20-20-60 ROW/ROP Messages*.

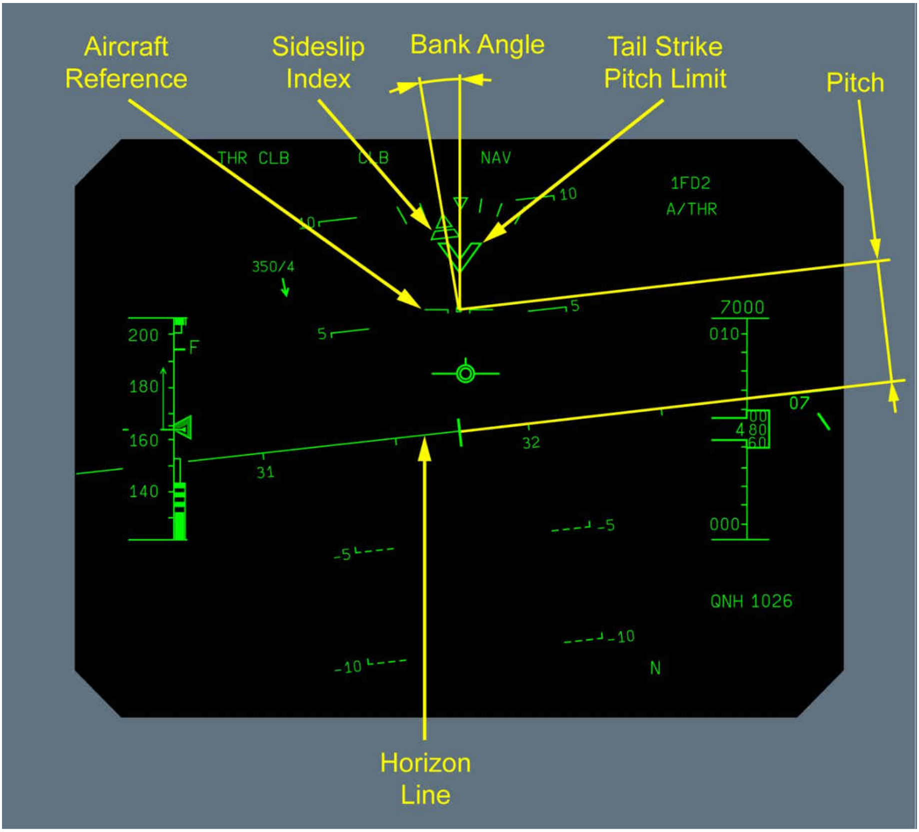
Attitude

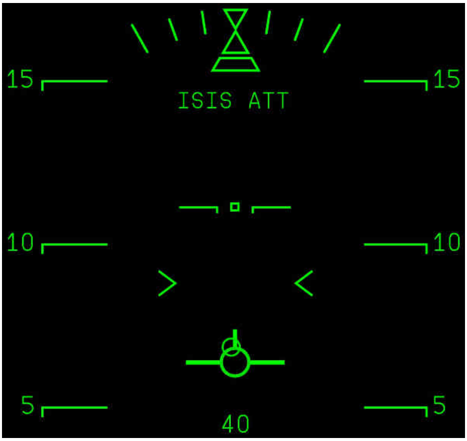
ATTITUDE

Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB

Ident.: DSC-31-CDS-50-30-30-10-00018145.0001001 / 02 OCT 14

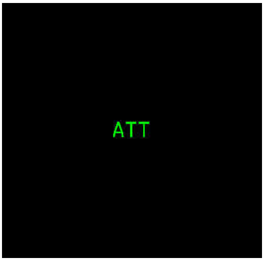
Attitude


Aircraft Reference
Sideslip Index
Bank Angle
Tail Strike Pitch Limit
Pitch
THR CLB
CLB
NAV
1FD2
A/THR
10
10
350/4
5
5
7000
010
200
F
180
160
140
07
480
32
31
-5
-5
000
QNH 1026
-10
-10
N
Horizon Line



Appears when the ISIS is the source of the attitude indication on the HUD.

L12

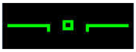


No attitude data is available. The attitude and guidance indications no longer appear. Temporarily flashes, then remains steady.

Ident.: DSC-31-CDS-50-30-30-10-00018175.0001001 / 08 JUL 19

AIRCRAFT REFERENCE

L12



Indicates the fixed reference position of the aircraft.

Appears, when the aircraft is:
- In normal mode or declutter 1 mode
- In declutter 2 mode, if the tail strike margin is below 1 °.

Ident.: DSC-31-CDS-50-30-30-10-00018174.0001001 / 03 JAN 19

HORIZON LINE

The horizon line:

- Indicates a zero degree pitch line/FPA information
- Provides a perception of the aircraft attitude.

L2 At high altitudes, the horizon line is above the earth's curve.
Appears as a dotted line, when the horizon line is outside the HUD field of view.

No longer appears if:
- The bank angle is beyond 71 ° to the left/right side, or
- The pitch attitude is more than 39 °, or less than -25 °.

L3 The ADIRS provide pitch and roll data that are necessary for the display of the horizon line.

L1 The horizon line has heading/track markers every 10 °.

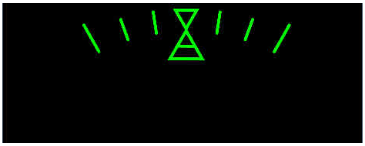
L2 The heading/track markers are not displayed when the ISIS inertial data is displayed. For more information about the display of the ISIS inertial data, *Refer to DSC-34-NAV-20-30 Display of ISIS Inertial Data*.

Ident.: DSC-31-CDS-50-30-30-10-00018176.0001001 / 03 DEC 15

BANK ANGLE

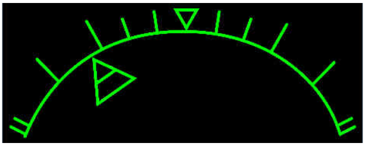
L2 The IRs provide the bank angle information.
In the case of a failure or a rejection of all IRs, the ISIS provides the bank angle information. For more information, *Refer to DSC-34-NAV-20-30 Display of ISIS Inertial Data*.

L1



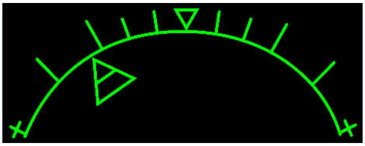
The bank angle of the aircraft is between 35 ° left or right.
Bank markers are indicated in increments of 10 ° up to 30 °.

L12



The bank angle of the aircraft is above 35 ° left or right.
The roll scale increases up to 67 ° left or right.
Bank markers appear at 45 ° and 60 °.
Indicates the bank angle protection limit in normal law.

L12



The bank angle of the aircraft is above 35 ° left or right, and the bank angle protection is lost. The aircraft is in alternate or direct law.
The roll scale increases up to 67 ° left or right.

L2 The roll scale and pointers no longer appear if:
- The pitch attitude exceeds 39 ° nose up, or 25 ° nose down, or
- The bank angle exceeds 71 ° left or right, or
- The aircraft is on ground.

Ident.: DSC-31-CDS-50-30-30-10-00018177.0001001 / 01 JUL 14

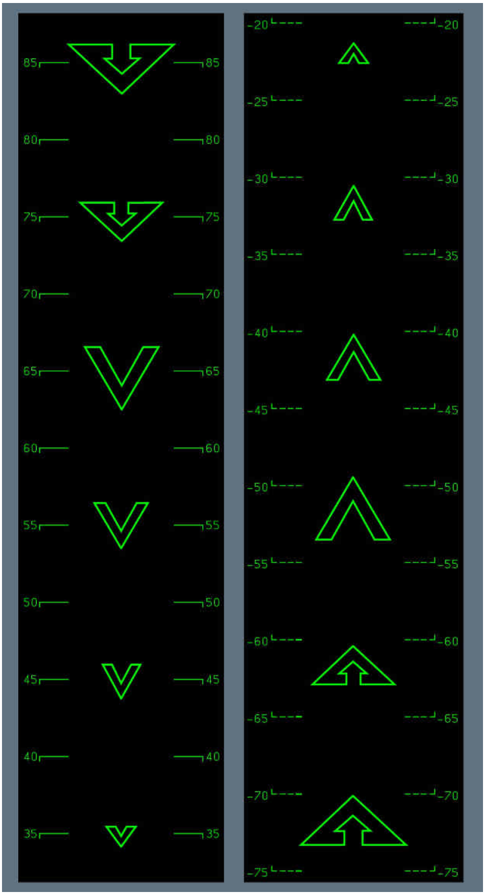
PITCH

L2 The IRs provide the pitch attitude and the FPA information.
In the case of a failure or a rejection of all IRs, the ISIS provides the pitch attitude information. For more information, *Refer to DSC-34-NAV-20-30 Display of ISIS Inertial Data*.

L1 The scale, associated with the aircraft reference and the Flight Path Vector (FPV), indicates the pitch attitude and the Flight Path Angle (FPA) of the aircraft.
Degrees are indicated in increments of 5 ° up to 90 ° nose up and 90 ° nose down. The horizon line indicates the zero reference of the pitch/FPA scale.

L2 Appears as dotted lines for negative values.

L1



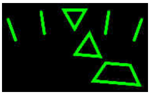
Indicates that the pitch attitude of the aircraft is excessive.
Shows the deviation of the pitch correction required.
Makers are displayed every 10 ° between 35 ° and 85 ° pitch up.
Makers are displayed every 10 ° between 22.5 ° and 72.5 ° pitch down.

Ident.: DSC-31-CDS-50-30-30-10-00018178.0001001 / 24 APR 14

SIDESLIP INDEX

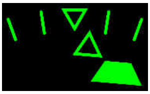
L3 The ADIRS provide the sideslip angle and the lateral acceleration.

L1



- On ground, indicates the aircraft lateral acceleration of the aircraft
- In flight, indicates the sideslip of the aircraft.

L13



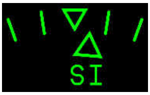
The PRIMs provide the beta target information.
Appears if one engine fails during takeoff, or go-around.
The sideslip index becomes the beta target.

Appears, when:

- The flight crew selects CONF 1, 2, or 3
- The N1 of the remaining engine is above 80 %
- The difference between the N1 of the engines is above 40 %.

For more information about the beta target, *Refer to DSC-27-10-30 Flight Law*.
The sideslip index also appears below the FPV.
For more information, *Refer to DSC-31-CDS-50-30-100 Flight Path Vector*.

L12



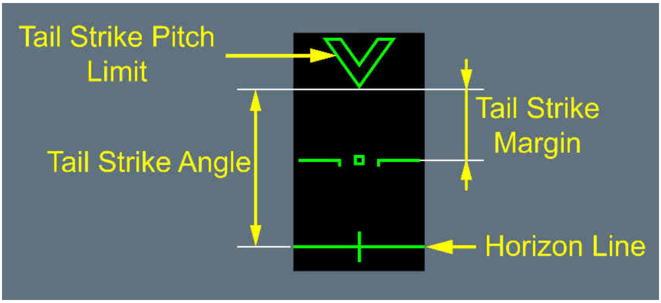
The sideslip and the lateral acceleration indications are not valid.
Temporarily flashes, then remains steady.

Ident.: DSC-31-CDS-50-30-30-10-00018179.0004001 / 08 APR 19

TAIL STRIKE PITCH LIMIT

L3 The PRIMs provide the tail strike limit indication.

Tail Strike



L1 Indicates the maximum pitch attitude, in order to avoid tail strike at landing.

L2 Pulses, if the tail strike margin is less than 1 °.
Appears, when the aircraft is below 400 ft RA, at a fixed value corresponding to the pitch limit with the main landing gear compressed.

No longer appears:

- When the ground speed is less than 50 kt, or
- 4 s after a go-around is initiated.

Airspeed

AIRSPEED

Ident.: DSC-31-CDS-50-30-40-00018146.0001001 / 24 APR 14
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB

The following general airspeed indications appear during all flight phases:
- The speed reference line
- The airspeed target
- The speed trend arrow
- The Mach number (over the crossover altitude)
- Green dot speed (in clean configuration only).

For more information, *Refer to DSC-31-CDS-50-30-40 General Airspeed Indications*.

The following airspeed indications appear during specific flight phases:
- During takeoff:
  - V1
  - VR
  - V2
  - The short-term managed speed
  - VFE next
  - F speed
  - S speed
  - The automatic retraction speed.

  For more information, *Refer to DSC-31-CDS-50-30-40 Airspeed Indications during Takeoff*.
- During descent:
  - VFE next
  - F speed
  - S speed
  - The short-term managed speed
  - Lower and upper speed range limits.

  For more information, *Refer to DSC-31-CDS-50-30-40 Airspeed Indications during Descent*.
- After touchdown:
  - The DECEL indication.

  For more information, *Refer to DSC-31-CDS-50-30-40 Airspeed Indications After Touchdown*.

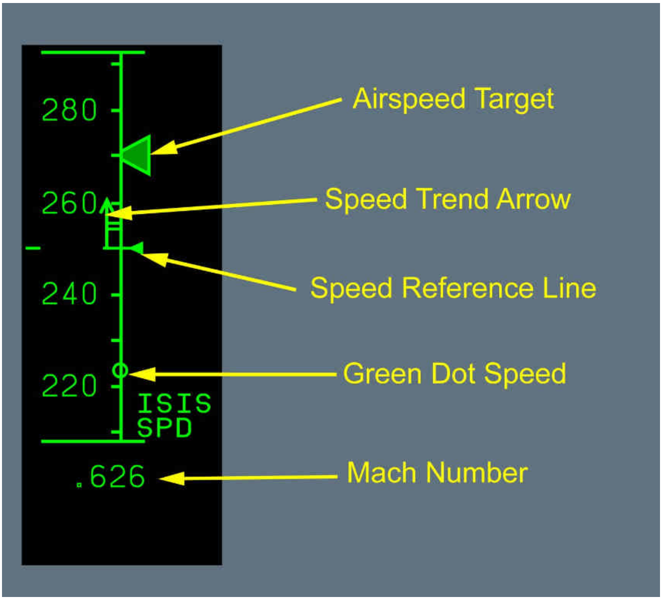
During flight, the airspeed scale also displays the following protection speeds:
- VMAX and the high speed protection indication
- VLS
- $V\alpha_{prot}$ (in normal law)
- $V\alpha_{max}$ (in normal law)
- $V\alpha_{sw}$ (in alternate and direct law).
  For more information, *Refer to DSC-31-CDS-50-30-40 Airspeed Protections*.

GENERAL AIRSPEED INDICATIONS

Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB

Ident.: DSC-31-CDS-50-30-40-10-00018180.0001001 / 17 NOV 17

General Airspeed Indications

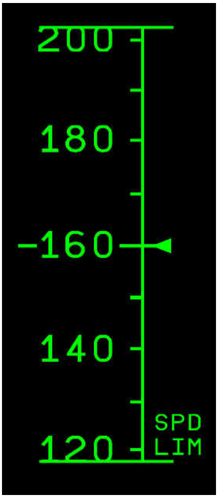

280
260
240
220
ISIS
SPD
.626
Airspeed Target
Speed Trend Arrow
Speed Reference Line
Green Dot Speed
Mach Number

The airspeed scale starts at 30 kt with markers every 10 kt. In addition, numeric values are displayed every 20 kt and start at 40 kt.

L12

SPD	Appears, instead of the airspeed scale, if no speed information is available. Temporarily flashes, then remains steady.

L12

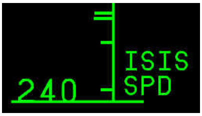


Appears if at least one characteristic speed is not available.

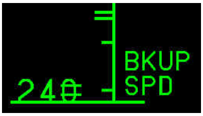
At least one of the following airspeeds no longer appears on the airspeed scale:

- VLS
- S speed
- F speed
- Green dot speed
- Speed trend arrow
- VFE next
- $V\alpha_{sw}$.

Temporarily flashes, then remains steady.



Appears when the ISIS speed indication is displayed on the HUD. For more information about the display of the ISIS speed, *Refer to DSC-34-NAV-20-30 Display of ISIS Speed and Altitude Indications*.



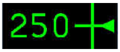
Appears when the backup speed indication (from FADECs and AOA probes) is displayed on the HUD. For more information about the backup speed indications, *Refer to DSC-34-NAV-20-30 Backup Speed and Backup Altitude Indications*.

Ident.: DSC-31-CDS-50-30-40-10-00018181.0001001 / 24 APR 14

SPEED REFERENCE LINE

L3 The ADRs provide the current airspeed value.

L1



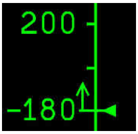
Indicates the current airspeed of the aircraft in knots.

Ident.: DSC-31-CDS-50-30-40-10-00018182.0001001 / 24 APR 14

SPEED TREND ARROW

L3 The PRIMs provide the speed trend information.

L12



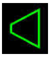
Indicates the airspeed that the aircraft will reach in 10 s, if the current acceleration (deceleration) remains constant.
Appears, when the speed trend exceed 2 kt.
Disappears when the speed trend is less than 1 kt.

Ident.: DSC-31-CDS-50-30-40-10-00018183.0001001 / 24 APR 14

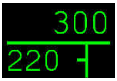
AIRSPEED TARGET

L3 The PRIMs provide the airspeed target information. If all three PRIMs are lost, the FCU backup provides the airspeed target information.

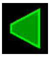
L1 Indicates the airspeed target, on the airspeed scale.



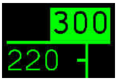
- The airspeed target is selected (manually on the AFS CP, or manually entered in the FMS)
- The airspeed target is within the airspeed scale.



- The airspeed target is selected (manually on the AFS CP, or manually entered in the FMS)
- The airspeed target is outside the airspeed scale.



- The airspeed target is managed (computed by the FMS)
- The airspeed target is within the airspeed scale.



- The airspeed target is managed (computed by the FMS)
- The airspeed target is outside the airspeed scale.

L12

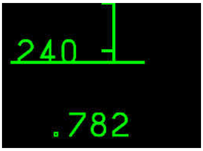
SPD SEL	The airspeed selected on the AFS CP is not available. Temporarily flashes, then remains steady.

Ident.: DSC-31-CDS-50-30-40-10-00018184.0001001 / 01 JUL 14

MACH NUMBER

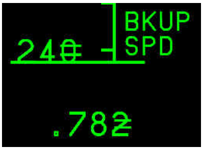
L3 The ADRs provide the Mach number information.

L1



Appears below the airspeed scale, when the Mach number exceeds M 0.5.
Disappears when the Mach number is less than M 0.45.

L12



Appears when the backup speed indication (from FADECs and AOA probes) is displayed on the HUD.
The accuracy of the Mach number is degraded, and the Mach number appears with a precision of ±M 0.03.
For more information about the backup speed indications, *Refer to DSC-34-NAV-20-30 Backup Speed and Backup Altitude Indications*.

L12

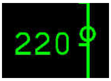
MACH	The Mach number is not available. The Mach flag appears instead of the Mach number. Temporarily flashes, then no longer appears.

Ident.: DSC-31-CDS-50-30-40-10-00019655.0001001 / 24 APR 14

GREEN DOT SPEED

L3 The PRIMs provide the green dot speed.

L1



Appears in clean configuration only.
For more information about the green dot speed, *Refer to DSC-22-27-10-20 GREEN DOT*.

AIRSPEED INDICATIONS DURING TAKEOFF

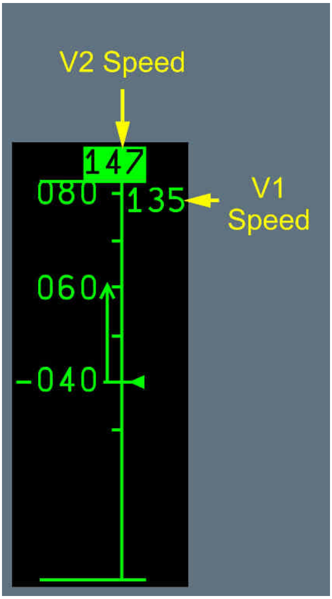
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB

Ident.: DSC-31-CDS-50-30-40-20-00018185.0001001 / 24 APR 14

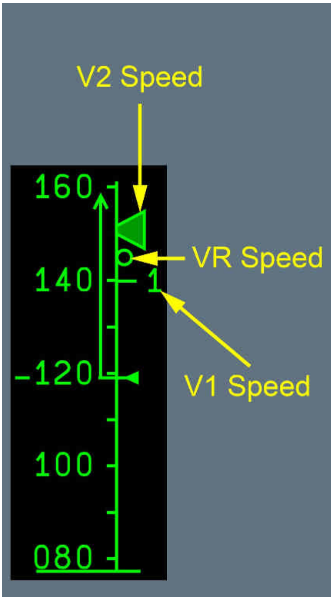
BEFORE LIFTOFF

L3 The FMS provides the values of V1, VR, and V2 that the flight crew entered.

L1

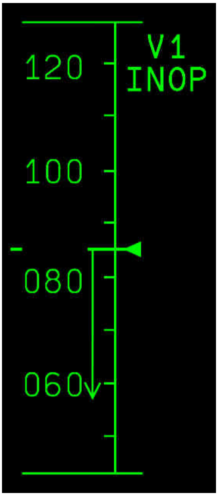


Until the aircraft reaches a sufficient speed, V1 and V2 are outside of the airspeed scale. Only the values are displayed at the top of the airspeed scale.
For more information about V1, *Refer to DSC-22-27-10-20 V1*.
For more information about V2, *Refer to DSC-22-27-10-20 V2*.


V2 Speed
VR Speed
V1 Speed
160
140
120
100
080
1

When V1, VR, and V2 are within the range of the airspeed scale, they are displayed as markers and located in accordance with the values that the flight crew entered in the T.O panel of the FMS ACTIVE/PERF page.
For more information about VR, *Refer to DSC-22-27-10-20 VR*.
V1 and VR no longer appear after liftoff.

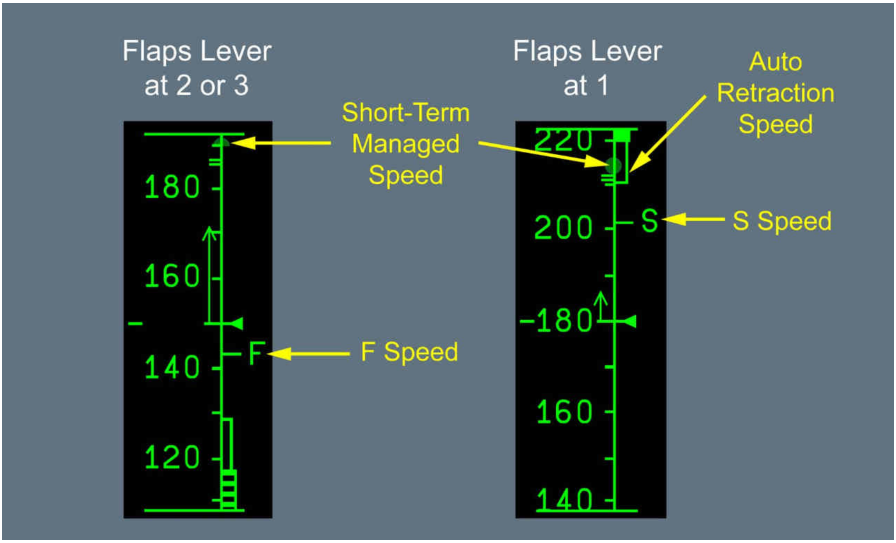
L12


V1
INOP
120
100
080
060

V1 is not valid.
Temporarily flashes, then remains steady.

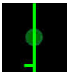
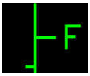
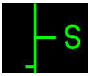
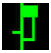
AFTER LIFTOFF

After Liftoff


Flaps Lever
at 2 or 3
180
160
140
120
F
Short-Term
Managed
Speed
F Speed
Flaps Lever
at 1
220
200
S
180
160
140
Auto
Retraction
Speed
S Speed

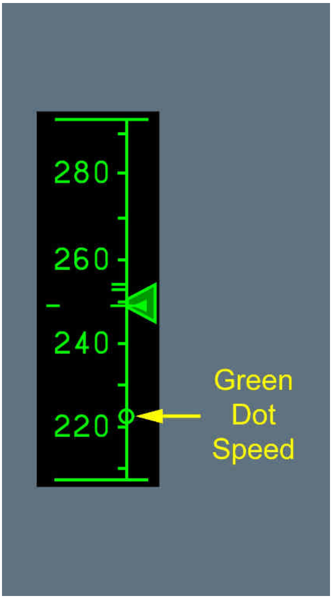
L3 The PRIMs provide these speeds.

L1

	Indicates the short-term managed speed, when the speed is either managed or selected. For more information about the short-term managed speed, *Refer to DSC-22-FG-60-20 Short-Term Managed Speed*.
	Appears when the FLAPS lever position is set to 2 or 3, also referred to as F speed. For more information about F speed, *Refer to DSC-22-27-10-20 F*.
	Appears when the FLAPS lever position is set to 1, also referred to as S speed. For more information about S speed, *Refer to DSC-22-27-10-20 S*.
	When the FLAPS lever is set to 1 (CONF 1+F), indicates the automatic retraction speed. For more information about the automatic retraction speed, *Refer to DSC-27-20-20 Automatic Retraction System*.

Ident.: DSC-31-CDS-50-30-40-20-00018187.0001001 / 24 APR 14

IN CLEAN CONFIGURATION

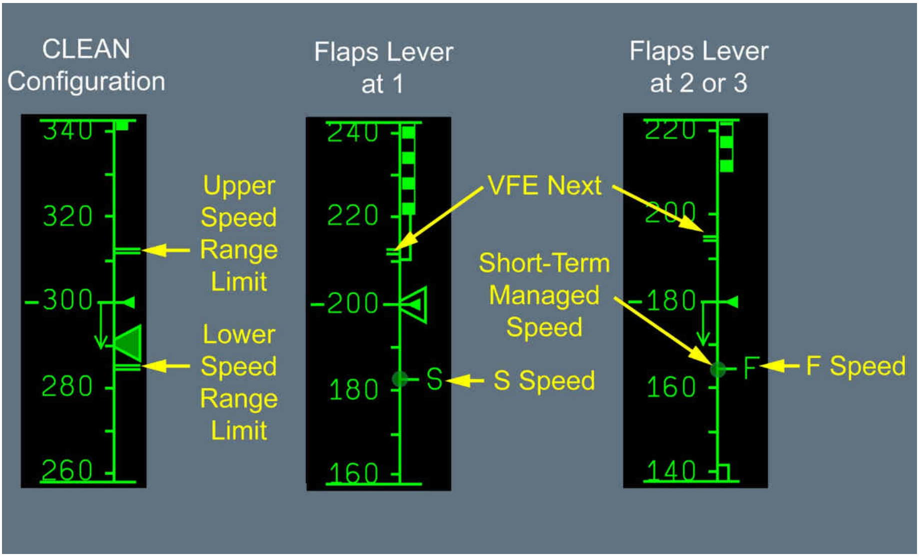


In clean configuration:
- The S speed no longer appears
- The green dot speed appears.

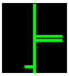
AIRSPEED INDICATIONS DURING DESCENT

Ident.: DSC-31-CDS-50-30-40-00018188.0001001 / 24 APR 14
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB

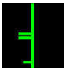
Airspeed Indication During Descent


CLEAN
Configuration
340
320
300
280
260
Upper
Speed
Range
Limit
Lower
Speed
Range
Limit
Flaps Lever
at 1
240
220
200
180
160
S
VFE Next
Short-Term
Managed
Speed
S Speed
Flaps Lever
at 2 or 3
220
200
180
160
140
F
F Speed

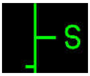
L123



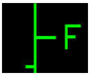
The PRIMs provide the speed range limits.
Indicates the range of aircraft speeds, that permits to maintain an appropriate vertical trajectory.
Appears during a managed descent only.
For more information about the upper and lower speed range limits, *Refer to DSC-22-FG-60-20 FMS Speed/Mach Target*.



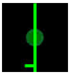
When the aircraft is below 20 000 ft, indicates the speed limit of the next flap configuration, also referred to as VFE next.
For more information about VFE next, *Refer to DSC-22-27-10-20 VFE NEXT*.



Appears when the FLAPS lever position is set to 1, also referred to as S speed.
For more information about S speed, *Refer to DSC-22-27-10-20 S*.



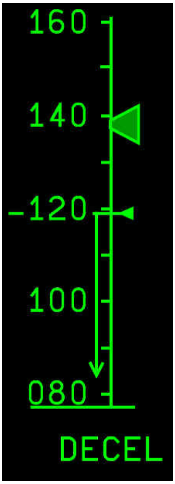
Appears when the FLAPS lever position is set to 2 or 3, also referred to as F speed.
For more information about F speed, *Refer to DSC-22-27-10-20 F*.



Indicates the short-term managed speed, when the speed is either managed or selected.
For more information about the short-term managed speed, *Refer to DSC-22-FG-60-20 Short-Term Managed Speed*.

AIRSPEED INDICATIONS AFTER TOUCHDOWN

Ident.: DSC-31-CDS-50-30-40-00018189.0001001 / 24 APR 14
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB



After touchdown, the only indications that appear on the airspeed scale are:
- The current airspeed
- The selected or managed speed before touchdown
- The speed trend arrow.

DECEL	The autobrake is active, and the aircraft decelerates. Appears below the speed scale, when the aircraft deceleration rate reaches at least 80 % of the selected deceleration. No longer appears when the aircraft deceleration rate is less than 70 % of the selected deceleration.

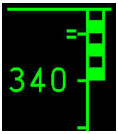
Note: *On a slippery runway, the A-SKID may be activated before the aircraft reaches the selected deceleration. Therefore, the DECEL indication may not appear, even if the autobrake is active.*

AIRSPEED PROTECTIONS

Ident.: DSC-31-CDS-50-30-40-00018190.0001001 / 24 APR 14
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB

L3 The PRIMs provide speed protection information. If all three PRIMs are lost, the ADRs provide the VMO/MMO information.

L1 VMAX

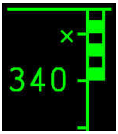


Indicates the VMAX speed, that is the lowest of the following speeds:
- VMO/MMO
- VLE
- VFE.

For more information about the VMAX definition, *Refer to DSC-22-27-10-20 VMAX*.

In normal law, when the aircraft reaches the speed marked with the symbol =, the high speed protection activates,

For more information about the high speed protection, *Refer to DSC-22-27-20 High Speed Protection*.

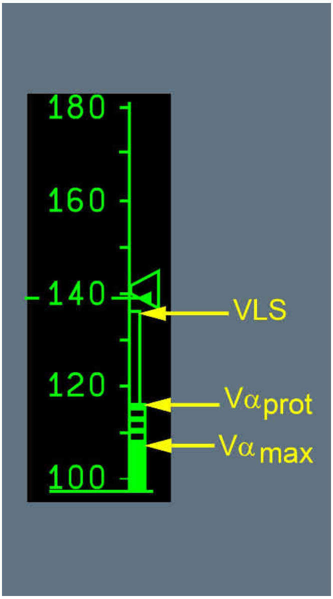


In alternate or direct law, the VMAX indication remains displayed, but the high speed protection is not available.

MINIMUM SPEEDS

MINIMUM SPEEDS IN NORMAL LAW

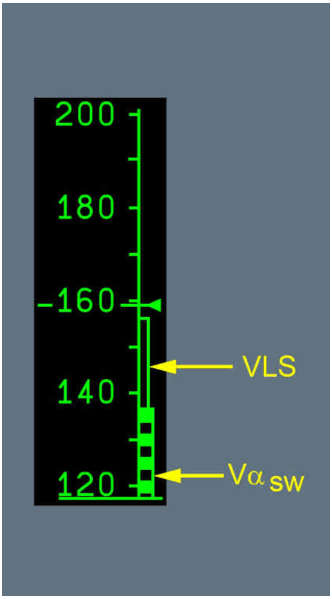
L12



The protection speeds, in normal law, are:

- The minimum selectable speed, also referred to as VLS
  For more information about VLS, *Refer to DSC-22-27-10-20 VLS*.
  No longer appears on ground.
- The alpha protection speed is also referred to as $V\alpha_{prot}$.
  For more information about $V\alpha_{prot}$, *Refer to DSC-22-27-10-20 V alpha prot*.
- The alpha max speed is also referred to as $V\alpha_{max}$.
  For more information about $V\alpha_{max}$, *Refer to DSC-22-27-10-20 V alpha Max*.

MINIMUM SPEEDS IN ALTERNATE LAW AND DIRECT LAW



The protection speeds in alternate law or in direct law, are:

- VLS
- The stall warning speed, also referred to as $V\alpha_{sw}$. For more information about $V\alpha_{sw}$, *Refer to DSC-22-27-10-20 V alpha sw*.

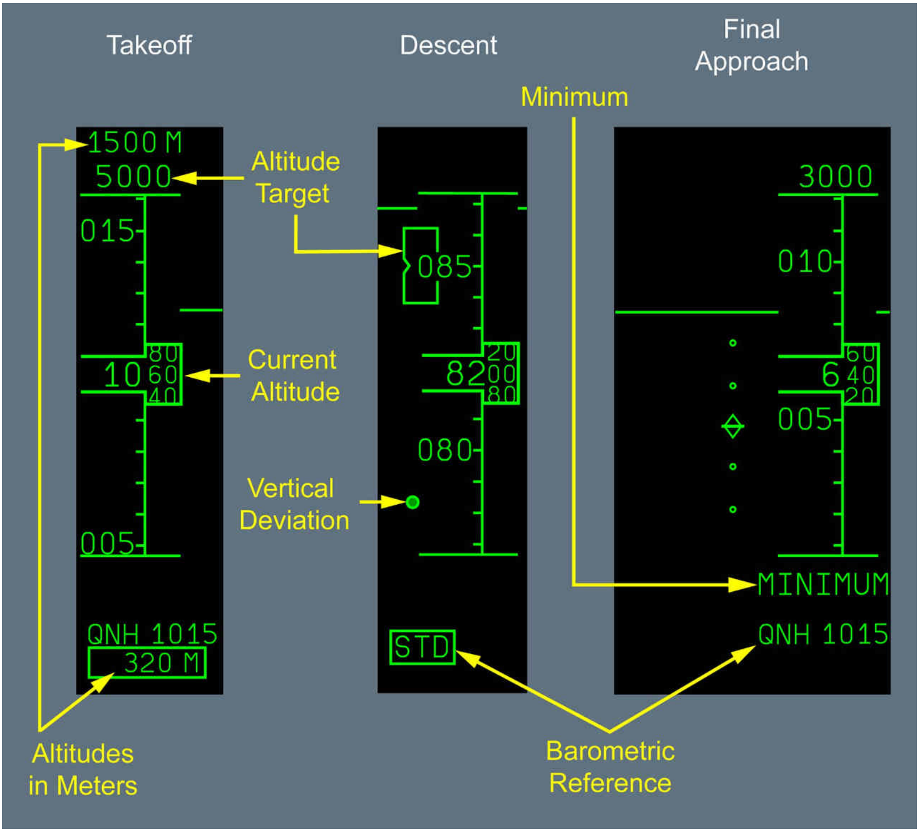
Altitude

ALTITUDE

Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB

Ident.: DSC-31-CDS-50-30-50-10-00018147.0002001 / 01 MAR 17

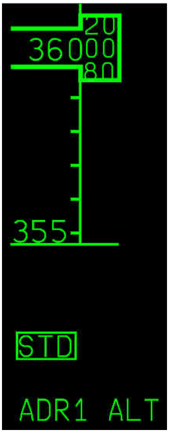
Altitude


Takeoff
Descent
Final Approach
Minimum
1500 M
5000
Altitude Target
015
085
3000
010
10
80
60
40
8200
20
00
80
6
60
40
20
Current Altitude
005
080
005
Vertical Deviation
MINIMUM
QNH 1015
320 M
STD
QNH 1015
Altitudes in Meters
Barometric Reference

L12

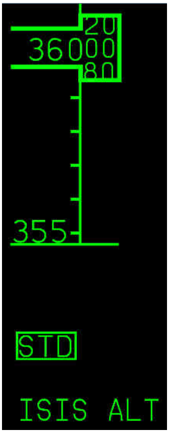
ALT	Appears, instead of the altitude scale, if the altitude data, with the reference selected on the AFS CP, is not available. Temporarily flashes, then remains steady.

L12



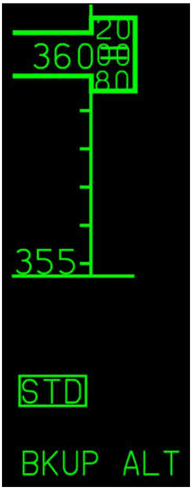
Appears on both HUDs when the altitude is based on only one ADR. The automatic monitoring rejected the other ADRs for altitude data. The required equipment for RVSM is not operative.
For more information about RVSM, *Refer to PRO-SPO-RVSM Required Equipment and Functions*.
For more information about the ADIRS monitoring, *Refer to DSC-34-NAV-20-10-50 ADIRS Monitoring*.

L12



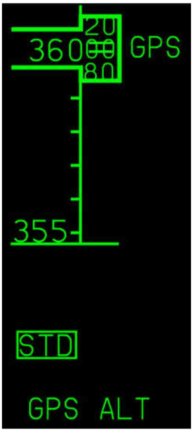
Appears when the ISIS altitude indication is displayed on the HUD. The required equipment for RVSM is not operative.
For more information about RVSM, *Refer to PRO-SPO-RVSM Required Equipment and Functions*.
For more information about the display of the ISIS altitude indication, *Refer to DSC-34-NAV-20-30 Display of ISIS Speed and Altitude Indications*.

L12



Appears when the backup altitude indication (from FADECs) is displayed on the HUD. The required equipment for RVSM is not operative.
For more information about RVSM, *Refer to PRO-SPO-RVSM Required Equipment and Functions*.
For more information about the backup altitude indications, *Refer to DSC-34-NAV-20-30 Backup Speed and Backup Altitude Indications*.

L123



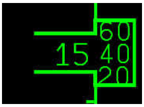
Appears when the ADRs, the ISIS, and the backup altitude (from FADECs) no longer provide the altitude. The backup GPS altitude is displayed on the HUD.
The backup GPS altitude remains available via the PRIMs.
The required equipment for RVSM is not operative.
For more information about RVSM, *Refer to PRO-SPO-RVSM Required Equipment and Functions*.

Ident.: DSC-31-CDS-50-30-50-10-00018191.0002001 / 01 MAR 17

CURRENT ALTITUDE

L3 The ADRs provide the current altitude information.

L12

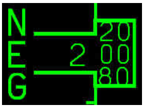


Indicates the current altitude in feet.

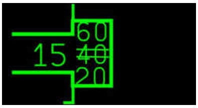
Pulses, when the difference between the current altitude and the selected altitude:
- Decreases
- Is between 200 ft and 750 ft.

Flashes, when the difference between the current altitude and the selected altitude:
- Increases
- Is above 200 ft.

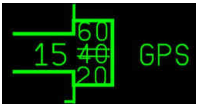
L1



The current altitude is negative.



The ADRs and the ISIS no longer provide the altitude. The backup altitude (from FADECs and AOA probes) is displayed. For more information about the display of the backup altitude, *Refer to DSC-34-NAV-20-30 Backup Speed and Backup Altitude Indications*.



The ADRs, the ISIS, and the backup altitude (from FADECs and AOA probes) no longer provide the altitude. The backup GPS altitude remains available via the PRIMs. The accuracy of the altitude is degraded, and the altitude appears with a precision around ±500 ft.

Ident.: DSC-31-CDS-50-30-50-10-00018192.0001001 / 02 OCT 14

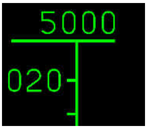
ALTITUDE TARGET

L3 The PRIMs provide the altitude target. If all three PRIMs are lost, the FCU backup provides the altitude target.

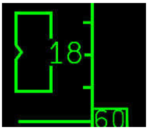
L1 Indicates:
- An Altitude, when the selected barometric reference is QNH, or
- A FL, when the selected barometric reference is STD.

L2 Appears on top of the altitude scale if the selected altitude is above the current altitude. Appears below the altitude scale if the selected altitude is below the current altitude.

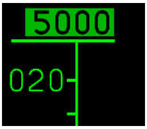
L1



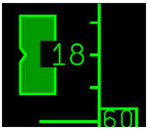
- Indicates the AFS CP selected altitude when the vertical guidance is selected
- The altitude target is outside the altitude scale.



- Indicates the AFS CP selected altitude when the vertical guidance is selected
- The altitude target is within the altitude scale.

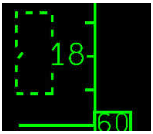


- Indicates an altitude constraint when the vertical guidance is managed
- The next altitude target is outside the altitude scale.



- Indicates an altitude constraint when the vertical guidance is managed
- The next altitude target is within the altitude scale.

L12



- Indicates the AFS CP selected altitude when the vertical guidance disregards the altitude target.
  This case occurs when a vertical approach mode is engaged and the aircraft descends through the missed approach altitude previously selected.
- The next altitude target is within the altitude scale.

L12

ALT SEL

Appears, instead of the altitude target value, if the following information cannot be displayed:
- The altitude that the flight crew selects on the AFS CP
- The altitude that the flight crew selects on the FCU backup page of the MFD
- The altitude constraint from the FMS.

Temporarily flashes, then remains steady.

Ident.: DSC-31-CDS-50-30-50-10-00018193.0001001 / 02 OCT 14

VERTICAL DEVIATION

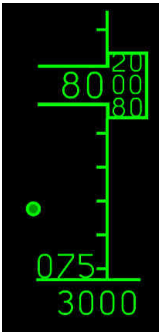
L3 The FMS provides the vertical deviation.

L1 The vertical deviation is the difference between the current altitude of the aircraft and the theoretical vertical profile of the FMS.

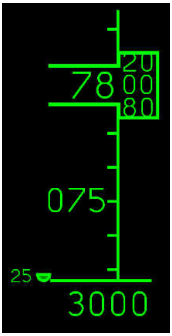
L2 The vertical deviation symbol appears when:
- The aircraft reaches the Top of Descent (T/D), or
- The FMS flight phase is descent, or approach.

The vertical deviation (VERT DEV) also appears on the DES and APPR panels of the FMS PERF page.

L1



When the vertical deviation is less than 570 ft, the vertical deviation symbol is a disk, located at the theoretical FMS altitude.

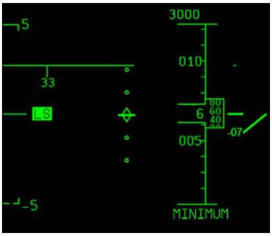


When the vertical deviation exceeds 570 ft, the symbol becomes a half disk, located at the altitude scale limits. In this case, it is associated with the numerical value displayed on two digits, in hundreds of feet.

L2 *Note:* *When the aircraft is in a holding pattern, the vertical deviation is the difference between the altitude of the aircraft, and the altitude of the holding exit. For more information, Refer to DSC-22-FMS-10-40-20 Purpose.*

Ident.: DSC-31-CDS-50-30-50-10-00021674.0002001 / 01 MAR 17

MINIMUM


5
33
LS
3000
010
6
80
60
40
-07
005
-5
MINIMUM

The MINIMUM indication appears when the current altitude of the aircraft is below the minimum that the flight crew entered in the BARO of the APPR panel of the FMS PERF page. For more information, *Refer to DSC-22-FMS-20-20-20 BARO/RADIO Entry Fields*.

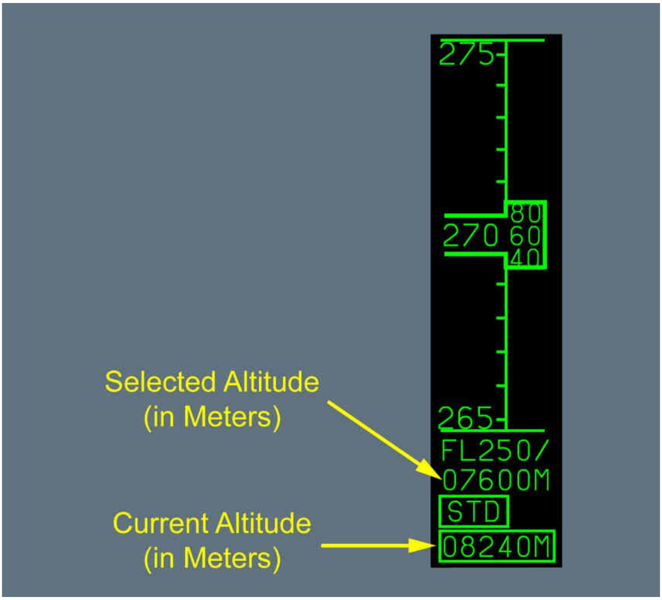
For more information about the display when the flight crew entered a minimum in the RADIO field, *Refer to DSC-31-CDS-50-30-70 RA Height*.

Ident.: DSC-31-CDS-50-30-50-10-00018194.0001001 / 01 JUL 14

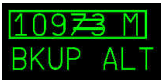
ALTITUDE IN METERS

L3 The PRIMs provide the meter indication.

L1 The selected altitude and the current aircraft altitude indications appear in meters, when the flight crew presses the METER pb on the AFS CP.

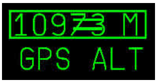

275
80
270
60
40
265
FL250/
07600M
STD
08240M
Selected Altitude
(in Meters)
Current Altitude
(in Meters)

L12



The ADRs and the ISIS no longer provide the altitude. The backup altitude (from FADECs) is displayed.
For more information about the display of the backup altitude, *Refer to DSC-34-NAV-20-30 Backup Speed and Backup Altitude Indications*.

L13



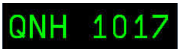
The ADRs, the ISIS, and the backup altitude (from FADECs) no longer provide the altitude. The accuracy of the altitude is degraded, and the altitude appears with a precision around ±500 ft.
The backup GPS altitude remains available via the PRIMs.

Ident.: DSC-31-CDS-50-30-50-10-00018195.0001001 / 04 MAY 16

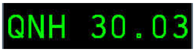
BAROMETRIC REFERENCE

L3 The ADRs provide the selected barometric reference.

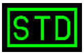
L1



The flight crew sets the barometric reference to QNH and select the barometric reference in hPa.



The flight crew sets the barometric reference to QNH and select the barometric reference in inches of mercury.

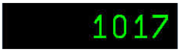


The flight crew sets the barometric reference to STD.

L2 Flashes, when the flight crew selected:
- QNH on the AFS CP, and the aircraft is in the climb phase, above the transition altitude, or
- STD on the AFS CP, and the aircraft is in the approach phase, below the transition flight level.

Note: *If the transition altitude (level) is not available from the FMS, the default transition altitude (level) is automatically set to 2 500 ft RA height.*

L1 For more information about the selection of the barometric reference, *Refer to DSC-31-CDS-40-60 Barometric Reference*.



If the automatic monitoring of air data rejects the altitude of the three ADRs, the ISIS provides the altitude information but cannot provide the barometric reference. The STD and QNH barometric references are not available. Only the pressure reference in hPa is displayed.

If the backup altitude is manually or automatically selected, only the STD barometric reference is available.
For more information about the display of the backup altitude, *Refer to DSC-34-NAV-20-30 Backup Speed and Backup Altitude Indications*.

Altitude Alerts

ALTITUDE ALERTS

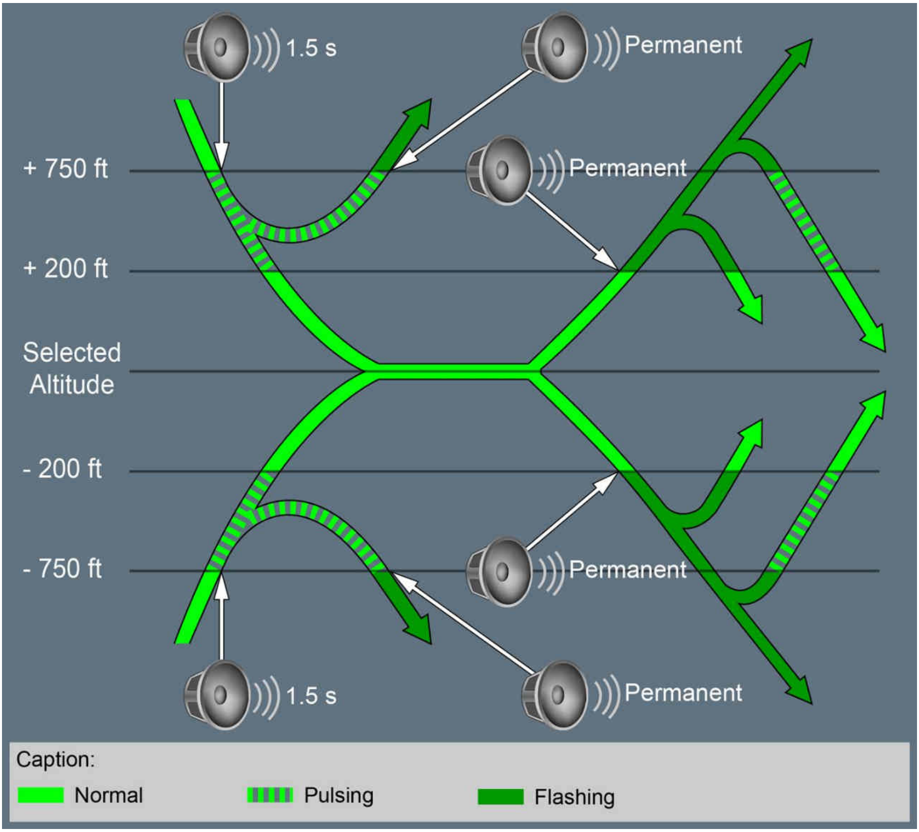
Ident.: DSC-31-CDS-50-30-60-00018148.0001001 / 24 APR 14
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB

In manual flight, and when the aircraft reaches the selected altitude (flight level), or when the aircraft significantly deviates from the selected altitude (flight level), the ECAM generates an altitude alert:
- The altitude frame pulses, or flashes
- The C chord sound is generated.

C Chord Sound (Not available in PDF)

L3 The altitude alerts are triggered, when the altitude provided by the ADIRS is different from the altitude selected on the AFS CP.

Altitude Alerts


1.5 s
Permanent
Permanent
+ 750 ft
+ 200 ft
Selected Altitude
- 200 ft
- 750 ft
Permanent
1.5 s
Permanent
Caption:
Normal
Pulsing
Flashing

L2 The C chord sound stops, when the flight crew:
- Selects a new altitude target, or
- Presses the EMER CANC pb on the ECAM CP, or
- Presses the MASTER WARN pb on the glareshield.

The altitude frame stops pulsing (flashing), when the flight crew selects a new altitude target.

This alert is inhibited:
- In approach, when the aircraft captures the glideslope, or
- When the landing gear is set to DOWN, and the slats are extended, or

- When the landing gear is locked down, or
- When the AP/FD TCAS mode engages upon a Resolution Advisory order.

Intentionally left blank

RA Height

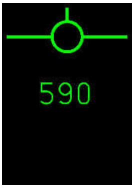
RA HEIGHT

Ident.: DSC-31-CDS-50-30-70-00018149.0001001 / 03 SEP 14
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB

The RA height appears on the HUD when the aircraft height is less than 2 500 ft.

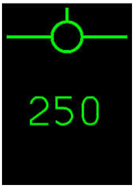
L3 The RA height value changes:
- Every 10 ft, above 50 ft
- Every 5 ft, between 5 ft and 50 ft
- Every foot below 5 ft.

L1

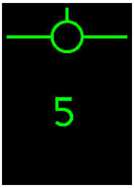


Indicates the RA height in feet, when the aircraft is:
- Below 2 500 ft
- Above 400 ft.

L12

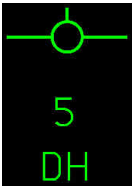


Indicates the RA height, when the aircraft is:
- Below 400 ft
- Above the minimum entered on the MFD (on the APPR panel of the FMS PERF page) +100 ft.
  Below 400 ft, the size of the RA height value increases.



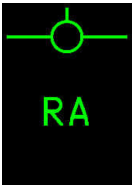
Appears when the aircraft is below:
- The minimum entered on the MFD (on the APPR panel of the FMS PERF page) +100 ft, or
- 400 ft, if the flight crew did not enter a minimum on the MFD (on the APPR panel of the FMS PERF page).

L12



Appears when the aircraft is below the minimum entered on the MFD (on the APPR panel of the FMS PERF page) .
Temporarily pulses, then remains steady.
Does not appear when the backup altitude (from FADECs and AOA probes) is manually or automatically selected. For more information, *Refer to DSC-34-NAV-20-30 Backup Speed and Backup Altitude Indications*.

L12



Appears when:
- The three radio altimeters (i.e. RA A, RA B, and RA C) are failed
- The STD barometric reference is not selected.

Temporarily flashes, then remains steady.

L2 The radio altitude indication no longer appears when:
- The aircraft is on ground with T.O power applied, or
- The aircraft is above 2 500 ft RA height.

Vertical Speed

VERTICAL SPEED

Ident.: DSC-31-CDS-50-30-80-00018150.0003001 / 26 JUL 17
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB

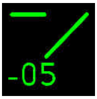
L2 The vertical speed indicated on the HUD is based on the barometric data from the ADRs and on inertial data from the IRs.

L1 The vertical speed scale ranges from -6 000 ft/min to 6 000 ft/min.

L3 *Note:* *In order to compute the baro inertial vertical speed, each IR mixes its own inertial data to the barometric data received from one ADR:*
- *In normal configuration, each IR uses its own ADR (IR 1 uses ADR 1, IR 2 uses ADR 2 and IR 3 uses ADR 3)*
- *The IR 1(2) changes its ADR source based on the ADR status (operative or failed), independently from the position of the AIR DATA and the ATT HDG selectors*
- *The IR 3 changes its ADR source based on the position of the AIR DATA and the ATT HDG selectors and on the ADR status (operative or failed).*

L2 If the baro inertial vertical speed from the IRs is no longer available, the ADRs provide the vertical speed based on a pure barometric vertical speed.

L12

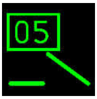


Indicates the vertical speed of the aircraft in hundred feet.

Note: *The digital indication only appears, when the vertical speed exceeds +/-200 ft/min.*
If the vertical speed exceeds +/-6 000 ft/min, the pointer remains on the top(bottom) of the scale.

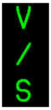
Flashes, if the vertical speed:
- Equals, or exceeds +/-6 000 ft/min, or
- Exceeds -2 000 ft/min, and the aircraft is in descent between 2 500 ft and 1 000 ft , or
- Exceeds -1 200 ft/min, and the aircraft is in descent below 1 000 ft.

L12



- The vertical speed is no longer based on the baro inertial vertical speed from the IRs, but based on the barometric vertical speed from the ADRs, or
  There is a time lag between the vertical speed indication and the current vertical speed of the aircraft.
- The vertical speed is based on baro inertial data from the backup sources.

L12



The vertical speed information is not available.
This flag is located on the right side of the altitude scale, in front of the current altitude.
Temporarily flashes, then remains steady.

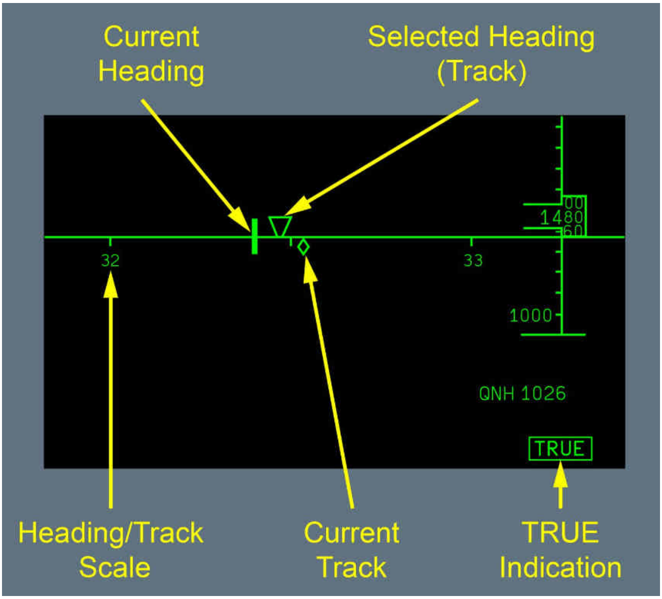
Heading/Track

HEADING/TRACK

Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB

Ident.: DSC-31-CDS-50-30-90-10-00018196.0001001 / 24 APR 14

Heading/Track


Current
Heading
Selected Heading
(Track)
00
1480
60
32
33
1000
QNH 1026
TRUE
Heading/Track
Scale
Current
Track
TRUE
Indication

Ident.: DSC-31-CDS-50-30-90-10-00018216.0003001 / 26 JUL 17

HEADING/TRACK SCALE

L3 The ADIRS provide the heading information.

L1 Appears on the horizon line, in the MAG or TRUE reference.
Headings are marked every 5 ° with a numeric value every 10 °.

L2 The heading/track scale is in the TRUE reference:
- When the flight crew presses the TRUE/MAG pb, on the AFS CP
- At high latitudes, when the ADIRS automatically change the MAG North reference to the TRUE North reference.

For more information about the polar navigation, *Refer to DSC-22-FMS-10-30-30 Introduction*.

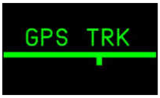
L12

HDG	Appears at the bottom of the HUD instead of the heading scale, if the heading information is not available. Temporarily flashes, then remains steady.

L1 GPS TRK MESSAGE

L3 The ISIS provide the current GPS true track information.

L12

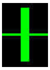
	Indicates the current GPS true track of the aircraft, on the heading/track scale, if the heading information is not available and the ISIS is selected as inertial source data. When displayed, the heading/track scale replaces the heading scale.

Ident.: DSC-31-CDS-50-30-90-10-00018202.0001001 / 24 APR 14

CURRENT HEADING

L3 The ADRs provide the heading value.

L1

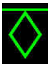
	Indicates the current heading of the aircraft, on the heading scale. The heading value refers to true or magnetic north, depending on the MAG/TRUE pb selection.

Ident.: DSC-31-CDS-50-30-90-10-00018215.0001001 / 26 JUL 17

CURRENT TRACK

L3 The IRS provide the current track information.

L12

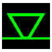
	Indicates the current track of the aircraft, on the heading/track scale. No longer appears, when the FPV is close to the horizon line, because the FPV also provides the track information.

Ident.: DSC-31-CDS-50-30-90-10-00018217.0001001 / 24 APR 14

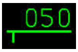
SELECTED HEADING(TRACK)

L3 If all three PRIMs are lost, the FCU backup provides the selected heading(track) information. In all other cases, the PRIMs provide the selected heading(track) information.

L12

	Indicates the heading(track) that the flight crew selected on the AFS CP. Appears, when: - The HDG/TRACK mode is engaged, or - The APs and FDs are off.

L1

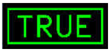


The selected heading(track) is outside the display area, the numerical value appears instead of the symbol on the right(left) side of the heading/track scale.

Ident.: DSC-31-CDS-50-30-90-10-00018218.0001001 / 24 APR 14

TRUE INDICATION

L123



The heading reference is TRUE north.

Appears when:
- The flight crew presses the TRUE/MAG pb, on the AFS CP
- At high latitudes, the ADIRS automatically change the MAG north reference to the TRUE north reference.

  The aircraft is at high latitude:
  - Above 82.5 ° North, or
  - Above 73.5 ° North, with a longitude between 117.5 ° West, and 92.5 ° West, or
  - Below 60.5 ° South.

  When the aircraft reaches high latitudes, the SELECT TRUE NORTH REF message appears on the ND, and requests that the flight crew selects the TRUE north reference.

Temporarily flashes, then remains steady when the slats are extended.
For more information about the polar navigation, *Refer to DSC-22-FMS-10-30-30 Introduction*.

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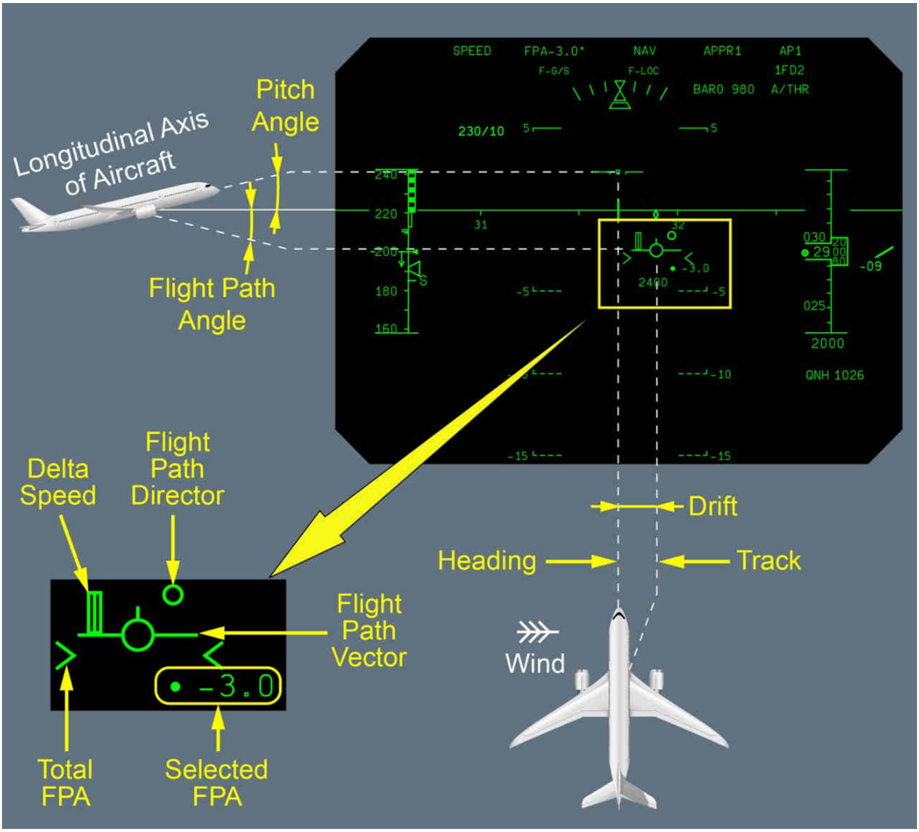
Guidance

TRAJECTORY GUIDANCE

Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB

Ident.: DSC-31-CDS-50-30-100-10-00018219.0001001 / 24 APR 14

Guidance

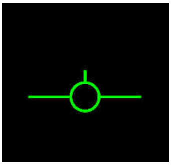

SPEED
FPA-3.0°
NAV
APPR1
AP1
F-G/S
F-LOC
1FD2
BARO 980
A/THR
230/10
Pitch Angle
Longitudinal Axis of Aircraft
Flight Path Angle
240
220
200
180
160
31
32
2400
-3.0
030
29
025
2000
QNH 1026
-09
-5
-10
-15
Delta Speed
Flight Path Director
Flight Path Vector
Total FPA
Selected FPA
Drift
Heading
Track
Wind

Ident.: DSC-31-CDS-50-30-100-10-00018220.0005001 / 26 JUL 17

FLIGHT PATH VECTOR (FPV)

L3 The ADIRS provide the flight path angle required to display the FPV.

L12

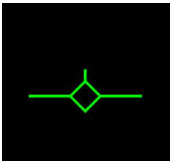


The FPV indicates:

- The Flight Path Angle (FPA) on the vertical axis
- The current track on the lateral axis.
  The current track is computed via the use of the hybrid position between IRS and GNSS/GPS. If the GPIRS position is not valid, the IRS provides the current track, and the FPV IRS message appears on the right lower part of the HUD.

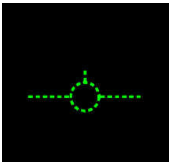
When both autopilots are not engaged, the FPV symbol shall be a circle with two horizontal lines (representing A/C wings) and one vertical line (representing A/C tail).

L1



When at least one autopilot is engaged, the FPV symbol shall be a diamond with two horizontal lines (representing A/C wings) and one vertical line (representing A/C tail).

L13

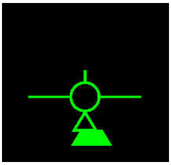


Appears as a dotted line at the edge of the display, if the FPV is outside the display area of the HUD.

The FPV is fixed at zero:

- On ground
- Under 60 kt.

L13



Appears when one engine fails during takeoff, or go-around.
The sideslip index then corresponds to the beta target.

Appears, when:

- The flight crew selects CONF 1, 2, or 3
- The N1 of the remaining engine is above 80 %
- The difference between the N1 of the engines is above 40 %.

L12

FPV IRS

The FPV only uses IRS data.
Temporarily flashes, then remains steady.

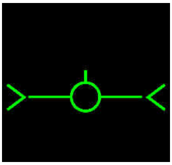
Ident.: DSC-31-CDS-50-30-100-10-00018221.0004001 / 29 JAN 19

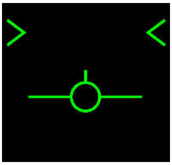
ENERGY CHEVRONS

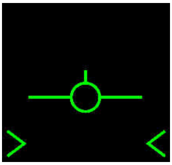
L3

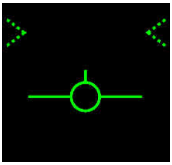
The PRIMs provide the energy chevrons information.

L1 Indicates the total energy of the aircraft. The position of the chevrons indicates if the aircraft accelerates, or decelerates on the current flight path.


The aircraft is at a constant speed.


The aircraft will accelerate, if the flight crew maintains the current thrust and flight path.


The aircraft will decelerate, if the flight crew maintains the current thrust and flight path.

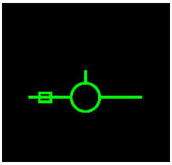

Appear as a dotted line:
- At the edge of the display, or
- When the FPV is outside the display area of the HUD.

Note: When the aircraft is on ground, during the taxi and the takeoff roll, the same symbol indicates the acceleration/deceleration of the aircraft.

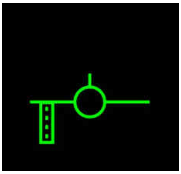
Ident.: DSC-31-CDS-50-30-100-10-00018223.0003001 / 26 JUL 17

DELTA SPEED

The PRIM provides the delta speed.
Indicates the difference between the current airspeed and the selected or managed airspeed target.

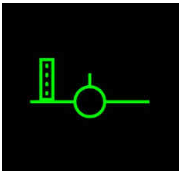

The current airspeed is equal to the airspeed target.

L12



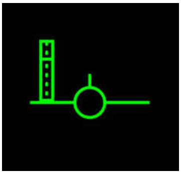
The current airspeed is less than the airspeed target, and the delta speed is less than or equal to 10 kt.
Each dot inside the vertical ribbon represents 2 kt.

L12

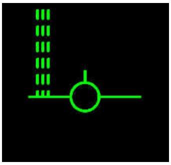


The current airspeed is more than the airspeed target, and the delta speed is less than or equal to 10 kt.
Each dot inside the vertical ribbon represents 2 kt.

L12



The current airspeed is more than the airspeed target, and the delta speed is more than 10 kt but below 20 kt.
Each dot inside the vertical ribbon represents 2 kt.

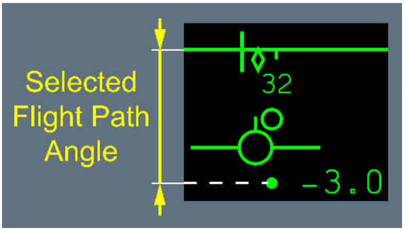


The current airspeed is more than the airspeed target, and the delta speed is more than 20 kt.

Ident.: DSC-31-CDS-50-30-100-10-00018224.0001001 / 24 APR 14

SELECTED FLIGHT PATH ANGLE

L123



Indicates the FPA that the flight crew selects on the AFS CP.

Appears, when:
- The flight crew selects TRK-FPA on the AFS CP
- The FD is engaged
-
  - The FPA mode is engaged, and the flight crew changes the selected FPA on the AFS CP, or
    The selected FPA appears for 5 s.
  - The FPA mode is not engaged, and the flight crew preselects the FPA value on the AFS CP.
    No longer appears when the FPA mode engages, or if any other AFS mode engages.

FD GUIDANCE

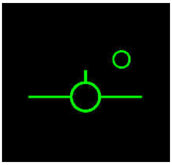
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB

Ident.: DSC-31-CDS-50-30-100-20-00018222.0001001 / 02 OCT 14

FLIGHT PATH DIRECTOR (FPD)

L3 The PRIMs provide the FPD information.

L12



Indicates the AFS guidance in relation to the flight path vector.
Appears after liftoff, when the FD is engaged.

Temporarily pulses:
- After liftoff, or
- During a go-around.

Flashes, when one of the FD bars flashes on the PFD. For more information, *Refer to DSC-22-FG-30-50 Pitch and Roll Bar Flashing*.
Appears as a dotted circle at the edge of the display, if the FPD is outside the display area of the HUD.

No longer appears:
- If the attitudes of the aircraft are excessive, or
- During flare, except during autoland.

Intentionally left blank

Departure and Approach Guidance

APPROACH GUIDANCE

Ident.: DSC-31-CDS-50-30-110-00018586.0001001 / 06 NOV 14
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB

The approach guidance indications on the HUD differ, when the aircraft performs:
- xLS approaches (*Refer to DSC-31-CDS-50-30-110 xLS Approaches*), or
- RNP AR/RNAV(RNP) approaches and RNAV departures (*Refer to DSC-31-CDS-50-30-110 RNP AR/RNAV(RNP) Departures And Approaches*).

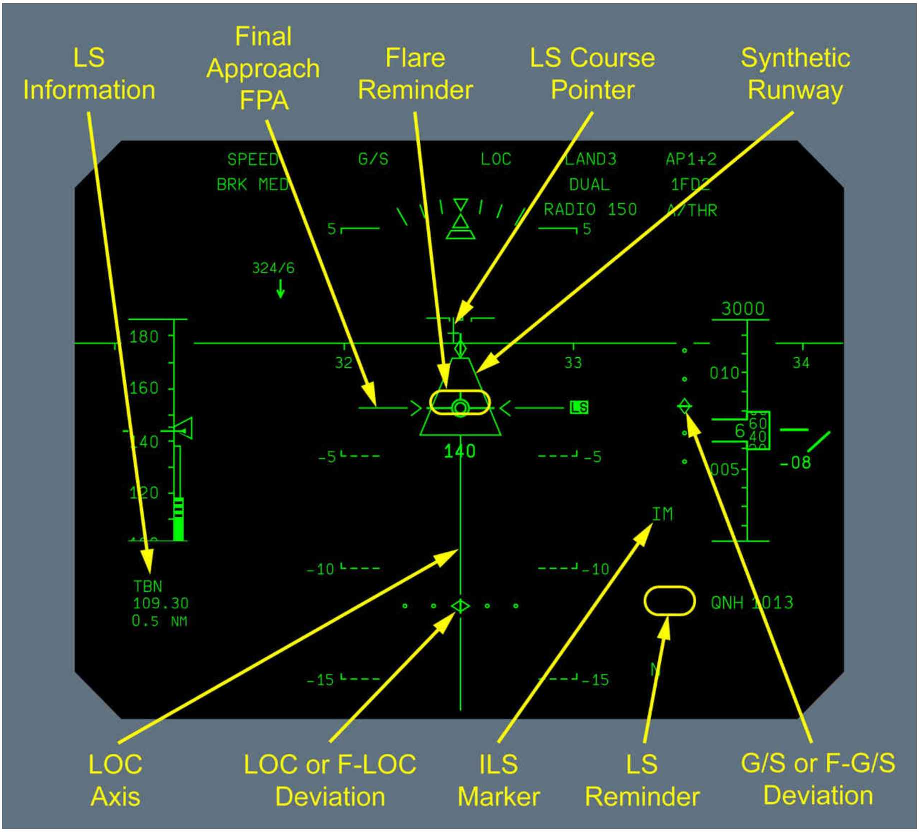
For more information about the different approaches included in the xLS and RNP AR/RNAV(RNP) categories, *Refer to PRO-NOR-SOP-180-A Cross-Reference Table*.

XLS APPROACHES

Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB

Ident.: DSC-31-CDS-50-30-110-10-00018225.0001001 / 04 MAY 18

xLS Approaches

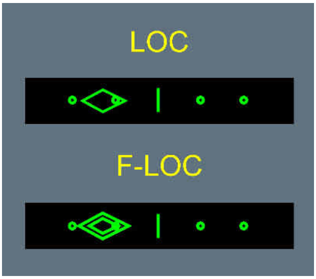

LS Information
Final Approach FPA
Flare Reminder
LS Course Pointer
Synthetic Runway
SPEED
BRK MED
G/S
LOC
LAND3
DUAL
RADIO 150
AP1+2
1FD2
A/THR
5
5
324/6
3000
180
160
140
120
32
33
34
010
LS
6
60
40
-08
140
-5
-5
005
IM
-10
-10
TBN
109.30
0.5 NM
QNH 1013
-15
-15
LOC Axis
LOC or F-LOC Deviation
ILS Marker
LS Reminder
G/S or F-G/S Deviation

Ident.: DSC-31-CDS-50-30-110-10-00018227.0001001 / 17 NOV 17

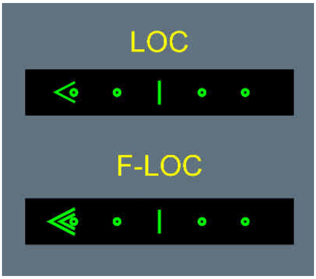
LOC OR F-LOC DEVIATION

L3 The MMR provides the LOC and F-LOC deviation.

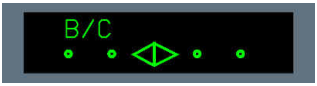
L1



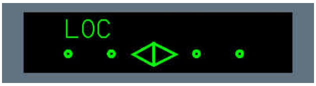
The LOC and F-LOC deviations are within the scale.



The LOC and F-LOC deviations are outside the scale.



The flight crew selected a back beam approach or a LOC back course departure .



The flight crew selected a LOC approach compatible with the FLS function.

If the deviation exceeds a quarter deflection, the deviation scale flashes and the LOC deviation symbol flashes when:
- The aircraft is below 1 000 ft down to 15 ft
- LAND1, LAND2, or LAND3 appears on the FMA
- LOC, LAND, or FLARE is engaged.

L2 For more information about the conditions of excessive deviation, *Refer to DSC-22-FG-100-20 Excessive Deviation Indication*.

L1 If the LOC transmitter fails:
- The LOC indexes disappear on both HUDs
- The LOC scales temporarily flash on both HUDs.

L2 The detection of the LOC transmitter failure is available between 1 000 ft and 15 ft, when the LOC mode is engaged.

For more information about the LS transmitter failure, *Refer to DSC-22-FG-100-20 Failure of the LS Transmitter*.

L12

LOC	Appears, instead of the LOC scale, if the LOC deviation is not valid. Temporarily flashes, then remains steady. For more information, *Refer to DSC-22-FG-100-20 Failure of one LS Receiver*.

L123

F-LOC	Appears, instead of the F-LOC scale, if the F-LOC deviation is not valid. The F-LOC deviation is not available if the FLS function of the MMR on the same side is lost. Temporarily flashes, then remains steady.

L12

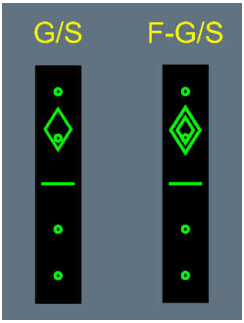
LOC F-LOC	Appears, instead of the LOC or F-LOC scale, if the MMR sends inconsistent information. Temporarily flashes, then remains steady.

Ident.: DSC-31-CDS-50-30-110-10-00018228.0001001 / 06 NOV 14

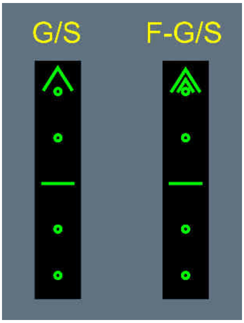
G/S OR F-G/S DEVIATION

L3 The MMR provides the G/S and F-G/S deviation.

L1



The G/S and F-G/S deviations is within the scale.



The G/S and F-G/S deviations is outside the scale.

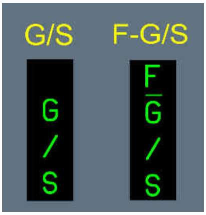
If the deviation exceeds a quarter deflection, the deviation scale flashes and the G/S deviation symbol flashes when:
- The aircraft is below 1 000 ft down to 100 ft
- LAND1, LAND2, or LAND3 appears on the FMA
- G/S, LAND, or FLARE is engaged.

L2 For more information about the conditions of excessive deviation, *Refer to DSC-22-FG-100-20 Excessive Deviation Indication*.

L1 If the G/S transmitter fails:
- The G/S indexes disappear on both HUDs
- The G/S scales temporarily flash on both HUDs.

L2 The detection of the G/S transmitter failure is available between 1 000 ft and 100 ft, when the G/S, LAND or FLARE mode is engaged.
For more information about the LS transmitter failure, *Refer to DSC-22-FG-100-20 Failure of the LS Transmitter*.

L1 *Note:* *During a LOC or LOC B/C approach flown with the FLS function, the lateral deviation symbol is a single diamond, as for an ILS approach.*



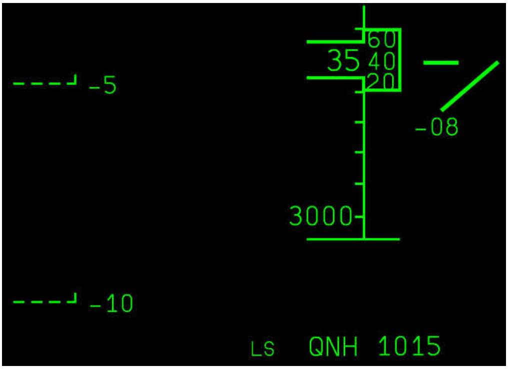
Appears, instead of the G/S or F-G/S scale, if the G/S or the F-G/S deviation is not valid.

Ident.: DSC-31-CDS-50-30-110-10-00019097.0001001 / 24 APR 14

LS REMINDER

L3 The MMR and the FMS provide the LS reminder information.

L12



Appears if:
- The flight crew selected an xLS approach
- The LS pb is set to off after the approach mode was armed or engaged.

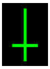
Temporarily flashes, then remains steady.

Ident.: DSC-31-CDS-50-30-110-10-00018229.0001001 / 17 NOV 17

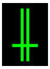
LS COURSE POINTER

L3 The MMR and the PRIM provide the LS course pointer information.

L1



Indicates the LOC course on the heading scale of the selected approach.



Indicates the F-LOC course on the heading scale of the selected approach.

L2 Appears, when the LS pb is set to on, for more information, *Refer to DSC-31-CDS-40-60 LS pb*.

Ident.: DSC-31-CDS-50-30-110-10-00018232.0003001 / 09 MAR 16

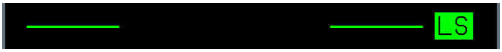
FINAL APPROACH FPA

L3 The FMS provide the necessary information to display the final approach FPA.

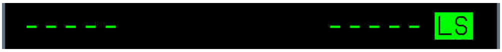
L1 The angle between the horizon line and the final approach FPA indicates the flight path angle of the final approach.

XLS APPROACH

When the LS pb is on, an LS label appears.



Appears during an ILS, GLS , or an approach compatible with the SLS function.
Indicates the flight path angle (or slope) of the final approach as stored in the FMS database.
When the aircraft is on the approach path, the final approach FPA is aligned with the touchdown point. For more information about the touchdown point, *Refer to DSC-31-CDS-50-30-110 Synthetic Runway*.

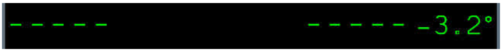


Appears during an approach compatible with the FLS function.
Indicates the flight path angle (or slope) of the final approach that the MMR provides.

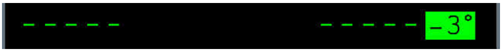
RNP AR/RNAV(RNP) APPROACH

For more information, *Refer to DSC-31-CDS-50-30-110 Final Approach FPA*.

OTHER APPROACHES



The flight crew selected an FPA value via the FCU.
The selected FPA value is displayed.



The flight crew did not select an FPA value via the FCU.
The default value of the final approach FPA is displayed: -3 °.

Ident.: DSC-31-CDS-50-30-110-10-00018231.0001001 / 04 MAY 18

SYNTHETIC RUNWAY

L3 The ANF or the FMS, and the ADIRS provide the necessary information to display the synthetic runway.

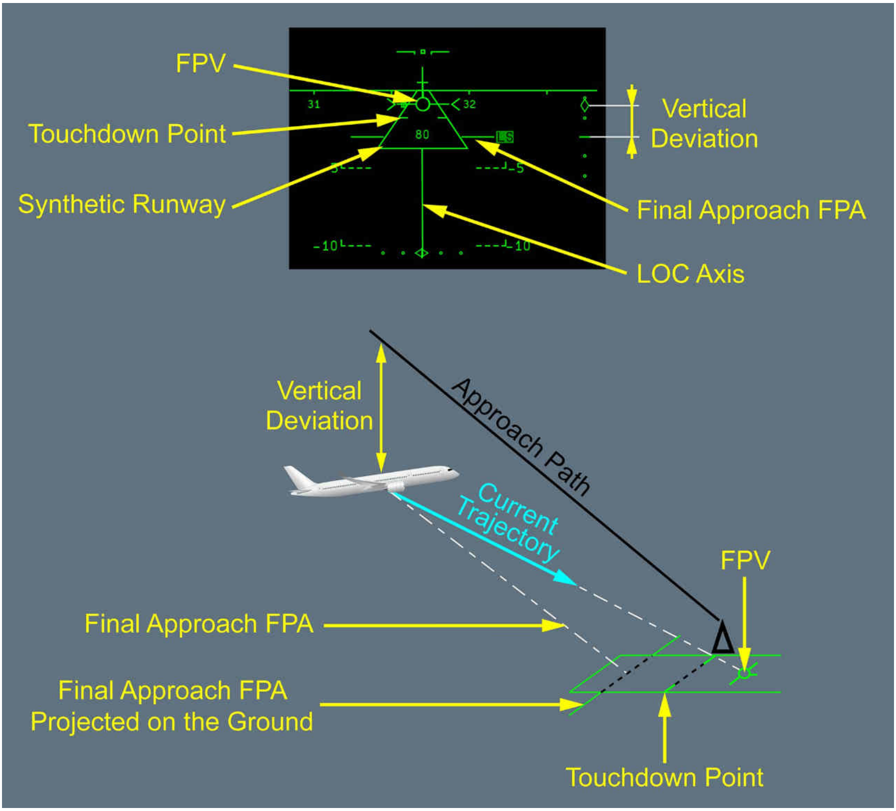
L1 The synthetic runway illustrates the destination runway on the HUD. The shape and position of the synthetic runway vary in accordance with the position and attitude of the aircraft.
The touchdown point is also indicated on the synthetic runway.

L2 The touchdown point flashes when the vertical deviation is excessive.

L1 *Note:* *During an approach compatible with the FLS function:*
- *The synthetic runway is drawn with dashed lines*
- *The touchdown point does not appear.*

L2 The synthetic runway no longer appears:
- When the aircraft overflies the runway, or
- Below the minimum, or
- During flare, or
- During go-around.

Synthetic Runway


FPV
Touchdown Point
Synthetic Runway
31
32
80
LS
5
5
10
10
Vertical Deviation
Final Approach FPA
LOC Axis
Vertical Deviation
Approach Path
Current Trajectory
FPV
Final Approach FPA
Final Approach FPA Projected on the Ground
Touchdown Point

L1 *Note:* *The synthetic runway displayed on the HUD may not overlay the real runway.*

Ident.: DSC-31-CDS-50-30-110-10-00018230.0001001 / 04 MAY 18

LOC AXIS

L3 The FMS, the PRIM, the MMR, and the ADIRS provide the necessary information to display the LOC axis.

L1 The LOC axis symbol:
- Indicates a perspective view of the LOC axis on the ground
- Gives an indication of the aircraft position in relation to the LOC axis.

L2 The LOC axis joins the threshold of the synthetic runway, or the anchor(end) point in the case of an approach compatible with the FLS function.

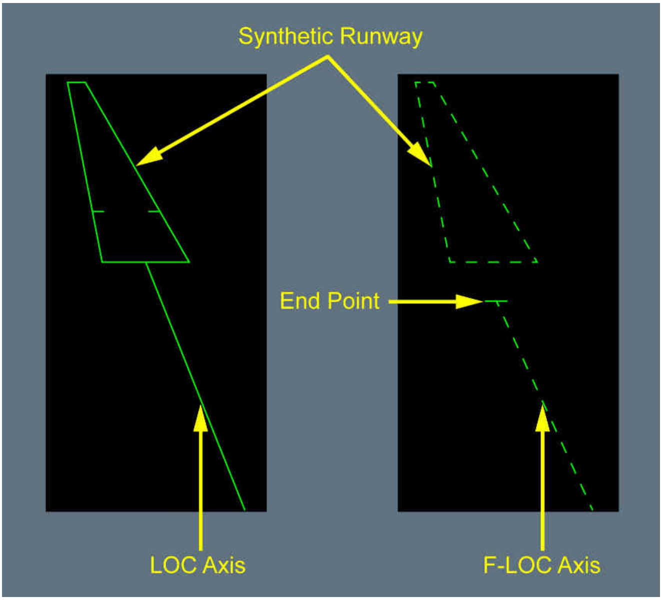
L1 *Note:* *During an approach compatible with the FLS function, the LOC axis appears as a dashed line.*

L2 Appears, when:
- The synthetic runway is displayed
- The LS pb is on.

Flashes, if the lateral deviation is excessive.

No longer appears:
- When the aircraft overflies the runway, or
- Below the minimum, or
- During flare, or
- During go-around.

LOC Axis

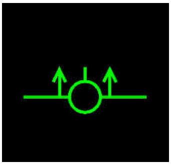


Ident.: DSC-31-CDS-50-30-110-10-00018226.0001001 / 06 NOV 14

FLARE REMINDER

L3 The RAs provide the radio altitude that is necessary for the display of the flare reminder.

L12



Indicates that it is necessary to flare.
Appears and pulses for 3 s, below 38 ft radio altitude.
No longer appears on ground.

Ident.: DSC-31-CDS-50-30-110-10-00018233.0001001 / 06 NOV 14

ILS MARKER

L3 The VOR 1 receiver provides the marker beacon information.

L2 Appears when:

- The LS pb is set to on
- The aircraft flies over the marker beacon.

L1

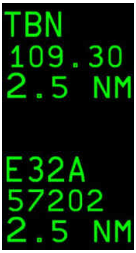
OM	The aircraft is over the outer marker of the ILS approach.
MM	The aircraft is over the middle marker of the ILS approach.
IM	The aircraft is over: - The inner marker of the ILS approach, or - An airway marker.

Ident.: DSC-31-CDS-50-30-110-10-00018234.0003001 / 28 APR 17

LS INFORMATION

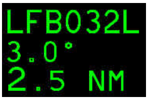
L3 The MMR, the DME, and the FMS provide the LS information.

L13



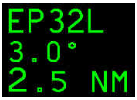
Indicates the following information about the ILS, GLS ◁ or an approach compatible with the SLS ◁ function:
- The ILS, GLS or SLS identification
  The MMR decodes the ILS identification.
- The ILS frequency or the channel of the GLS or the approach compatible with the SLS function
- The DME distance, if any.

L13



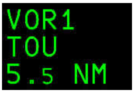
When the flight crew flies an approach with the FLS function, indicates:
- The FLS anchor point identification, when the anchor point is on the runway threshold
- The FLS beam slope
- The distance to the anchor point.
  The FMS computes this distance.

L1



When the flight crew flies an approach with the FLS function, indicates:
- The anchor point is not located on the runway threshold: In this case, the anchor point is also referred to as the End Point (EP)
- The FLS beam slope to the EP
- The distance to the anchor point.

L12



VOR1
TOU
5.5 NM

During a VOR or VOR/DME approach flown without the FLS function, indicates:
- The selected VOR receiver
- The VOR/DME ident
  If the VOR ident is not valid, the ND displays the VOR frequency instead.
  If the VOR frequency is not valid, the ND displays the DME frequency, if any.
  If nothing is displayed, it indicates that both the identifier and the frequency are not valid.
- The DME distance, if any.

L12

ILS

Appears during an ILS approach, if one of the following is not available:
- The LOC signal, or
- The G/S signal.

Temporarily flashes, then remains steady.

L12

GLS

Appears, if one of the following is not available during an GLS ◁ approach:
- The LOC signal, or
- The G/S signal.

Temporarily flashes, then remains steady.

L12

SLS

Appears, if one of the following is not available during an approach compatible with the SLS ◁ function:
- The LOC signal, or
- The G/S signal.

Temporarily flashes, then remains steady.

L12

FLS

Appears, if one of the following is not available:
- The FLS function, or
- The computed F-LOC signal, or
- The computed F-G/S signal, or
- The distance to the anchor point.

Temporarily flashes, then remains steady.

L12

LOC/FLS

Appears, if one of the following is not available:
- The LOC/FLS function, or
- The LOC signal, or
- The computed F-G/S signal, or
- The distance to the anchor point.

Temporarily flashes, then remains steady.

L12

DME	Appears, if: - The ILS has a DME - The DME distance is not available. Temporarily flashes, then remains steady.

RNP AR/RNAV(RNP) APPROACHES

Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB

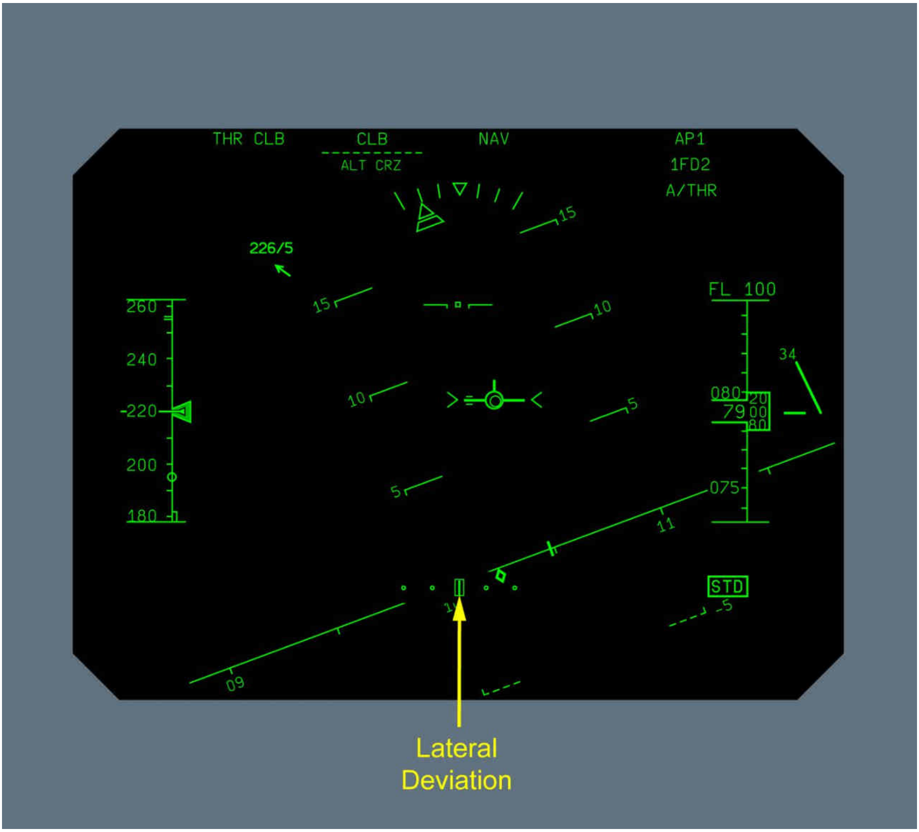
Ident.: DSC-31-CDS-50-30-110-20-00018893.0001001 / 06 NOV 14

To perform an RNAV(RNP) departure, the flight crew must:
- Select an RNAV(RNP) departure on the FMS DEPARTURE page
- Set the LS pb to off on the EFIS CP.

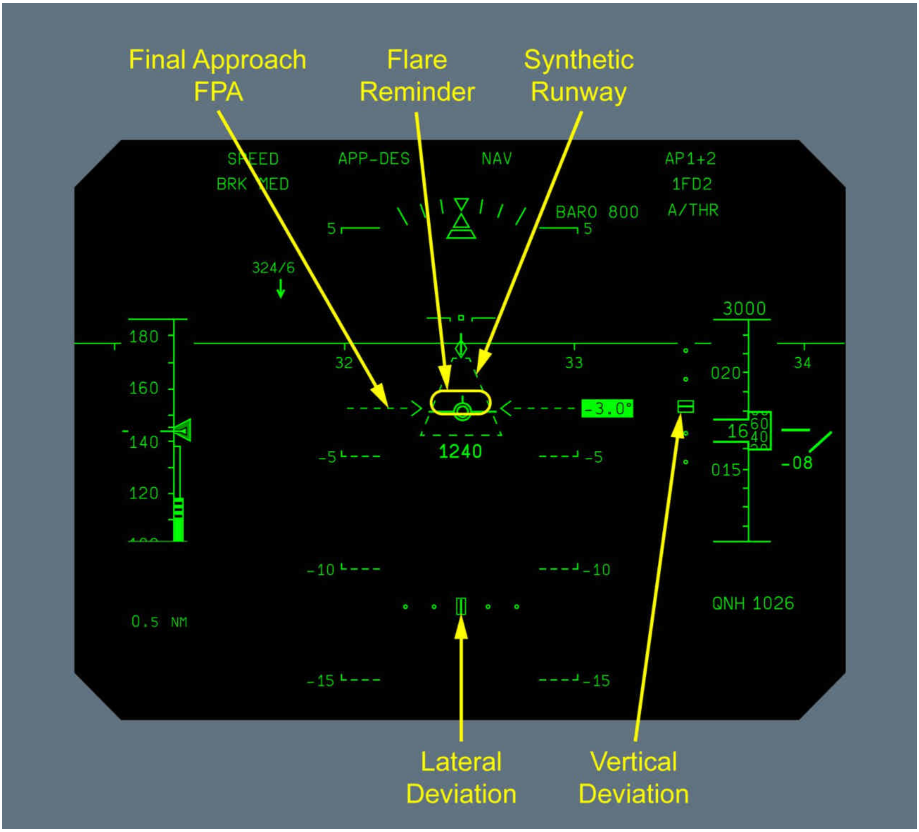
To perform an RNP AR/RNAV(RNP) approach, the flight crew must:
- Select an RNP AR/RNAV(RNP) approach on the FMS ARRIVAL page
- Set the APPR pb to on
- Set the LS pb to off on the EFIS CP.

Note: *The display enables to perform the RNAV(RNP) missed approach procedure associated with the RNP AR/RNAV(RNP) approach.*

RNAV(RNP) Departure


THR CLB
CLB
ALT CRZ
NAV
AP1
1FD2
A/THR
226/5
15
15
10
10
5
5
260
240
220
200
180
FL 100
34
080
79
20
00
80
075
11
STD
-5
09
1
Lateral
Deviation

RNP AR/RNAV(RNP) Approach

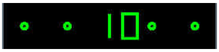

Final Approach
FPA
Flare
Reminder
Synthetic
Runway
SPEED
BRK MED
APP-DES
NAV
AP1+2
1FD2
A/THR
BARO 800
5
5
324/6
3000
180
160
140
120
32
33
34
020
015
1640
-08
-3.0°
1240
-5
-5
-10
-10
-15
-15
0.5 NM
QNH 1026
Lateral
Deviation
Vertical
Deviation

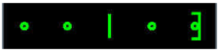
Ident.: DSC-31-CDS-50-30-110-20-00018897.0001001 / 03 JUL 20

1 LATERAL DEVIATION

L3 The FMS provides the lateral deviation (LDEV).

L1 Indicates the deviation relative to the lateral F-PLN profile.


The LDEV is within the scale.


The LDEV is outside the scale.

The maximum value of the LDEV is 0.2 NM either side.

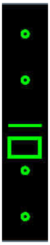
L2 During approach, the LDEV scale and index flash when the FMS detects an excessive deviation that exceeds 1 x RNP of the current leg. There is no LDEV and index flash on departure or go-around.

Ident.: DSC-31-CDS-50-30-110-20-00018896.0002001 / 01 MAR 17

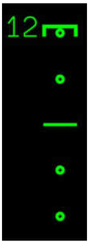
VERTICAL DEVIATION

L3 The FMS provides the vertical deviation (VDEV).

L1 Indicates the deviation relative to the vertical F-PLN profile.



The VDEV is within the scale.



The VDEV is outside the scale.

The maximum value of the VDEV is 200 ft up and down.

L2 The VDEV scale and index flash when the FMS detects an excessive deviation of 3/4 dot (75 ft) below the vertical profile.

Ident.: DSC-31-CDS-50-30-110-20-00022183.0001001 / 06 NOV 14

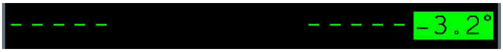
FINAL APPROACH FPA

L3 The FMS provide the necessary information to display the final approach FPA.

L1 The angle between the horizon line and the final approach FPA indicates the flight path angle of the final approach.

RNP AR/RNAV(RNP) APPROACH

When the LS pb is off, the value of the flight path angle appears.

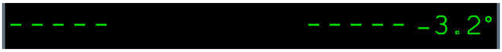


Indicates the flight path angle (or slope) of the final approach as stored in the FMS database.

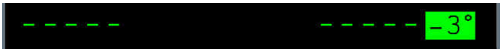
XLS APPROACH

For more information, *Refer to DSC-31-CDS-50-30-110 Final Approach FPA*.

OTHER APPROACHES



The flight crew selected an FPA value via the FCU.
The selected FPA value is displayed.



The flight crew did not select an FPA value via the FCU.
The default value of the final approach FPA is displayed: -3 °.

Ident.: DSC-31-CDS-50-30-110-20-00022187.0001001 / 01 MAR 17

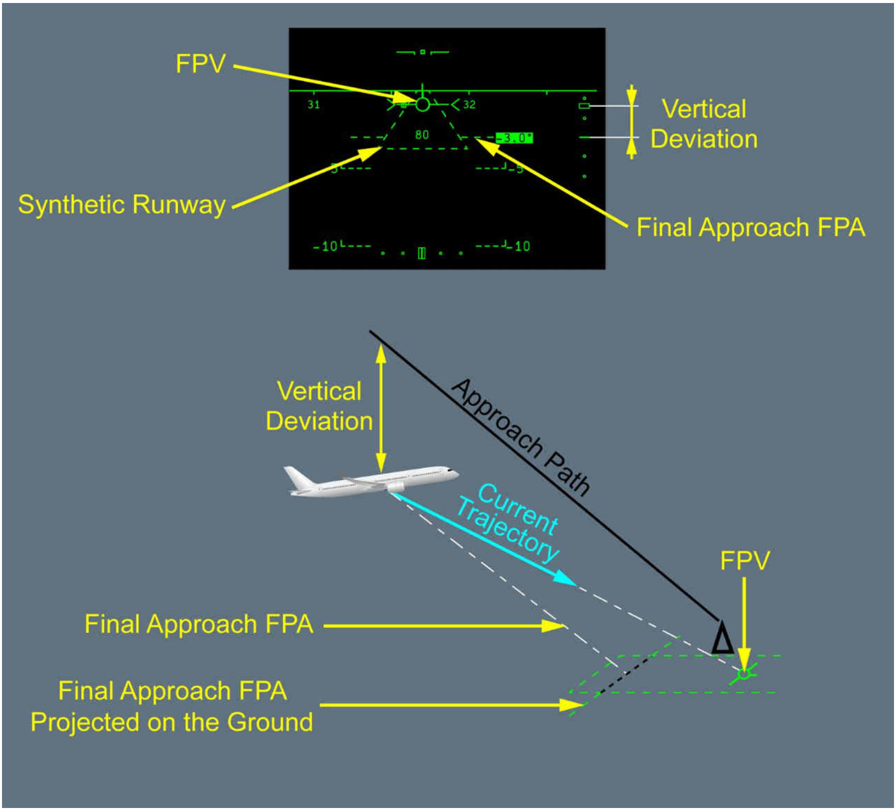
SYNTHETIC RUNWAY

L3 The FMS and the ADIRS provide the necessary information to display the synthetic runway.

L1 The synthetic runway illustrates the destination runway on the HUD. The shape and position of the synthetic runway vary in accordance with the position and attitude of the aircraft.

L2 The synthetic runway no longer appears:
- When the aircraft overflies the runway, or
- Below the minimum, or
- During flare, or
- During go-around.

Synthetic Runway


FPV
31
32
80
-3.0°
5
5
-10
10
Vertical Deviation
Synthetic Runway
Final Approach FPA
Vertical Deviation
Approach Path
Current Trajectory
FPV
Final Approach FPA
Final Approach FPA Projected on the Ground

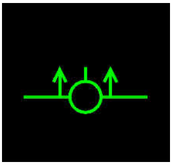
L1 *Note:* *The synthetic runway displayed on the HUD may not overlay the real runway.*

Ident.: DSC-31-CDS-50-30-110-20-00022200.0001001 / 06 NOV 14

FLARE REMINDER

L3 The RAs provide the radio altitude that is necessary for the display of the flare reminder.

L12



Indicates that it is necessary to flare.
Appears and pulses for 3 s, below 38 ft radio altitude.
No longer appears on ground.

Intentionally left blank

Flight Mode Annunciator

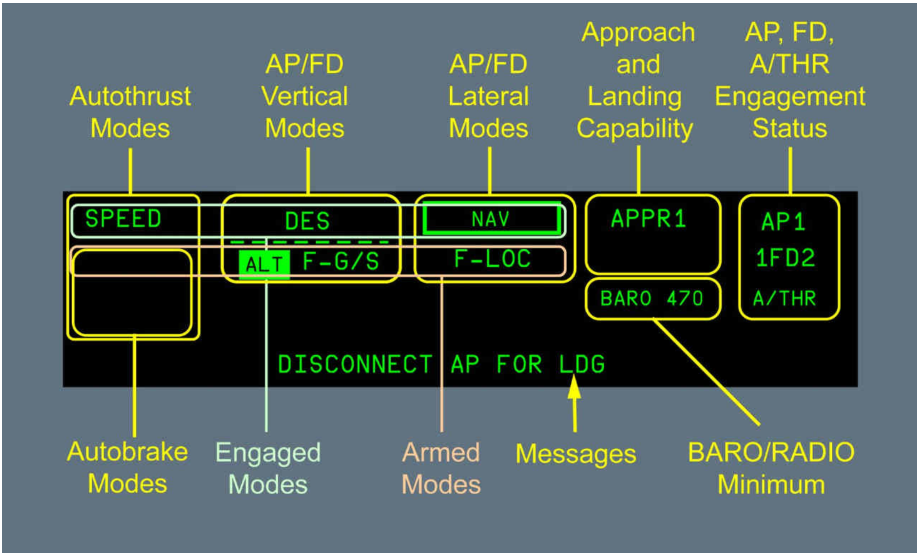
FLIGHT MODE ANNUNCIATOR (FMA)

Ident.: DSC-31-CDS-50-30-120-00018245.0001001 / 24 APR 14
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB

The Flight Mode Annunciator (FMA) indicates:
- The status of the A/THR
- The AP/FD vertical and lateral modes
- The approach and landing capability
- The AP/FD and A/THR engagement status
- The autobrake arming status
- The messages of flight guidance, flight controls, or FMS.

The FMA on the HUD provides the same indication and has the same layout as the FMA on the PFD, except for the following indications:
- In the second column, second line, when in managed mode and the altitude target is a constraint, ALT is displayed in reverse video on the HUD whereas ALT is displayed on the PFD
- An armed mode appears in blue on the PFD and is displayed with a dashed line above on the HUD.

FMA


Autothrust Modes
AP/FD Vertical Modes
AP/FD Lateral Modes
Approach and Landing Capability
AP, FD, A/THR Engagement Status
SPEED
DES
NAV
APPR1
AP1
ALT
F-G/S
F-LOC
1FD2
BARO 470
A/THR
DISCONNECT AP FOR LDG
Autobrake Modes
Engaged Modes
Armed Modes
Messages
BARO/RADIO Minimum

L2 The FMA no longer appears when:
- The bank angle is more than 45 ° left or right, or
- The pitch attitude is more than 25 °, or less than -13 °.

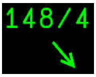
L1 For more information about:
- The indications on the FMA, except BTV indications, *Refer to DSC-22-FG-90-80 Overview*
- The autobrake indications on the FMA, *Refer to DSC-32-20-20 FMA*
- The BTV indications on the FMA, *Refer to DSC-34-32-30-20-40 FMA*.

Wind Indications

WIND INDICATIONS

Ident.: DSC-31-CDS-50-30-130-00018246.0003001 / 26 JUL 17
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB

L13



The PRIM as a primary source (IRS as a backup), provide the wind information.
Indicates the current wind direction (in degrees, TRUE North reference) and the current wind speed (in knots).
When the wind speed is above 2 kt, the HUD also displays a green arrow that indicates the wind direction.

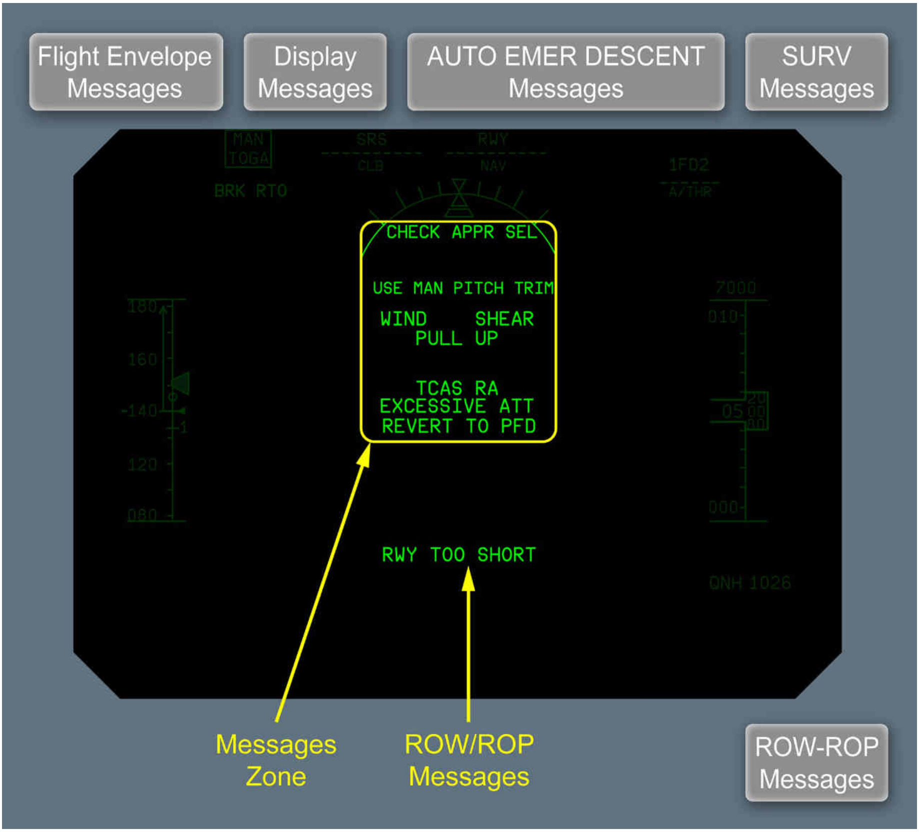
Intentionally left blank

HUD Messages

HUD MESSAGES

Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB

Ident.: DSC-31-CDS-50-30-140-10-00019842.0006001 / 01 JUN 17


Flight Envelope Messages
Display Messages
AUTO EMER DESCENT Messages
SURV Messages
MAN TOGA
SRS
CLB
RWY
NAV
1FD2
A/THR
BRK RTO
180
160
140
120
080
7000
010
05
000
QNH 1026
Messages Zone
ROW/ROP Messages
ROW-ROP Messages

CHECK APPR SEL

USE MAN PITCH TRIM

WIND SHEAR

PULL UP

TCAS RA

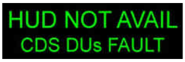
EXCESSIVE ATT

REVERT TO PFD

RWY TOO SHORT

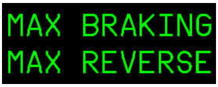
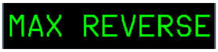
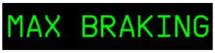
Ident.: DSC-31-CDS-50-30-140-10-00019806.0001001 / 01 MAR 17

DISPLAY MESSAGES

L12	
CHECK ATT	Attitude data on both HUDs differs by more than 5 ° in pitch or roll. Temporarily flashes, then remains steady.
L12	
CHECK CAPT HUD	Appears at the bottom of the F/O HUD. Indicates to the F/O that the CAPT HUD must be checked. Temporarily flashes, then remains steady.
L12	
CHECK F/O HUD	Appears at the bottom of the CAPT HUD. Indicates to the CAPT that the F/O HUD must be checked. Temporarily flashes, then remains steady.
L12	
CHECK HDG	Appears if the difference between the two headings exceeds: - 5 ° in TRUE reference - 7 ° in MAG reference. Temporarily flashes, then remains steady.
COMBINER UNLOCKED	Appears on the center of the HCU. The HCU is deployed and unlocked.
L12	
HUD FAULT	Displayed over the symbology. Temporarily flashes, then remains steady.
HUD NOT ALIGNED	The message shall be displayed on one line centered on the HCU. If not, the HCU and HPU are not aligned.
 HUD NOT AVAIL CDS DUs FAULT	Appears on two lines centered in the HCU. Indicate that the HUD is not available, in accordance with the DUs available.
L12	
REVERT TO PFD	The flight crew must revert to the PFD. Appears when: - EXCESSIVE ATT appears, or - TCAS RA appears. Temporarily flashes, then remains steady.

Ident.: DSC-31-CDS-50-30-140-10-00019805.0003001 / 27 FEB 17

ROW/ROP MESSAGES

L12	RWY TOO SHORT	The ROW function computes that the landing runway is too short. Appears in dark green when the aircraft is between 500 ft RA and 200 ft RA. For more information, *Refer to DSC-34-32-20-20-60 ROW/ROP Messages*. Temporarily flashes, then remains steady.
L12	RWY TOO SHORT	The ROW function computes that the landing runway is too short. Appears in light green when the aircraft is below 200 ft RA. For more information, *Refer to DSC-34-32-20-20-60 ROW/ROP Messages*. Temporarily flashes, then remains steady.
L12	 MAX BRAKING MAX REVERSE	The MAX BRAKING and the MAX REVERSE messages appear simultaneously. For more information, *Refer to DSC-34-32-20-20-60 ROW/ROP Messages*. Temporarily flashes, then remains steady.
L12	 MAX REVERSE	Only the MAX REVERSE message appears. For more information, *Refer to DSC-34-32-20-20-60 ROW/ROP Messages*. Temporarily flashes, then remains steady.
L12	 MAX BRAKING	Only the MAX BRAKING message appears. For more information, *Refer to DSC-34-32-20-20-60 ROW/ROP Messages*. Temporarily flashes, then remains steady.

Ident.: DSC-31-CDS-50-30-140-10-00019807.0002001 / 01 MAR 17

SURV MESSAGES

L12	AVOID TERRAIN	For more information, *Refer to DSC-34-SURV-20-20 TAWS Messages* Temporarily flashes, then remains steady.

L12	
AVOID OBSTACLE	For more information, *Refer to DSC-34-SURV-20-20 TAWS Messages* Temporarily flashes, then remains steady.
L12	
PULL UP	For more information, *Refer to DSC-34-SURV-20-20 TAWS Messages* Temporarily flashes, then remains steady.
L12	
TCAS RA	The TCAS triggers a resolution advisory. Advise the flight crew that a TCAS RA is displayed on the PFD. Temporarily flashes, then remains steady.
L12	
WIND SHEAR	For more information, *Refer to DSC-22-27-20 Reactive Windshear Detection*. Temporarily flashes, then remains steady.
L12	
W/S AHEAD	For more information, *Refer to DSC-34-SURV-30-20 Windshear Messages* Temporarily flashes, then remains steady.

Ident.: DSC-31-CDS-50-30-140-10-00019808.0001001 / 02 OCT 14

FLIGHT ENVELOPE

L12	
BANK BANK	For more information, *Refer to DSC-22-27-20 Bank Angle Protection*. Temporarily flashes, then remains steady.
L12	
EXCESSIVE ATT	Indicates that the attitude of the aircraft is excessive. Temporarily flashes, then remains steady.
STALL STALL	Appears if at least one FWS detects the stall. For more information, *Refer to DSC-22-27-10-20 V alpha sw*.
L12	
USE MAN PITCH TRIM	Appears when the direct law is active. For more information, *Refer to DSC-27-10-40 Direct Law*. Temporarily pulses, then remains steady.

Ident.: DSC-31-CDS-50-30-140-10-00024046.0001001 / 01 JUN 17

AUTO EMER DESCENT MESSAGES

L12	EMER DESCENT ARMED	The AUTO EMER DESCENT function is manually armed. For more information, *Refer to DSC-22-FG-70-60-40 Arming Conditions*. Temporarily flashes, then remains steady.
L12	AUTO EMER DES IN XX S	The AUTO EMER DESCENT function is automatically armed. For more information, *Refer to DSC-22-FG-70-60-40 Arming Conditions*. A 15 s countdown starts after the automatic arming of the AUTO EMER DESCENT function. Temporarily flashes, then remains steady.
L12	AUTO EMER DES ENGAGED	The EMER DES mode is automatically engaged. For more information, *Refer to DSC-22-FG-70-60-40 Engagement Conditions*. Temporarily flashes, then remains steady.
L12	AUTO EMER DES COMPLETED	The AUTO EMER DESCENT is completed. For more information, *Refer to DSC-22-FG-70-60-40 Disengagement Conditions*. The AUTO EMER DES COMPLETED message remains displayed until the flight crew either: - Changes any AFS CP target, or - Selects another AFS mode, or - Voluntarily disconnects the AP. Temporarily flashes, then remains steady.

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HUD Reduced Display Modes

HUD MODE INDICATOR

Ident.: DSC-31-CDS-50-30-150-00018248.0001001 / 09 JUL 19
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB

Indicates the mode of the HUD:

N	The HUD is in normal mode.
D	The HUD is in declutter 1 mode.

Disappears in declutter 2 mode.
The flight crew can remove some information displayed on the HUD, in order to improve the observation of external parameters.

The flight crew can select different levels of declutter, in accordance with the flight phase:
- In the taxi phase, there is one level of declutter available
- In the approach phase, there are two levels of declutter available: D1 and D2

L2 Declutter 1 mode is available only when the approach phase of the FMS is active.

L1 - In all flight phases except the approach phase, there is one level of declutter available.

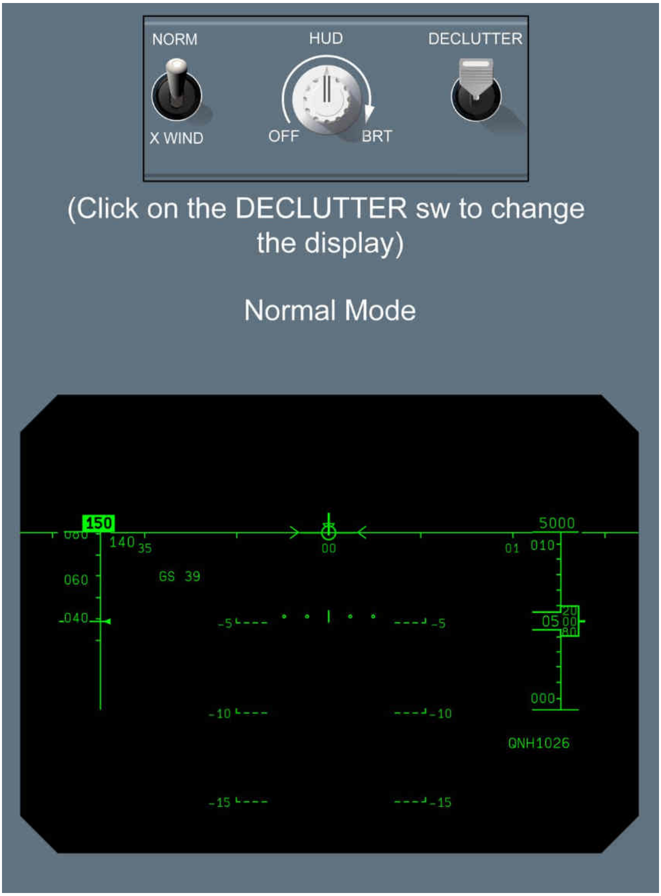
For more information about the declutter mode, *Refer to DSC-31-CDS-50-30-150 Declutter Modes*.
When flying in crosswind conditions, the aircraft trajectory and guidance symbols may reach the border of the display zone.
In flight, the flight crew can reduce the size of the speed and altitude scales, via the XWIND sw on the HUD CP, in order to maintain adequate visibility of the symbols.
For more information about the Crosswind mode, *Refer to DSC-31-CDS-50-30-150 Crosswind Mode*.

DECLUTTER MODES

Ident.: DSC-31-CDS-50-30-150-00018249.0003001 / 04 MAY 18
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB

TAXI

The flight crew can remove the following symbols, via the DECLUTTER sw on the HUD CP:
- The pitch scale
- The airspeed scale
- The altitude scale
- The barometric setting.


NORM
HUD
DECLUTTER
X WIND
OFF
BRT
150
080
140
35
060
040
GS 39
00
01
5000
010
-5
-5
05 20 00 80
000
-10
-10
QNH1026
-15
-15

(Click on the DECLUTTER sw to change the display)

Normal Mode

When the flight crew sets the takeoff thrust, the HUD automatically displays the normal mode for takeoff.

IN FLIGHT

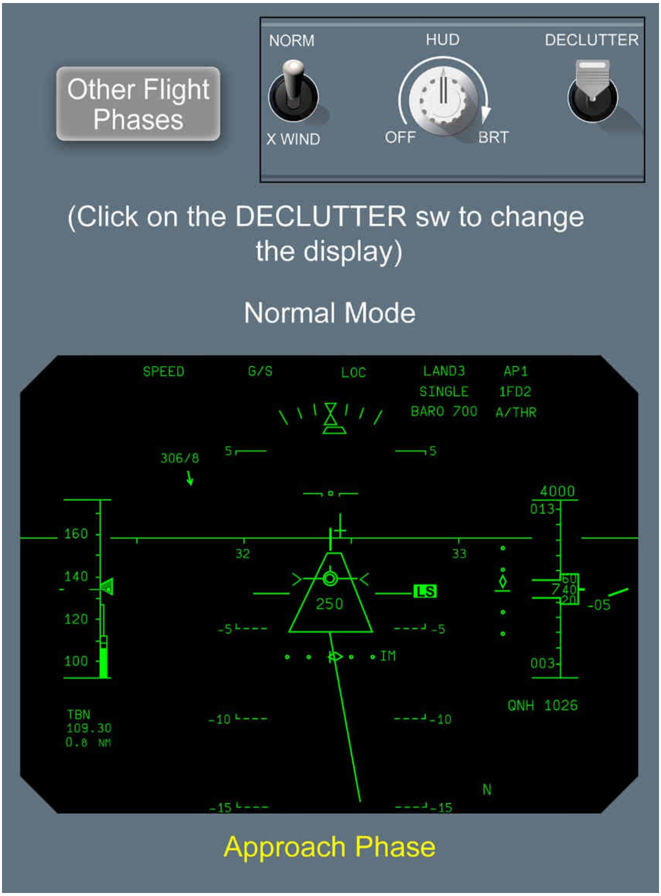
In normal and declutter 1 mode, the flight crew can also select the crosswind mode in order to reduce the size of the speed and altitude scales.
In declutter 2 mode, the altitude and speed scales are already reduced, therefore the X WIND sw has no effect on the display.

During the approach phase, the flight crew can remove the following approach symbols, via the DECLUTTER sw one time on the HUD CP:

- The synthetic runway
- The LOC axis
- The touchdown point, or the anchor point.

The flight crew can choose to display only the following symbols, via the DECLUTTER sw used two times in the approach phase, or used one time in the other flight phases:

- The flight path vector
- The flight director
- The current heading
- The selected heading (track)
- The horizon line
- The aircraft reference, if the tail strike margin is less than 1 °
- A part of the pitch scale
- The reduced airspeed scale
- The reduced altitude scale
- The flare reminder
- The approach tail strike symbol, if the tail strike margin is less than 1 °
- The energy chevrons
- The selected FPA
- The final approach FPA
- The delta speed
- The radio altitude
- The A/THR messages and modes, and the annunciations within boxes on the FMA
- The flags and messages in the case of alerts.


Other Flight Phases
NORM
X WIND
HUD
OFF
BRT
DECLUTTER

(Click on the DECLUTTER sw to change the display)

Normal Mode

SPEED
G/S
LOC
LAND3
SINGLE
BARO 700
AP1
1FD2
A/THR
306/8
5
5
4000
013
160
140
120
100
32
33
250
LS
760
740
720
-05
-5
-5
IM
003
QNH 1026
TBN
109.30
0.8 NM
-10
-10
N
-15
-15

Approach Phase

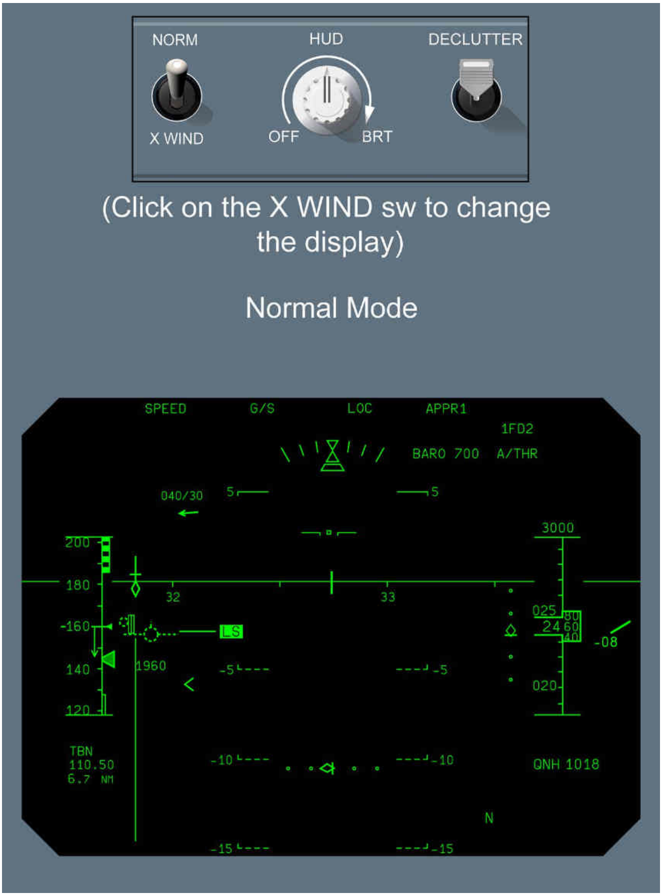
In the case of a go-around, the HUD automatically displays the normal mode.

CROSSWIND MODE

Ident.: DSC-31-CDS-50-30-150-00018250.0003001 / 05 NOV 18
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB

If the flight crew sets the X WIND sw to X WIND on ground, it has no effect on the HUD display until the aircraft reaches 30 ft RA after takeoff.
When flying in crosswind conditions, the aircraft trajectory and guidance symbols may reach the border of the display zone.

L2 The X WIND mode reduces the speed and altitude scales:
- The speed scale with a reduced range of ±10 kt
- The altitude scale with a reduced range of ±250 ft.


NORM
HUD
DECLUTTER
X WIND
OFF
BRT
SPEED
G/S
LOC
APPR1
1FD2
BARO 700
A/THR
040/30
5
5
3000
200
180
32
33
-160
LS
025
24
80
60
40
-08
140
1960
-5
-5
020
120
TBN
110.50
6.7 NM
-10
-10
QNH 1018
N
-15
-15

(Click on the X WIND sw to change the display)

Normal Mode

L1 During approach, the flight crew can combine the declutter 1 mode and the crosswind mode.
In declutter 2 mode, the altitude and the speed scales are already reduced, therefore the X WIND sw has no effect on the display.

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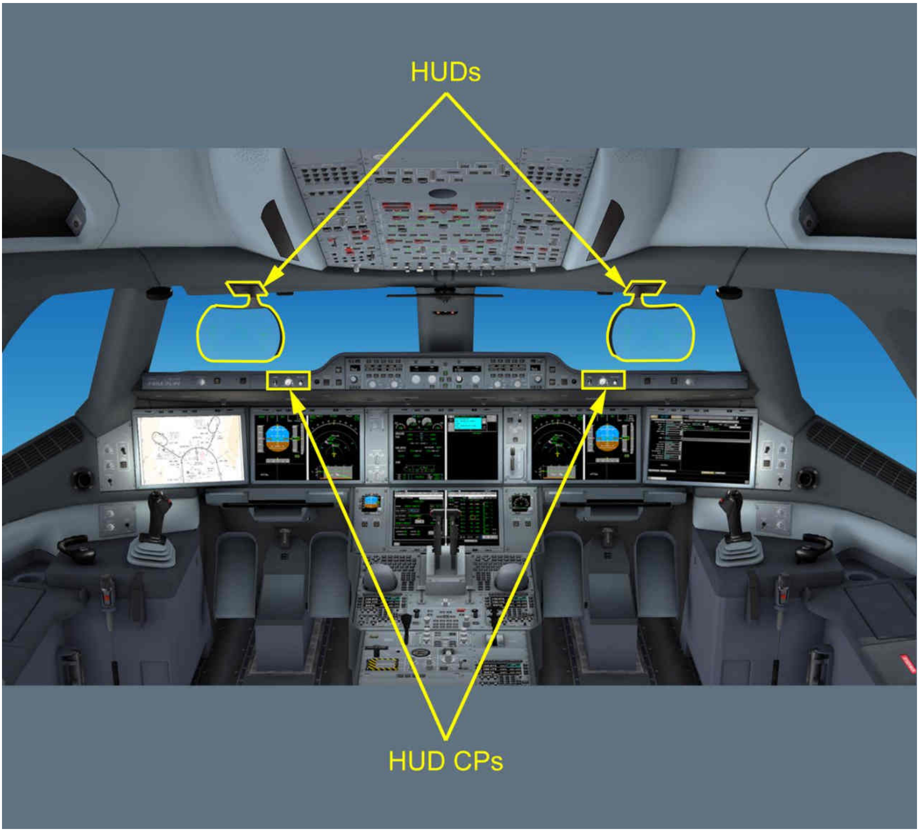
COCKPIT VIEW

Ident.: DSC-31-CDS-50-40-00018251.0001001 / 24 APR 14

Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB

Cockpit View

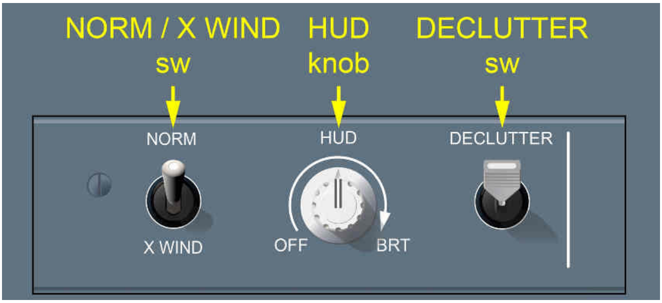


HUD CONTROL PANEL

Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB

Ident.: DSC-31-CDS-50-40-10-00018252.0001001 / 24 APR 14

HUD Control Panel

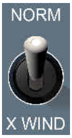


There are two identical HUD Control Panels (HUD CP):
- One HUD CP on the Captain side
- One HUD CP on the First Officer side.

Each HUD CP is associated with the corresponding HUD.

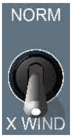
Ident.: DSC-31-CDS-50-40-10-00018254.0001001 / 24 APR 14

NORM / X WIND SW



The flight crew selects the normal mode of the HUD.

L12

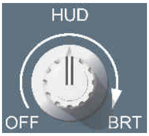


The flight crew selects the crosswind mode of the HUD.
The X WIND sw reduces the size of the speed and altitude scales, only if the aircraft is in flight.

For more information about the crosswind mode, *Refer to DSC-31-CDS-50-30-150 Crosswind Mode*.

Ident.: DSC-31-CDS-50-40-10-00018255.0001001 / 24 APR 14

HUD BRIGHTNESS KNOB

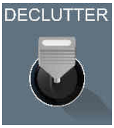


When turned, turns the HUD on or off, and adjusts the brightness.

Ident.: DSC-31-CDS-50-40-10-00018256.0001001 / 24 APR 14

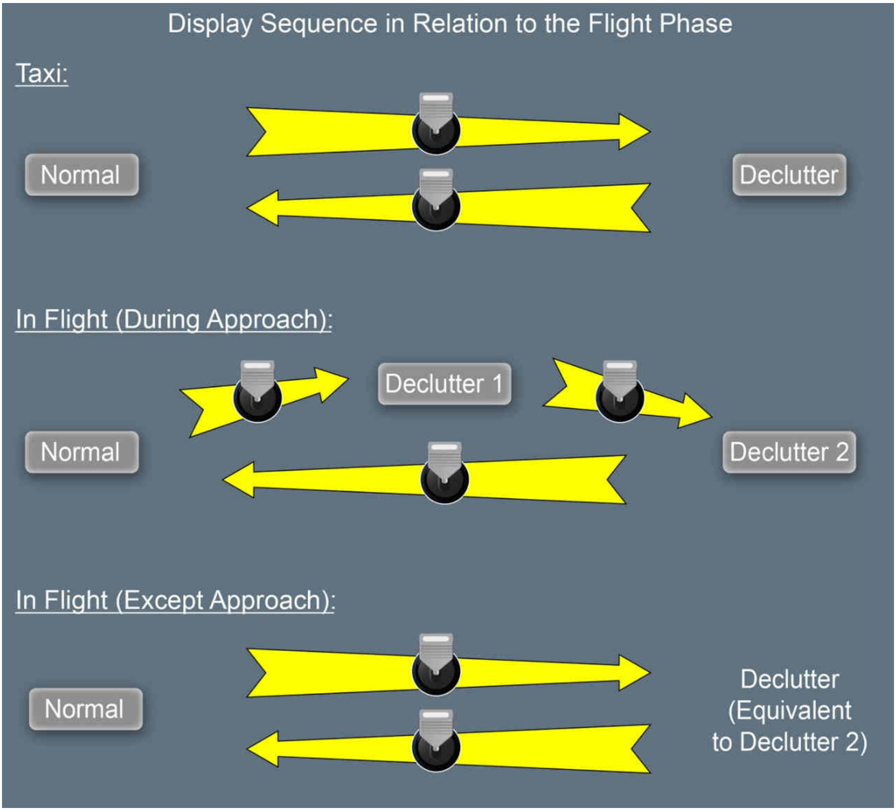
DECLUTTER SW

L12



The flight crew uses the DECLUTTER sw to reduce the HUD display.

The DECLUTTER sw changes the display, when the HUD is in:
- Taxi phase, or
- Flight phase.


Display Sequence in Relation to the Flight Phase
Taxi:
Normal
Declutter
In Flight (During Approach):
Declutter 1
Normal
Declutter 2
In Flight (Except Approach):
Normal
Declutter
(Equivalent
to Declutter 2)

For more information about the declutter modes, *Refer to DSC-31-CDS-50-30-150 Declutter Modes*.

HOW TO MOVE THE HCU

Ident.: DSC-31-CDS-50-70-00022747.0001001 / 30 JAN 17
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB

The flight crew should always apply the following:

- All actions on the HCU handle and on the thumbpad should be performed in sequence and not simultaneously
- Move the HCU with only the hand on the side of the HCU handle with the thumbpad
- Do not touch the glass (e.g. to not put fingerprints on the glass).

HOW TO DEPLOY THE HCU

Ident.: DSC-31-CDS-50-70-00022748.0001001 / 03 JUL 20
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB

1
2 The HUD is off, and the HCU is locked in the stowed position.
In order to use the HUD, the flight crew should apply the following procedure:

CAUTION	The HCU must be operated with one hand only. The flight crew should use the hand located on the side of the HCU handle. The deployment or stowage of the HCU with two hands may damage the HCU mechanism.

STEP 1

Pull the HCU handle to the maximum with one hand to unlock the HCU. The HCU slightly moves downward to the stop position (intermediate position). Release the HCU handle.

STEP 2

Put the hand on the thumbpad of the HCU and deploy the HCU to the operational position (steady position).
When the HCU is in the operational position, release the thumbpad of the HCU.

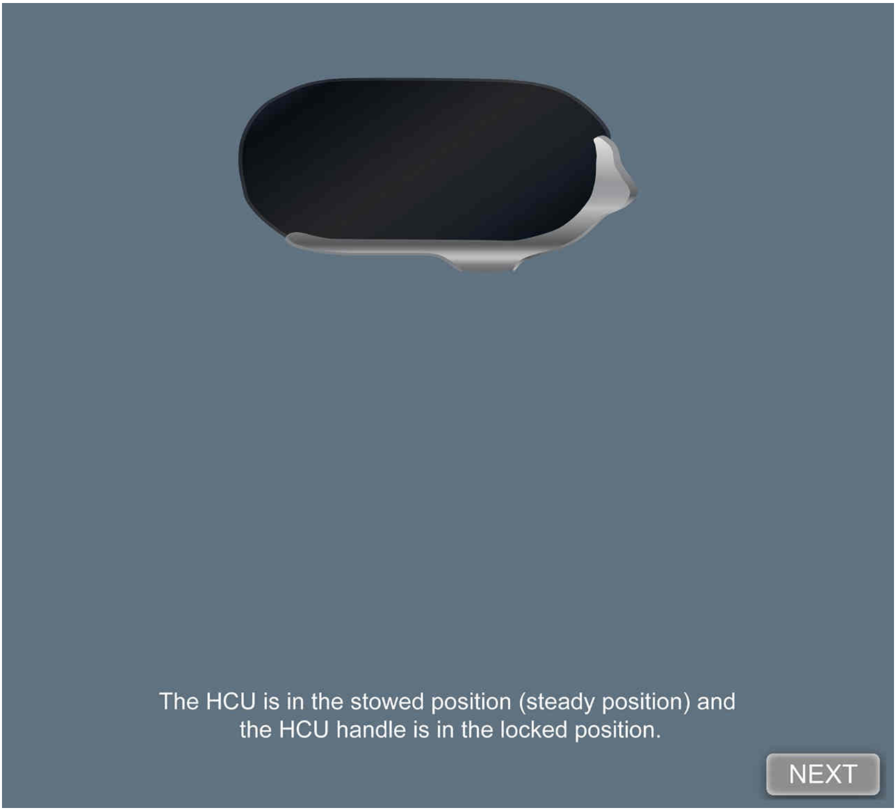
STEP 3

Push the HCU handle with one hand, in order to lock the HCU in the operational position.
When the HCU is locked in the operational position, release the HCU handle.

3 **STEP 4**

Switch on the HUD via the HUD knob on the glareshield.
L2 At HUD power-up, the HPU performs a fast functional test, then the attitude and other flight data appear on the HCU.
L1 Adjust the brightness as necessary via the HUD knob.
The illustration below illustrates the different steps for the deployment of the HCU.

Illustrated Sequence



The HCU is in the stowed position (steady position) and the HCU handle is in the locked position.

HOW TO STOW THE HCU

Ident.: DSC-31-CDS-50-70-00022749.0001001 / 03 JUL 20
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB

4 The HUD is on, and the HCU is deployed and locked in the operational position.
The flight crew can stow the HCU during flight (e.g. in the cruise phase), or on ground.

CAUTION	The HCU must be operated with one hand only. The flight crew should use the hand located on the side of the HCU handle. The deployment or stowage of the HCU with two hands may damage the HCU mechanism. Once initiated the following procedure must be fully completed.

STEP 1

Switch off the HUD via the HUD knob on the glareshield.

5 STEP 2

Pull the HCU handle to the maximum with one hand to unlock the HCU. The HCU slightly moves to the pre-operational position (intermediate position).

When the HCU is in the pre-operational position, release the HCU handle.

STEP 3

Move the HCU upward with one hand on the thumbpad, in order to reach the stowed position (steady position).

When the HCU is in the stowed position, release the thumbpad.

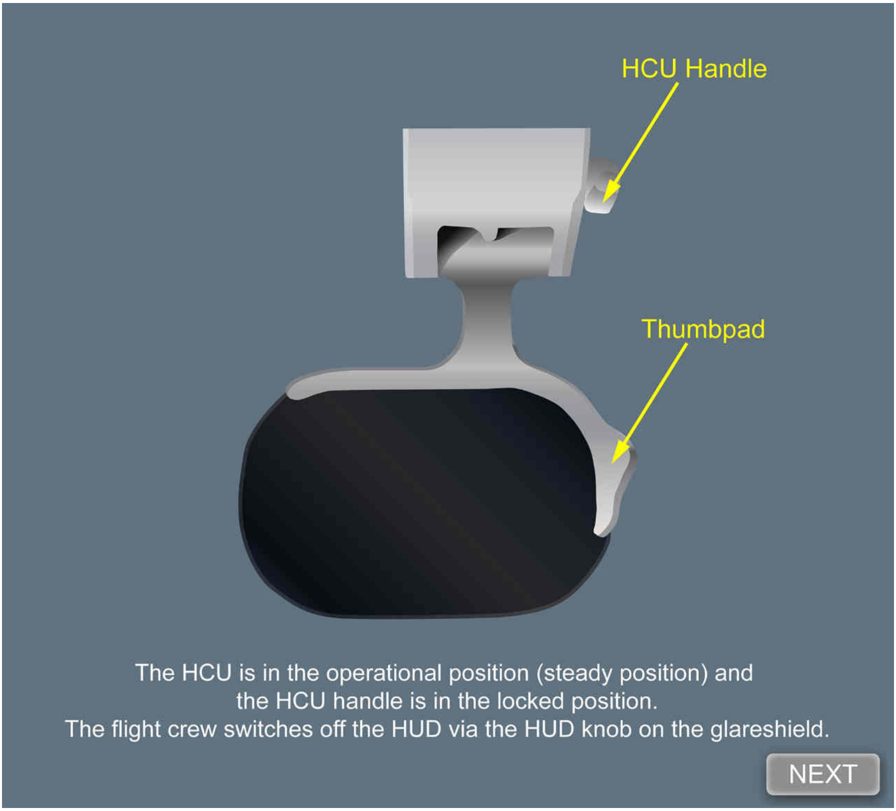
6 STEP 4

Push the HCU handle with one hand to lock the HCU in the stowed position.

When the HCU is locked in the stowed position, release the HCU handle.

The illustration below illustrates the different steps for the stowage of the HCU.

Illustrated Sequence



The HCU is in the operational position (steady position) and the HCU handle is in the locked position.
The flight crew switches off the HUD via the HUD knob on the glareshield.

HOW TO RELEASE THE HCU FROM THE BREAKAWAY ZONE/POSITIONS

Ident.: DSC-31-CDS-50-70-00022750.0001001 / 30 JAN 17
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB

In the case of an inadvertent action on the HCU from the operational position, the HCU may reach the breakaway zone or reach one of the following positions:

- The breakaway stop position
- The locked breakaway position.

CAUTION	The HCU must be operated with one hand only. The flight crew should use the hand located on the side of the HCU handle. The deployment or stowage of the HCU with two hands may damage the HCU mechanism.

BREAKAWAY ZONE

If the HCU reaches the breakaway zone, the flight crew cannot see any flight data on the HCU.
In order to use the HUD, the flight crew should apply the "How to Stow the HCU" procedure, then should apply the "How to Deploy the HCU" procedure.

LOCKED BREAKAWAY POSITION

When the HCU reaches the locked breakaway position, the red breakaway release button appears and is engaged. Therefore, the HCU is mechanically blocked.
In order to release the HCU from the locked breakaway position, the flight crew should apply the following procedure:

STEP 1

Move the red breakaway release button to the right with the hand located on the side of the HCU handle, so that the HCU moves to the breakaway stop position. The HCU handle remains in the locked position.

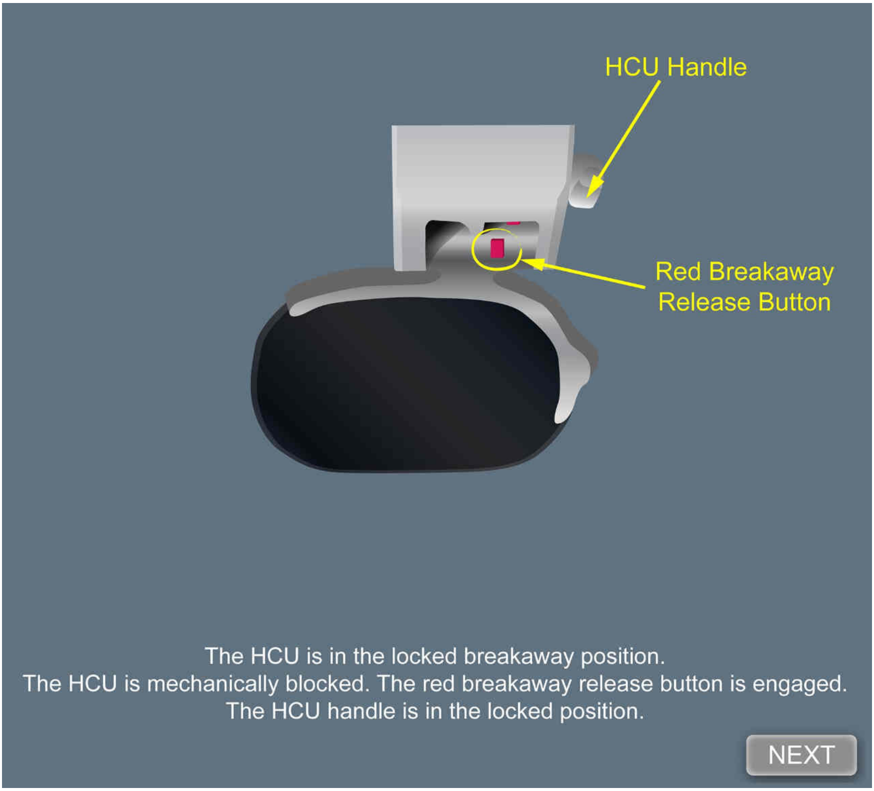
STEP 2

With one hand on the thumbpad, pull the HCU back to the operational position.

STEP 3

Then, apply the "How to Stow the HCU" procedure.
The illustration below illustrates the different steps that the flight crew should apply to release the HCU from the locked breakaway position.

Illustrated Sequence


HCU Handle
Red Breakaway Release Button
NEXT

The HCU is in the locked breakaway position.
The HCU is mechanically blocked. The red breakaway release button is engaged.
The HCU handle is in the locked position.

General

GENERAL

Ident.: DSC-31-CDS-60-10-00-00000002.0001001 / 24 APR 14
Applicable to: ALL

The Electronic Centralized Aircraft Monitoring (ECAM) function assists the flight crew in managing and monitoring the aircraft systems during both normal and abnormal operations.

The ECAM:
- Displays aircraft system information
- Monitors aircraft systems
- Identifies abnormal system operations, and triggers the related alerts and dispatch messages
- Indicates the required flight crew actions in abnormal and emergency situations
- Provides operational information to the flight crew
- Displays the checklists.

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Architecture

ARCHITECTURE

Applicable to: ALL

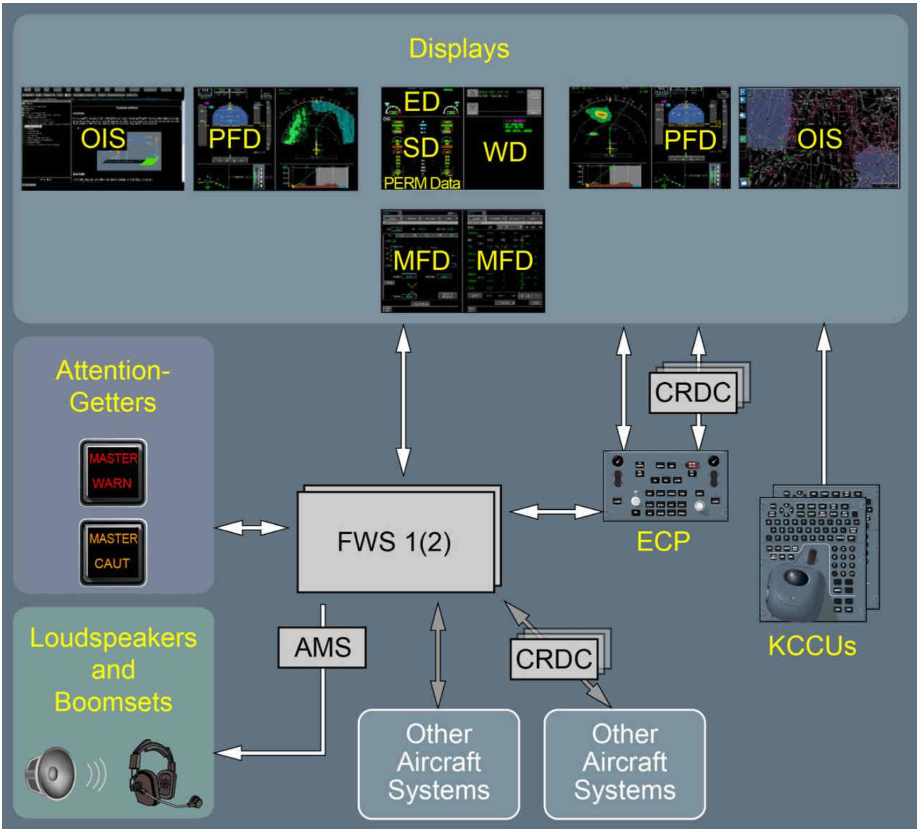
Ident.: DSC-31-CDS-60-10-20-10-00000003.0001001 / 24 APR 14

The ECAM has:

- 2 Flight Warning Systems (FWS)
- 1 ECAM Control Panel (ECP)
- 4 attention-getters

The ECAM information appears on various displays.

ECAM Architecture


Displays
OIS
PFD
ED
SD
PERM Data
WD
PFD
OIS
MFD
MFD
Attention-Getters
MASTER WARN
MASTER CAUT
FWS 1(2)
CRDC
ECP
KCCUs
Loudspeakers and Boomsets
AMS
CRDC
Other Aircraft Systems
Other Aircraft Systems

Ident.: DSC-31-CDS-60-10-20-10-00000004.0003001 / 06 MAY 14

FWS

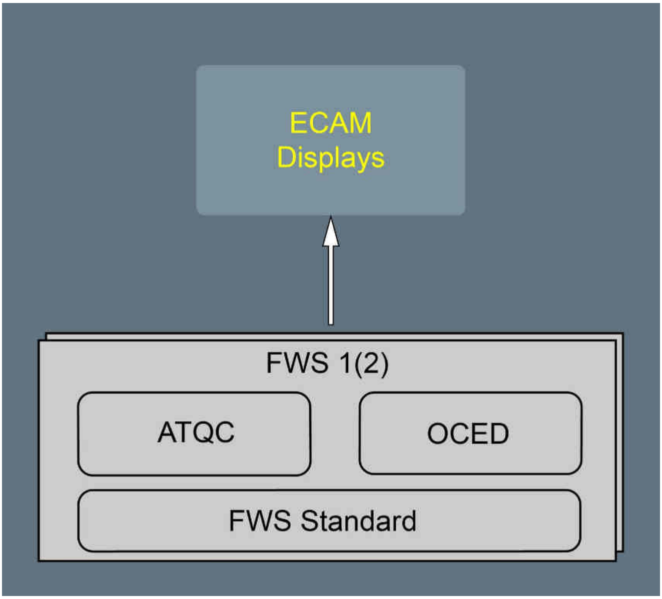
Both FWS receive information from aircraft systems in real time.

L3 Each FWS directly receives system information mainly via the avionics network. Systems that are not able to directly communicate via the avionics network transmit the parameters via the assigned Common Remote Data Concentrators (CRDCs).
In addition to the avionics network, conventional buses also ensure direct communication between each FWS and specific systems, and between FWS and the CDS.

Two CPIOMs host two independent FWS, as follows:
- CPIOM-J11 hosts FWS 1
- CPIOM-J12 hosts FWS 2.

L1 To manage the ECAM functions each FWS has:
- A flight warning software also referred to as FWS standard
- Two types of database to enable FWS standard modification and customization:
  - The Airbus Temporary Quick Change (ATQC) database
  - The Operator-Customized ECAM Database (OCED)

FWS Databases



FWS STANDARD

The FWS standard contains all the ECAM logics, and information to process all the ECAM functions.
For more information about ECAM functions, *Refer to DSC-31-CDS-60-10-10 Overview*.

ATQC DATABASE

The ATQC database enables Airbus to update the FWS standard, in between two standards.
The ATQC is mainly dedicated to modify the ECAM alerts.
L3 The ATQC enables Airbus to modify any part of the FWS standard, except the checklists.

L1 As a consequence, an ECAM alert that is modified, or updated, via the ATQC is temporary. The modification remains applicable until the appropriate technical solution is applied to the aircraft (new FWS standard or new system standard).

L2 The ATQC always has priority over the OCED and the FWS standard.
The FWS check that the ATQC database is compatible with the FWS standard. If the ATQC database is not compatible, the ECAM triggers the FWS ATQC DATABASE dispatch message.

L1 OCED DATABASE

The OCED database enables the operators to customize the checklists and some of the ECAM alerts, if necessary.

L3 The OCED enables Operators to:
- Modify the checklists
- Add not-sensed procedures
- Add more information to abnormal and emergency procedures.

L1 The FWS can have two OCED. The flight crew can change the active OCED via the C/L MENU page of MFD, when the aircraft is on ground.
L3 When the FWS changes the OCED, both FWS reset and the new OCED is loaded in both FWS.
L2 The OCED always has priority over the FWS standard.
The FWS check that the OCED database is compatible with the FWS standard. If the OCED database is not compatible, the ECAM triggers the FWS CPNY DATABASE dispatch message.
For more information about how to change the OCED, *Refer to DSC-31-CDS-60-50 How to Change COMPANY ECAM DATABASE*.

Ident.: DSC-31-CDS-60-10-20-10-00000005.0001001 / 24 APR 14

ECP

The flight crew uses the ECP to:
- Select abnormal not-sensed procedures
- Select deferred procedures
- Interface with the procedures that appear on the WD
  - Sensed abnormal procedures
  - Deferred procedures
  - Abnormal not-sensed procedures.
- Display the SD pages
- Display the dispatch messages.

For more information about ECP, *Refer to DSC-31-CDS-60-20 ECP*.

Ident.: DSC-31-CDS-60-10-20-10-00000076.0001001 / 24 APR 14

KCCU s

The Keyboard and Cursor Control Units (KCCUs) is part of the Control and Display System.
The flight crew uses the KCCU to interface with the checklists that appear on the MFDs.
For more information about KCCU, *Refer to DSC-31-CDS-60-20 KCCU*.

Ident.: DSC-31-CDS-60-10-20-10-00000006.0001001 / 24 APR 14

ATTENTION-GETTERS

Each flight crewmember has two attention-getters on the glareshield:
- 1 MASTER WARN pb
- 1 MASTER CAUT pb.

Each attention-getter has a light that informs the flight crew of an alert:
- The MASTER WARN light of both MASTER WARN pushbuttons flashes in the case of an ECAM alert for an emergency situation
- The MASTER CAUT light of both MASTER CAUT pushbuttons comes on in the case of an ECAM alert for an abnormal situation.

Note: *In the case of simultaneously-triggered alerts, all MASTER WARN lights and MASTER CAUT lights may come on at the same time.*

The flight crew can turn off the lights and stop the associated audio indicator, by pressing the corresponding attention-getter.
For more information, *Refer to DSC-31-CDS-60-20 Attention-Getters*.

Ident.: DSC-31-CDS-60-10-20-10-00000007.0001001 / 24 APR 14

LOUDSPEAKERS AND BOOMSETS

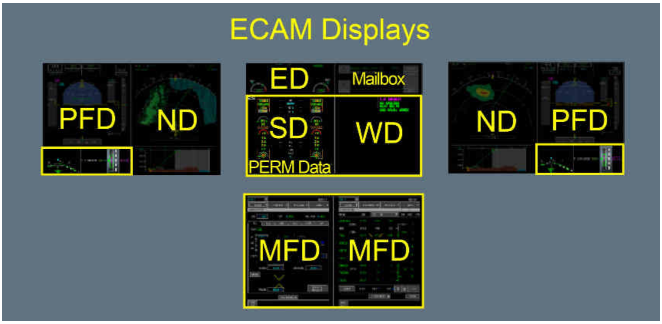
The ECAM can emit audio indicators via the loudspeakers and the boomsets of the cockpit.

Note: *The ECAM manages the priority of all audio indicators.*

For more information about loudspeakers and boomsets, *Refer to DSC-23-10-10 Communication Equipment*.

DISPLAYS

ECAM Displays



The ECAM information appears on the:
- MFD for checklists
- WD for abnormal and emergency procedures, deferred procedures, limitations, and memos
- Lower part of the PFD:
  - For limitations that have an immediate effect on the flight
  - For memos.
- SD for system displays, aircraft status and dispatch messages
- Permanent Data for temperature data, time data, G load data, aircraft weight data, and fuel data.

In addition, the ECAM communicates with the Onboard Information System (OIS) for the display of information in various OIS applications. For more information, *Refer to DSC-46-OIS-10-10 Overview*.

ECAM Function

OVERVIEW

Ident.: DSC-31-CDS-60-10-10-00018772.0001001 / 24 APR 14
Applicable to: ALL

IN NORMAL AIRCRAFT OPERATION

The FWS:

- Displays memos on WD and PFD

L2 For more informations about memos, *Refer to DSC-31-CDS-60-10-40 Limitations and Memos*.

L1 - Displays the checklists on the MFD, on flight crew request

L2 For more information about checklists, *Refer to DSC-31-CDS-60-10-30 General*.

L1 - Displays SD page in accordance with the flight phase, or on flight crew request

L2 For more information about SD pages, *Refer to DSC-31-CDS-60-10-50 SD Pages*.

L1 - Generates audio indicators.

L2 For more information about audio indicators, *Refer to DSC-31-CDS-60-10-10 Audio Indicators*.

L3 The SURV system also generates some of the audio indicators. Nevertheless, the ECAM manages the priority of all audio indicators.

L1 IN ABNORMAL AIRCRAFT OPERATION

If the FWS detects system failures or the abnormal operation of systems or a degraded state of the aircraft, the FWS:

- Triggers the applicable alerts
  The FWS manages alert priority.

L2 For more information about alerts, *Refer to DSC-31-CDS-60-10-10 Definition*.

L1 The FWS can inhibit some alerts during specific flight phases. The FWS computes these flight phases.

L2 For more information about the ECAM flight phases, *Refer to DSC-31-CDS-60-10-10 ECAM Flight Phases*.

L1 - Displays the associated procedures
The procedures include abnormal and emergency procedures and deferred procedures.

L2 For more information about the ECAM procedures, *Refer to DSC-31-CDS-60-10-40 Overview*.

L1 - Displays the applicable System Display (SD) pages with failed systems

L2 For more information about SD pages, *Refer to DSC-31-CDS-60-10-50 SD Pages*.

L1 - Advises the flight crew in case of parameter drift

L2 For more information about the advisory function, *Refer to DSC-31-CDS-60-10-10 Advisory*.

L1 - Provides the aircraft status

L2 For more information about ECAM STATUS, *Refer to DSC-31-CDS-60-10-50 STATUS Page and STATUS MORE Page*.

L1 - Displays the limitations

L2 For more information about limitations, *Refer to DSC-31-CDS-60-10-40 Limitations and Memos*.

L1 - Displays dispatch messages.
Dispatch messages are system failures that can affect the dispatch of the aircraft in accordance with MEL information.

L2 For more information about dispatch messages, *Refer to DSC-31-CDS-60-10-50 DISPATCH Page*.

ALERT TYPES AND LEVELS

Applicable to: ALL

Ident.: DSC-31-CDS-60-10-10-20-00000029.0001001 / 24 APR 14

DEFINITION

An ECAM alert is a visual or aural signal that helps the flight crew to detect and identify:
- A system failure, or
- The abnormal operation of a system, or
- A degraded state of the aircraft.

An ECAM alert can include one or more of the following visual and aural signals:
- MASTER WARN light or MASTER CAUT light
- Specific local light
- ECAM procedure on the WD
- SD page on the SD
- Audio indicator.

Ident.: DSC-31-CDS-60-10-10-20-00000072.0001001 / 24 APR 14

ALERT LEVELS

There are three levels of ECAM alerts:
- Warnings (level 3)
- Cautions (level 2 and level 1).

The ECAM receives information from aircraft systems, computes alerts (warnings and cautions) in real time, then displays and sounds these alerts in the cockpit.

If applicable, an ECAM procedure can be part of an ECAM alert:
- An ECAM procedure associated with a warning is referred to as an ECAM emergency procedure
- An ECAM procedure associated with a caution is referred to as an ECAM abnormal procedure.

For more information about ECAM procedures, *Refer to DSC-31-CDS-60-10-40 Overview*.

The ECAM alerts are categorized in the three levels, based on the situation and the priority of required actions:

Alert Level	Color	Description	Audio Indicators	Visual Signals
Warning (Level 3)	Red	For an emergency situation that requires immediate flight crew action, because: - The aircraft is in a dangerous configuration, or in a limiting flight condition - A failure of a system affects the safety of the flight.	Continuous Repetitive Chime (CRC), or a specific sound, or a synthetic voice message, or a specific sound with a synthetic voice message	- Flashing MASTER WARN light, with or without a specific local red light. - Title of the alert displayed on the WD, with the associated emergency procedure, if any. - Applicable SD page automatically displayed on the SD, if any.
Caution (Level 2)	Amber	For an abnormal situation that the flight crew should be aware of, but that does not require immediate action, because the failure does not immediately affect the flight. However, when time and situations permit, the flight crew should consider these cautions without delay, to prevent any additional degradation of the affected system, or of any other associated system.	Single Chime (SC)	- Steady MASTER CAUT light, with or without a specific local amber light. - Title of the alert displayed on the WD, with the associated abnormal procedure, if any. - Applicable SD page automatically displayed on the SD, if any.
Caution (Level 1)	Amber	For a situation that requires the flight crew to be informed (crew awareness), and may require flight crew action (e.g. redundancy loss, or system degradation).	None	- Title of the alert displayed on the WD, usually with no associated abnormal procedure. - Applicable SD page automatically displayed on the SD, if any.

Ident.: DSC-31-CDS-60-10-10-20-00000028.0001001 / 24 APR 14

PRIORITY OF ALERTS

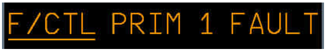
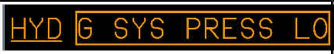
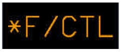
There are three levels of priority associated with warnings and cautions:
- Warnings (level 3)
- Cautions (level 2)
- Cautions (level 1).

Level 3 warnings have priority over level 2 cautions, that have priority over level 1 cautions.
In addition, if the ECAM detects several alerts that have the same level, the ECAM displays these alerts in their decreasing order of priority. In all cases, the ECAM first displays the alert that has the highest priority, and that the flight crew should take into account first.

Ident.: DSC-31-CDS-60-10-10-20-00000009.0001001 / 24 APR 14

ALERT TYPES

The ECAM alerts are categorized in three types, depending on their possible effect on other systems:

Alert Type	WD Display (Alert Title)	Description
Independent	 F/CTL PRIM 1 FAULT	For a failure that affects a system, but does not degrade the performance of other aircraft systems.
Primary	 HYD G SYS PRESS LO	For a failure that affects a system, and causes the loss or the degradation of other systems.
Secondary	 *F/CTL	For the loss of a system, a system reconfiguration, or a system limitation, that is the result of a primary failure. Affected parts of the affected system are indicated on the corresponding SD page.

GENERAL

Ident.: DSC-31-CDS-60-10-10-00000039.0001001 / 10 APR 18
Applicable to: ALL

An advisory indicates that a monitored parameter of an aircraft system starts to deviate from the usual operational range, but does not reach a level that triggers an alert.
An advisory is indicated by the affected parameter that pulses in green on the applicable SD page.
The parameter pulses in green as long as the parameter is out of the usual operational range.

The following SD pages can display advisories:
- APU SD page
- CAB PRESS SD page
- CRUISE page
- ENG SD page
- F/CTL SD page

When there is an advisory, the SD and the WD display the applicable information, as follows:
- If the current SD page is a page that the SD automatically displays based on the current flight phase:
  The current SD page automatically changes to the SD page of the system affected by the advisory.
  The ECP pushbutton that is associated with the affected SD page comes on.
- If the current SD page is a page that the flight crew manually selected:
  The current SD page remains displayed.
  The ECP pushbutton that is associated with the affected SD page flashes. It flashes, until the flight crew presses it to manually display the SD page of the system affected by the advisory.

- If the current SD page is a page that is associated with an ECAM alert:
  The current SD page remains displayed.
  The SD page of the system affected by the advisory does not appear, until the flight crew clears the alert.
- If the WD displays memos or limitations, the ADV reminder appears on the last line of the WD.
  For more information on the reminder, *Refer to DSC-31-CDS-60-10-40 ADV Reminder*.

L3 In the case of several advisories on different SD pages, only the advisory that has the higher level is taken into account.

L1 When there is an advisory, the flight crew should check the applicable SD page to monitor the affected parameter. For more information, *Refer to ECAM Advisory*.

AUDIO INDICATORS

Ident.: DSC-31-CDS-60-10-10-00000066.0005001 / 03 JAN 19
Applicable to: ALL

The aircraft can generate three types of audio indicators:
- Sounds
- Synthetic voice messages
- Sounds associated with synthetic voice messages.

L3 Two aircraft systems can provide audio indicators:
- The ECAM
- The SURV system.

The ECAM always manages the priority of all audio indicators.
Any generated audio indicator will be entirely played, even if the triggering condition is no longer applicable.

L1

Audio Indicator	Meaning
Auto Brake Off (Synthetic Voice)	The flight crew disconnected the autobrake after touchdown. For more information, *Refer to AUTO BRK OFF audio indicator*
Auto Brake Off, Auto Brake Off (Synthetic Voice)	The autobrake is disconnected after touchdown due to a failure. For more information, *Refer to AUTO BRK OFF audio indicator*
Avoid Obstacle (Synthetic voice)	TAWS alert. For more information, *Refer to (Surveillance -TAWS)*.
Avoid Terrain (Synthetic voice)	TAWS alert. For more information, *Refer to (Surveillance -TAWS)*.

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Audio Indicator	Meaning
Brake, Max Braking, Max Braking (Synthetic voice)	Runway Overrun Protection. For more information, *Refer to (ROW/ROP System)*.
C Chord (Sound)	Altitude Alert. For more information, *Refer to (Flight Guidance)*.
Cabin Ready (Sound)	Cabin crew information. For more information, *Refer to (Communication System)*.
Call Company (Sound and Synthetic Voice)	Message received from company. For more information, *Refer to (Onboard Information System)*.
Cavalry Charge (Low Volume Sound)	Voluntary AP disconnection. For more information, *Refer to (Flight Guidance)*.
Cavalry Charge (High Volume Sound)	Not-voluntary AP disconnection. For more information, *Refer to (Flight Guidance)*.
Clear of conflict (Synthetic voice)	End of TCAS resolution. For more information, *Refer to (Surveillance - TCAS)*.
Climb, climb (Synthetic voice)	TCAS resolution. For more information, *Refer to (Surveillance - TCAS)*.
Climb climb now, Climb climb now (Synthetic voice)	TCAS resolution. For more information, *Refer to (Surveillance - TCAS)*.
Climb crossing climb, climb crossing climb (Synthetic voice)	TCAS resolution. For more information, *Refer to (Surveillance - TCAS)*.
Company Alert (Sound and Synthetic Voice)	Urgent message received from company. For more information, *Refer to (Onboard Information System)*.
Company Message (Sound and Synthetic Voice)	Message received from company. For more information, *Refer to (Onboard Information System)*.
Continuous Buzzer (Sound)	MECH call or SELCAL For more information, *Refer to (Communication)*.
Continuous Repetitive Chime (Sound)	ECAM Warning For more information, *Refer to (Control and Display System - ECAM)*.
Crossing maintain (Synthetic voice)	TCAS resolution. For more information, *Refer to (Surveillance - TCAS)*.
Descend, descend (synthetic voice)	TCAS resolution. For more information, *Refer to (Surveillance - TCAS)*.
Descend crossing descend, descend crossing descend (Synthetic voice)	TCAS resolution. For more information, *Refer to (Surveillance - TCAS)*.
Descend descend now, descend descend now (Synthetic voice)	TCAS resolution. For more information, *Refer to (Surveillance - TCAS)*.

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Audio Indicator	Meaning
Don't Sink (Synthetic Voice)	TAWS alert. For more information, *Refer to (Surveillance - TAWS)*.
Door Please (Sound and Synthetic Voice)	Cockpit access request. For more information, *Refer to (Doors - Cockpit Door)*.
Dual Input (Synthetic Voice)	Simultaneous flight crew action on both sidesticks. For more information, *Refer to (Flight Controls)*.
EFB Message (Sound and Synthetic voice)	Message received on the EFB. For more information, *Refer to (Onboard Information System)*.
Emergency Buzzer (Sound)	Emergency cabin call For more information, *Refer to (Communication)*.
Emergency Cockpit Door (Sound)	Emergency request for cockpit access. For more information, *Refer to (Doors - Cockpit Door)*.
Glideslope (Synthetic voice)	TAWS alert. For more information,*Refer to (Surveillance -TAWS)*.
Go Around, Windshear Ahead (Synthetic Voice)	Predictive Windshear detection. For more information, *Refer to (Surveillance -WXR)*.
Hundred Above (Synthetic voice)	100 ft above approach Minima. For more information, *Refer to (Navigation - Radio Altimeter)*.
Increase climb, increase climb (Synthetic voice)	TCAS resolution. For more information, *Refer to (Surveillance - TCAS)*.
Increase descent, increase descent (Synthetic voice)	TCAS resolution. For more information, *Refer to (Surveillance - TCAS)*.
Keep Max Reverse (Synthetic voice)	Runway Overrun Protection. For more information, *Refer to (ROW/ROP)*.
Level off, Level off (Synthetic voice)	TCAS resolution. For more information, *Refer to (Surveillance - TCAS)*.
Minimum (Synthetic voice)	Minimum height announce during approach. For more information, *Refer to (Navigation - Radio Altimeter)*.
Maintain vertical speed, crossing maintain (Synthetic voice)	TCAS resolution. For more information, *Refer to (Surveillance - TCAS)*.
Maintain vertical speed maintain (Synthetic voice)	TCAS resolution. For more information, *Refer to (Surveillance - TCAS)*.
Monitor vertical speed (Synthetic voice)	TCAS resolution. For more information, *Refer to (Surveillance - TCAS)*.
Monitor Radar Display (Synthetic Voice)	Predictive Windshear. For more information, *Refer to (Surveillance - WXR)*.

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Audio Indicator	Meaning
Normal Buzzer (Sound)	Cabin call. For more information, *Refer to (Communication)*.
Obstacle Ahead (Synthetic voice)	TAWS alert. For more information, *Refer to (Surveillance - TAWS)*.
Obstacle Ahead, Pull Up (Synthetic voice)	TAWS alert. For more information, *Refer to (Surveillance - TAWS)*.
Pitch (Synthetic voice)	Excessive pitch attitude at landing. For more information, *Refer to (Flight Envelope)*.
Priority Left (Synthetic voice)	Sidestick priority. For more information, *Refer to (Flight Controls)*.
Priority Right (Synthetic voice)	Sidestick priority For more information, *Refer to (Flight Controls)*.
Pull Up (Synthetic voice)	TAWS alert. For more information, *Refer to (Surveillance - TAWS)*.
Radio Altitude Callout	Announce of radio height value. For more information, *Refer to (Navigation - Radio Altimeter)*.
Retard (Synthetic Voice)	Thrust lever retard announce. For more information, *Refer to (Navigation - Radio Altimeter)*.
Retard (Synthetic voice)	The engine thrust levers are not symmetrical on ground. For more information, *Refer to (Engines)*.
Ring (Sound)	ATC message in mailbox. For more information, *Refer to (Air Traffic Control Datalink System)*.
Runway Too Short, Runway Too Short (Synthetic voice)	Runway Overrun Protection. For more information, *Refer to (ROW/ROP System)*.
Set Max reverse (Synthetic voice)	Runway Overrun Protection. For more information, *Refer to (ROW/ROP System)*.
Single Chime (Sound)	ECAM Caution. For more information, *Refer to (Control and Display System - ECAM)*.
Sink Rate (Synthetic voice)	TAWS alert. For more information, *Refer to (Surveillance - TAWS)*.
Speed (Synthetic Voice)	Low energy alert. For more information, *Refer to (Flight envelope)*.
Stall (Sound and Synthetic Voice)	Stall warning. For more information, *Refer to (Flight Envelope)*.
Ten Retard (Synthetic voice)	Reminder to retard the thrust levers in autoland. For more information, *Refer to (Navigation - Radio Altimeter)*.

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Audio Indicator	Meaning
Terrain (Synthetic voice)	TAWS alert. For more information,*Refer to (Surveillance - TAWS)*.
Terrain, Terrain (Synthetic voice)	TAWS alert. For more information, *Refer to (Surveillance -TAWS)*.
Terrain Ahead, Terrain Ahead (Synthetic voice)	TAWS alert. For more information, *Refer to (Surveillance - TAWS)*.
Terrain Ahead, Pull Up (Synthetic voice)	TAWS alert. For more information, *Refer to (Surveillance -TAWS)*.
Time Marker (Sound and Synthetic Voice)	FMS time marker For more information, *Refer to (Flight Management System)*.
Too low, flaps (Synthetic Voice)	TAWS alert. For more information, *Refer to (Surveillance -TAWS)*.
Too low gear (Synthetic voice)	TAWS alert. For more information, *Refer to (Surveillance-TAWS)*.
Too Low, Terrain (Synthetic voice)	TAWS alert. For more information, *Refer to (Surveillance-TAWS)*.
Traffic, Traffic (Synthetic voice)	TCAS advisory For more information, *Refer to (Surveillance - TCAS)*..
Triple Click (Sound)	Reversion of flight guidance mode. For more information, *Refer to (Flight Guidance)*.
Twenty retard (Synthetic voice)	Reminder to retard the thrust levers if manual landing is performed. For more information, *Refer to (Navigation-Radio Altimeter)*..
V1 (Synthetic Voice)	V1 Auto Callout. For more information, *Refer to (Flight Envelope)*.
Weather Ahead (Synthetic Voice)	Weather radar detection For more information, *Refer to (Surveillance - WXR)*.
Windshear (Synthetic Voice)	Reactive Windshear. For more information, *Refer to (Flight Envelope)*.
Windshear Ahead (Synthetic Voice)	Predictive Windshear For more information, *Refer to (Surveillance - WXR)*.

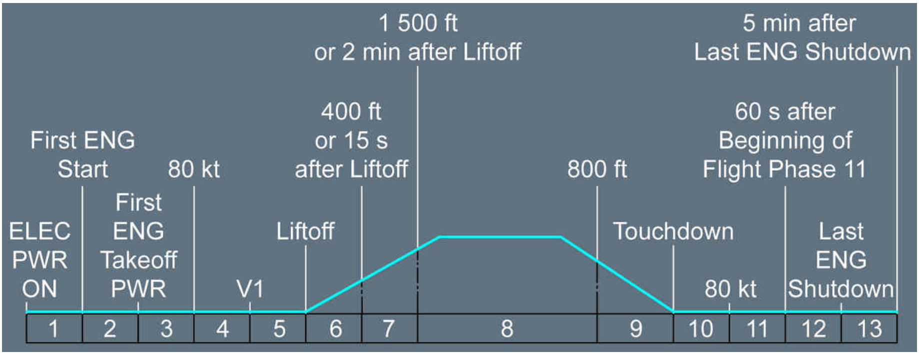
ECAM FLIGHT PHASES

Ident.: DSC-31-CDS-60-10-10-00000011.0001001 / 02 OCT 14
Applicable to: ALL

The ECAM computes ECAM flight phases for the flight.

L2 Each flight is divided into 13 flight phases. Flight phases change according to the aircraft configuration and system input.

ECAM Flight Phases


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
2
3
4
5
6
7
8
9
10
11
12
13

L3 *Note: For flight phase computation:*
- *Speed is based on computed airspeed from ADRs*
- *Height is based on radio height from radio altimeters.*

L1 The ECAM uses flight phases to better operate during each flight:
- The ECAM displays dispatch messages when in appropriate flight phases
- During high workload phases, e.g. takeoff and landing, the ECAM inhibits alerts that can be delayed to a more appropriate time
  For more information, See Flight Phase Inhibition.
- The ECAM displays the SD page that corresponds to the current flight phase, unless there is an aircraft system failure
- The ECAM displays the applicable takeoff and landing memos.

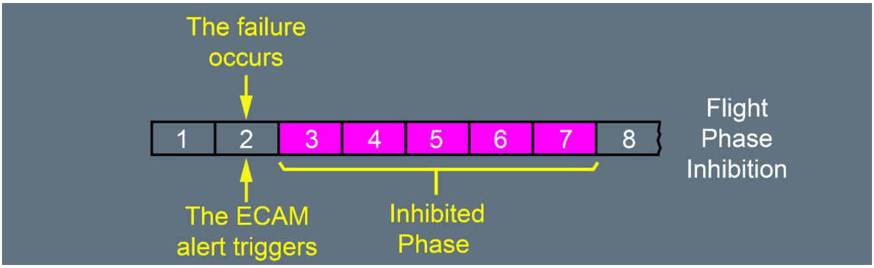
L2 *Note:*
1. *The ECAM flight phases are different and independent of the flight phases that the FMS computes and uses.*
2. *The ECAM flight phases are also different and independent of the flight phases of the CHECKLIST MENU page of the MFD.*
3. *In flight phase 7, if the thrust is reduced (thrust levers at CL) and the aircraft is below 800 ft, the flight phase changes from 7 to 9. When the aircraft reaches 800 ft, the flight phase changes from 9 to 8.*

L1 INHIBITION OF ECAM ALERTS AND MEMOS

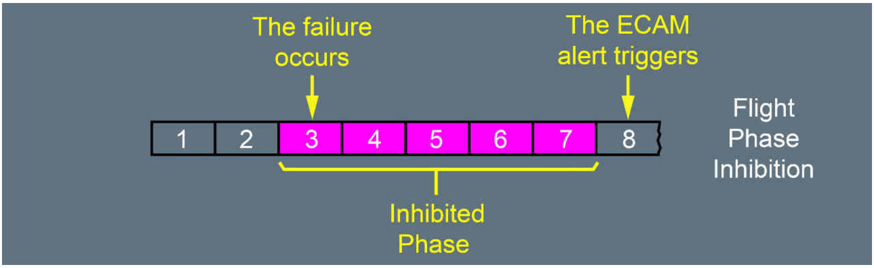
When the ECAM detects a system failure, or a system state associated to a memo, the applicable alert or memo is either immediately triggered, or delayed to a more appropriate time.
Therefore, for each ECAM alert and memo, inhibitions are defined in accordance with the ECAM flight phases.

L2 *Note:* 1. *The Flight Crew Operating Manual (FCOM) indicates the flight phase inhibition associated with each alert with the description of the alerts.*
For more information about inhibition of alerts, Refer to PRO-ABN-ABN-00 Annunciations.
2. *Most of memos are not inhibited. Nevertheless, when a memo is inhibited the FCOM indicates the flight phase inhibition associated to each memo with the memo description.*

SCENARIO EXAMPLES


The failure occurs
1
2
3
4
5
6
7
8
Flight Phase Inhibition
The ECAM alert triggers
Inhibited Phase

The failure occurs during the ECAM flight phase 2: The ECAM immediately triggers the alert, and continues to display the associated procedure on the WD, as long as there is the failure (even if the next ECAM flight phase is inhibited).


The failure occurs
The ECAM alert triggers
1
2
3
4
5
6
7
8
Flight Phase Inhibition
Inhibited Phase

The failure occurs during the ECAM flight phase 3: The ECAM inhibits the alert. The alert is triggered and the associated procedure appears on the WD, only when the aircraft exits the ECAM flight phase 7.

L1 INHIBITION OF DISPATCH MESSAGES

DISPATCH MESSAGES ASSOCIATED TO AN ECAM ALERT

If the dispatch message is associated with an ECAM alert then this dispatch message has the same flight phase inhibition than the associated alert.

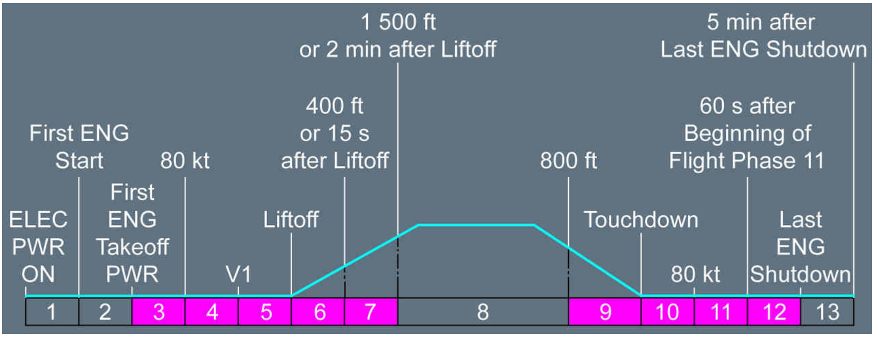
DISPATCH MESSAGES NOT ASSOCIATED TO AN ECAM ALERT

When the ECAM detects a system failure that has a dispatch condition and this dispatch message is not associated with an ECAM alert, the ECAM triggers an independent dispatch message.

Independent dispatch messages are displayed as follows:
- On ground, when the failure assessment is applicable
- In flight, during cruise when the workload is lower, for crew awareness.
L2 Dispatch messages are displayed in cruise for the flight crew to anticipate the consequences of the failure assessment after landing, if needed.

The inhibition of independent dispatch messages is the following:

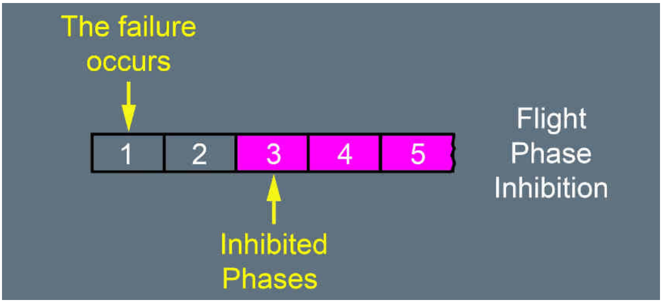
Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
V1
Touchdown
80 kt
Last
ENG
Shutdown
1
2
3
4
5
6
7
8
9
10
11
12
13

However, some dispatch messages can also be inhibited in flight phase 2, in particular when there is no:
- Dispatch consequence
- Operational limitation
- Particular operational procedure due to the failure.

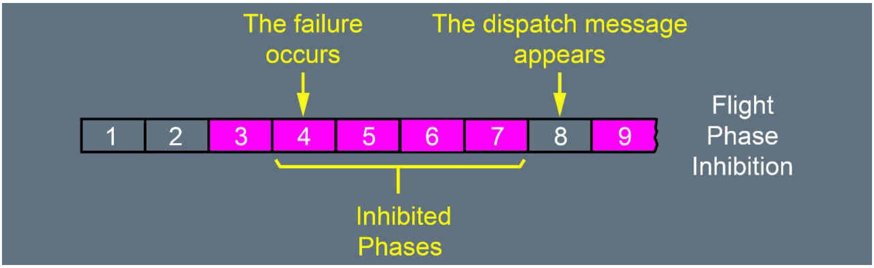
SCENARIO EXAMPLE

Dispatch Message In Flight Phase 1


The failure occurs
1
2
3
4
5
Flight Phase Inhibition
Inhibited Phases

A system failure associated to an independent dispatch message occurs during phase 1: The ECAM displays the dispatch message on the DISPATCH page. Then, the dispatch message is available as long as the failure remains.

Dispatch Message in Flight Phase 4


The failure occurs
The dispatch message appears
1
2
3
4
5
6
7
8
9
Flight Phase Inhibition
Inhibited Phases

A system failure associated to an independent dispatch message occurs during phase 4: The ECAM inhibits the dispatch message until the aircraft reaches the phase 8. Then, the dispatch message is available as long as the failure remains.

ECAM COLOR CODE

Ident.: DSC-31-CDS-60-10-10-00000013.0001001 / 24 APR 14
Applicable to: ALL

The ECAM displays information in 7 different colors.
Each color has an assigned definition.

RED	- For configurations or failures that require immediate action - For specific memos (e.g. AP OFF), or specific messages (e.g. LAND ASAP).

AMBER	- For configurations or failures that the flight crew should be aware of, but that do not require immediate action However, when time and situations permit, these cautions should be considered without delay, to prevent any additional degradation of the affected system, or of any other related system. - For specific memos (e.g. A/THR OFF), or specific messages (e.g. LAND ANSA).
GREEN	- For information in a procedure, or on the STATUS page - For checklist items that are completed - For memos.
WHITE	- For procedure items that are completed - For submenus, condition lines, titles, and reminders - For information on the STATUS page, or on the STATUS MORE page - For dispatch messages on the DISPATCH page.
BLUE	- For actions to be performed - For limitations - For checklist items to be checked - For titles of checklists that are not completed.
MAGENTA	For specific memos (e.g. T.O INHIBIT).
GRAY	- For checklists that are completed - For items (e.g. procedure lines) that are not yet activated.

MFD

GENERAL

Ident.: DSC-31-CDS-60-10-30-00000014.0001001 / 24 APR 14
Applicable to: ALL

A checklist (C/L) is a reminder of normal operation items, and should be performed in a specific flight phase in accordance with the Standard Operating Procedures (SOPs).
At any time during the flight, the flight crew can access and display a checklist on the MFD.

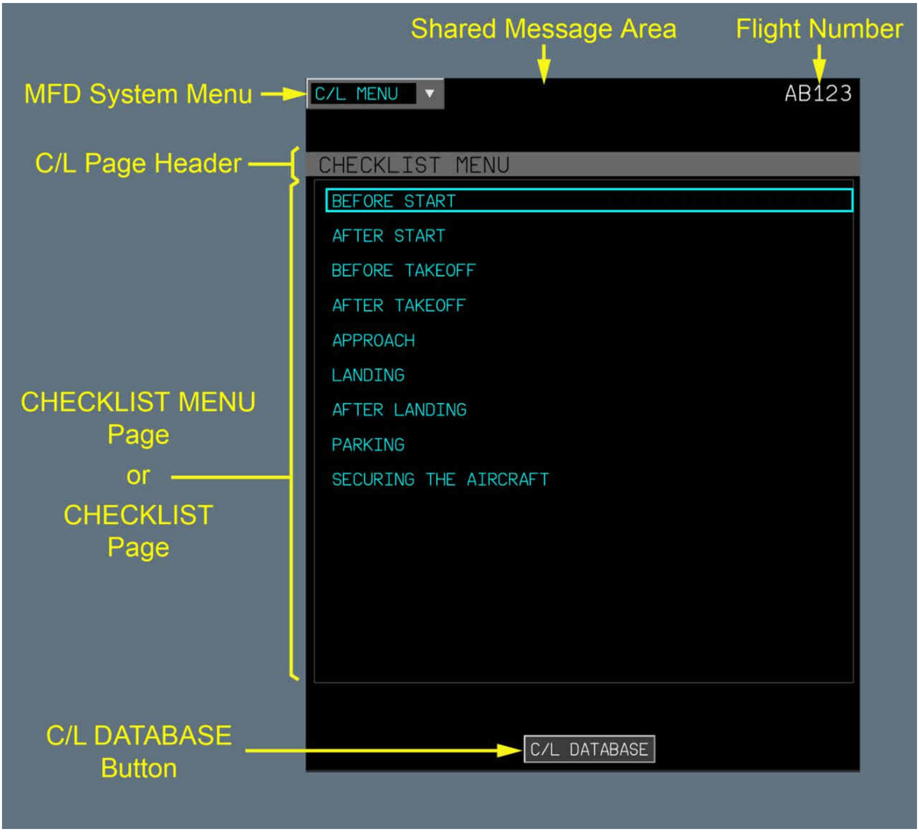
MFD OVERVIEW

Applicable to: ALL

Ident.: DSC-31-CDS-60-10-30-10-00009747.0002001 / 24 APR 14

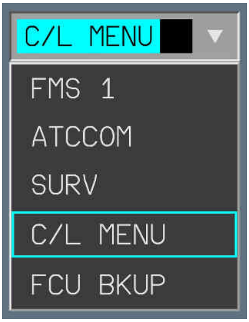
The ECAM dedicated pages on the MFD are the C/L pages.
The MFD is interactive. Therefore, the flight crew can navigate through the C/L pages, and perform the checklists, via the KCCU.
For all information about the MFD, *Refer to DSC-31-CDS-70-10 MFD*.

MFD Overview


Shared Message Area
Flight Number
MFD System Menu
C/L MENU ▼
AB123
C/L Page Header
CHECKLIST MENU
BEFORE START
AFTER START
BEFORE TAKEOFF
AFTER TAKEOFF
APPROACH
LANDING
AFTER LANDING
PARKING
SECURING THE AIRCRAFT
CHECKLIST MENU Page or CHECKLIST Page
C/L DATABASE Button
C/L DATABASE

Ident.: DSC-31-CDS-60-10-30-10-00009749.0001001 / 24 APR 14

MFD SYSTEM MENU



The flight crew can access the C/L pages by selecting C/L MENU in the MFD system menu.

Ident.: DSC-31-CDS-60-10-30-10-00009750.0001001 / 24 APR 14

C/L PAGE HEADER

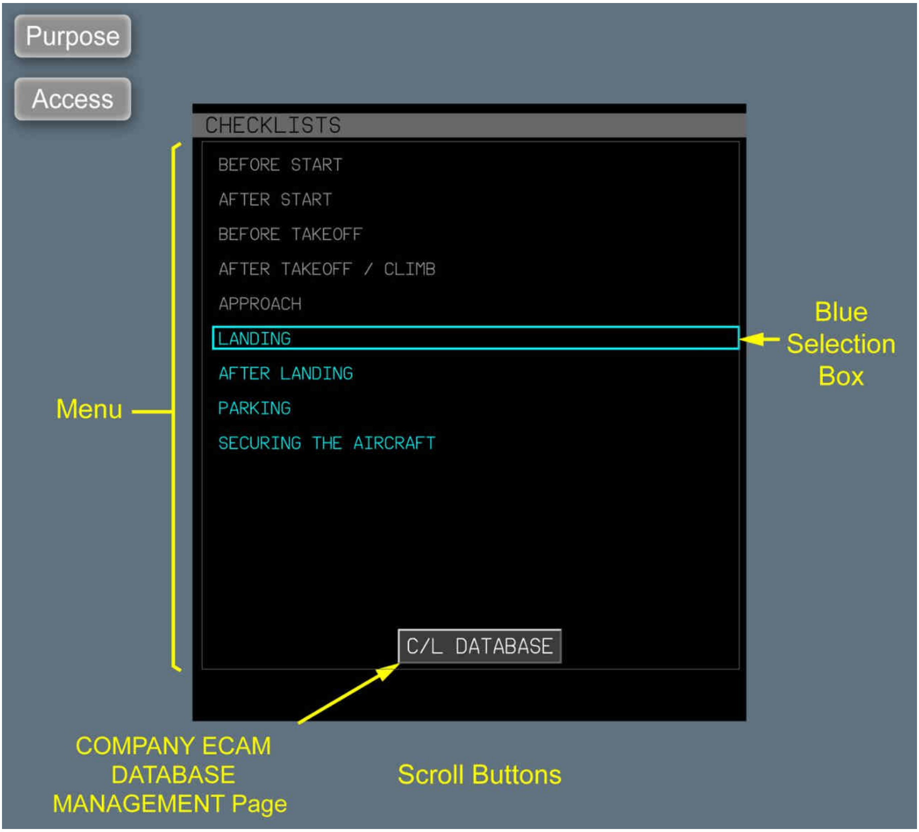
The C/L page header indicates:
- The title of the CHECKLIST MENU page, or
- The title of the displayed checklist page.

CHECKLIST MENU PAGE

Applicable to: ALL

Ident.: DSC-31-CDS-60-10-30-20-00000015.0002001 / 24 APR 14

Checklist Menu Page


Purpose
Access
CHECKLISTS
BEFORE START
AFTER START
BEFORE TAKEOFF
AFTER TAKEOFF / CLIMB
APPROACH
LANDING
AFTER LANDING
PARKING
SECURING THE AIRCRAFT
C/L DATABASE
Blue Selection Box
Menu
COMPANY ECAM DATABASE MANAGEMENT Page
Scroll Buttons

Ident.: DSC-31-CDS-60-10-30-20-00005655.0001001 / 24 APR 14

PURPOSE

The CHECKLIST MENU page enables the flight crew to

- To identify checklists that are complete
- To access and display any checklist.

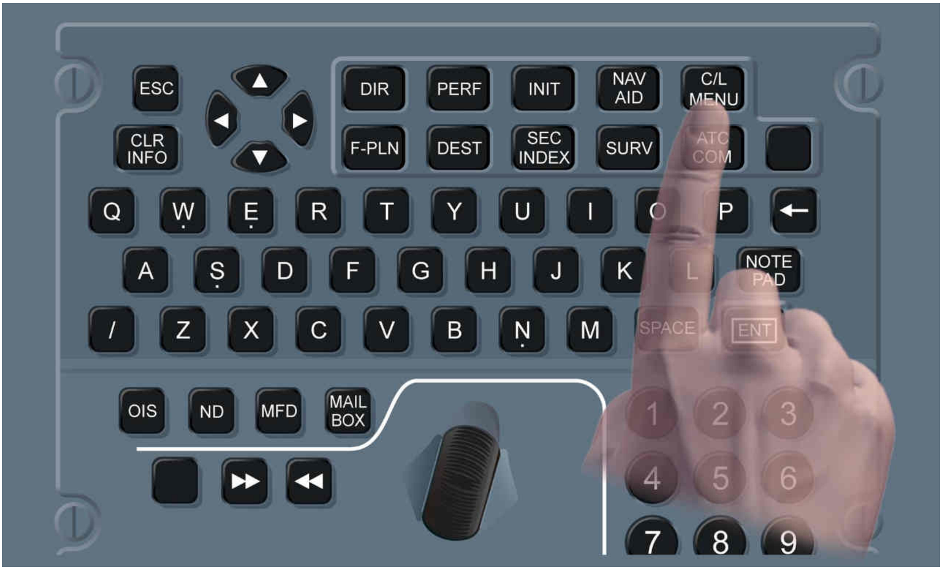
Ident.: DSC-31-CDS-60-10-30-20-00005656.0001001 / 24 APR 14

ACCESS

The flight crew can access the CHECKLIST MENU page, via:

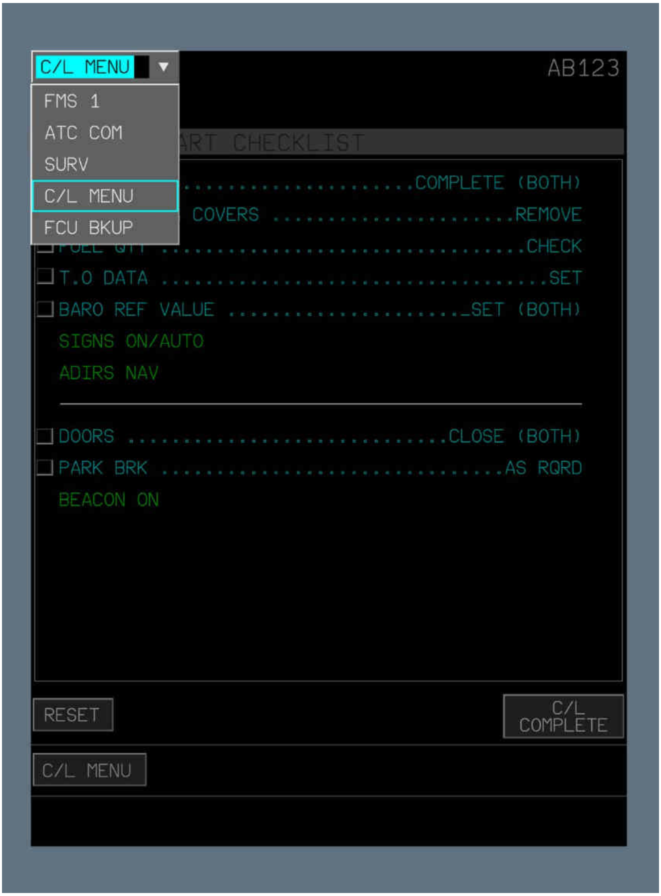
- The C/L MENU key on the keyboard of the KCCU

C/L MENU Key on the KCCU


ESC
CLR INFO
DIR
PERF
INIT
NAV AID
C/L MENU
F-PLN
DEST
SEC INDEX
SURV
ATC COM
Q W E R T Y U I O P
A S D F G H J K L
NOTE PAD
/ Z X C V B N M
SPACE
ENT
OIS
ND
MFD
MAIL BOX
1 2 3
4 5 6
7 8 9

- The selection of the C/L MENU in the MFD system menu

MFD System Menu


C/L MENU ▼
AB123
FMS 1
ATC COM
SURV
C/L MENU
FCU BKUP
RESET
C/L COMPLETE
C/L MENU

ART CHECKLIST

.......................COMPLETE (BOTH)

COVERS ....REMOVE

☐ FUEL QTY ....CHECK

☐ T.O DATA ....SET

☐ BARO REF VALUE ....SET (BOTH)

SIGNS ON/AUTO

ADIRS NAV

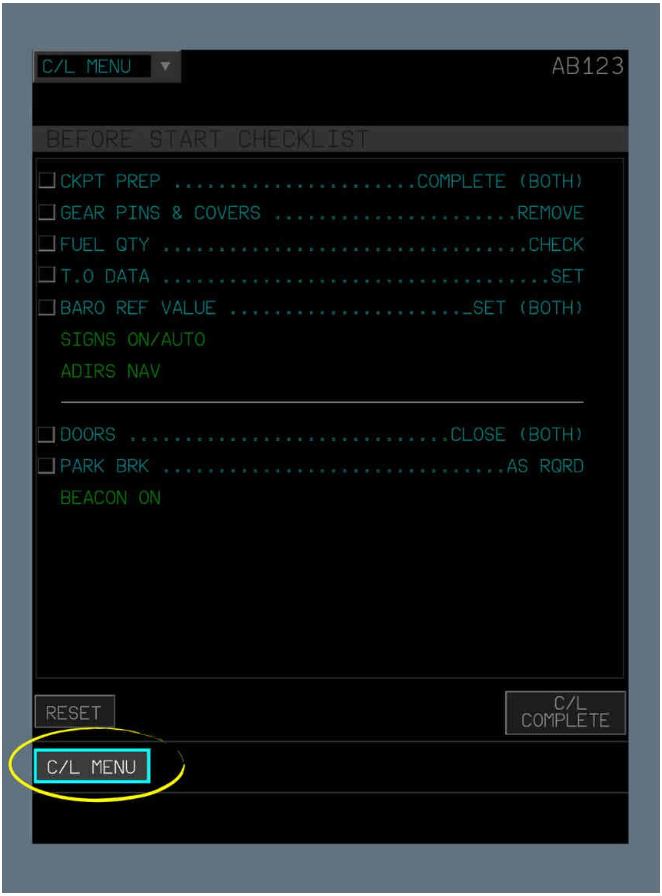
☐ DOORS ....CLOSE (BOTH)

☐ PARK BRK ....AS RQRD

BEACON ON

- The C/L MENU button on a CHECKLIST page.

CHECKLIST Page



BEFORE START CHECKLIST

☐ CKPT PREP ....COMPLETE (BOTH)
☐ GEAR PINS & COVERS ....REMOVE
☐ FUEL QTY ....CHECK
☐ T.O DATA ....SET
☐ BARO REF VALUE ....SET (BOTH)
SIGNS ON/AUTO
ADIRS NAV

☐ DOORS ....CLOSE (BOTH)
☐ PARK BRK ....AS RQRD
BEACON ON

Ident.: DSC-31-CDS-60-10-30-20-00005657.0001001 / 24 APR 14

MENU

The menu provides the list of all checklists by flight phase.

The checklists titles are:
- In blue, when the corresponding checklists are not completed
- In gray, when the corresponding checklists are completed.

Ident.: DSC-31-CDS-60-10-30-20-00005658.0001001 / 24 APR 14

BLUE SELECTION BOX

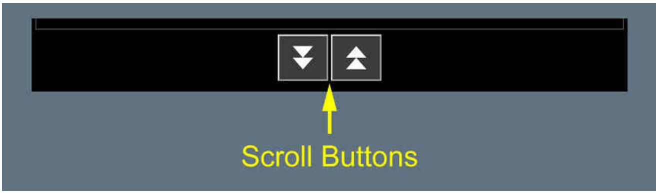
A blue selection box automatically appears around the applicable checklist, below the last completed checklist.
However, the flight crew can manually move the blue selection box, via the KCCU, in order to select any checklist in the menu.

Ident.: DSC-31-CDS-60-10-30-20-00005659.0001001 / 24 APR 14

SCROLL BUTTONS

The scroll buttons appear, only if the MFD cannot display all lines of the menu at the same time.

Scroll Buttons



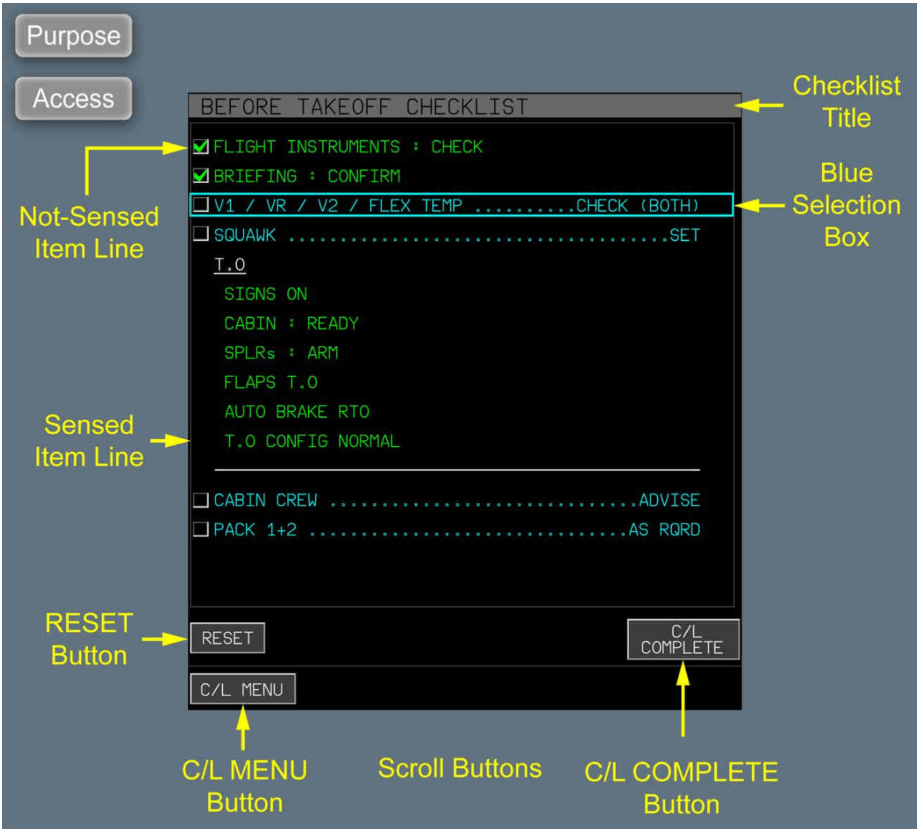
The flight crew uses the scroll buttons to move, page by page, downward and upward through the menu.

CHECKLIST PAGE

Applicable to: ALL

Ident.: DSC-31-CDS-60-10-30-30-00000016.0001001 / 24 APR 14

CHECKLIST Page



BEFORE TAKEOFF CHECKLIST

☑ FLIGHT INSTRUMENTS : CHECK

☑ BRIEFING : CONFIRM

☐ V1 / VR / V2 / FLEX TEMP ....CHECK (BOTH)

☐ SQUAWK ....SET

T.O

SIGNS ON

CABIN : READY

SPLRs : ARM

FLAPS T.O

AUTO BRAKE RTO

T.O CONFIG NORMAL

☐ CABIN CREW ....ADVISE

☐ PACK 1+2 ....AS RQRD

Purpose
Access
Checklist Title
Blue Selection Box
Not-Sensed Item Line
Sensed Item Line
RESET Button
RESET
C/L COMPLETE
C/L MENU
C/L MENU Button
Scroll Buttons
C/L COMPLETE Button

Ident.: DSC-31-CDS-60-10-30-30-00005795.0001001 / 24 APR 14

PURPOSE

On a CHECKLIST page, the flight crew can:

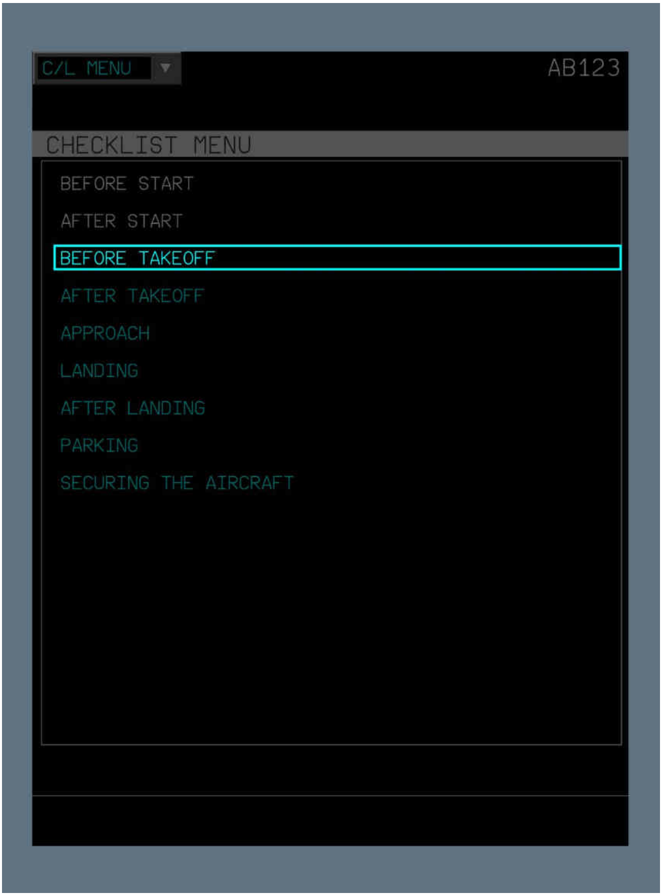
- Perform and complete the displayed checklist
- Reset the displayed checklist
- Access the CHECKLIST MENU page.

Ident.: DSC-31-CDS-60-10-30-30-00005796.0001001 / 24 APR 14

ACCESS

The flight crew can access a CHECKLIST page, by selecting the applicable checklist title in the CHECKLIST MENU page.

CHECKLIST MENU Page


C/L MENU ▼ AB123

CHECKLIST MENU

BEFORE START
AFTER START
BEFORE TAKEOFF
AFTER TAKEOFF
APPROACH
LANDING
AFTER LANDING
PARKING
SECURING THE AIRCRAFT

Ident.: DSC-31-CDS-60-10-30-30-00005797.0001001 / 24 APR 14

CHECKLIST TITLE

Indicates the title of the checklist.

Ident.: DSC-31-CDS-60-10-30-30-00005798.0001001 / 24 APR 14

BLUE SELECTION BOX

A blue selection box appears around the applicable item line of the checklist. When the flight crew validates or completes the item line, the blue selection box automatically moves to the next applicable item line.
However, the flight crew can manually move the blue selection box, via the KCCU, in order to select any item line of the checklist.

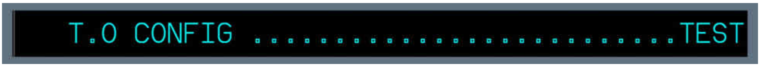
Ident.: DSC-31-CDS-60-10-30-30-00005799.0001001 / 24 APR 14

SENSED ITEM LINE

The checklists have item lines for which the ECAM can detect that the corresponding actions are completed.

These sensed item lines appear as follows:
- When the action is not completed, the item line is in blue

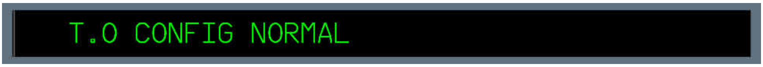
Sensed Item Line - Not Completed - Example



T.O CONFIG ....TEST

- When the action is completed, the item line is in green.

Sensed Item Line - Completed - Example



T.O CONFIG NORMAL

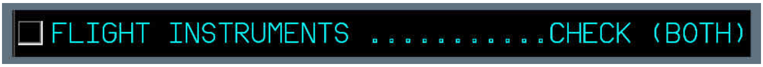
Ident.: DSC-31-CDS-60-10-30-30-00005800.0001001 / 24 APR 14

NOT-SENSED ITEM LINE

The checklists have item lines for which the ECAM cannot detect that the corresponding actions are completed.

A square appears before these not-sensed item lines, as follows:
- When the action is not completed, the item line is in blue

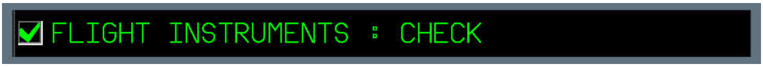
Not-Sensed Item Line - Not Completed - Example



☐ FLIGHT INSTRUMENTS ....CHECK (BOTH)

- When the action is completed and the flight crew validates the item line, the item line appears in green.

Not-Sensed Item Line - Completed - Example



☑ FLIGHT INSTRUMENTS : CHECK

Ident.: DSC-31-CDS-60-10-30-30-00005801.0001001 / 05 NOV 18

C/L COMPLETE BUTTON

When the checklist is completed, the flight crew clicks on the C/L COMPLETE button.

All of the following occurs:
- The item lines of the checklist become gray
- The CHECKLIST page disappears
- The MFD returns to the page that was previously displayed.

Note: *The flight crew can click on the C/L COMPLETE button, and consider the checklist is complete, even if the flight crew did not validate some checklist items. This may be the case after a system failure that prevents the flight crew from completing some checklist items. In that case, the state of all not-sensed lines is memorized and the checklist appears in gray in the checklist menu.*

Ident.: DSC-31-CDS-60-10-30-30-00005802.0001001 / 24 APR 14

RESET BUTTON

When clicked, resets the checklist, as follows:
- All not-sensed item lines are no longer validated
- Sensed item lines for which actions are completed remain validated
- The blue selection box returns to the first line of the checklist.

Note: *When a checklist is reset via the RESET button, all subsequent checklists are reset.*

L2 A checklist can also reset automatically. For more information about automatic checklist reset, *Refer to DSC-31-CDS-60-30 Checklist Automatic Reset*.

Ident.: DSC-31-CDS-60-10-30-30-00005803.0001001 / 24 APR 14

C/L MENU BUTTON

When clicked, displays the CHECKLIST MENU page (*Refer to DSC-31-CDS-60-10-30 CHECKLIST MENU Page*).

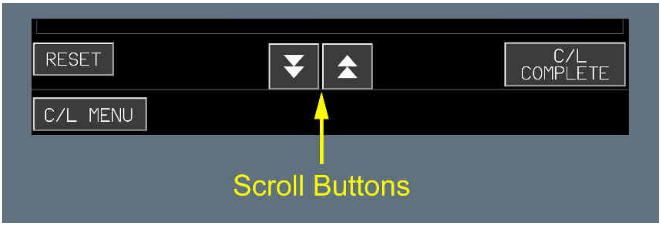
Note: *When the flight crew exits from a checklist via the CHECKLIST MENU button, the state of each not-sensed item line is memorized.*

Ident.: DSC-31-CDS-60-10-30-30-00005804.0001001 / 24 APR 14

SCROLL BUTTONS

The scroll buttons only appear, when the MFD cannot display all item lines of the checklist on a single page.

Scroll Buttons

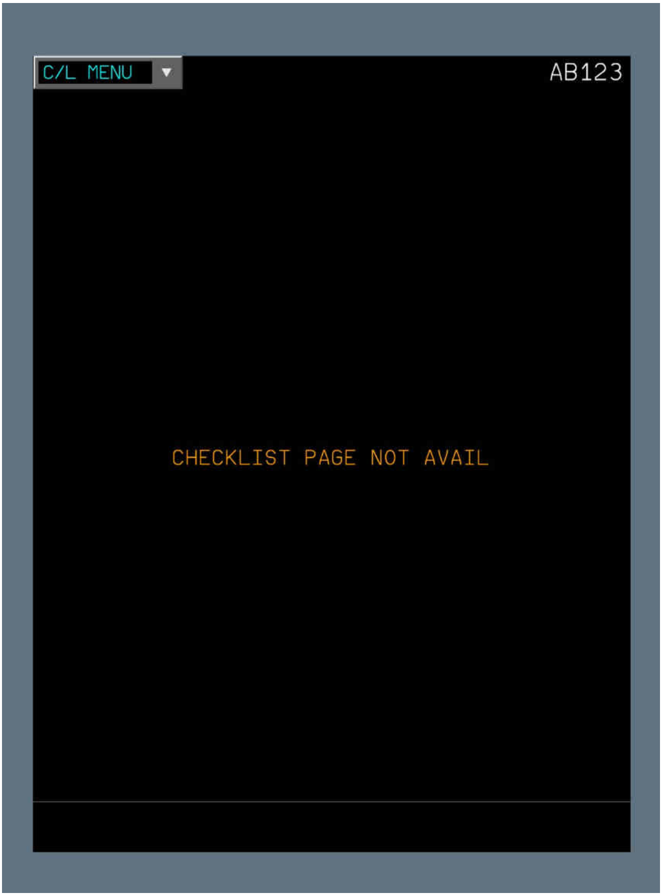


In the case of a checklist with several pages, the ECAM automatically displays the next checklist page, when the flight crew completes the last item line of the current checklist page.
The flight crew can also use the wheel of the cursor and control device, or the scroll buttons of the checklist page to display the next page or the previous page of the current checklist.

CHECKLIST NOT AVAIL

Ident.: DSC-31-CDS-60-10-30-00014693.0001001 / 24 APR 14
Applicable to: ALL

Checklist Page Not Available



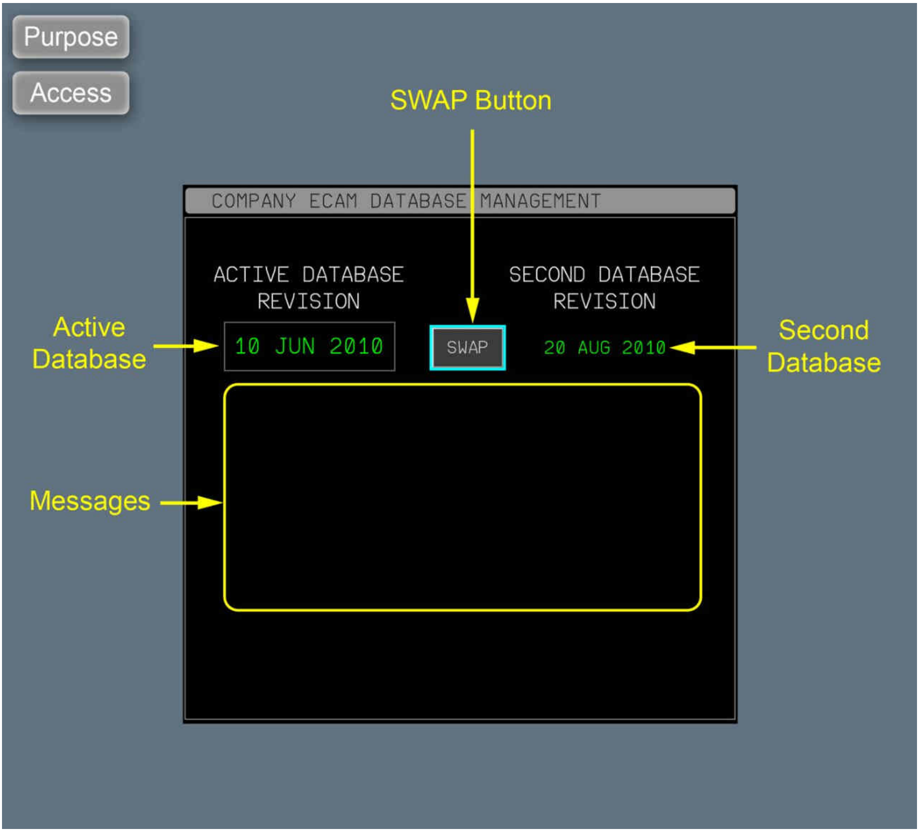
CHECKLIST PAGE NOT AVAIL

The CHECKLIST PAGE NOT AVAIL message appears, when the CDS can no longer display the CHECKLIST PAGE or the CHECKLIST MENU page.

COMPANY ECAM DATABASE MANAGEMENT PAGE

Ident.: DSC-31-CDS-60-10-30-00018782.0001001 / 02 OCT 14
Applicable to: ALL

Overview


Purpose
Access
SWAP Button
COMPANY ECAM DATABASE MANAGEMENT
ACTIVE DATABASE REVISION
SECOND DATABASE REVISION
10 JUN 2010
SWAP
20 AUG 2010
Active Database
Second Database
Messages

PURPOSE

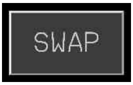
The operator has the capability to load two databases on the aircraft in order to customize the ECAM content.
The COMPANY ECAM DATABASE MANAGEMENT page displays the reference of the active customized ECAM database, and enables the flight crew to change the ECAM customized database from one to the other.

L2 The ECAM customized database is also referred to as the Operator-Customized ECAM Database (OCED). For more information about the OCED, *Refer to DSC-31-CDS-60-10-20 FWS*.

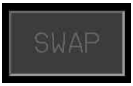
L1 ACCESS

The flight crew can access the COMPANY ECAM DATABASE MANAGEMENT page via the C/L MENU page of the MFD.
For more information about how to change the company ECAM database, *Refer to DSC-31-CDS-60-50 How to Change COMPANY ECAM DATABASE*.

SWAP

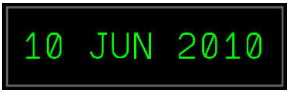


A second database is available.
When pressed, the FWS changes the database to the second database.



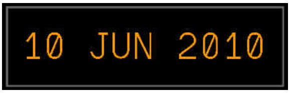
The customized database cannot be changed.
- The aircraft is in flight, or
- There is only one, or no customized database available, or
- The customized database is failed in one FWS.

ACTIVE DATABASE



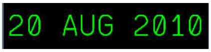
Displays the current active revision of the company ECAM database.

L12



The exchange of the customized ECAM database is failed.
One or both FWS rejected the new database.
Can be associated with the FWS CPNY DATABASE dispatch message.

SECOND DATABASE



Displays the reference of the second database revision that is not active.

MESSAGES

SWAP IN PROGRESS...

The exchange of customized ECAM database is in progress, both FWS will reset.

L12

SWAP NOT AVAIL	The exchange of the active customized ECAM database is failed. The customized ECAM database is not changed. If the flight crew exits the page and comes back, the message is no longer displayed. The flight crew can try to exchange the databases one more time.

WD

OVERVIEW

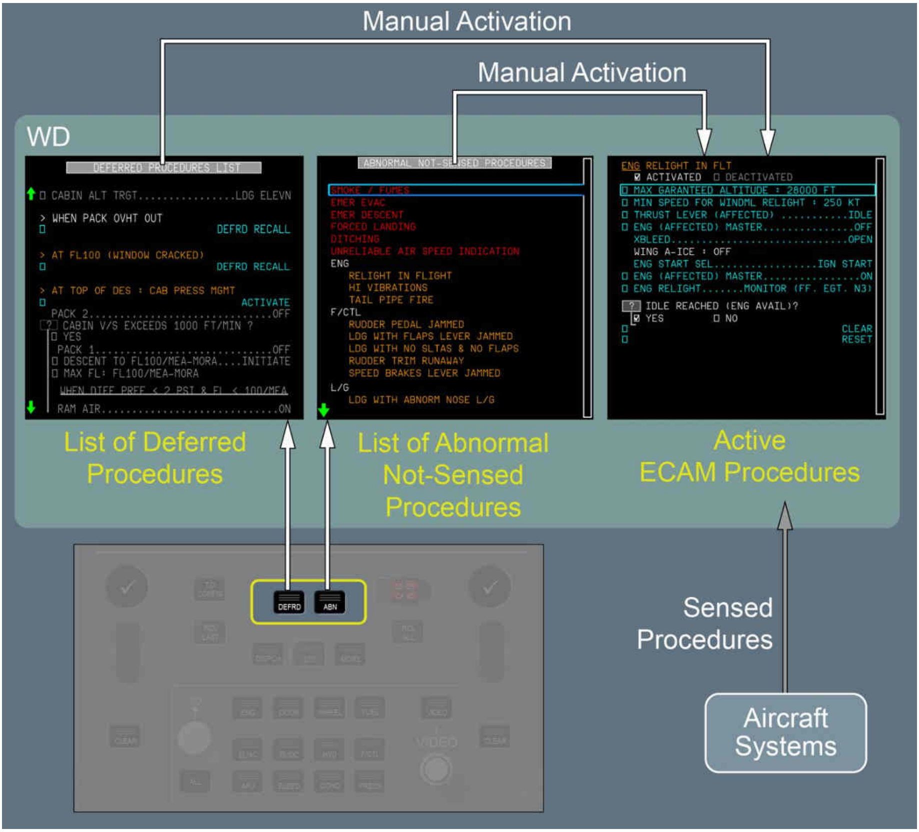
Ident.: DSC-31-CDS-60-10-40-00000017.0001001 / 24 APR 14
Applicable to: ALL

The WD displays:
- The active ECAM procedures:
  - The sensed procedures: *Refer to DSC-31-CDS-60-10-40 Sensed Procedures*
  - The abnormal not-sensed procedures: *Refer to DSC-31-CDS-60-10-40 Abnormal Not-Sensed Procedures*
  - The deferred procedures: *Refer to DSC-31-CDS-60-10-40 Deferred Procedures*
- The ABNORMAL NOT-SENSED PROCEDURES page to access abnormal not-sensed procedures.
- The DEFERRED PROCEDURES LIST page to access the deferred procedures: *Refer to DSC-31-CDS-60-10-40 Deferred Procedures*
- Limitations: *Refer to DSC-31-CDS-60-10-40 Limitations*
- Memos: *Refer to DSC-31-CDS-60-10-40 Memos*
- Reminders: *Refer to DSC-31-CDS-60-10-40 Reminders*.

L2 By default, when there is no alert, the WD displays the Limitations and Memos page.

L1 The flight crew uses the ECP to interface with the WD.

ECAM Procedure on the WD

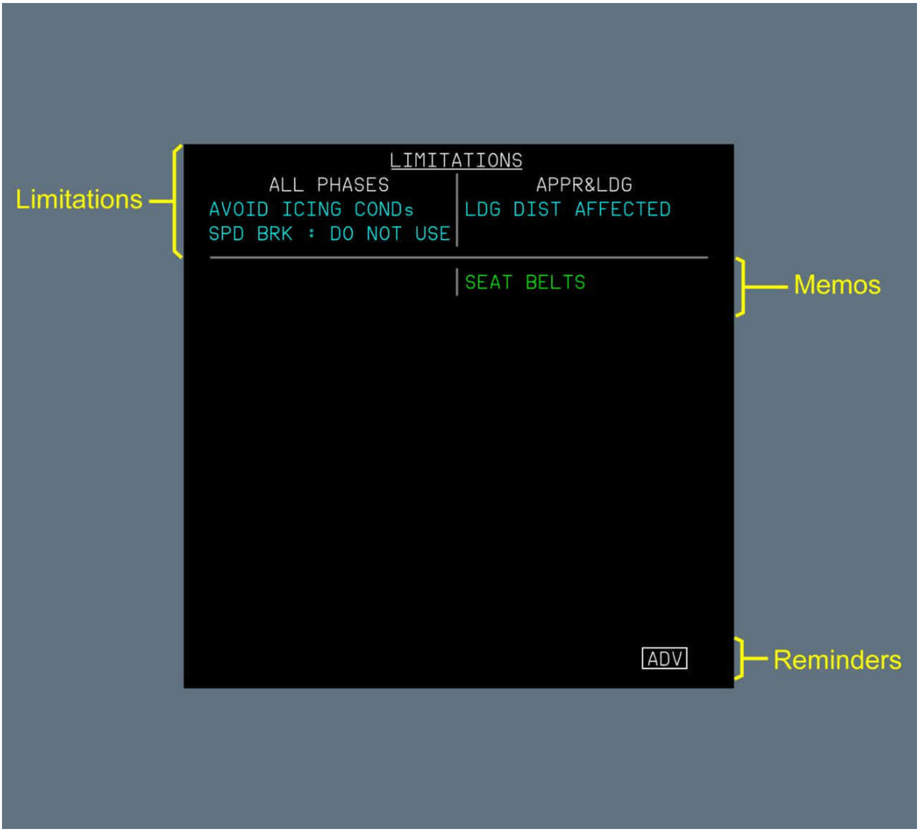

Manual Activation
Manual Activation
WD
List of Deferred Procedures
List of Abnormal Not-Sensed Procedures
Active ECAM Procedures
DEFRD
ABN
Sensed Procedures
Aircraft Systems

```
        DEFERRED PROCEDURES LIST

☐ CABIN ALT TRGT................LDG ELEVN

> WHEN PACK OVHT OUT
☐                             DEFRD RECALL

> AT FL100 (WINDOW CRACKED)
☐                             DEFRD RECALL

> AT TOP OF DES : CAB PRESS MGMT
☐                                 ACTIVATE
  PACK 2..............................OFF
 ? CABIN V/S EXCEEDS 1000 FT/MIN ?
 ☐ YES
   PACK 1............................OFF
 ☐ DESCENT TO FL100/MEA-MORA....INITIATE
 ☐ MAX FL: FL100/MEA-MORA
   WHEN DIFF PRFF < 2 PSI & FL < 100/MEA
   RAM AIR............................ON
```

```
ABNORMAL NOT-SENSED PROCEDURES

SMOKE / FUMES
EMER EVAC
EMER DESCENT
FORCED LANDING
DITCHING
UNRELIABLE AIR SPEED INDICATION
ENG
   RELIGHT IN FLIGHT
   HI VIBRATIONS
   TAIL PIPE FIRE
F/CTL
   RUDDER PEDAL JAMMED
   LDG WITH FLAPS LEVER JAMMED
   LDG WITH NO SLTAS & NO FLAPS
   RUDDER TRIM RUNAWAY
   SPEED BRAKES LEVER JAMMED
L/G
   LDG WITH ABNORM NOSE L/G
```

```
ENG RELIGHT IN FLT
   ☑ ACTIVATED  ☐ DEACTIVATED
☐ MAX GARANTEED ALTITUDE : 28000 FT
☐ MIN SPEED FOR WINDML RELIGHT : 250 KT
☐ THRUST LEVER (AFFECTED) ...........IDLE
☐ ENG (AFFECTED) MASTER...............OFF
  XBLEED.............................OPEN
  WING A-ICE : OFF
  ENG START SEL.................IGN START
☐ ENG (AFFECTED) MASTER................ON
☐ ENG RELIGHT.......MONITOR (FF. EGT. N3)

 ? IDLE REACHED (ENG AVAIL)?
  ☑ YES         ☐ NO
☐                                   CLEAR
☐                                   RESET
```

Limitations, Memos, and Reminders on the WD



LIMITATIONS

ALL PHASES
AVOID ICING CONDs
SPD BRK : DO NOT USE

APPR&LDG
LDG DIST AFFECTED

SEAT BELTS

SENSED PROCEDURES

Ident.: DSC-31-CDS-60-10-40-00000019.0001001 / 24 APR 14
Applicable to: ALL

The sensed procedures are abnormal or emergency procedures that the ECAM automatically activates and displays due to an ECAM alert.

L2 For more information about:

- ECAM Alerts, *Refer to DSC-31-CDS-60-10-10 Definition*
- How the active procedures appear on the WD, *Refer to DSC-31-CDS-60-10-40 Active ECAM Procedure*

ABNORMAL NOT-SENSED PROCEDURES

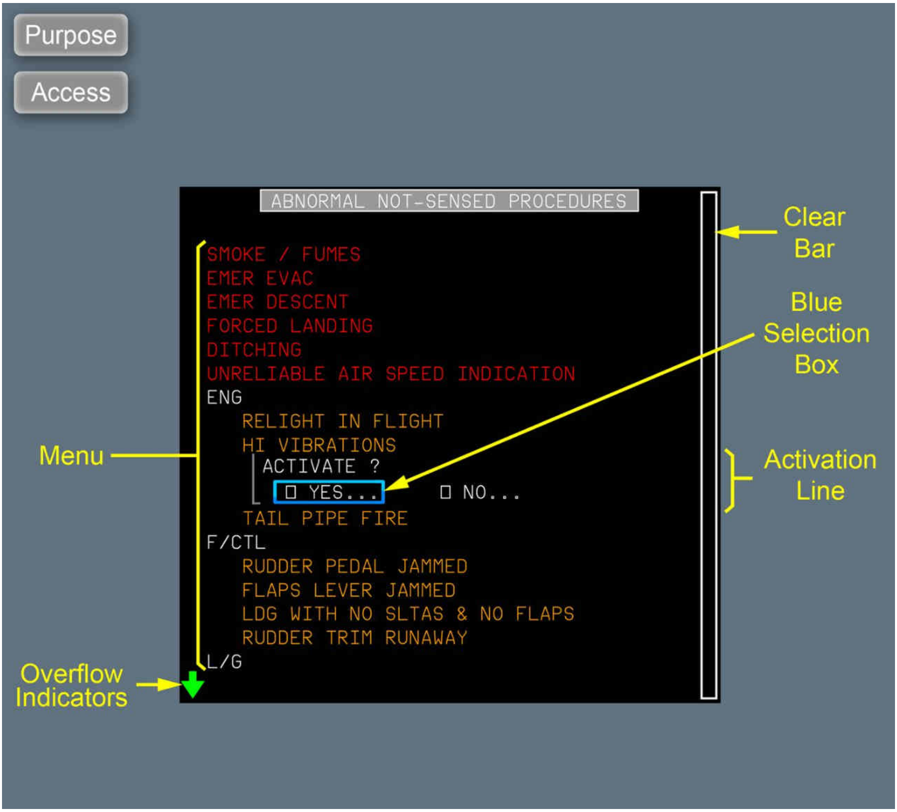
Ident.: DSC-31-CDS-60-10-40-00009624.0001001 / 07 JUL 16
Applicable to: ALL

The abnormal not-sensed procedures are abnormal and emergency procedures that the flight crew manually activates via the ABNORMAL NOT-SENSED PROCEDURES menu.
When an abnormal not-sensed procedure is active, the WD displays the procedure content.

Note: *Abnormal not-sensed procedures refer to as either abnormal or emergency not-sensed procedures.*

ABNORMAL NOT-SENSED PROCEDURES PAGE

Overview of ABNORMAL NOT-SENSED PROCEDURES Page


Purpose
Access
ABNORMAL NOT-SENSED PROCEDURES
SMOKE / FUMES
EMER EVAC
EMER DESCENT
FORCED LANDING
DITCHING
UNRELIABLE AIR SPEED INDICATION
ENG
RELIGHT IN FLIGHT
HI VIBRATIONS
ACTIVATE ?
☐ YES...
☐ NO...
TAIL PIPE FIRE
F/CTL
RUDDER PEDAL JAMMED
FLAPS LEVER JAMMED
LDG WITH NO SLTAS & NO FLAPS
RUDDER TRIM RUNAWAY
L/G
Clear Bar
Blue Selection Box
Activation Line
Menu
Overflow Indicators

PURPOSE

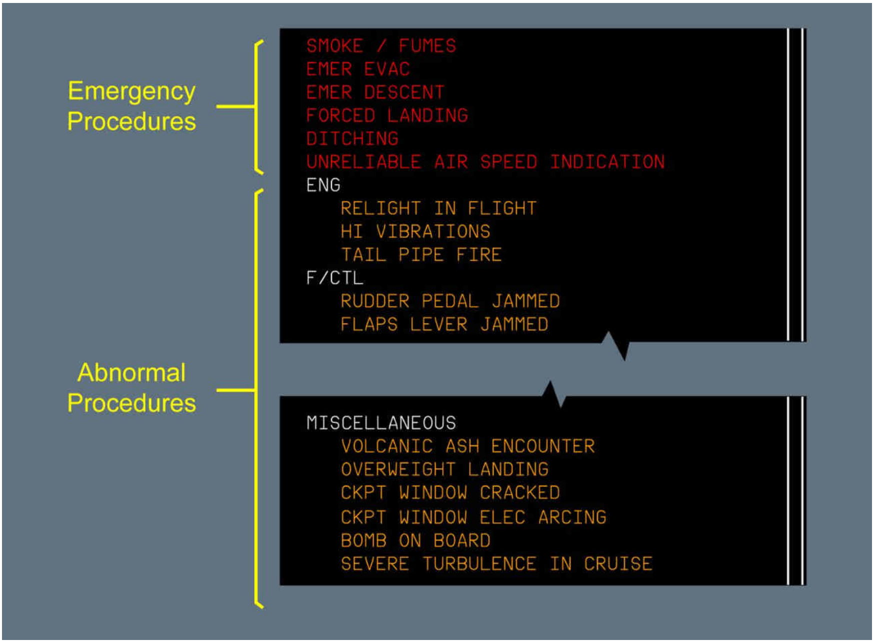
The ABNORMAL NOT-SENSED PROCEDURES page enables the flight crew to access to the list of not-sensed abnormal procedures.

ACCESS

The flight crew can access the ABNORMAL NOT-SENSED PROCEDURES page via the ABN pb on the ECP.

MENU

Menu Parts


Emergency Procedures
Abnormal Procedures
SMOKE / FUMES
EMER EVAC
EMER DESCENT
FORCED LANDING
DITCHING
UNRELIABLE AIR SPEED INDICATION
ENG
RELIGHT IN FLIGHT
HI VIBRATIONS
TAIL PIPE FIRE
F/CTL
RUDDER PEDAL JAMMED
FLAPS LEVER JAMMED
MISCELLANEOUS
VOLCANIC ASH ENCOUNTER
OVERWEIGHT LANDING
CKPT WINDOW CRACKED
CKPT WINDOW ELEC ARCING
BOMB ON BOARD
SEVERE TURBULENCE IN CRUISE

The list of ABNORMAL NOT-SENSED PROCEDURES has two parts:

- The first part provides direct access to the not-sensed emergency procedures. The titles of the not-sensed emergency procedures are in red.
- The second part provides access to the not-sensed abnormal procedures in accordance with the ECAM category. The ECAM categories are white, and the not-sensed abnormal procedures are amber.

BLUE SELECTION BOX

A blue selection box automatically appears around the first procedure of the menu.
The flight crew can manually move the blue selection box, via the wheel of the ECP, in order to select any procedure title and to activate it.

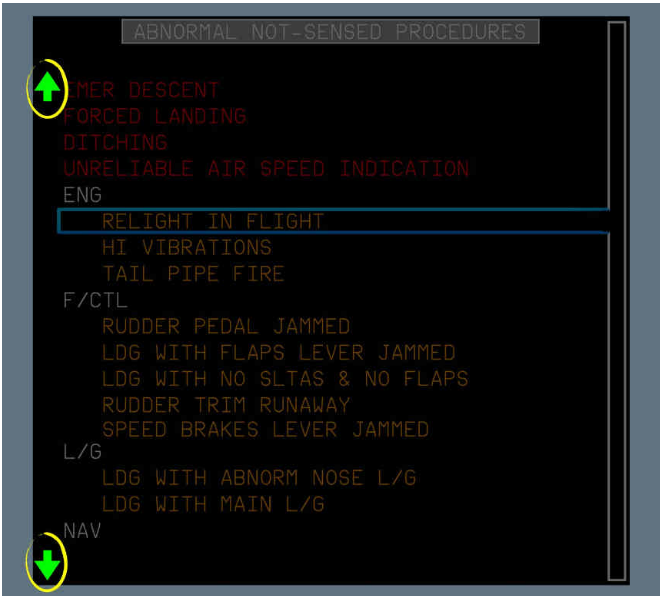
CLEAR BAR

A clear bar, on the right side of the WD, indicates the lines that can be cleared.
If the flight crew presses the CLEAR pb on the ECP, the WD clears the ABNORMAL NOT-SENSED PROCEDURES page, and displays limitations and memos (if any).

OVERFLOW INDICATORS

The WD cannot display the menu of the abnormal not-sensed procedures on a single page. Therefore, overflow indicators appears on the left part of the screen to indicate that more abnormal not-sensed procedures are available above or below the current display.

Overflow Indicators

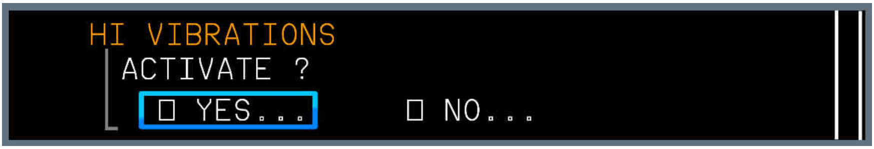

ABNORMAL NOT-SENSED PROCEDURES
EMER DESCENT
FORCED LANDING
DITCHING
UNRELIABLE AIR SPEED INDICATION
ENG
RELIGHT IN FLIGHT
HI VIBRATIONS
TAIL PIPE FIRE
F/CTL
RUDDER PEDAL JAMMED
LDG WITH FLAPS LEVER JAMMED
LDG WITH NO SLTAS & NO FLAPS
RUDDER TRIM RUNAWAY
SPEED BRAKES LEVER JAMMED
L/G
LDG WITH ABNORM NOSE L/G
LDG WITH MAIN L/G
NAV

A green down-arrow (⬇) appears at the bottom left of the screen to indicate that the menu of the abnormal not-sensed procedures continues below the current display.
When the flight crew scrolls down the menu of the abnormal not-sensed procedures, a green up-arrow (⬆) appears at the top left of the screen, to indicate that the menu of the abnormal not-sensed procedures starts above the current display.
When the flight crew scrolls the menu, the ABNORMAL NOT-SENSED PROCEDURES title always remains on top of the WD.

ACTIVATION LINE

When the flight crew selects an abnormal not-sensed procedure in the menu, an activation line appears below the title of the abnormal not-sensed procedure.

Activation Line



HI VIBRATIONS
ACTIVATE ?
☐ YES...
☐ NO...

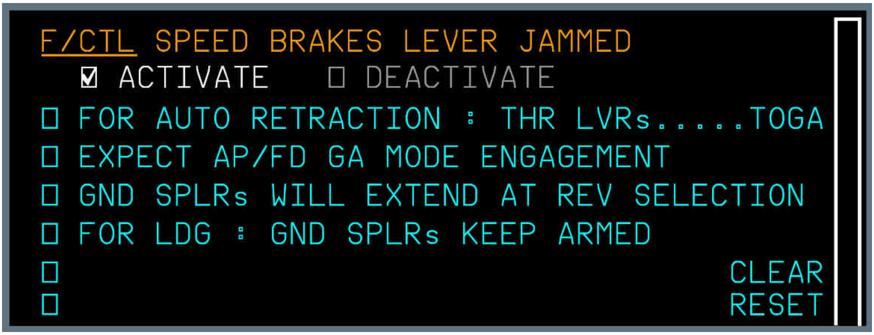
To apply an abnormal not-sensed procedure, the flight crew must activate the procedure by selecting YES... in the activation line.
If the flight crew selects the NO... answer in the activation line, the activation line closes and the blue selection box reverts to the title of the associated abnormal not-sensed procedure.
If the flight crew selects an abnormal not-sensed procedure that is active, the WD directly displays the content of the procedure.

When the flight crew activates an abnormal not-sensed procedure:
- The procedure becomes active, and the WD displays the procedure as any other active procedure
- The SD automatically displays the applicable SD page, if any
- If limitations and memos are associated with the abnormal not-sensed procedure, they become applicable
- If deferred procedures are associated with the abnormal not-sensed procedure, the deferred procedures become available in the DEFERRED PROCEDURES LIST page.
- L2 No audio indicator sounds and no attention-getter comes on.
- L3 No message is sent to the ground.

L1 *Note: To read an abnormal not-sensed procedure with no intention to apply it, the flight crew must display the procedure on the OIS, via the OPS LIBRARY BROWSER.*

The following example shows the display on the WD of an abnormal not-sensed procedure that the flight crew activated via the ABNORMAL NOT-SENSED PROCEDURES menu.

Example of Active Not-Sensed Procedure



```
F/CTL SPEED BRAKES LEVER JAMMED
  ☑ ACTIVATE    ☐ DEACTIVATE
☐ FOR AUTO RETRACTION : THR LVRs.....TOGA
☐ EXPECT AP/FD GA MODE ENGAGEMENT
☐ GND SPLRs WILL EXTEND AT REV SELECTION
☐ FOR LDG : GND SPLRs KEEP ARMED
☐                                   CLEAR
☐                                   RESET
```

To deactivate an abnormal not-sensed procedure, the flight crew can display again the procedure on the WD (via the RCL ALL pb on the ECP, or via the menu of the ABNORMAL NOT-SENSED PROCEDURES), then:

- Select the activation line to DEACTIVATE (on top of the applicable procedure), or
  L2 For more information, *Refer to DSC-31-CDS-60-10-40 Activation Line*.
- L1 Validate the DEACTIVATE action line (at the end of applicable procedures), if any.
  L2 For more information, *Refer to DSC-31-CDS-60-10-40 DEACTIVATE Action Line*.

For more information about the display of active abnormal not-sensed procedure on the WD, *Refer to DSC-31-CDS-60-10-40 Active ECAM Procedure*.

Note: *An automatic deactivation of the abnormal not-sensed procedures can occur in specific conditions. For more information, Refer to DSC-31-CDS-60-30 Automatic Deactivation of Not-Sensed ABN Procedures.*

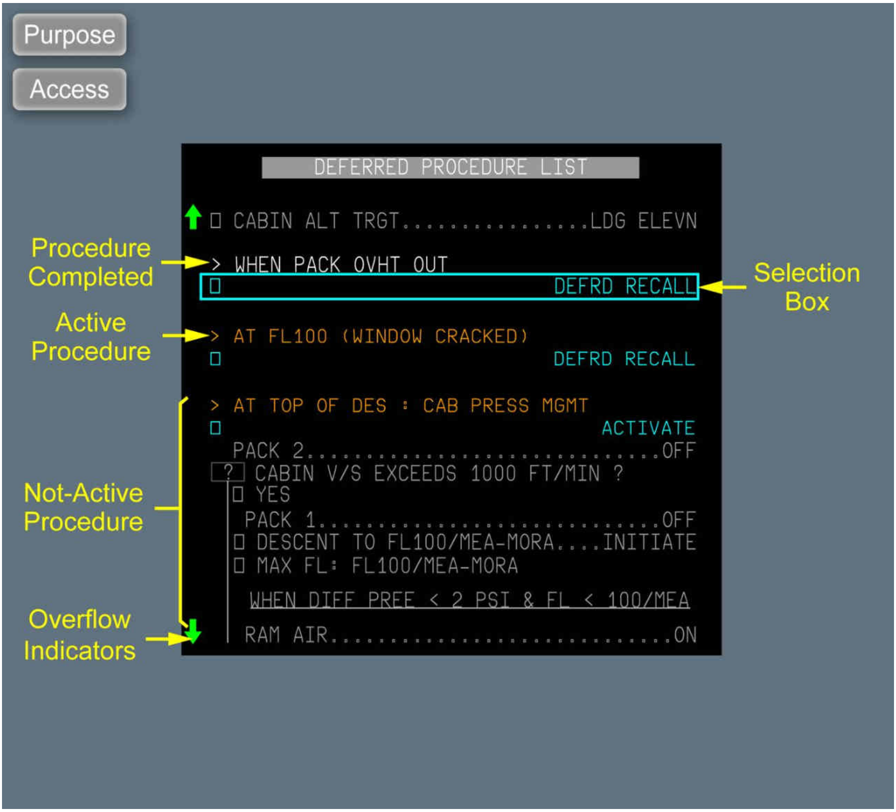
DEFERRED PROCEDURES

Ident.: DSC-31-CDS-60-10-40-00009627.0001001 / 06 MAR 15
Applicable to: ALL

In some cases, an emergency or abnormal procedure has complementary actions that the ECAM delays to a more appropriate time, later during the flight. These complementary actions are referred to as deferred procedures.
When an active emergency or abnormal procedure has a deferred procedure, the deferred procedure is available on the DEFERRED PROCEDURE LIST page.
The flight crew manually displays and activates the deferred procedures, via the DEFERRED PROCEDURE LIST page.

DEFERRED PROCEDURE LIST PAGE

DEFERRED PROCEDURE LIST Page


Purpose
Access
Procedure Completed
Active Procedure
Not-Active Procedure
Overflow Indicators
Selection Box

```
DEFERRED PROCEDURE LIST

☐ CABIN ALT TRGT...............LDG ELEVN
> WHEN PACK OVHT OUT
☐                          DEFRD RECALL

> AT FL100 (WINDOW CRACKED)
☐                          DEFRD RECALL

> AT TOP OF DES : CAB PRESS MGMT
☐                              ACTIVATE
  PACK 2.............................OFF
 ?  CABIN V/S EXCEEDS 1000 FT/MIN ?
  ☐ YES
   PACK 1............................OFF
  ☐ DESCENT TO FL100/MEA-MORA....INITIATE
  ☐ MAX FL: FL100/MEA-MORA

   WHEN DIFF PREE < 2 PSI & FL < 100/MEA

   RAM AIR............................ON
```

PURPOSE

The DEFERRED PROCEDURE LIST page enables the flight crew to:

- Display the content of a deferred procedures as long as the flight crew does not activate the procedure
- Activate a deferred procedure
- Recall the display of an activated deferred procedure on the WD.

The deferred procedures are displayed by order of priority in the list.

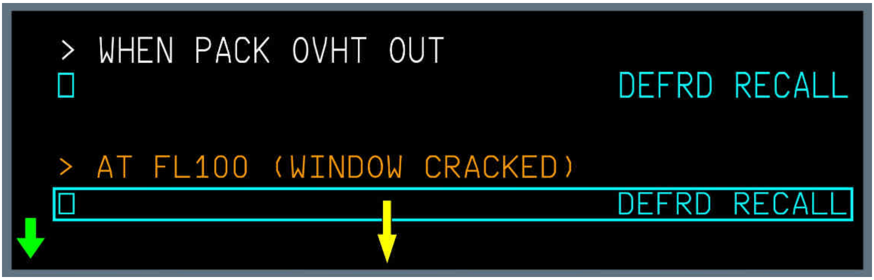
ACCESS

The flight crew can access the DEFERRED PROCEDURE LIST page via the DEFRD pb on the ECP.

SELECTION BOX

The flight crew can scroll the list of the deferred procedures with the wheel of the ECP.

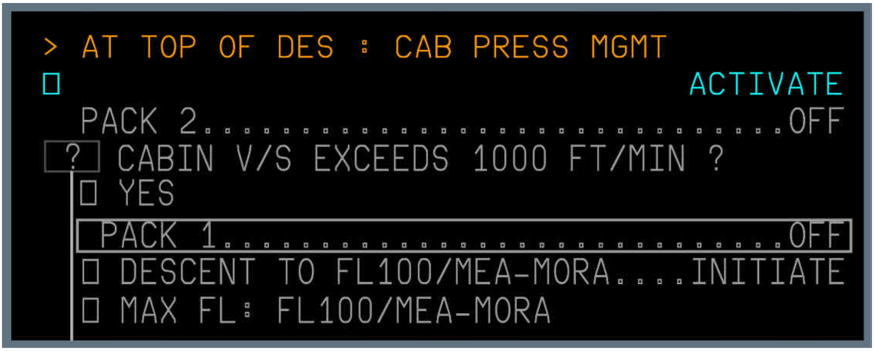
Scroll



```
> WHEN PACK OVHT OUT
☐                                  DEFRD RECALL

> AT FL100 (WINDOW CRACKED)
☐                                  DEFRD RECALL
```

When the flight crew scrolls the selection box inside the content of a not-active deferred procedure, the selection box becomes gray, as no flight crew action is available.

Gray Selection Box



```
> AT TOP OF DES : CAB PRESS MGMT
☐                                      ACTIVATE
  PACK 2..............................OFF
 ?  CABIN V/S EXCEEDS 1000 FT/MIN ?
  ☐ YES
    PACK 1............................OFF
  ☐ DESCENT TO FL100/MEA-MORA....INITIATE
  ☐ MAX FL: FL100/MEA-MORA
```

OVERFLOW INDICATORS

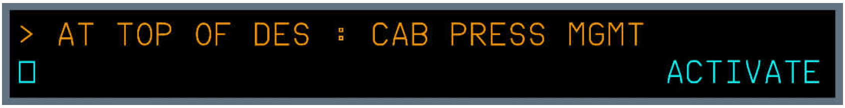
Overflow indicators appears on the left part of the screen to indicate that more deferred procedures are available above or below the current display.

⬇	Appears at the bottom left of the screen to indicate that the list of the deferred procedures continues below the current display.

⬆	Appears at the top left of the screen, to indicate that the list of the deferred procedures starts above the current display.

NOT-ACTIVE DEFERRED PROCEDURE

The deferred procedures that are not active yet are displayed in the list with an amber title.
This is the case, every time a new procedure appears in the list.
An ACTIVATE action line enables the flight crew to activate the procedure.



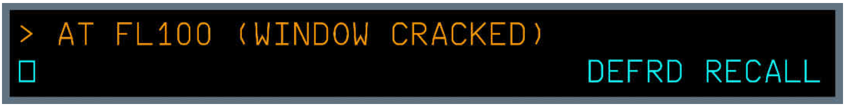
```
> AT TOP OF DES : CAB PRESS MGMT
□                         ACTIVATE
```

Not-Active Deferred Procedure

The entire content of the procedure is displayed in gray, with all the available conditions.
Therefore, the flight crew can read the entire procedure in the DEFERRED PROCEDURES LIST page, before the activation.
The title of the deferred procedure enables the flight crew to decide when the activation of the procedure is appropriate.
When the flight crew activates a deferred procedure, the procedure is displayed on the WD as any other active procedure.
L2 For information on how the active procedures appear on the WD, *Refer to DSC-31-CDS-60-10-40 Active ECAM Procedure*.

L1 ACTIVE DEFERRED PROCEDURE

The deferred procedures that the flight crew manually activated are displayed in the list with an amber title, when they are not completed yet.
The content of the procedure is no longer displayed.
A DEFRD RECALL action line enables the flight crew to display again the procedure, on the WD.



```
> AT FL100 (WINDOW CRACKED)
□                     DEFRD RECALL
```

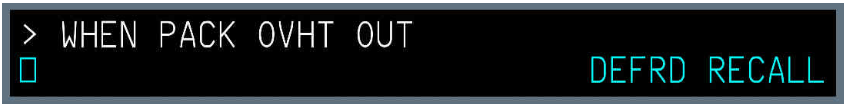
Active Deferred Procedure

DEFERRED PROCEDURE COMPLETED

The deferred procedures that the flight crew already completed, remains in the list of the deferred procedures with a white title.
The content of the procedure is no longer displayed on the DEFERRED PROCEDURE LIST page.

A DEFRD RECALL action line enables the flight crew to display again the procedure, on the WD.

Deferred Procedure Completed



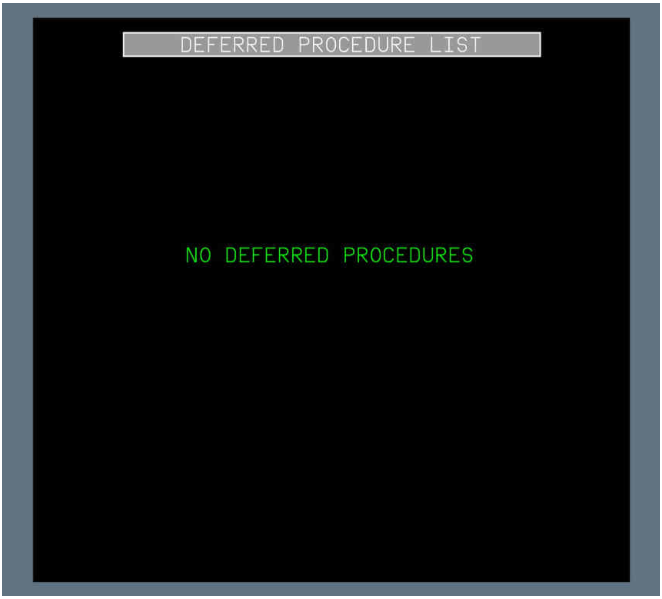
```
> WHEN PACK OVHT OUT
☐                                    DEFRD RECALL
```

NO DEFERRED PROCEDURE

If the flight crew presses the DEFRD pb and there is no deferred procedures, the WD displays the NO DEFERRED PROCEDURE message.

L2 The messages appears during 3 s, then the DEFERRED PROCEDURE LIST page disappears.

No Deferred Message



```
DEFERRED PROCEDURE LIST

NO DEFERRED PROCEDURES
```

ACTIVE ECAM PROCEDURE

Applicable to: ALL

Ident.: DSC-31-CDS-60-10-40-30-00000022.0001001 / 24 APR 14

The abnormal or emergency ECAM procedures that can be active are:

- ECAM sensed procedures that the ECAM automatically activates, when a system detects a failure
- ECAM abnormal not-sensed procedures that the flight crew manually activated

L2 For more information about manual activation of not-sensed procedures, *Refer to DSC-31-CDS-60-10-40 Abnormal Not-Sensed Procedures*

L1 - ECAM deferred procedures that the flight crew manually activated.

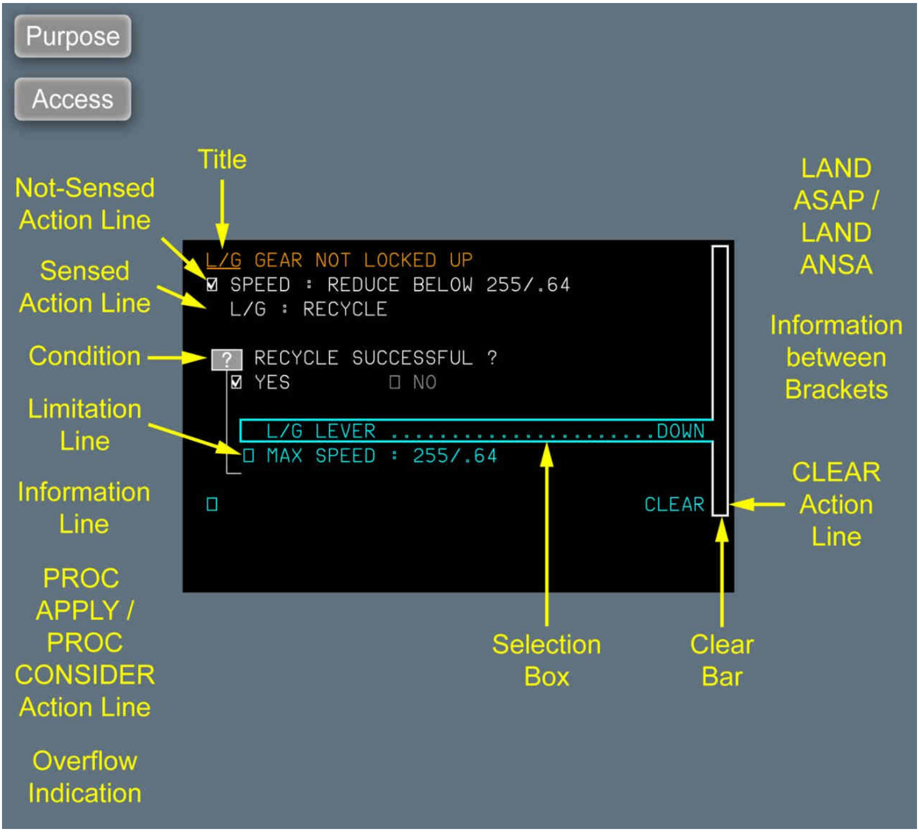
L2 For more information about manual activation of deferred procedures, *Refer to DSC-31-CDS-60-10-40 Deferred Procedures*

For more information about abnormal procedure description in FCOM, *Refer to PRO-ABN-ABN-00 Introduction*.

L1 Several abnormal or emergency procedures can be active at the same time. However, the WD only displays the content of only one procedure at a time, in accordance with the priority of each procedure.

Note: *When the flight crew activates an abnormal not-sensed procedure, the WD displays the abnormal not-sensed procedure as the first procedure to be applied, regardless of the priority of the other active procedures.*
However, if the ECAM triggers an alert associated with a sensed procedure while the flight crew applies an abnormal not-sensed procedure, the WD displays the active procedures in the order in which the flight crew should apply them.

Active ECAM Procedure


Purpose
Access
Title
Not-Sensed Action Line
Sensed Action Line
Condition
Limitation Line
Information Line
PROC APPLY / PROC CONSIDER Action Line
Overflow Indication
LAND ASAP / LAND ANSA
Information between Brackets
CLEAR Action Line
Selection Box
Clear Bar

```
L/G GEAR NOT LOCKED UP
☑ SPEED : REDUCE BELOW 255/.64
  L/G : RECYCLE

 ? RECYCLE SUCCESSFUL ?
 ☑ YES          ☐ NO

   L/G LEVER .....................DOWN
   ☐ MAX SPEED : 255/.64

☐                              CLEAR
```

Ident.: DSC-31-CDS-60-10-40-30-00000312.0001001 / 24 APR 14

PURPOSE

The WD displays an active procedure to enable the flight crew to apply the procedure.

Ident.: DSC-31-CDS-60-10-40-30-00000315.0001001 / 24 APR 14

ACCESS

The WD displays active ECAM procedures as soon as a procedure becomes active.

Ident.: DSC-31-CDS-60-10-40-30-00000023.0001001 / 24 APR 14

TITLE

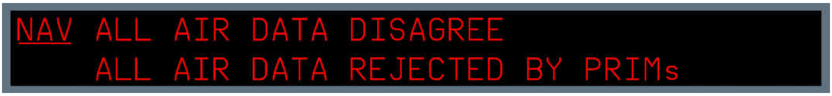
The title of the procedure appears in:
- Red, for emergency procedures
- Amber, for abnormal procedures.

The display of the procedure title depends on the type of the procedure (independent, primary, or secondary). For more information, *Refer to DSC-31-CDS-60-10-10 Alert Types*.
When the WD displays a deferred procedure, the DEFRD label appears before the title of the deferred procedure (e.g. DEFRD FOR LANDING (HYD G+Y SYS PRESS LO))

SUBTITLE

When necessary, a subtitle can appear below the title:

Subtitle

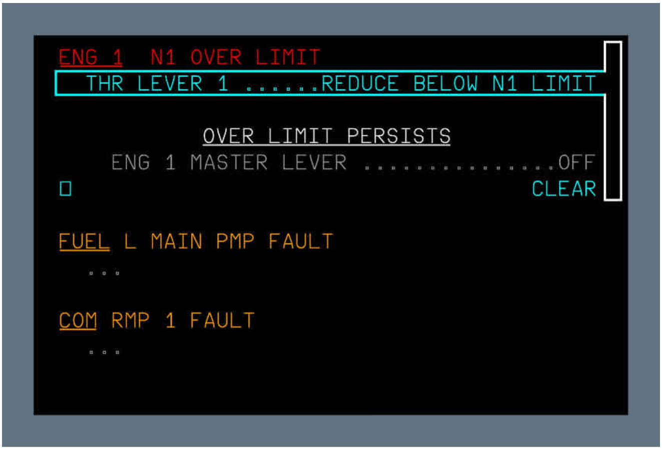


NAV ALL AIR DATA DISAGREE
ALL AIR DATA REJECTED BY PRIMs

SIMULTANEOUSLY-DISPLAYED PROCEDURES

If several alerts are triggered at the same time, the WD displays the procedures that are associated with these alerts in decreasing order of priority.
The WD first displays the procedure that is associated with the alert that has the highest priority, and that the flight crew should apply first. For the other procedures, the WD displays their title with the ... indication, instead of the procedure lines.

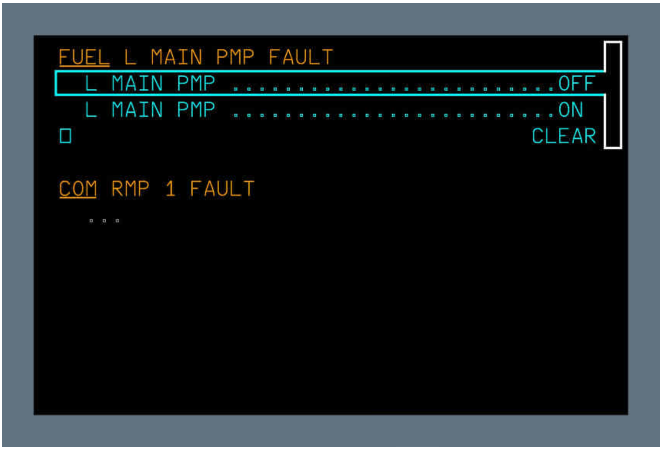
Simultaneously-Displayed Procedures - Example



```
ENG 1  N1 OVER LIMIT
  THR LEVER 1 .......REDUCE BELOW N1 LIMIT

           OVER LIMIT PERSISTS
    ENG 1 MASTER LEVER ...............OFF
☐                                   CLEAR

FUEL L MAIN PMP FAULT
   ▫ ▫ ▫

COM RMP 1 FAULT
   ▫ ▫ ▫
```

When the flight crew clears the first procedure, the procedure lines of the next procedure appear below the corresponding title, instead of the ▫ ▫ ▫ indication.

Simultaneously-Displayed Procedures - After Clear - Example



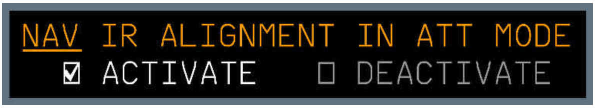
```
FUEL L MAIN PMP FAULT
  L MAIN PMP .........................OFF
  L MAIN PMP .........................ON
☐                                   CLEAR

COM RMP 1 FAULT
   ▫ ▫ ▫
```

Ident.: DSC-31-CDS-60-10-40-30-00015649.0001001 / 24 APR 14

ACTIVATION LINE

When the flight crew activated an abnormal not-sensed procedure, or a deferred procedure the procedure displays an activation line on top of the procedure to enable the flight crew to deactivate the procedure.

Activation Line



NAV IR ALIGNMENT IN ATT MODE
☑ ACTIVATE ☐ DEACTIVATE

When the flight crew deactivates a procedure then all associated limitations, memos, information and associated deferred procedures are removed.
The activation line is not displayed for sensed alerts.

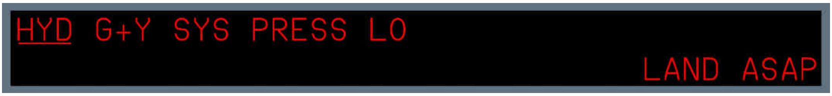
Ident.: DSC-31-CDS-60-10-40-30-00000024.0001001 / 24 APR 14

LAND ASAP / LAND ANSA

In some abnormal or emergency cases, the ECAM indicates, below the title of the procedure:

- LAND ASAP
  For more information about the LAND ASAP definition and expected flight crew action, *Refer to GEN Definitions*.

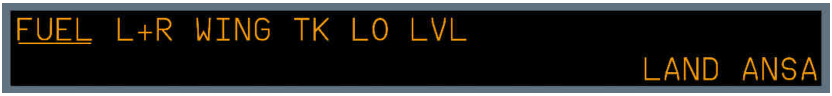
LAND ASAP - Example



HYD G+Y SYS PRESS LO
LAND ASAP

- LAND ANSA
  For more information about the LAND ANSA definition and expected flight crew action, *Refer to GEN Definitions*.

LAND ANSA - Example



FUEL L+R WING TK LO LVL
LAND ANSA

Note: *LAND ASAP and LAND ANSA also appear in the memos section of the WD and on the PFD.*

Ident.: DSC-31-CDS-60-10-40-30-00000025.0001001 / 24 APR 14

SELECTION BOX

A selection box appears around the applicable procedure line. When the flight crew validates or completes the procedure line, the selection box automatically moves to the next applicable procedure line.
However, the flight crew can manually move the selection box, via the wheel of the ECP, in order to select any line of the procedure.

The selection box is either:
- Blue, when the boxed line corresponds to an action to be performed, or
- Gray, if the boxed line is not yet activated .
  (e.g. in a sensed procedure step that is not active yet).

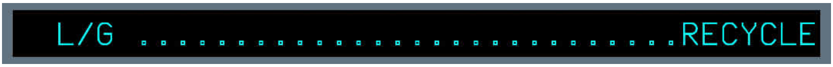
Ident.: DSC-31-CDS-60-10-40-30-00000026.0001001 / 24 APR 14

SENSED ACTION LINE

The ECAM procedures have action lines for which the ECAM can detect that the corresponding actions are completed.

These sensed action lines appear as follows:
- When the action is not completed, the action line is in blue

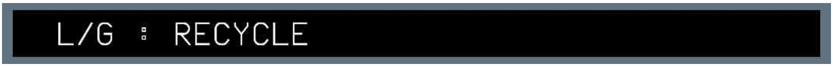
Sensed Action Line - Not Completed - Example



```
L/G ............................RECYCLE
```

- When the flight crew completes the action, the action line appears in white.

Sensed Action Line - Completed - Example



```
L/G : RECYCLE
```

Ident.: DSC-31-CDS-60-10-40-30-00000027.0001001 / 24 APR 14

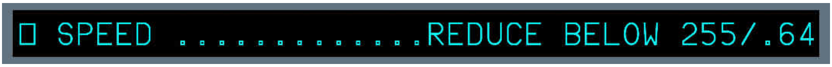
NOT-SENSED ACTION LINE

The ECAM procedures have item lines for which the ECAM cannot detect that the corresponding actions are completed.

A square appears before these not-sensed action lines, as follows:

- When the action is not completed, the action line is in blue

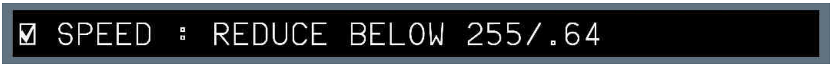
Not-Sensed Action Line - Not Completed - Example



☐ SPEED ....REDUCE BELOW 255/.64

- When the action is completed and the flight crew validates the action line, the action line appears in white.

Not-Sensed Action Line - Completed - Example



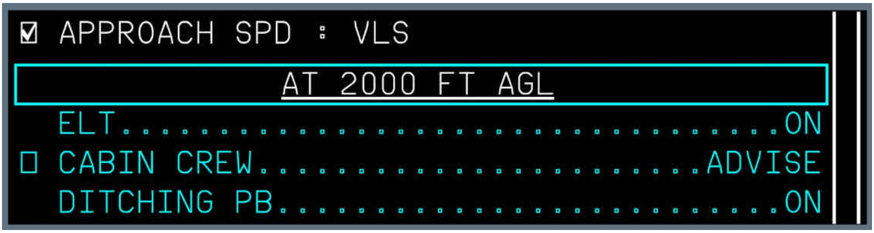
☑ SPEED : REDUCE BELOW 255/.64

Ident.: DSC-31-CDS-60-10-40-30-00001154.0001001 / 24 APR 14

CONDITIONS

NOT-SENSED PROCEDURE STEP

Procedure Step



☑ APPROACH SPD : VLS

AT 2000 FT AGL

ELT..................................ON

☐ CABIN CREW..........................ADVISE

DITCHING PB..........................ON

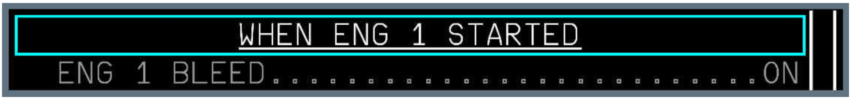
The not-sensed procedure step is a block of ECAM lines that the flight crew must perform at the appropriate time.

SENSED PROCEDURE STEP

A sensed procedure step is a block of ECAM lines that appears in grey, until the ECAM detects the flight crew can perform related actions.

Step Condition Not-Satisfied

Sensed Condition Not-Satisfied



WHEN ENG 1 STARTED

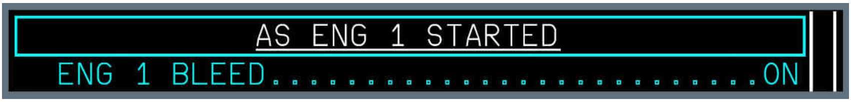
ENG 1 BLEED...........................ON

The block of actions associated with the condition is not applicable (grey color).

The flight crew must wait the condition is satisfied to continue the procedure.

Step Condition Satisfied

Sensed Condition Satisfied



AS ENG 1 STARTED

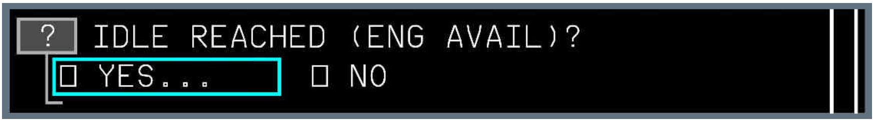
ENG 1 BLEED..........................ON

When the condition is satisfied, the colors of the ECAM lines change from grey to blue, and the text of the condition changes to start with "AS" . Then, the flight crew can complete the remaining applicable actions that are associated with the condition.
When a confirmation time is necessary to perform more actions (e.g. for landing gear extension), the ECAM step contains a countdown timer.

YES/NO QUESTION

For some abnormal procedures the ECAM can display a question with a YES/NO answer, when a manual confirmation is required from the flight crew to continue the procedure.

YES/NO

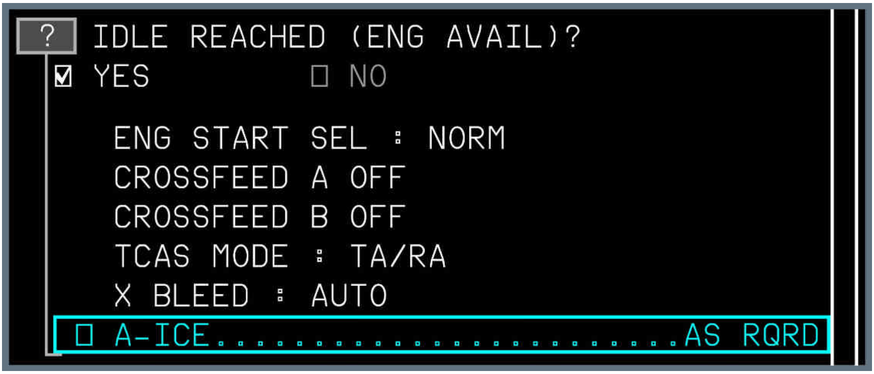


? IDLE REACHED (ENG AVAIL)?

☐ YES...   ☐ NO

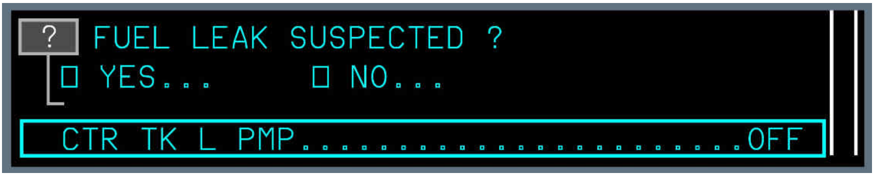
The content associated to each choice is displayed only when the answer is ticked. However the "..." after the YES or NO selection indicates if the choice contain actions. In the above example only the YES choice has associated actions. The "NO" choice answers the ECAM question without associated action.
When the flight crew selects an answer, the ECAM displays the associated actions to perform.

Open Condition


? IDLE REACHED (ENG AVAIL)?
☑ YES ☐ NO
ENG START SEL : NORM
CROSSFEED A OFF
CROSSFEED B OFF
TCAS MODE : TA/RA
X BLEED : AUTO
☐ A-ICE..........................AS RQRD

If the flight crew scrolls down the procedure and do not select an answer at the ECAM question, the ECAM question becomes blue.

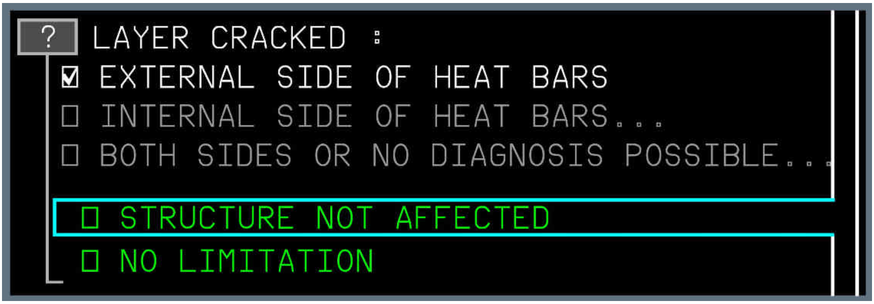
Condition Not-Checked


? FUEL LEAK SUSPECTED ?
☐ YES... ☐ NO...
CTR TK L PMP.......................OFF

MULTIPLE CHOICES

When more than two choices are available, the ECAM question displays the different possibilities. As for the YES/NO choice, the "..." after each possibility indicates that more content will be available when the choice is ticked.
When the flight crew selects an answer, the ECAM displays the associated actions as below.

Multiple Choices



```
? LAYER CRACKED :
  ☑ EXTERNAL SIDE OF HEAT BARS
  ☐ INTERNAL SIDE OF HEAT BARS...
  ☐ BOTH SIDES OR NO DIAGNOSIS POSSIBLE...
    ☐ STRUCTURE NOT AFFECTED
    ☐ NO LIMITATION
```

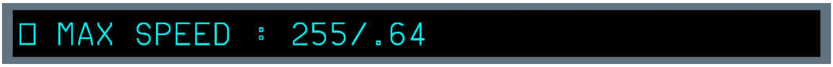
Ident.: DSC-31-CDS-60-10-40-30-00009751.0001001 / 24 APR 14

LIMITATION LINE

Some ECAM procedures have lines that indicate limitations.

The limitation lines appear as follows:
- When the limitation line is not validated, the line is in blue

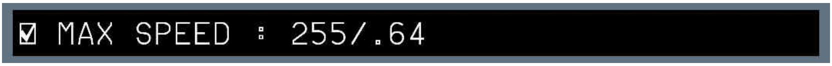
Limitation Line - Not Validated - Example



```
☐ MAX SPEED : 255/.64
```

- When the flight crew acknowledges the limitation by validating the limitation line, the limitation line appears in white.

Limitation Line - Validated - Example



```
☑ MAX SPEED : 255/.64
```

Note: *The limitations also appear in the LIMITATIONS section of the WD, and, if applicable, on the PFD. For more information about limitations on the WD and PFD, Refer to DSC-31-CDS-60-10-40 Limitations.*

Ident.: DSC-31-CDS-60-10-40-30-00000306.0001001 / 24 APR 14

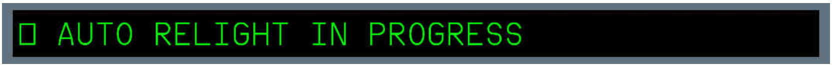
INFORMATION LINE

Some ECAM procedures have lines that provide information.

The information lines appear as follows:

- When the information line is not validated, the information line is in green

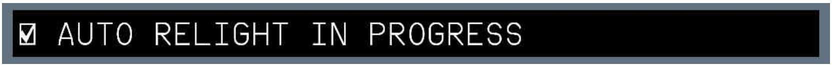
Information Line - Not Validated - Example



☐ AUTO RELIGHT IN PROGRESS

- When the flight crew acknowledges the information by validating the information line, the information line appears in white.

Information Line - Validated - Example



☑ AUTO RELIGHT IN PROGRESS

Ident.: DSC-31-CDS-60-10-40-30-00001157.0001001 / 15 APR 19

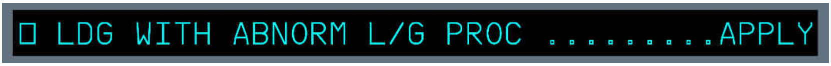
PROC APPLY OR PROC CONSIDER ACTION LINE

Some ECAM procedures have an action line that requests the flight crew to refer to another procedure.

The action line appears as follows, depending on the requested action:

- Name of the abnormal not-sensed procedure...........APPLY
  The flight crew stops applying the current ECAM procedure, and immediately begins to apply the indicated abnormal not-sensed procedure. The flight crew resumes and completes the current ECAM procedure, after the flight crew completes the indicated abnormal not-sensed procedure.

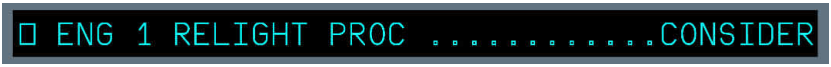
Abnormal Not-Sensed PROC....APPLY - Example



☐ LDG WITH ABNORM L/G PROC ....APPLY

- Name of the abnormal not-sensed procedure..........CONSIDER
  The flight crew should consider the application of the indicated abnormal not-sensed procedure, depending on the situation (e.g. remaining flight time, flight conditions, or when time permits after the flight crew completes the current ECAM procedure). The flight crew can validate the action line without immediately applying the indicated abnormal not-sensed procedure.

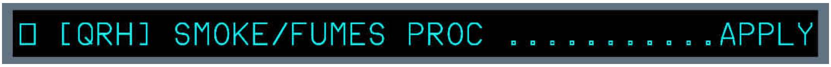
Abnormal Not-Sensed PROC....CONSIDER - Example



☐ ENG 1 RELIGHT PROC ....CONSIDER

- [QRH] Name of the procedure..........APPLY
  The flight crew stops applying the current ECAM procedure, and immediately begins to apply the indicated procedure in the Quick Reference Handbook (QRH). The flight crew resumes and completes the current ECAM procedure, after the flight crew completes the indicated QRH procedure.

[QRH] PROC....APPLY - Example



☐ [QRH] SMOKE/FUMES PROC ....APPLY

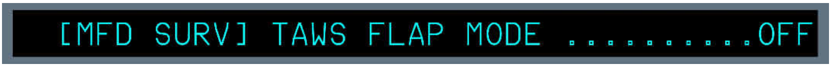
Ident.: DSC-31-CDS-60-10-40-30-00001155.0001001 / 24 APR 14

INFORMATION BETWEEN BRACKETS

Some ECAM procedures have action lines with information between brackets.

Information between brackets indicates:
- The associated MFD page on which to perform the ECAM action, or

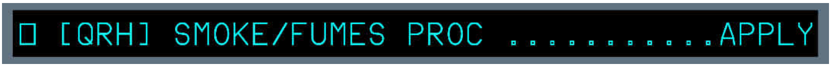
Action on MFD Page - Example



```
[MFD SURV] TAWS FLAP MODE ..........OFF
```

- That the procedure to be applied is in the QRH.

QRH Procedure - Example



```
☐ [QRH] SMOKE/FUMES PROC ...........APPLY
```

Ident.: DSC-31-CDS-60-10-40-30-00000031.0001001 / 24 APR 14

OVERFLOW INDICATION

When a procedure contains many lines, or when several alerts are simultaneously triggered, the WD may not be able to display all lines at the same time.

In these cases, a green down-arrow symbol (⬇) appears at the bottom left of the screen to indicate that the procedure continues below the current display.

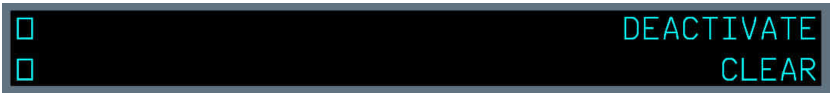
When the flight crew scrolls down, a green up-arrow symbol (⬆) appears at the top left of the procedure, below the title of the procedure, to indicate that the procedure starts above the current display. The title of the procedure always appears.
If the next applicable line of a procedure is in overflow, the WD automatically scrolls down line by line to display the next procedure lines.

Ident.: DSC-31-CDS-60-10-40-30-00009626.0001001 / 06 MAR 15

DEACTIVATE ACTION LINE

Some of the abnormal not-sensed procedures have a DEACTIVATE action line before the CLEAR line, at the end of the procedure.

DEACTIVATE Action Line



```
☐                                 DEACTIVATE
☐                                      CLEAR
```

When an active abnormal not-sensed procedure is no longer applicable, the flight crew must manually deactivate it, in order to remove the limitations, information, and deferred procedures that are associated with the abnormal not-sensed procedure.

An abnormal not-sensed procedure can be no longer applicable:
- When the conditions that caused the activation of the abnormal not-sensed procedure disappear (e.g. there is no longer turbulence), or
- Immediately after the flight crew completes the abnormal not-sensed procedure (e.g. ENG RELIGHT IN FLIGHT).

The DEACTIVATE line has the same effect as the DEACTIVATE selection of the activation line on the top of the procedure.

Ident.: DSC-31-CDS-60-10-40-30-00000030.0001001 / 24 APR 14

CLEAR BAR

When it is possible to clear procedure lines, a clear bar appears on the right side of the WD.

This clear bar indicates the procedure lines that can be cleared. To clear these applicable procedure lines, the flight crew can either:
- Validates the CLEAR action line, or
- Press the CLEAR pb on the ECP.

In the case of simultaneously-displayed ECAM procedures, the clear bar appears on the right side of the first procedure. When the flight crew clears the procedure, the clear bar moves to the next procedure.

L2 The clear bar only appears, when the selection box is on the first procedure to apply.

Ident.: DSC-31-CDS-60-10-40-30-00000032.0001001 / 24 APR 14

CLEAR ACTION LINE

When validated, clears the procedure lines that are associated with the clear bar.

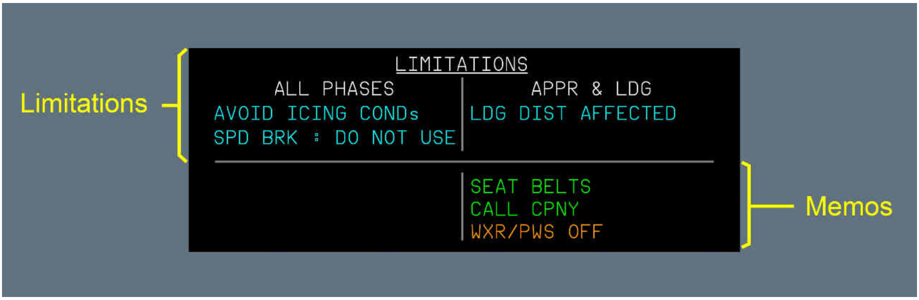
LIMITATIONS AND MEMOS

Applicable to: ALL

Ident.: DSC-31-CDS-60-10-40-35-00018766.0001001 / 24 APR 14

The limitations and memos page is the default page of the WD, when:
- No abnormal procedure is active
- The ABNORMAL NOT-SENSED PROCEDURES menu is not displayed
- The DEFERRED PROCEDURES LIST page is not displayed.

Overview



LIMITATIONS
ALL PHASES
AVOID ICING CONDs
SPD BRK : DO NOT USE
APPR & LDG
LDG DIST AFFECTED
SEAT BELTS
CALL CPNY
WXR/PWS OFF

L2 There is only one page to display memos and limitations. As a consequence, if the limitations and memos exceed the display, some of the memos or limitations does not appear on the WD.

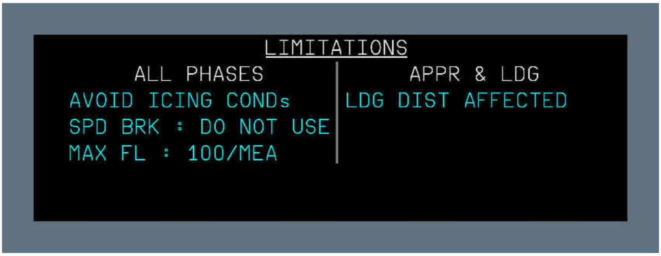
Ident.: DSC-31-CDS-60-10-40-35-00000041.0001001 / 24 APR 14

LIMITATIONS

A limitation is an operational constraint that is applicable after a system failure.

A limitation can appear on the WD only, or on both the PFD and the WD:
- A limitation appears on both the WD and the PFD, when the limitation has an immediate effect on the flight (e.g. MAX FL : 100/MEA)
  For more information about Limitations on PFD, *Refer to DSC-31-CDS-40-30 Limitations*.
- In all other cases (e.g. LDG DIST AFFECTED), limitations appear on the WD only.

Limitations appear in blue.



LIMITATIONS
ALL PHASES
AVOID ICING CONDs
SPD BRK : DO NOT USE
MAX FL : 100/MEA
APPR & LDG
LDG DIST AFFECTED

The WD displays limitations in two columns:
- The left column (ALL PHASES) displays the limitations that are applicable to all flight phases
- The right column (APPR & LDG) displays the limitations that are only applicable to the approach phase, or to the landing phase, or to both the approach and landing phases.

The first line of each column displays the most important limitation. All other limitations are listed in the order of most to least important.

L12

Note: *During some flight phases, the WD may temporarily clear some limitations, in order to optimize the information display. This may occur, for example, when the T.O or LDG memo is displayed, because there is no sufficient space on the screen to display all the memos and limitations.*

The WD clears limitations:

- *If they also appear on the PFD*
- *In the order of least to most important.*

Ident.: DSC-31-CDS-60-10-40-35-00000042.0001001 / 07 JAN 16

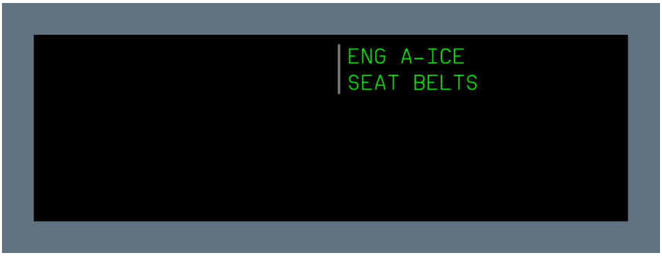
MEMOS

A memo indicates the status of an aircraft system, and usually appears as a reminder:

- After a specific flight crew action or selection
- To indicate the automatic function of a system
- To indicate a LAND ASAP or LAND ANSA.

A memo can appear on the WD only, or on both the PFD and the WD:

- Memos that appear on both the PFD and the WD are memos to increase the flight crew awareness (e.g. ENG A-ICE).
  For more information about the display of memos on the PFD, *Refer to DSC-31-CDS-40-30 MEMOs*
- Other memos (e.g. SEAT BELTS) appear on the WD only.



```
ENG A-ICE
SEAT BELTS
```

The WD displays memos in two columns:

- The left column displays the Takeoff (T.O) and Landing (LDG) memos
- The right column displays all other memos.

L2 Most of memos are not inhibited. Nevertheless, the ECAM can inhibit a memo during specific flight phases. For more information about memo inhibition, *Refer to DSC-31-CDS-60-10-10 ECAM Flight Phases*.

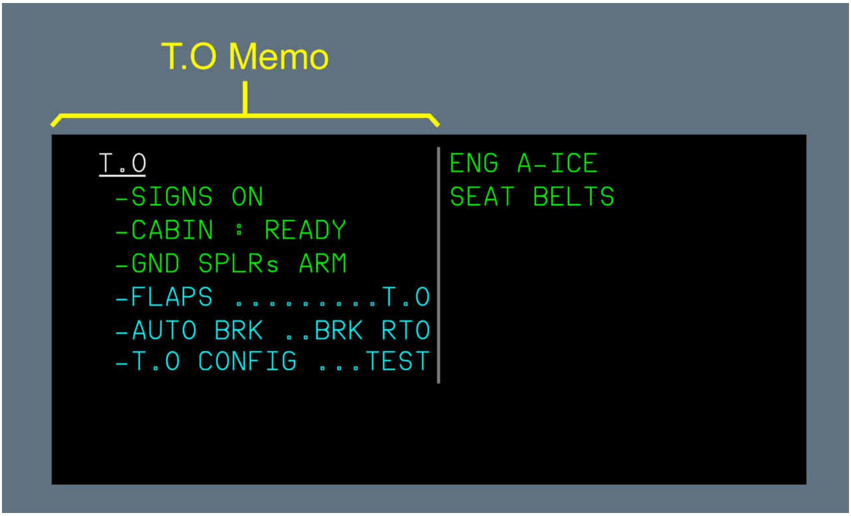
L1 T.O AND LDG MEMOS (LEFT COLUMN)

The T.O and LDG memos provide the flight crew with the list of actions to be performed before takeoff and landing:

- Actions that are not completed yet, appears in blue
- Actions that are already completed appear in green.

Note: In accordance with the Standard Operating Procedures (SOP), the flight crew must ensure that all memo items are green before takeoff and landing.

T.O Memo



```
T.O                        ENG A-ICE
 -SIGNS ON                 SEAT BELTS
 -CABIN : READY
 -GND SPLRs ARM
 -FLAPS .........T.O
 -AUTO BRK ..BRK RTO
 -T.O CONFIG ...TEST
```

L2 *Note: The T.O memo illustration shows the optional CABIN : READY ◁ indication.*

L1 The T.O memo automatically appears 2 min after the first engine start.

The flight crew can manually display the T.O memo when the flight crew presses the T.O CONFIG pb on the ECP, and:

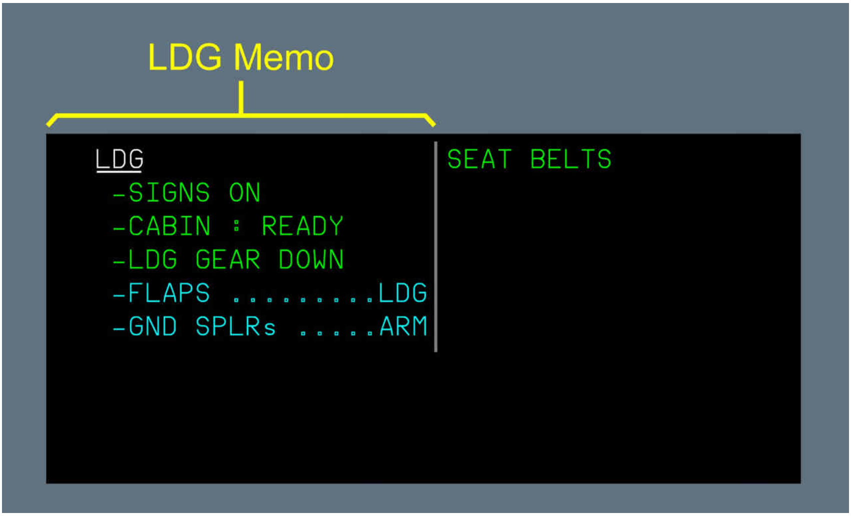
- The aircraft is on the ground with at least one engine running
- There is no engine at takeoff power.

The T.O memo disappears, when the flight crew applies the takeoff power.

Note: *The T.O memo items are also part of the BEFORE TAKEOFF checklist.*

For more information about T.O configuration test, *Refer to DSC-31-CDS-60-30 Takeoff Configuration Test*.

LDG Memo



```
LDG                          SEAT BELTS
 -SIGNS ON
 -CABIN : READY
 -LDG GEAR DOWN
 -FLAPS .........LDG
 -GND SPLRs .....ARM
```

Note: *The LDG memo illustration shows the optional CABIN : READY* ⊲✳ *indication.*

The LDG memo automatically appears, when the aircraft descends below 2 000 ft radio height.

The LDG memo disappears after landing:
- One minute after the speed goes below 80 kt
- If the flight crew applies takeoff power.

Note: *The LDG memo items are also part of the LANDING checklist.*

ALL PHASE MEMOS (RIGHT COLUMN)

The right column displays memos that are applicable to all phases.
Memos are displayed in accordance with memo importance. The first line displays the most important memo.
Memos usually appear in green. However, some memos may appear in amber (e.g. A/THR OFF), in red (e.g. AP OFF), or in magenta (e.g. T.O INHIBIT).

REMINDERS

Applicable to: ALL

Ident.: DSC-31-CDS-60-10-40-40-00000033.0001001 / 24 APR 14

The following reminders can appear on the last line of the limitations and memos pages of the WD:

- The DISPCH reminder
- The ADV reminder
- The STS reminder
- The STS & DEFRD PROC reminder.

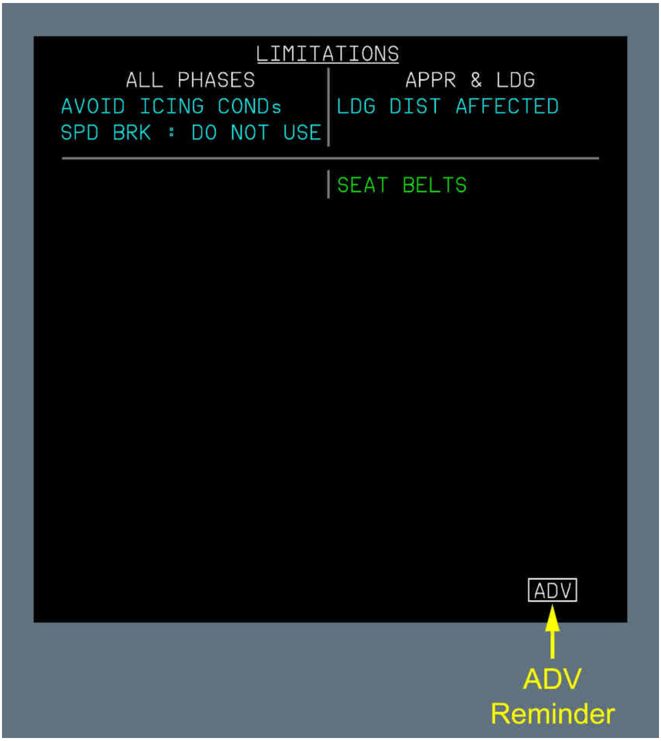
Ident.: DSC-31-CDS-60-10-40-40-00000107.0001001 / 24 APR 14

ADV REMINDER

The ADV reminder appears and pulses on the WD, if all of the following apply:

- There is an advisory condition for an aircraft system
L2 For more information about advisory, *Refer to DSC-31-CDS-60-10-10 Advisory*.
L1
- The WD displays the page dedicated to limitations and memos.

ADV Reminder



LIMITATIONS

ALL PHASES
AVOID ICING CONDs
SPD BRK : DO NOT USE

APPR & LDG
LDG DIST AFFECTED

SEAT BELTS

The ADV reminder disappears from the WD, when:

- The flight crew presses the ECP pushbutton that is associated with the affected SD page, or
- The parameter, source of the advisory indication, returns to its defined operational range.

Ident.: DSC-31-CDS-60-10-40-40-00000108.0001001 / 24 APR 14

STS REMINDER

The STS reminder appears on the WD, if all of the following apply:

- The STATUS page is not empty

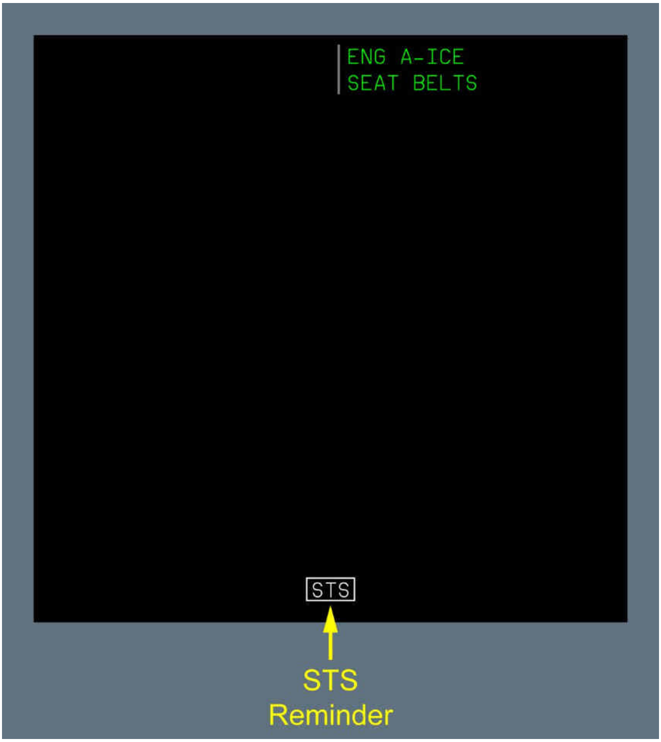
L2 For more information about the STATUS page, *Refer to DSC-31-CDS-60-10-50 STATUS Page and STATUS MORE Page*.

L1 - The DEFERRED PROCEDURES page is empty

L2 For more information about the DEFERRED PROCEDURES page, *Refer to DSC-31-CDS-60-10-40 Deferred Procedures*.

L1 - The WD displays memos or limitations.

STS Reminder



Ident.: DSC-31-CDS-60-10-40-40-00000109.0001001 / 24 APR 14

STS & DEFRD PROC REMINDER

The STS & DEFRD PROC reminder appears on the WD, if all of the following apply:

- The STATUS page is not empty

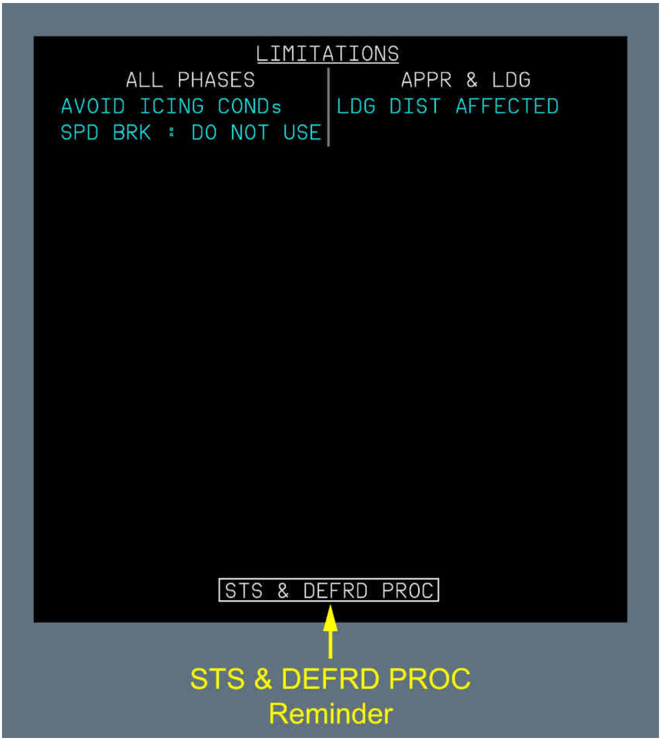
L2 For more information about the STATUS page, *Refer to DSC-31-CDS-60-10-50 STATUS Page and STATUS MORE Page*.

L1
- There are deferred procedures available in the DEFERRED PROCEDURES page.

L2 For more information about the DEFERRED PROCEDURES page, *Refer to DSC-31-CDS-60-10-40 Deferred Procedures*.

L1
- The WD displays memos or limitations.

STS & DEFRD PROC Reminder



LIMITATIONS

ALL PHASES	APPR & LDG
AVOID ICING CONDs	LDG DIST AFFECTED
SPD BRK : DO NOT USE	

STS & DEFRD PROC

Ident.: DSC-31-CDS-60-10-40-40-00000110.0001001 / 24 APR 14

DISPCH REMINDER

The DISPCH reminder appears on the WD, if all the following apply:

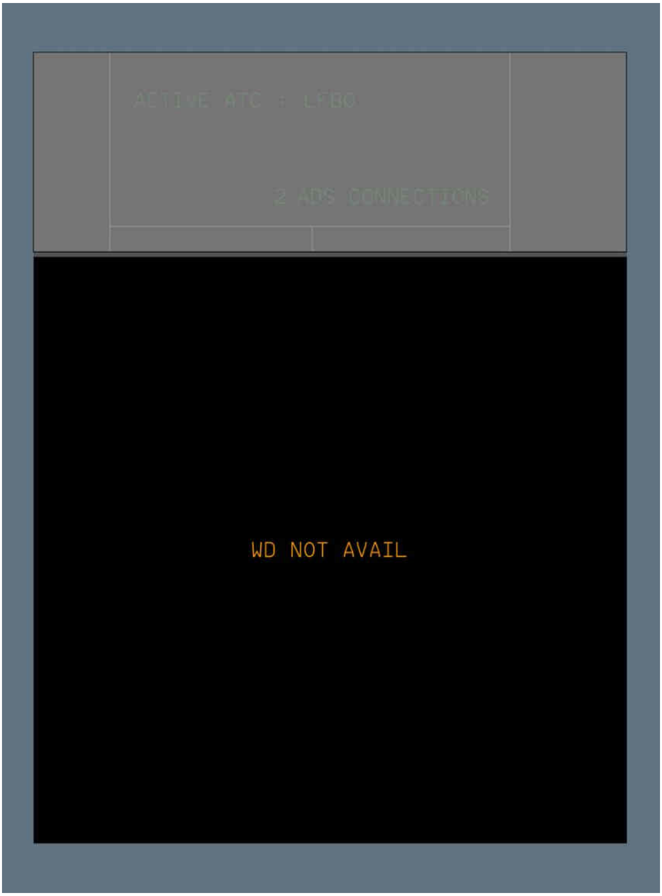
- The DISPATCH page is not empty

L2 For more information about the DISPATCH page, *Refer to DSC-31-CDS-60-10-50 DISPATCH Page*.

L1
- The DISPATCH page does not appear on the SD
- The WD displays memos or limitations.

WD NOT AVAILABLE

Ident.: DSC-31-CDS-60-10-40-00000034.0001001 / 24 APR 14
Applicable to: ALL



ACTIVE ATC : LFBO

2 ADS CONNECTIONS

WD NOT AVAIL

The WD NOT AVAIL message appears, when the CDS cannot display the WD.

Intentionally left blank

SD

OVERVIEW

Ident.: DSC-31-CDS-60-10-50-00000035.0001001 / 24 APR 14
Applicable to: ALL

The SD displays the:
- SD pages: *Refer to DSC-31-CDS-60-10-50 SD Pages*
- STATUS page and STATUS MORE page: *Refer to DSC-31-CDS-60-10-50 STATUS Page and STATUS MORE Page*
- The DISPATCH page: *Refer to DSC-31-CDS-60-10-50 DISPATCH Page*
- Video: *Refer to DSC-31-CDS-110-10 Overview*.

The flight crew uses the ECP to interface with the SD.

SD PAGES

Ident.: DSC-31-CDS-60-10-50-00000036.0001001 / 04 MAY 18
Applicable to: ALL

The SD pages provide information about aircraft systems.

The following SD pages are available:
- APU SD page
  Provides information about APU: *Refer to DSC-49-20 APU SD Page*.
- BLEED SD page

  Provides information about bleed air and air conditioning:
  - For bleed air: *Refer to DSC-36-20 BLEED SD Page*
  - For air conditioning: *Refer to DSC-21-COND-20 BLEED SD Page*
  - For wing anti-ice, *Refer to DSC-30-20-20 BLEED SD page*.
- C/B SD page
  Provides the list of the tripped circuit breakers: *Refer to DSC-24-20 ELEC C/B SD Page*.
- CAB PRESS SD page

  Provides information about air systems:
  - For air conditioning: *Refer to DSC-21-COND-20 CAB PRESS SD Page*
  - For ventilation: *Refer to DSC-21-VENT-20 CAB PRESS SD Page*
  - For pressurization: *Refer to DSC-21-PRESS-20 CAB PRESS SD page*.

- COND SD page

  Provides information about air systems and smoke detection:
  - For air conditioning: *Refer to DSC-21-COND-20 COND SD Page*
  - For ventilation: *Refer to DSC-21-VENT-20 COND SD Page*
  - For smoke detection in avionic bay, *Refer to DSC-26-60-20 COND SD Page*
  - For smoke detection in cargo compartment, *Refer to DSC-26-70-20 COND SD Page*.

- DOOR/OXYGEN SD page

  Provides information about doors, oxygen, and rain repellent ◁ fluid:
  - For cabin doors: *Refer to DSC-52-30-20 DOOR/OXYGEN SD page*
  - For cargo doors: *Refer to DSC-52-60-20 DOOR/OXYGEN SD page*
  - For avionics bay door: *Refer to DSC-52-20-20 DOOR/OXYGEN SD page*
  - For oxygen in the cockpit: *Refer to DSC-35-20-20 DOOR/OXYGEN SD Page*
  - For rain repellent ◁ fluid: *Refer to DSC-30-30-20 DOOR/OXYGEN SD page*.

- ELEC AC SD page

  Provides information about AC electrical power:
  - For in-flight configuration, *Refer to DSC-24-20 ELEC AC SD Page: In-Flight Configuration*
  - For on-ground configuration, *Refer to DSC-24-20 ELEC AC SD Page: On-Ground Configuration*.

- ELEC DC SD page
  Provides information about DC electrical power: *Refer to DSC-24-20 ELEC DC SD Page*.
- ENG SD page
  Provides information about engine secondary parameters: *Refer to DSC-70-20 ENG SD Page*.
- F/CTL SD page
  Provides information about flight controls, *Refer to DSC-27-10-20 F/CTL SD Page*.
- FUEL SD page
  Provides information about the fuel system: *Refer to DSC-28-20 FUEL SD Page*.
- HYD SD page
  Provides information about hydraulic power: *Refer to DSC-29-20 HYD SD Page*.
- WHEEL SD page

  Provides information about the landing gear and the associated systems:
  - For landing gear and doors, *Refer to DSC-32-10-20 WHEEL SD Page*
  - For braking system, *Refer to DSC-32-20-20 WHEEL SD Page*
  - For steering system, *Refer to DSC-32-30-20 WHEEL SD Page*
  - For landing gear monitoring system, *Refer to DSC-32-40-20 WHEEL SD Page*.

The SD pages appear:
- When the flight crew manually selects a SD page via the ECP, or
- Automatically.

The SD can also display:

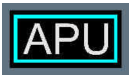
- The CRUISE page (See CRUISE page)
- The RWY CONDITION/BRAKING ACTION Matrix, *Refer to DSC-34-32-20-20-70 RWY CONDITION/BRAKING ACTION Matrix*.

For more information about SD page display, *Refer to DSC-31-CDS-60-30 Automatic SD Page Display*.

SD PAGE TITLE

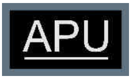
The title of a SD page appears as follows:
- In a blue box, when the flight crew manually displays the SD page

SD Page Title - Manual Display



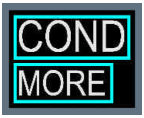
- Underlined in white, when the SD automatically displays the SD page

SD Page Title - Automatic Display

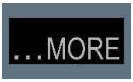


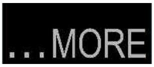
- In a blue box, when the flight crew manually selects the SD MORE page.

SD Page Title with MORE Page Selection



SD MORE PAGE

Some SD system displays have two pages available to provide additional information on the applicable system. In such a case,  appears below the name of the system.



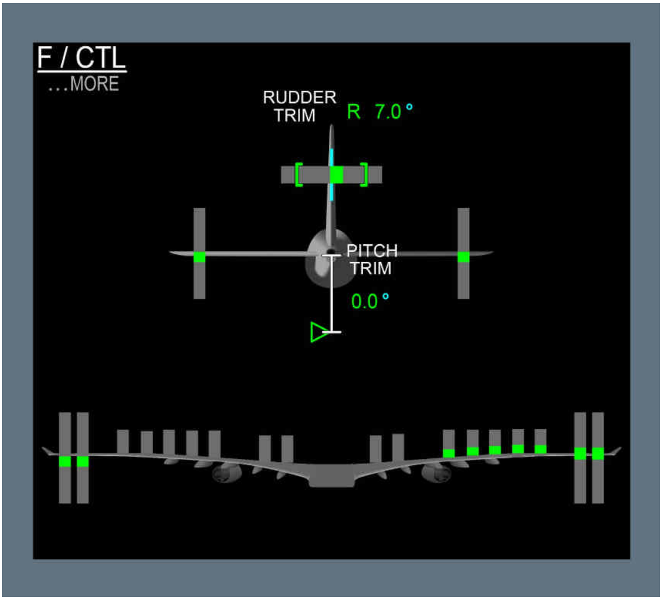
The MORE page is available but not active, the system page does not display all the available information.

MORE	The flight crew pressed the MORE pb on the ECP The MORE page is active, additional system information is displayed.

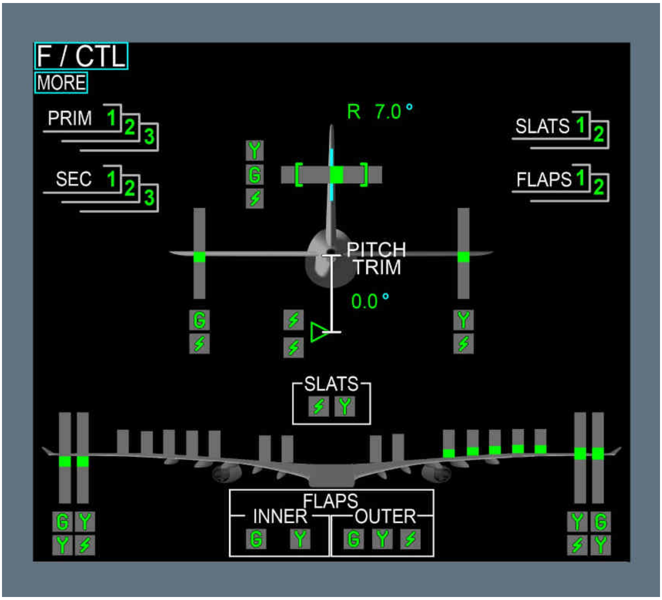
The following systems have a SD MORE page:
- The WHEEL page
- The COND page
- The F/CTL page.

The following page is an example of SD page with additional information available but not displayed.

SD Page with Basic Information



The following page is an example of SD page with additional information displayed when the flight crew selects the MORE page.

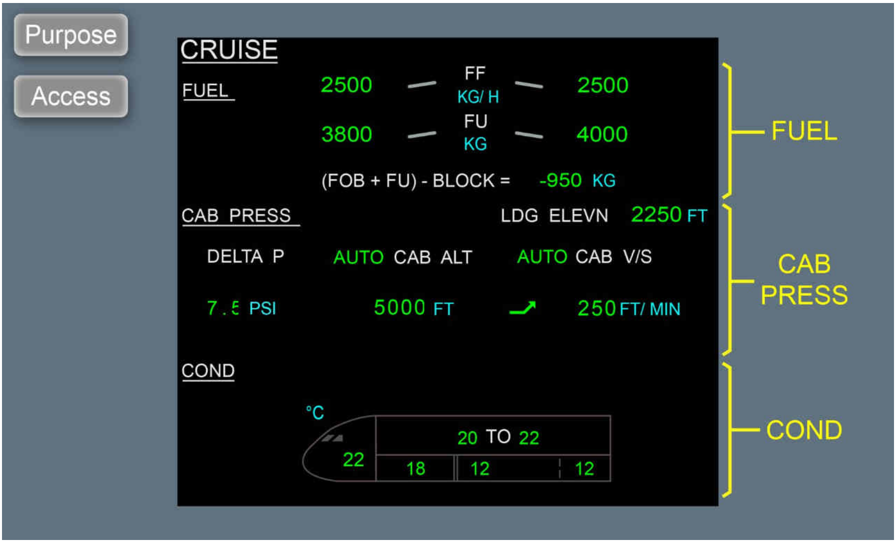

F / CTL
MORE
PRIM 1 2 3
SEC 1 2 3
R 7.0 °
SLATS 1 2
FLAPS 1 2
Y
G
PITCH
TRIM
0.0 °
G
Y
SLATS
Y
G Y
Y
FLAPS
INNER
OUTER
G Y
G Y
Y G
Y

SD Page with MORE Information

L2 *Note:* *Pieces of information that are usually displayed on the MORE page only can also be displayed on the default SD page in case of malfunction, or particular system configuration.*

L1 CRUISE PAGE

CRUISE Page


Purpose
Access
CRUISE
FUEL
2500
FF
KG/ H
2500
3800
FU
KG
4000
(FOB + FU) - BLOCK = -950 KG
CAB PRESS
LDG ELEVN 2250 FT
DELTA P
AUTO CAB ALT
AUTO CAB V/S
7.5 PSI
5000 FT
250 FT/ MIN
COND
°C
22
20 TO 22
18
12
12
FUEL
CAB PRESS
COND

PURPOSE

The CRUISE page provides the flight crew with information about the fuel system and air systems, via three sections:

- FUEL
- CAB PRESS
- COND.

ACCESS

The flight crew cannot manually display the CRUISE page via the ECP.
The SD automatically displays the CRUISE page at 1 500 ft AGL, or at thrust reduction, depending on which one occurs first. Then, the CRUISE page remains the default-displayed page, until landing gear extension in approach.

FUEL

The FUEL section indicates the:
- Fuel flow per engine
- Fuel used per engine
- The difference between:
  - The current FOB plus the total fuel used by the two engines and the APU, and
  - The FOB at departure.

For more information about the FUEL section of the CRUISE page, *Refer to DSC-28-20 CRUISE SD Page - Upper Part*.

CAB PRESS

The CAB PRESS section indicates the:
- Differential pressure
- Cabin pressure and cabin vertical speed
- Landing elevation.

For more information about the CAB PRESS section of the CRUISE page, *Refer to DSC-21-PRESS-20 CRUISE Page*.

COND

The COND section indicates the temperature in the cockpit, cabin, and cargo compartments.
For more information about the COND section of the CRUISE page, *Refer to DSC-21-COND-20 CRUISE Page*.

XX DISPLAY ON SD PAGES

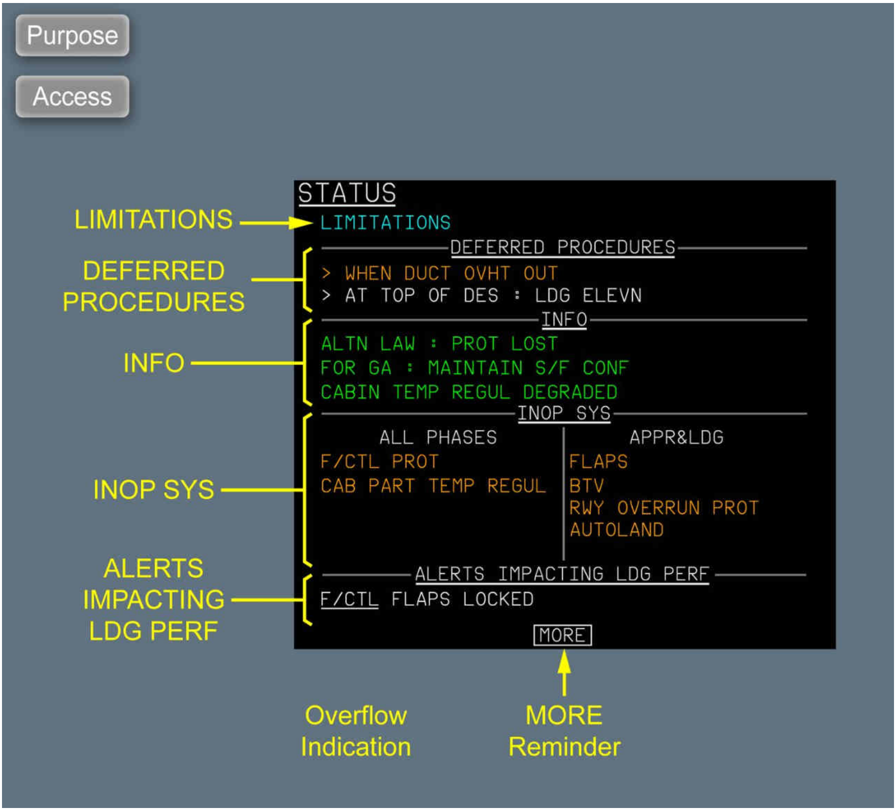
If a parameter value or status on any SD page is not available for display, XX appears, instead of the value or status.

STATUS PAGE AND STATUS MORE PAGE

Ident.: DSC-31-CDS-60-10-50-00000037.0001001 / 03 DEC 15
Applicable to: ALL

STATUS PAGE

STATUS Page


Purpose
Access
LIMITATIONS
DEFERRED PROCEDURES
INFO
INOP SYS
ALERTS IMPACTING LDG PERF
Overflow Indication
MORE Reminder

```
STATUS
 LIMITATIONS
 ----------------DEFERRED PROCEDURES----------------
 > WHEN DUCT OVHT OUT
 > AT TOP OF DES : LDG ELEVN
 ------------------------INFO------------------------
 ALTN LAW : PROT LOST
 FOR GA : MAINTAIN S/F CONF
 CABIN TEMP REGUL DEGRADED
 ----------------------INOP SYS----------------------
       ALL PHASES          |      APPR&LDG
 F/CTL PROT                | FLAPS
 CAB PART TEMP REGUL       | BTV
                           | RWY OVERRUN PROT
                           | AUTOLAND
 --------------ALERTS IMPACTING LDG PERF-------------
 F/CTL FLAPS LOCKED
                        MORE
```

PURPOSE

The STATUS page provides an operational summary of the aircraft state, via 5 sections:
- LIMITATIONS
- DEFERRED PROCEDURES
- INFO

- INOP SYS
- ALERTS IMPACTING LANDING PERF.

The above-listed sections appear, only if they are not empty.

ACCESS

The flight crew displays the STATUS page when:

- The STATUS page is not empty, and the flight crew clears the last alert on the WD via:
  - The CLEAR action line on the WD
  - The CLEAR pb on the ECP.
  - L2 The EMER CANC pb on the ECP.
- L1 The flight crew presses the STS pb on the ECP.

L2 The STATUS page can also automatically appear. For more information about the automatic STATUS page display, *Refer to DSC-31-CDS-60-30 Automatic STATUS Page Display*.

L1 LIMITATIONS

The LIMITATIONS label indicates that there are limitations.
These limitations appear on the WD only, or on the WD and the PFD.
L2 For more information, *Refer to DSC-31-CDS-60-10-40 Limitations*.

L1 DEFERRED PROCEDURES

The DEFERRED PROCEDURES section provides the list of the applicable deferred procedures by order of priority.

The titles of the applicable deferred procedures are:

- Amber, when the corresponding deferred procedures are not completed
- White, when the corresponding deferred procedures are completed.

The flight crew access the deferred procedures on the DEFERRED PROCEDURE LIST page, via the DEFRD pb on the ECP.
L2 For more information, *Refer to DSC-31-CDS-60-10-40 Deferred Procedures*.

L1 INFO

The INFO section provides information about any degraded aircraft system.
Information appears in green.

INOP SYS

The INOP SYS section makes a list of inoperative systems in two columns:
- The left column (ALL PHASES) displays the inoperative systems that are applicable to all flight phases
- The right column (APPR&LDG) displays the inoperative systems that are applicable to the approach phase, or to the landing phase, or to both the approach and landing phases.

The inoperative systems appear in amber.
The first line of each column displays the most important inoperative system. All other inoperative systems are listed in the order of most to least important.

ALERTS IMPACTING LDG PERF

The ALERTS IMPACTING LDG PERF section provides the list of the active alerts that affect the landing performance.
L2 For more information about landing distance computation, *Refer to FCTM/PR-AEP-LDC Landing Computation*.

L1 MORE

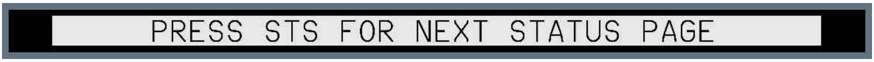
The MORE reminder appears on the last line of the SD, only if the STATUS MORE page is not empty.

The MORE reminder indicates that information is available on the STATUS MORE page: See STATUS MORE Page.

OVERFLOW INDICATION

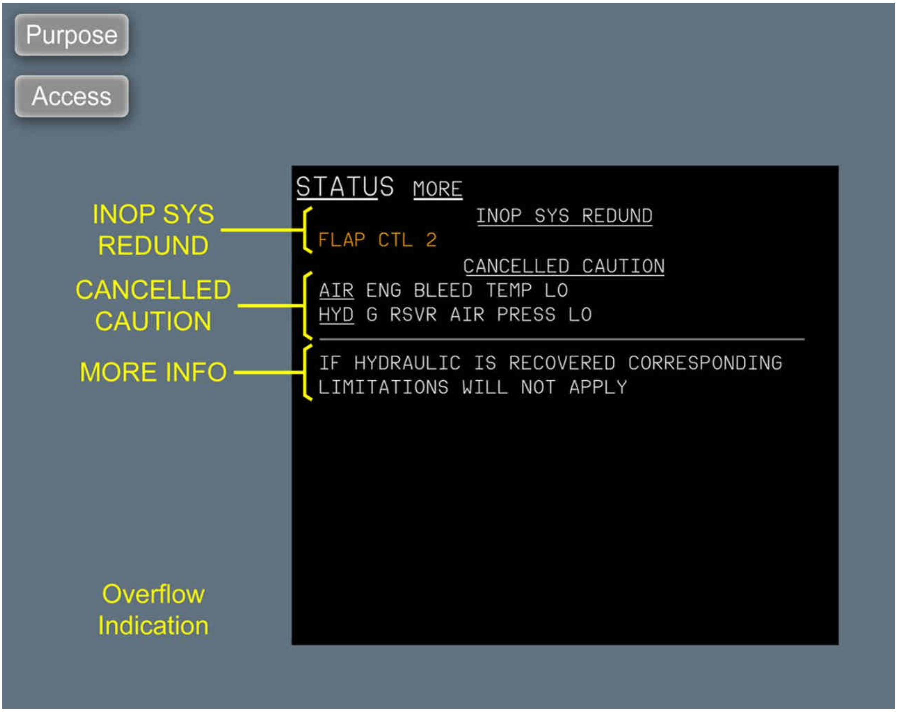
When the SD cannot display the STATUS information on a single STATUS page, the SD displays the following message on the bottom of the STATUS page.

Overflow Indication


PRESS STS FOR NEXT STATUS PAGE

The flight crew can press the STS pb on the ECP to access the next STATUS pages, as long as the message appears. Several STATUS pages may be available.
When the SD displays the last STATUS page the PRESS STS FOR NEXT STATUS PAGE message disappears and the flight crew can press the STS pb on the ECP to remove the STATUS page.

STATUS MORE PAGE


Purpose
Access
INOP SYS REDUND
CANCELLED CAUTION
MORE INFO
Overflow Indication

STATUS MORE

INOP SYS REDUND

FLAP CTL 2

CANCELLED CAUTION

AIR ENG BLEED TEMP LO

HYD G RSVR AIR PRESS LO

IF HYDRAULIC IS RECOVERED CORRESPONDING LIMITATIONS WILL NOT APPLY

STATUS MORE Page

PURPOSE

The STATUS MORE page provides additional information about the aircraft state, via three sections:

- INOP SYS REDUND
- CANCELLED CAUTION
- MORE INFO.

The above-listed sections appear, only if they are not empty.

ACCESS

The flight crew can access the STATUS MORE page via the STATUS page, by pressing the MORE pb on the ECP.

Note:

The flight crew can access the STATUS MORE page, only if the MORE *reminder appears at the bottom of the STATUS page.*

INOP SYS REDUND

The INOP SYS REDUND section provides the list of the system redundancy losses that are associated with the active alerts.
The system redundancy losses appear in amber.
The first line displays the most important system redundancy loss. All other system redundancy losses are listed in the order of most to least important.

CANCELLED CAUTION

The CANCELLED CAUTION section provides the list of the cautions that the flight crew cancelled by using the EMER CANC pb on the ECP.
The titles of the cancelled cautions are in white.

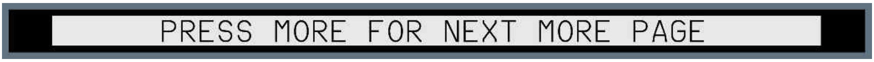
MORE INFO

The lower section of the STATUS MORE page provides additional information related to procedures. This section is referred to as MORE INFO.
The information appears in white.
If the MORE INFO is not the first-displayed section on the STATUS MORE page, a separation line appears above the MORE INFO.

OVERFLOW INDICATION

When the SD cannot display the STATUS MORE information on a single STATUS page, the SD displays the following message on the bottom of the STATUS page.

Overflow Indication



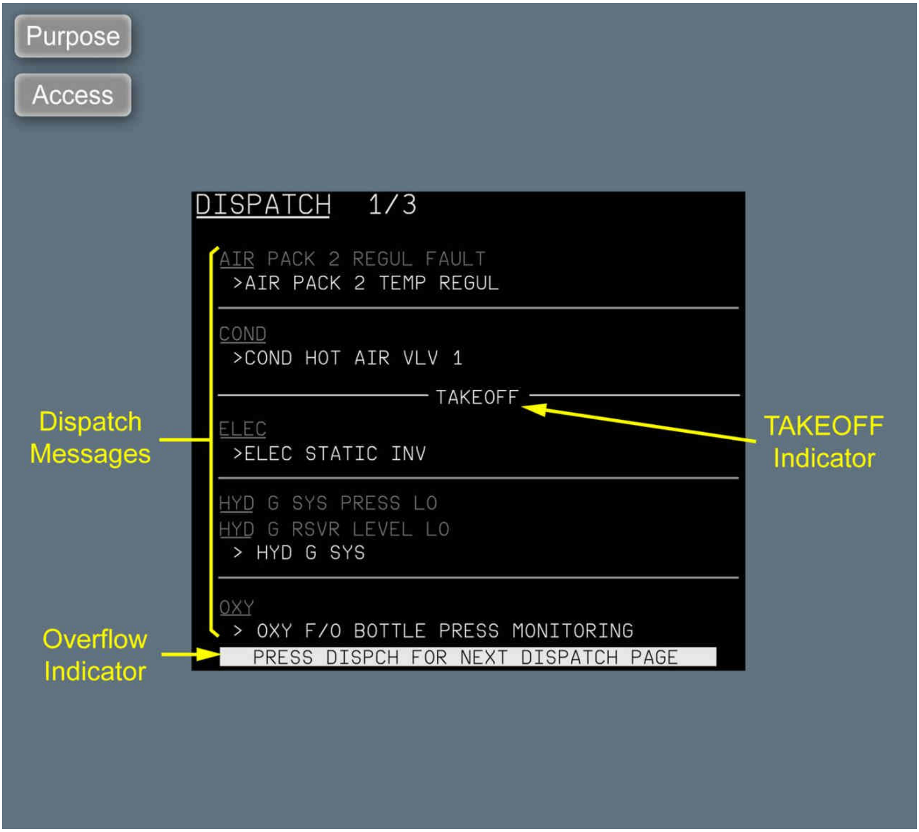
PRESS MORE FOR NEXT MORE PAGE

The flight crew can press the MORE pb on the ECP to access the next STATUS MORE pages, as long as the message appears. Several STATUS MORE pages may be available.
When the SD displays the last STATUS MORE page the overflow message disappears and the flight crew can press the MORE pb on the ECP to remove the STATUS MORE page. Then, the SD displays the STATUS page.

DISPATCH PAGE

Ident.: DSC-31-CDS-60-10-50-00000038.0001001 / 02 JUL 14
Applicable to: ALL

DISPATCH Page



```
DISPATCH   1/3

AIR PACK 2 REGUL FAULT
 >AIR PACK 2 TEMP REGUL

COND
 >COND HOT AIR VLV 1
                    TAKEOFF
ELEC
 >ELEC STATIC INV

HYD G SYS PRESS LO
HYD G RSVR LEVEL LO
 > HYD G SYS

OXY
 > OXY F/O BOTTLE PRESS MONITORING
    PRESS DISPCH FOR NEXT DISPATCH PAGE
```

PURPOSE

The DISPATCH page provides the list of all current dispatch messages with the associated alerts, if available.
The dispatch messages enable the flight crew to identify failed equipment that can be detected, if there is an associated dispatch condition to consider.

ACCESS

The DISPATCH page appears when the flight crew presses the DISPCH pb on the ECP.

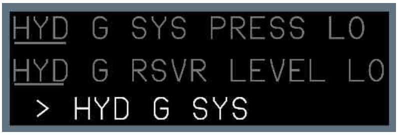
DISPATCH MESSAGES

The dispatch function computes all the dispatch messages associated to a system failure in order to display each dispatch message only one time with the associated system ECAM alerts, or the associated ECAM category.
The DISPATCH page displays the sequence of dispatch messages as they appeared, with the last dispatch message on the top of the list. A line separates each dispatch message.
As for ECAM alerts the display of the dispatch messages can be inhibited in accordance with ECAM flight phases.
When there is at least one dispatch message available, a reminder appears on the WD.

L3 *Note: The dispatch function also interfaces with the OPS LIBRARY on the Onboard Information System (OIS)*

L1 DISPATCH MESSAGES ASSOCIATED WITH ECAM ALERTS

Dispatch Message with ECAM Alert

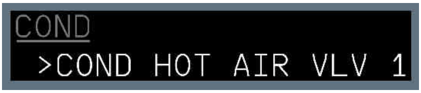


HYD G SYS PRESS LO
HYD G RSVR LEVEL LO
> HYD G SYS

The above dispatch message is associated with two ECAM alerts.

DISPATCH MESSAGES ASSOCIATED WITH ECAM CATEGORY

Dispatch Message with ECAM Category



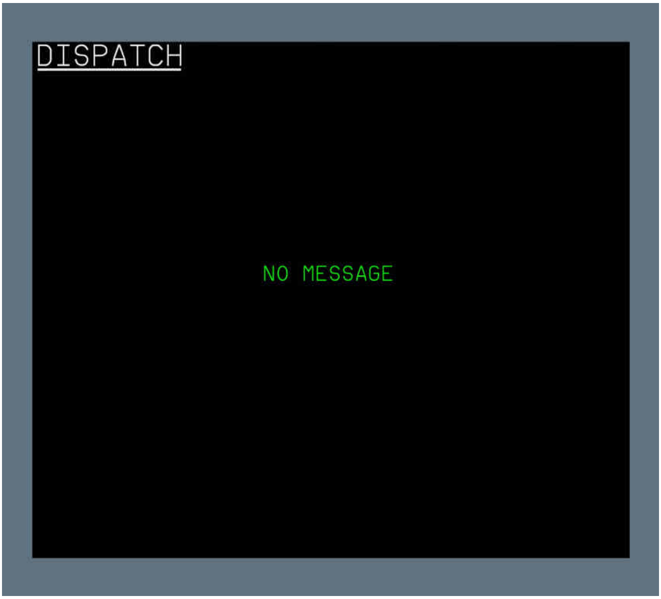
COND
\>COND HOT AIR VLV 1

The above dispatch message is not associated with an ECAM alert.
When the dispatch message is not associated with an ECAM alert, the ECAM triggers the DISPATCH PAGE UPDATE.
This ECAM alert only appears before takeoff and after all engine shutdown.
L2 For more information about the DISPATCH PAGE UPDATE, *Refer to procedure*

L1 NO MESSAGE PAGE

When the flight crew displays the DISPATCH page and no dispatch message is available, the NO MESSAGE label appears.

No Message Page



DISPATCH

NO MESSAGE

L2 When there is no message, the DISPATCH page remains 3 s then the SD page reverts to the previous SD page.

L1 TAKEOFF LINE INDICATOR

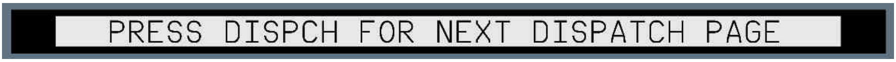
The TAKEOFF line separates the list of the dispatch messages:
- The dispatch messages that occurred before the flight crew applied the takeoff thrust on ground are displayed below the TAKEOFF line
- The dispatch messages that occurred after the flight crew applied the takeoff thrust on ground are displayed above the TAKEOFF line.

L2 The takeoff line appears when the flight crew sets the take off thrust and disappears 5 min after the last engine shutdown.

L1 OVERFLOW INDICATOR

When there are more than one page of dispatch messages:
- The DISPATCH page number appears next to the DISPATCH title
- The overflow indication appears below the dispatch messages on the DISPATCH pages.

Overflow Indicator



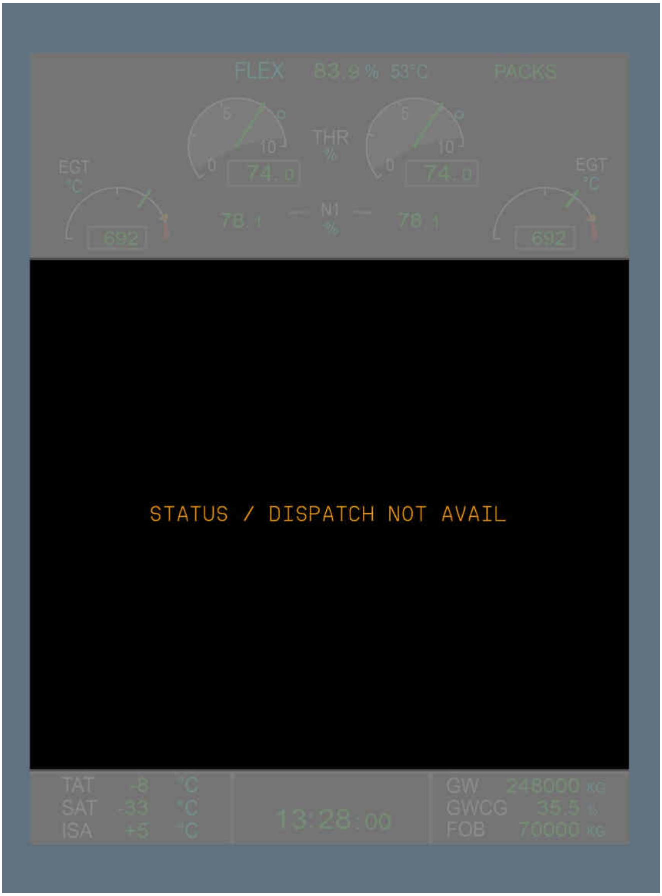
PRESS DISPCH FOR NEXT DISPATCH PAGE

When this message appears, the flight crew can press the DISPCH pb on the ECP to display the next DISPATCH page with the dispatch messages previously triggered .

L2 When the flight crew presses the DISPCH pb on the last dispatch page, the DISPATCH page disappears from the SD and the light of DISPCH pb goes off.

STATUS / DISPATCH NOT AVAIL

Ident.: DSC-31-CDS-60-10-50-00014692.0001001 / 24 APR 14
Applicable to: ALL


FLEX
83.9 %
53°C
PACKS
THR
%
EGT
°C
74.0
74.0
692
692
78.1
N1
%
78.1
TAT
-8
°C
SAT
-33
°C
ISA
+5
°C
13:28:00
GW
248000 KG
GWCG
35.5 %
FOB
70000 KG

STATUS / DISPATCH NOT AVAIL

The STATUS / DISPATCH NOT AVAIL message appears, when the CDS cannot display the STATUS page, the STATUS MORE page, and the DISPATCH page.

Intentionally left blank

Permanent Data

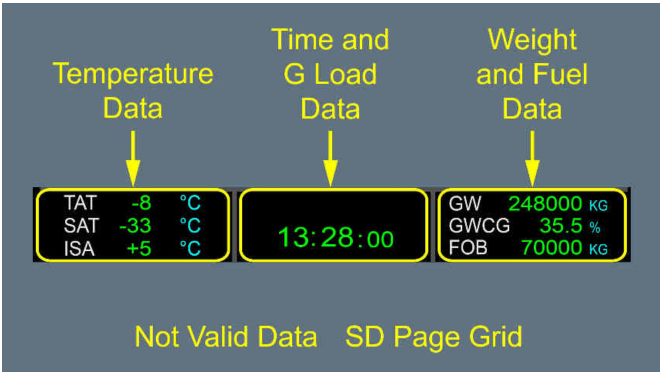
PERMANENT DATA

Applicable to: ALL

Ident.: DSC-31-CDS-60-10-80-10-00000043.0001001 / 24 APR 14

The following data permanently appears below the SD, in three columns:
- Temperature data
- Time and G load data
- Weight and fuel data.

Permanent Data

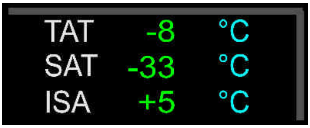

Temperature Data
Time and G Load Data
Weight and Fuel Data
TAT -8 °C
SAT -33 °C
ISA +5 °C
13:28:00
GW 248000 KG
GWCG 35.5 %
FOB 70000 KG
Not Valid Data
SD Page Grid

Ident.: DSC-31-CDS-60-10-80-10-00000044.0001001 / 03 JUL 14

TEMPERATURE DATA

The left column displays the external air temperature values in degrees Celsius. The applicable plus and minus signs always appear.

L13


TAT -8 °C
SAT -33 °C
ISA +5 °C

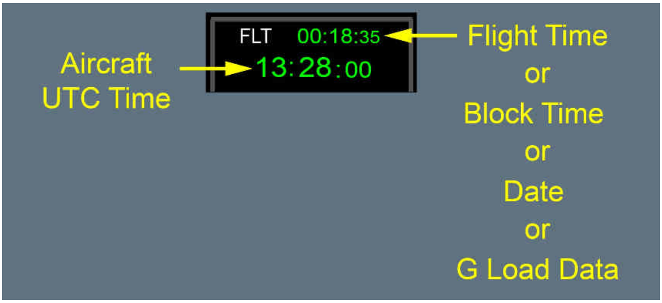
Indicates:
- The Total Air Temperature (TAT)
  The ADIRS provides the TAT and SAT values
- The Static Air Temperature (SAT)
  The ADIRS provides the TAT and SAT values
- The International Standard Atmosphere (ISA) deviation.
  The CDS uses SAT to compute the ISA deviation.

Ident.: DSC-31-CDS-60-10-80-10-00000045.0001001 / 24 APR 14

TIME AND G LOAD DATA

The first line of the middle column may display either the flight time, the block time, the date, or the G load data.
The Aircraft Universal Time Coordinated (UTC) time appears on the second line.

Time and G Load Data



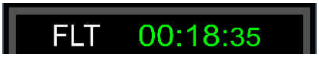
FLIGHT TIME

The Flight (FLT) time appears, if the flight crew selects the FLT TIME display via the POSITION/TIME page of the MFD.

L2 For more information about the POSITION/TIME page, *Refer to DSC-22-FMS-20-20-20 POSITION/TIME Page*.

L3 The FMS provides the FLT time.

L1



Indicates the FLT time. The format is HH:MM:SS.

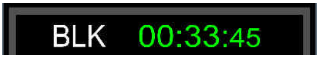
BLOCK TIME

The Block (BLK) time appears, if the flight crew selects the BLK TIME display via the POSITION/TIME page of the MFD.

L2 For more information about the POSITION/TIME page, *Refer to DSC-22-FMS-20-20-20 POSITION/TIME Page*.

L3 The FMS provides the BLK time.

L1



Indicates the BLK time. The format is HH:MM:SS.

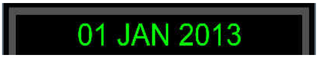
DATE

The date appears, if the flight crew selects the DATE display via the POSITION/TIME page of the MFD.

L2 For more information about the POSITION/TIME page, *Refer to DSC-22-FMS-20-20-20 POSITION/TIME Page*.

L3 The ADIRS provides the date.

L1



Indicates the date. The format is DD MMM YYYY.

G LOAD DATA

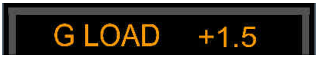
If the measured G load exceeds a specific range, the first line of the middle column indicates the abnormal G load.

L2 The G LOAD indication appears, if the G load is less than 0.7 g, or more than 1.4 g, for more than 2 s.
Then, the G LOAD indication remains displayed as long as the G load is in the abnormal range.
The G LOAD indication disappears, 5 s after the G load returns in the normal range.

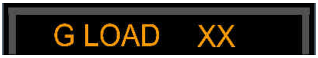
L1 The applicable plus or minus signs always appears.

L3 The ADIRS provides the G load data.

L1



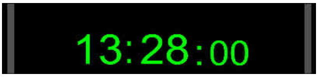
Indicates the abnormal G load.



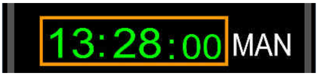
An abnormal G load value was measured, but the value is not available.

AIRCRAFT UTC TIME

L13



Indicates the UTC time, when the aircraft time reference is set to AUTO on the POSITION/TIME page of the MFD.
The format is HH:MM:SS.
The ADIRS provides the UTC time. For more information about the computation of the aircraft time reference, *Refer to DSC-34-NAV-20-10-70 Time Function*.



Indicates the manual time entry, when the aircraft time reference is set to MANUAL on the POSITION/TIME page of the MFD.
The flight crew can manually enter the UTC time in the UTC field of the POSITION/TIME page of the MFD.

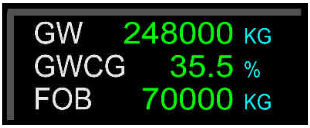
Ident.: DSC-31-CDS-60-10-80-10-00000046.0001001 / 09 MAR 16

WEIGHT AND FUEL DATA

The right column displays weight and fuel data: The aircraft Gross Weight (GW), the aircraft Gross Weight Center of Gravity (GWCG), and the Fuel On Board (FOB).

L3 In normal operation, the permanent data displays the GW, GWCG, and FOB values from the Fuel Quantity Management System (FQMS) computation.

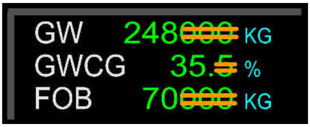
L1 The GW and FOB values are rounded off to the nearest hundred.



GW 248000 KG
GWCG 35.5 %
FOB 70000 KG

Indicates:
- The GW in kilograms (kg) or in pounds (lbs)
- The GWCG in per cent
- The FOB in kilograms (kg) or in pounds (lbs).

L123



GW 248~~000~~ KG
GWCG 35.~~5~~ %
FOB 70~~000~~ KG

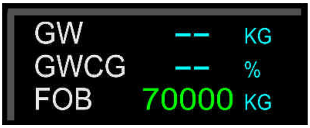
Value accuracy is degraded.

Associated with one of the following alerts:
- FUEL FQI FAULT
- FUEL FQMS 1(2)(1+2) FAULT

The GW value is dashed in the case of an FQMS failure, when:
- The CDS computes the GW based on last memorized FOB and ZFW values, with current total fuel used (engines+ APU).
- The WBBC computes the GW, if the CDS cannot compute the GW.

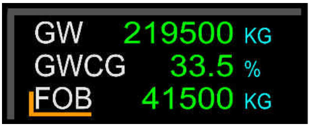
The GWCG value is dashed in the case of an FQMS failure, when the WBBC computes the GW.

The FOB value is dashed in the case of an FQMS failure, when the CDS computes the FOB with:
- The memorized FOB value at second engine start.
- The current value of total fuel used (engines+APU).



GW -- KG
GWCG -- %
FOB 70000 KG

The aircraft is on ground, and the flight crew did not enter the ZFW and ZFWCG in the FMS.



GW 219500 KG
GWCG 33.5 %
FOB 41500 KG

At least one fuel tank is not usable.

Ident.: DSC-31-CDS-60-10-80-10-00000018.0001001 / 24 APR 14

NOT VALID DATA

If the value of a parameter is not valid, XX appears, instead of the value.

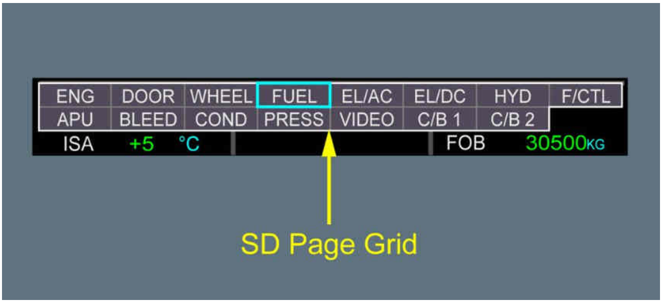
Ident.: DSC-31-CDS-60-10-80-10-00018765.0001001 / 02 MAY 14

SD PAGE GRID

The permanent data area can also display the SD page grid, when the flight crew:

- Rotates the SD knob, on the ECAM control panel (ECP)
- Presses the ALL pb, on the ECP.

SD Page Grid


ENG
DOOR
WHEEL
FUEL
EL/AC
EL/DC
HYD
F/CTL
APU
BLEED
COND
PRESS
VIDEO
C/B 1
C/B 2
ISA
+5
°C
FOB
30500KG
SD Page Grid

L2 The C/B 2 selection is available only if the C/B 2 page is not empty.

L1 When the SD page grid is displayed, the flight crew can move the selection box to select an SD display, via:

- The SD knob of the ECP
- The ALL pb of the ECP.

The SD page grid disappears, when:

- The flight crew selects an SD display
- The grid remains inactive for 5 s.

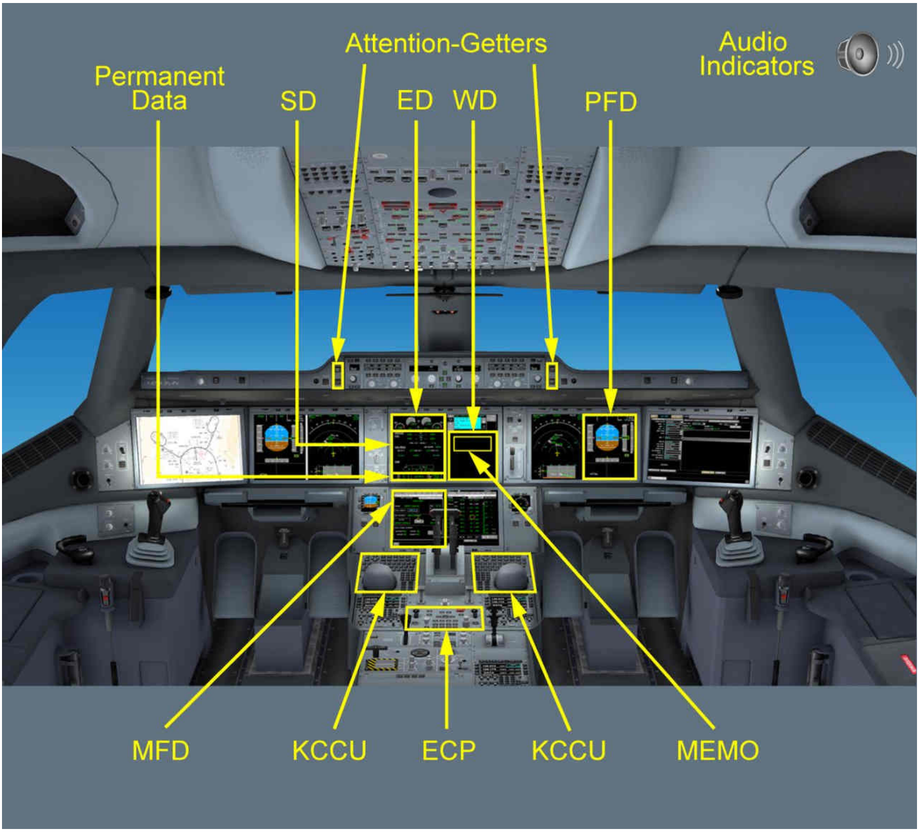
L2 The SD page grid is the only way to access to the C/B pages.

Intentionally left blank

COCKPIT VIEW

Ident.: DSC-31-CDS-60-20-00000047.0001001 / 24 APR 14
Applicable to: ALL

Cockpit View

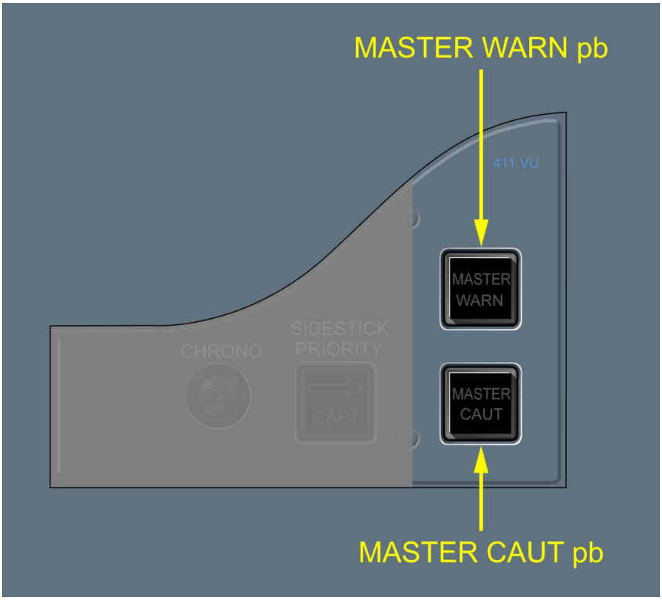

Permanent Data
SD
Attention-Getters
ED
WD
PFD
Audio Indicators
MFD
KCCU
ECP
KCCU
MEMO

ATTENTION-GETTERS

Applicable to: ALL

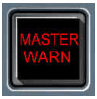
Ident.: DSC-31-CDS-60-20-30-00000105.0001001 / 24 APR 14

Attention-Getters


MASTER WARN pb
411 VU
MASTER WARN
CHRONO
SIDESTICK PRIORITY
CAPT
MASTER CAUT
MASTER CAUT pb

Ident.: DSC-31-CDS-60-20-30-00000065.0001001 / 24 APR 14

MASTER WARN pb


MASTER WARN

The ECAM triggers a warning: The MASTER WARN light flashes, and an audio indicator sounds.
The audio indicator associated with the MASTER WARN light is usually the continuous repetitive chime, but the audio indicator can also be a specific sound, a synthetic voice message, or a specific sound with a synthetic voice message.
When pressed, the light goes off, and the audio indicator associated with the warning stops.
However, for some specific warnings, the flight crew cannot turn off the light and stop the audio indicator by pressing the MASTER WARN pb (e.g overspeed).

L2

MASTER
WARN

or

MASTER
WARN

The ECAM triggers a warning, and one FWS is inoperative. As each FWS controls half of the MASTER WARN light, the remaining FWS turns on its assigned half of the MASTER WARN light.

Ident.: DSC-31-CDS-60-20-30-00000100.0001001 / 24 APR 14

MASTER CAUT pb

L13

MASTER
CAUT

The ECAM triggers a caution (level 2): The MASTER CAUT light comes on, and the single chime sounds.
The MASTER CAUT light remains steady.
When pressed, the light goes off, and the single chime associated with the caution stops.

L2

MASTER
CAUT

or

MASTER
CAUT

The ECAM triggers a caution, and one FWS is inoperative. As each FWS controls half of the MASTER CAUT light, the remaining FWS turns on its assigned half of the MASTER CAUT light.

AUDIO INDICATORS

Ident.: DSC-31-CDS-60-20-00000010.0001001 / 24 APR 14
Applicable to: ALL

Audio Indicator	Condition or Cause	Duration (1)
Continuous Repetitive Chime (Sound)	The ECAM triggers a new level 3 alert (Warning), and the Master warning comes on.	Sounds until the flight crew presses any MASTER WARN pb (except for some warnings that the flight crew cannot cancel via the MASTER WARN pb).
Single Chime (Sound)	The ECAM triggers a new level 2 alert (Caution), and the Master caution comes on.	Sounds one time.

(1) *All audio indicators are canceled if the flight crew presses the EMER CANC pb on the ECP.*

L2 For more information about the list of all audio indicators, *Refer to DSC-31-CDS-60-10-10 Audio Indicators*.

ECP

Applicable to: ALL

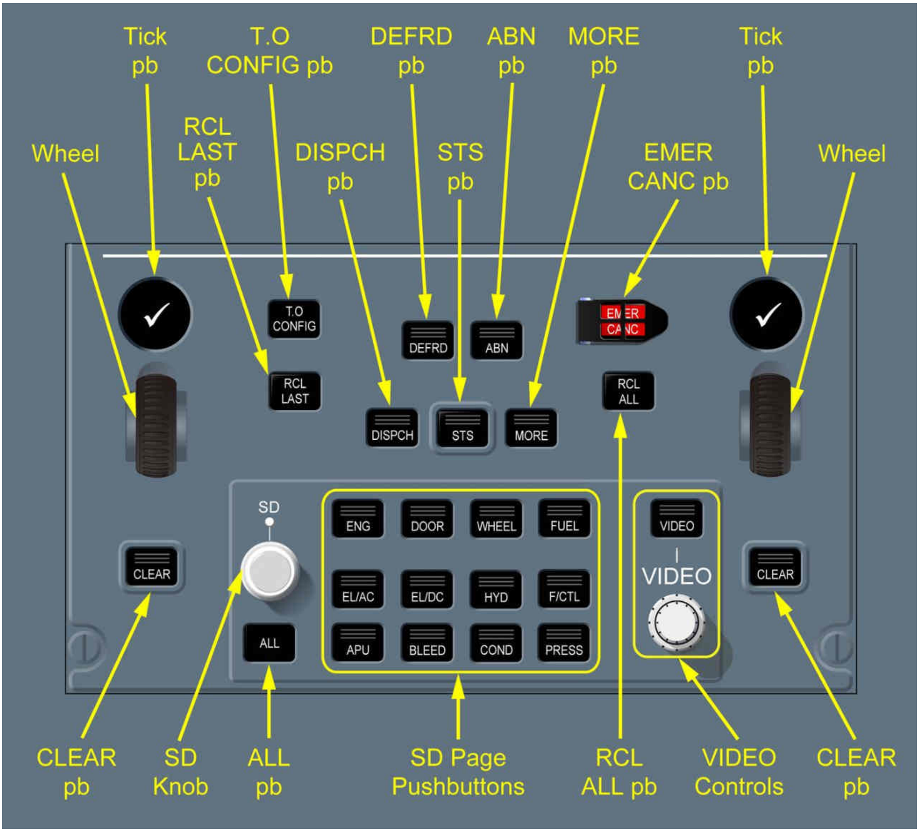
Ident.: DSC-31-CDS-60-20-10-00000048.0001001 / 24 APR 14

The flight crew uses the ECP to interface with the SD and the WD.

There is one ECP, and it is on the pedestal.

The flight crew uses the ECP to:
- Navigate in a menu or in a procedure
- Select an item in a menu
- Validate an item in a procedure
- Activate the takeoff configuration test
- Cancel alerts
- Clear alerts or abnormal procedures
- Access the SD pages (except the CRUISE page)
- Access the not-sensed abnormal and emergency procedures
- Access the deferred procedures
- Access the DISPATCH page
- Access the STATUS page and the STATUS MORE page
- Display videos of the aircraft cameras.

ECP


Tick pb
T.O CONFIG pb
DEFRD pb
ABN pb
MORE pb
Tick pb
Wheel
RCL LAST pb
DISPCH pb
STS pb
EMER CANC pb
Wheel
T.O CONFIG
DEFRD
ABN
EMER CANC
RCL LAST
DISPCH
STS
MORE
RCL ALL
SD
ENG
DOOR
WHEEL
FUEL
VIDEO
CLEAR
EL/AC
EL/DC
HYD
F/CTL
VIDEO
CLEAR
ALL
APU
BLEED
COND
PRESS
CLEAR pb
SD Knob
ALL pb
SD Page Pushbuttons
RCL ALL pb
VIDEO Controls
CLEAR pb

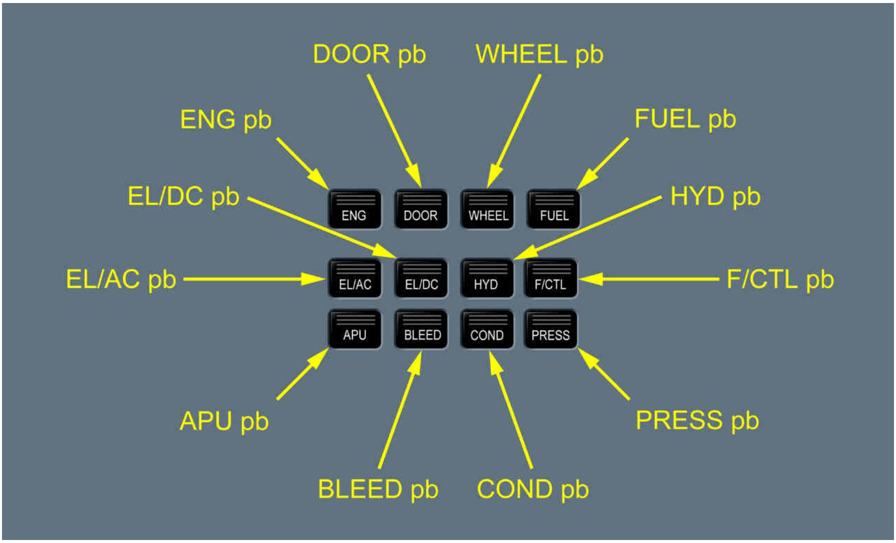
Ident.: DSC-31-CDS-60-20-10-00000049.0001001 / 04 MAY 18

SD PAGE PUSHBUTTONS

The flight crew can manually access each of the SD pages on the SD via the associated pushbutton on the ECP:

- When pressed a first time, the corresponding SD page appears on the SD, and the light of the pushbutton comes on.
- When pressed a second time, the corresponding SD page disappears from the SD, and the light of the pushbutton goes off.

Note: 1. *The light of the pushbutton does not come on, when the ECAM automatically displays the corresponding SD page.*
2. *The light of the pushbutton flashes in specific advisory conditions. For more information, Refer to DSC-31-CDS-60-10-10 Advisory.*


DOOR pb
WHEEL pb
ENG pb
FUEL pb
EL/DC pb
HYD pb
EL/AC pb
F/CTL pb
ENG
DOOR
WHEEL
FUEL
EL/AC
EL/DC
HYD
F/CTL
APU
BLEED
COND
PRESS
APU pb
PRESS pb
BLEED pb
COND pb

SD Page Pushbuttons

ENG pb

L12

The SD displays the ENG SD page.
For information about the ENG SD page, *Refer to DSC-70-20 ENG SD Page*.

DOOR pb

L12

The SD displays the DOOR/OXYGEN SD page.

For information about the DOOR/OXYGEN SD page:
- For cabin doors: *Refer to DSC-52-30-20 DOOR/OXYGEN SD page*.
- For cargo doors: *Refer to DSC-52-60-20 DOOR/OXYGEN SD page*.
- For avionics bay door: *Refer to DSC-52-20-20 DOOR/OXYGEN SD page*.
- For fixed oxygen for the cockpit: *Refer to DSC-35-20-20 DOOR/OXYGEN SD Page*.
- For rain repellent ⊲ fluid: *Refer to DSC-30-30-20 DOOR/OXYGEN SD page*.

WHEEL pb

L12

The SD displays the WHEEL SD page.
For information about the WHEEL SD page, *Refer to DSC-32-10-20 WHEEL SD Page*.

FUEL pb

L12

The SD displays the FUEL SD page.
For information about the FUEL SD page, *Refer to DSC-28-20 FUEL SD Page*.

EL/AC pb

L12

The SD displays the ELEC AC SD page.
For information about the ELEC AC SD page, *Refer to DSC-24-20 ELEC AC SD Page: In-Flight Configuration* .

EL/DC pb

L12

The SD displays the ELEC DC SD page.
For information about the ELEC DC SD page, *Refer to DSC-24-20 ELEC DC SD Page*.

HYD pb

L12

The SD displays the HYD SD page.
For information about the HYD SD page, *Refer to DSC-29-20 HYD SD Page*.

F/CTL pb

L12

The SD displays the F/CTL SD page.
For information about the F/CTL SD page, *Refer to DSC-27-10-20 F/CTL SD Page*.

APU pb

L12

The SD displays the APU SD page.
For information about the APU SD page, *Refer to DSC-49-20 APU SD Page*.

BLEED pb

L12

The SD displays the BLEED SD page.

For information about the BLEED SD page:
- For bleed air: *Refer to DSC-36-20 BLEED SD Page*.
- For air conditioning: *Refer to DSC-21-COND-20 BLEED SD Page*.

COND pb

L12

The SD displays the COND SD page.

For information about the COND SD page:
- For air conditioning: *Refer to DSC-21-COND-20 COND SD Page*.
- For ventilation: *Refer to DSC-21-VENT-20 COND SD Page*.

PRESS pb

L12

The SD displays the CAB PRESS SD page.

For information about the CAB PRESS SD page:
- For air conditioning: *Refer to DSC-21-COND-20 CAB PRESS SD Page*.
- For ventilation: *Refer to DSC-21-VENT-20 CAB PRESS SD Page*.
- For pressurization: *Refer to DSC-21-PRESS-20 CAB PRESS SD page*.

Ident.: DSC-31-CDS-60-20-10-00000050.0001001 / 24 APR 14

ALL pb

L13

When pressed and maintained, the SD displays the SD pages one after the other, and displays each SD page for 3 s.
In addition, the permanent data area displays the SD page grid.

The display cycle begins with:
- The currently-displayed SD page, or
- The ENG SD page, when the current SD display is not in the list of cycled displays.

The SD display appears in the sequence of the SD page grid.
The display cycle ends when the SD display revert to the first page of the cycle.
When released, the last-displayed SD page remains, until a new page is either requested by the flight crew, or displayed by the ECAM, and the SD page grid disappears from the permanent data area.
For more information about the SD page grid, *Refer to DSC-31-CDS-60-10-80 SD Page Grid*.

Ident.: DSC-31-CDS-60-20-10-00000051.0001001 / 24 APR 14

SD knob

The flight crew can select the SD display with the SD knob:
- When turned:
  - Displays the SD page grid on the permanent data area, if the permanent data area is not displayed.
  - Moves the selection box of the SD page grid in the direction of the knob rotation, when the SD page grid is already displayed on the permanent data area.
- When pressed, displays the SD page selected on the SD page grid, and removes the SD page grid.

L2 For more information about the SD page grid, *Refer to DSC-31-CDS-60-10-80 SD Page Grid*.

L1

The SD display is one of the following:
- The DISPATCH page
- The STATUS, or STATUS MORE page
- An automatic SD display, in accordance with the flight phase
- An SD display, in accordance with the active ECAM alert.

The SD display is:
- A flight crew selection, or
- An SD display due to an advisory.

Ident.: DSC-31-CDS-60-20-10-00000061.0001001 / 24 APR 14

Tick pb

When pressed:
- Validates or cancels the procedure item that is in the selection box on the WD
- Selects one item of a procedure menu, when the item is in the selection box on the WD.

Ident.: DSC-31-CDS-60-20-10-00000062.0001001 / 24 APR 14

WHEEL

Moves the selection box to scroll through a procedure or a procedure menu on the WD.

Ident.: DSC-31-CDS-60-20-10-00000052.0001001 / 24 APR 14

T.O CONFIG pb

When pressed, initiates a takeoff configuration test. This test simulates the application of takeoff power.
If all of the monitored systems are in the correct takeoff configuration, the WD displays the T.O CONFIG NORMAL line in the T.O memo section.
If the test is not successful, the applicable alerts are triggered.
For more information about the takeoff configuration test, *Refer to DSC-31-CDS-60-30 Takeoff Configuration Test*.

Ident.: DSC-31-CDS-60-20-10-00000053.0001001 / 24 APR 14

DEFRD pb

The WD does not display the DEFERRED PROCEDURES page.
When pressed, the DEFERRED PROCEDURES page appears on the WD.

The WD displays the DEFERRED PROCEDURES page.
When pressed, the DEFERRED PROCEDURES page disappears from the WD.

Ident.: DSC-31-CDS-60-20-10-00000054.0001001 / 24 APR 14

ABN pb

The WD does not display the ABNORMAL PROCEDURES menu.
When pressed, the ABNORMAL PROCEDURES menu appears on the WD.

The WD displays the ABNORMAL PROCEDURES menu.
When pressed, the ABNORMAL PROCEDURES menu disappears from the WD.

Ident.: DSC-31-CDS-60-20-10-00000055.0001001 / 06 MAR 15

EMER CANC pb

The EMER CANC pb is a guarded pushbutton.

L123

When pressed:

- Cancels the audio indicator and turns off the MASTER WARN light, associated with an ECAM warning. However, the associated procedure remains displayed on the WD.
  The audio indicator and the light on the attention-getter are not cancelled for the remainder of the flight. If the ECAM warning is triggered a second time, the audio indicator and the MASTER WARN light appear again.
- Cancels the single chime, the procedure on the WD, and turns off the MASTER CAUT light, that are associated with an ECAM caution
  The ECAM caution is cancelled for the remainder of the flight, even if the triggering conditions occur again.
  The title of the cancelled caution appears in the CANCELLED CAUTION section of the STATUS MORE page.
- Cancels all audio indicators and aural alerts
  If the triggering conditions occur again, the audio indicators and aural alerts sound again.
- Deactivates an activated not-sensed procedure.
  However, Airbus does not recommend to use the EMER CANC pb to deactivate a not-sensed procedure.

Note:
1. *Pressing the EMER CANC pb cancels only one alert at a time. Therefore, if the WD displays more than one alert, press the EMER CANC pb as many times as necessary to cancel each alert one at a time.*
2. *When alerts are cancelled with the EMER CANC pb but remain active, these alerts reappear on the WD after the flight crew presses the RCL ALL pb on the ECP for more than three seconds.*
3. *When pressed and if there is no alert, the WD displays the EMERGENCY CANCEL ON message.*

Ident.: DSC-31-CDS-60-20-10-00000056.0001001 / 03 JUL 20

1 RCL LAST pb

L12

When pressed, the WD displays the last alert that was previously cleared.
If the triggering conditions of the last cleared alert are no longer applicable, the recall has no effect.

Ident.: DSC-31-CDS-60-20-10-00000058.0001001 / 24 APR 14

DISPCH pb

The SD does not display the DISPATCH page.
When pressed, displays the DISPATCH page.

The SD displays the DISPATCH page.

When pressed:
- The DISPATCH page disappears, if there is no overflow.
- The next DISPATCH page appears, if there is an overflow.

Ident.: DSC-31-CDS-60-20-10-00000059.0001001 / 24 APR 14

STS pb

The SD does not display the STATUS page.
When pressed, the STATUS page appears on the SD.

The SD displays the STATUS page.
When pressed and if there is an overflow on the STATUS page, the next part of the STATUS page appears on the SD.
When pressed and if there is no overflow on the STATUS page, the STATUS page disappears from the SD.

Ident.: DSC-31-CDS-60-20-10-00000060.0001001 / 24 APR 14

MORE pb

The SD does not display the STATUS MORE page or a SD MORE page.

When pressed:
- If the SD displays the STATUS page, and the MORE reminder is at the bottom of page, the STATUS MORE page appears
- If the SD displays a system page with ...MORE indication below the title of the system page, the associated MORE page appears.

The SD displays the STATUS MORE page, or a SD MORE page.

When pressed:
- If the SD displays the STATUS MORE page, the STATUS MORE page disappears, and the SD reverts to the previous STATUS page.
- If the SD displays the MORE page of a system SD page, the MORE page disappears, and the SD reverts to the system SD page.

Ident.: DSC-31-CDS-60-20-10-00000057.0001001 / 06 MAR 15

RCL ALL pb

- When pressed, the WD displays all previously-cleared alerts that are still active.
- When pressed for more than three seconds, the WD displays all alerts that were previously:
  - Cancelled via the EMER CANC pb, or
  - Inhibited based on the current ECAM flight phase, or
  - Cleared.

Note: When pressed and if there is no alert to recall, the NORMAL message appears for 3 seconds on the WD.

Ident.: DSC-31-CDS-60-20-10-00000063.0001001 / 24 APR 14

CLEAR pb

When pressed, has no effect because there is no clear bar on the WD.

When pressed, clears the lines that are associated with the clear bar on the WD.

Note: The CLEAR pb does not cancel any audio indicator that is associated with a caution or warning, and does not deactivate a not-sensed procedure.

Ident.: DSC-31-CDS-60-20-10-00000064.0001001 / 24 APR 14

VIDEO CONTROLS

VIDEO
VIDEO

Enables the flight crew to display the selected video on the SD.
For more information, *Refer to DSC-31-CDS-110-20 ECP*.

ED

Ident.: DSC-31-CDS-60-20-00000316.0001001 / 24 APR 14
Applicable to: ALL

The ED displays engine parameters, *Refer to DSC-70-20 Engine Display*.

KCCU

Applicable to: ALL

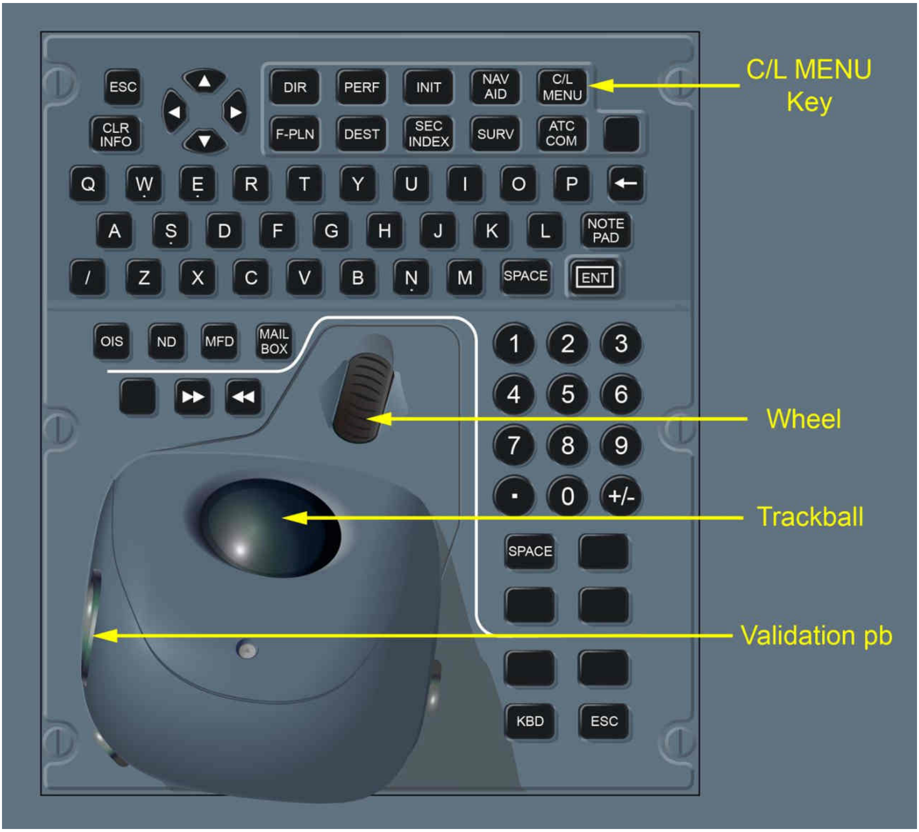
Ident.: DSC-31-CDS-60-20-20-00000084.0001001 / 24 APR 14

There are two KCCUs on the center pedestal. There is one for the Captain and one for the First Officer.

The KCCU enables the flight crew to manage the checklists that are displayed on the MFD.

L2 For information about all KCCU controls, *Refer to DSC-31-CDS-100-20 Overview*

KCCU


ESC
CLR INFO
DIR
PERF
INIT
NAV AID
C/L MENU
F-PLN
DEST
SEC INDEX
SURV
ATC COM
Q W E R T Y U I O P
A S D F G H J K L
NOTE PAD
/ Z X C V B N M
SPACE
ENT
OIS
ND
MFD
MAIL BOX
1 2 3 4 5 6 7 8 9 . 0 +/-
SPACE
KBD
ESC
C/L MENU Key
Wheel
Trackball
Validation pb

Ident.: DSC-31-CDS-60-20-20-00000309.0001001 / 24 APR 14

C/L MENU KEY

When pressed:
- Displays the CHECKLISTS page on the MFD (*Refer to DSC-31-CDS-60-10-30 CHECKLIST MENU Page*)
- Moves the cursor back to the MFD, if the cursor was previously on another display.

Ident.: DSC-31-CDS-60-20-20-00014694.0001001 / 24 APR 14

TRACKBALL

Enables the flight crew to move the cursor on any item of the checklist menu page, or the checklist page.

Ident.: DSC-31-CDS-60-20-20-00014695.0001001 / 24 APR 14

WHEEL

Enables the flight crew to:
- Move the cursor on the checklist menu page, or the checklist page
- Scroll the checklist lines, if the checklist has more than a single page.

Ident.: DSC-31-CDS-60-20-20-00014696.0001001 / 24 APR 14

VALIDATION PB

Enables the flight crew to validate a not-sensed action of the checklist.

MEMO

Applicable to: ALL

Ident.: DSC-31-CDS-60-20-40-00018786.0001001 / 24 APR 14

The FWS displays:

- Two memos on the right part of the memo area of the WD page:
  - The T.O INHIBIT memo
  - The LDG INHIBIT memo.
- Two memos on the left part of the memo area of the WD page:
  - The T.O memo
  - The LDG memo.

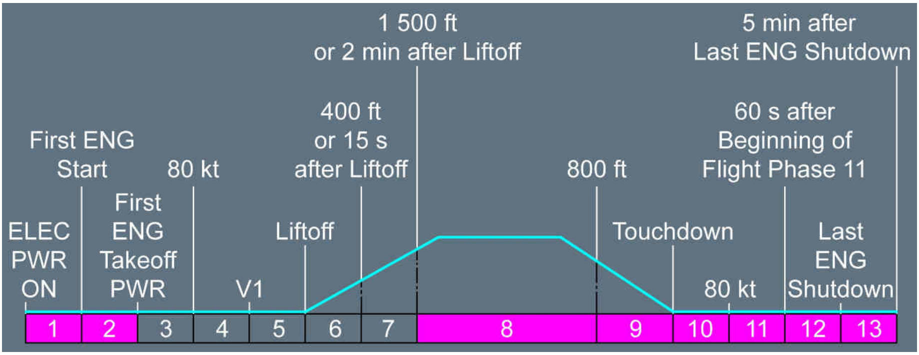
L2 For more information about the T.O memo, the LDG memo, and the memo display function, *Refer to DSC-31-CDS-60-10-40 Memos*.

Ident.: DSC-31-CDS-60-20-40-00000067.0001001 / 24 APR 14

T.O INHIBIT	The ECAM inhibits the alerts that are not necessary, in order to enable the flight crew to focus on and perform their takeoff tasks. Note: *The WD displays the T.O INHIBIT memo, even if no alerts are active.*

L2 Flight Phase Inhibition:

Flight Phase Inhibition

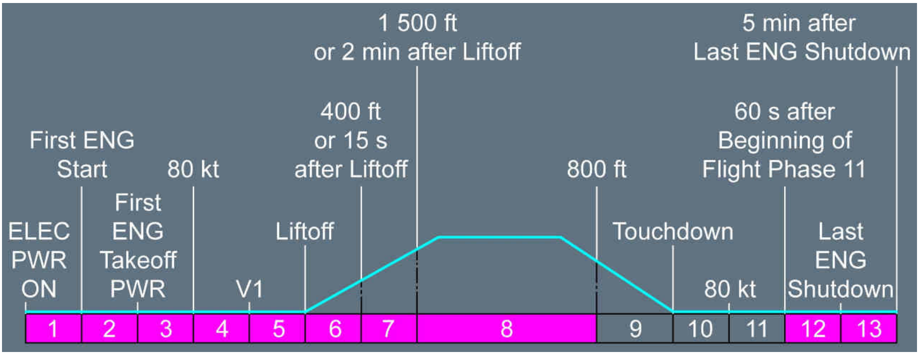

1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

Ident.: DSC-31-CDS-60-20-40-00000068.0002001 / 03 JAN 19

LDG INHIBIT	The ECAM inhibits the alerts that are not necessary, in order to enable the flight crew to focus on and perform their landing tasks. *Note:* *The WD displays the LDG INHIBIT memo, even if no alerts are active.*

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

MFD

Ident.: DSC-31-CDS-60-20-00000323.0001001 / 24 APR 14
Applicable to: ALL

The MFD displays checklists: *Refer to DSC-31-CDS-60-10-30 General*.

PERMANENT DATA

Ident.: DSC-31-CDS-60-20-00000317.0001001 / 24 APR 14
Applicable to: ALL

The permanent data display temperature data, time data, G load data, aircraft weight data, and fuel data: *Refer to DSC-31-CDS-60-10-80 Permanent Data*.

PFD

Ident.: DSC-31-CDS-60-20-00000311.0001001 / 24 APR 14
Applicable to: ALL

The ECAM information appears on the PFD for:
- Limitations: *Refer to DSC-31-CDS-40-30 Limitations*
- Memos: *Refer to DSC-31-CDS-40-30 MEMOs*.

SD

Ident.: DSC-31-CDS-60-20-00000318.0001001 / 24 APR 14
Applicable to: ALL

The SD displays system displays, aircraft status, dispatch messages and video: *Refer to DSC-31-CDS-60-10-50 Overview*.

WD

Ident.: DSC-31-CDS-60-20-00000322.0001001 / 24 APR 14
Applicable to: ALL

The WD displays abnormal and emergency procedures, deferred procedures, limitations, and memos: *Refer to DSC-31-CDS-60-10-40 Overview*.

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CHECKLIST AUTOMATIC RESET

Ident.: DSC-31-CDS-60-30-00000310.0001001 / 24 APR 14
Applicable to: ALL

The ECAM automatically resets all of the checklists:
- At aircraft power-up, or
- At the end of the flight, if the aircraft remains powered.

L2 The ECAM automatically resets the checklists 30 min after the last engine shutdown.

L1 In addition, an automatic reset of the checklists occurs, in the following cases:
- If the flight crew manually resets a checklist, the ECAM resets all subsequent checklists
- In the case of a go-around, the ECAM resets the AFTER TAKEOFF checklist and subsequent checklists
- After a system failure that affects a checklist, the ECAM resets the applicable checklist.

AUTOMATIC DEACTIVATION OF ABNORMAL NOT-SENSED PROCEDURES

Ident.: DSC-31-CDS-60-30-00009709.0001001 / 24 APR 14
Applicable to: ALL

The ECAM automatically deactivates all the abnormal not-sensed procedures that are active:
- At aircraft power-up, or
- At the end of the flight, if the aircraft remains powered.

L2 The ECAM automatically deactivates the abnormal not-sensed procedures that are active 30 min after the last engine shutdown.

AUTOMATIC SD PAGE DISPLAY

Ident.: DSC-31-CDS-60-30-00000070.0001001 / 06 MAR 15
Applicable to: ALL

IN NORMAL AIRCRAFT OPERATION

In normal aircraft operation, the SD automatically displays some of the SD pages that are relevant for the flight crew, depending on the flight phase.

L2

SD Page	Automatic Display Conditions
DOOR	On ground: - Before engine start, or - After last engine shutdown.
APU	When the APU MASTER SW pb-sw is set to ON, until the end of the APU start sequence.

Continued on the following page

Continued from the previous page

SD Page	Automatic Display Conditions
ENG	- When the ENG START selector is set to IGN START, until the end of the engine start sequence, or - When the ENG START selector is set to CRANK, until the end of the engine crank sequence, or - When takeoff thrust is set, until 1 500 ft AGL or thrust reduction (depending on which one occurs first).
WHEEL	- After engine start, until takeoff thrust is set, or - After landing gear extension, until last engine shutdown.
F/CTL	After engine start, during flight control checks.
CRUISE	At 1 500 ft AGL or at thrust reduction (depending on which one occurs first), until landing gear extension in approach.
VIDEO	Above 1 500 ft AGL and until 800 ft, if video is required (e.g. cockpit door access request)

L1 The SD can also automatically display a system page in the case of a system advisory, when a parameter starts to deviate.

L2 For more information about advisory, *Refer to DSC-31-CDS-60-10-10 Advisory*.

L1 IN ABNORMAL AIRCRAFT OPERATION

When the ECAM triggers an alert, the SD displays the associated system display to identify the consequences of the alert.
Depending on the alert, one, none or several SD pages can be displayed.
When the flight crew clears the current active alert, the SD removes the associated SD page and displays the SD page that is associated with the next alert, if any.

L2 If several alerts are triggered at the same time, the flight crew can scroll the selection box of the WD on an alert that is displayed below the current active alert. The SD always displays the SD page that is associated with the alert where the WD selection box is.

L1 PRIORITY OF DISPLAY

In the case of simultaneous automatic requests for the display of SD pages, the following priority applies to change the current SD page display (from the highest priority to the lowest priority):

- SD page that automatically appears, when an alert is triggered
- SD page that automatically appears, in the case of an advisory
- SD page that automatically appears, depending on the flight phase.

L3 In accordance with above rules, when several SD pages can be automatically displayed at the same time by the same automatic trigger, the SD pages appear with the following priority.

Priority	SD Page
1	ENG SD page
2	APU SD page
3	F/CTL SD page
4	DOOR SD page
5	WHEEL SD page
6	VIDEO page
7	CRUISE page

L1 *Note:*
- *At any time the flight crew can manually display an SD page via the ECP. In this case the manual display has always priority over the automatic display.*
- *If the current SD page displayed is a manual display, then only an alert can change the current display.*

AUTOMATIC STATUS PAGE DISPLAY

Ident.: DSC-31-CDS-60-30-00019753.0001001 / 24 APR 14
Applicable to: ALL

L2 The STATUS page automatically appears, if all the following conditions are applicable:
- The STATUS page is not empty
- The aircraft is below 20 000 ft
- The aircraft is in cruise or descent
- The flight crew performs one of the following action:
  - Slat or flap extension
  - Barometric reference change from STD to barometric on the EFIS CP

TAKEOFF CONFIGURATION TEST

Ident.: DSC-31-CDS-60-30-00000071.0003001 / 03 JAN 19
Applicable to: ALL

At any time between engine start and takeoff, when the aircraft is ready for takeoff, the flight crew can request a takeoff configuration test.
In accordance with the SOPs, the flight crew performs this test before takeoff. For more information, *Refer to PRO-NOR-SOP-100 Taxi - Final Check*.
The T.O CONFIG ...TEST line of the T.O memo is a reminder that the flight crew must perform this test.
The flight crew presses the T.O CONFIG pb on the ECP to initiate the takeoff configuration test. This test simulates the application of takeoff power.
The test is successful, if all of the monitored systems are in the takeoff configuration.
When the takeoff configuration test is completed and successful, the T.O CONFIG NORMAL line appears in the T.O memo, instead of the T.O CONFIG ...TEST line.
If the test is not successful one or more alerts appears.

L2 Depending on the affected systems one or more of the following alerts appears:

- CONFIG PITCH TRIM NOT IN T.O RANGE, *Refer to (procedure)*.
- CONFIG RUDDER TRIM NOT IN T.O RANGE, *Refer to (procedure)*.
- CONFIG SLATS(FLAPS) NOT IN T.O CONFIG, *Refer to (procedure)*.
- CONFIG SPEED BRAKES NOT RETRACTED, *Refer to (procedure)*.
- CONFIG L(R) SIDESTICK FAULT (BY TAKEOVER), *Refer to (procedure)*.
- CONFIG AFT(FWD) CARGO DOOR NOT CLOSED, *Refer to (procedure)*.
- HYD G+Y SYS PRESS LO, *Refer to (procedure)*.
- BRAKES HOT, *Refer to (procedure)*.
- CAB PRESS MAN CTL FAULT, *Refer to (procedure)*.
- DOOR AFT(BULK)(FWD) CARGO POS DET FAULT, *Refer to (procedure)*.
- DOOR ALL POS DET FAULT, *Refer to (procedure)*.
- DOOR AVNCS NOT CLOSED, *Refer to (procedure)*.
- DOOR AVNCS POS DET FAULT, *Refer to (procedure)*.
- DOOR BULK CARGO NOT CLOSED, *Refer to (procedure)*.
- DOOR ESCAPE HATCH NOT CLOSED, *Refer to (procedure)*.
- DOOR ESCAPE HATCH POS DET FAULT, *Refer to (procedure)*.
- DOOR 1(2)(3)(4) L(R) NOT CLOSED, *Refer to (procedure)*.
- DOOR 1(2)(3)(4) L(R) POS DET FAULT, *Refer to (procedure)*.
- DOOR 1(2)(3)(4) L(R) SLIDE FAULT, *Refer to (procedure)*.
- DOOR MULTIPLE POS DET FAULT, *Refer to (procedure)*.
- ELEC DRIVE 1A(1B)(2B)(2A) DISCONNECTED, *Refer to (procedure)*.
- ELEC GEN 1A(1B)(2B)(2A) FAULT, *Refer to (procedure)*.
- ELEC GEN 1A(1B)(2B)(2A) OFF, *Refer to (procedure)*.
- ENG 1(2) OIL TEMP LO, *Refer to (procedure)*.
- F/CTL PITCH TRIM/FMS/CG DISAGREE, *Refer to (procedure)*.
- F/CTL T.O FLAPS/FMS DISAGREE, *Refer to (procedure)*.
- FUEL CTR TK L+R PMPS FAULT, *Refer to (procedure)*.
- FUEL L(R) TK MAIN+STBY PMPS FAULT, *Refer to (procedure)*.
- HYD G(Y) SYS PRESS LO, *Refer to (procedure)*.
- T.O RWY TOO SHORT, *Refer to (procedure)*.
- T.O SPEEDS NOT INSERTED, *Refer to (procedure)*.
- T.O SPEEDS TOO LOW, *Refer to (procedure)*.
- T.O V1/VR/V2 DISAGREE, *Refer to (procedure)*.

When corrective actions are completed, the flight crew must press the T.O CONFIG pb again to verify the takeoff configuration is correct.

L1 When the flight crew sets the takeoff power, the test automatically occurs again.

FWS REDUNDANCY

Ident.: DSC-31-CDS-60-40-00015029.0001001 / 24 APR 14
Applicable to: ALL

The two FWS operate independently and in parallel. Therefore, if one FWS fails, the remaining FWS is sufficient to perform all ECAM functions.

L2 The failure of one FWS is associated with the FWS FWS 1(2) FAULT (*Refer to procedure*) ECAM alert.

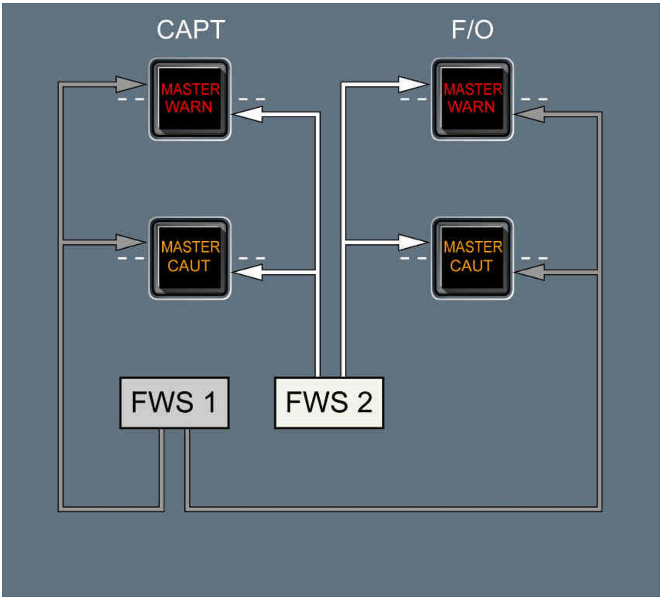
L1 However, the FWS controls some indicators that are divided in two parts, with each part associated with a FWS.

Therefore, in the case of a FWS failure, only half of the following indicators are available:
- The Master Caution indicator
- The Master Warning indicator
- The AUTOLAND indicator
- The ATC MSG indicator.

MASTER WARN AND MASTER CAUT INDICATORS

When a FWS fails the MASTER WARN and the MASTER CAUT indicators remain available, on both sides. Nevertheless, only the half part of each indicator remains available, depending on the FWS 1(2) failure.

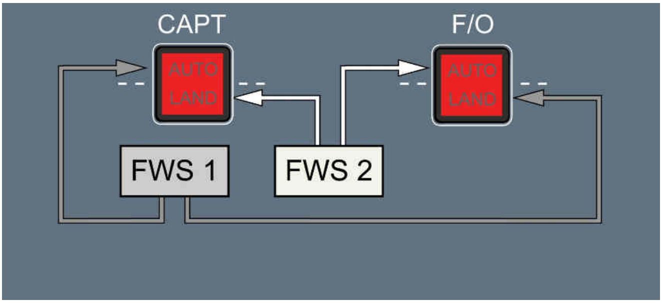
MASTER WARN and MASTER CAUT Redundancy


CAPT
F/O
MASTER WARN
MASTER WARN
MASTER CAUT
MASTER CAUT
FWS 1
FWS 2

AUTOLAND INDICATORS

When a FWS fails the AUTOLAND indicators remain available, on both sides. Nevertheless, only the half part of each indicator remains available, depending on the FWS 1(2) failure.

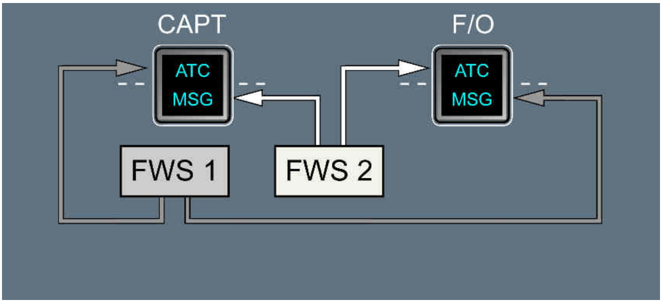
AUTOLAND Redundancy


CAPT
F/O
AUTO LAND
AUTO LAND
FWS 1
FWS 2

ATC MSG INDICATORS

When a FWS fails the ATC MSG indicators remain available, on both sides. Nevertheless, only the half part of each indicator remains available, depending on the FWS 1(2) failure.

ATC MSG Redundancy



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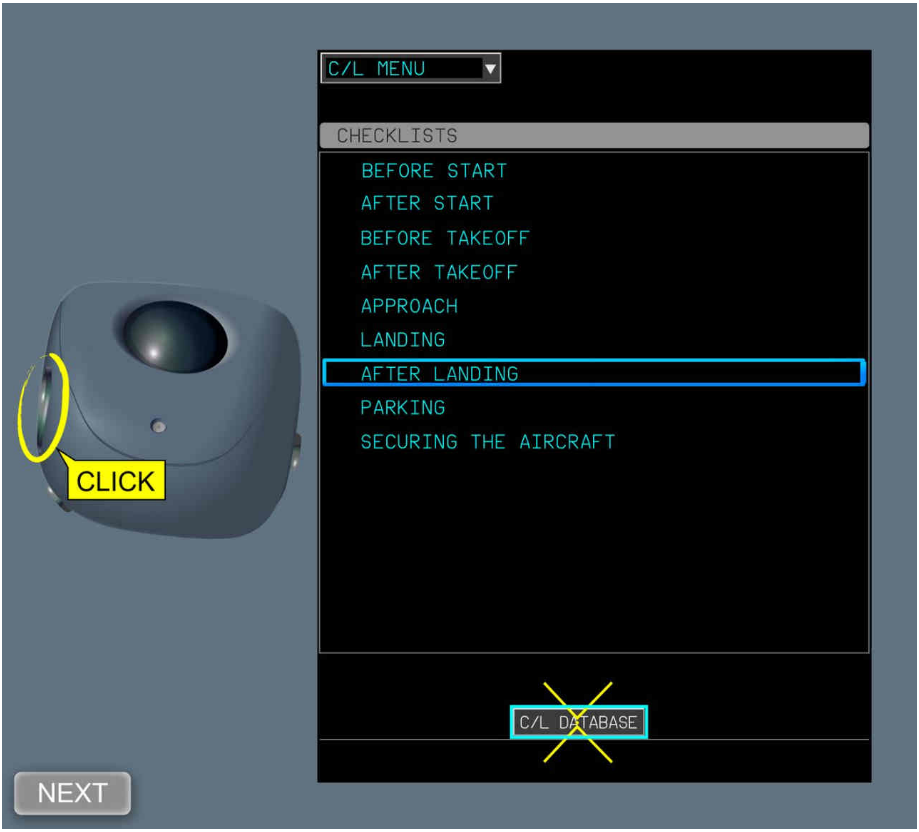
HOW TO CHANGE COMPANY ECAM DATABASE

Ident.: DSC-31-CDS-60-50-00018783.0001001 / 02 OCT 14
Applicable to: ALL

The flight crew can change the ECAM database of the FWS via the COMPANY ECAM DATABASE MANAGEMENT page, when the aircraft is on ground.

L2 The COMPANY ECAM DATABASE is also referred to as Operator-Customized ECAM DATABASE (OCED). For more information about OCED, *Refer to DSC-31-CDS-60-10-20 FWS*.

Overview


C/L MENU
CHECKLISTS
BEFORE START
AFTER START
BEFORE TAKEOFF
AFTER TAKEOFF
APPROACH
LANDING
AFTER LANDING
PARKING
SECURING THE AIRCRAFT
C/L DATABASE
CLICK
NEXT

For more information about failures during the change process *Refer to DSC-31-CDS-60-10-30 COMPANY ECAM DATABASE MANAGEMENT Page*.

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MFD

Applicable to: ALL

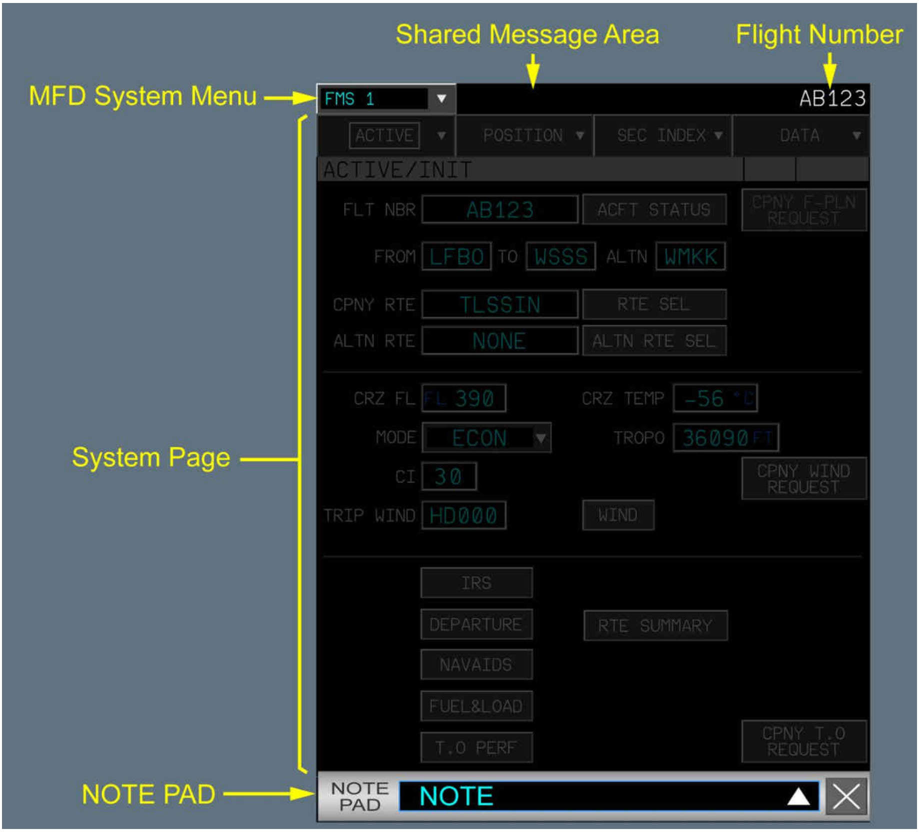
Ident.: DSC-31-CDS-70-10-10-00001325.0001001 / 17 APR 14

There are two Multifunction Displays (MFDs), one for the Captain and one for the First Officer.

The MFD displays:
- The FMS pages (FMS)
- The ATC communication pages (ATC COM)
- The surveillance pages (SURV)
- The checklists page (C/L MENU)
- The FCU backup pages (FCU BKUP).

The MFD is interactive. Therefore, the flight crew can navigate through the pages and display, enter, or modify data via the KCCUs.

Multifunction Display (MFD)


FMS 1
AB123
ACTIVE/INIT
FLT NBR AB123
FROM LFBO TO WSSS ALTN WMKK
CPNY RTE TLSSIN
ALTN RTE NONE
CRZ FL FL 390
CRZ TEMP -56 °C
MODE ECON
TROPO 36090 FT
CI 30
TRIP WIND HD000
NOTE PAD NOTE

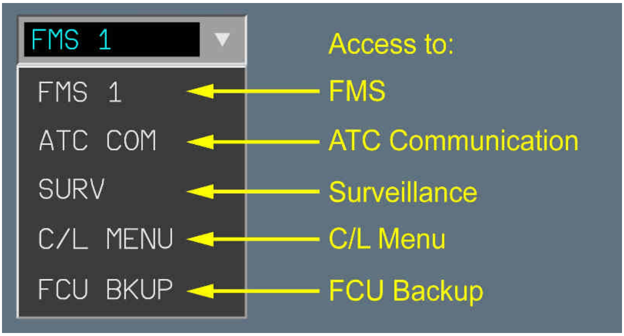
Shared Message Area
Flight Number
MFD System Menu
System Page
NOTE PAD
ACTIVE
POSITION
SEC INDEX
DATA
ACFT STATUS
CPNY F-PLN REQUEST
RTE SEL
ALTN RTE SEL
CPNY WIND REQUEST
WIND
IRS
DEPARTURE
RTE SUMMARY
NAVAIDS
FUEL&LOAD
T.O PERF
CPNY T.O REQUEST

Ident.: DSC-31-CDS-70-10-10-00001329.0001001 / 17 APR 14

MFD SYSTEM MENU

Indicates the system identifier that displays data on the MFD.
The menu list displays all systems that can display data on the MFD.
When the flight crew clicks on an option of the menu, the associated page appears in the system page area.

MFD System Menu



L2 *Note:* *The identifier that enables to access the FMS page is different on the Captain's side and First Officer's side, and depends on which FMC provides data for display on the MFD.*

Ident.: DSC-31-CDS-70-10-10-00001331.0001001 / 15 APR 14

SHARED MESSAGE AREA

The shared message area displays messages in order to inform the flight crew about an event that is related to the FMS or ATC communication.
The shared message area displays the following messages:

D-ATIS RECEIVED	Indicates that a new ATIS report is received. Only appears if the MFD displays a page that is not an ATC COM page. Disappears when the flight crew accesses an ATC COM page.
D-ATIS GROUND MSG	Indicates that an ATIS FSM message is received. Only appears if the MFD displays a page that is not an ATC COM page. Disappears when the flight crew accesses an ATC COM page.
D-ATIS NO REPLY	Appears when the time-out (7.5 min) is reached and that no ATIS was received. Only appears if the MFD displays a page that is not an ATC COM page. Disappears when the flight crew accesses an ATC COM page.

D-ATIS SEND FAIL	Appears when an ATIS request failed for one of the following reasons: - The sending of the ATIS request failed, or - The time-out (6 min) for acknowledgement is reached, or - A negative answer for the ATIS request is received. Only appears if the MFD displays a page that is not an ATC COM page. Disappears when the flight crew accesses an ATC COM page.
CHECK FMS MESSAGE	Indicates that the FMS triggered an amber FMS message. Only appears if the MFD displays a page that is not an FMS page. Disappears when the flight crew accesses an FMS page.

L12

IND	Indicates that both FMS operate in INDEPENDENT mode. For information about the INDEPENDENT mode, *Refer to DSC-22-FMS-40 INDEPENDENT Mode*.

L2 *Note: The shared message area displays only one message at a time. However, the IND message can appear in addition to another message.*

Ident.: DSC-31-CDS-70-10-10-00001333.0001001 / 15 APR 14

FLIGHT NUMBER

Indicates the flight number that the flight crew entered on the FMS ACTIVE/INIT page (*Refer to DSC-22-FMS-20-20-20 INIT Page*).

Ident.: DSC-31-CDS-70-10-10-00001334.0001001 / 17 APR 14

SYSTEM PAGE

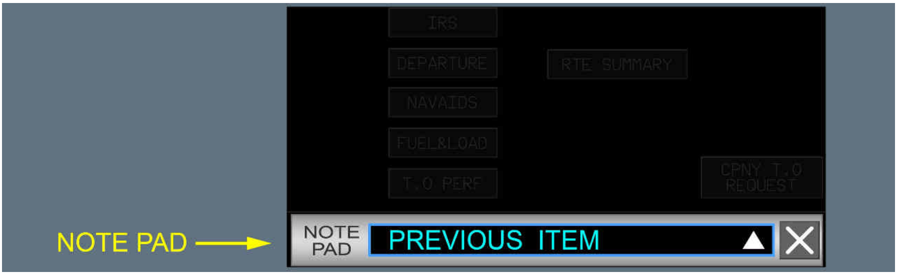
In this area, the MFD displays:

- The FMS pages
  L2 For more information about the FMS pages, *Refer to DSC-22-FMS-20-20-20 FMS Pages Index*.
- L1 The ATC COM pages
  L2 For more information about the ATC COM pages, *Refer to DSC-46-ATC-20-20 MFD Overview*.
- L1 The SURV pages
  L2 For more information about the SURV pages, *Refer to DSC-34-SURV-70-50 SURV Pages*.
- L1 The FCU BKUP pages
  L2 For more information about the FCU BKUP pages, *Refer to DSC-31-CDS-40-60 MFD - FCU BKUP Pages*.
- L1 The C/L MENU page.
  L2 For more information about the C/L MENU page, *Refer to DSC-31-CDS-60-10-30 MFD Overview*.

Ident.: DSC-31-CDS-70-10-10-00011277.0001001 / 17 APR 14

NOTE PAD

NOTE PAD Overview


IRS
DEPARTURE
RTE SUMMARY
NAVAIDS
FUEL&LOAD
T.O PERF
CPNY T.O REQUEST
NOTE PAD
NOTE PAD
PREVIOUS ITEM

The NOTE PAD enables the flight crew to write and store notes during the flight.
One independent NOTE PAD is available on each side of the cockpit.
The NOTE PAD appears on the lower part of the MFD.

L2 When the OIS is displayed on the center lower DU, and two MFDs are displayed on the CAPT(F/O) outer DU, the NOTE PAD is displayed on the inner MFD.

L3 When the NOTE PAD is full, the last entry removes the oldest entry.

L2 If the flight crew does not use the NOTE PAD, the NOTE PAD automatically closes after:
- 10 min on ground
- 1 min in flight.

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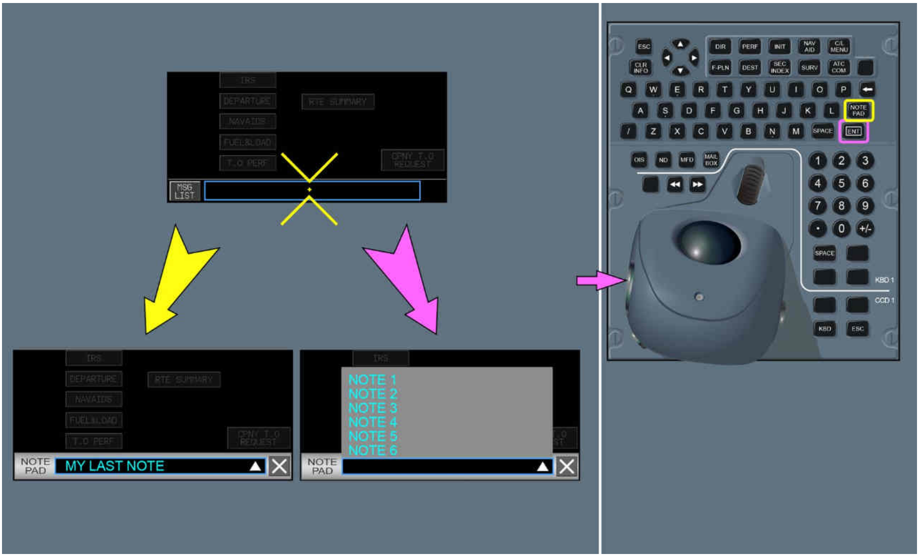
HOW TO OPEN THE NOTE PAD

Ident.: DSC-31-CDS-70-20-00011306.0001001 / 15 APR 14
Applicable to: ALL

To open the NOTE PAD, the flight crew has to:

- Press the NOTE PAD key on the KCCU, or
  In this case the last note is displayed on the NOTE PAD.
- Click on the NOTE PAD area, or
  In this case a pop-up list of notes appears.
- Press the ENT key when the cursor is over the NOTE PAD area.
  In this case the pop-up list of notes appears.

NOTE PAD Display


IRS
DEPARTURE
RTE SUMMARY
NAVAIDS
FUEL&LOAD
T.O PERF
CPNY T.O REQUEST
MSG LIST
NOTE PAD
MY LAST NOTE
NOTE 1
NOTE 2
NOTE 3
NOTE 4
NOTE 5
NOTE 6
ESC
DIR
PERF
INIT
NAV AID
C/L MENU
CLR INFO
F-PLN
DEST
SEC INDEX
SURV
ATC COM
SPACE
ENT
OIS
ND
MFD
MAIL BOX
KBD 1
CCD 1
KBD

When the NOTE PAD opens with the pop-up list, the pointer is always on the last note of the list.

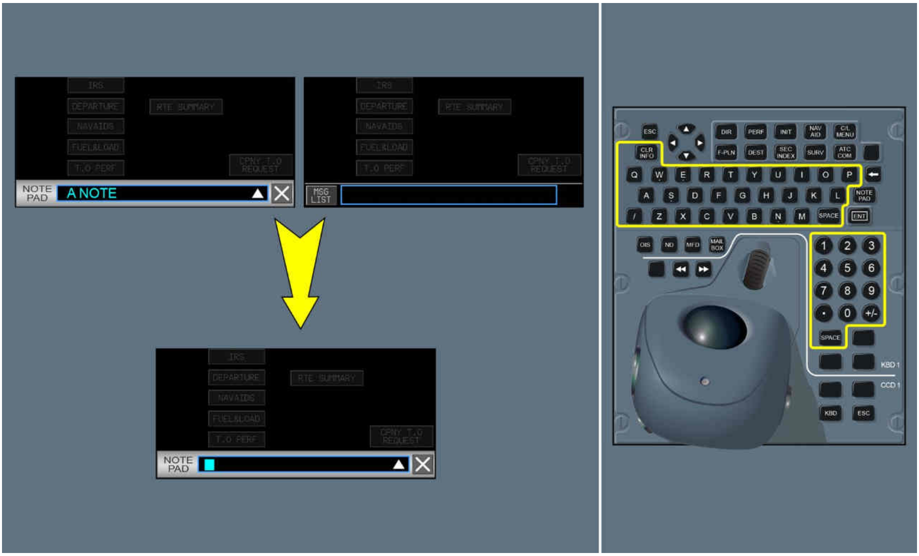
HOW TO CREATE A NOTE

Ident.: DSC-31-CDS-70-20-00011307.0001001 / 15 APR 14
Applicable to: ALL

The flight crew can create a note when:

- The NOTE PAD is closed and the cursor is on the NOTE PAD area, or
- The NOTE PAD is open.

NOTE PAD Creation


IRS
DEPARTURE
RTE SUMMARY
NAVAIDS
FUEL&LOAD
T.O PERF
CPNY T.O REQUEST
NOTE PAD
A NOTE
MSG LIST
ESC
DIR
PERF
INIT
NAV AID
C/L MENU
CLR INFO
F-PLN
DEST
SEC INDEX
SURV
ATC COM
Q W E R T Y U I O P
A S D F G H J K L
NOTE PAD
/ Z X C V B N M
SPACE
ENT
OIS
ND
MFD
MAIL BOX
1 2 3
4 5 6
7 8 9
. 0 +/-
SPACE
KBD 1
CCD 1
KBD
ESC

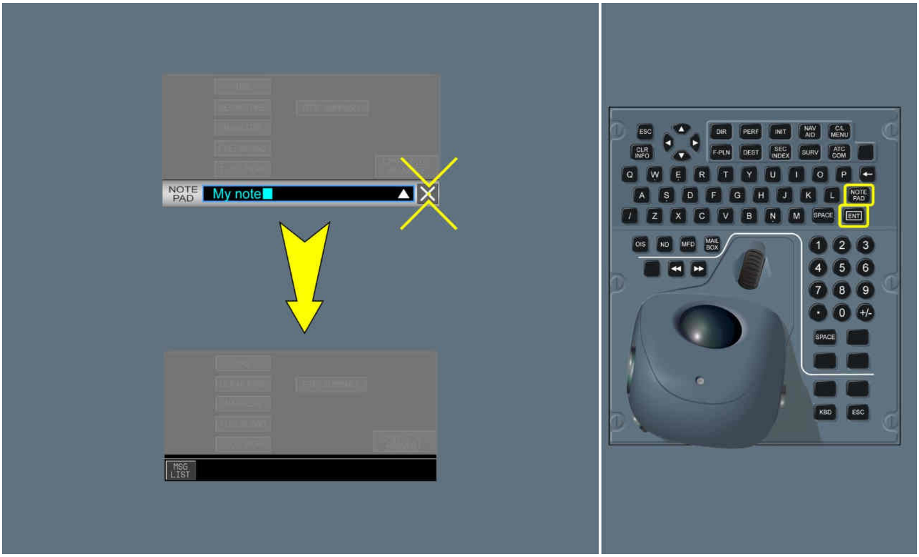
HOW TO CLOSE THE NOTE PAD

Ident.: DSC-31-CDS-70-20-00011308.0001001 / 15 APR 14
Applicable to: ALL

To close the NOTE PAD, the flight crew has to:

- Press the NOTE PAD key on the KCCU for more than 2 s, or
- Click on the ✕ button on the NOTE PAD area.

NOTE PAD Closure


NOTE PAD
My note
MSG LIST
ESC
DIR
PERF
INIT
NAV AID
C/L MENU
CLR INFO
F-PLN
DEST
SEC INDEX
SURV
ATC COM
NOTE PAD
SPACE
ENT
OIS
ND
MFD
MAIL BOX
KBD
ESC

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OIS

Ident.: DSC-31-CDS-80-00000081.0001001 / 18 APR 14
Applicable to: ALL

The Onboard Information System (OIS) provides software applications to the flight crew, the cabin crew, and the maintenance personnel.

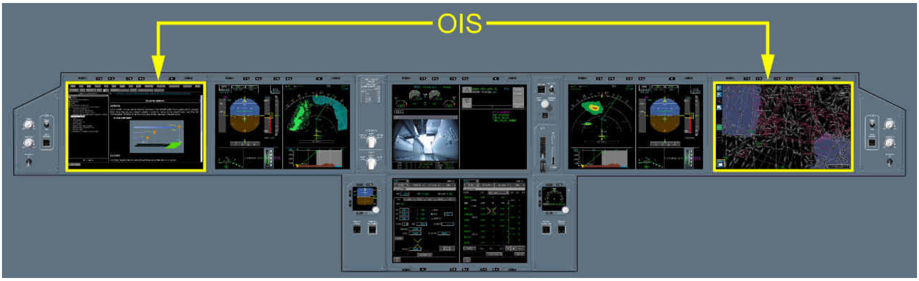
The flight crew uses the OIS applications to access the following tools and information:
- The aircraft operating manuals (OPS LIBRARY)
- The aircraft performance applications (T.O PERF, LDG PERF, IN-FLT PERF, LOADSHEET)
- The navigation charts (CHARTS)
- The mission management information (FLT FOLDER)
- The company communication application (COMPANY COM).

Note: Operators can install other applications.

L2 For more information, *Refer to DSC-46-OIS-10-10 Overview*.

L1 The CDS displays the OIS information. In the standard display configuration, the OIS dedicated screens are the CAPT and the F/O outer DUs.

OIS Overview



If necessary, the flight crew can display either the CAPT or F/O OIS on the center lower DU via the CAPT(F/O) OIS ON CENTER pb.

L2 For more information, *Refer to DSC-31-CDS-30-30 Normal Operations*.

Intentionally left blank

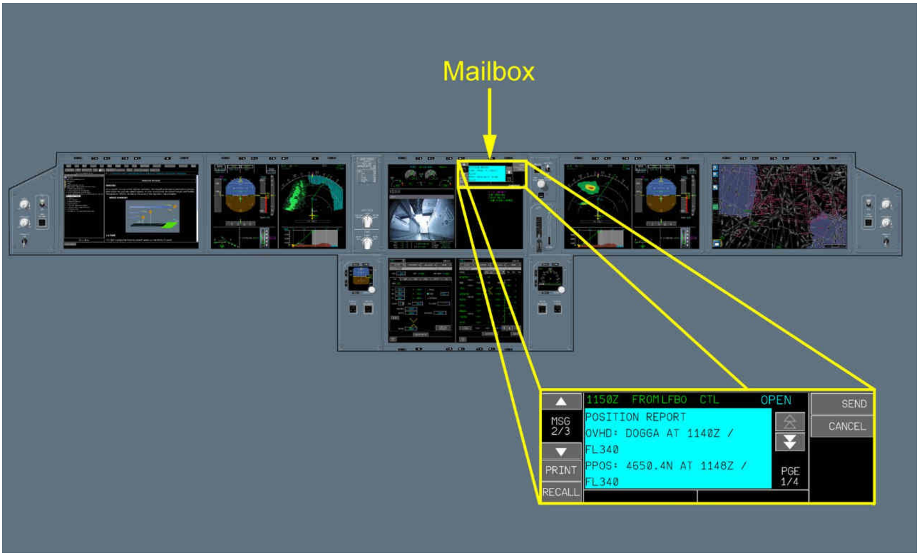
MAILBOX

Ident.: DSC-31-CDS-90-10-00000188.0001001 / 18 APR 14
Applicable to: ALL

The ATC mailbox is the dialog interface between the aircraft and the ATC center. Uplink and downlink messages are received or sent via the mailbox.

L2 For more information, *Refer to DSC-46-ATC-10-70 General*.

Mailbox Overview



1150Z FROM LFBO CTL OPEN
POSITION REPORT
OVHD: DOGGA AT 1140Z /
FL340
PPOS: 4650.4N AT 1148Z /
FL340

Intentionally left blank

GENERAL

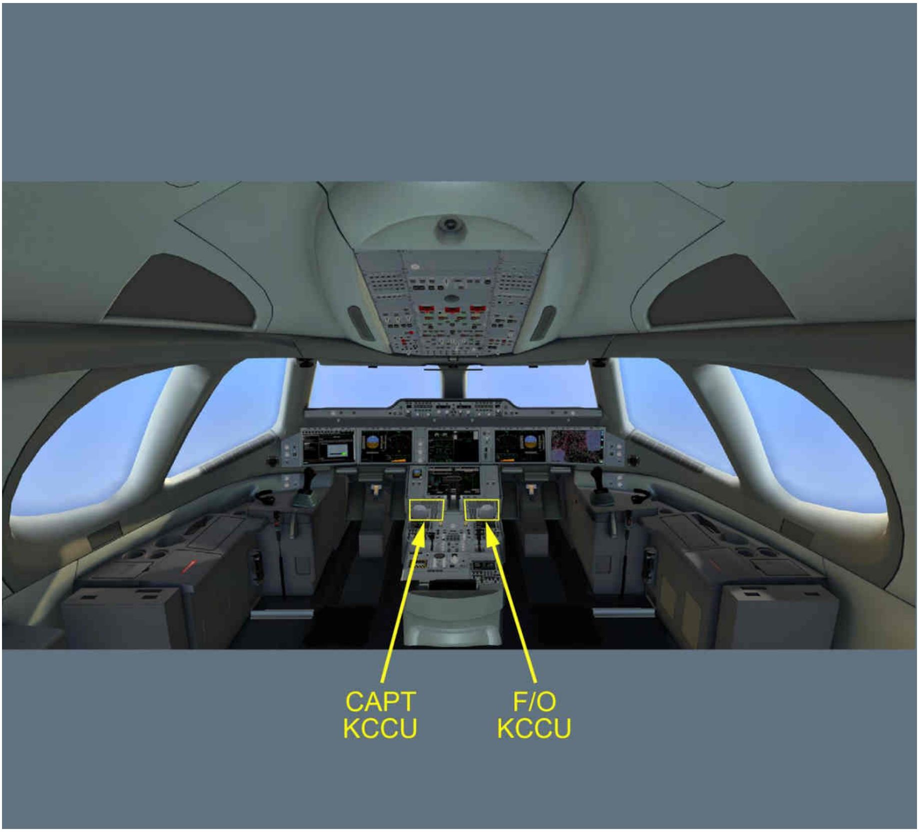
Ident.: DSC-31-CDS-100-10-00001083.0001001 / 24 APR 14
Applicable to: ALL

There are two Keyboard and Cursor Control Units (KCCUs) on the center pedestal. There is one for the Captain and one for the First Officer.

The KCCUs are used to:
- Interface with the NDs, the MFDs, the mailbox, and the OIS
- Select and/or modify parameters.

L3 Both KCCUs are functionally identical.

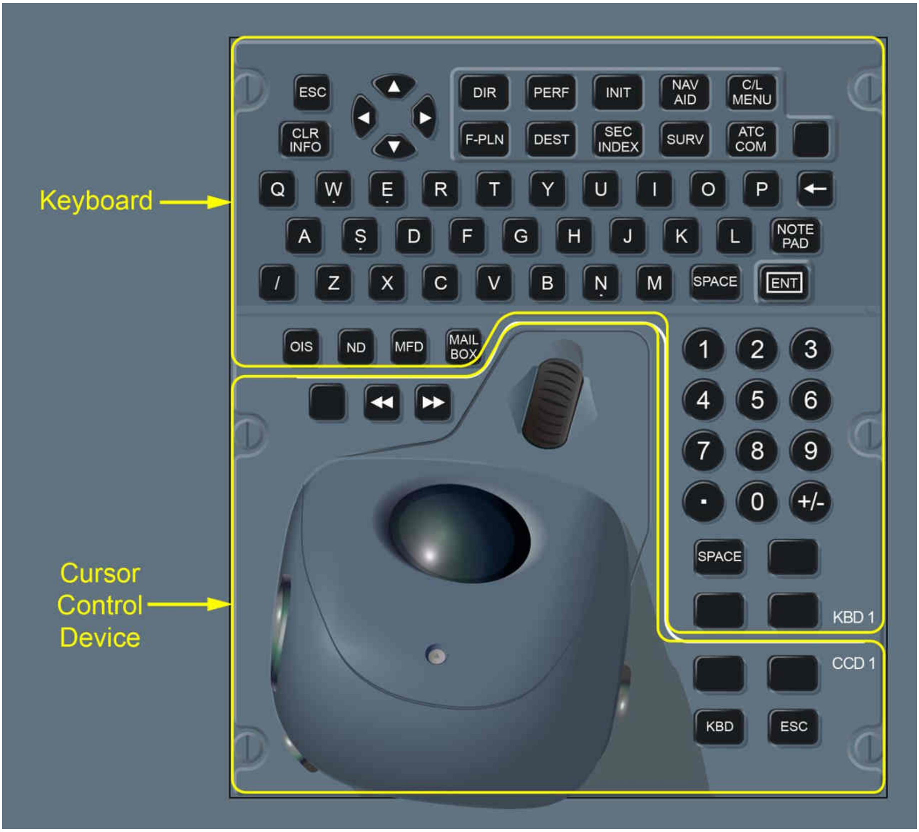
Cockpit Presentation



L1 Each KCCU has:
- A Keyboard (KBD) that enables to enter alphanumeric information
  The KBD also has shortcut keys that provide direct access to specific pages on a display unit.
- A Cursor Control Device (CCD) that enables to control the associated cursor.

L2 The KBD and the CCD are independent of each other: The failure of one does not affect the other.

The Captain KCCU

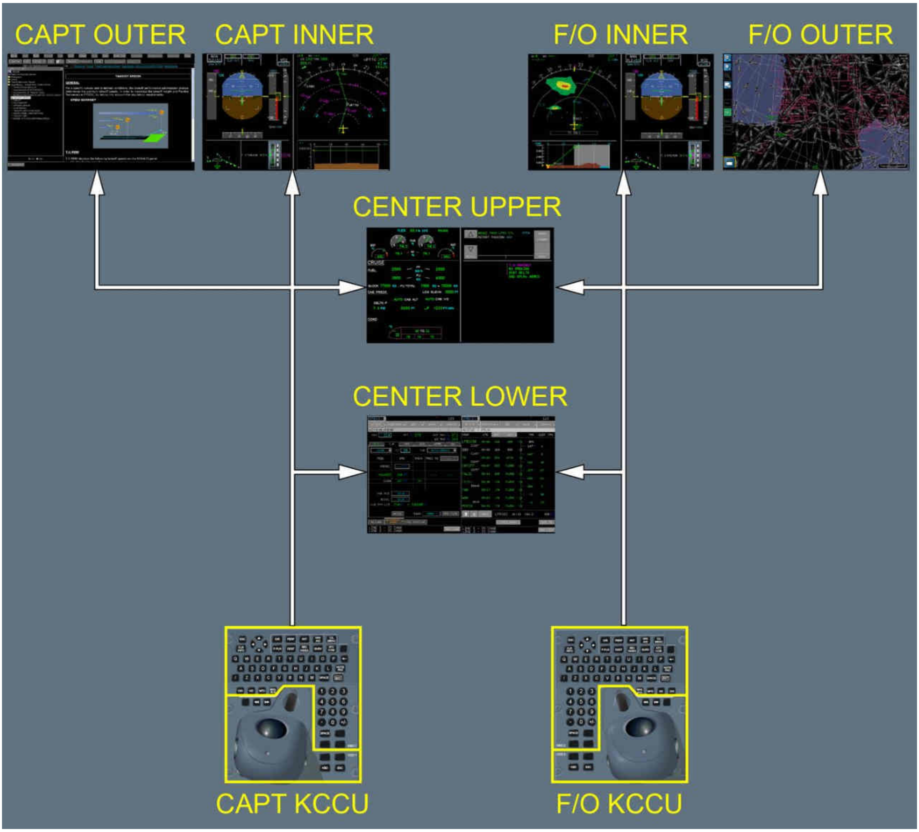

Keyboard
Cursor Control Device
ESC
CLR INFO
DIR
PERF
INIT
NAV AID
C/L MENU
F-PLN
DEST
SEC INDEX
SURV
ATC COM
Q W E R T Y U I O P
A S D F G H J K L
NOTE PAD
/ Z X C V B N M
SPACE
ENT
OIS
ND
MFD
MAIL BOX
1 2 3 4 5 6 7 8 9 . 0 +/-
SPACE
KBD 1
CCD 1
KBD
ESC

ARCHITECTURE

Ident.: DSC-31-CDS-100-10-00001084.0001001 / 24 APR 14
Applicable to: ALL

The KCCUs are directly connected to all the display units for normal operations and for reconfiguration purposes (*Refer to Display Units Reconfiguration*).

Architecture


CAPT OUTER
CAPT INNER
F/O INNER
F/O OUTER
CENTER UPPER
CENTER LOWER
CAPT KCCU
F/O KCCU

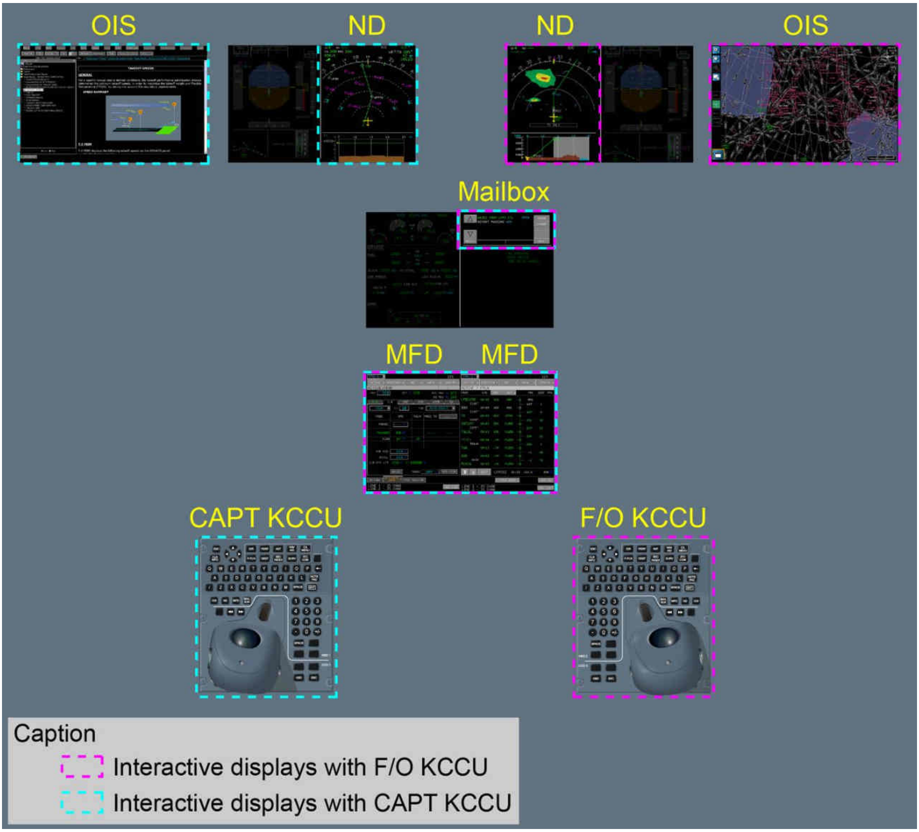
INTERACTION WITH DISPLAY UNITS

Applicable to: ALL

Ident.: DSC-31-CDS-100-10-10-00001085.0001001 / 03 DEC 15

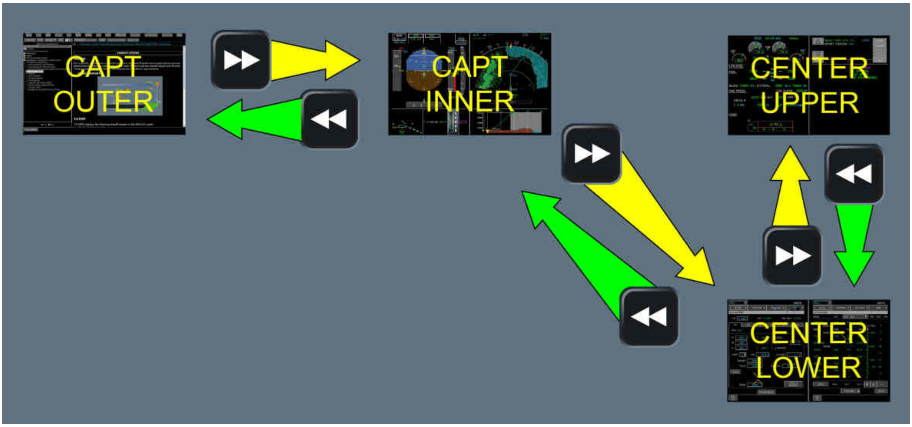
Each KCCU enables the flight crew to directly interact with:
- The onside ND
- The MFDs
- The mailbox
- The onside OIS.

Interaction with the Display Units


OIS
ND
ND
OIS
Mailbox
MFD
MFD
CAPT KCCU
F/O KCCU
Caption
Interactive displays with F/O KCCU
Interactive displays with CAPT KCCU

Note: *The KCCU continues to interact with the ND, MFD, mailbox, and OIS, regardless of the display unit reconfiguration.*

The flight crew uses the navigation keys to move the cursor from a display unit to another.
The illustration below shows the moving path of the Captain's cursor:

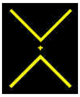


The moving path of the First Officer's cursor is symmetrically identical.

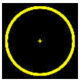
CURSOR DISPLAY

Each KCCU displays a different cursor.

The Captain's cursor is :



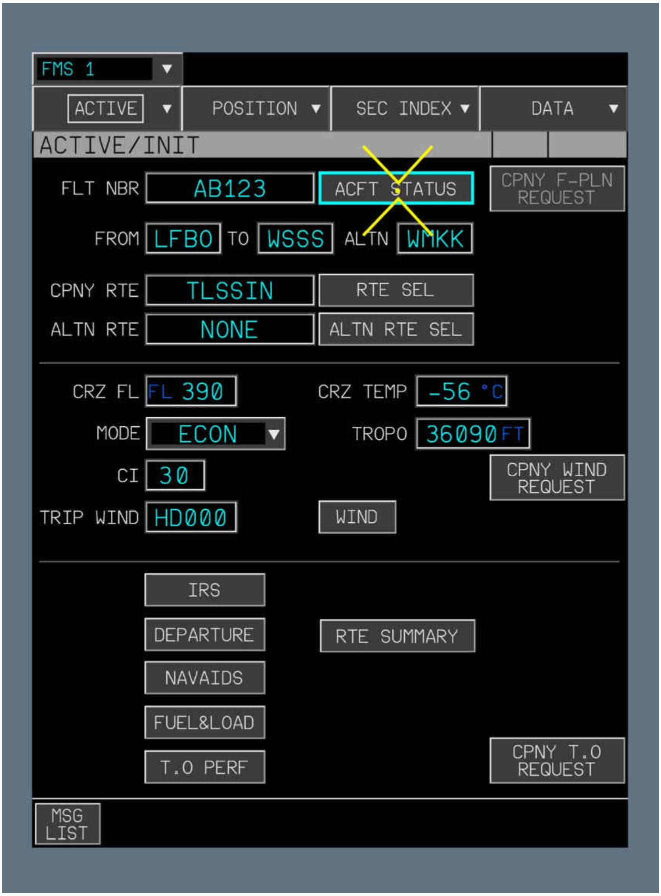
The First Officer's cursor is :



Both cursors can appear on the MFD or on the mailbox at the same time. However, only one KCCU can interact at one time. The active KCCU is the one that last interacted with the display. However, the cursor may disappear when the KCCU is not used for an extended period of time. It reappears, when the flight crew uses any key or the trackball of the KCCU.

INTERACTIVE ZONES

The flight crew can use the KCCU to interact with the objects on the different display units. When the cursor is moved over an interactive element of the display unit, a light blue box appears around this element.


FMS 1
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/INIT
ACFT STATUS
CPNY F-PLN REQUEST
RTE SEL
ALTN RTE SEL
CPNY WIND REQUEST
WIND
IRS
DEPARTURE
NAVAIDS
FUEL&LOAD
T.O PERF
RTE SUMMARY
CPNY T.O REQUEST
MSG LIST

FLT NBR AB123

FROM LFBO TO WSSS ALTN WMKK

CPNY RTE TLSSIN

ALTN RTE NONE

CRZ FL FL 390

CRZ TEMP -56 °C

MODE ECON

TROPO 36090 FT

CI 30

TRIP WIND HD000

Ident.: DSC-31-CDS-100-10-10-00001088.0001001 / 24 APR 14

INTERACTION WITH THE ND

The lateral navigation part and the airport navigation display are the only interactive parts of the ND.

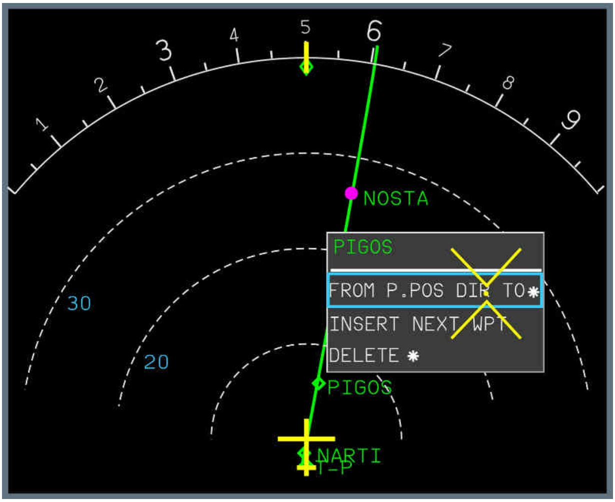
The interactive objects are:
- The aircraft symbol
- All displayed waypoints

- All displayed navaids
- All displayed airports.

The KCCU can be used to perform the following functions:
- Direct To
- Insert or delete a waypoint
- Access data on any displayed airport
- Insert, erase, or undo the temporary flight plan.

For the Direct To and the Insert functions, an interactive FMS dialog box replaces the vertical display part of the ND. This FMS dialog box enables the flight crew to enter parameters with the KCCU.
For more information, *Refer to DSC-31-CDS-40-40-100 Interactive ND Overview*.

DIR TO Revision



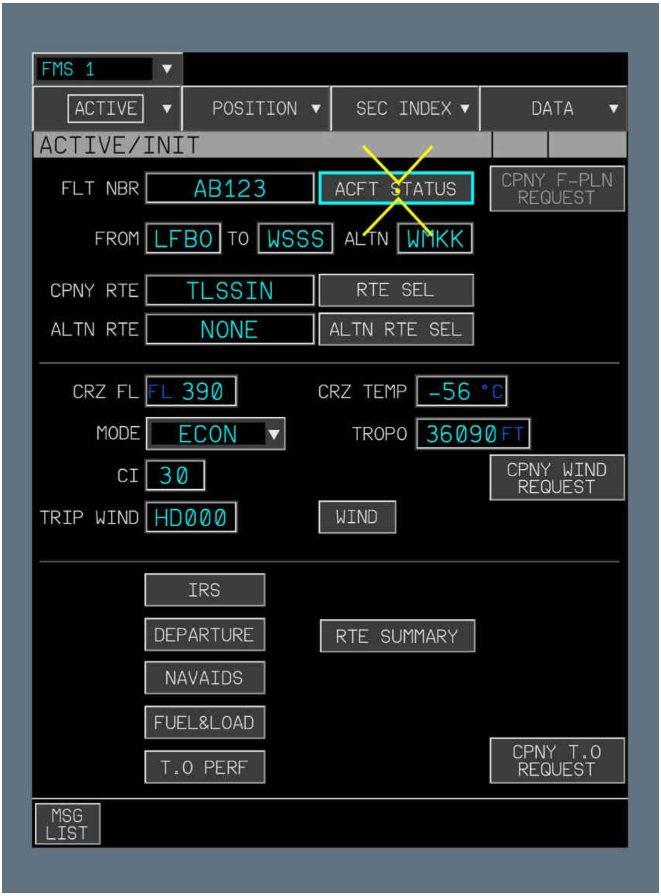
Ident.: DSC-31-CDS-100-10-10-00001089.0001001 / 24 APR 14

INTERACTION WITH THE MFD

The entire MFD is interactive.

The MFD displays the pages of the following applications:

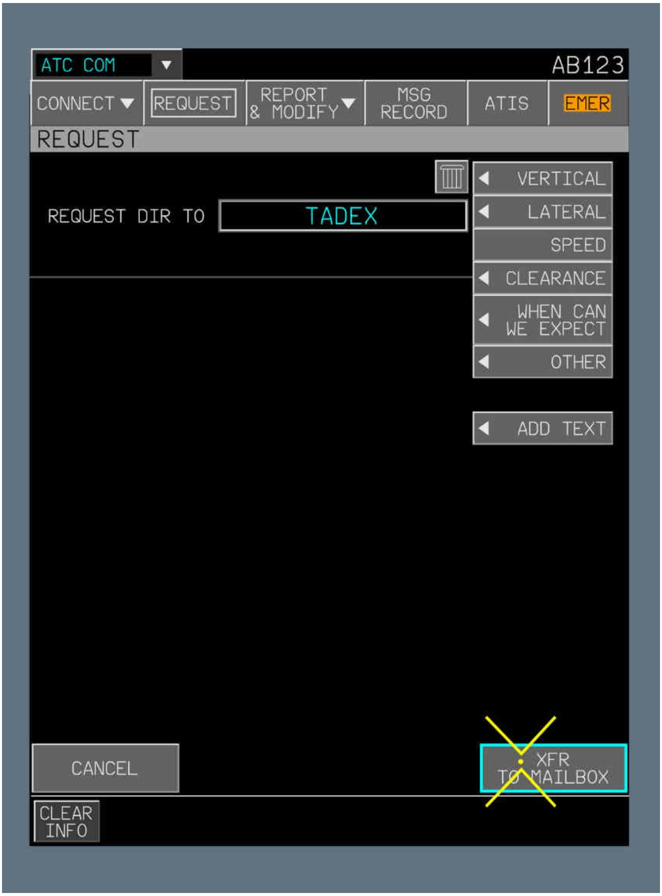
- FMS
  The MFD enables to manage the flight planning functions of the aircraft.


FMS 1
ACTIVE
POSITION
SEC INDEX
DATA
ACTIVE/INIT
ACFT STATUS
CPNY F-PLN REQUEST
RTE SEL
ALTN RTE SEL
CPNY WIND REQUEST
WIND
IRS
DEPARTURE
RTE SUMMARY
NAVAIDS
FUEL&LOAD
T.O PERF
CPNY T.O REQUEST
MSG LIST

FLT NBR AB123
FROM LFBO TO WSSS ALTN WMKK
CPNY RTE TLSSIN
ALTN RTE NONE
CRZ FL FL 390
CRZ TEMP -56 °C
MODE ECON
TROPO 36090 FT
CI 30
TRIP WIND HD000

- ATC COM
  The MFD enables to manage the ATC functions of the aircraft.

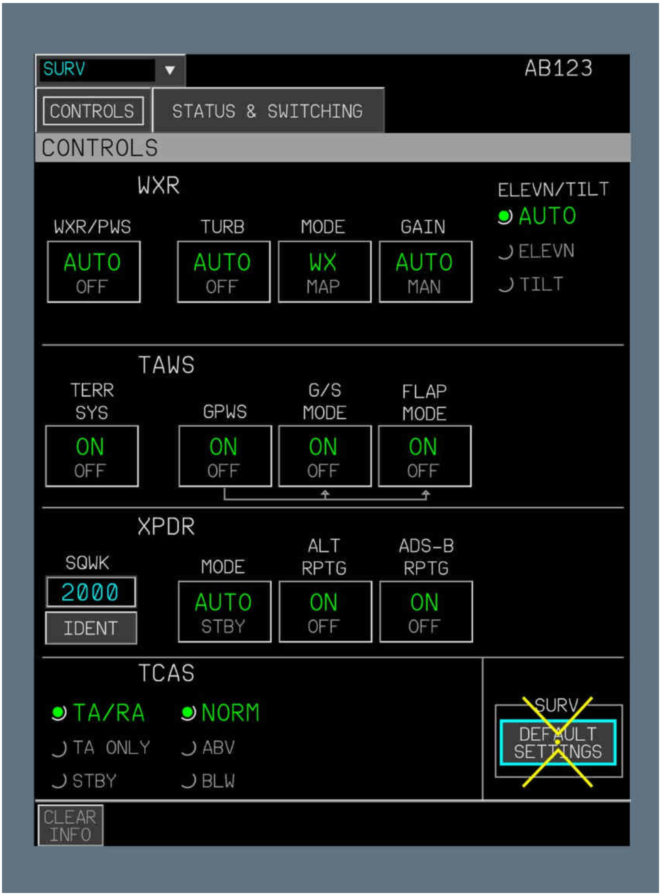
ATC COM


ATC COM ▼
AB123
CONNECT ▼
REQUEST
REPORT & MODIFY ▼
MSG RECORD
ATIS
EMER
REQUEST
◄ VERTICAL
◄ LATERAL
SPEED
◄ CLEARANCE
◄ WHEN CAN WE EXPECT
◄ OTHER
◄ ADD TEXT
CANCEL
XFR TO MAILBOX
CLEAR INFO

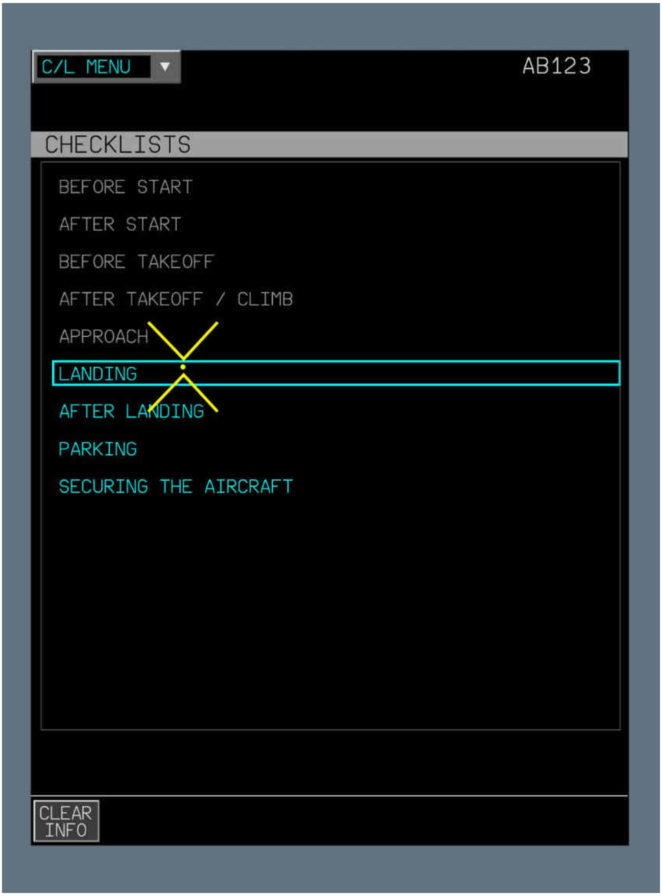
REQUEST DIR TO TADEX

- SURV
  The MFD enables to manage the surveillance functions of the aircraft (TAWS, WXR, TCAS, XPDR).

SURV


SURV
AB123
CONTROLS
STATUS & SWITCHING
CONTROLS
WXR
WXR/PWS
AUTO
OFF
TURB
AUTO
OFF
MODE
WX
MAP
GAIN
AUTO
MAN
ELEVN/TILT
AUTO
ELEVN
TILT
TAWS
TERR SYS
ON
OFF
GPWS
ON
OFF
G/S MODE
ON
OFF
FLAP MODE
ON
OFF
XPDR
SQWK
2000
IDENT
MODE
AUTO
STBY
ALT RPTG
ON
OFF
ADS-B RPTG
ON
OFF
TCAS
TA/RA
TA ONLY
STBY
NORM
ABV
BLW
SURV
DEFAULT SETTINGS
CLEAR INFO

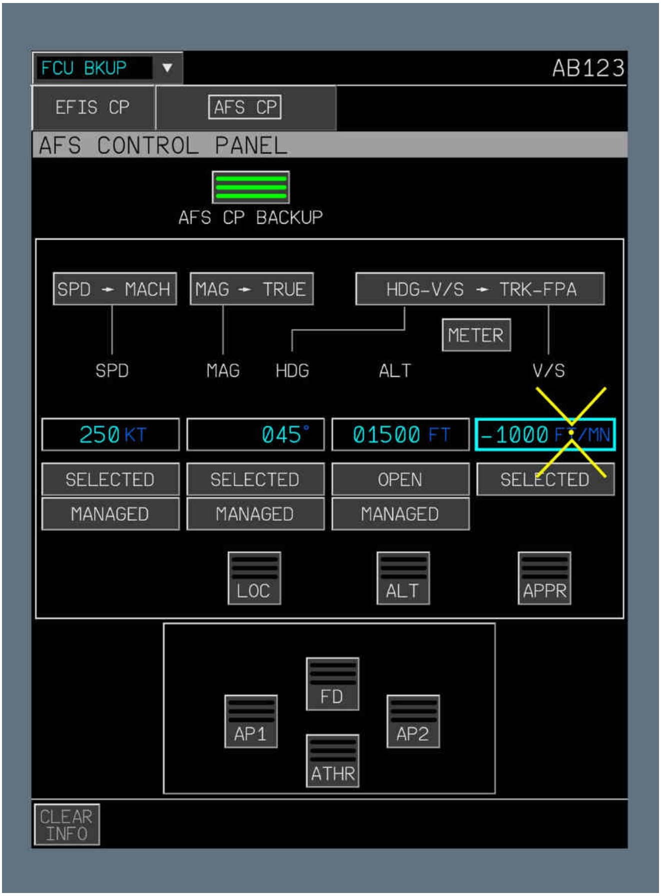
- C/L MENU
  The MFD enables to manage the normal checklists.


C/L MENU ▼
AB123
CHECKLISTS
BEFORE START
AFTER START
BEFORE TAKEOFF
AFTER TAKEOFF / CLIMB
APPROACH
LANDING
AFTER LANDING
PARKING
SECURING THE AIRCRAFT
CLEAR INFO

C/L MENU

- FCU backup.
  The MFD enables to recover all EFIS CP and/or all AFS CP functionalities through two dedicated pages.

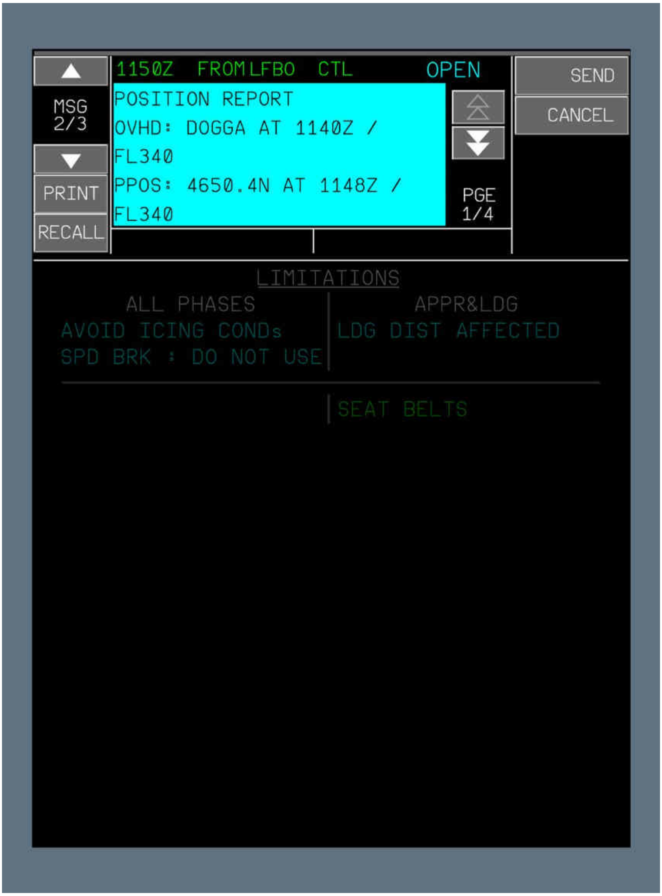
FCU Backup


FCU BKUP
AB123
EFIS CP
AFS CP
AFS CONTROL PANEL
AFS CP BACKUP
SPD → MACH
MAG → TRUE
HDG-V/S → TRK-FPA
METER
SPD
MAG
HDG
ALT
V/S
250 KT
045°
01500 FT
-1000 FT/MN
SELECTED
SELECTED
OPEN
SELECTED
MANAGED
MANAGED
MANAGED
LOC
ALT
APPR
FD
AP1
AP2
ATHR
CLEAR INFO

Ident.: DSC-31-CDS-100-10-10-00001090.0001001 / 24 APR 14

INTERACTION WITH THE MAILBOX

The flight crew can use the KCCU to:
- Write, select, and send messages to the ATC
- Select and read messages from the ATC.



1150Z FROM LFBO CTL OPEN

POSITION REPORT
OVHD: DOGGA AT 1140Z /
FL340
PPOS: 4650.4N AT 1148Z /
FL340

LIMITATIONS

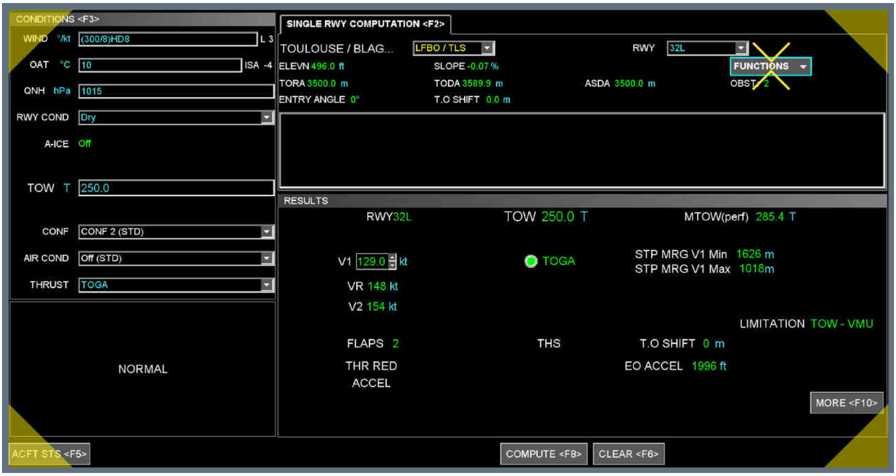
ALL PHASES	APPR&LDG
AVOID ICING CONDs SPD BRK : DO NOT USE	LDG DIST AFFECTED
	SEAT BELTS

Ident.: DSC-31-CDS-100-10-10-00009743.0001001 / 24 APR 14

INTERACTION WITH THE OIS

The flight crew can use the KCCU to interact with the OIS applications.
When the flight crew moves the cursor of a KCCU to the OIS, yellow corners appear on the OIS.

CAPT Interaction with OIS


CONDITIONS <F3>
SINGLE RWY COMPUTATION <F2>
FUNCTIONS
RESULTS
MORE <F10>
ACFT STS <F5>
COMPUTE <F8>
CLEAR <F6>

WIND °/kt (300/8)HD8 L 3
OAT °C 10 ISA -4
QNH hPa 1015
RWY COND Dry
A-ICE Off
TOW T 250.0
CONF CONF 2 (STD)
AIR COND Off (STD)
THRUST TOGA
NORMAL

TOULOUSE / BLAG... LFBO / TLS
RWY 32L
ELEVN 496.0 ft
SLOPE -0.07 %
TORA 3500.0 m
TODA 3589.9 m
ASDA 3500.0 m
OBST 2
ENTRY ANGLE 0°
T.O SHIFT 0.0 m

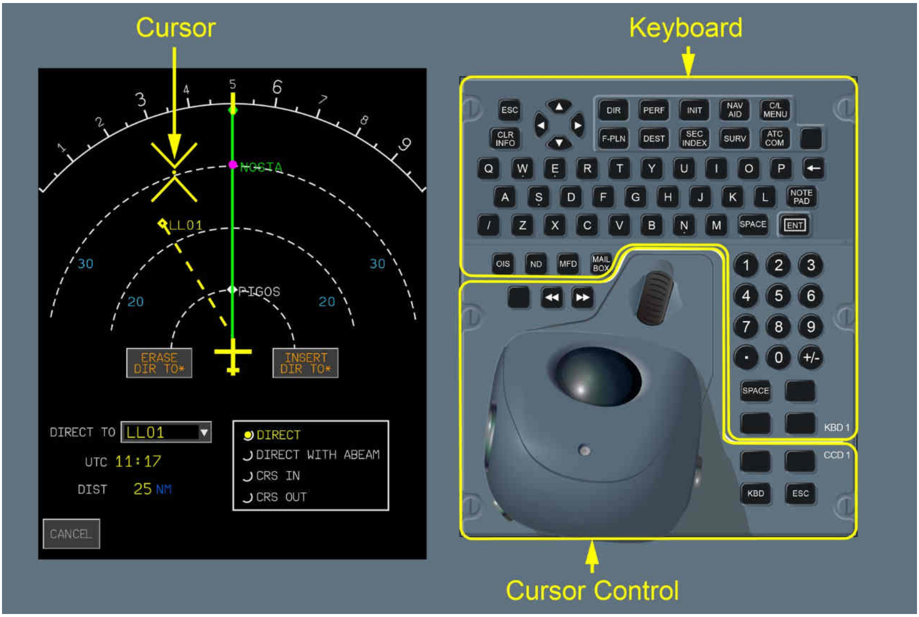
RWY32L
TOW 250.0 T
MTOW(perf) 285.4 T
V1 129.0 kt
TOGA
STP MRG V1 Min 1626 m
STP MRG V1 Max 1018m
VR 148 kt
V2 154 kt
LIMITATION TOW - VMU
FLAPS 2
THS
T.O SHIFT 0 m
THR RED
ACCEL
EO ACCEL 1996 ft

Note:

Depending on the EFB installed on the aircraft, the OIS cursor can be as follows: .

OVERVIEW

Ident.: DSC-31-CDS-100-20-00001092.0001001 / 24 APR 14
Applicable to: ALL


Cursor
Keyboard
NOSTA
LL01
PIGOS
30
20
ERASE DIR TO*
INSERT DIR TO*
DIRECT TO LL01
UTC 11:17
DIST 25 NM
CANCEL
DIRECT
DIRECT WITH ABEAM
CRS IN
CRS OUT
ESC
DIR
PERF
INIT
NAV AID
C/L MENU
CLR INFO
F-PLN
DEST
SEC INDEX
SURV
ATC COM
NOTE PAD
SPACE
ENT
OIS
ND
MFD
MAIL BOX
KBD 1
CCD 1
KBD
ESC
Cursor Control

Each key has a backlight.

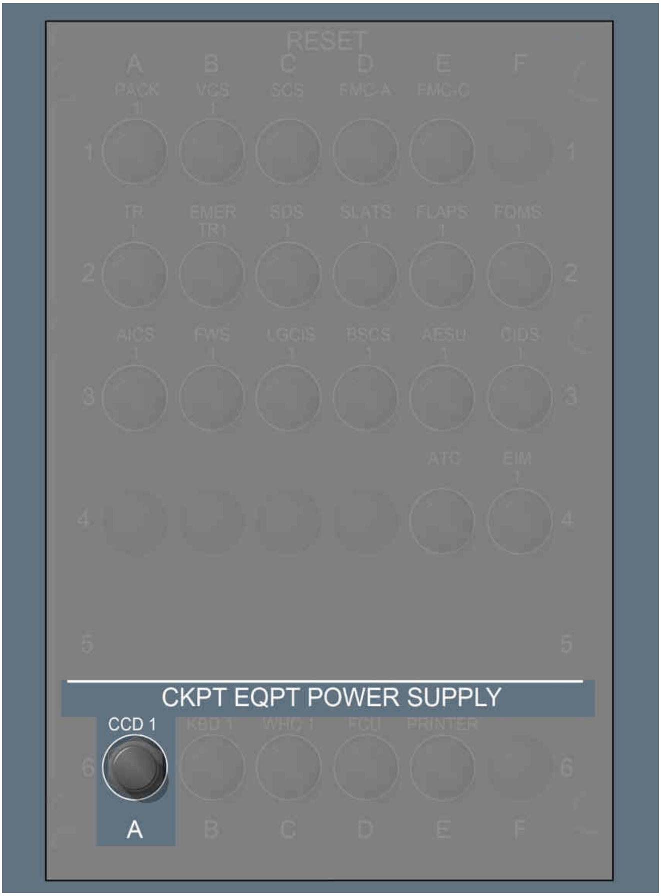
CCD AND KBD POWER SUPPLY

Applicable to: ALL

Ident.: DSC-31-CDS-100-20-900-00011324.0001001 / 24 APR 14

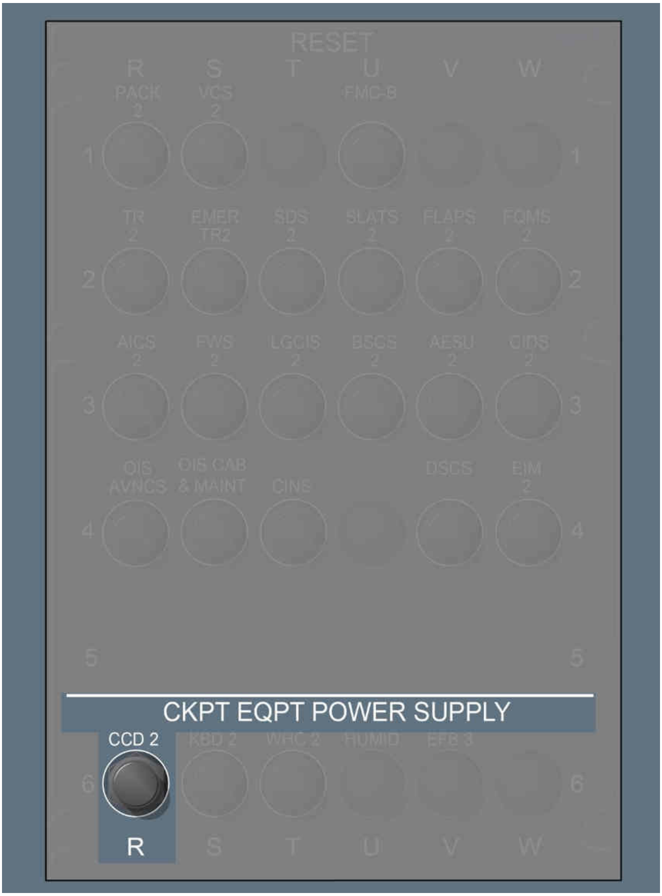
CCD POWER SUPPLY BUTTON

CCD 1 Power Supply Button


RESET
A
B
C
D
E
F
PACK 1
VCS 1
SCS
FMC-A
FMC-C
1
TR 1
EMER TR1
SDS 1
SLATS 1
FLAPS 1
FDMS 1
2
AICS 1
FWS 1
LGCIS 1
BSCS 1
AESU 1
CIDS 1
3
ATC
EIM 1
4
5
CKPT EQPT POWER SUPPLY
CCD 1
KBD 1
WHC 1
FCU
PRINTER
6

The Captain can pull the CCD 1 power supply button out, in order to switch off the Captain's CCD.

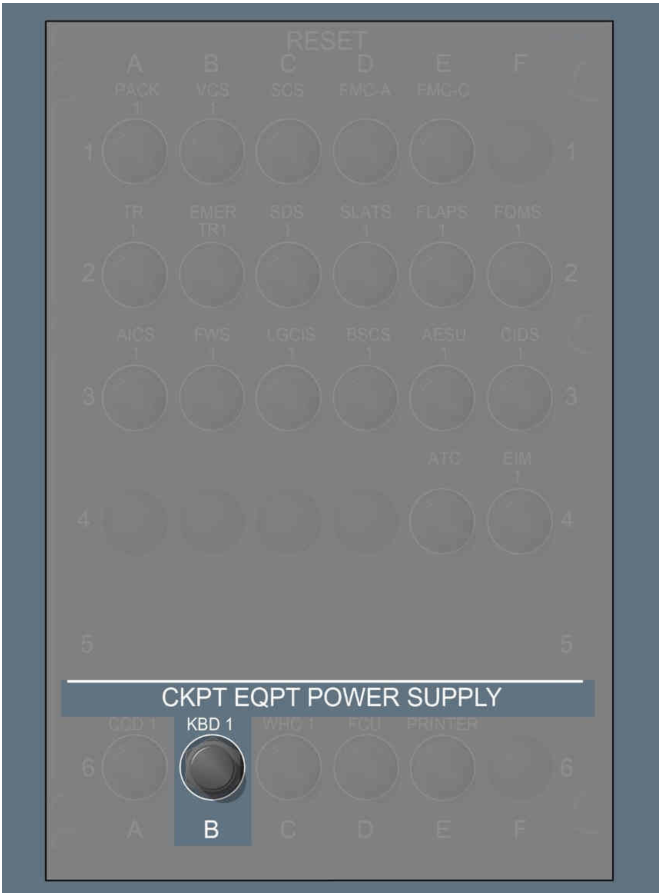
CCD 2 Power Supply Button


RESET
R
S
T
U
V
W
PACK 2
VCS 2
FMC-B
1
TR 2
EMER TR2
SDS 2
SLATS 2
FLAPS 2
FOMS 2
2
AICS 2
FWS 2
LGCIS 2
BSCS 2
AESU 2
CIDS 2
3
OIS AVNCS
OIS CAB & MAINT
CINS
DSCS
EIM 2
4
5
CKPT EQPT POWER SUPPLY
CCD 2
KBD 2
WHC 2
HUMID
EFB 3
6

The First Officer can pull the CCD 2 power supply button out, in order to switch off the First Officer's CCD.

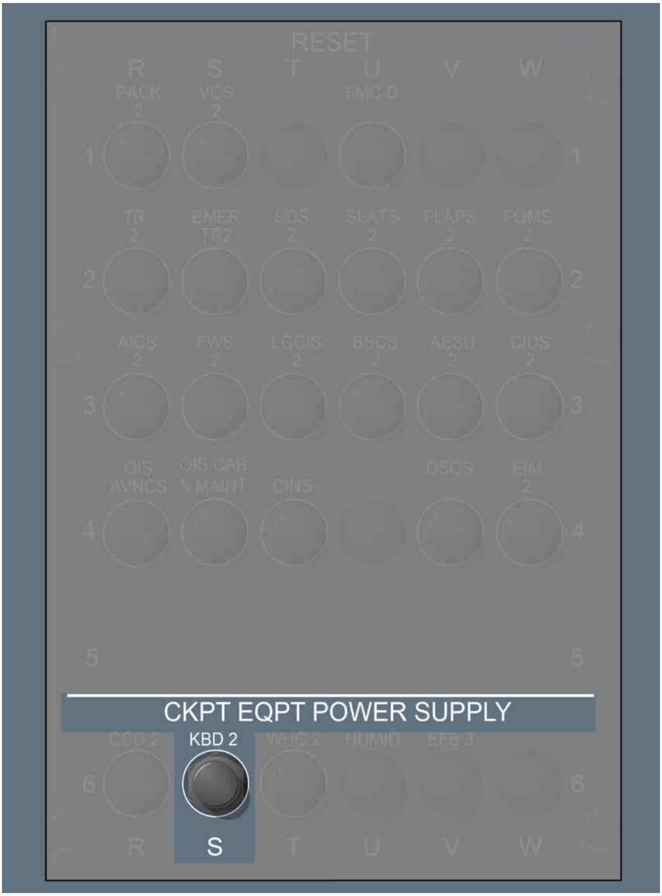
KEYBOARD POWER SUPPLY BUTTON

KBD 1 Power Supply Button


RESET
A
B
C
D
E
F
PACK 1
VCS 1
SCS
FMC-A
FMC-C
1
1
TR 1
EMER TR1
SDS 1
SLATS 1
FLAPS 1
FDMS 1
2
2
AICS 1
FWS 1
LGCIS 1
BSCS 1
AESU 1
CIDS 1
3
3
ATC
EIM 1
4
4
5
5
CKPT EQPT POWER SUPPLY
CCD 1
KBD 1
WHC 1
FCU
PRINTER
6
6
A
B
C
D
E
F

The Captain can pull the KBD 1 power supply button out, in order to switch off the Captain's KBD.

KBD 2 Power Supply Button


RESET
R
S
T
U
V
W
FACK 2
VCS 2
FMC-B
1
TR 2
EMER TR2
SDS 2
SLATS 2
FLAPS 2
FOMS 2
2
AICS 2
FWS 2
LGCIS 2
BSCS 2
AESU 2
CIDS 2
3
OIS AVNCS
OIS CAB & MAINT
CINS
DSCS
EIM 2
4
5
CKPT EQPT POWER SUPPLY
CCD 2
KBD 2
WHC 2
HUMID
EFB 3
6
S

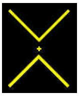
The First Officer can pull the KBD 2 power supply button out, in order to switch off the First Officer's KBD.

CURSOR

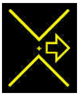
Ident.: DSC-31-CDS-100-20-00001094.0001001 / 07 MAY 18
Applicable to: ALL

Each KCCU has a unique cursor. The symbol changes to indicate the status of the cursor.

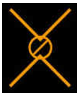
CAPTAIN'S CURSOR



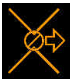
The Captain's cursor is active.



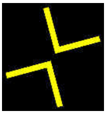
On the center lower DU, the Captain's cursor is active on the CAPT MFD at the separation with the F/O MFD.
When in this state, the Captain can move the cursor to the right to move the cursor to the F/O MFD.



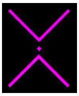
The Captain's cursor is not active.
This occurs when both Captain's and First Officer's cursors appear on the same display, and the First Officer's cursor is active.
Both cursors can be displayed on the center lower DU or on the mailbox.



On the center lower DU, the Captain's cursor is not active on the CAPT MFD at the separation with the F/O MFD.
When in this state, the Captain can move the cursor to the right to move the cursor to the F/O MFD.

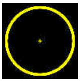


Appears:
- Before the cursor is displayed: The symbol rotates and becomes increasingly smaller, until it disappears. Then, the cursor becomes active.
- When the Captain selects a different page on the MFD, or moves the cursor to a different display unit.

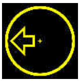


: The Captain's cursor is magenta on the ND when the ANF is displayed.

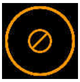
FIRST OFFICER'S CURSOR



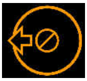
The First Officer's cursor is active.



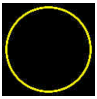
On the center lower DU, the First Officer's cursor is active on the F/O MFD at the separation with the CAPT MFD.
When in this state, the First Officer can move the cursor to the left to move the cursor to the CAPT MFD.



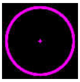
The First Officer's cursor is not active.
This occurs when both Captain's and First Officer's cursors appear on the same display, and the Captain's cursor is active.
Both cursors can be displayed on the center lower DU or on the mailbox.



On the center lower DU, the First Officer's cursor is not active on the F/O MFD at the separation with the CAPT MFD.
When in this state, the First Officer can move the cursor to the left to move the cursor to the CAPT MFD.



Appears:
- Before the cursor is displayed: The circle becomes increasingly smaller, until it disappears. Then, the cursor is active.
- When the First Officer selects a different page on the MFD, or moves the cursor to a different display unit.



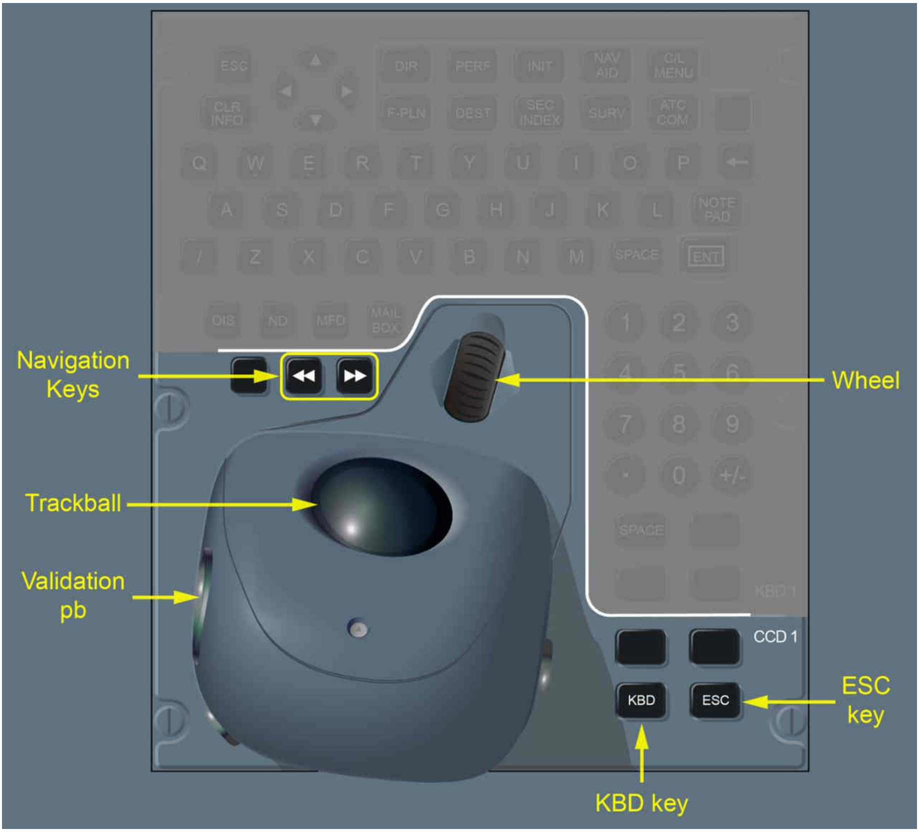
: The First Officer's cursor is magenta on the ND when the ANF is displayed.

CURSOR CONTROL DEVICE

Applicable to: ALL

Ident.: DSC-31-CDS-100-20-20-00001097.0001001 / 13 JAN 15

Cursor Control Device


Navigation Keys
Trackball
Validation pb
Wheel
CCD 1
KBD
ESC
ESC key
KBD key

The two buttons on the bottom-left and bottom-right of the trackball are inactive.
The spare keys without label are inactive.

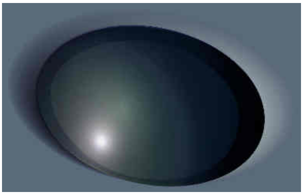
Ident.: DSC-31-CDS-100-20-20-00001126.0001001 / 24 APR 14

WHEEL

Enables the flight crew:
- To change the selection in an option-list
- To scroll through a page (e.g. F-PLN page or message list)
- To increment a value in an entry field.

Ident.: DSC-31-CDS-100-20-20-00001128.0001001 / 24 APR 14

TRACKBALL



Enables the flight crew to move the cursor over the interactive section of the selected display unit.
Operates the same way as the direction arrow keys on the KBD.

Ident.: DSC-31-CDS-100-20-20-00001131.0001001 / 24 APR 14

VALIDATION PB

Operates the same way as the ENT key of the KBD.

Enables the flight crew to:
- Edit an entry field:
  - The cursor is positioned in the field, and is ready for a new entry
  - When data is entered, another click validates the entry, and the cursor moves to the field or button that is most likely to be used next
- Edit an option-list:
  - The option-list opens to the first option that is selected
  - The flight crew uses the wheel or the direction arrow keys, to change the selected option, if required
  - Another click validates the selection, and the cursor moves to the field or button that is most likely to be used next
- Activates an button.

Ident.: DSC-31-CDS-100-20-20-00001133.0001001 / 24 APR 14

NAVIGATION KEYS

Moves the cursor to the next display unit with an interactive format that is to the right, or to the left, of the one that is currently selected.

Ident.: DSC-31-CDS-100-20-20-00001134.0001001 / 24 APR 14

ESC KEY

L12

When pressed:
- Cancels the current field edition, or
  The field returns to the last valid value.
- Closes a pop-up window or a menu.

There is a similar key on the KBD.

Ident.: DSC-31-CDS-100-20-20-00001136.0001001 / 04 SEP 17

KBD KEY

L12

When pressed, displays the soft keyboard on the MFD depending on the type of editable field and the availability of the KCCU keyboard.
By default, the soft keyboard appears in the lower part of the MFD, unless the field to be edited is in the lower part of the MFD.
The flight crew can use the soft keyboard when the KCCU keyboard is inoperative, for more information, *Refer to DSC-31-CDS-100-30 Soft Keyboard Display*.

The flight crew can also access to the soft keyboard when the KCCU keyboard is operative:
- To edit an entry field, the flight crew selects an entry field then presses the KBD key in order to display the soft keyboard
- To manually enter data in a list, the flight crew performs the following sequence:
  - Select the list
  - Press one time the KBD key to activate the cursor in the list
  - Press a second time the KBD key to display the soft keyboard.

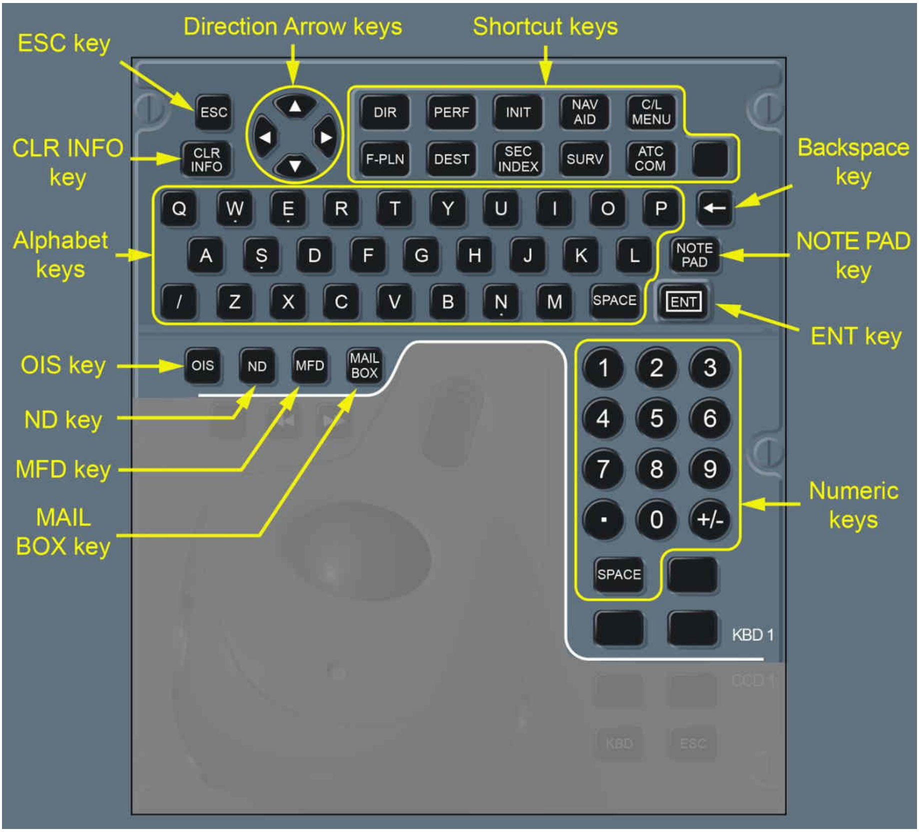
When pressed again, the soft keyboard disappears from the MFD.

KEYBOARD

Applicable to: ALL

Ident.: DSC-31-CDS-100-20-10-00001095.0001001 / 13 JAN 15

Keyboard


ESC key
Direction Arrow keys
Shortcut keys
ESC
DIR
PERF
INIT
NAV AID
C/L MENU
CLR INFO key
CLR INFO
F-PLN
DEST
SEC INDEX
SURV
ATC COM
Backspace key
Alphabet keys
Q W E R T Y U I O P
A S D F G H J K L
/ Z X C V B N M SPACE
NOTE PAD key
NOTE PAD
ENT key
ENT
OIS key
OIS
ND
MFD
MAIL BOX
ND key
MFD key
MAIL BOX key
1 2 3 4 5 6 7 8 9 . 0 +/-
SPACE
Numeric keys
KBD 1

The spare keys without label are inactive.

Ident.: DSC-31-CDS-100-20-10-00001099.0001001 / 24 APR 14

DIR KEY

When pressed:
- Displays the FMS DIRECT TO page on the MFD (*Refer to DSC-22-FMS-20-20-20 DIRECT TO Page*)
- Moves the cursor back to the MFD, if the cursor was previously on another display.

Ident.: DSC-31-CDS-100-20-10-00001100.0001001 / 24 APR 14

PERF KEY

When pressed:
- Displays the FMS ACTIVE/PERF page (on the panel that corresponds to the active flight phase) on the MFD (*Refer to DSC-22-FMS-20-20-20 PERF Page*)
- Moves the cursor back to the MFD, if the cursor was previously on another display.

Ident.: DSC-31-CDS-100-20-10-00001102.0001001 / 24 APR 14

INIT KEY

When pressed:
- Displays the FMS ACTIVE/INIT page on the MFD (*Refer to DSC-22-FMS-20-20-20 INIT Page*)
- Moves the cursor back to the MFD, if the cursor was previously on another display.

Ident.: DSC-31-CDS-100-20-10-00001103.0001001 / 24 APR 14

NAV AID KEY

When pressed:
- Displays the FMS POSITION/NAVAIDS page on the MFD (*Refer to DSC-22-FMS-20-20-20 POSITION/NAVAIDS Page*)
- Moves the cursor back to the MFD, if the cursor was previously on another display.

Ident.: DSC-31-CDS-100-20-10-00011278.0001001 / 24 APR 14

C/L MENU KEY

When pressed:
- Displays the CHECKLISTS page on the MFD (*Refer to DSC-31-CDS-60-10-30 CHECKLIST MENU Page*)
- Moves the cursor back to the MFD, if the cursor was previously on another display.

Ident.: DSC-31-CDS-100-20-10-00001104.0001001 / 24 APR 14

F-PLN KEY

When pressed:

- Displays the top of the flight plan on the FMS ACTIVE/F-PLN page on the MFD (*Refer to DSC-22-FMS-20-20-20 F-PLN Page*)
- Moves the cursor back to the MFD, if the cursor was previously on another display.

Ident.: DSC-31-CDS-100-20-10-00001105.0001001 / 24 APR 14

DEST KEY

When pressed:

- Displays the bottom of the destination flight plan on the FMS ACTIVE/F-PLN page on the MFD (*Refer to DSC-22-FMS-20-20-20 F-PLN Page*)
- Moves the cursor back to the MFD, if the cursor was previously on another display.

Ident.: DSC-31-CDS-100-20-10-00001107.0001001 / 24 APR 14

SEC INDEX KEY

When pressed:

- Displays the FMS SEC INDEX page on the MFD (*Refer to DSC-22-FMS-20-20-20 SEC INDEX Page*)
- Moves the cursor back to the MFD, if the cursor was previously on another display.

Ident.: DSC-31-CDS-100-20-10-00001109.0001001 / 24 APR 14

SURV KEY

When pressed:

- Displays the SURV CONTROLS page on the MFD (*Refer to DSC-34-SURV-70-50 CONTROLS Page*)
- The cursor moves back to the MFD, if the cursor was previously on another display.

Ident.: DSC-31-CDS-100-20-10-00001111.0001001 / 24 APR 14

ATC COM KEY

When pressed:

- Displays the ATC COM REQUEST page on the MFD (*Refer to DSC-46-ATC-20-30-30 REQUEST Page*)
- Moves the cursor back to the MFD, if the cursor was on another display before.

Ident.: DSC-31-CDS-100-20-10-00011279.0001001 / 24 APR 14

OIS KEY

When pressed, moves the cursor to the onside OIS display.
If the OIS is not displayed, the OIS appears.

Ident.: DSC-31-CDS-100-20-10-00001112.0001001 / 24 APR 14

ND KEY

When pressed, moves the cursor to the onside ND.
If the ND is not displayed, the ND appears.

Ident.: DSC-31-CDS-100-20-10-00011280.0001001 / 24 APR 14

MFD KEY

When pressed, the cursor moves to the onside MFD.
If the MFD is not displayed, the MFD appears.

Ident.: DSC-31-CDS-100-20-10-00001110.0001001 / 24 APR 14

MAIL BOX KEY

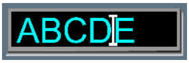
When pressed, moves the cursor to the mailbox (*Refer to DSC-46-ATC-20-60 Mailbox*).

Ident.: DSC-31-CDS-100-20-10-00001116.0001001 / 24 APR 14

← KEY

- Clears the character that is on the left of the cursor, when the flight crew presses the key less than 2 s, or

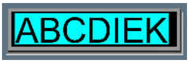
Example of Character Clear



ABCDE

- Clears the entire entry field when:
  - The flight crew presses the key more than 2 s, or
  - The entire field is selected.

Example of Selection Clear



ABCDIEK

Note: *In some entry fields (e.g. navaids) clearing a previously entered value will set the entry field to the default value.*

Ident.: DSC-31-CDS-100-20-10-00011282.0001001 / 24 APR 14

NOTE PAD KEY

- When pressed less than 2 s, activates the NOTE PAD area on the MFD, in edit mode.
- When pressed more than 2 s, closes the NOTE PAD area on the MFD.

For more information about the NOTE PAD, *Refer to DSC-31-CDS-70-10 NOTE PAD*.

Ident.: DSC-31-CDS-100-20-10-00001114.0001001 / 24 APR 14

ENT KEY

Operates the same way as the validation pb of the CCD.

- Edits an entry field:
  - The cursor is positioned in the field, and is ready for a new entry
  - When data is entered, another click validates the entry, and the cursor moves to the field or button that is most likely to be used next
- Edits an option-list:
  - The option-list opens, and the first option is selected
  - The flight crew uses the wheel or the direction arrow keys, to change the selected option, if required
  - Another click validates the selection, and the cursor moves to the field or button that is most likely to be used next
- Activates a button.

Ident.: DSC-31-CDS-100-20-10-00001117.0001001 / 24 APR 14

NUMERIC KEYS

Note: Only one character is displayed, even if the flight crew presses and holds a numeric key.

NUMBER KEYS

Inserts a number at the cursor position in the entry field.

+/- KEY

Inserts:

- A "-" (minus) sign in front of the edited value, when pressed for the first time
- A "+" (plus) sign in front of the edited value, when pressed again.

. KEY

Inserts a “.” (decimal point) at the cursor position in the entry field.

SPACE KEY

Inserts a space at the cursor position in the entry field.

Ident.: DSC-31-CDS-100-20-10-00001118.0001001 / 24 APR 14

ALPHABET KEYS

Note: *Only one character is displayed, even if the flight crew presses and holds an alphabet key.*

LETTER KEYS

Inserts an alphabet character at the cursor position in the entry field.
The alphabet keys are organized in the “QWERTY” (US keyboard) layout.

N, E, S, W (CARDINAL POINT) KEYS

Inserts a cardinal point (N, E, S, W) in fields, when applicable.
There is a dot under these letters to help the flight crew to easily find these keys.

/ KEY

Inserts a “/” (slash) at the cursor position in the entry field.

SPACE KEY

Inserts a space at the cursor position in the entry field.

Ident.: DSC-31-CDS-100-20-10-00001121.0001001 / 24 APR 14

CLR INFO KEY

When pressed, clears the message that is currently displayed in the FMS, ATC COM, or SURV message area.

Ident.: DSC-31-CDS-100-20-10-00001123.0001001 / 24 APR 14

ESC KEY

L12

When pressed:
- Cancels the current field edition, or
  The field returns to the last valid value.
- Closes a pop-up window or a menu.

There is a similar key on the CCD.

Ident.: DSC-31-CDS-100-20-10-00001125.0001001 / 24 APR 14

DIRECTION ARROW KEYS

- Move the cursor from one interactive area to another, in the direction of the pressed key. The cursor remains in the selected display unit
  These keys operate in the same way as the trackball on the CCD.
- Move the light blue selection box in the option-list, in the direction of the pressed key. These keys operate in the same way as the wheel on the CCD.

Note: *If the flight crew presses and holds a direction arrow key, the associated action is repeated periodically.*

LOSS OF KEYBOARD

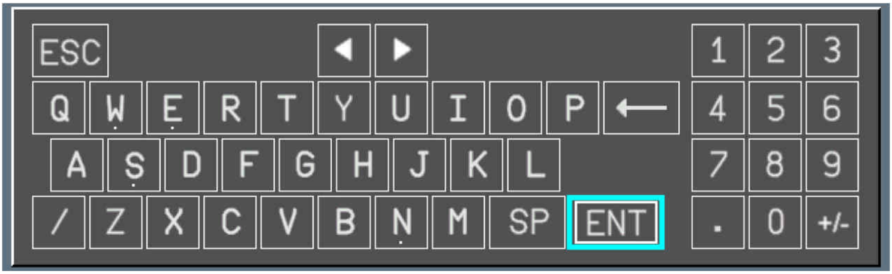
Applicable to: ALL

Ident.: DSC-31-CDS-100-30-10-00001138.0001001 / 24 APR 14

KEYBOARD BACKUP

In the case of a total or partial loss of the KBD, the flight crew can use a soft keyboard as a backup.

Soft Keyboard



The soft keyboard has:
- Alphabet softkeys
  “A” to “Z” keys, organized in a “QWERTY” layout.
- Numeric softkeys
  “0” to “9”, “.” (decimal point) and "+/-” (plus or minus) keys.
- A backspace softkey
- An ENT softkey
- A “/” (slash) softkey
- A space (SP) softkey
- An escape (ESC) softkey
- N, E, S, W softkeys
  These softkeys insert cardinal points. There is a dot under these letters to help the flight crew to easily find these keys.
- Left and right arrow softkeys.
  These softkeys operate in the same way as the left and right keys of the direction arrow keys.

Ident.: DSC-31-CDS-100-30-10-00001141.0001001 / 04 SEP 17

SOFT KEYBOARD DISPLAY

The soft keyboard is a backup of the KCCU keyboard.
By default, the soft keyboard appears in the lower part of the MFD, unless the field to be edited is in the lower part of the MFD.

When the KCCU keyboard is inoperative:
- To edit an entry field, the flight crew clicks on the entry field in order to display the soft keyboard
- To manually enter data in a list, the flight crew performs the following sequence:
  - Select the list
  - Press one time the KBD key to display the soft keyboard.

Note: *The soft keyboard cannot be used to edit an entry field on the ND, even if the flight crew can continue to interact with the ND, via the CCD.*
Therefore, if the KCCU keyboard fails, it is not recommended to access the FMS functions via the ND, but to use the MFD instead.

Ident.: DSC-31-CDS-100-30-10-00001142.0001001 / 24 APR 14

SOFT KEYBOARD EXIT

The soft keyboard is no longer displayed on the MFD:
- When the flight crew presses the ENT key or the ESC key
- When the flight crew presses the KBD key on the CCD, while the soft keyboard is displayed

L3 Note: *Pressing the KBD key to remove the soft keyboard from the MFD will leave the cursor in its current position.*

L1
- In the case of a display unit reconfiguration that involves the MFD.

Ident.: DSC-31-CDS-100-30-10-00001144.0001001 / 24 APR 14

USE OF THE SOFT KEYBOARD

When the soft keyboard appears, a light blue box highlights the “ENT” softkey.
The light blue box highlights the currently selected softkey. The flight crew can change the selection with the trackball of the CCD.
Only one softkey is highlighted at a time.
When the flight crew presses the CCD validation pb, the selected character is entered in the active entry field.

LOSS OF KCCU

Ident.: DSC-31-CDS-100-30-00024499.0001001 / 02 NOV 17
Applicable to: ALL

In the case of loss of a KCCU, the ECAM displays the CDS CAPT(F/O) KCCU CURSOR CTL + KEYBOARD FAULT alert (*Refer to procedure*).

L2 On the affected side:
- The KCCU is not available to interact with the MFD session
- The OIS KBD remains available to interact with the OIS session.

L1 On the affected side, the CAPT(F/O) OIS ON CENTER pb becomes inactive.

L2 The associated INOP light does not come on.

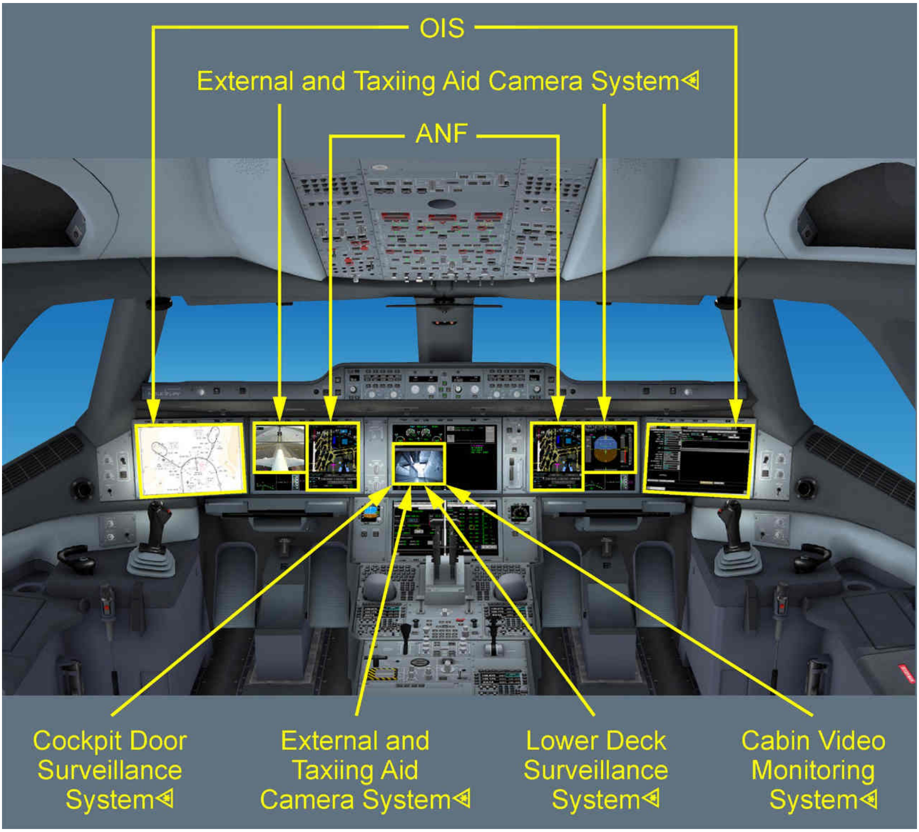
L1 If the OIS session of the affected side is displayed on the center lower display unit, the flight crew can press two times the OIS ON CENTER pb on the opposite side in order to recover the OIS displayed on the outer display units and the MFD displayed on the center lower display unit.

Intentionally left blank

OVERVIEW

Ident.: DSC-31-CDS-110-10-00001474.0001001 / 09 MAR 16
Applicable to: ALL

The video system provides images and/or live video from outside or inside the aircraft.


OIS
External and Taxiing Aid Camera System◁
ANF
Cockpit Door Surveillance System◁
External and Taxiing Aid Camera System◁
Lower Deck Surveillance System◁
Cabin Video Monitoring System◁

The flight crew can display on some display units:

- The OIS information

L2 For more information, *Refer to OIS*

L1 - The aircraft position on the current airport moving map from the Airport Navigation Function (ANF)

L2 For more information on the ANF, *Refer to Airport Navigation Function*

L1 - The live video images from the CDSS ◁

L2 For more information, *Refer to Cockpit Door Surveillance System*

L1 - The live video images from the ETACS ◁

L2 For more information, *Refer to ETACS*

L1 - The live video images from the CVMS ◁

L2 For more information, *Refer to Cabin Video Monitoring System*

L1 - The live video images from the Lower Deck Surveillance Function ◁ .

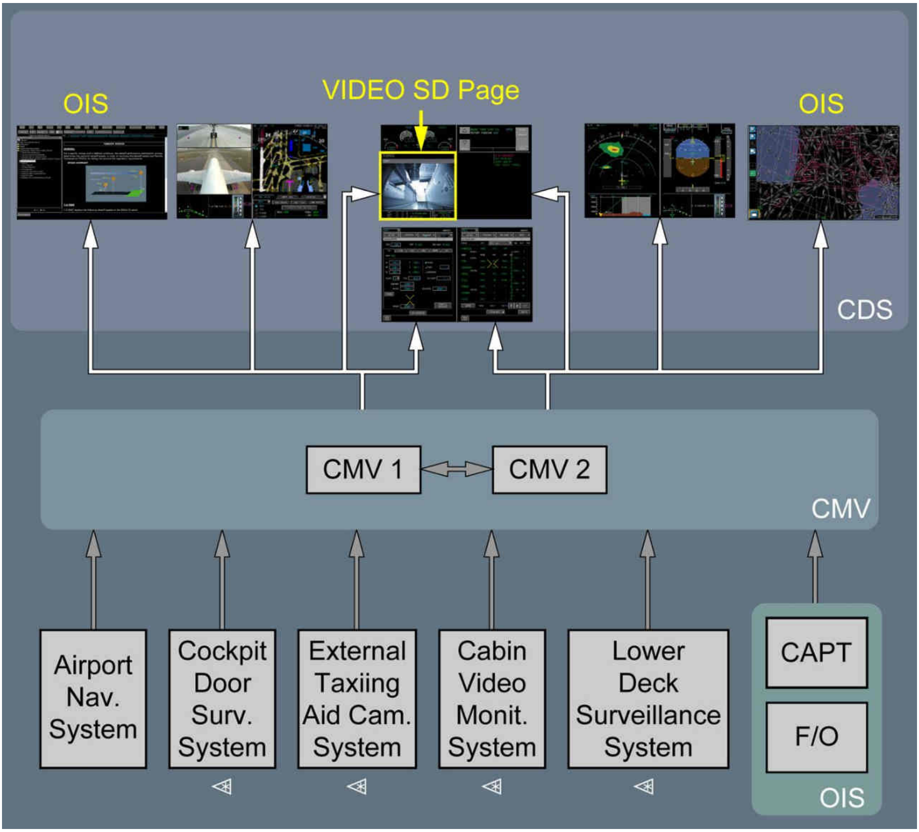
L2 For more information, *Refer to Lower Deck Surveillance Function*.

ARCHITECTURE

Applicable to: ALL

Ident.: DSC-31-CDS-110-10-10-00001480.0001001 / 18 APR 14

CMV Architecture


OIS
VIDEO SD Page
OIS
CDS
CMV 1
CMV 2
CMV
Airport Nav. System
Cockpit Door Surv. System
◁
External Taxiing Aid Cam. System
◁
Cabin Video Monit. System
◁
Lower Deck Surveillance System
◁
CAPT
F/O
OIS

Ident.: DSC-31-CDS-110-10-10-00001486.0001001 / 09 MAR 16

CMV

The Concentrator and Multiplexer for Video (CMV) system:

- Manages:
  - OIS display reconfigurations
    L2 For more information about OIS display reconfigurations, *Refer to DSC-31-CDS-110-20 Video Messages*.
  - L1 The CDSS ◁
  - The ETACS ◁
  - The CVMS ◁
  - The Lower Deck Surveillance Function ◁ .
- Displays:
  - The video from the ETACS ◁ on the PFD and/or on the VIDEO SD page
  - The video from the CDSS ◁ , the CVMS ◁ and the Lower Deck Surveillance Function ◁ on the VIDEO SD page only
  - The OIS information.

The CMV system has two Concentrator and Multiplexer for Video modules, as CMV 1 and CMV 2.
L2 Only the CMV 1 provides live video from the ETACS ◁ to the IFE for passenger entertainment.
In the case of a video failure, the corresponding part of the display is a black area (*Refer to DSC-31-CDS-110-20 Video Messages*).

Ident.: DSC-31-CDS-110-10-10-00001489.0001001 / 09 MAR 16

VIDEO SD PAGE

The VIDEO SD page can display:

- The CDSS ◁ videos
- The ETACS ◁ videos
- The CVMS ◁ videos
- The videos from Lower Deck Surveillance Function ◁ .

Ident.: DSC-31-CDS-110-10-10-00011289.0001001 / 18 APR 14

OIS DISPLAY

The CMV displays OIS information on the OIS displays, or on the center lower display unit.
For more information about OIS display reconfiguration, *Refer to DSC-31-CDS-30-30 Normal Operations*.

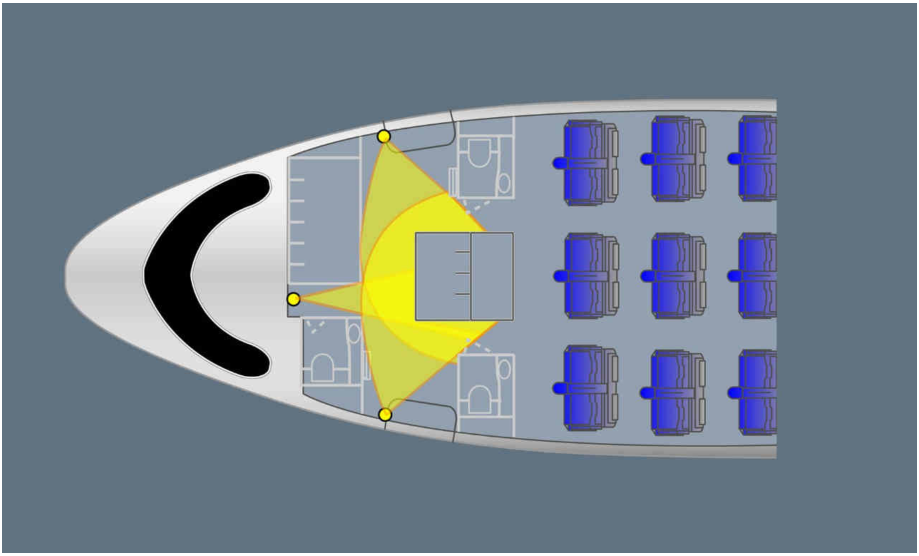
COCKPIT DOOR SURVEILLANCE SYSTEM ⋞

Ident.: DSC-31-CDS-110-10-00001484.0001001 / 28 APR 17
Applicable to: ALL

There are three cameras that enable the flight crew to identify who is requesting entry to the cockpit, before authorizing (or not) their access.

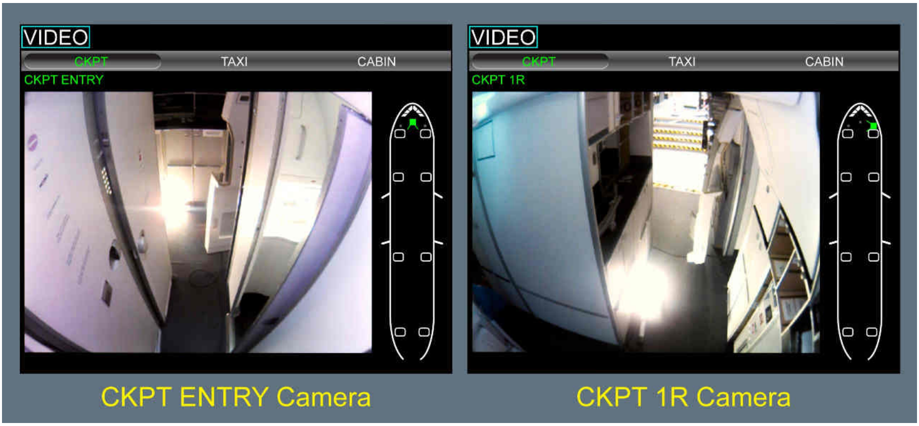
The CDSS has three cameras:
- One camera monitors the cockpit door
- Two cameras monitor the hidden cross section between the right and the left forward doors.

Cockpit Door Cameras



The live video images from these three cameras appear on the VIDEO SD page, in one of the following views:
- A full image of cockpit door entry area, or
- A full image of the cross section from the camera that are next to the left/right forward doors.

Cockpit Door Cameras



CKPT ENTRY Camera CKPT 1R Camera

The VIDEO SD page automatically displays the video image of the cockpit door entry area, if:
- The emergency cockpit access is requested, or
- In flight, the routine cockpit access is requested, and the ECAM displays the CRUISE page.

L2 If the VIDEO SD page is not automatically displayed, the flight crew can press the VIDEO pb on the ECP.

L1 The flight crew can also display images from these cameras without a request for cockpit access, via dedicated controls on the ECP. For a detailed description, *Refer to DSC-31-CDS-110-20 ECP*.

EXTERNAL AND TAXIING AID CAMERA SYSTEM ✻

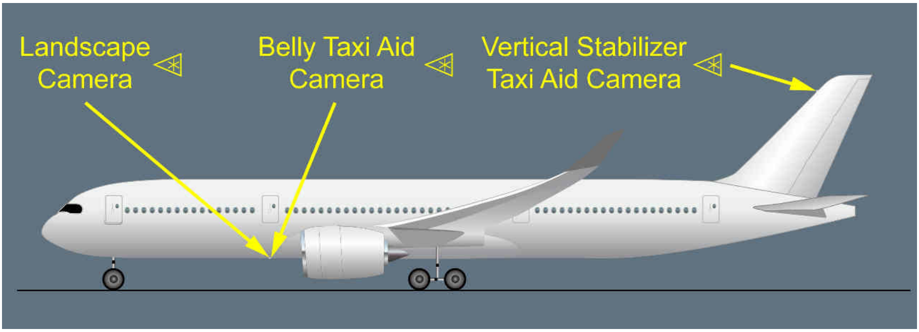
Ident.: DSC-31-CDS-110-10-00019119.0002001 / 09 MAR 16
Applicable to: ALL

The ETACS provides the flight crew an external view of the aircraft, in order to:

- Monitor external activities on ground (maintenance operations, airport activities,...)
- Make taxiing easier
- Perform a visual check of the external environment during the flight.

There are several cameras on the exterior of the aircraft that provide the external view of the aircraft.

These cameras are:
- The Belly Taxi Aid Camera ✻ (TAC) and the Vertical Stabilizer TAC ✻
- The Landscape camera ✻ .



Cameras Location

TAXI AID CAMERAS

BELLY TAXI AID CAMERA ◁

The Belly TAC provides live video images of:
- The NLG
- The ground marking
- The front of the aircraft
- 9 m (30 ft) on each side of the NLG.

VERTICAL STABILIZER TAXI AID CAMERA ◁

The Vertical Stabilizer TAC provides live video images of:
- The front of the aircraft
- The taxiway/runway
- Both engines
- The main landing gears
- A part of the wings trailing edge.

USE OF THE TAXI AID CAMERAS

The live video images from the Belly TAC ◁ and Vertical Stabilizer TAC ◁ can be displayed in the cockpit, and help the flight crew:
- To taxi the aircraft on the taxiway/runway centerline
- To evaluate the margin between the landing gears and the taxiway/runway edge for any maneuvers (e.g. a 180 ° turn).

For more information, *Refer to FCTM/PR-NP-SOP-100 External Taxi Aid Camera System*.

The live video images from the Belly TAC and the Vertical Stabilizer TAC can be displayed on:

- The PFDs, when the aircraft is on ground and the speed below 60 kt
- The SD, on ground or in flight.

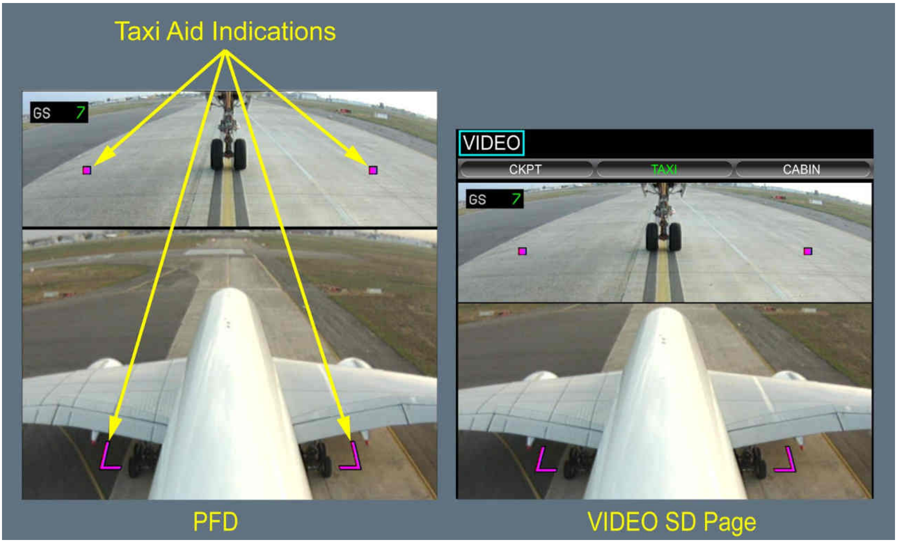
The flight crew can manually display the ETACS camera view:

- On the PFD, via the TAXI pb on the EFIS CP. For more information, *Refer to DSC-31-CDS-40-60 TAXI pb*
- On the VIDEO SD page, via dedicated controls on the ECP. For more information, *Refer to DSC-31-CDS-60-20 VIDEO Controls*

The live video images from these two cameras are displayed as follows:

- The upper part of the display provides the video from the Belly TAC . Two magenta squares, one located on each side of the NLG, indicate a lateral 5 m (16 ft) distance from the NLG
- The lower part of the display provides the video from the Vertical Stabilizer TAC . A magenta position indicator located on each outer side of the MLG helps the flight crew to determine the position of the MLG in relation with the runway centerline or the taxiway/runway edge.

Taxi Aid Indications



For using the ETACS in night condition, the lighting is ensured by external lights.

For more information, *Refer to Camera Lights*.
These two cameras are also connected to the IFE that enables to display the live video images for passengers entertainment.

LANDSCAPE CAMERA ⊲

The landscape camera provides live video images downward of the aircraft, only displayed by the IFE for passengers entertainment.

Note: *In accordance with the situation during the flight (abnormal or emergency situation), the flight crew can inhibit the live video images transmission from the three cameras (Belly TAC, Vertical Stabilizer TAC and Landscape camera) to the IFE by pressing the LANDSCAPE CAMERA pb-sw on the overhead CABIN panel.*

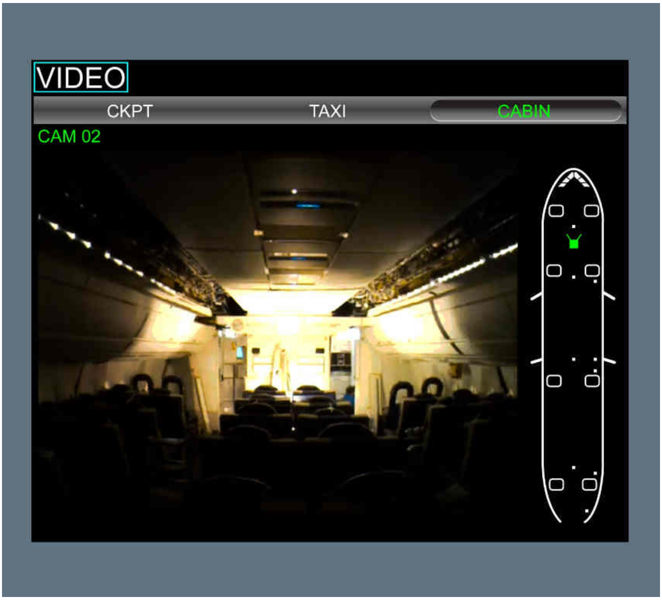
CABIN VIDEO MONITORING SYSTEM ⊲

Ident.: DSC-31-CDS-110-10-00019207.0001001 / 07 JUL 16
Applicable to: ALL

The CVMS helps the flight crew to monitor the cabin status without leaving the cockpit.
The CVMS includes several video cameras that are installed throughout the cabin.
The flight crew can display the cabin video images from each camera on the VIDEO SD page, via dedicated controls on the ECP. For more information, *Refer to DSC-31-CDS-60-20 VIDEO Controls*
The cabin crew can also observe the cabin video images on the Flight Attendant Panels (FAPs).

L2 Depending on the aircraft customization, if the cabin crew activates the ECAS ⊲ :
- An aural alert sounds in the cockpit
- The VIDEO SD page automatically appears for 5 s and displays the affected cabin area.

Cabin Camera



LOWER DECK SURVEILLANCE FUNCTION

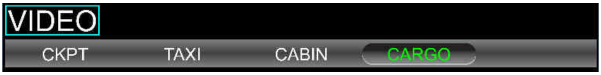
Ident.: DSC-31-CDS-110-10-00019225.0001001 / 09 MAR 16
Applicable to: ALL

The Lower Deck Surveillance Function is a video surveillance system installed in forward, aft and bulk cargo compartments.

The Lower Deck Surveillance Function enables:
- On ground, the monitoring of loading/unloading activities for damage prevention, theft...
- In flight, increased security (smoke/fire detection, damage...).

The Lower Deck Surveillance Function has several video cameras installed in all cargo compartments. The cameras enable to monitor all access doors and the entire empty cargo compartment.
On ground and in flight, the flight crew can monitor all cargo compartments on the VIDEO SD page.

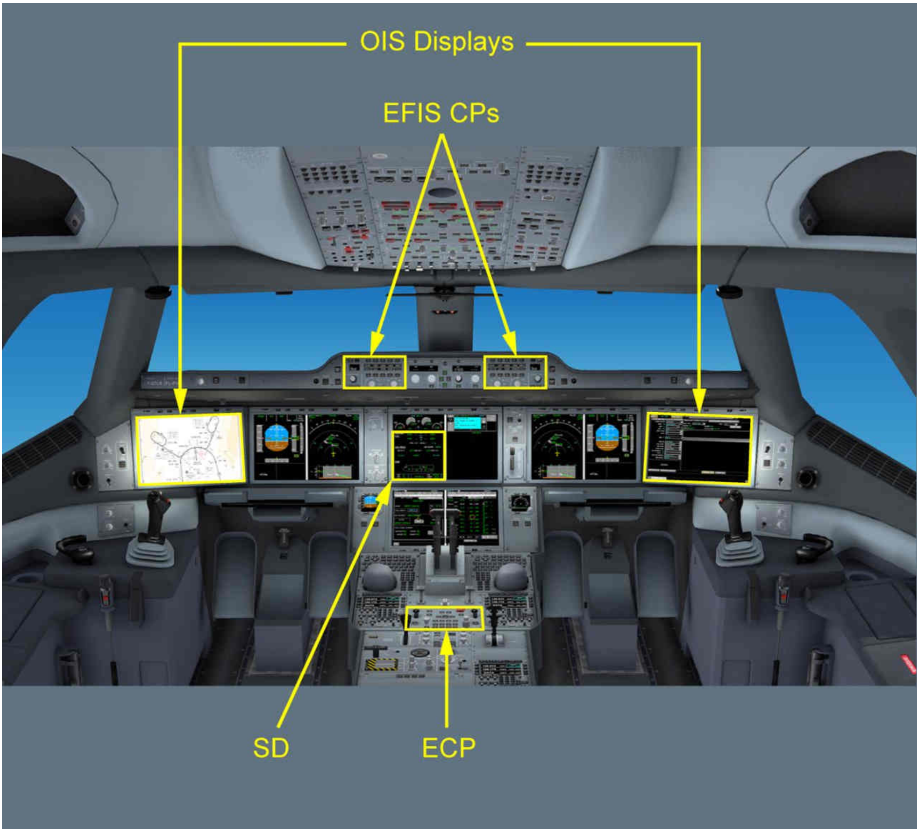
VIDEO SD page


VIDEO
CKPT
TAXI
CABIN
CARGO

COCKPIT VIEW

Ident.: DSC-31-CDS-110-20-00001492.0001001 / 18 APR 14
Applicable to: ALL

Cockpit View

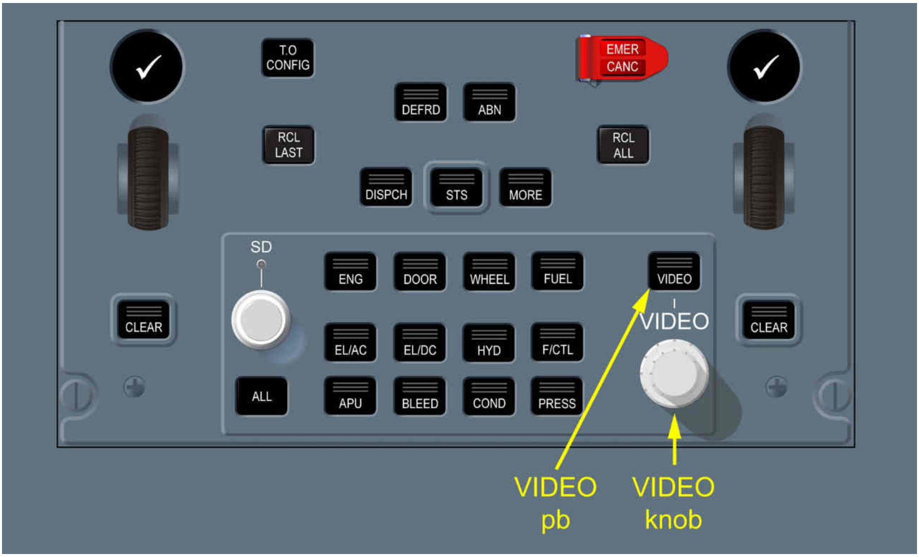


ECP

Applicable to: ALL

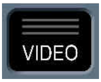
Ident.: DSC-31-CDS-110-20-10-00001493.0001001 / 18 APR 14

ECAM Control Panel

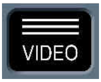

T.O
CONFIG
EMER
CANC
DEFRD
ABN
RCL
LAST
RCL
ALL
DISPCH
STS
MORE
SD
ENG
DOOR
WHEEL
FUEL
VIDEO
CLEAR
VIDEO
CLEAR
EL/AC
EL/DC
HYD
F/CTL
ALL
APU
BLEED
COND
PRESS
VIDEO
pb
VIDEO
knob

Ident.: DSC-31-CDS-110-20-10-00001499.0001001 / 18 APR 14

VIDEO pb



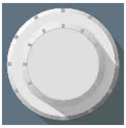
The SD does not display the VIDEO page.



The SD displays the VIDEO page.

Ident.: DSC-31-CDS-110-20-10-00001500.0001001 / 18 APR 14

VIDEO knob



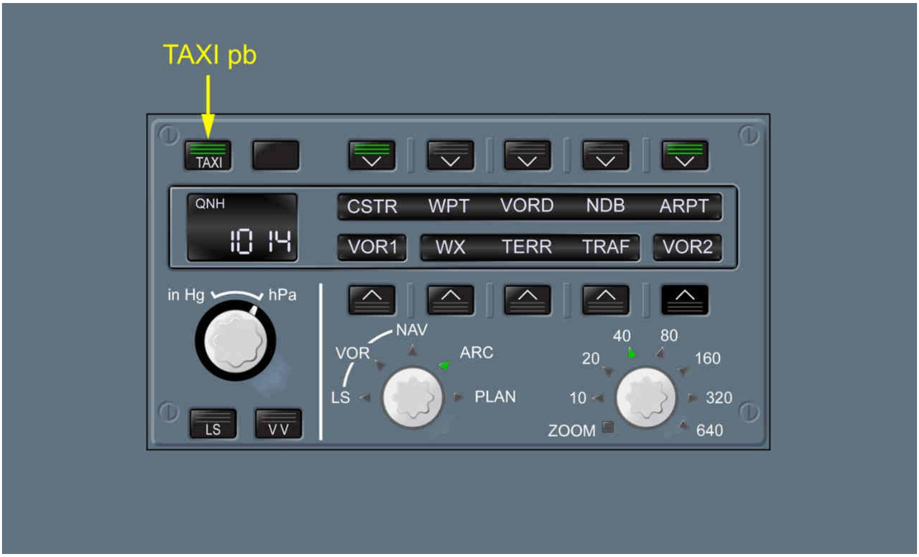
The outer part of the VIDEO knob enables the flight crew to select a different video system to be displayed on the SD.
The inner part of the VIDEO knob enables the flight crew to select a video camera associated with a video system, as applicable.

EFIS CP

Applicable to: ALL

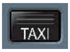
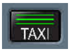
Ident.: DSC-31-CDS-110-20-20-00001494.0001001 / 03 JUL 14

EFIS Control Panel


TAXI pb
TAXI
QNH
1014
CSTR
WPT
VORD
NDB
ARPT
VOR1
WX
TERR
TRAF
VOR2
in Hg
hPa
NAV
VOR
ARC
LS
PLAN
40
80
20
160
10
320
ZOOM
640
LS
V V

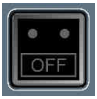
Ident.: DSC-31-CDS-110-20-20-00011291.0001001 / 18 APR 14

TAXI pb

	The onside PFD does not display the ETACS ◁ videos.
	The onside PFD displays the ETACS ◁ videos.

LANDSCAPE CAMERA PB-SW ◁

Ident.: DSC-31-CDS-110-20-00019883.0001001 / 07 JUL 16
Applicable to: ALL



The IFE system receives live video images from the landscape camera, the belly camera, and the vertical stabilizer camera.

L12

The IFE system does not receive live video images from the landscape camera, the belly camera, and the vertical stabilizer camera.

Note: The cabin crew can also manage the display of live video images on the IFE.

OIS DISPLAY

Ident.: DSC-31-CDS-110-20-00011284.0001001 / 18 APR 14
Applicable to: ALL

The flight crew can change the video display of the OIS via:

- The CAPT(F/O) OIS ON CENTER pb

L2 For more information, *Refer to DSC-31-CDS-30-20 CAPT(F/O) OIS ON CENTER pb*.

L1
- The OIS VIEW OFFSIDE pb.

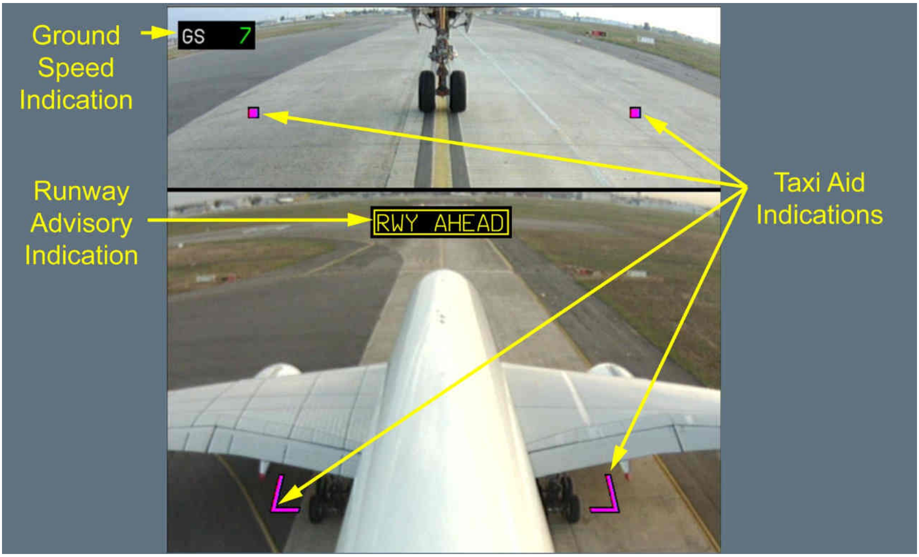
L2 For more information, *Refer to DSC-31-CDS-30-20 OIS VIEW OFFSIDE pb*.

PFD

Applicable to: ALL

Ident.: DSC-31-CDS-110-20-30-00020028.0001001 / 18 APR 14

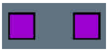
PFD


Ground Speed Indication
GS 7
Runway Advisory Indication
RWY AHEAD
Taxi Aid Indications

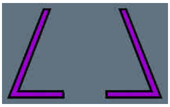
Note: *The same information can be displayed on the VIDEO SD page, except the RWY AHEAD message.*

Ident.: DSC-31-CDS-110-20-30-00020148.0001001 / 09 MAR 16

TAXI AID INDICATIONS



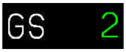
: These magenta squares indicate:
- A lateral 5 m (16 ft) distance from the NLG
- The starting points for performing a nosewheel steering maneuver, in order to guide the flight crew in taxiing the aircraft.



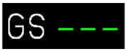
: These magenta lines indicate:
- The left and right outer edges of the MLG
- The position of the MLG, in order to guide the flight crew in the case of reduced visibility.

Ident.: DSC-31-CDS-110-20-30-00020151.0001001 / 18 APR 14

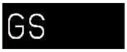
GROUND SPEED INDICATION



: Indicates the ground speed in knots.



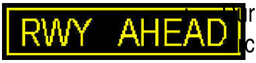
: The ground speed data is not valid.



: No ground speed data is transmitted.

Ident.: DSC-31-CDS-110-20-30-00020168.0001001 / 23 APR 14

RUNWAY APPROACHING ADVISORY



ring taxi, the runway approaching advisory warns the flight crew that the craft is near:

- A runway, or
- A runway intersection.

For more information about the runway approaching advisory, *Refer to DSC-34-NAV-80-10 Airport Navigation Surveillance*.

VIDEO MESSAGES

Ident.: DSC-31-CDS-110-20-00011285.0001001 / 18 APR 14
Applicable to: ALL

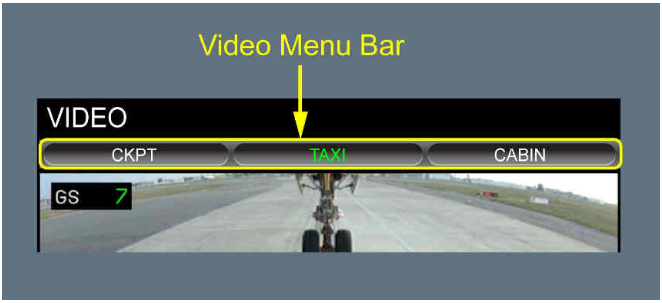
MESSAGES ON PFD AND SD

VIDEO LOADING	The video display is not ready. This message may appear for a short period of time.
VIDEO NOT AVAIL	The video display is not available. This message may appear in the case of CMV failures.

VIDEO SD PAGE

Ident.: DSC-31-CDS-110-20-00011283.0001001 / 09 MAR 16
Applicable to: ALL

Video Source



A video menu bar indicates the video system selection:
- CKPT indicates the CDSS ◁ selection
- TAXI indicates the ETACS ◁ selection
- CABIN indicates the CVMS ◁ selection
- CARGO indicates the selection of the Lower Deck Surveillance Function ◁ .

If the flight crew selects the TAXI menu, the GPIRS ground speed displays, in knots, in the upper left corner of the live video image.

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AIRCRAFT SYSTEMS

31 - RECORDERS

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DSC-31-REC-10 System Description

Overview..A

DSC-31-REC-20 Controls and Indicators

Cockpit View..A
Audio Indicators..B
Cockpit Area Microphone..C
CVR Panel..D
Recorder Panel..E

DSC-31-REC-30 Normal Operations

Recorder System and CVR..A
ACMS..B

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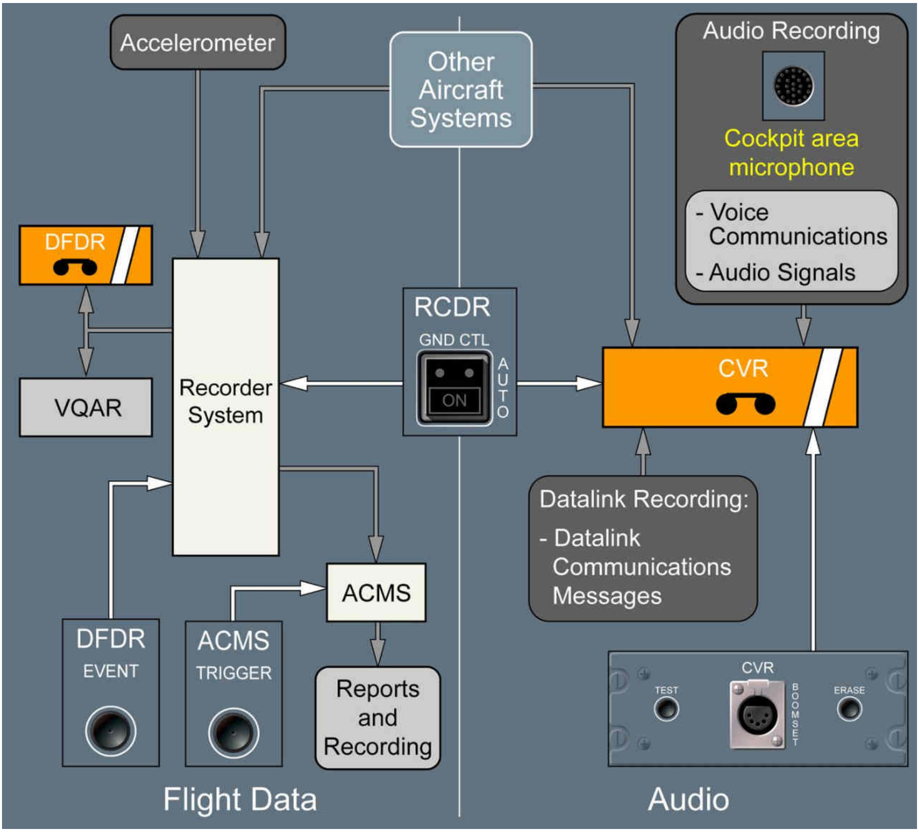
OVERVIEW

Applicable to: ALL

Ident.: DSC-31-REC-10-10-00011484.0001001 / 24 APR 14

The aircraft records flight data parameters, audio communication, and Air Traffic Control (ATC) datalink communication via:
- The Recorder System, and
- The Aircraft Condition Monitoring System (ACMS), and
- The Cockpit Voice Recorder (CVR).

Overview


Accelerometer
Other Aircraft Systems
Audio Recording
Cockpit area microphone
- Voice Communications
- Audio Signals
DFDR
VQAR
Recorder System
RCDR
GND CTL
ON
AUTO
CVR
Datalink Recording:
- Datalink Communications Messages
ACMS
DFDR EVENT
ACMS TRIGGER
Reports and Recording
CVR
TEST
BOOMSET
ERASE
Flight Data
Audio

Ident.: DSC-31-REC-10-10-00011485.0001001 / 24 APR 14

RECORDER SYSTEM

The Recorder System records the mandatory flight data parameters from the aircraft systems, and stores the flight data parameters in:

- The Digital Flight Data Recorder (DFDR)

L2 The DFDR stores the flight data parameters of the last 25 hours of operation.

L1
- The Virtual Quick Access Recorder (VQAR).

Note: The DFDR and the VQAR store the same set of flight data parameters. The Operator cannot customize the set of recorded flight data parameters.

Ident.: DSC-31-REC-10-10-00011491.0001001 / 24 APR 14

AIRCRAFT CONDITION MONITORING SYSTEM (ACMS)

The ACMS records the flight data parameters from the aircraft systems, in order to generate reports, and to record predefined sets of flight data.

L3 The Operator can customize the content and the triggering conditions of the reports and recordings.

Ident.: DSC-31-REC-10-10-00001512.0001001 / 24 APR 14

COCKPIT VOICE RECORDER (CVR)

The Cockpit Voice Recorder (CVR) records:

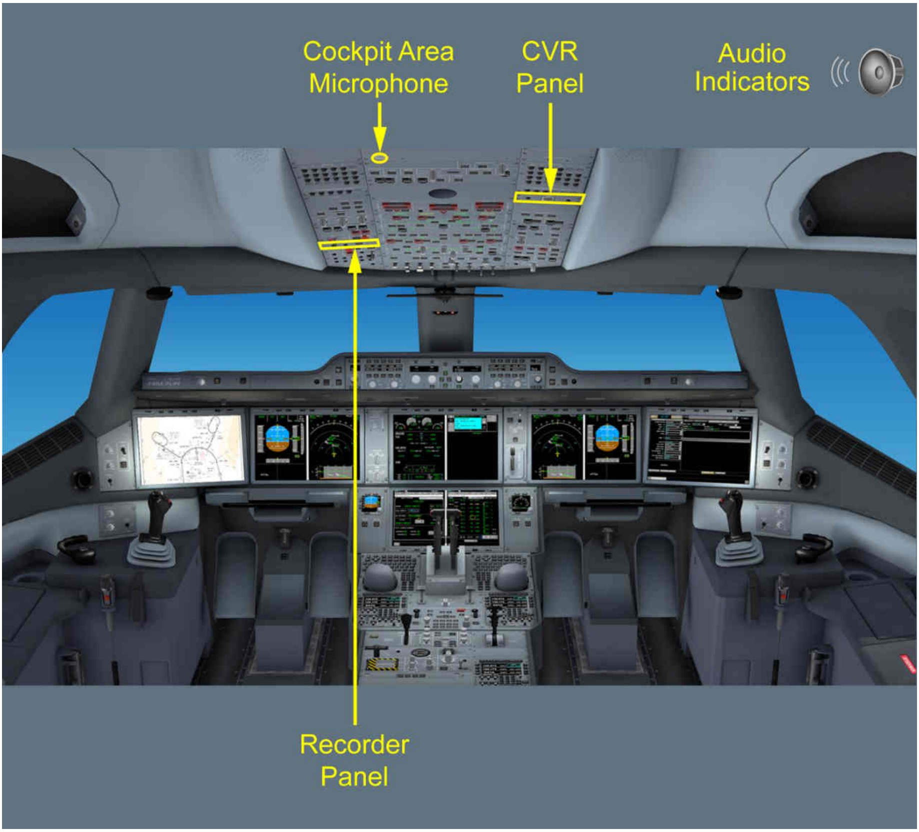
- Voice communications from and to the cockpit, and
- Cockpit sounds (include all aural alerts), and
- ATC datalink communication.

L2 The CVR keeps a recording of the most recent 2 h of communication.

COCKPIT VIEW

Ident.: DSC-31-REC-20-00001514.0001001 / 24 APR 14
Applicable to: ALL

Cockpit View


Cockpit Area Microphone
CVR Panel
Audio Indicators
Recorder Panel

AUDIO INDICATORS

Ident.: DSC-31-REC-20-00018882.0001001 / 24 APR 14
Applicable to: ALL

Audio Indicator	Condition or Cause	Duration
TEST Tone (Sound)	The flight crew presses the TEST pb	As long as the flight crew presses the TEST pb.
Erase Tone (Sound)	The flight crew presses the ERASE pb	As long as the flight crew presses the ERASE pb

Note: *The flight crew can hear the audio indicators from the CVR only via the BOOMSET jack of the CVR Panel.*

COCKPIT AREA MICROPHONE

Ident.: DSC-31-REC-20-00001518.0001001 / 24 APR 14
Applicable to: ALL

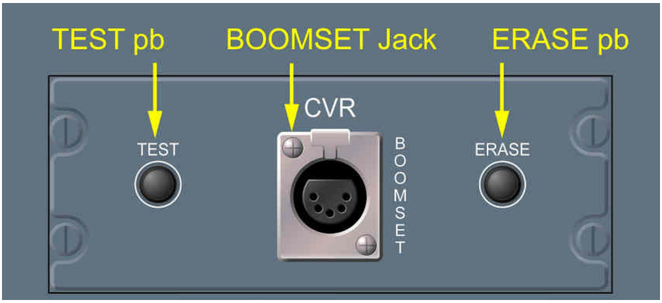
Records all the sounds in the cockpit.

CVR PANEL

Applicable to: ALL

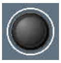
Ident.: DSC-31-REC-20-10-00001517.0001001 / 24 APR 14

CVR Panel



Ident.: DSC-31-REC-20-10-00001521.0001001 / 24 APR 14

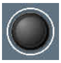
TEST PB



When pressed, performs a test of the CVR.
If the test is not successful, the ECAM displays the DISPATCH PAGE UPDATE alert, along with the associated RECORDER CVR dispatch message.

Ident.: DSC-31-REC-20-10-00001522.0001001 / 24 APR 14

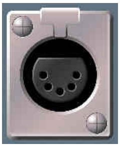
ERASE PB



When pressed for 2 s, erases the audio recording if:
- The aircraft is on ground, and
- The parking brake is on, and
- The CVR is on.

Ident.: DSC-31-REC-20-10-00001523.0001001 / 24 APR 14

BOOMSET JACK



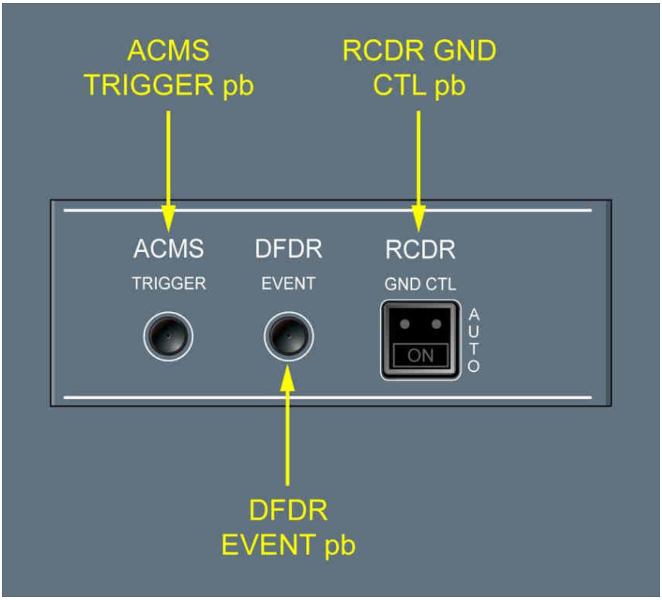
When the flight crew plugs a boomset in the BOOMSET jack:
- The cockpit sounds are audible
- The test tone is audible, when the flight crew presses the TEST pb
- The erase tone is audible, when the flight crew presses the ERASE pb.

RECORDER PANEL

Applicable to: ALL

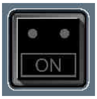
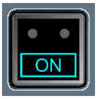
Ident.: DSC-31-REC-20-20-00001515.0001001 / 24 APR 14

Recorder Panel


ACMS
TRIGGER pb
RCDR GND
CTL pb
ACMS
TRIGGER
DFDR
EVENT
RCDR
GND CTL
ON
AUTO
DFDR
EVENT pb

Ident.: DSC-31-REC-20-20-00001519.0001001 / 24 APR 14

RCDR GND CTL PB

	The recorders automatically operate after the first engine start.
	The flight crew manually starts the Recorder System and the CVR. After the first engine start, the ON light goes off and the normal operations apply. For more information about the normal operations, *Refer to DSC-31-REC-30 Recorder System and CVR*.

Ident.: DSC-31-REC-20-20-00001520.0001001 / 24 APR 14

DFDR EVENT PB

When pressed, records an event in the data of both the DFDR and the VQAR.

Ident.: DSC-31-REC-20-20-00011321.0001001 / 24 APR 14

ACMS TRIGGER PB

When pressed, prints a specific ACMS report, and/or triggers the recording of some specific parameters.

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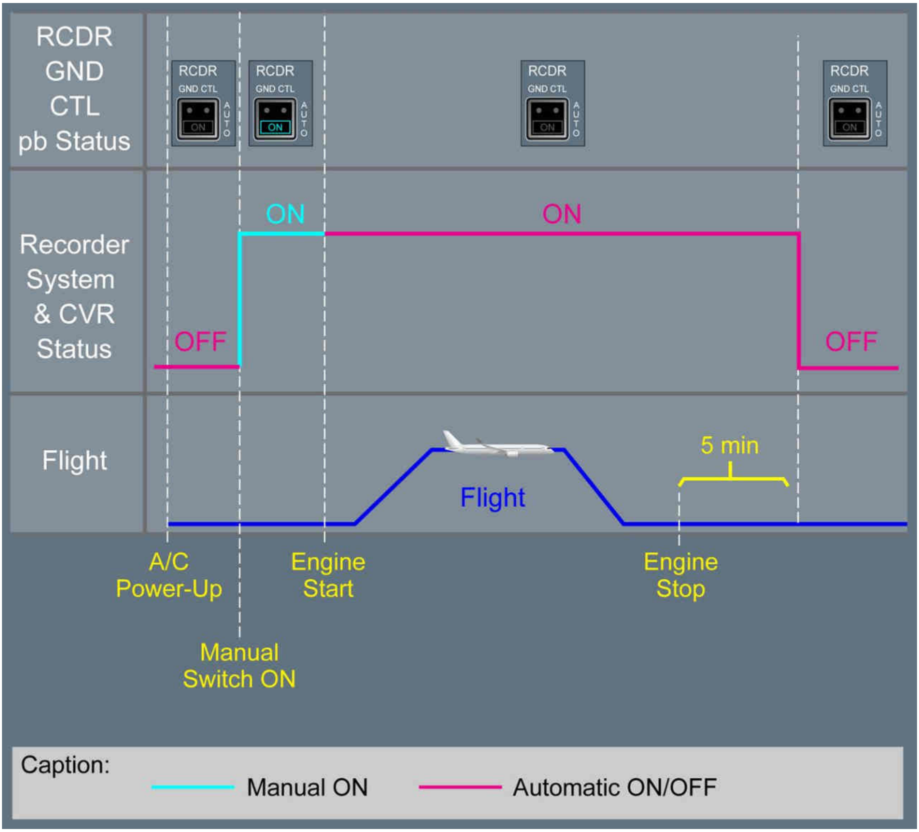
RECORDER SYSTEM AND CVR

Ident.: DSC-31-REC-30-00001513.0001001 / 24 APR 14
Applicable to: ALL

The Recorder System and the CVR automatically comes ON, as soon as any one of the engines is started.
The Recorder System and the CVR remain ON until 5 min after both engines are stopped.
When the recorders are automatically ON, the flight crew cannot stop the recording.
When the recorders are automatically OFF, the flight crew manually switches ON the recording, via the RCDR GND CTL pb.

Recorder System and CVR


RCDR GND CTL pb Status
RCDR GND CTL ON AUTO
Recorder System & CVR Status
OFF
ON
ON
OFF
Flight
Flight
5 min
A/C Power-Up
Manual Switch ON
Engine Start
Engine Stop
Caption:
Manual ON
Automatic ON/OFF

ACMS

Ident.: DSC-31-REC-30-00018881.0001001 / 24 APR 14
Applicable to: ALL

The ACMS automatically triggers independent reports and recordings.
The flight crew can print a report, or trigger a recording via the ACMS TRIGGER pb.

AIRCRAFT SYSTEMS

32 - LANDING GEAR

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DSC-32-10 Landing Gear and Doors

DSC-32-10-10 System Description

DSC-32-10-10-10 Overview

General....A
Nose Landing Gear (NLG)....B
Main Landing Gear (MLG)....C

DSC-32-10-10-20 Landing Gear Extension Retraction System (LGERS)

General....A
L/G Extension and Retraction Equipment....B
LGERS Hydraulic Power Supply....C
Normal Extension/Retraction System....D
Alternate Extension System....E
L/G Ground Door Opening....F
Interface with other systems....G

DSC-32-10-20 Controls and Indicators

Cockpit View....A
L/G GRVTY EXTN Panel....B
L/G Lever....C
MEMO....D
Slats/Flaps Display....E
WHEEL SD Page....F

DSC-32-20 Braking System

DSC-32-20-10 System Description

DSC-32-20-10-10 Overview

General....A
Brakes....B
Wheel Fuse Plugs....C

DSC-32-20-10-20 System Architecture

System Architecture....A
Brakes Control System (BRAKES CTL)....B
Remote Braking Control Units (RBCU)....C
Tachometers....D
Brake Pressure Transducers....E
Interface With Other Systems....F

Continued on the following page

Continued from the previous page

DSC-32-20-10-30 Braking System Hydraulic Architecture

General.....A
Normal Hydraulic Network.....B
Alternate Hydraulic Network.....C

DSC-32-20-10-40 Braking Modes

General.....A
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Continued from the previous page

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Backup Steering Function.......... A

DSC-32-40 Landing Gear Monitoring System (LGMS)

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Overview.......... A
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Cockpit View.......... A
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MEMO.......... C
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Localization Title	Toc Index	ID	Reason
DSC-32-20-25 Erroneous BRAKES AFT(FWD) WHEELS BRK LOST after landing gear retraction	A	1	Documentation update: Deletion of information.
			Modification of the description section in order to introduce the second operational case. This abnormal behavior may occur if the flight crew selects the L/G lever UP and then selects the L/G lever DOWN before the landing gear uplock.
DSC-32-20-25 Erroneous BRAKES AFT(FWD) WHEELS BRK LOST after landing gear retraction	A	2	Enhancement of the title for standardization purpose.
			Modification of the operational recommendation in order to provide the recommendations applicable to the second operational case.

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Overview

GENERAL

Ident.: DSC-32-10-10-10-00002197.0001001 / 30 APR 14
Applicable to: ALL

The A350 has:
- One Nose Landing Gear (NLG)
- Two Main Landing Gears (MLG).

The Landing Gear Extension and Retraction System (LGERS) extends and retracts the NLG and the MLG.

NOSE LANDING GEAR (NLG)

Ident.: DSC-32-10-10-10-00012144.0001001 / 30 APR 14
Applicable to: ALL

The NLG is located in the forward lower fuselage, on the aircraft centreline. The NLG is a forward retracting gear. The NLG is hydraulically operated by a single Extension/Retraction Actuator.

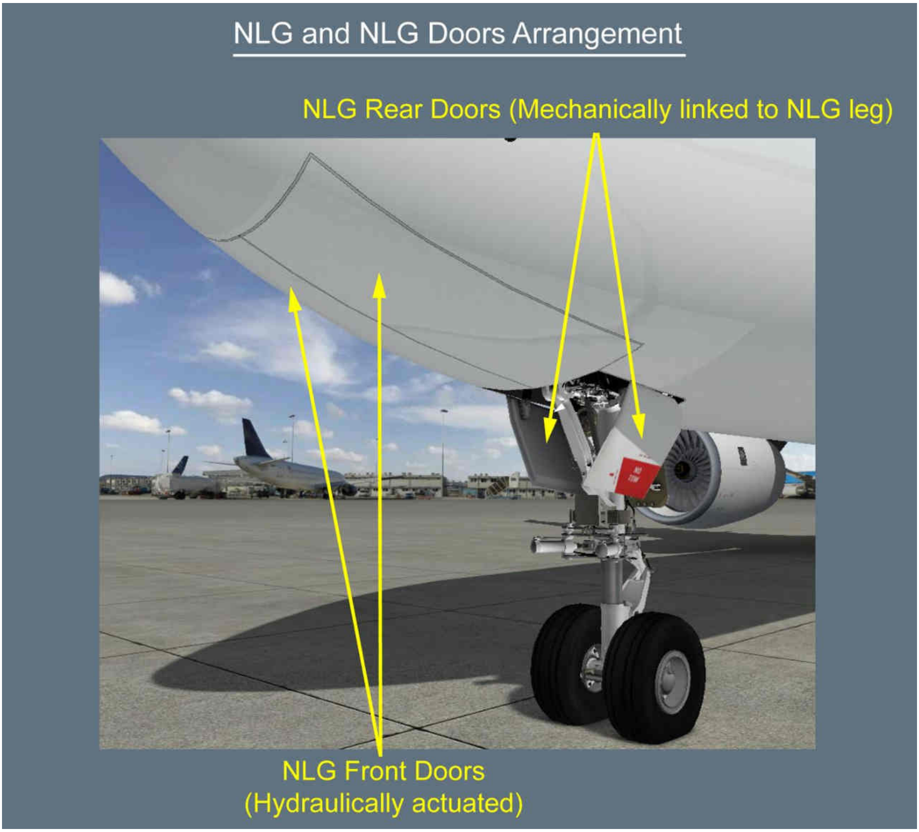
L2 The NLG is a twin wheel gear equipped with an oleo shock absorber.

L1 The NWS is operated, thanks to two steering actuators. For more information, *Refer to NWS Actuators*.

The NLG bay is fitted with four doors:
- Two rear doors that are mechanically linked to the NLG
- Two front doors, each operated by a single hydraulic actuator.

L2 In normal operation, when the NLG is extended, the rear doors are open, and the front doors are closed.

Arrangement of the NLG, and NLG doors


NLG and NLG Doors Arrangement
NLG Rear Doors (Mechanically linked to NLG leg)
NLG Front Doors
(Hydraulically actuated)

MAIN LANDING GEAR (MLG)

Ident.: DSC-32-10-10-10-00012146.0002001 / 30 APR 14
Applicable to: ALL

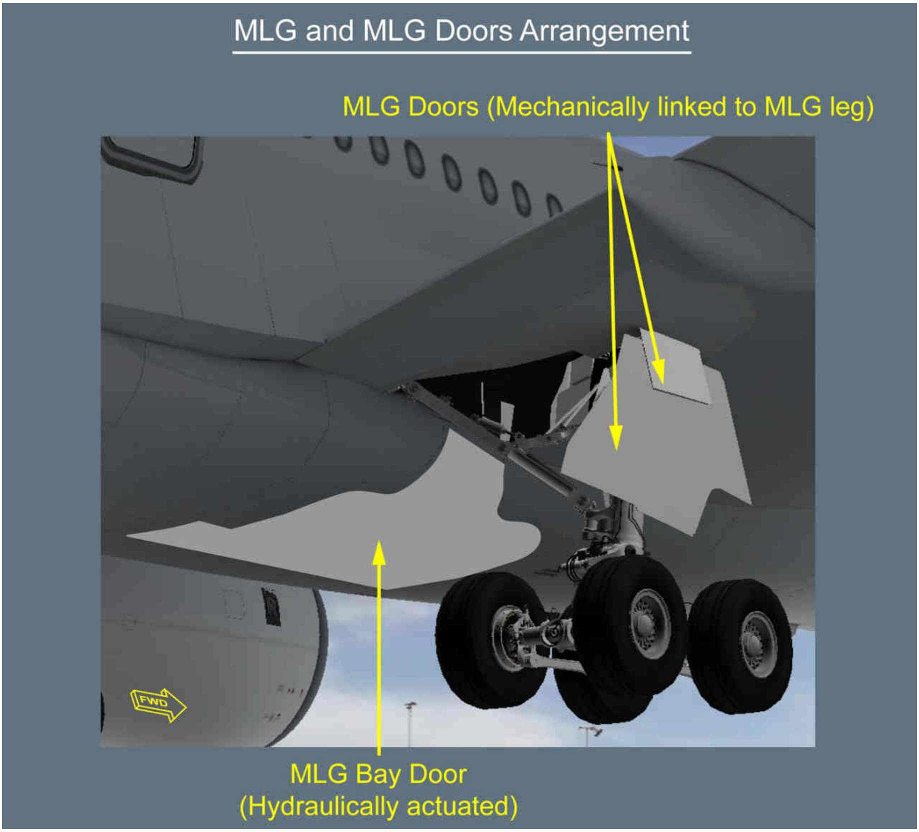
The MLG includes two MLG segments, one under each wing.
Each MLG segment retracts sideways into its MLG bay in the fuselage.
The MLG bogies have four wheels in a twin tandem configuration.
L2 Each MLG segment has an oleo shock absorber.

L1 Each MLG has three doors:

- Two doors that are mechanically linked to the MLG segment (leg)
- One MLG bay door that is operated by a single hydraulic actuator.

L2 In normal operation, when the MLG is extended, the mechanically-operated doors stay open, and the hydraulically-operated door is closed.

Arrangement of the MLG, and MLG Doors


MLG and MLG Doors Arrangement
MLG Doors (Mechanically linked to MLG leg)
FWD
MLG Bay Door
(Hydraulically actuated)

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Landing Gear Extension Retraction System (LGERS)

GENERAL

Ident.: DSC-32-10-10-20-00002198.0001001 / 30 APR 14
Applicable to: ALL

The LGERS is divided into three systems:
- The normal extension/retraction system
- The alternate extension system
- The ground door opening system.

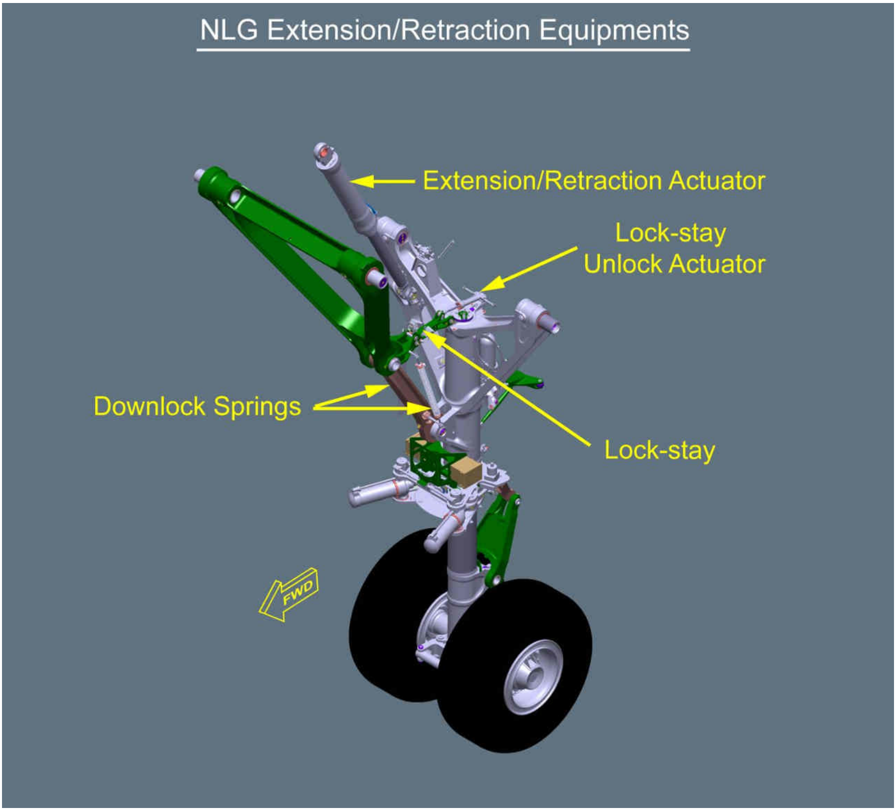
L/G EXTENSION AND RETRACTION EQUIPMENT

Applicable to: ALL

Ident.: DSC-32-10-10-20-10-00002200.0001001 / 30 APR 14

NOSE LANDING GEAR

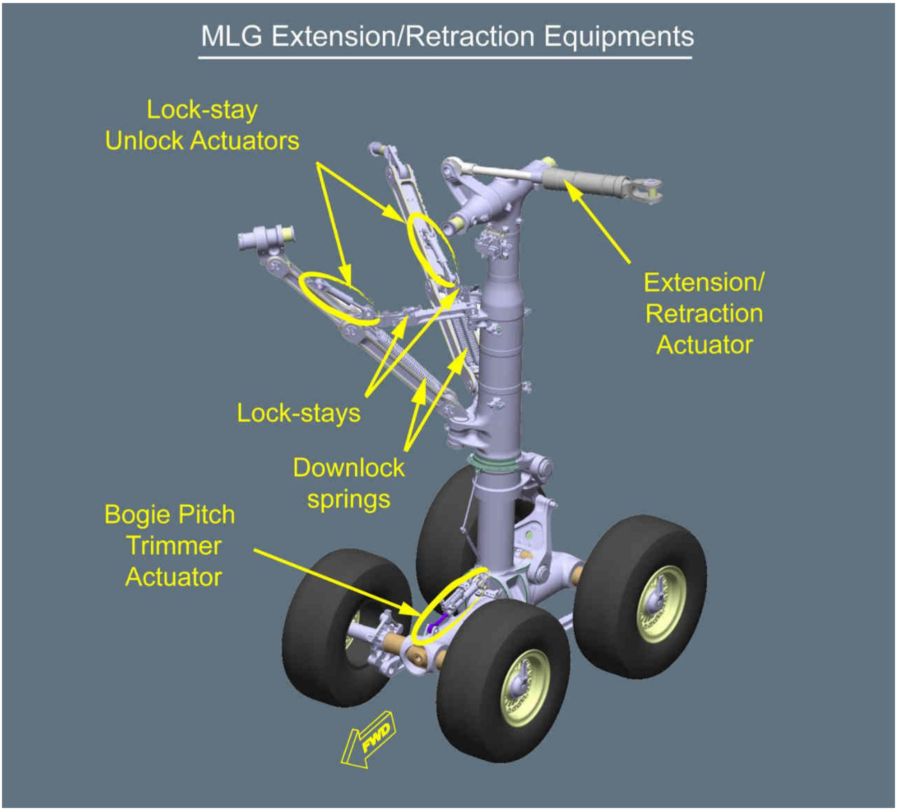
Nose Landing Gear Retraction System Equipment


NLG Extension/Retraction Equipments
Extension/Retraction Actuator
Lock-stay
Unlock Actuator
Downlock Springs
Lock-stay
FWD

Ident.: DSC-32-10-10-20-10-00002208.0002001 / 30 APR 14

MAIN LANDING GEAR

Main Landing Gear Retraction System Equipment


MLG Extension/Retraction Equipments
Lock-stay Unlock Actuators
Extension/ Retraction Actuator
Lock-stays
Downlock springs
Bogie Pitch Trimmer Actuator
FWD

Ident.: DSC-32-10-10-20-10-00012319.0001001 / 13 JAN 15

LANDING GEAR AND LANDING GEAR DOORS ACTUATORS

Hydraulic actuators operate the L/G and L/G doors. In normal operation, the aircraft hydraulic system powers the L/G and L/G doors actuators.

Ident.: DSC-32-10-10-20-10-00002211.0001001 / 13 JAN 15

LANDING GEAR LOCK-STAYS

The lock-stays secure the L/G in the extended position.

L3 The downlock mechanism is mechanical, and is achieved via downlock springs.

L1 When the aircraft is on the ground, locking pins are installed on each landing gear lock-stay to mechanically prevent the retraction of the L/G.

L2 For more information about external walkaround SOP, *Refer to PRO-NOR-SOP-50 General*.

Ident.: DSC-32-10-10-20-10-00012147.0001001 / 30 APR 14

Lock-stay unlock actuators release the lock-stays from the downlock position for retraction of the L/G.

L2 The lock-stay unlock actuators are commanded by the NLG and MLG selector valves. For more information, *Refer to Hydraulic Power Supply.*

Ident.: DSC-32-10-10-20-10-00002210.0001001 / 30 APR 14

BOGIE PITCH TRIMMER ACTUATORS

A bogie pitch trimmer actuator holds each MLG bogie in a correct pitch attitude when the gear is not in contact with the ground.

L2 The green hydraulic system provides hydraulic power to the pitch trimmer actuators.

L3 The hydraulic pressure in the pitch trimmer actuators is low. Therefore, when the aircraft is on the ground, the bogies are forced to the horizontal position by the weight of the aircraft.
The bogie pitch trimmer actuators are the only gear retraction / extension hydraulic equipment permanently pressurized, including when gears are uplocked.

Ident.: DSC-32-10-10-20-10-00002203.0001001 / 30 APR 14

L3 L/G AND L/G DOORS UPLOCKS

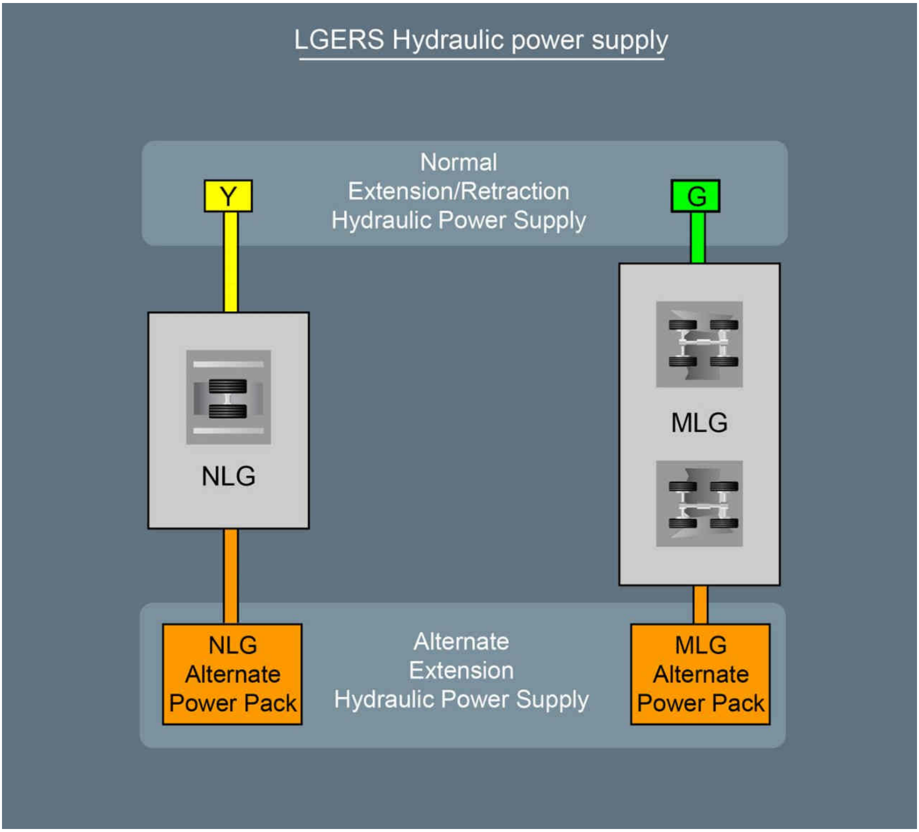
The uplocks hold the L/G in the retracted position, and the L/G doors in the closed position.

Each uplock has:
- A locking hook that mechanically locks the gear/door when the L/G is up.
- Two hydraulic actuators that release the locking hook:
  - One normal unlock actuator that is controlled by the active L/G CTL System.
  - One alternate unlock actuator that is controlled by the alternate extension system for L/G gravity extension.

LGERS HYDRAULIC POWER SUPPLY

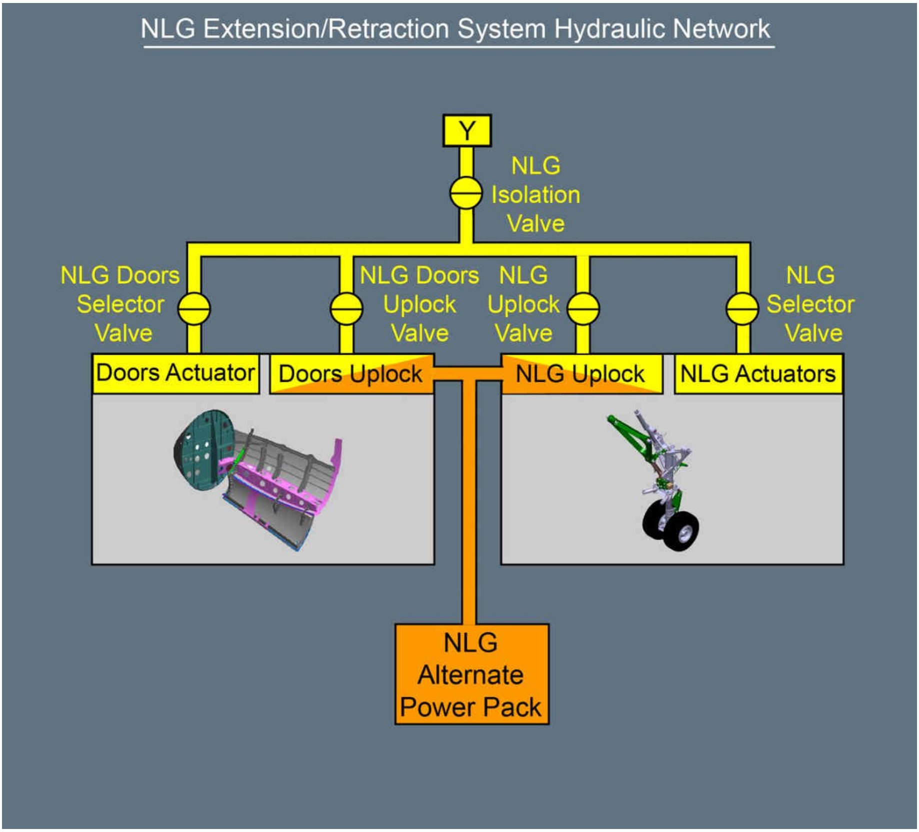
Applicable to: ALL

Ident.: DSC-32-10-10-20-20-00012321.0001001 / 30 APR 14

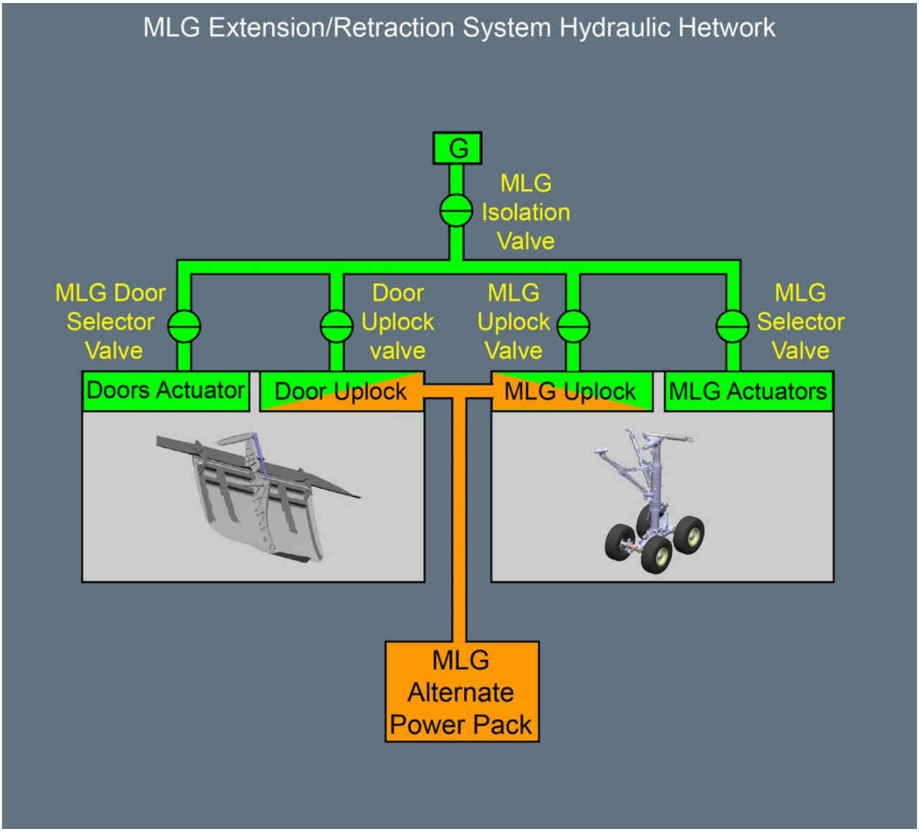

LGERS Hydraulic power supply
Normal Extension/Retraction Hydraulic Power Supply
Y
G
NLG
MLG
NLG Alternate Power Pack
Alternate Extension Hydraulic Power Supply
MLG Alternate Power Pack

LGERS Hydraulic power supply

NLG Extension/Retraction System Hydraulic Network


NLG Extension/Retraction System Hydraulic Network
Y
NLG Isolation Valve
NLG Doors Selector Valve
NLG Doors Uplock Valve
NLG Uplock Valve
NLG Selector Valve
Doors Actuator
Doors Uplock
NLG Uplock
NLG Actuators
NLG Alternate Power Pack

MLG Extension/Retraction System Hydraulic Network


MLG Extension/Retraction System Hydraulic Hetwork
G
MLG Isolation Valve
MLG Door Selector Valve
Door Uplock valve
MLG Uplock Valve
MLG Selector Valve
Doors Actuator
Door Uplock
MLG Uplock
MLG Actuators
MLG Alternate Power Pack

Ident.: DSC-32-10-10-20-20-00002206.0001001 / 13 JAN 15

NORMAL HYDRAULIC POWER SUPPLY

The YELLOW hydraulic system powers:
- The normal extension/retraction of the NLG
- The normal operation of the NLG doors.

The GREEN hydraulic system powers:
- The normal extension/retraction of the MLG
- The normal operation of the MLG doors.

L2 *Note: The LGERS is pressurized only during the extension and the retraction phases. At all other flight phases, the LGERS is isolated from hydraulic pressure by closing the isolation valves (Refer to Isolation valves).*

Ident.: DSC-32-10-10-20-20-00012322.0001001 / 30 APR 14

ALTERNATE HYDRAULIC POWER SUPPLY

Two alternate power packs provide independent hydraulic power to the L/G alternate extension system.
L2 The alternate power packs provide hydraulic power to the uplocks to release the doors and gears.
L3 Each alternate power pack converts electrical power to hydraulic power using two electrical pumps. Each pump is powered by a different electrical supply.
L2 Each alternate power pack has its own hydraulic fluid reservoir.
L1 One alternate power pack operates the NLG alternate extension and the other alternate power pack operates the MLG alternate extension.

Ident.: DSC-32-10-10-20-20-00002371.0001001 / 30 APR 14

L2 LANDING GEAR ISOLATION VALVES

There are two L/G isolation valves:
- One for the NLG
- One for the MLG.

The L/G isolation valves close and isolate the associated landing gear from the hydraulic power (YELLOW for NLG or GREEN for MLG). The L/G isolation valves also isolate the normal hydraulic system during alternate extension operation through the alternate power pack.

Ident.: DSC-32-10-10-20-20-00002205.0001001 / 30 APR 14

L2 LANDING GEAR SELECTOR VALVES

There are four L/G selector valves
- One selector valve for the NLG actuators
- One selector valve for the MLG door actuators
- One selector valve for the NLG extension/retraction actuator and the NLG lock-stay unlock actuator
- One selector valve for both MLG extension/retraction actuators and both MLG lock-stay unlock actuators.

The selector valves control the hydraulic power that is supplied to the actuators.

NORMAL EXTENSION/RETRACTION SYSTEM

Applicable to: ALL

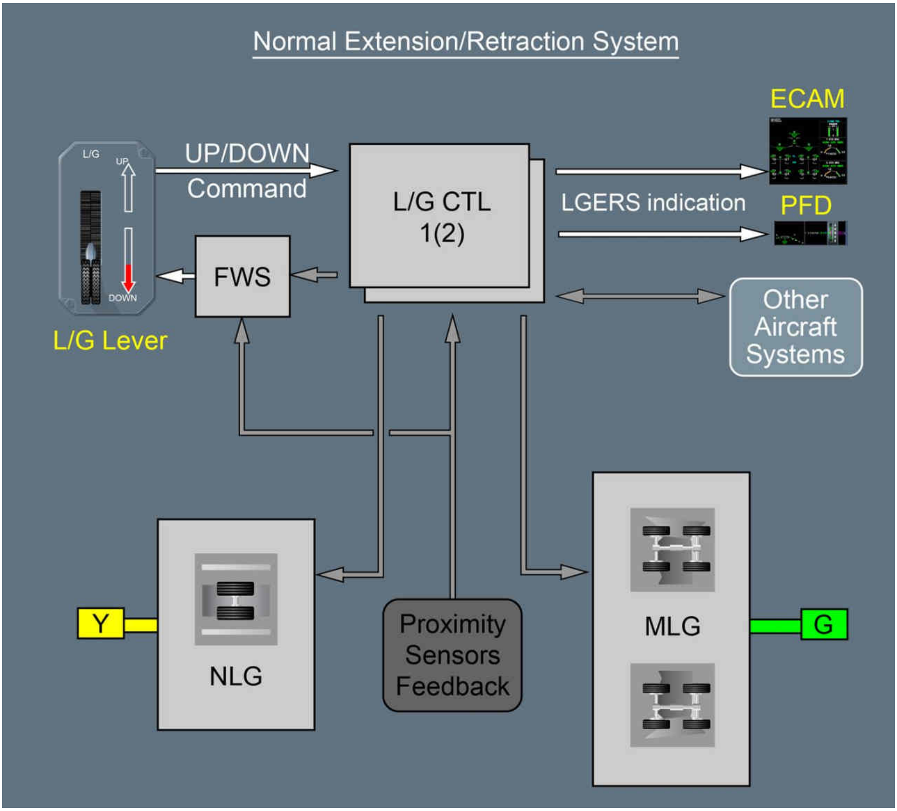
Ident.: DSC-32-10-10-20-30-00002199.0001001 / 30 APR 14

In normal operation, the flight crew selects the extension/retraction of the landing gear, via the landing gear lever.
The LGERS uses hydraulic power to actuate the landing gear and the landing gear doors.

Ident.: DSC-32-10-10-20-30-00002202.0001001 / 13 JAN 15

L/G CONTROL SYSTEM (L/G CTL)

Normal Extension/Retraction System


Normal Extension/Retraction System
L/G
UP
DOWN
L/G Lever
UP/DOWN
Command
FWS
L/G CTL
1(2)
LGERS indication
ECAM
PFD
Other
Aircraft
Systems
Y
NLG
Proximity
Sensors
Feedback
MLG
G

The L/G CTL system controls the LGERS and has two redundant control systems referred to as L/G CTL 1 and L/G CTL 2.
One L/G CTL system is active and controls the LGERS, while the other is passive.
L2 The passive L/G CTL system automatically activates if the active L/G CTL system fails.
The active L/G CTL system changes when the L/G lever is moved from down to up.

L1 Two Landing Gear Control and Indication Systems (LGCIS) command each L/G CTL system:

L3
- LGCIS 1 is hosted in CPIOM H61 and CPIOM H63 for L/G CTL 1
- LGCIS 2 is hosted in CPIOM H62 and CPIOM H64 for L/G CTL 2.

L1 When the flight crew sets the L/G lever to UP or DOWN, the active L/G CTL system generates and sends the appropriate electrical commands in sequence to:
- Retract and secure the L/G in the retracted position (uplock), or
- Extend and secure the L/G in the extended position (downlock).

L2 *Note: It takes about 20 s to extend or retract the L/G.*

Ident.: DSC-32-10-10-20-30-00012271.0001001 / 06 MAR 15

L3 The following conditions must be satisfied before the retraction sequence is initiated:
- The nose wheel steering is centred and the NLG shock absorber is fully extended
- Both MLG shock absorbers are fully extended
- Both MLG bogies are in the tilted position.

L2 All gears are retracted simultaneously.

L1 Upon L/G retraction demand, when the flight crew sets the L/G lever to UP:
- L3 The active L/G CTL system changes over
- The isolation valves open to provide normal hydraulic power supply
- L2 The L/G CTL system commands the doors uplock to open
- L1 The L/G CTL system commands the doors to open
- Once the doors are opened, the L/G CTL system commands the lock-stay unlock actuators to release the L/G from the downlock position, and the L/G to retract
- Once the L/G is uplocked, the L/G CTL system commands the doors actuators to close the doors.

Ident.: DSC-32-10-10-20-30-00012272.0001001 / 03 DEC 15

Upon L/G extension demand, when the flight crew sets the L/G lever to DOWN:
- L3 The isolation valves open to provide normal hydraulic power supply
- L2 The L/G CTL system commands the doors uplock to release the doors
- L1 The L/G CTL system commands the doors to open
- L2 Once the doors are open, the L/G CTL system commands the gears uplock to release the gears
- L1 The L/G CTL system commands the gears to extend

- The L/G are locked mechanically in the downlock position by the lock-stays, thanks to the downlock springs
- The LGCIS commands the doors to close.

Ident.: DSC-32-10-10-20-30-00002204.0001001 / 07 NOV 16

PROXIMITY SENSORS

The proximity sensors provide the L/G CTL system with feedback on L/G and L/G doors position.

L3 Each L/G CTL system has an assigned set of proximity sensors, and receives the following data:
- L/G uplocked or downlocked
- L/G doors fully open or uplocked
- Shock absorber fully extended
- Bogies in flight or on ground position
- Nose Wheel centered.

L1 The landing gear position data is sent to:
- The ECAM for the generation of alerts and the display of the WHEEL SD page
- The PFD for the landing gear position indication on the Slats/Flaps display.
- The FWS, for the red arrow indication on the L/G lever panel.

L2 The L/G CTL system also computes a consolidated Weight on Wheel information based on the proximity sensors data. This information is then transmitted to various aircraft system and used in the elaboration of their own ground/flight status.
On each gear lock-stay, an additional proximity sensor provides an independent gear downlock indication to the ECAM and PFD.

ALTERNATE EXTENSION SYSTEM

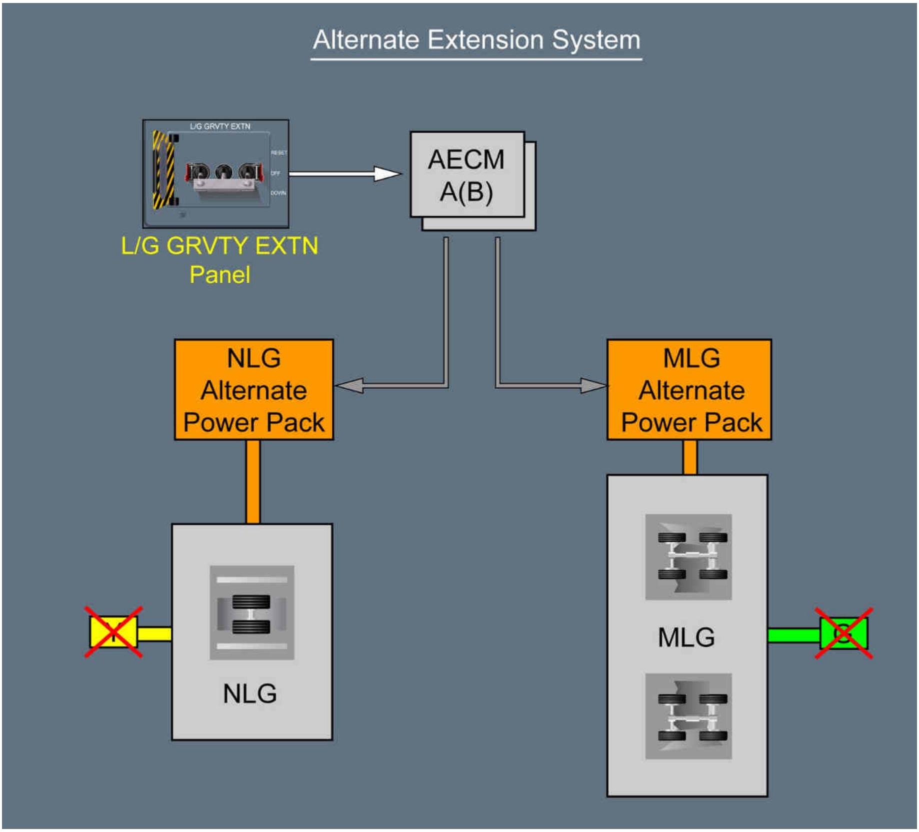
Applicable to: ALL

Ident.: DSC-32-10-10-20-40-00002368.0001001 / 30 APR 14

When the normal extension of L/G fails, the flight crew can perform a gravity extension via the L/G GRVTY EXTN selector.
The gravity extension of the L/G does not use normal hydraulic power supply.
Two alternate power packs provide hydraulic power to release the L/G from the uplock position. One for the NLG and one for the MLG.
L2 After a gravity extension, all the L/G doors remain open.

Ident.: DSC-32-10-10-20-40-00012323.0001001 / 30 APR 14

Alternate Extension System


Alternate Extension System
L/G GRVTY EXTN
RESET
OFF
DOWN
L/G GRVTY EXTN
Panel
AECM
A(B)
NLG
Alternate
Power Pack
MLG
Alternate
Power Pack
Y
NLG
MLG
G

Ident.: DSC-32-10-10-20-40-00012149.0001001 / 30 APR 14

Two Alternate Extension Control Modules (AECMs) command the alternate extension of the landing gear.

The AECMs and the L/G CTL system are independent.

L3 The two AECMs operate simultaneously and independently to ensure that one supply is always available.

Ident.: DSC-32-10-10-20-40-00002370.0001001 / 03 DEC 15

GRAVITY EXTENSION SEQUENCE

When the flight crew sets the L/G GRVTY EXTN selector to the DOWN position, the AECMs send the appropriate electrical commands to the alternate power packs to extend the landing gear by gravity. The MLG is released first and 30 s later the NLG releases.

L3 When the flight crew selects the L/G GRVTY selector to down, the alternate extension sequence is as follows:

1. The motors of the alternate power packs start (MLG first and NLG 30 s later).
2. The AECMs ensure the closure of the NLG and MLG isolation valves to isolate the LGERS from the normal hydraulic supply.
3. Hydraulic pressure from the alternate power packs unlocks the door uplocks and doors start to open by gravity.
4. Hydraulic pressure from the alternate power packs unlocks the gear uplocks and the gears extend by gravity and downlock in the extended position.

L1 The total duration of the L/G gravity sequence should not exceed 90 s.
The landing gear position indications remain available during a gravity extension from the NLG and MLG proximity sensors.

L/G GROUND DOOR OPENING

Ident.: DSC-32-10-10-20-00002201.0001001 / 13 JAN 15
Applicable to: ALL

L2 For maintenance purposes, the landing gear doors can be opened and closed on the ground via the ground door opening levers (one per landing gear).
The landing gear doors open by gravity and need hydraulic pressure to be closed.
L3 The Landing Gear Control and Indication System (LGCIS) commands the closing sequence.

INTERFACE WITH OTHER SYSTEMS

Ident.: DSC-32-10-10-20-00002207.0001001 / 03 APR 20
Applicable to: ALL

L3 The LGCIS receives airspeed data from the ADIRS to inhibit the extension of the landing gear above 260 kt or M 0.6.
The LGCIS sends the "weight on wheels" (ground/flight) data to all other aircraft systems.

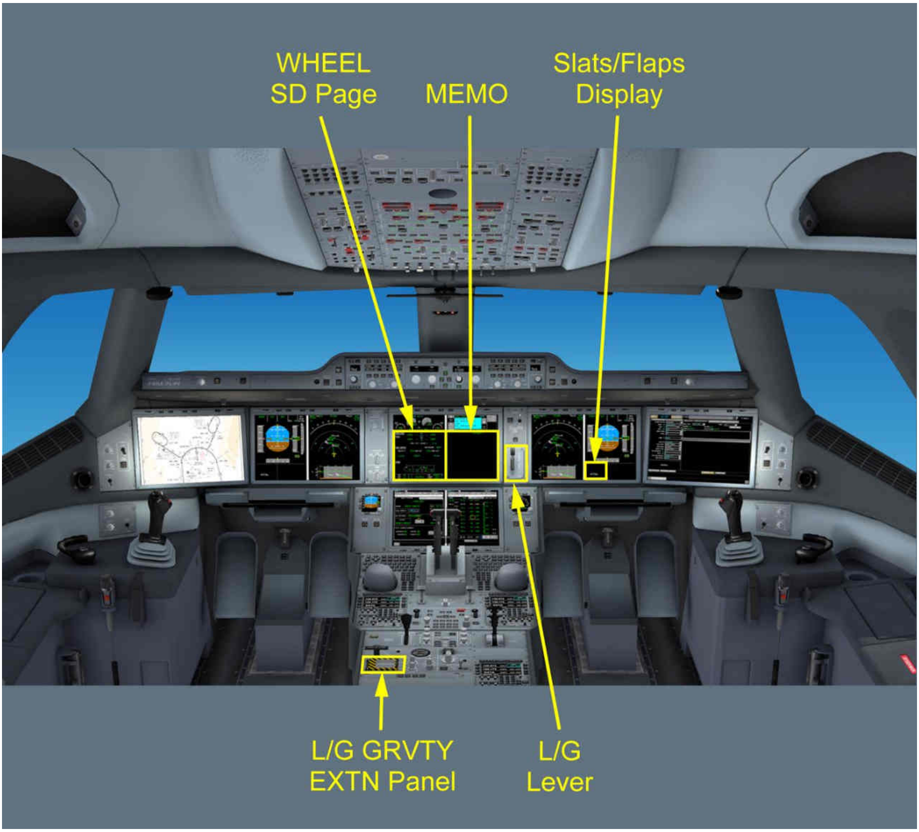
These systems are:
- The Air Conditioning System
- The Air Data/Inertial Reference System (ADIRS)
- The Aircraft Condition Monitoring System (ACMS)
- The Airport Navigation Function (ANF)

- The Anti-Ice System
- The Auto Flight System (AFS)
- The Automatic Direction Finder (ADF) ◁
- The Auxiliary Power Unit (APU)
- The Bleed Air System
- The Braking Control System (BCS)
- The Cabin Pressurization System to control the pressurization cycle
- The Cockpit Voice Recorder (CVR)
- The Communication System
- The Digital Flight Data Recorder (DFDR)
- The Distance Measuring Equipment (DME)
- The Doors and Slides Control System (DSCS)
- The Electrical System
- The Engine Interface Management (EIM)
- The Taxi Video ◁
- The Fire Protection System
- The Flight Control System for the ground spoilers extension logic
- The Flight Management System (FMS)
- The Flight Warning System (FWS)
- The Fuel System
- The Hydraulic System
- The Landing Gear Monitoring System (LGMS)
- The Lights System
- The Multi Mode Receiver (MMR)
- The Oxygen System
- The Radio Altimeters (RA)
- The Steering System
- The Surveillance System (SURV)
- The Ventilation System
- The VHF Omnidirectional Range (VOR)
- The Water and Waste System

COCKPIT VIEW

Ident.: DSC-32-10-20-00012324.0001001 / 30 APR 14
Applicable to: ALL

Cockpit View

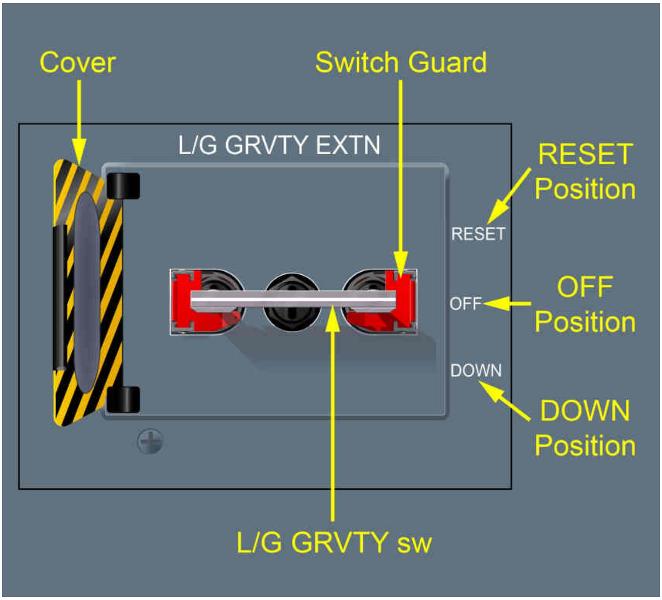

WHEEL
SD Page
MEMO
Slats/Flaps
Display
L/G GRVTY
EXTN Panel
L/G
Lever

L/G GRVTY EXTN PANEL

Applicable to: ALL

Ident.: DSC-32-10-20-10-00002326.0001001 / 30 APR 14

L/G GRVTY EXTN Panel


Cover
Switch Guard
L/G GRVTY EXTN
RESET Position
RESET
OFF
OFF Position
DOWN
DOWN Position
L/G GRVTY sw

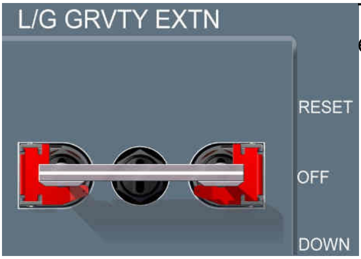
Ident.: DSC-32-10-20-10-00002327.0001001 / 30 APR 14

L/G GRVTY SW

The L/G GRVTY EXTN panel has three switches that are linked together for simultaneous operation, and protected by a cover.

Ident.: DSC-32-10-20-10-00002328.0001001 / 30 APR 14

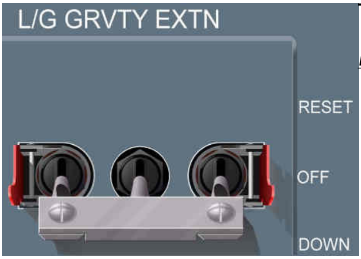
OFF POSITION


L/G GRVTY EXTN
RESET
OFF
DOWN

The landing gear lever is used for the normal extension/retraction of the L/G.

Ident.: DSC-32-10-20-10-00002329.0001001 / 30 APR 14

DOWN POSITION

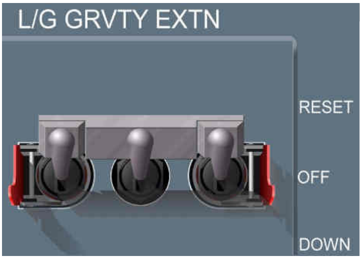

L/G GRVTY EXTN
RESET
OFF
DOWN

The extension of the landing gear by gravity is selected.

Note: *Both switch-guards should be removed before the DOWN position is selected.*

Ident.: DSC-32-10-20-10-00002331.0001001 / 30 APR 14

RESET POSITION


L/G GRVTY EXTN
RESET
OFF
DOWN

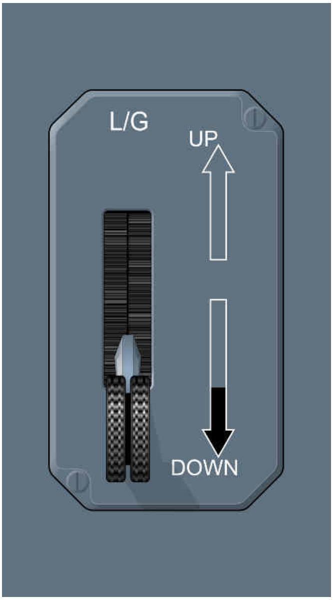
Do not use the RESET position in flight.

CAUTION	The L/G GRVTY sw must be reset only on ground by maintenance personnel.

L/G LEVER

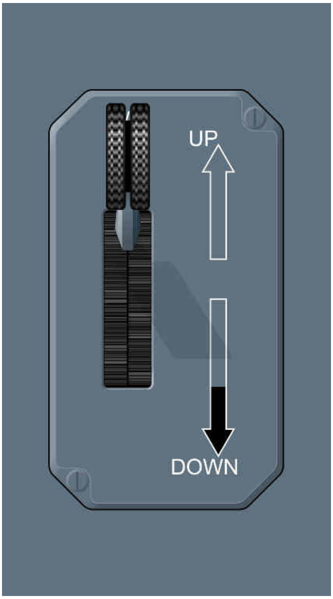
Ident.: DSC-32-10-20-00002336.0001001 / 30 APR 14

Applicable to: ALL



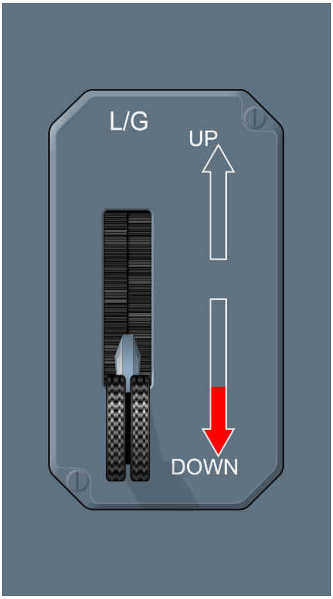
Landing gear extension is selected.

L12



Landing gear retraction is selected.
As long as both L/G CTL systems detect the compression of any gear, an interlock mechanism (baulk) locks the landing gear lever in the DOWN position to prevent the retraction of the landing gear.

L12



The red arrow comes on and flashes when the aircraft is below 750 ft radio altimeter and one or more landing gear is not down. The red arrow logic is independent from the position of the landing gear lever.
Associated with the L/G GEAR NOT DOWN alert, (*Refer to procedure*).

MEMO

Applicable to: ALL

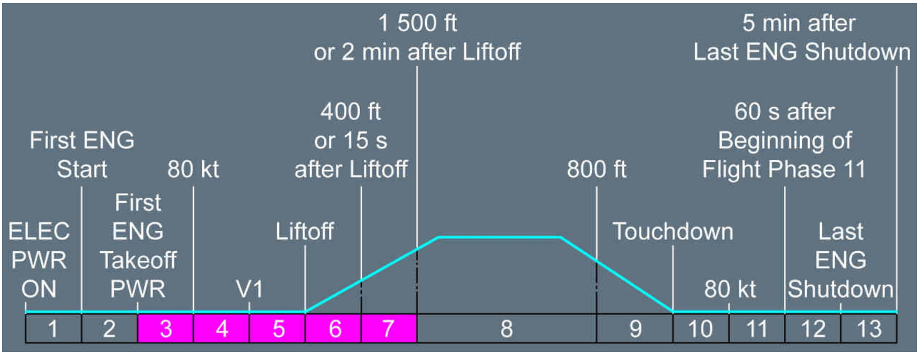
Ident.: DSC-32-10-20-15-00002361.0001001 / 30 APR 14

L12

L/G GRVTY EXTN	The L/G has been extended by gravity. Appears on the WD.

L2 Flight Phase Inhibition

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

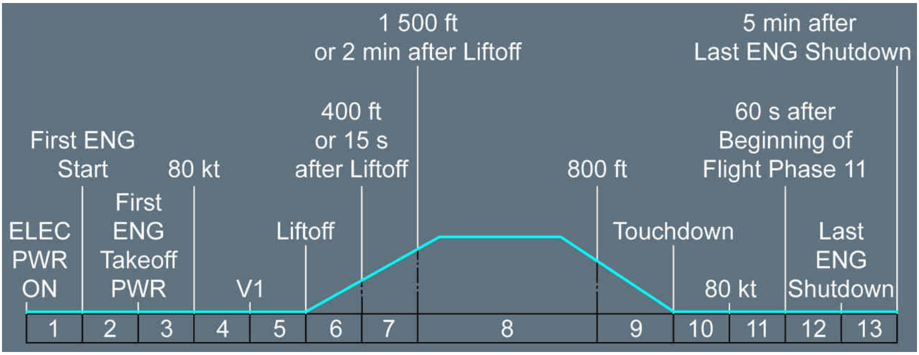
Ident.: DSC-32-10-20-15-00023258.0001001 / 07 JUL 16

L12

FLT L/G DOWN : For the preparation of a flight with the landing gear down, the maintenance has set the L/G DOWN VMO/MMO SELECTION sw in the avionics compartment to the L/G DOWN position.
Appears on the WD.

L2 Flight Phase Inhibition

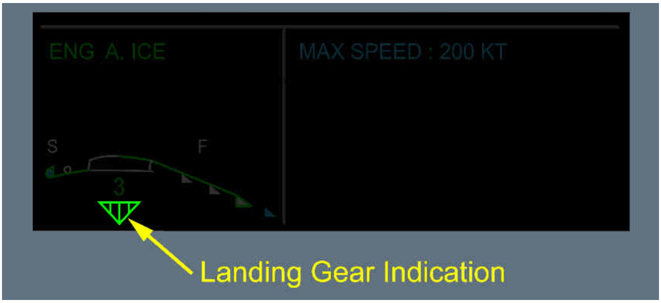
Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

SLATS/FLAPS DISPLAY

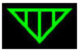
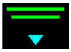
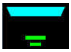
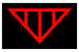
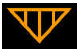
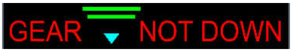
Ident.: DSC-32-10-20-00002342.0001001 / 30 APR 14
Applicable to: ALL

Slats/Flaps Display

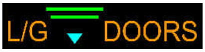


Landing Gear Indication

LANDING GEAR INDICATION

	No display, the L/G is uplocked.
	All L/Gs are downlocked.
	The L/G is in transit down.
	The L/G is in transit up.
L12 	At least one L/G is not downlocked. Associated with the following ECAM alert: L/G GEAR NOT LOCKED DOWN (*Refer to procedure*).
L12 	At least one L/G is not uplocked. Associated with one of the following ECAM alerts: - L/G RETRACTION FAULT (*Refer to procedure*). - L/G NOT LOCKED UP (*Refer to procedure*).
L12 	The L/G is not down. Associated with the following ECAM alert: L/G GEAR NOT DOWN (*Refer to procedure*).

L12



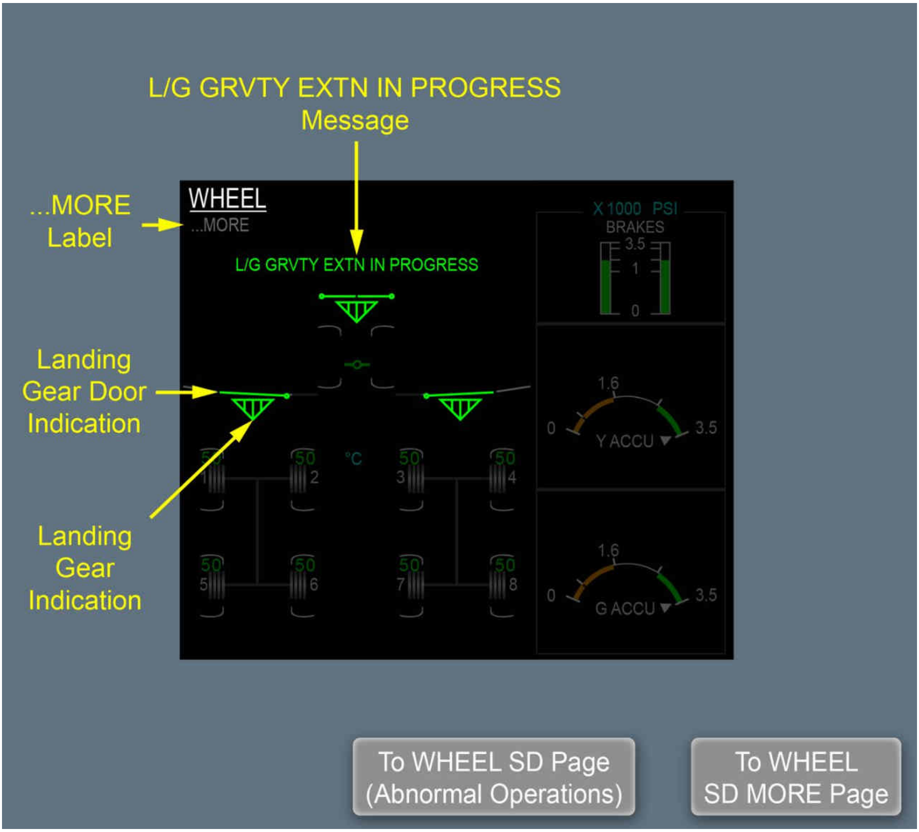
At least one L/G door is not closed.
Associated with the following ECAM alert: L/G DOORS NOT CLOSED (*Refer to procedure*).

WHEEL SD PAGE

Applicable to: ALL

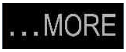
Ident.: DSC-32-10-20-20-00002301.0001001 / 30 APR 14

WHEEL SD Page


L/G GRVTY EXTN IN PROGRESS
Message
...MORE
Label
Landing
Gear Door
Indication
Landing
Gear
Indication
WHEEL
...MORE
L/G GRVTY EXTN IN PROGRESS
X 1000 PSI
BRAKES
3.5
1
0
50
1
2
°C
3
4
5
6
7
8
1.6
0
3.5
Y ACCU
G ACCU
To WHEEL SD Page
(Abnormal Operations)
To WHEEL
SD MORE Page

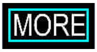
Ident.: DSC-32-10-20-20-00018058.0001001 / 30 APR 14

...MORE LABEL

	Indicates that more information is available on the WHEEL SD MORE Page. In order to display the WHEEL SD MORE Page, the flight crew presses the MORE pb on the ECP.

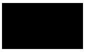
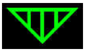
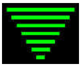
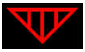
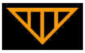
Ident.: DSC-32-10-20-20-00018059.0001001 / 30 APR 14

MORE LABEL

	Indicates that the WHEEL SD MORE page is displayed. The WHEEL SD MORE page displays additional information compared with the WHEEL SD page. To remove the WHEEL SD MORE page, the flight crew presses the MORE pb on the ECP. Then, the WHEEL SD page appears.

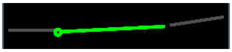
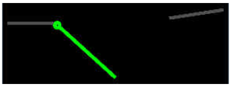
Ident.: DSC-32-10-20-20-00002305.0001001 / 30 APR 14

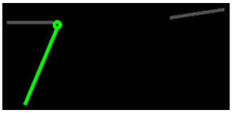
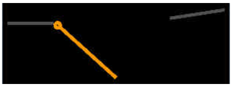
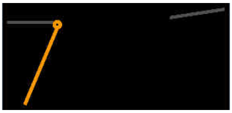
LANDING GEAR INDICATION

	The associated landing gear is retracted and uplocked.
	The associated landing gear is locked down.
	The associated landing gear is in transit.
L12 	The associated landing gear is not locked down. Associated with the following ECAM alert: L/G GEAR NOT LOCKED DOWN (*Refer to procedure*).
L12 	The associated landing gear is not uplocked. Associated with the following ECAM alert: L/G GEAR NOT LOCKED UP (*Refer to procedure*).

Ident.: DSC-32-10-20-20-00002306.0001001 / 30 APR 14

LANDING GEAR DOOR INDICATION

	The associated landing gear door is closed and uplocked.
	The associated landing gear door is in transit.

	The associated landing gear door is open.
L12	
	The associated landing gear door is in transit and is failed. Associated with the following ECAM alert: L/G DOORS NOT CLOSED (*Refer to procedure*).
L12	
	The associated landing gear door is open and is failed. Associated with the following ECAM alert: L/G DOORS NOT CLOSED (*Refer to procedure*).

Ident.: DSC-32-10-20-20-00002307.0001001 / 30 APR 14

L/G GRVTY EXTN IN PROGRESS MESSAGE

L/G GRVTY EXTN IN PROGRESS	Appears when the flight crew commands a landing gear gravity extension, and remains displayed until all gears are locked down.

Ident.: DSC-32-10-20-20-00002304.0001001 / 30 APR 14

LGERS HYDRAULIC POWER SUPPLY

G	The associated hydraulic power supply is available.
L12	
Y	The associated hydraulic system pressure is low. Associated with the following ECAM alert: HYD G(Y) SYS PRESS LO (*Refer to procedure*).

Ident.: DSC-32-10-20-20-00002303.0001001 / 30 APR 14

UPLOCK INDICATION

L12

UPLOCK	The associated landing gear is locked down, and one or more uplocks are in the closed position. Associated with the following ECAM alert: L/G GEAR UPLOCK FAULT (*Refer to procedure*).

Intentionally left blank

Overview

GENERAL

Ident.: DSC-32-20-10-10-00012752.0001001 / 30 APR 14
Applicable to: ALL

The braking system enables:

- Manual braking via flight crew action on:
  - The brake pedals
L2 The brake pedals, that are on the Captain (CAPT) and the First Officer (F/O) sides of the cockpit, are mechanically linked to each other.
  - L1 The PARK BRK handle.
  - L2 The steering handwheel (when backup steering is used)
- L1 Automatic braking via:
  - The basic Autobrake (A/BRK) function
  - The Brake To Vacate (BTV) function
  - The Runway Overrun Protection (ROP) function.
  - L2 The retraction braking that automatically reduces the speed of the MLG wheels, when the landing gear retracts.

L1 There are four braking modes:

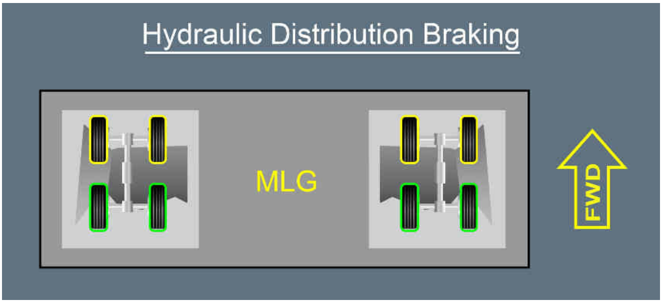
- Normal braking
- Alternate braking
- Emergency braking
- Parking brake.

BRAKES

Ident.: DSC-32-20-10-10-00012753.0001001 / 30 APR 14
Applicable to: ALL

The aircraft has carbon brakes. Each MLG wheel has one brake.
One wheel group corresponds to all wheel brakes which are supplied by the same hydraulic system (GREEN or YELLOW).
Each brake has a visual wear indicator. When the parking brake is on, the flight crew can visually check the wear of the MLG brakes (*Refer to Before Walkaround*).

Hydraulic Distribution BRAKING



The GREEN and YELLOW hydraulic circuits are used for braking as illustrated above.

WHEEL FUSE PLUGS

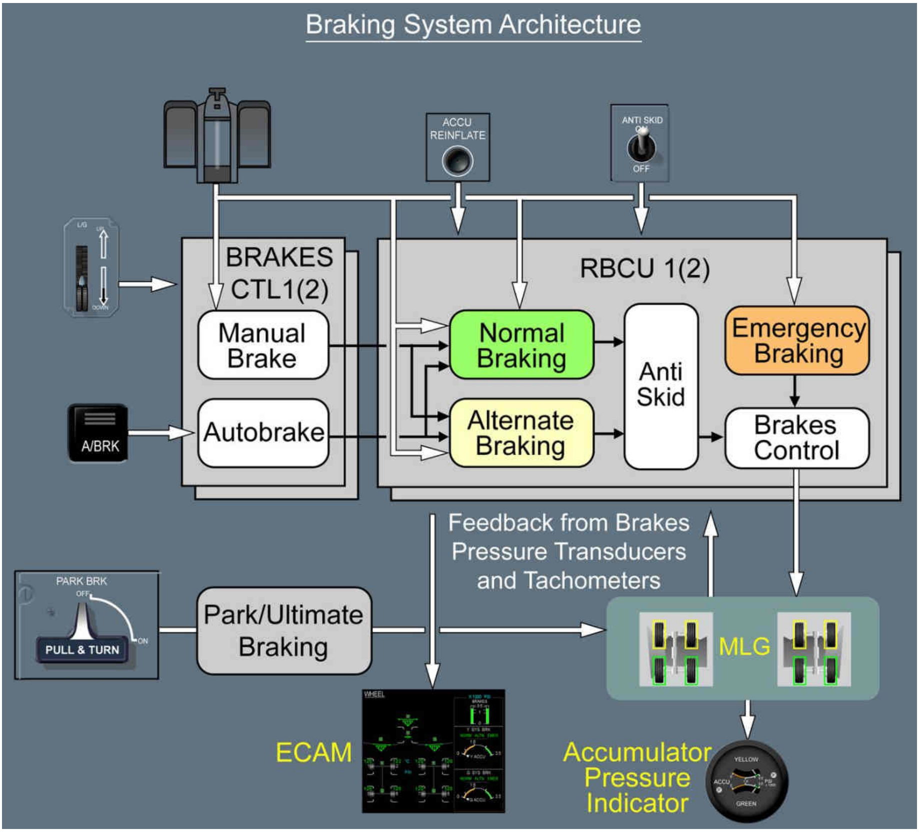
Ident.: DSC-32-20-10-10-00012754.0001001 / 30 APR 14
Applicable to: ALL

Each MLG wheel has fuse plugs that prevent the wheel and tire from bursting. In the case of a brake overheat, the fuses melt and the tire deflates.

System Architecture

SYSTEM ARCHITECTURE

Ident.: DSC-32-20-10-20-00012721.0001001 / 30 APR 14
Applicable to: ALL


Braking System Architecture
ACCU REINFLATE
ANTI SKID
ON
OFF
L/G
UP
DOWN
BRAKES CTL1(2)
Manual Brake
Autobrake
A/BRK
RBCU 1(2)
Normal Braking
Alternate Braking
Anti Skid
Emergency Braking
Brakes Control
Feedback from Brakes Pressure Transducers and Tachometers
PARK BRK
OFF
ON
PULL & TURN
Park/Ultimate Braking
MLG
ECAM
WHEEL
Accumulator Pressure Indicator
YELLOW
ACCU
GREEN

BRAKES CONTROL SYSTEM (BRAKES CTL)

Ident.: DSC-32-20-10-20-00012720.0001001 / 06 MAR 15
Applicable to: ALL

The Brakes Control System (BRAKES CTL) controls the normal, and the alternate braking modes.
The system has two redundant modules, referred to as Brakes Control System 1 (BRAKES CTL 1) and BRAKES CTL 2.
One BRAKES CTL is active when the other one is a backup.
L2 The backup BRAKES CTL automatically activates if the active BRAKES CTL fails.
The active BRAKES CTL changes after each landing gear extension.

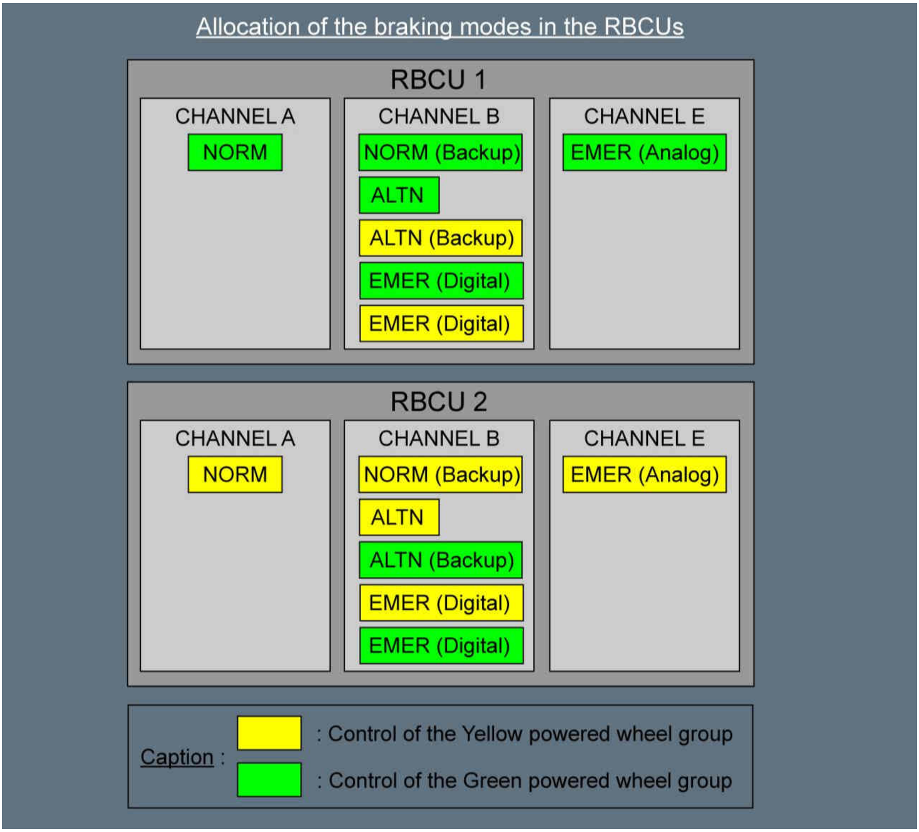
L3
- BRAKES CTL 1 is hosted by CPIOM-H61 and CPIOM-H63
- BRAKES CTL 2 is hosted by CPIOM-H62 and CPIOM-H64.

L1 The flight crew commands each BRAKES CTL via:
- The brake pedals
- The A/BRK pb
- The A-SKID sw
- The ACCU REINFLATE pb.
- L2 The steering handwheel (when backup steering is used)
- The L/G lever.
  In normal braking mode, the retraction braking activates when the L/G lever is set to the UP position.

The active BRAKES CTL commands the Remote Braking Control Unit (RBCU) for control of the normal and/or to the alternate hydraulic equipments of the braking system.
The BRAKES CTL also sends data to the ECAM, in order to generate alerts, and to display the WHEEL SD page.

REMOTE BRAKING CONTROL UNITS (RBCU)

Ident.: DSC-32-20-10-20-00012722.0002001 / 04 DEC 14
Applicable to: ALL


Allocation of the braking modes in the RBCUs
RBCU 1
CHANNEL A
NORM
CHANNEL B
NORM (Backup)
ALTN
ALTN (Backup)
EMER (Digital)
EMER (Digital)
CHANNEL E
EMER (Analog)
RBCU 2
CHANNEL A
NORM
CHANNEL B
NORM (Backup)
ALTN
ALTN (Backup)
EMER (Digital)
EMER (Digital)
CHANNEL E
EMER (Analog)
Caption :
: Control of the Yellow powered wheel group
: Control of the Green powered wheel group

There are two RBCUs.

Each RBCU controls its dedicated wheel group, and can provide alternate and EMER braking control to the other group in the case of braking mode reconfiguration:
- RBCU 1 controls the MLG wheels powered by the GREEN hydraulic system
- RBCU 2 controls the MLG wheels powered by the YELLOW hydraulic system.

L2 Each RBCU has three channels: A, B, and E. Channels A and B are digital channels. Channel E is an analogical channel.

- Channel A controls normal braking of the associated wheel group.
- Channel B controls:
  - Normal braking (backup of channel A) of the associated wheel group
  - Alternate braking of the associated wheel group
  - Alternate braking of the other wheel group (backup of the other RBCU channel B)
  - Emergency braking of both the associated and other wheel group (digital control)
- Channel E controls emergency braking (analogical control) of the associated wheel group.

L1 The RBCUs receive inputs from:

- The active BRAKES CTL for manual or automatic braking control
- The brake pedals for normal or alternate braking control (if BRAKES CTL is not available)
- The brake pedals for emergency braking
- The ANTI SKID sw
- The tachometers
- The brake pressure transducers.

The RBCU performs the antiskid function. (*Refer to Antiskid Presentation).*

L2 The RBCU computes and sends the corresponding electrical commands to the hydraulic equipment of the braking system.
The RBCU also sends data to the BRAKES CTL that relays the fault data to the ECAM to generate alerts.
In the case of BRAKES CTL failure, the RBCU can send data directly to the ECAM to generate alerts.

TACHOMETERS

Ident.: DSC-32-20-10-20-00012723.0001001 / 30 APR 14
Applicable to: ALL

Each MLG wheel is equipped with a tachometer that measures the wheel rotation speed.
The tachometers send the wheel speed value to the RBCUs.

BRAKE PRESSURE TRANSDUCERS

Ident.: DSC-32-20-10-20-00012724.0001001 / 30 APR 14
Applicable to: ALL

Each MLG wheel brake has a brake pressure transducer to monitor the hydraulic pressure supplied to each brake.

INTERFACE WITH OTHER SYSTEMS

Ident.: DSC-32-20-10-20-00012734.0001001 / 30 APR 14
Applicable to: ALL

L3 The BRAKES CTL exchanges data with:
- The flight control system and the Auto Flight System (AFS) for flight calculations and the ground control laws
- The Hydraulic system (HYD)
- The Air Data and Inertial Reference System (ADIRS)
- The Propulsion Control System (PCS)
- The Landing Gear Extension/Retraction System (LGERS)
- The Landing Gear Monitoring System (LGMS)
- The Flight Data Recording System (FDRS)
- The Central Maintenance System (CMS)
- The Control and Display System (CDS)
- The Electrical system (ELEC)
- The Flight Warning System (FWS).

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Braking System Hydraulic Architecture

GENERAL

Ident.: DSC-32-20-10-30-00012725.0001001 / 30 APR 14
Applicable to: ALL

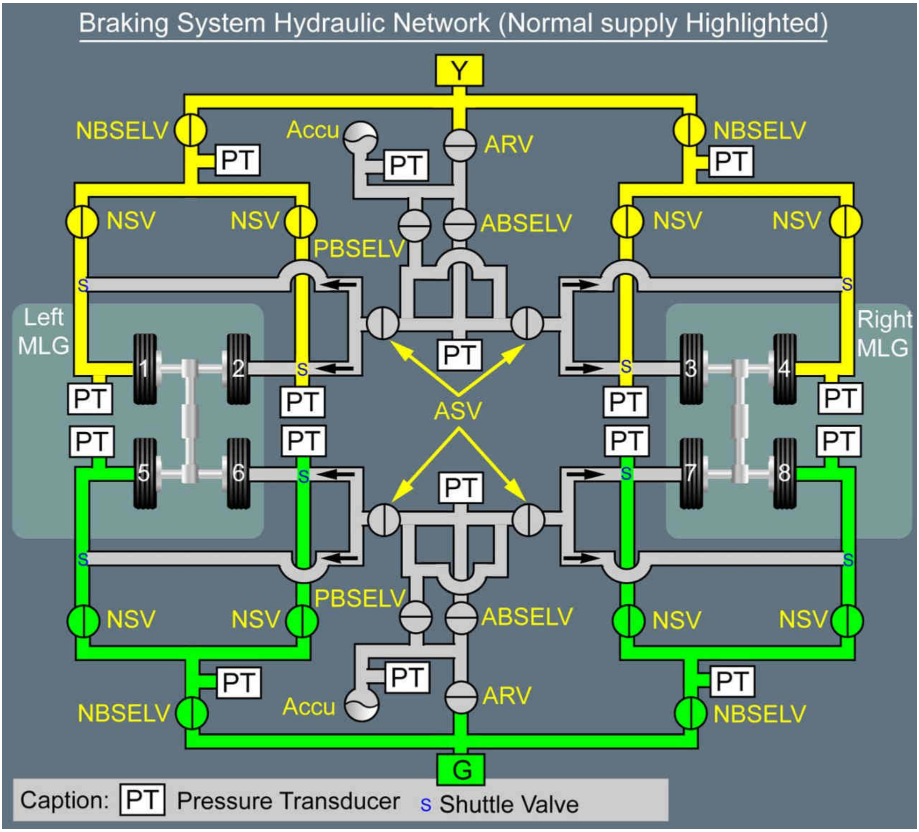
The hydraulic power supply of the braking system is divided into two networks:
- The normal hydraulic network
- The alternate hydraulic network.

NORMAL HYDRAULIC NETWORK

Applicable to: ALL

Ident.: DSC-32-20-10-30-10-00012726.0001001 / 30 APR 14

Braking System - Normal Hydraulic Network


Braking System Hydraulic Network (Normal supply Highlighted)
Y
NBSELV
Accu
ARV
NBSELV
PT
PT
PT
NSV
NSV
ABSELV
NSV
NSV
PBSELV
S
S
Left MLG
Right MLG
PT
1
2
3
4
S
S
PT
PT
PT
PT
ASV
PT
PT
PT
PT
5
6
7
8
S
S
PT
S
S
PBSELV
ABSELV
NSV
NSV
NSV
NSV
PT
PT
PT
NBSELV
Accu
ARV
NBSELV
G
Caption: PT Pressure Transducer
S Shuttle Valve

In normal braking mode:

- The YELLOW normal hydraulic system supplies hydraulic power to the front MLG wheels
- The GREEN normal hydraulic system supplies hydraulic power to the rear MLG wheels.

Ident.: DSC-32-20-10-30-10-00012728.0001001 / 30 APR 14

L2 NORMAL BRAKING SELECTOR VALVE (NBSELV)

There are four NBSELVs. Each wheel pair of the MLG bogies has one NBSELV.

The NBSELVs have two functions:
- Provide pressure from the main hydraulic supply to the Normal Servo Valves (NSVs) for braking demand
- Isolate the braking circuit from the aircraft hydraulic supply.

Ident.: DSC-32-20-10-30-10-00012729.0001001 / 30 APR 14

L2 NORMAL SERVO VALVE (NSV)

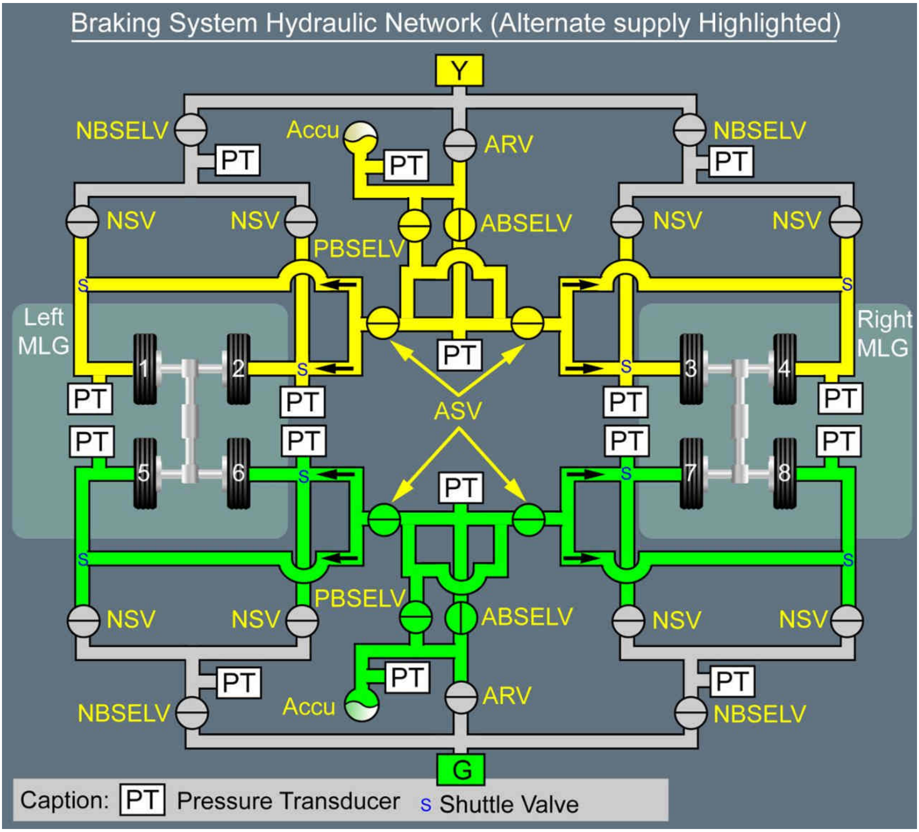
There are eight NSVs. Each MLG wheel has one NSV.
When braking is commanded, the NSVs ensure regulated pressure from the normal hydraulic supply to the associated wheel brake.

ALTERNATE HYDRAULIC NETWORK

Applicable to: ALL

Ident.: DSC-32-20-10-30-20-00012727.0001001 / 30 APR 14

Braking System - Alternate Hydraulic Network


Braking System Hydraulic Network (Alternate supply Highlighted)
Y
NBSELV
Accu
ARV
NBSELV
PT
PT
PT
NSV
NSV
ABSELV
NSV
NSV
PBSELV
S
S
Left MLG
Right MLG
PT
1
2
3
4
S
S
PT
PT
PT
PT
ASV
PT
PT
PT
PT
5
6
7
8
S
S
PT
S
S
PBSELV
NSV
NSV
ABSELV
NSV
NSV
PT
PT
PT
NBSELV
Accu
ARV
NBSELV
G
Caption: PT Pressure Transducer
S Shuttle Valve

For the alternate hydraulic system, two reinflatable hydraulic accumulators achieve the hydraulic supply redundancy.

Each accumulator supplies hydraulic power to the corresponding wheels in the case of a failure of the normal hydraulic system:

- One accumulator is reinflated by the YELLOW hydraulic system, and supplies the MLG front wheels
- One accumulator is reinflated by the GREEN hydraulic system, and supplies the MLG rear wheels.

The alternate hydraulic power supply is used for:

- Alternate braking
- Emergency braking
- Parking brake and ultimate braking.

Ident.: DSC-32-20-10-30-20-00012730.0001001 / 07 NOV 16

ACCUMULATORS REINFLATION

Accumulators can be reinflated either manually by pressing the ACCU REINFLATE pb or automatically.
On ground, when both engines are OFF, the flight crew can manually reinflate the accumulators by pressing the ACCU REINFLATE pb on the PARK BRK panel.
On ground, the BRAKES G(Y) ACCU PRESS LO alert warns the flight crew if the accumulator pressure is below a specified threshold and requests a manual reinflation.
On ground, when at least one engines is running, the accumulators are automatically reinflated. This ensures that the aircraft has the maximum accumulator pressure in the case of a RTO.
In flight, the accumulators are automatically reinflated to maximize alternate braking performance at landing.

L3 An automatic reinflation is triggered:

- As soon as the accumulator pressure goes below 180 bar (2 600 PSI), or
- Every hour if the accumulator pressure transducer is inoperative.

Ident.: DSC-32-20-10-30-20-00012731.0001001 / 30 APR 14

L2 ALTERNATE REFILL VALVE (ARV)

There are two Alternate Refill Valves (ARVs) that connect to the hydraulic power supplies to reinflate the accumulators.
The active BRAKES CTL automatically commands the ARVs. They can also be opened by pressing the ACCU REINFLATE pb.

Ident.: DSC-32-20-10-30-20-00012732.0001001 / 30 APR 14

L2 ALTERNATE BRAKING SELECTOR VALVE (ABSELV)

There are two ABSELVs. Each wheel group has one ABSELV.

The ABSELVs have two functions:
- Provide pressure from the accumulator to the ASV for braking demand
- Isolate the braking circuit from the alternate hydraulic supply.

Ident.: DSC-32-20-10-30-20-00012733.0001001 / 30 APR 14

L2 ALTERNATE SERVO VALVE (ASV)

There are four ASVs: one for each wheel pair of the MLG bogies.

The ASVs have two functions:
- Provide regulated pressure from the accumulator to the wheel brake when alternate braking (or alternate braking without antiskid) is commanded.
- Provide full pressure from the accumulator to the wheel brake when park braking is commanded.

Ident.: DSC-32-20-10-30-20-00020893.0001001 / 30 APR 14

L2 PARKING BRAKE SELECTOR VALVE (PBSELV)

There are two PBSELVs. Each wheel group has one PBSELV.
When the PARK BRK handle is set to the ON position, the PBSELVs open and hydraulic pressure from the brake accumulators is sent to the brakes.

Braking Modes

GENERAL

Ident.: DSC-32-20-10-40-00012735.0001001 / 30 APR 14
Applicable to: ALL

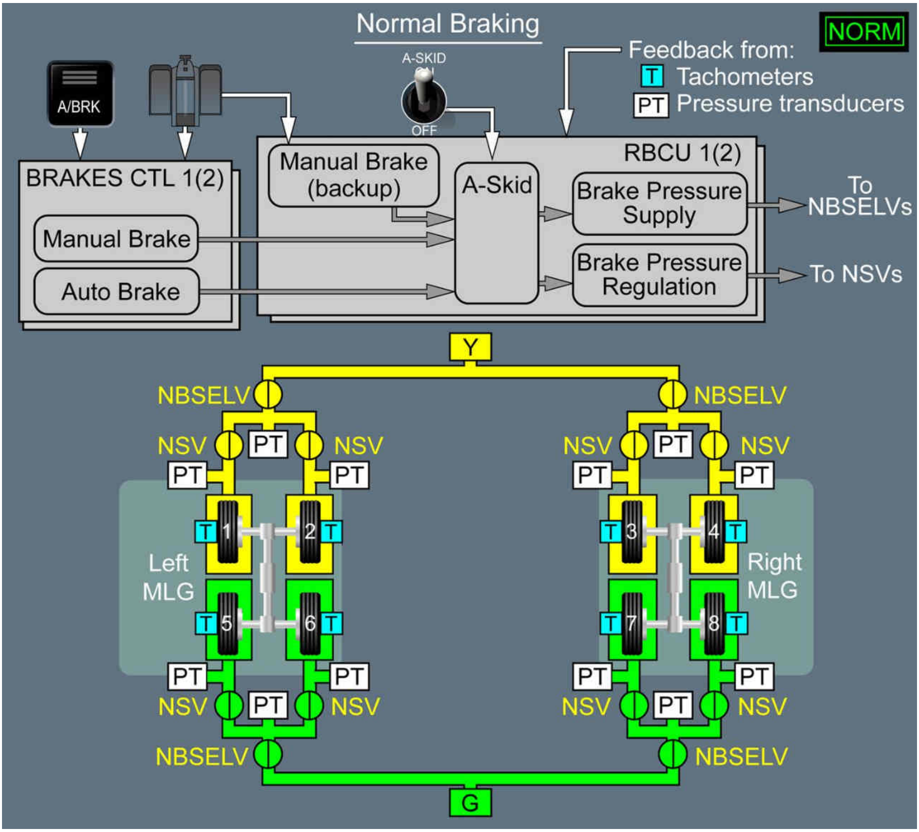
There are four braking modes:
- Normal braking
- Alternate braking
- Emergency braking
- Parking brake.

Depending on the available avionics and hydraulic supply, the braking system can use one of the four braking modes.
In order to minimize the consequences of a local failure, the YELLOW wheel group and the GREEN wheel group of the MLG can operate independently in a different braking mode.
The active braking mode is displayed on the WHEEL SD page.
L2 For more information about the WHEEL SD page, *Refer to DSC-32-20-20 Braking Mode Indications*.

NORMAL BRAKING

Ident.: DSC-32-20-10-40-00012736.0001001 / 30 APR 14
Applicable to: ALL

Normal Braking


Normal Braking
NORM
A/BRK
A-SKID
ON
OFF
Feedback from:
T Tachometers
PT Pressure transducers
BRAKES CTL 1(2)
Manual Brake
Auto Brake
RBCU 1(2)
Manual Brake (backup)
A-Skid
Brake Pressure Supply
Brake Pressure Regulation
To NBSELVs
To NSVs
Y
NBSELV
NBSELV
NSV
PT
NSV
PT
PT
T
1
2
T
3
4
Left MLG
Right MLG
5
6
7
8
NSV
PT
NSV
NBSELV
NBSELV
G

In normal braking mode:
- A-SKID is available
- A/BRK is available (if at least one BRAKES CTL is operative)
- Wheels are controlled individually

L2 - Nose-high braking law is active

L3 The nose-high braking law limits the braking force on the MLG to reduce the nose-down movement and avoid a hard touchdown of the NLG.

- L2 Automatic retraction braking is available (if at least one BRAKES CTL is operative)
- L2 Backup steering function is available (through differential braking) in the case of Nose Wheel Steering (NWS) failure (if at least one BRAKES CTL is operative).

The BRAKES CTLs acquire the braking orders from the brake pedals or compute the braking demand according to the active autobrake function.

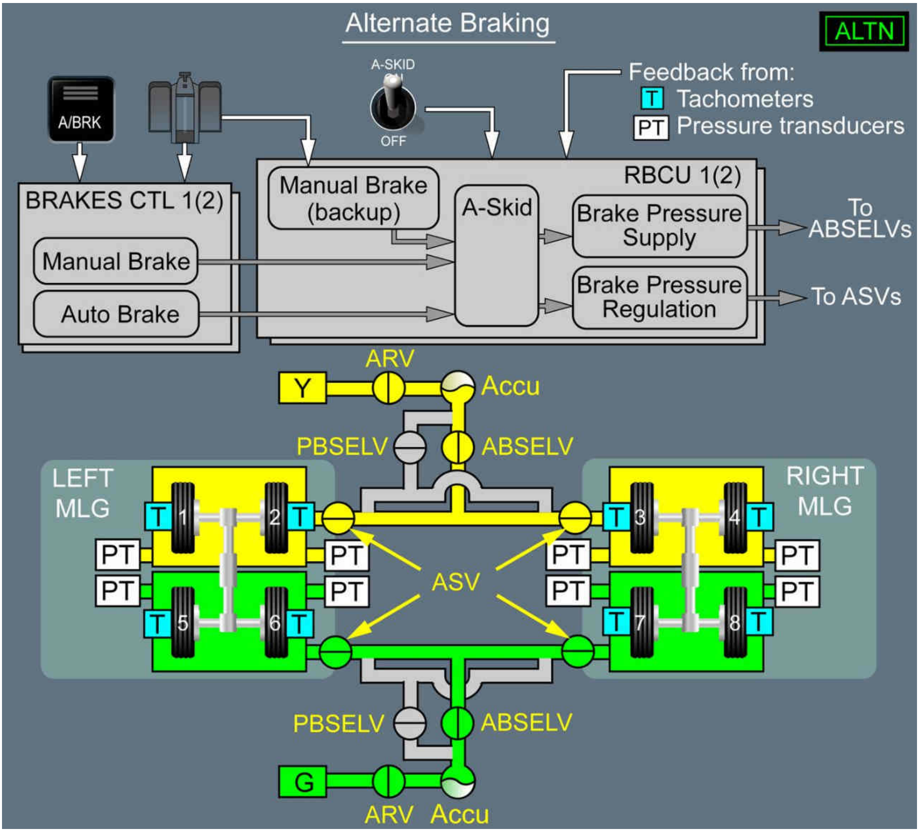
The active BRAKES CTL sends the braking demand to the RBCUs. The RBCUs uses feedback from the tachometers and the pressure transducers to:
- Apply antiskid protection
- Supply hydraulic pressure via the NBSELVs
- Regulate the brake pressure via each NSV in order to provide optimum braking performance.

When a wheel group operates in normal braking mode, the ABSELV remains closed to isolate the brakes from the alternate hydraulic network.

ALTERNATE BRAKING

Ident.: DSC-32-20-10-40-00012737.0001001 / 04 MAY 16
Applicable to: ALL

Alternate Braking


Alternate Braking
ALTN
A/BRK
A-SKID
OFF
Feedback from:
T Tachometers
PT Pressure transducers
BRAKES CTL 1(2)
Manual Brake
Auto Brake
RBCU 1(2)
Manual Brake (backup)
A-Skid
Brake Pressure Supply
Brake Pressure Regulation
To ABSELVs
To ASVs
Y
ARV
Accu
PBSELV
ABSELV
LEFT MLG
RIGHT MLG
T
PT
1
2
3
4
5
6
7
8
ASV
PBSELV
ABSELV
G
ARV
Accu

In alternate braking mode:

- Hydraulic power is provided by the accumulator (braking performance is degraded)
- A-SKID is available, provided that the accumulator pressure is more than 1 600 PSI (110 bar)
- A/BRK is available, provided that at least one BRAKES CTL is operative and the accumulator pressure is more than 1 600 PSI (110 bar)
- Pedal braking is available via the brake pedals.

L2 - Nose-high braking law is active

L3 The nose-high braking law limits the braking force on the MLG to reduce the nose-down movement and avoid a hard touchdown of the NLG.

L2 - Automatic retraction braking is not available

L2 - Backup steering function is available (through differential braking) in the case of Nose Wheel Steering (NWS) failure, provided that the GREEN hydraulic system is not affected.

L1 The green hydraulic network and the yellow hydraulic network are individually controlled. Therefore, one wheel group may be in alternate braking mode while the other is in normal braking mode.
The hydraulic power supplied by the accumulator is sufficient to provide one full braking from touchdown to the complete stop of the aircraft.

L2 The BRAKES CTLs acquire the braking orders from the brake pedals or compute the braking demand according to the active autobrake function.

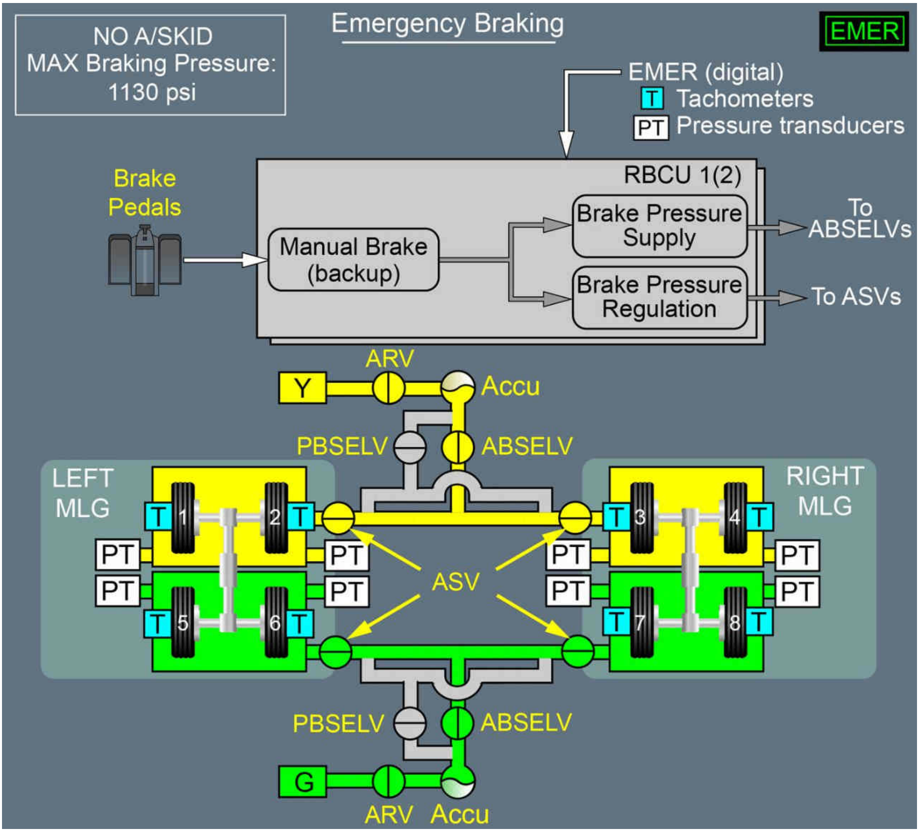
The active BRAKES CTL sends the braking demand to the RBCUs. The RBCUs uses feedback from the tachometers and the pressure transducers to:
- Apply antiskid protection
- Supply hydraulic pressure via the ABSELVs
- Regulate the brake pressure via each ASV, in order to provide optimum braking performance.

When a wheel group operates in alternate braking mode, the NBSELV remains closed to isolate the brakes from the normal hydraulic network.

EMERGENCY BRAKING

Ident.: DSC-32-20-10-40-00012738.0001001 / 02 MAY 14
Applicable to: ALL

Emergency Braking


NO A/SKID
MAX Braking Pressure:
1130 psi
Emergency Braking
EMER
EMER (digital)
T Tachometers
PT Pressure transducers
Brake Pedals
RBCU 1(2)
Manual Brake (backup)
Brake Pressure Supply
Brake Pressure Regulation
To ABSELVs
To ASVs
ARV
Y
Accu
PBSELV
ABSELV
LEFT MLG
RIGHT MLG
T
1
2
3
4
5
6
7
8
PT
ASV
G
ARV
Accu

In emergency braking mode:
- Hydraulic power is provided by the accumulator (braking performance is degraded)
- Manual braking is available via the brake pedals
- The brake pressure is automatically limited to 1 130 PSI (78 bar)
- The flight crew can apply pedal braking at least 6 times.

L2 After 6 brake applications, the accumulator still contains enough fluid for use of the parking brake.

The RBCUs acquire the braking order from the brake pedals.

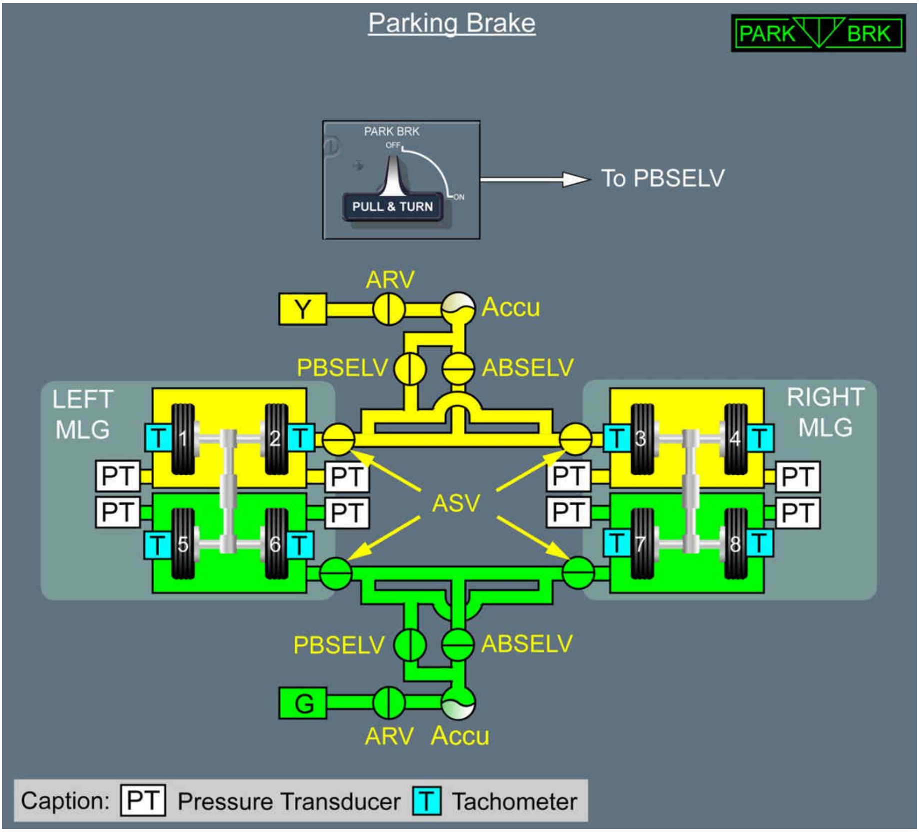
L2 The RBCUs command:
- L2 The Alternate Brake Selector Valves (ABSELVs) to open, in order to supply hydraulic pressure
- L2 Each Alternate Servo Valve (ASV) to open, in order to provide the braking pressure.

When a wheel group operates in emergency braking mode, the NBSELV remains closed to isolate the brakes from the normal hydraulic network.

PARKING BRAKE

Ident.: DSC-32-20-10-40-00012739.0001001 / 30 APR 14
Applicable to: ALL

Parking Brake


Parking Brake
PARK BRK
PARK BRK
OFF
ON
PULL & TURN
To PBSELV
ARV
Y
Accu
PBSELV
ABSELV
LEFT MLG
RIGHT MLG
T
1
2
3
4
5
6
7
8
PT
ASV
PBSELV
ABSELV
G
ARV
Accu

Caption: PT Pressure Transducer T Tachometer

The parking brake uses the alternate hydraulic supply (braking accumulators) of the braking system. Once the PARK BRK handle is set to the ON position, full accumulators pressure is applied to the brakes.

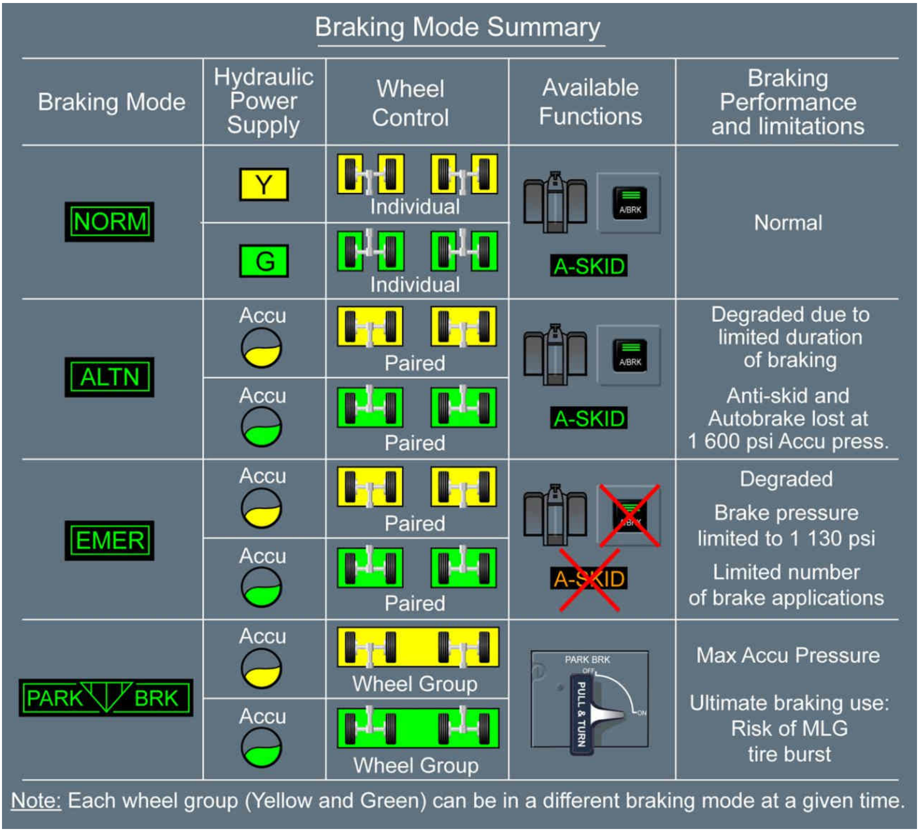
Note: The parking brake is also usable as ultimate braking means.

L2 The Parking Brake Selector Valves (PBSELVs) open to provide the full accumulator pressure.

L1 With nominal accumulators pressure and aircraft not powered, the parking brake is effective for 12 h.

SUMMARY OF BRAKING MODES

Ident.: DSC-32-20-10-40-00012740.0001001 / 30 APR 14
Applicable to: ALL



Braking Mode Summary

Braking Mode	Hydraulic Power Supply	Wheel Control	Available Functions	Braking Performance and limitations
NORM	Y	Individual	A/BRK A-SKID	Normal
	G	Individual		
ALTN	Accu	Paired	A/BRK A-SKID	Degraded due to limited duration of braking Anti-skid and Autobrake lost at 1 600 psi Accu press.
	Accu	Paired		
EMER	Accu	Paired	~~A/BRK~~ ~~A-SKID~~	Degraded Brake pressure limited to 1 130 psi Limited number of brake applications
	Accu	Paired		
PARK BRK	Accu	Wheel Group	PARK BRK OFF ON PULL & TURN	Max Accu Pressure Ultimate braking use: Risk of MLG tire burst
	Accu	Wheel Group		

Note: Each wheel group (Yellow and Green) can be in a different braking mode at a given time.

Braking Functions

AUTOBRAKE

Applicable to: ALL

Ident.: DSC-32-20-10-50-10-00012741.0002001 / 17 NOV 17

GENERAL

The A/BRK is a function of the BRAKES CTL that automatically decelerates the aircraft during landing, or in the case of a rejected takeoff (RTO).

L2 The A/BRK:
- Avoids any delay for brake application in the case of a RTO
- Reduces flight crew workload during landing, by maintaining a constant deceleration rate
- Reduces the number of brake applications, and therefore, brake wear.

L1 The A/BRK has four modes:
- Three landing modes:
  - BTV mode (on dry and wet runways)
  - BTV CONTAM (on contaminated runways)
  - Basic autobrake (BRK MED)
- One RTO mode.

L2 Each mode provides a specific deceleration:
- The BTV targets a ground speed equal to 10 kt, approx. 60 m before the exit that the flight crew selected
- The BTV CONTAM provides a constant deceleration of 3 m/s^2 limited by A-SKID
- The BRK MED provides a constant deceleration of 3 m/s^2
- The RTO mode provides maximum braking performance limited by A-SKID.

L1 The flight crew arms the A/BRK via the A/BRK pb.
The BRAKES CTL automatically selects the appropriate autobrake mode depending on the aircraft on-ground or in-flight state, the selection of a BTV exit with the ANF and the selection of the LDG PERF CODE with the RWY CONDITION/BRAKING ACTION matrix.

Ident.: DSC-32-20-10-50-10-00012742.0001001 / 02 OCT 14

ARMING OF THE BASIC AUTOBRAKE MODE

The basic autobrake mode arms when:
- The flight crew presses the A/BRK pb
- The aircraft is in flight
- No BTV exit is selected
- Normal or alternate braking modes are available on all wheel groups.

L2 - Not more than one wheel per MLG has an A-SKID failure
L2 - At least one ADIRU is available (in NAV mode).
L3 The ADIRUs provide the autobrake with the current aircraft deceleration.

L1 Once armed, the Flight Mode Annunciator (FMA) displays BRK MED.

Ident.: DSC-32-20-10-50-10-00012743.0001001 / 28 APR 17

ACTIVATION OF THE BASIC AUTOBRAKE MODE

The basic autobrake mode activates when all of the following conditions occur:
- All the arming conditions are satisfied,
-
  - Immediately after ground spoilers extension if the NLG is on ground, or
  - 5 s after ground spoilers extension if the NLG is not on ground.

L2 For more information about the ground spoilers extension, *Refer to DSC-27-10-10 Ground Spoiler Control*.

L1 When the basic autobrake mode is active, the FMA displays BRK MED.

Ident.: DSC-32-20-10-50-10-00012744.0001001 / 03 JAN 20

DEACTIVATION OF THE BASIC AUTOBRAKE MODE

Once engaged, the basic autobrake mode deactivates/disengages and reverts to armed state if the ground spoilers are retracted and either the ground speed is at or above 72 kt, or at least one thrust lever is at or above MCT.

Once engaged, the basic autobrake mode deactivates/disengages and reverts to disarmed state if one of the following occurs:
- The autobrake is disarmed (refer to "DISARMING OF THE BASIC AUTOBRAKE MODE" below)
- The flight crew applies sufficient pedal deflection on one or both brake pedals
- The parking brake is activated
- The flight crew presses one of the A/THR instinctive disconnect pushbutttons.

DISARMING OF THE BASIC AUTOBRAKE MODE

The basic autobrake mode disarms if one of the following occurs:
- An autobrake landing mode arming condition is lost
- A system failure related to autobrake occurs (e.g BRAKES AUTO BRK FAULT alert, or BRAKES PART A-SKID FAULT),
- The flight crew presses the autobrake pushbutton in order to deselect the autobrake mode
- The ground spoilers are retracted, the aircraft speed is below 72 kt and both thrust levers are below MCT.

Note: *On ground, if the flight crew presses one time the A/THR instinctive disconnect pb, the autobrake disconnects. Immediately after, if the flight crew presses a second time the A/THR instinctive disconnect pb, the AUTO BRK OFF memo disappears and the corresponding audio indicator is not emitted.*

Ident.: DSC-32-20-10-50-10-00012745.0001001 / 02 OCT 14

ARMING OF THE RTO MODE

The autobrake RTO mode arms when:
- The flight crew presses the A/BRK pb
- The aircraft is on ground
- Normal or alternate braking modes are available on all wheel groups
- L2 Not more than one wheel per MLG has an A-SKID failure
- L3 The ground spoilers extension signal is available.

L1 Once the RTO mode is armed, The FMA displays BRK RTO.

Ident.: DSC-32-20-10-50-10-00012746.0001001 / 30 APR 14

ACTIVATION OF THE RTO MODE

The autobrake RTO mode activates when:
- All the arming conditions are satisfied
- The ground spoilers extend
- The aircraft ground speed is above 40 kt.

Once the RTO mode is activated, the FMA displays BRK RTO.

Ident.: DSC-32-20-10-50-10-00012747.0001001 / 03 JAN 20

DEACTIVATION OF THE RTO MODE

Once engaged, the autobrake RTO mode deactivates/disengages and reverts to armed state if the ground spoilers are retracted and at least one thrust reverser is at or above MCT.

Once engaged, the autobrake RTO mode deactivates/disengages and reverts to disarmed state if one of the following occurs:
- The RTO mode is disarmed (refer to "DISARMING OF THE RTO MODE" below)
- The ground spoilers are retracted and both thrust levers are below MCT
- The flight crew applies sufficient pedal deflection on one or both brake pedals
- The parking brake is activated.

DISARMING OF THE RTO MODE

The autobrake RTO mode disarms if one of the following occurs:
- A RTO mode arming condition is lost
- A system failure related to autobrake mode occurs (e.g BRAKES AUTO BRK FAULT alert, or BRAKES PART A-SKID FAULT),
- The flight crew presses the autobrake pushbutton in order to deselect the RTO mode
- The aircraft is in flight for more than 10 s
- The L/G lever is moved to the UP position.

Once the RTO mode is disarmed, the light of the A/BRK pb goes off.

Note: *On ground, if the flight crew presses the A/THR instinctive disconnect pb, immediately after autobrake disconnection, the AUTO BRK OFF memo disappears and the corresponding audio indicator is not emitted.*

Ident.: DSC-32-20-10-50-10-00012750.0001001 / 30 APR 14

For information about BTV, *Refer to DSC-34-32-30-10 Overview*.

ANTISKID

Applicable to: ALL

Ident.: DSC-32-20-10-50-20-00012748.0001001 / 13 JAN 15

The antiskid (A-SKID) prevents any wheel lock, to optimize the manual and automatic braking performance.

The A-SKID also:
- Limits tire wear
- Prevents tire bursts
- Provides aquaplaning protection.

For manual braking, the flight crew can achieve maximum braking performance by applying maximum deflection of the brake pedals.
For automatic braking, the aircraft can achieve maximum braking performance in RTO mode and ROP activation.
The flight crew can turn off the A-SKID from the A-SKID sw in the cockpit, without losing NWS.

CAUTION	The A-SKID disconnection with the A-SKID sw in the cockpit is permitted only in the case of “LOSS OF BRAKING” procedure (*Refer to procedure*).

A-SKID is not available:
- In alternate braking mode, if the accumulator pressure is less than 1 600 PSI (110 bar)
- In emergency braking mode
- In ultimate braking mode (parking brake).

Ident.: DSC-32-20-10-50-20-00012749.0001001 / 30 APR 14

L3 A-SKID PRINCIPLE

The A-SKID uses data from the ADIRS and the tachometers to calculate an individual target speed for each wheel. Each individual target speed ensures maximum braking performance in the current runway conditions, and changes as runway conditions change.
When the speed of a wheel decreases below the individual target speed, a brake release order is generated and combined with the braking orders of the flight crew or of the autobrake to maintain this target speed.

The resulting braking order is sent to:
- The Normal Servo Valve (NSV) of the wheel, when in normal braking
- The Alternate Servo Valves (ASV) of the pair of the affected wheel, when in alternate braking. The highest brake release order corresponds to the lowest speed of the wheel pair.

BRAKING PRE-LAND TEST (PLT)

Ident.: DSC-32-20-10-50-00024847.0001001 / 05 NOV 18
Applicable to: ALL

During the approach, 20 s after the landing gear is down and locked, the braking system tests all the braking modes in sequence. This is the braking Pre-Land Test (PLT).

L2 During the braking PLT, the braking system pressurizes the brakes and measures the actual braking pressure. If the braking PLT detects a failure, the braking system triggers the appropriate alert or dispatch message to inform the flight crew (e.g. BRAKES ALTN+EMER BRK FAULT).
As all the braking modes (normal, alternate, and emergency) are tested in sequence, the braking PLT may last approximately 2 min.

L1 The purpose of the braking PLT is to:
- Check that the braking system is configured in the appropriate mode for landing,
- Enable braking system reconfiguration if a failure is detected.

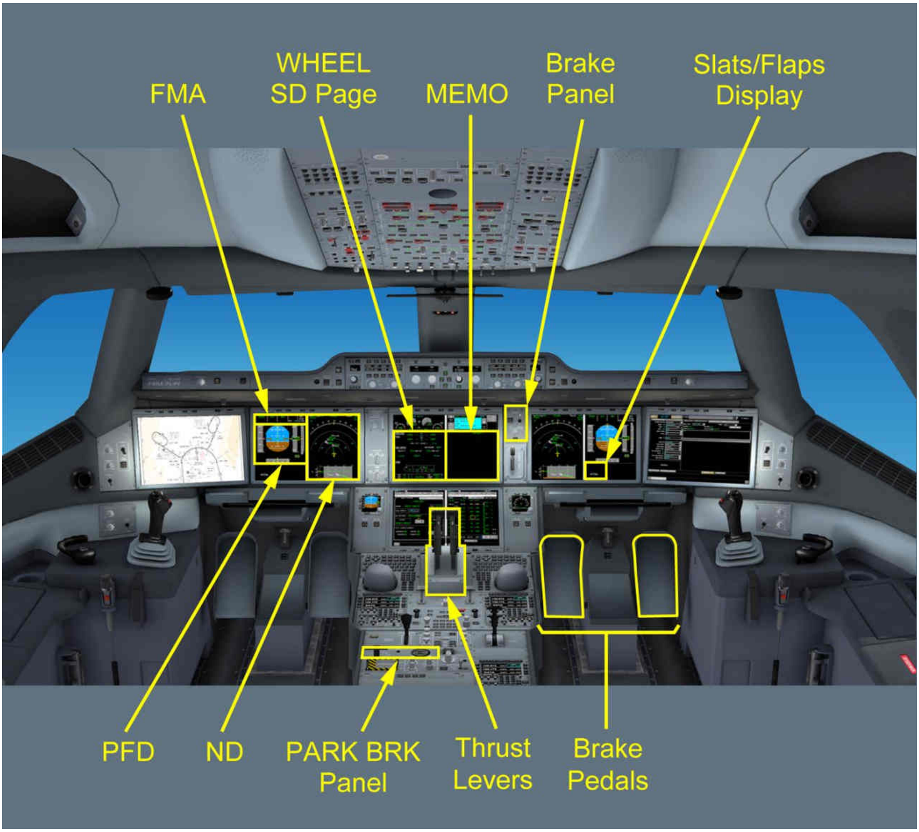
When the braking PLT is in progress, the WHEEL SD page displays all of the following:
- Variation of pressure on the pressure gauges,
- Variation in accumulator pressure indication until the braking system refills the braking accumulators.

If the aircraft touches down with the braking PLT in progress, the braking system automatically interrupts the PLT and depressurizes the brakes.

COCKPIT VIEW

Ident.: DSC-32-20-20-00012892.0001001 / 30 APR 14
Applicable to: ALL

Cockpit View

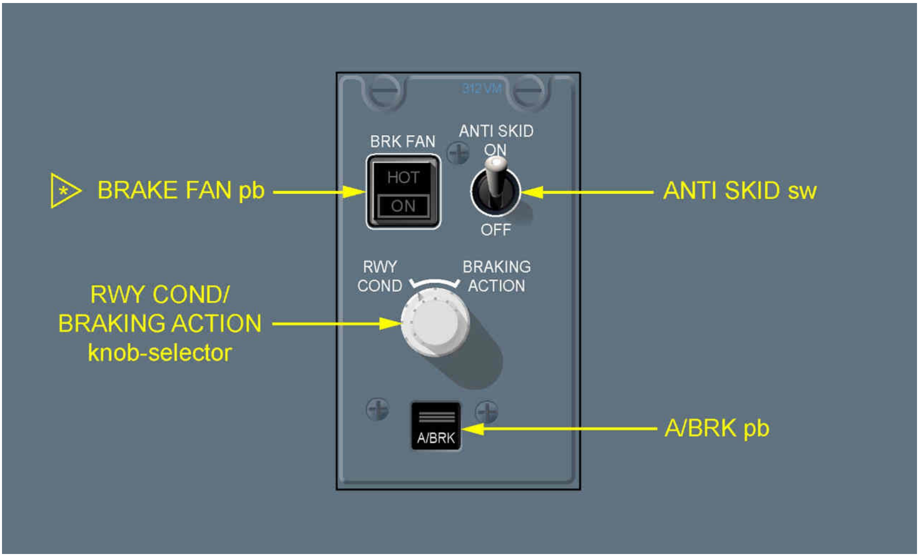

FMA
WHEEL
SD Page
MEMO
Brake
Panel
Slats/Flaps
Display
PFD
ND
PARK BRK
Panel
Thrust
Levers
Brake
Pedals

BRAKE PANEL

Applicable to: ALL

Ident.: DSC-32-20-20-10-00012893.0001001 / 09 MAR 16

Brake Panel


312 VM
BRK FAN
ANTI SKID
ON
HOT
ON
OFF
BRAKE FAN pb
ANTI SKID sw
RWY COND
BRAKING ACTION
RWY COND/
BRAKING ACTION
knob-selector
A/BRK
A/BRK pb

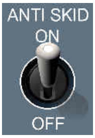
Ident.: DSC-32-20-20-10-00002299.0002001 / 09 MAR 16

BRAKE FAN PB ◁

For information, *Refer to DSC-32-40-20 Brake Fan pb*.

Ident.: DSC-32-20-20-10-00002297.0001001 / 30 APR 14

ANTI SKID SW


ANTI SKID
ON
OFF

The A-SKID is selected ON. A-SKID may be available depending on system status (no A-SKID fault).

ANTI SKID
ON
OFF

The A-SKID is selected OFF. As a consequence, emergency braking is active.

Note:
- *ANTI SKID sw OFF does not cut off NWS*
- *ANTI SKID sw OFF is to be used only in the case of a total loss of brake efficiency.*

Ident.: DSC-32-20-20-10-00012895.0001001 / 30 APR 14

RWY COND/BRAKING ACTION KNOB-SELECTOR

For information, *Refer to DSC-34-32-30-20-30 RWY COND/BRAKING ACTION knob-selector*.

Ident.: DSC-32-20-20-10-00012896.0002001 / 27 FEB 17

A/BRK PB

The BTV, the BTV CONTAM, the BRK MED and the BRK RTO are not armed.

The BTV or the BTV CONTAM or the BRK MED or the BRK RTO is armed.

L2 For more information about autobrake, *Refer to DSC-32-20-10-50 General*.

BRAKE PEDALS

Ident.: DSC-32-20-20-00012897.0001001 / 30 APR 14
Applicable to: ALL

The brake pedals of the Captain (CAPT) and the First Officer (F/O) sides are mechanically coupled. They are used for manual braking.
L3 The brake pedals have a Brake Pedal Transmitter Unit (BPTU) that converts the position of the pedals into an electrical signal.

FMA

Ident.: DSC-32-20-20-00002343.0002001 / 27 FEB 17
Applicable to: ALL

Display	Meaning
BRK MED	The basic autobrake mode is armed.
BRK MED	The basic autobrake mode is active.

Continued on the following page

Continued from the previous page

Display	Meaning
BTV	The BTV mode is armed.
BTV	The BTV mode is active.
BTV CONTAM	The BTV CONTAM mode is armed.
BTV CONTAM	The BTV CONTAM mode is active.
BRK RTO	The RTO mode is armed.
BRK RTO	The RTO mode is active.

AUDIO INDICATORS

Ident.: DSC-32-20-20-00024937.0001001 / 08 JUL 19
Applicable to: ALL

Audio Indicator	Condition or Cause	Duration
Auto Brake Off (Synthetic Voice)	The flight crew disconnected the autobrake after touchdown or after an RTO at a speed greater than 80 kt. Associated with the AUTO BRK OFF memo.	Sounds one time. Is inhibited if the autobrake function is inoperative. *Note:* *the audio does not sound if the flight crew presses the A/THR instinctive disconnect pb, immediately after the disconnection of the autobrake.*
Auto Brake Off, Auto Brake Off (Synthetic Voice)	The autobrake is disconnected after touchdown or after an RTO at a speed greater than 80 kt due to a system failure. Associated with the AUTO BRK OFF memo.	Sounds one time. *Note:* *the audio does not sound if the flight crew presses the A/THR instinctive disconnect pb, immediately after the disconnection of the autobrake.*

MEMO

Applicable to: ALL

Ident.: DSC-32-20-20-40-00002357.0002001 / 08 JUL 19

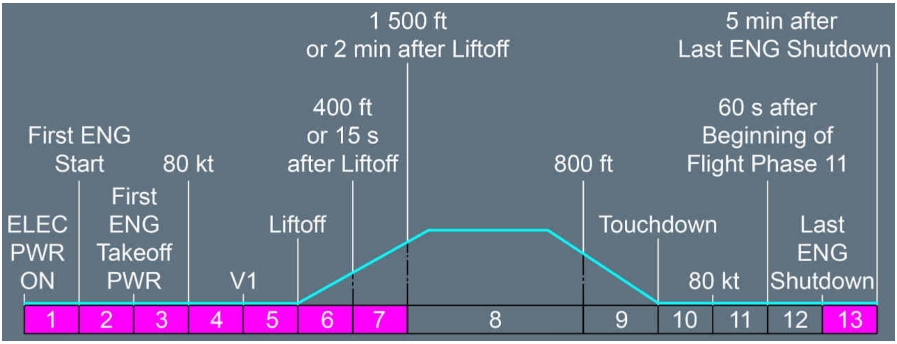
AUTO BRK OFF

L12

AUTO BRK OFF	The autobrake is disconnected. The memo appears when the autobrake is armed or active and any of the following occurs: - The flight crew manually disconnects the autobrake with the A/THR instinctive disconnect pb or the brake pedals, or - The autobrake fails. Appears on the PFD and on the WD. The MASTER CAUT lights come on. Associated with: - A single chime if the disconnection occurs in-flight, - The "Auto Brake Off" audio indicator if the disconnection occurs on ground (after touch down or after an RTO at a speed greater than 80 kt , *Refer to Audio Indicators*).

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

Ident.: DSC-32-20-20-40-00002362.0001001 / 30 APR 14

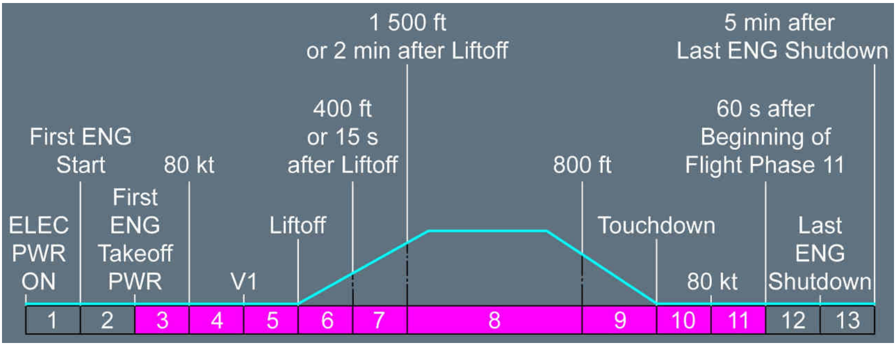
PARK BRK ON

L12

PRK BRK ON	The parking brake is ON. Appears on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

ND

Ident.: DSC-32-20-20-00012902.0001001 / 30 APR 14
Applicable to: ALL

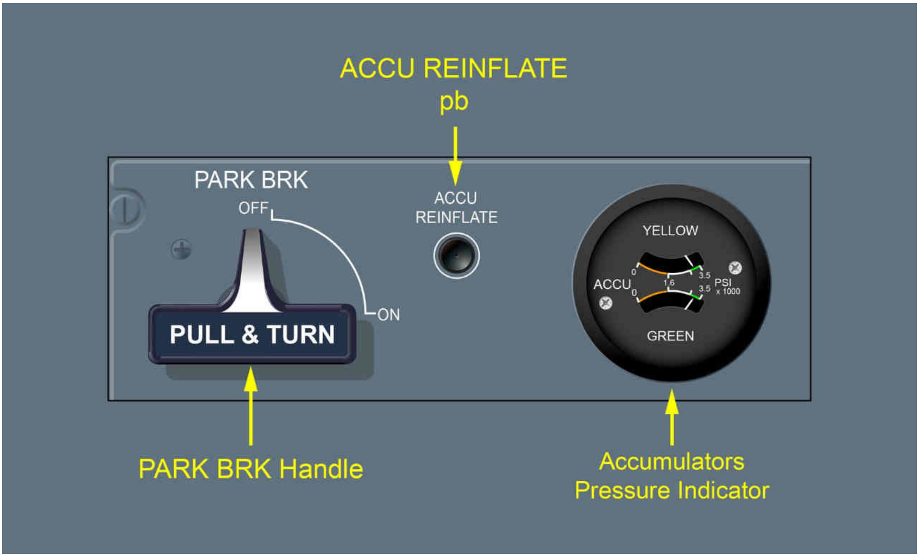
The ND displays BTV information. For more information about the ND for BTV, *Refer to DSC-34-32-30-20-60 ND*.

PARK BRK PANEL

Applicable to: ALL

Ident.: DSC-32-20-20-20-00002323.0001001 / 30 APR 14

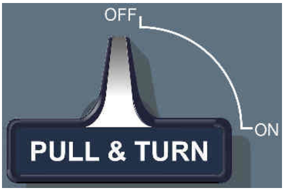
PARK BRK Panel


ACCU REINFLATE
pb
PARK BRK
OFF
ON
PULL & TURN
ACCU
REINFLATE
YELLOW
ACCU
0
0
1.6
3.5
3.5
PSI
x 1000
GREEN
PARK BRK Handle
Accumulators
Pressure Indicator

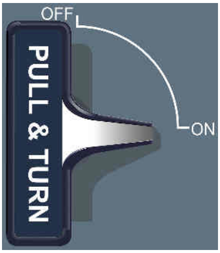
Ident.: DSC-32-20-20-20-00002324.0001001 / 04 MAY 16

PARK BRK HANDLE

The parking brake handle requires a pull and turn to change from OFF to ON, and from ON to OFF.


OFF
ON
PULL & TURN

The parking brake is not set.



The parking brake is set to ON.

L3 When the parking brake is set to ON, pedal braking is still available.

Ident.: DSC-32-20-20-20-00002325.0001001 / 30 APR 14

ACCU REINFLATE PB

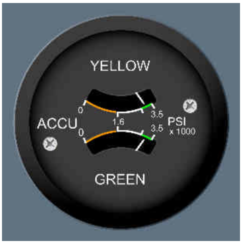
ACCU
REINFLATE

When pressed, the brake accumulators reinflate via the GREEN and YELLOW hydraulic systems. A single push on the ACCU REINFLATE pb is sufficient.

Note: *When one engine is running, the brake accumulators are automatically pressurized.*

Ident.: DSC-32-20-20-20-00012571.0001001 / 07 NOV 16

ACCUMULATOR PRESSURE INDICATOR



The accumulator pressure indicator displays the pressure of the green and yellow brake accumulators.

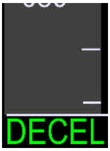
Amber arc	:	The amber range is from 0 to 1 600 PSI, and corresponds to the range at which the crew needs to reinflate the accumulators, as there is not enough pressure to use the parking brake or start the engines.
White arc	:	The zone from 1 600 to 2 600 PSI is white, and corresponds to a pressure sufficient to use the parking brake and start the engines, but not sufficient to perform engine tests.
Green arc	:	The Green range is from 2 600 to 3 500 PSI, and corresponds to the minimum pressure required to start a flight or perform engine tests.

Note: *Green and yellow brake accumulators are installed in different positions in the aircraft. As a consequence, depending on the temperature, a difference can be noticed between the pressure of the green and yellow brake accumulators.*

L2 For more information about the accumulator reinflation, *Refer to DSC-32-20-10-30 Accumulator Reinflation*.

PFD

Ident.: DSC-32-20-20-00002337.0001001 / 30 APR 14
Applicable to: ALL

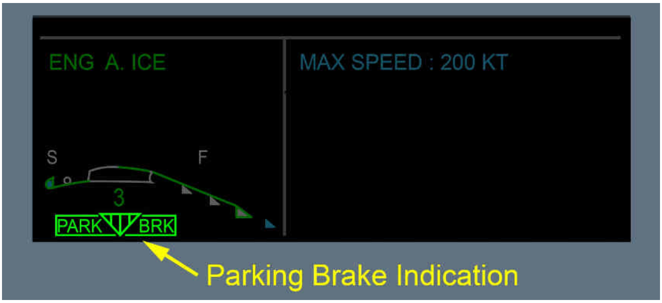


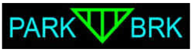
The autobrake function has engaged and reached the target deceleration.

SLATS/FLAPS DISPLAY

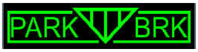
Ident.: DSC-32-20-20-00013620.0002001 / 26 JUL 17
Applicable to: ALL

Slats/Flaps Display





The PARK BRK handle is set to ON and the pressure is rising in the brakes.



The PARK BRK handle is set to ON and the pressure is effective on brakes.

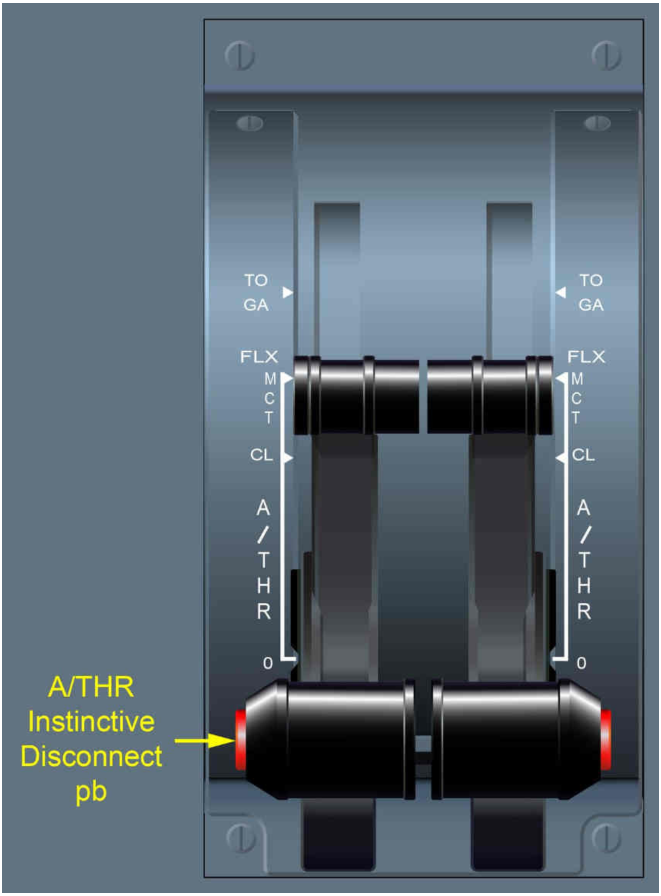
L2 Note: *Park brake indication takes few seconds to be displayed on Slats/Flaps and Trim (SFT) zone after PARK BRK handle is set to ON position.*

THRUST LEVERS

Ident.: DSC-32-20-20-00016533.0001001 / 13 JAN 15
Applicable to: ALL

On ground, the A/THR Instinctive Disconnect pb disconnects the autobrake function.

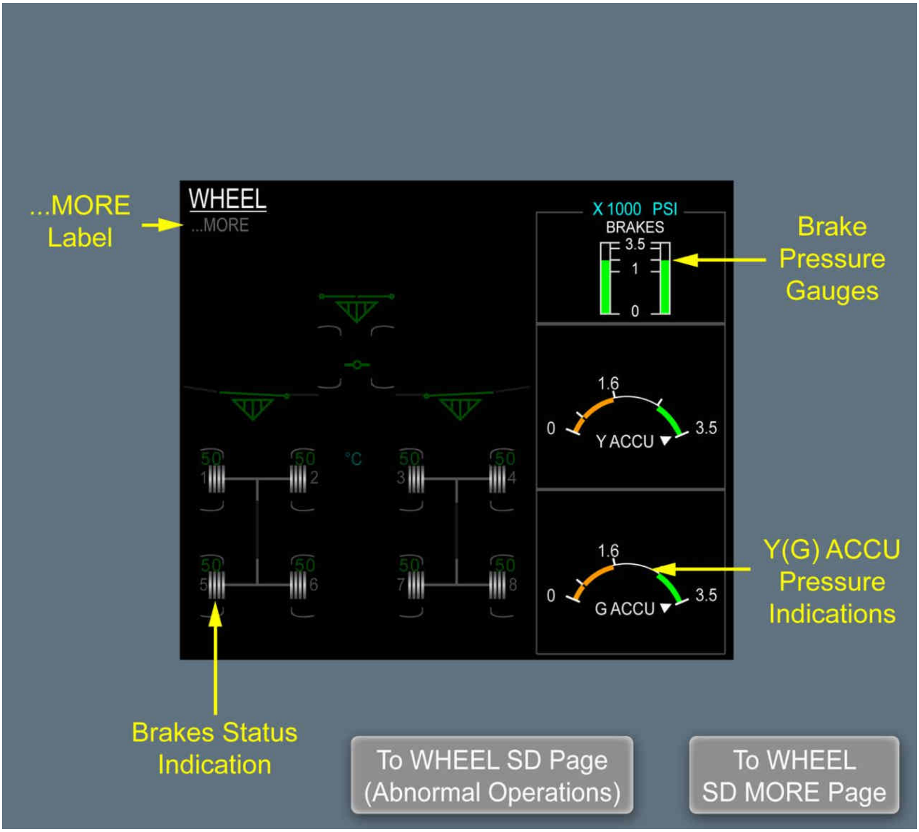
A/THR Instinctive Disconnect pb


TO
GA
FLX
MCT
CL
A/THR
0
TO
GA
FLX
MCT
CL
A/THR
0
A/THR Instinctive Disconnect pb

WHEEL SD PAGE

Applicable to: ALL

Ident.: DSC-32-20-20-30-00002308.0001001 / 30 APR 14


...MORE
Label
WHEEL
...MORE
X 1000 PSI
BRAKES
3.5
1
0
Brake
Pressure
Gauges
1.6
0
3.5
Y ACCU
G ACCU
Y(G) ACCU
Pressure
Indications
50
1
2
3
4
5
6
7
8
°C
Brakes Status
Indication
To WHEEL SD Page
(Abnormal Operations)
To WHEEL
SD MORE Page

Ident.: DSC-32-20-20-30-00018069.0001001 / 30 APR 14

...MORE LABEL

...MORE	Indicates that more information is available on the WHEEL SD MORE Page. In order to display the WHEEL SD MORE Page, the flight crew presses the MORE pb on the ECP.

Ident.: DSC-32-20-20-30-00018070.0001001 / 30 APR 14

MORE LABEL

MORE

Indicates that the WHEEL SD MORE Page is displayed. The WHEEL SD MORE Page displays additional information compared with the WHEEL SD page.
To remove the WHEEL SD MORE Page, the flight crew presses the MORE pb on the ECP. Then, the WHEEL SD page appears.

Ident.: DSC-32-20-20-30-00002310.0001001 / 30 APR 14

BRAKE PRESSURE GAUGES

The dual gauge indicates the pressure applied to the left and right brakes of the main landing gear. The pressure range is displayed on a non-linear scale from 0 to the maximum braking pressure (3 500 PSI).

Ident.: DSC-32-20-20-30-00002309.0001001 / 30 APR 14

A-SKID INDICATION

A-SKID

Following a failure, the antiskid function is still available on the corresponding wheel pair.

L12

A-SKID

Following a failure, the antiskid function is not available on the corresponding wheel pair.

Associated with one of the following ECAM alerts:
- BRAKES PART A-SKID FAULT (*Refer to procedure*), or
- BRAKES A-SKID FAULT ON ALL WHEELS (*Refer to procedure*), or
- BRAKES A-SKID OFF (*Refer to procedure*).

Ident.: DSC-32-20-20-30-00002311.0001001 / 30 APR 14

AUTO BRK INDICATION

L12

AUTO BRK

The autobrake is failed.
Associated with the following ECAM alert: BRAKES AUTO BRK FAULT (*Refer to procedure*).

Ident.: DSC-32-20-20-30-00002312.0001001 / 30 APR 14

BRAKING HYDRAULIC POWER SUPPLY

G

The normal braking is available on the associated wheel group, with the corresponding hydraulic power supply.

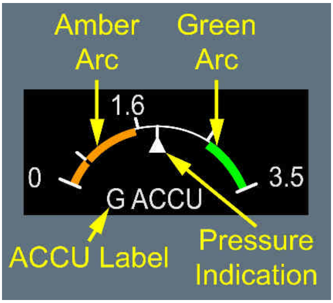
Y ACCU

The normal braking is failed on the associated wheel group, and the corresponding accumulator is available.

Y ACCU	The normal braking is failed on the associated wheel group, and the corresponding accumulator is not available (low pressure or fault).

Ident.: DSC-32-20-20-30-00002314.0001001 / 07 NOV 16

Y(G) ACCU PRESSURE INDICATIONS

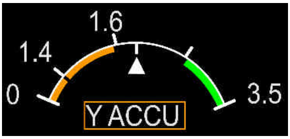


PRESSURE INDICATION

The pressure indication indicates the brake accumulator pressure, from 0 to 3 500 PSI.

Note: *Green and yellow brake accumulators are installed in different positions in the aircraft. As a consequence, depending on the temperature, a difference can be noticed between the pressure of the green and yellow brake accumulators.*

In normal operation, the "0", "1.6", and "3.5" values are displayed on the ACCU pressure indiction.
If the normal braking mode is lost on a wheel group, the "1.4" value is also displayed on the associated accumulator pressure indication.



When the pressure indication is:
- Above 1.6: The alternate braking mode is available with A-SKID
- Between 1.4 and 1.6: The alternate braking mode or emergency braking mode is available without A-SKID
- Below 1.4: All braking modes are lost.

GREEN ARC

The green arc represents the normal pressure zone.
The green arc goes from 2 600 to 3 500 PSI.

AMBER ARC

The amber arc represents the low pressure zone.
The amber arc goes from 0 to 1 600 PSI.

ACCU LABEL

G ACCU	The associated accumulator operates normally.
G ACCU	The associated accumulator is failed.

Ident.: DSC-32-20-20-30-00018106.0001001 / 30 APR 14

BRAKING MODE INDICATIONS

NORM	The associated braking mode is available and active.
EMER	The associated braking mode is available.

L12

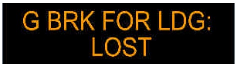
ALTN	The associated braking mode is failed. Associated with one of the following ECAM alerts: - BRAKES PART NORM BRK FAULT (*Refer to procedure*), or - BRAKES PART ALTN BRK FAULT (*Refer to procedure*).

Ident.: DSC-32-20-20-30-00018107.0001001 / 30 APR 14

BRAKING LOSS FORECAST

Y A-SKID FOR LDG: AVAIL	The associated antiskid function is available.
G A-SKID FOR LDG: LOSS IN 2^{H} 30’	The associated antiskid function will be lost in 2 h 30 min.
Y BRK FOR LDG: LOSS IN 2^{H} 20’	The associated braking function will be lost in 2 h 20 min.
G BRK FOR LDG: LOSS > 9^{H} 00’	The associated braking function is available for more than 9 h.
Y BRK FOR LDG: LOSS < 0^{H} 30’	The associated braking function will be lost in less than 30 min.

L12



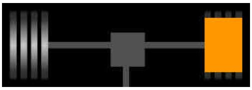
G BRK FOR LDG:
LOST

The associated braking function is lost.
Associated with the following ECAM alert: BRAKES G(Y) ACCU REINFLATE FAULT (*Refer to procedure*).

Ident.: DSC-32-20-20-30-00002315.0001001 / 30 APR 14

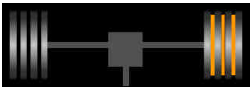
BRAKES STATUS INDICATION

L12



Residual braking affects the associated brake.
Associated with the following ECAM alert: BRAKES RESIDUAL BRAKING (*Refer to procedure*).

L12



The associated brake is released.
Associated with the following ECAM alert: BRAKES RELEASED (*Refer to procedure*).

Intentionally left blank

ERRONEOUS BRAKES AFT(FWD) WHEELS BRK LOST AFTER LANDING GEAR RETRACTION

Ident.: DSC-32-20-25-00025349.0001001 / 28 MAY 20
Applicable to: ALL

1 DESCRIPTION

In both of the following cases, at least one of the BRAKES AFT WHEELS BRK LOST or the BRAKES FWD WHEELS BRK LOST ECAM alert may appear:

- Some failure modes of the landing gear lever may cause the Brake Control System (BCS) to consider the landing gear lever in an erroneous position. When the flight crew moves the landing gear lever to the up position, the landing gear will move to the up position. However, the monitoring part of the BCS may still consider it in the down position. This situation may delay the application of the brakes during the retraction braking sequence and cause erroneous ECAM alerts,
- After lift-off, the BRAKES HOT ECAM alert can appear if the temperature of one of the brakes reaches 300 °C. In this case, the flight crew has to select the L/G lever DOWN for cooling. However, if the flight crew selects the L/G lever UP, as required by SOP, and then applies ECAM action before the landing gear uplock, this can cause erroneous ECAM alerts.

2 OPERATIONAL RECOMMENDATIONS

If one of the following condition is applicable:

- L/G CTL 1 or L/G CTL 2 appears after takeoff (above the takeoff line) on the DISPATCH page,
- After lift-off, following the BRAKES HOT ECAM alert, the flight crew selects the L/G lever UP and then selects the L/G lever DOWN, as per ECAM action, before the landing gear uplock.

Disregard the BRAKES AFT WHEELS BRK LOST ECAM alert or the BRAKES FWD WHEELS BRK LOST ECAM alert.

DISCREPANCY BETWEEN WHEEL SD page AND ECAM ALERTS - A-SKID INDICATION

Ident.: DSC-32-20-25-00022164.0001001 / 04 DEC 14
Applicable to: ALL

DESCRIPTION

On the WHEEL SD page, A-SKID indication is displayed instead of A-SKID between wheels pairs following total loss of braking on the affected wheel group.

However the following alert and indications remain correct:
- The BRAKES AFT(FWD) WHEELS BRK LOST or BRAKES PART A-SKID FAULT alert on the WD, and
- The associated braking modes on the WHEEL SD page, and
- The A-SKID status in the INOP SYS section of the SD STATUS page.

PROCEDURE

On the WHEEL SD page: Disregard the A-SKID indication of the affected wheel group.

ERRONEOUS INDICATION OF TIME TO A/SKID LOSS DURING CLIMB AND FIRST HOUR OF CRUISE

Ident.: DSC-32-20-25-00022170.0001001 / 04 DEC 14
Applicable to: ALL

DESCRIPTION

On the WHEEL SD page, a time indication for the loss of the A-SKID is displayed in the case of hydraulic failure. This time indication may be erroneous (underestimated) during initial climb up to the first hour of cruise.

PROCEDURE

On the WHEEL SD page:
Disregard "TIME TO A-SKID LOSS INFO" during initial climb and the first hour of cruise.

DISCREPANCY BETWEEN WHEEL SD PAGE AND ECAM ALERTS - RELEASED INDICATION

Ident.: DSC-32-20-25-00024295.0001001 / 29 MAY 17
Applicable to: ALL

DESCRIPTION

On the WHEEL SD page, the released amber indication is not displayed for the affected wheel when the BRAKES RELEASED [BRK XX RELEASED] alert is displayed and BRAKES CTL 1 and BRAKES CTL 2 are not available.

However, the following alerts and indication remain correct:
- The BRAKES RELEASED [BRK XX RELEASED] alert on the WD that indicates the failure of a brake,
- The BRAKES AUTO BRK FAULT alert on the WD that indicates the failure of the BRAKES CTL 1 and BRAKES CTL 2,
- The AUTO BRK amber indication on the WHEEL SD page.

PROCEDURE

On the WHEEL SD page, disregard the normal indication for the wheel that is released. The flight crew must compute the impact on landing performance in accordance with the alerts displayed on the WD and the information available on the STATUS page.

LOW LEVEL OF RESIDUAL BRAKING PRESSURE AFTER PARKING BRAKE RELEASE

Ident.: DSC-32-20-25-00024420.0001001 / 26 OCT 17
Applicable to: ALL

DESCRIPTION

At parking brake release, a small amount of hydraulic fluid could remain temporarily trapped in some wheels due to the behavior of the Alternate Servo Valves (ASVs) in the alternate braking hydraulic circuit.
This low level of residual braking pressure is not felt by the crew during taxi or takeoff roll.
When it occurs, this low level of residual pressure trapped in the brakes can be detected by the crew via pressure indicated on the brake pressure gauges on the WHEEL SD page.

PROCEDURE

In order to remove this residual braking pressure from the brakes, the flight crew should press the brake pedals for parking brake release.
This permits to evacuate the hydraulic fluid via the normal braking circuit that brake pedals control.

Intentionally left blank

OVERVIEW

Ident.: DSC-32-30-10-00012904.0001001 / 06 AUG 14
Applicable to: ALL

The Nose Wheel Steering (NWS) system enables directional control of the aircraft on ground.

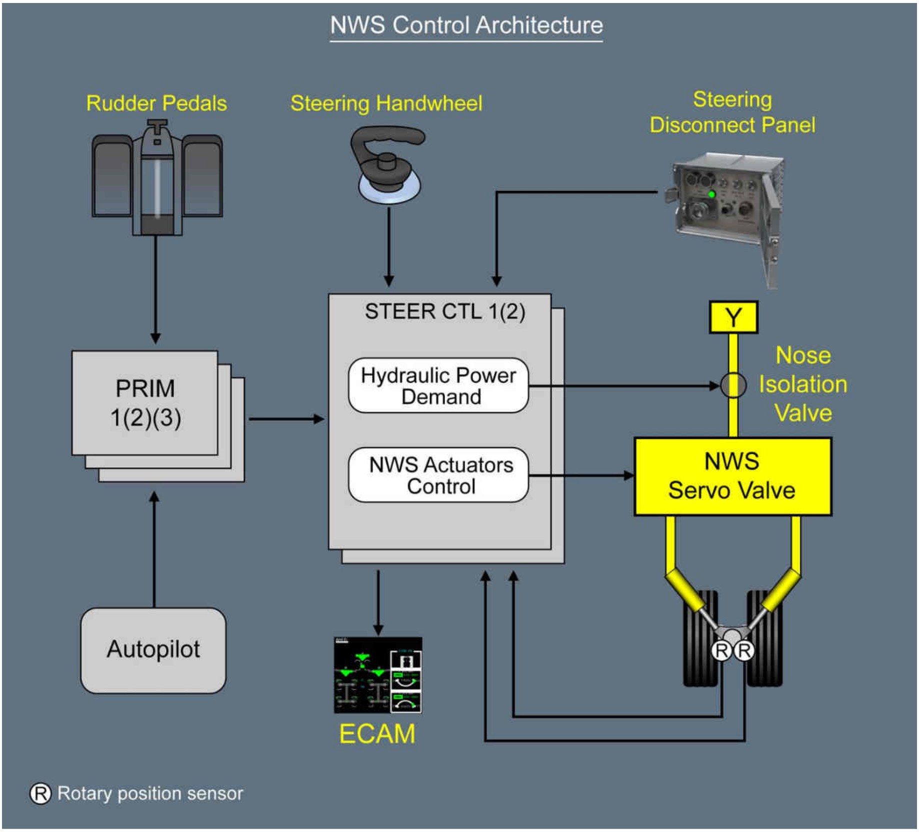
The flight crew can steer the aircraft using:
- The rudder pedals, or
- The steering handwheels (tillers).

The autopilot can also generate steering commands during an automatic landing.

ARCHITECTURE

Applicable to: ALL

Ident.: DSC-32-30-10-10-00012905.0001001 / 30 APR 14


NWS Control Architecture
Rudder Pedals
Steering Handwheel
Steering
Disconnect Panel
STEER CTL 1(2)
Hydraulic Power
Demand
NWS Actuators
Control
Y
Nose
Isolation
Valve
NWS
Servo Valve
PRIM
1(2)(3)
Autopilot
ECAM
R R
R Rotary position sensor

Ident.: DSC-32-30-10-10-00012906.0001001 / 30 APR 14

NWS HYDRAULIC POWER SUPPLY

The YELLOW hydraulic system powers the NWS.

L2 The YELLOW hydraulic system supplies the NWS only when at least one engine is running.

Ident.: DSC-32-30-10-10-00012907.0001001 / 30 APR 14

NWS ACTUATORS

Two hydraulic NWS actuators, attached on the front of the NLG, generate the rotational movement of the NLG wheels.

Ident.: DSC-32-30-10-10-00012908.0001001 / 30 APR 14

L2 NOSE ISOLATION VALVE

The Nose Isolation Valve (NIV) opens when the normal NWS is active.
If the NWS fails, the NIV closes automatically to isolate the NWS from the yellow hydraulic pressure.

Ident.: DSC-32-30-10-10-00012909.0001001 / 30 APR 14

L2 NWS SERVO VALVE

The NWS servo valve regulates the hydraulic flow that is supplied to the steering actuators in accordance with the flight crew steering commands or the autopilot (AP) commands.

Ident.: DSC-32-30-10-10-00012910.0001001 / 30 APR 14

STEERING CONTROL (STEER CTL)

The STEER CTL controls the Nose Wheel Steering (NWS).
The STEER CTL has two redundant control systems referred to as STEER CTL 1 and STEER CTL 2.
One STEER CTL side is active at a time, while the other is on standby.
L2 At landing gear extension, the standby STEER CTL side becomes active.

L3 Both STEER CTL are commanded by the Wheel Steering Control System (WSCS) applications hosted by the CPIOMs :
- WSCS 1 is hosted in CPIOM-H61 and CPIOM-H63
- WSCS 2 is hosted in CPIOM-H62 and CPIOM-H64.

L1 Each STEER CTL receives electrical demand from:
- The steering handwheels (tillers)
- The rudder pedals

  L2 The commands from the rudder pedals are initially sent via the primary flight control computer (PRIMs). If the rudder pedal signals from PRIMs are lost or invalid, rudder pedals orders are acquired from the secondary flight control computer (SEC)
- L1 The autopilot during automatic landings

  L2 The commands of the autopilot are also initially sent to the PRIMs
- L1 The Steering Disconnect Panel (SDP).

Then, the active STEER CTL computes and sends electrical commands to the hydraulic equipment of the steering system.

L2 The STEER CTL commands the NIV in open position to provide hydraulic power.
The STEER CTL commands the NWS actuators via the NWS Servo Valve (NWSSV).
A feedback of the NLG position is ensured by two rotary position sensors.

L1 The STEER CTL also sends data to the FWS and the CDS to generate alerts and displays the WHEEL SD page.
During taxi, the active STEER CTL compensates for NWS offset and crosswind with the Heading Control Function (HCF).

Ident.: DSC-32-30-10-10-00012911.0001001 / 30 APR 14

NLG ROTARY POSITION SENSOR

L2 Two rotary position sensors provide the STEER CTL with feedback on the NLG position.

Ident.: DSC-32-30-10-10-00012915.0001001 / 30 APR 14

L2 INTERFACE WITH OTHER SYSTEMS

The Steering System interfaces with the following systems:
- Hydraulic system (HYD)
- Electrical system (ELEC)
- Air Data/Inertial Reference System (ADIRS)
- PRIM and SEC
- Brakes Control system (BRAKES CTL)
- Landing Gear Extension and Retraction System (LGERS)
- Control and Display System (CDS)
- Flight Warning System (FWS)
- Propulsion Control System (PCS)
- The Digital Flight Data Recorder (DFDR)
- Aircraft Condition Monitoring System (ACMS)
- Central Maintenance System (CMS)

NWS OPERATION

Ident.: DSC-32-30-10-00012912.0001001 / 30 APR 14
Applicable to: ALL

L2 The NWS is not available when the engines are shut down.

L1 The NWS angle is a function of:
- The position of the steering handwheel that is used by the flight crew, or
- The deflection of the rudder pedals

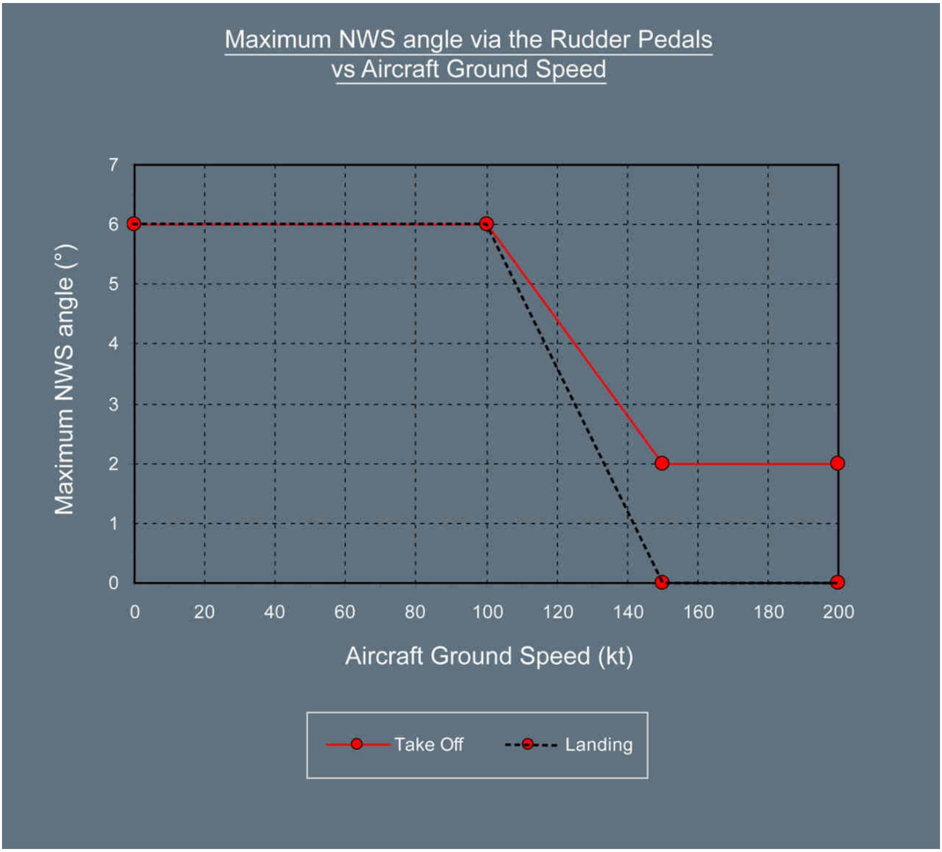
L2 The rudder pedals of the Captain (CAPT) and the First Officer (F/O) are mechanically linked.

L1 - The ground speed of the aircraft in accordance with the flight phase (taxi, takeoff or landing).

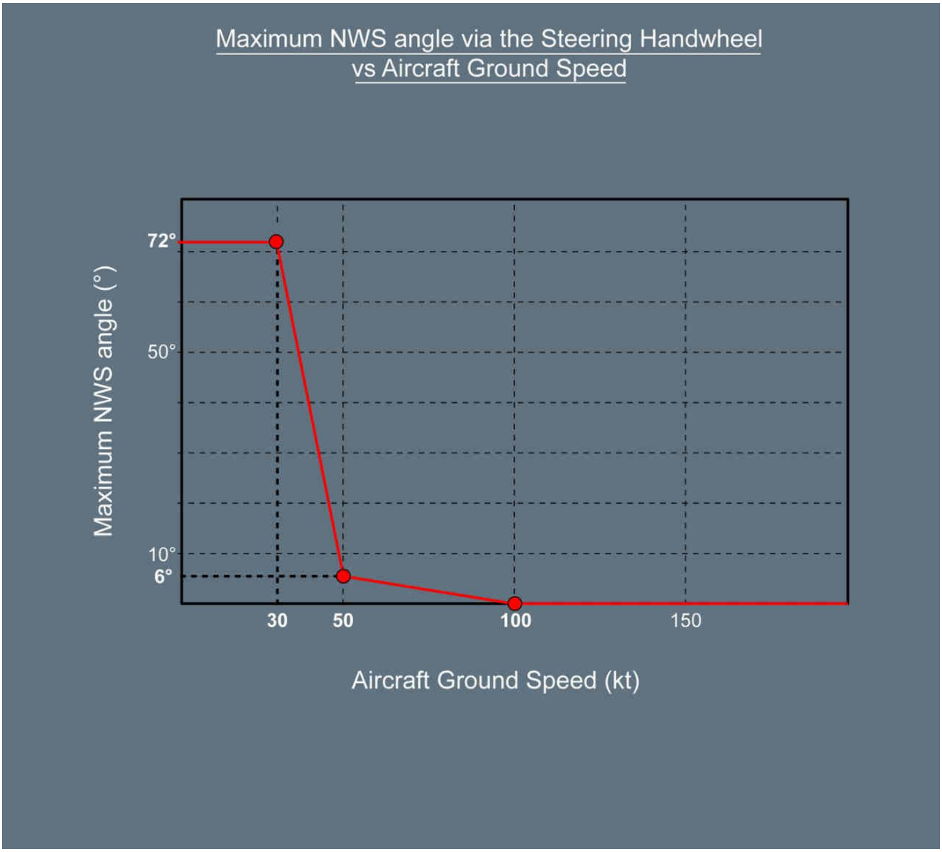
Note: *If both steering handwheels are used simultaneously, the steering commands are algebraically added.*

The maximum NWS angle is:

- 6 ° left or right, via the rudder pedals below 100 kt and is reduced above 100 kt.



- 72 ° left or right via the steering handwheels below 30 kt and is reduced above 30 kt.



HEADING CONTROL FUNCTION

Ident.: DSC-32-30-10-00014043.0001001 / 30 APR 14
Applicable to: ALL

The Heading Control Function (HCF) aims to mitigate aircraft veering during taxi (speed below 50 kt), by maintaining the aircraft in straight line when the flight crew releases the steering handwheel. The HCF compensates for the external perturbations (NWS offset, crosswind, taxiway slope).

L2 At takeoff and landing, the HCF is inhibited.

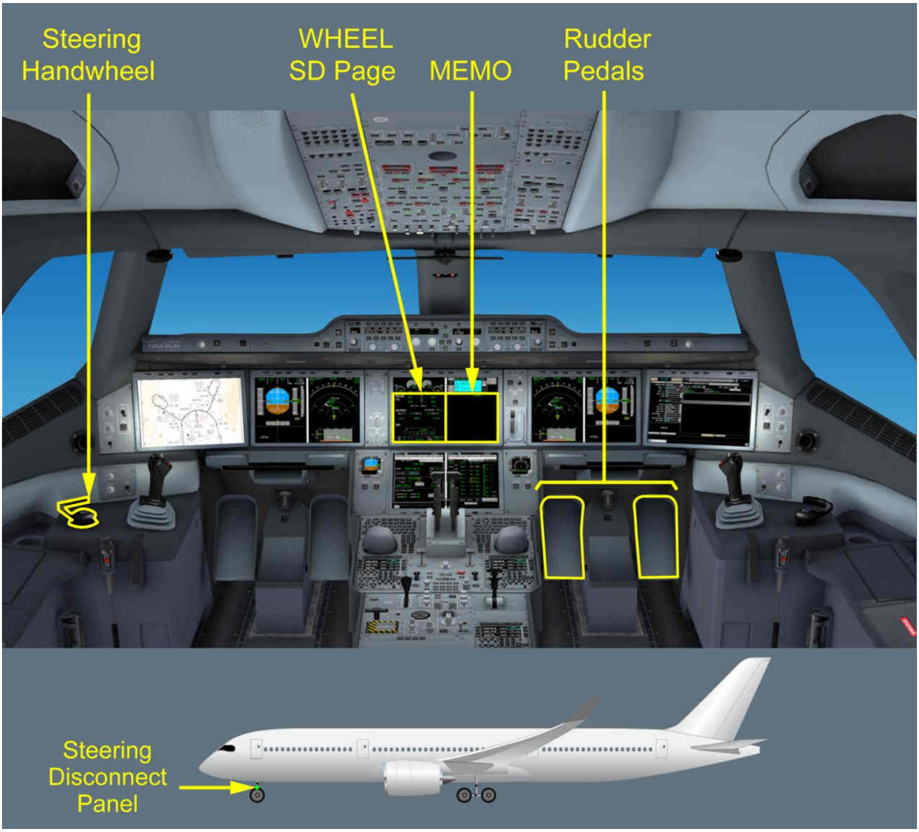
L3 The HCF can order a maximum of +/- 3 ° of nosewheel steering.

L1 Note: *If the HCF is inoperative or disconnected via the PEDAL DISC pb, the pilot has to compensate for the offset with the steering handwheel.*

COCKPIT VIEW

Ident.: DSC-32-30-20-00012916.0001001 / 30 APR 14
Applicable to: ALL

Cockpit View


Steering
Handwheel
WHEEL
SD Page
MEMO
Rudder
Pedals
Steering
Disconnect
Panel

MEMO

Ident.: DSC-32-30-20-00012925.0001001 / 13 JAN 15
Applicable to: ALL

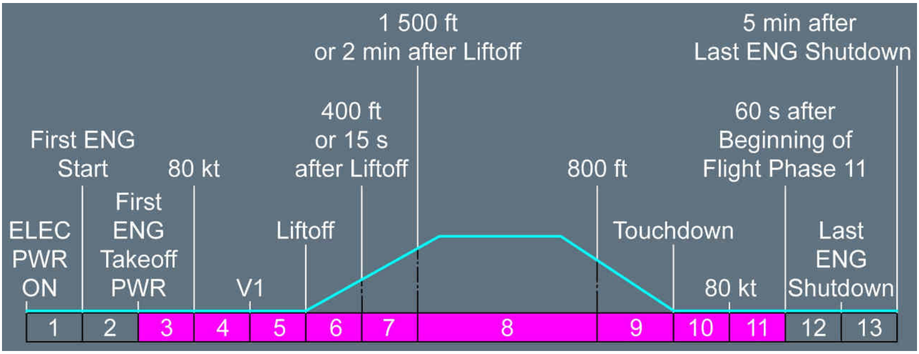
N/W STEER DISC	The NWS is disconnected (at least one engine is running)

L12

N/W STEER DISC	The NWS is disconnected (both engines are off) Appears on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

RUDDER PEDALS

Ident.: DSC-32-30-20-00012920.0001001 / 30 APR 14
Applicable to: ALL

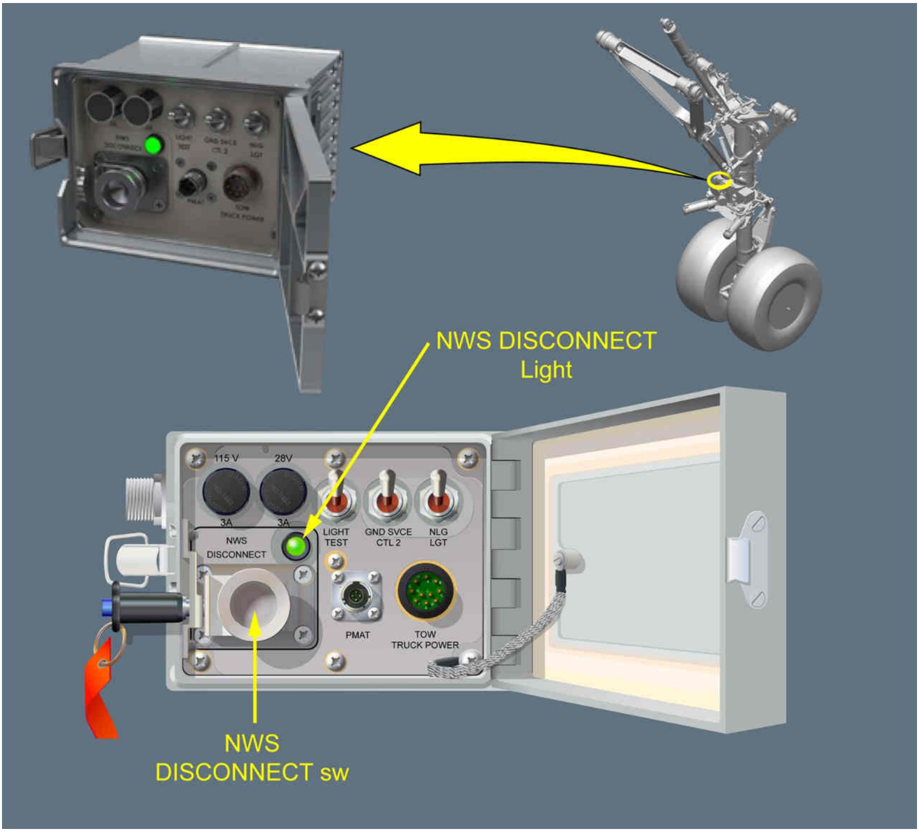
The rudder pedals are used for lateral control during takeoff and landing roll.

L2 Rudder pedal demands are sent to the PRIM, and to the SEC for backup purpose.

STEERING DISCONNECT PANEL

Applicable to: ALL

Ident.: DSC-32-30-20-30-00012924.0001001 / 30 APR 14


NWS DISCONNECT
Light
115 V
28V
3A
3A
NWS
DISCONNECT
LIGHT
TEST
GND SVCE
CTL 2
NLG
LGT
PMAT
TOW
TRUCK POWER
NWS
DISCONNECT sw

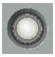
Ident.: DSC-32-30-20-30-00012993.0001001 / 02 OCT 14

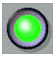
NWS DISCONNECT SW

When the tow pin is installed, the NWS is inhibited and the NWS Disconnect light is on.

Ident.: DSC-32-30-20-30-00012994.0001001 / 02 OCT 14

NWS DISCONNECT LIGHT

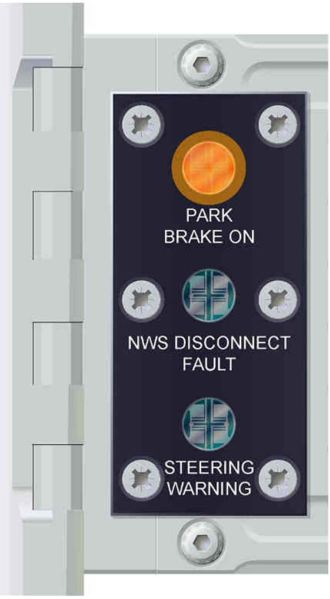

: The NWS Disconnect switch is not activated.


: The NWS Disconnect switch is activated.

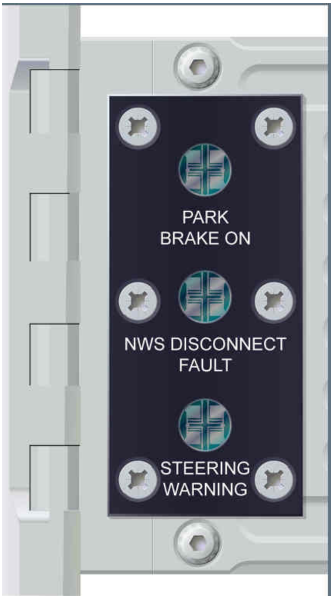
Ident.: DSC-32-30-20-30-00012995.0001001 / 05 NOV 15

PARK BRAKE AND STEERING INDICATION LIGHTS

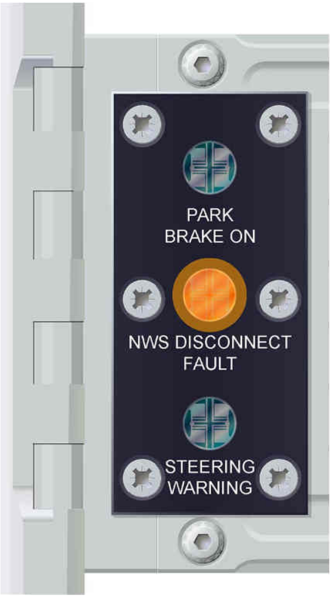
The PARK BRAKE ON light and NWS light are located on the right-hand side of the Steering Disconnect Panel (SDP).



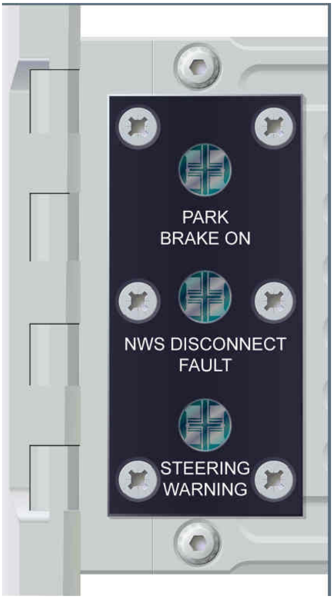
The PARK BRK is set to ON.


PARK
BRAKE ON
NWS DISCONNECT
FAULT
STEERING
WARNING

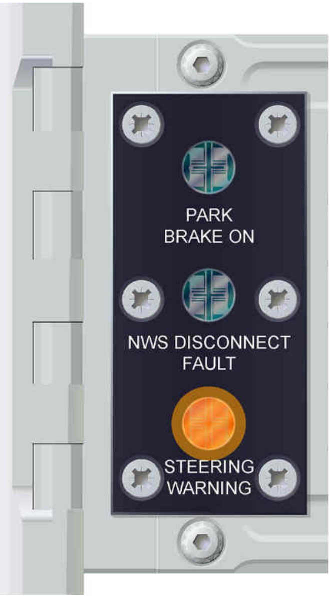
The PARK BRK is set to OFF


PARK
BRAKE ON
NWS DISCONNECT
FAULT
STEERING
WARNING

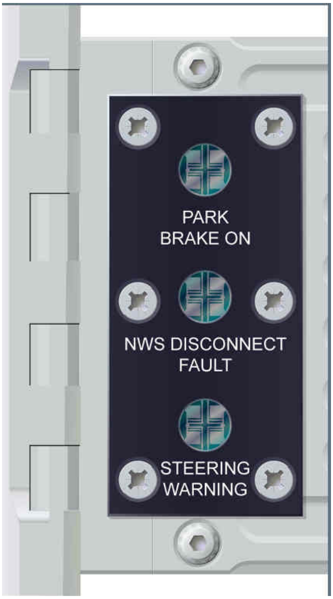
The WSCS detects that towing has been requested, but the NWS is not disconnected.


PARK
BRAKE ON
NWS DISCONNECT
FAULT
STEERING
WARNING

The WSCS detects that towing has been requested and NWS is disconnected.


PARK
BRAKE ON
NWS DISCONNECT
FAULT
STEERING
WARNING

The WSCS detects an over steer event (flashing).

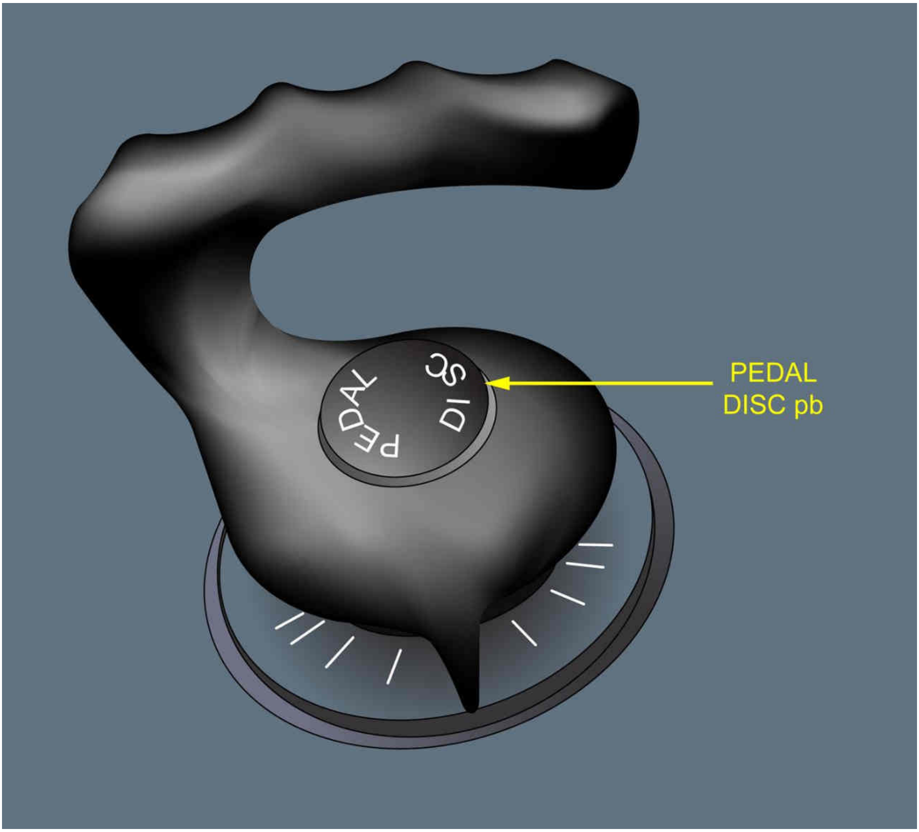

PARK
BRAKE ON
NWS DISCONNECT
FAULT
STEERING
WARNING

The WSCS does not detect an over steer warning.

STEERING HANDWHEEL

Applicable to: ALL

Ident.: DSC-32-30-20-10-00012921.0002001 / 03 JAN 20



The flight crew uses the steering handwheels to steer the aircraft during taxi.
Each steering handwheel controls the NWS angle up to 72 ° left or right.
The following table provides the nose wheel steering angle corresponding to the handwheel graduations, for an aircraft speed lower than 30 kt. *Refer to DSC-32-30-10 NWS Operation*.

Handwheel Graduation	Nose Wheel Steering Angle
1	0 °
2	6.4 °

Continued on the following page

Continued from the previous page

3	23.3 °
4	48.1 °
5	68.4 °

Ident.: DSC-32-30-20-10-00012922.0001001 / 30 APR 14

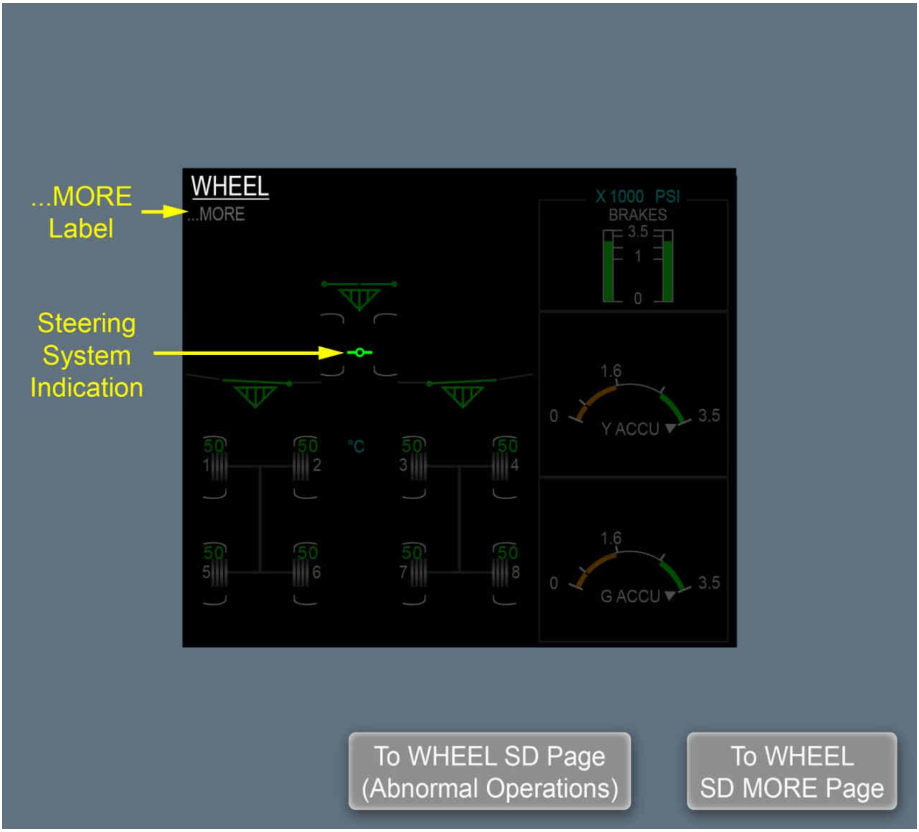
PEDAL DISC PB

When pressed and held, the PEDAL DISC pb disconnects:
- The NWS from the rudder pedals
- The Heading Control Function (HCF).

WHEEL SD PAGE

Applicable to: ALL

Ident.: DSC-32-30-20-20-00012923.0001001 / 30 APR 14


...MORE Label
Steering System Indication
WHEEL
...MORE
X 1000 PSI
BRAKES
3.5
1
0
1.6
0
3.5
Y ACCU
1.6
0
3.5
G ACCU
50
1
50
2
°C
50
3
50
4
50
5
50
6
50
7
50
8
To WHEEL SD Page (Abnormal Operations)
To WHEEL SD MORE Page

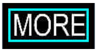
Ident.: DSC-32-30-20-20-00018080.0001001 / 30 APR 14

...MORE LABEL

Indicates that more information is available on the WHEEL SD MORE Page.
In order to display the WHEEL SD MORE Page, the flight crew presses the MORE pb on the ECP.

Ident.: DSC-32-30-20-20-00018081.0001001 / 30 APR 14

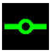
MORE LABEL



Indicates that the WHEEL SD MORE Page is displayed. The WHEEL SD MORE Page displays additional information compared with the WHEEL SD page.
To remove the WHEEL SD MORE Page, the flight crew presses the MORE pb on the ECP. Then, the WHEEL SD page appears.

Ident.: DSC-32-30-20-20-00013029.0001001 / 30 APR 14

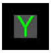
STEERING SYSTEM INDICATION



The nose wheel steering operates normally.

Ident.: DSC-32-30-20-20-00013030.0001001 / 30 APR 14

STEERING HYDRAULIC POWER SUPPLY

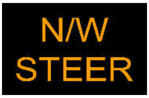


The yellow hydraulic power supply is available.

Ident.: DSC-32-30-20-20-00018095.0001001 / 16 JUN 14

N/W STEER INDICATION

L12



The nose wheel steering is failed.
Associated with the following ECAM alert: STEER N/W STEER FAULT (*Refer to procedure*).

Intentionally left blank

TOWING

Ident.: DSC-32-30-30-00012913.0001001 / 30 APR 14
Applicable to: ALL

When the aircraft is towed, the ground crew must set the NWS Disconnect sw of the Steering Disconnect Panel (SDP) in the towing position. The towing position enables the NLG to be free to swivel and prevent damages to the structure due to unwanted NWS activation if an engine is started.

L2 For more information about the SDP, *Refer to DSC-32-30-20 Steering Disconnect Panel*.

Intentionally left blank

BACKUP STEERING FUNCTION

Applicable to: ALL

Ident.: DSC-32-30-40-10-00012914.0001001 / 24 MAY 17

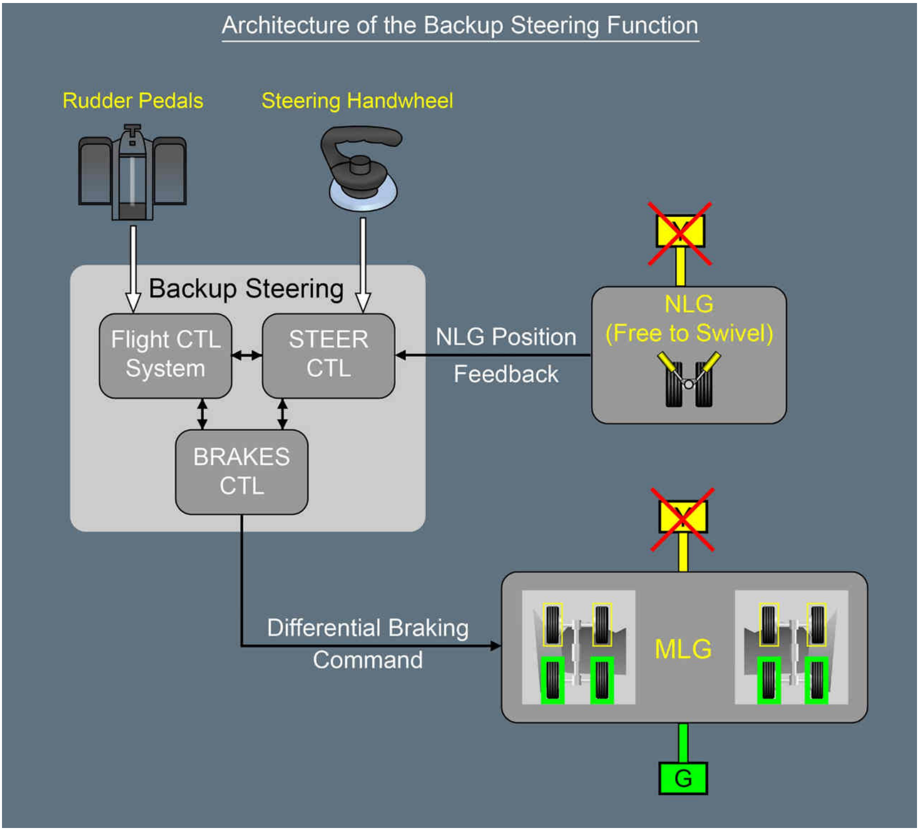
The Backup Steering Function (BSF) permits the flight crew to steer the aircraft when:

- The Nose Wheel Steering (NWS) is failed and the nose wheel is free to swivel, or
- The yellow hydraulic circuit is lost.

The BSF permits to vacate the runway using the normal steering controls (i.e. steering handwheels and rudder pedals).

L2 The maximum NWS angle remains the same as in normal operation with the nose wheel steering system operative.

L1 The PRIMs and the STEER CTL convert steering control inputs into differential braking orders applied on the MLG wheels powered by the GREEN hydraulic system.


Architecture of the Backup Steering Function
Rudder Pedals
Steering Handwheel
Backup Steering
Flight CTL System
STEER CTL
BRAKES CTL
NLG Position Feedback
NLG (Free to Swivel)
Y
Y
Differential Braking Command
MLG
G

Ident.: DSC-32-30-40-10-00022546.0001001 / 24 MAY 17

BSF ACTIVATION

The BSF is active:

- When one of the following failure occurs:
  - The NWS is inoperative and the nose wheel is free to swivel (for more information, *Refer to procedure*), or
  - The yellow hydraulic circuit is lost (for more information, *Refer to procedure*),
- After landing,
- When the autopilot (AP) and the autobrake (A/BRK) are disconnected,
- When the aircraft speed is at or below 30 kt.

The BSF does not activate:
- During taxi out, or
- After a Rejected Takeoff (RTO), or
- When one engine is inoperative, or
- When one or more green brakes are not available in normal braking mode, or
- When the nose wheel is not free to swivel.

The STEER N/W STEER FAULT and the HYD Y SYS PRESS LO alerts indicate to the flight crew when the BSF is active or inhibited.

Intentionally left blank

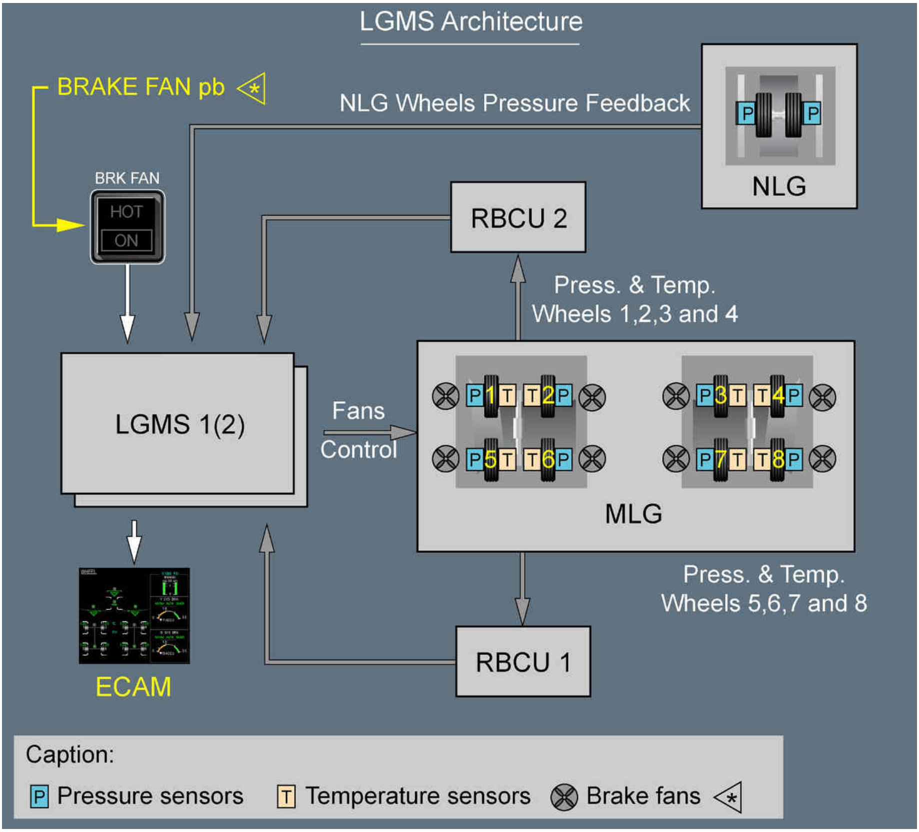
OVERVIEW

Ident.: DSC-32-40-10-00012631.0002001 / 09 MAR 16
Applicable to: ALL

The Landing Gear Monitoring System (LGMS) includes:
- The Brake Temperature Monitoring System (BTMS)
- The Brake Fan ◁
- The Tire Pressure Indicating System (TPIS).

ARCHITECTURE

Ident.: DSC-32-40-10-00012632.0003001 / 09 MAR 16
Applicable to: ALL


LGMS Architecture
BRAKE FAN pb
NLG Wheels Pressure Feedback
P
P
NLG
BRK FAN
HOT
ON
RBCU 2
Press. & Temp.
Wheels 1,2,3 and 4
LGMS 1(2)
Fans
Control
P 1 T
T 2 P
P 3 T
T 4 P
P 5 T
T 6 P
P 7 T
T 8 P
MLG
Press. & Temp.
Wheels 5,6,7 and 8
ECAM
RBCU 1
Caption:
P Pressure sensors
T Temperature sensors
Brake fans

L2
- LGMS 1 is hosted in CPIOM H61
- LGMS 2 is hosted in CPIOM H62.

BRAKE TEMPERATURE MONITORING

Ident.: DSC-32-40-10-00012917.0001001 / 30 APR 14
Applicable to: ALL

The Brake Temperature Monitoring System (BTMS) of the LGMS measures the temperature of each brake and sends it to:

- The ECAM to generate the BRAKES BRAKES HOT alert (*Refer to procedure*), when a brake temperature exceeds 300 °C, and to the WHEEL SD page (*Refer to WHEEL SD - LGMS Indication)*
- L2 The Central Maintenance System (CMS) to trigger maintenance messages when a brake temperature exceeds 800 °C.

The BTMS displays measured temperatures from 0 °C to 995 °C by step of 5 °C.
L1 The brake temperature values are sent to the LGMS 1 and LGMS 2.

BRAKE FANS

Ident.: DSC-32-40-10-00012918.0004001 / 09 MAR 16
Applicable to: ALL

To improve aircraft turnaround time, brake fans can be used to cool down the brakes quicker than natural conduction and radiation.
The flight crew sets the brake fans to ON by pressing the BRAKE FAN pb.
L2 The brake fans are automatically set to off at takeoff when the engines thrust increase and the BCF power supply frequency is more than 525 Hz.

TIRE PRESSURE INDICATING SYSTEM (TPIS)

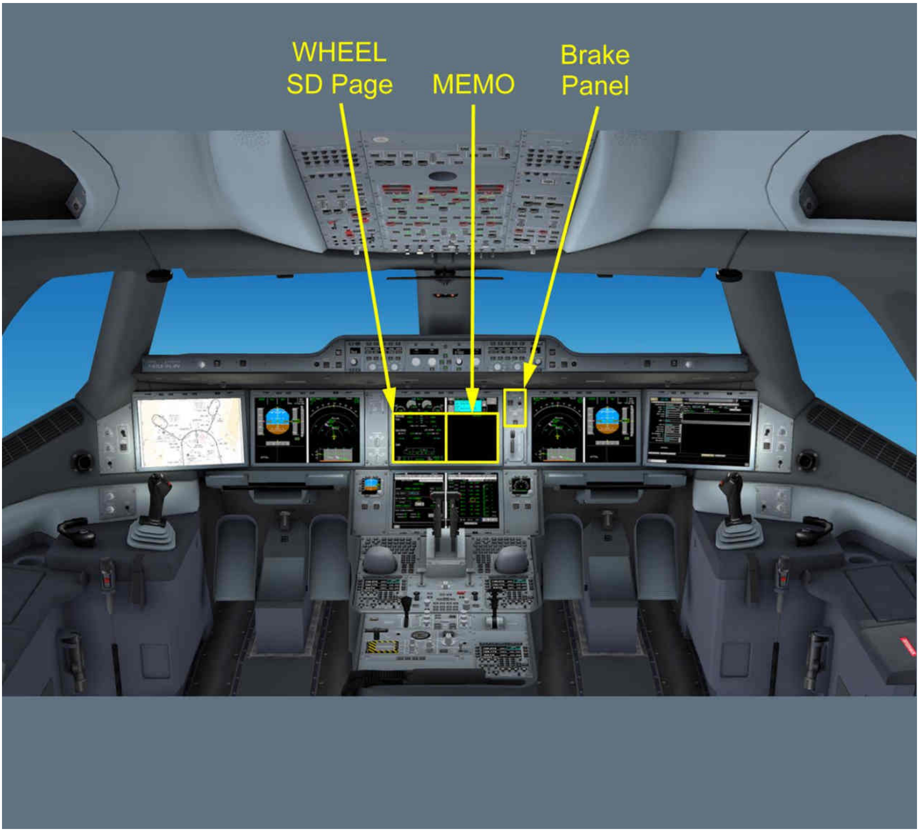
Ident.: DSC-32-40-10-00002291.0001001 / 30 APR 14
Applicable to: ALL

The Tire Pressure Indicating System (TPIS) measures the pressure of each tire. This information is sent to the ECAM to generate the WHEEL TIRE PRESS LO alert (*Refer to procedure*), and to the WHEEL SD page (*Refer to WHEEL SD page - Tire Pressure Indication*).
L3 The TPIS can measure pressures from 0 to 480 PSI by step of 1 PSI.
L1 The tire pressure values are sent to the LGMS 1 and LGMS 2.

COCKPIT VIEW

Ident.: DSC-32-40-20-00012919.0002001 / 09 MAR 16
Applicable to: ALL

Cockpit View

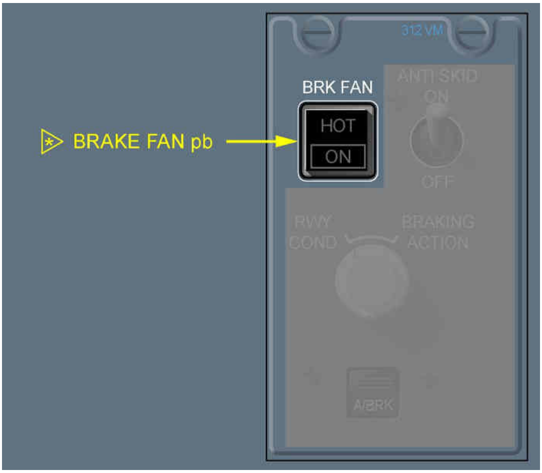


BRAKE PANEL

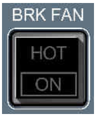
Applicable to: ALL

Ident.: DSC-32-40-20-20-00014124.0001001 / 09 MAR 16

Brake Panel

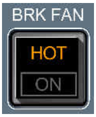

312 VM
BRK FAN
HOT
ON
ANTI SKID
ON
OFF
RWY
COND
BRAKING
ACTION
A/BRK
◁✳ BRAKE FAN pb

Ident.: DSC-32-40-20-20-00012930.0002001 / 09 MAR 16

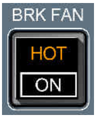

BRK FAN
HOT
ON

The brake fans ◁✳ are off, and no hot brake condition is detected.

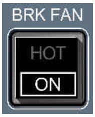
L12


BRK FAN
HOT
ON

The brake fans ◁✳ are off, and a hot brake condition is detected.
The HOT light goes comes on when the ECAM triggers BRAKES BRAKES HOT alert (*Refer to procedure*) and the aircraft is on ground.
The HOT light goes off when the ECAM does not trigger the BRAKES BRAKES HOT or the aircraft is not on ground.


BRK FAN
HOT
ON

The brake fans ◁✳ are ON, and a hot brake condition is detected.


BRK FAN
HOT
ON

The brake fans ✳ are ON, and no hot brake condition is detected.

MEMO

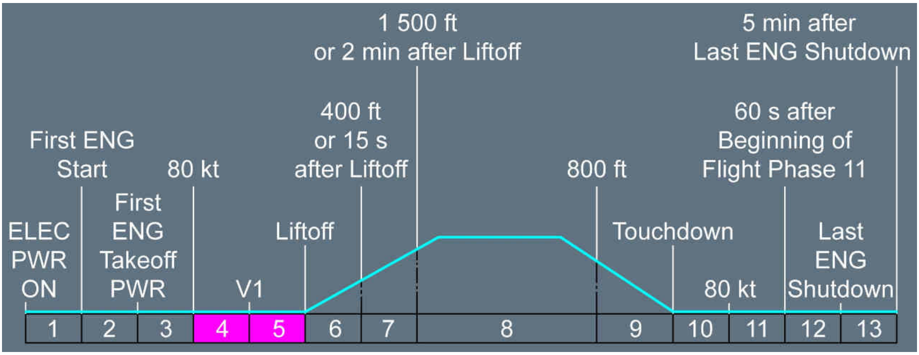
Ident.: DSC-32-40-20-00012931.0002001 / 09 MAR 16
Applicable to: ALL

L12

BRK FAN	The brake fans ✳ are ON. Appears on the WD.

L2 Flight Phase Inhibition:

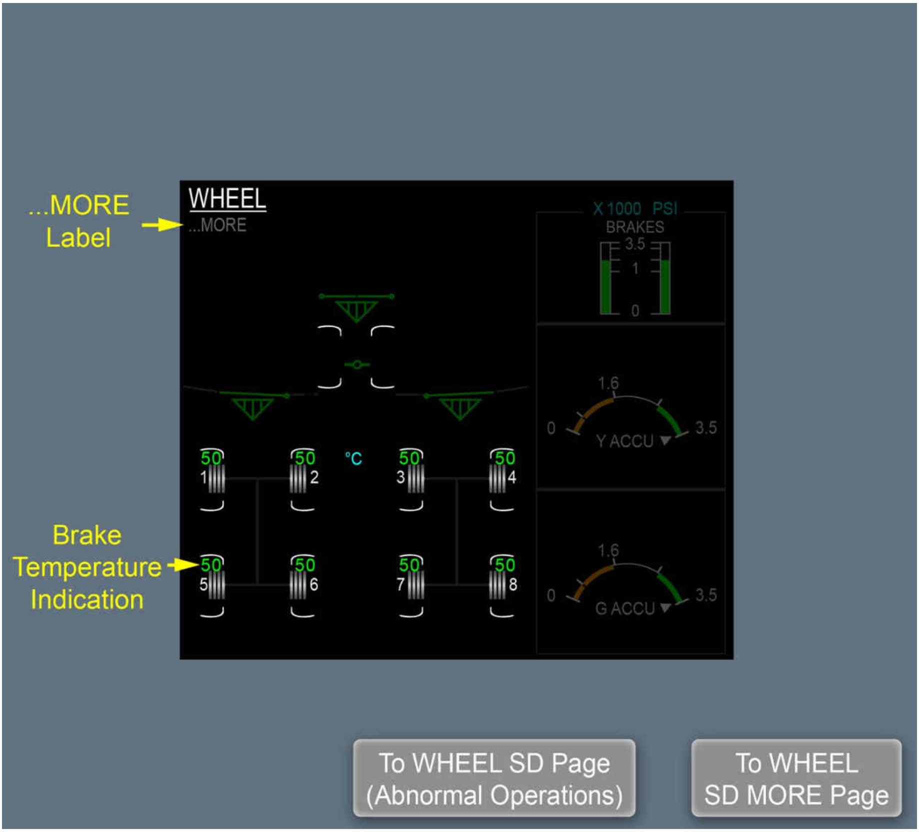
Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

WHEEL SD PAGE

Applicable to: ALL

Ident.: DSC-32-40-20-10-00012927.0001001 / 30 APR 14


...MORE
Label
WHEEL
...MORE
X 1000 PSI
BRAKES
3.5
1
0
1.6
0
3.5
Y ACCU
1.6
0
3.5
G ACCU
°C
50
1
50
2
50
3
50
4
50
5
50
6
50
7
50
8
Brake
Temperature
Indication
To WHEEL SD Page
(Abnormal Operations)
To WHEEL
SD MORE Page

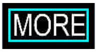
Ident.: DSC-32-40-20-10-00018082.0001001 / 30 APR 14

...MORE LABEL

...MORE	Indicates that more information is available on the WHEEL SD MORE Page. In order to display the WHEEL SD MORE Page, the flight crew presses the MORE pb on the ECP.

Ident.: DSC-32-40-20-10-00018083.0001001 / 30 APR 14

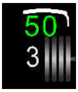
MORE LABEL



Indicates that the WHEEL SD MORE Page is displayed. The WHEEL SD MORE Page displays additional information compared with the WHEEL SD page.
To remove the WHEEL SD MORE Page, the flight crew presses the MORE pb on the ECP. Then, the WHEEL SD page appears.

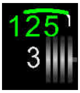
Ident.: DSC-32-40-20-10-00012928.0001001 / 30 APR 14

BRAKE TEMPERATURE INDICATION



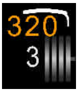
The brake temperature is normal.

L12

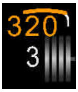


The brake temperature is normal. The green arc indicates the hottest wheel brake. The green arc appears only if the hottest brake temperature exceeds 100 °C.

L12



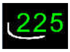
The brake temperature is excessive.
The brake temperature exceeds 300 °C.
Associated with the following ECAM alert: BRAKES BRAKES HOT (*Refer to procedure*).



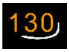
The brake temperature is excessive. The amber arc indicates the hottest wheel brake.

Ident.: DSC-32-40-20-10-00012929.0001001 / 30 APR 14

TIRE PRESSURE INDICATION



The tire pressure is normal.



- The tire pressure is low, or

  The tire pressure is low if it reaches the following percentage of the nominal pressure:
  - 89 % before liftoff
  - 74 % after liftoff.
- The difference of pressure between the two tires of the same axle is excessive.

  The difference of pressure between the two tires is excessive if it reaches the following percentage:
  - 15 % before liftoff
  - 21 % after liftoff.

Associated with the following ECAM alert: WHEEL TIRE PRESS LO (*Refer to procedure*).

AIRCRAFT SYSTEMS

33 - LIGHTS

Intentionally left blank

DSC-33-10 Overview

OVERVIEW.. A

DSC-33-20 Cockpit Lights

DSC-33-20-10 System Description

Overview.. A
Dome Lights.. B
Integral Lights.. C
Pedestal Lights.. D
Main Instrument Panel Lights.. E
Sliding Table Lights.. F
Pedals Lights.. G
Lateral Console Lights.. H
Map Holder Lights.. I
Reading Lights.. J
Coat Stowage Lights.. K
Ice Indicator, Standby Compass, and Eye Reference Lights.. L
Annunciator Lights.. M
Storm Function.. N

DSC-33-20-20 Controls and Indicators

Cockpit View.. A
3RD and 4TH OCCPNT READING LT Knobs.. B
3RD OCCPNT CONSOLE LT Knob.. C
AVNCS LT sw.. D
CAPT and F/O Reading Lights Knob.. E
CKPT LT Panel.. F
COAT STWG LT sw.. G
DOME LT pb.. H
Glareshield Integral Lights Knob.. I
INT LT Panel.. J
MAP CONSOLE PEDALS LT Panel.. K
Sliding Table Lights Knob.. L

Continued on the following page

Continued from the previous page

DSC-33-30 Exterior Lights

DSC-33-30-10 System Description

Overview........A
Strobe Lights........B
Beacon Lights........C
Navigation Lights........D
Logo Lights........E
Wing and Engine Scan Lights........F
Landing Lights........G
Takeoff Lights........H
Taxi and Runway Turn Off Lights........I
TAXI Camera Lights ....J

DSC-33-30-20 Controls and Indicators

Cockpit View........A
EXT LT Panel........B
MEMO........C

DSC-33-40 Emergency Lights

DSC-33-40-10 System Description

Overview........A
Floor Path Marking System........B
Flight Crew Rest Compartment (FCRC) Emergency Lights........C
Overhead Emergency Lights........D
Exit Signs........E
Evacuation Area Lights........F
Emergency Slide Lights........G
Lavatory Emergency Lights........H
Power Supply........I

DSC-33-40-20 Controls and Indicators

Cockpit View........A
SIGNS Panel........B

DSC-33-40-30 Normal Operations

Normal Operations........A

DSC-33-50 Signs

DSC-33-50-10 System Description

Overview........A

Continued on the following page

Continued from the previous page

DSC-33-50-20 Controls and Indicators

Cockpit View.......... A
MEMO.......... B
SIGNS Panel.......... C

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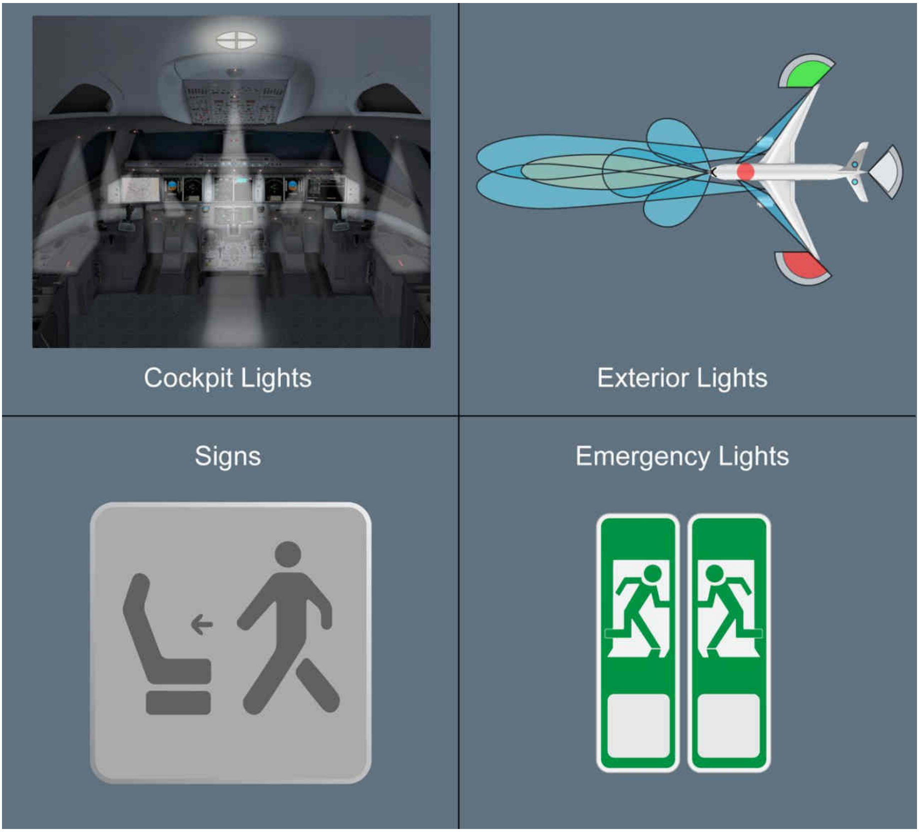
OVERVIEW

Ident.: DSC-33-10-00013575.0001001 / 29 APR 14
Applicable to: ALL


Cockpit Lights
Exterior Lights
Signs
Emergency Lights

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OVERVIEW

Ident.: DSC-33-20-10-00013394.0001001 / 29 APR 14
Applicable to: ALL

The cockpit lights provide the flight crew with the best lighting environment to perform their duties.

L2 The cockpit lights enable the flight crew:
- To move safely in the cockpit
- To see the cockpit equipment
- To use the work surfaces in an appropriate way.

L1 The flight crew can dim most of the cockpit lights, if necessary.

L2 The flight crew cannot dim the following cockpit lights:
- The pedals lights
- The coat stowage lights
- The ice indicator, the standby compass, and the eye reference lights.

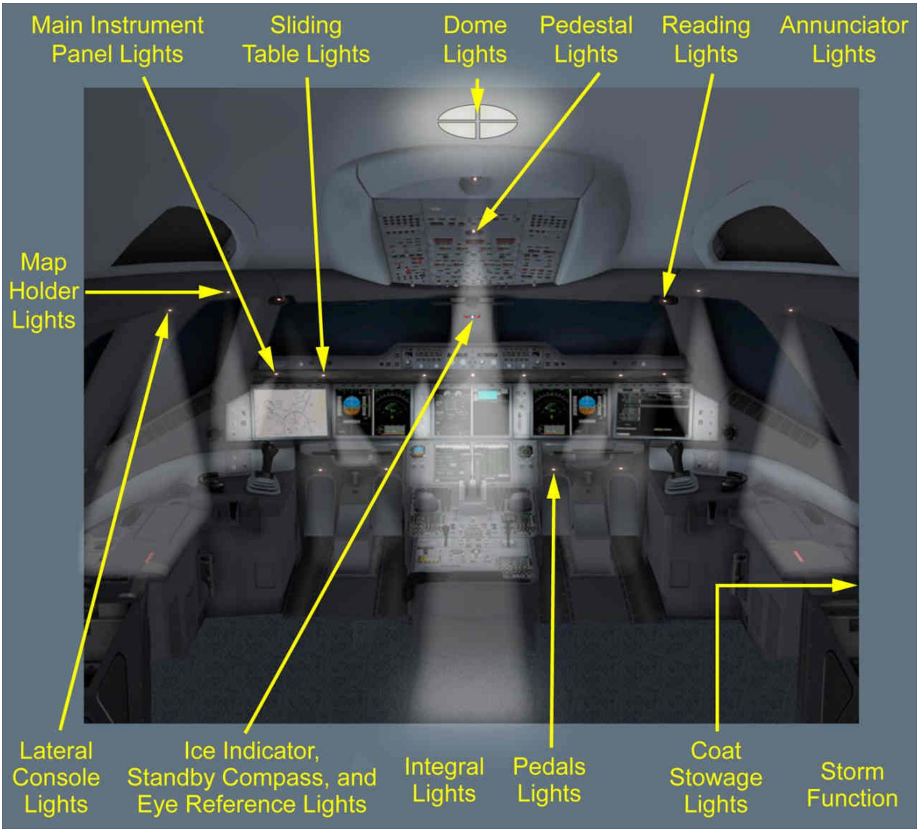
L1 The cockpit has lights of two different colors:
- Lights with an orangey white color that do not strain the human eye.

L2 The following lights are an orangey white color:
  - The dome lights
  - The integral lights
  - The pedestal lights
  - The main instrument panel lights
  - The pedals lights
  - The console lights
  - The coat stowage lights
  - The standby compass, the ice indicator, and the eye reference lights
  - The annunciator lights.

L1 - Lights with a bluish white color that help the flight crew to read.

L2 The following lights are a bluish white color:
  - The sliding table lights
  - The map lights
  - The reading lights.

Overview

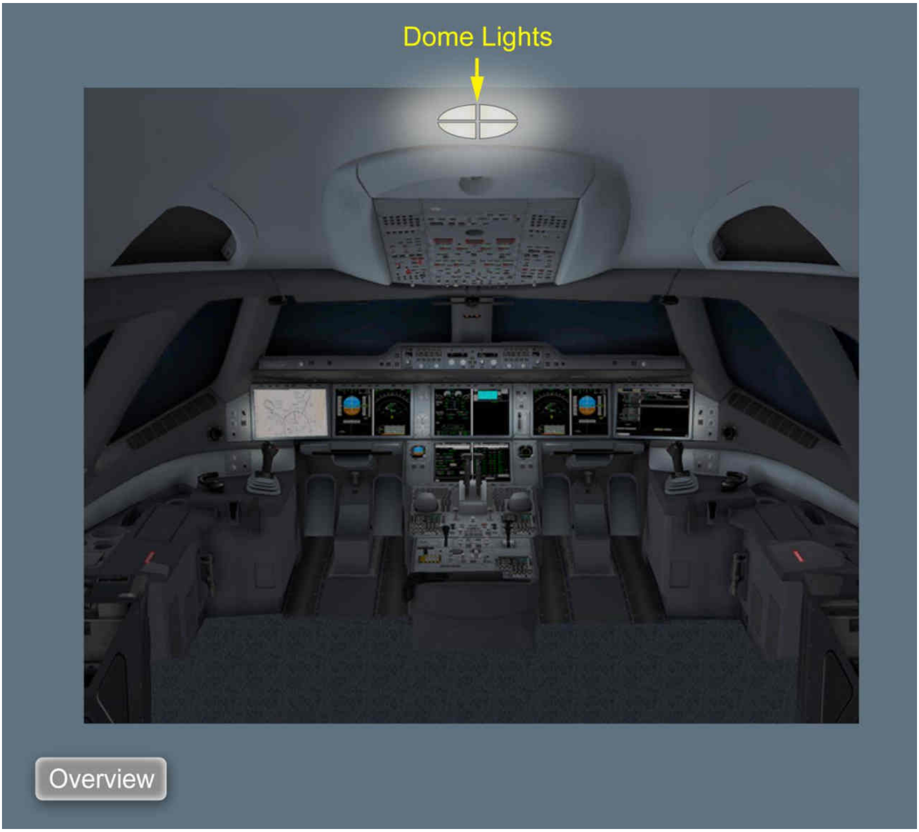

Main Instrument Panel Lights
Sliding Table Lights
Dome Lights
Pedestal Lights
Reading Lights
Annunciator Lights
Map Holder Lights
Lateral Console Lights
Ice Indicator, Standby Compass, and Eye Reference Lights
Integral Lights
Pedals Lights
Coat Stowage Lights
Storm Function

DOME LIGHTS

Ident.: DSC-33-20-10-00013592.0001001 / 29 APR 14
Applicable to: ALL

The cockpit has two dome lights behind the overhead panel that provide lighting in the cockpit.

Dome Lights



L2 When the ground servicing supplies the aircraft with electricity, the right side dome light is available.

INTEGRAL LIGHTS

Ident.: DSC-33-20-10-00013593.0001001 / 29 APR 14
Applicable to: ALL

The cockpit has integral lights on:
- The main instrument panel
- The pedestal

- The overhead panel
- The glareshield.

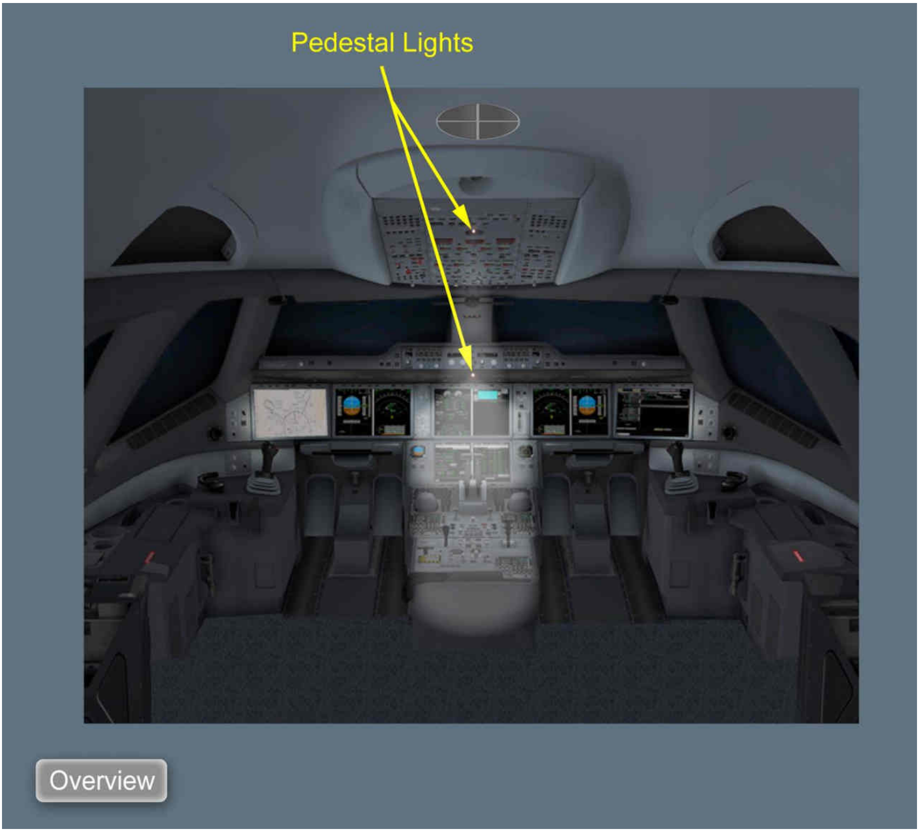
PEDESTAL LIGHTS

Ident.: DSC-33-20-10-00013594.0001001 / 29 APR 14
Applicable to: ALL

The cockpit has one light on the overhead panel and another light under the glareshield. These lights provide lighting on and in front of the pedestal.

L2 The flight crew can adjust the brightness of the pedestal lights via the FLOOD LT knob.

Pedestal Lights



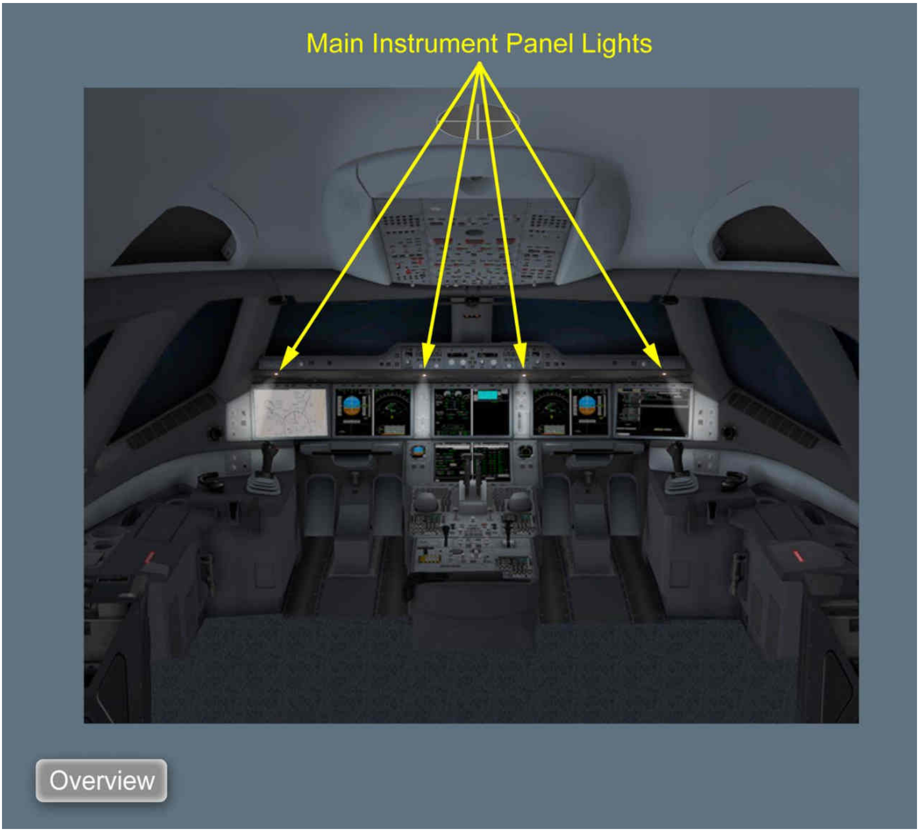
MAIN INSTRUMENT PANEL LIGHTS

Ident.: DSC-33-20-10-00013595.0001001 / 29 APR 14
Applicable to: ALL

The cockpit has four lights under the glareshield that provide lighting on the controls of the main instrument panel.

L2 The flight crew can adjust the brightness of the main instrument panel lights via the FLOOD LT knob.

Main Instrument Panel Lights



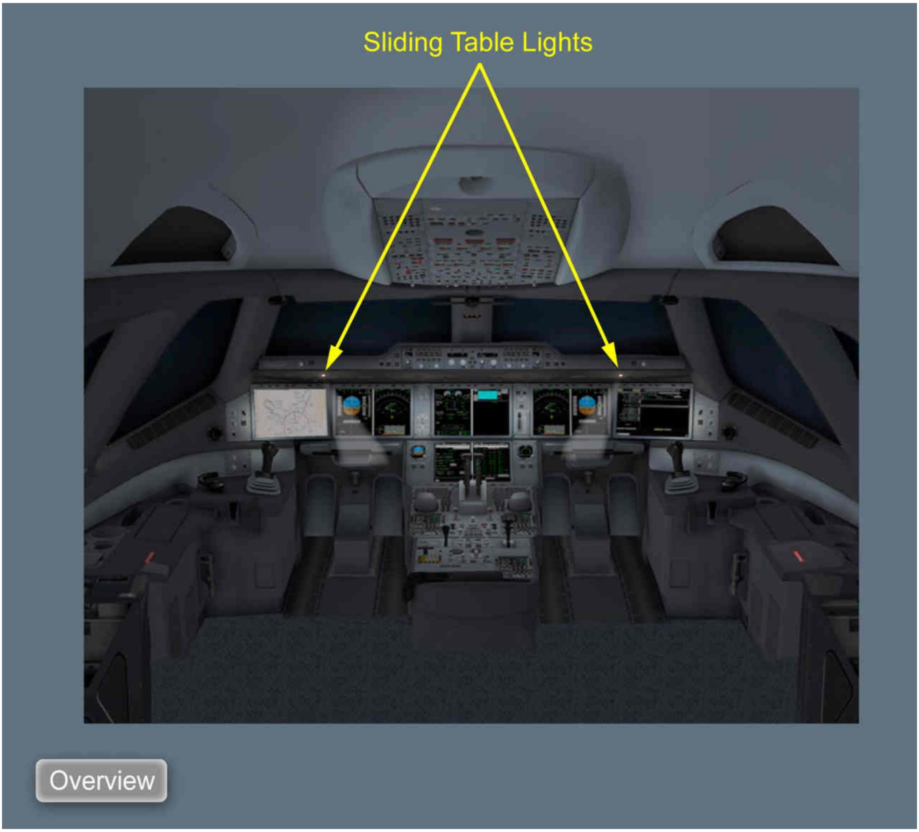
SLIDING TABLE LIGHTS

Ident.: DSC-33-20-10-00013596.0001001 / 29 APR 14

Applicable to: ALL

The cockpit has two lights under the glareshield. These lights provide lighting on the sliding tables of the CAPT and the F/O.

Sliding Table Lights



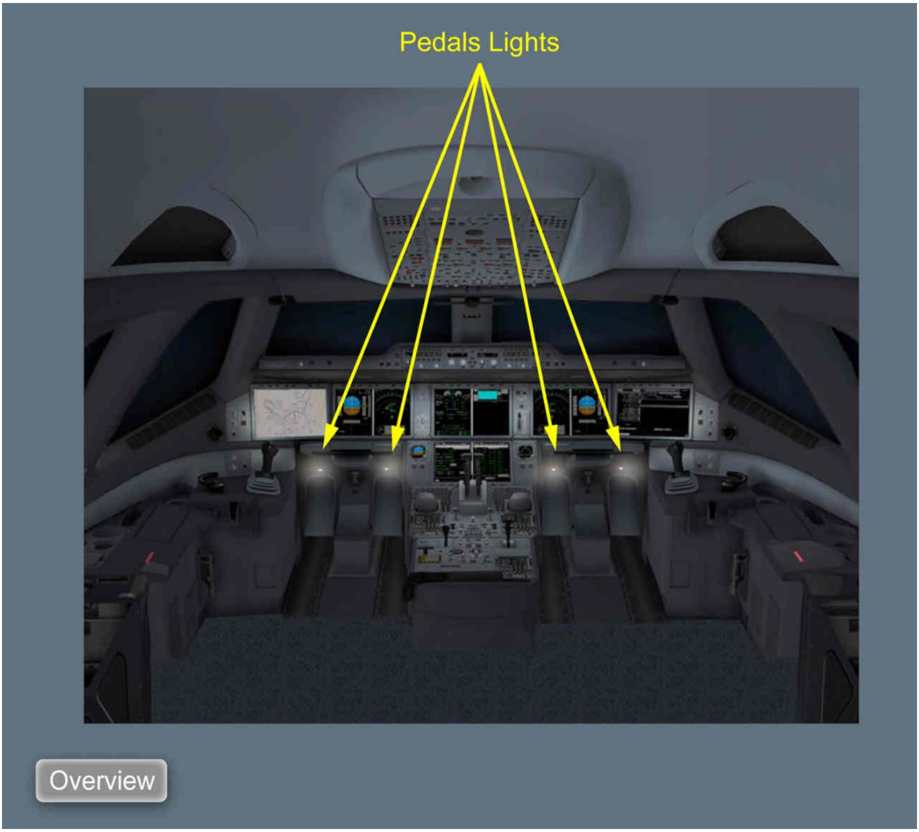
PEDALS LIGHTS

Ident.: DSC-33-20-10-00013597.0001001 / 29 APR 14
Applicable to: ALL

The cockpit has four lights behind the rudder pedals:
- Two lights on the CAPT side
- Two lights on the F/O side.

These lights provide lighting on the rudder pedals.

Pedals Lights



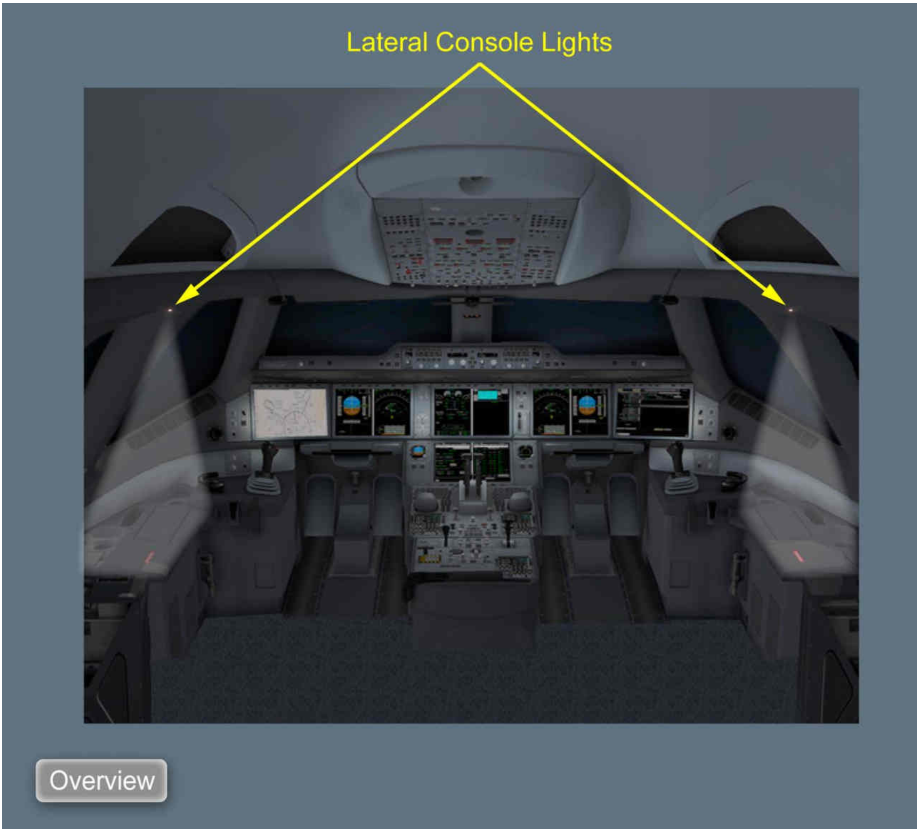
LATERAL CONSOLE LIGHTS

Ident.: DSC-33-20-10-00013598.0001001 / 29 APR 14
Applicable to: ALL

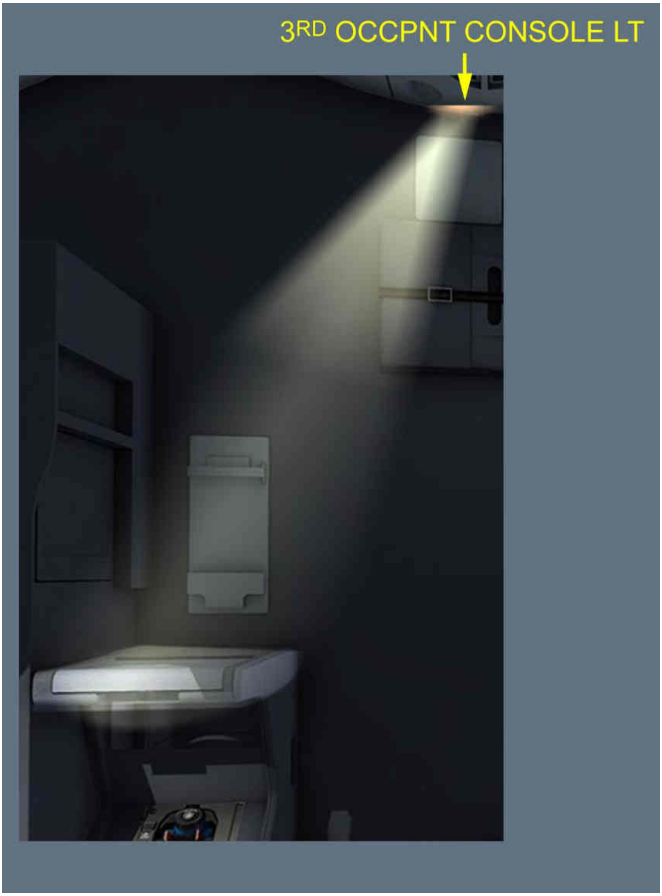
The cockpit has three lights that provide lighting on the lateral console area of the CAPT, the F/O, and the third occupant. These lights are:

- One above the space between the lateral and the aft windows of the CAPT side
- One above the space between the lateral and the aft windows of the F/O side
- One behind the overhead panel.

Lateral Console Lights



Lateral Console Light of the Third Occupant

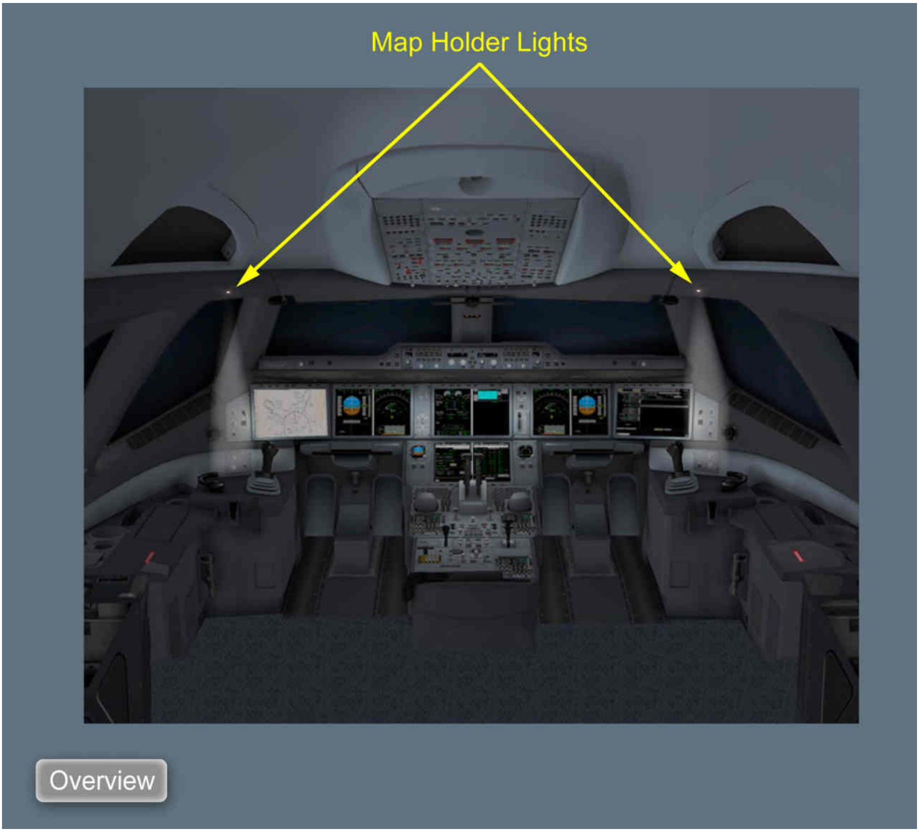


MAP HOLDER LIGHTS

Ident.: DSC-33-20-10-00013599.0001001 / 29 APR 14
Applicable to: ALL

The cockpit has two lights above the lateral windows that provide lighting on the map holder of the CAPT and the F/O.

Map Holder Lights

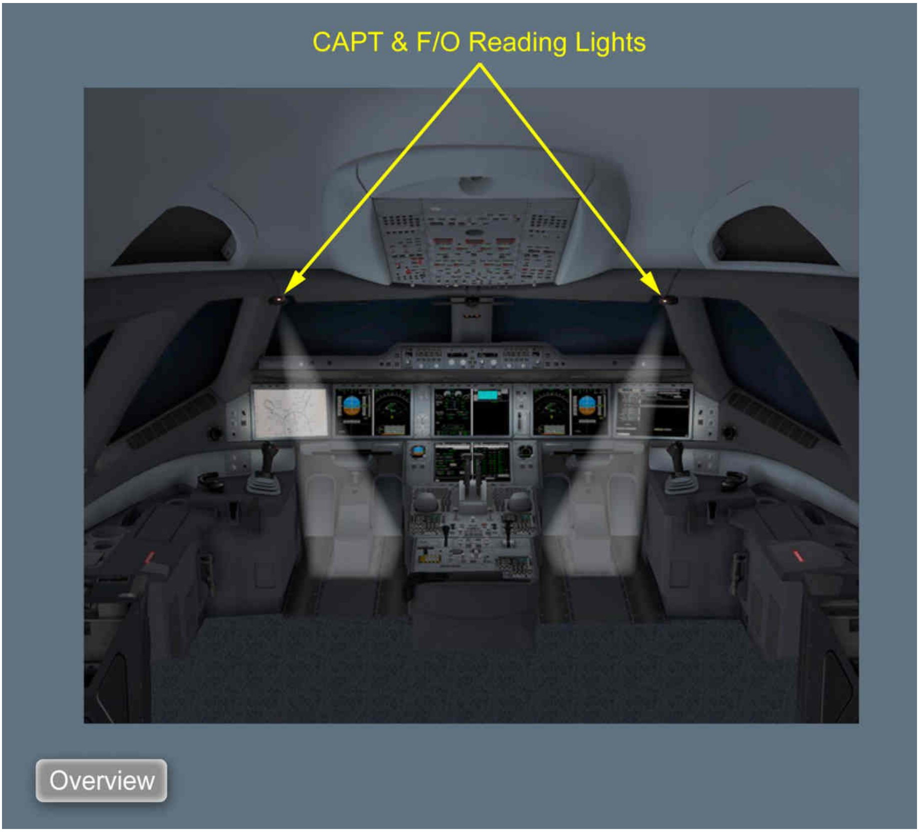


READING LIGHTS

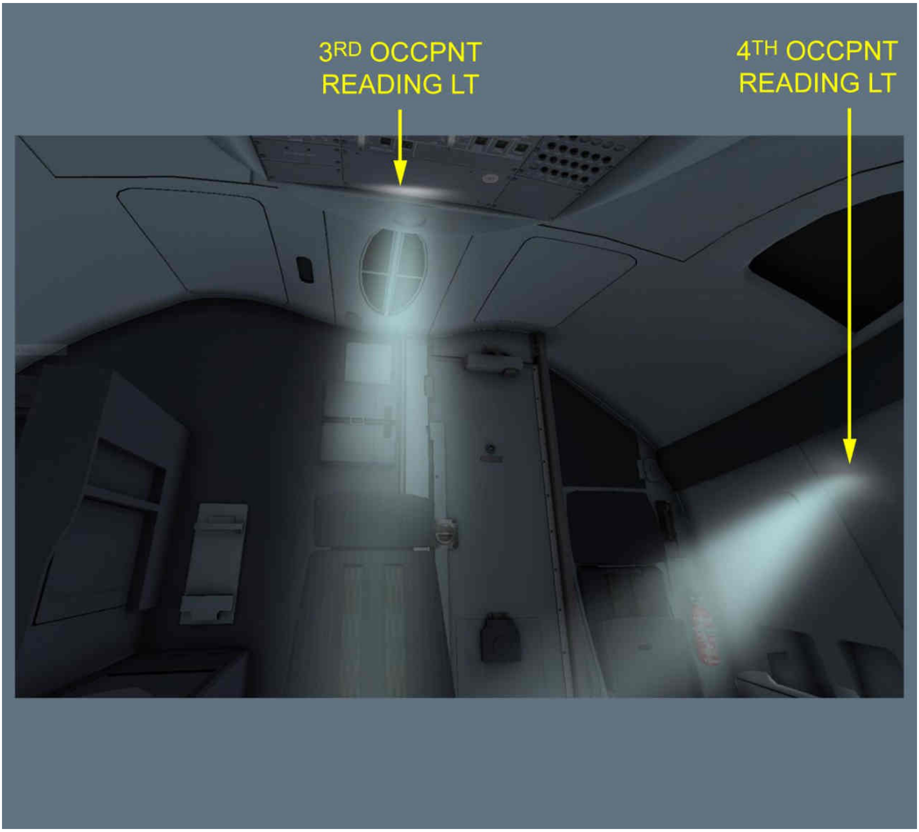
Ident.: DSC-33-20-10-00013600.0001001 / 29 APR 14
Applicable to: ALL

The cockpit has four reading lights: One for each occupant.

CAPT & F/O Reading Lights


CAPT & F/O Reading Lights
Overview

Third & Fourth Occupants Reading Lights

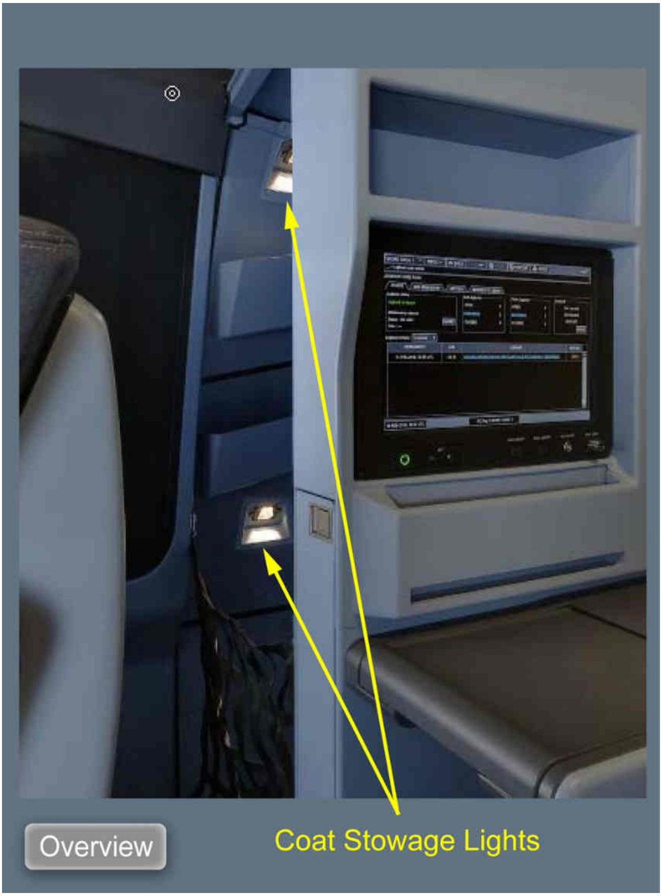

3RD OCCPNT
READING LT
4TH OCCPNT
READING LT

COAT STOWAGE LIGHTS

Ident.: DSC-33-20-10-00013601.0001001 / 29 APR 14
Applicable to: ALL

The cockpit has two lights that provide lighting on the upper and the lower areas of the coat stowage.

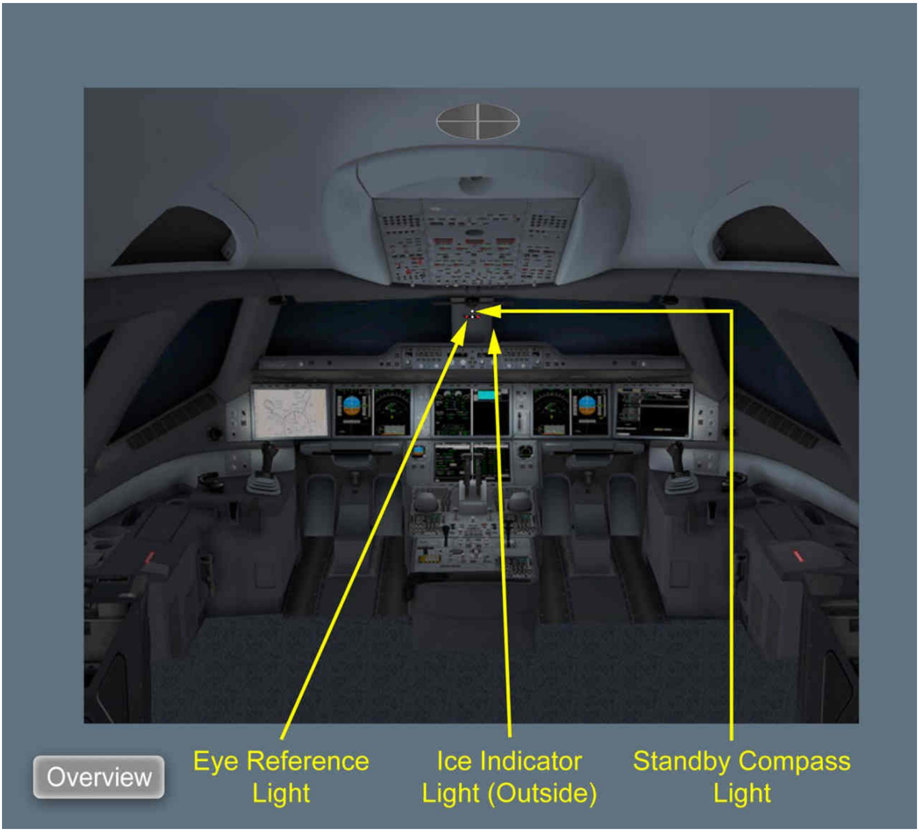
Coat Stowage Lights

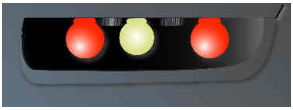

Overview
Coat Stowage Lights

ICE INDICATOR, STANDBY COMPASS, AND EYE REFERENCE LIGHTS

Ident.: DSC-33-20-10-00013602.0001001 / 29 APR 14
Applicable to: ALL

Ice Indicator, Standby Compass, and Eye Reference Lights


Overview
Eye Reference Light
Ice Indicator Light (Outside)
Standby Compass Light



The eye reference light is on

ANNUNCIATOR LIGHTS

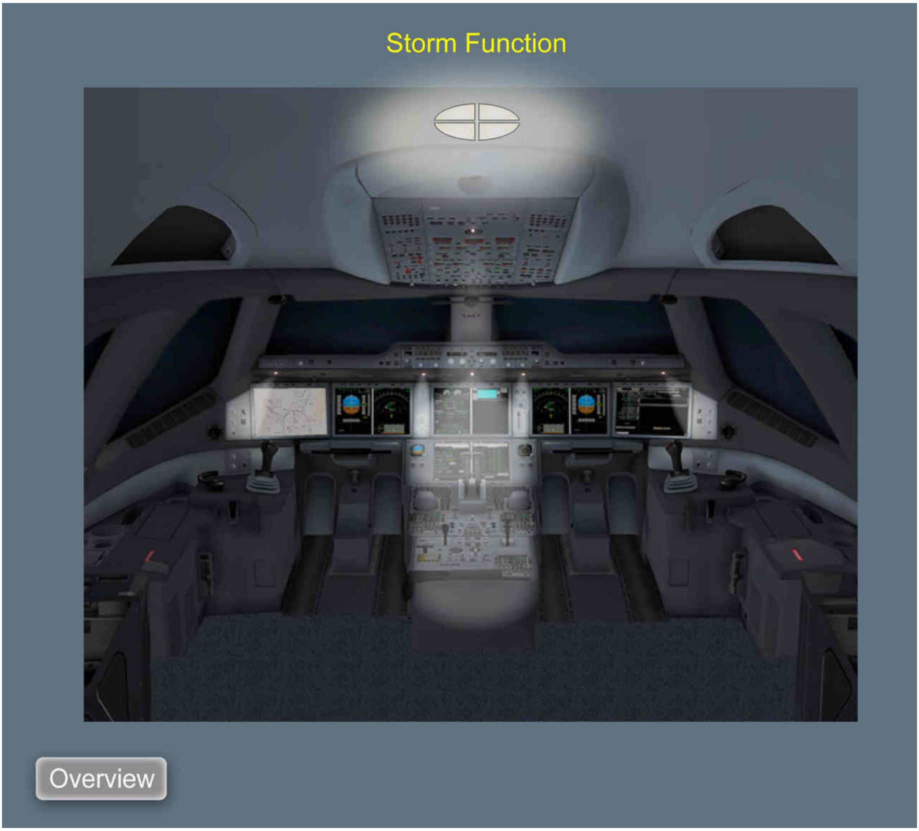
Ident.: DSC-33-20-10-00013603.0001001 / 29 APR 14
Applicable to: ALL

The flight crew can adjust the brightness of all annunciator pushbuttons, pushbutton-switches, and selectors.
The flight crew uses the TEST position of the ANN LT sw in order to ensure that the lighting of all annunciator is operative.

STORM FUNCTION

Ident.: DSC-33-20-10-00013604.0001001 / 08 JUL 19
Applicable to: ALL

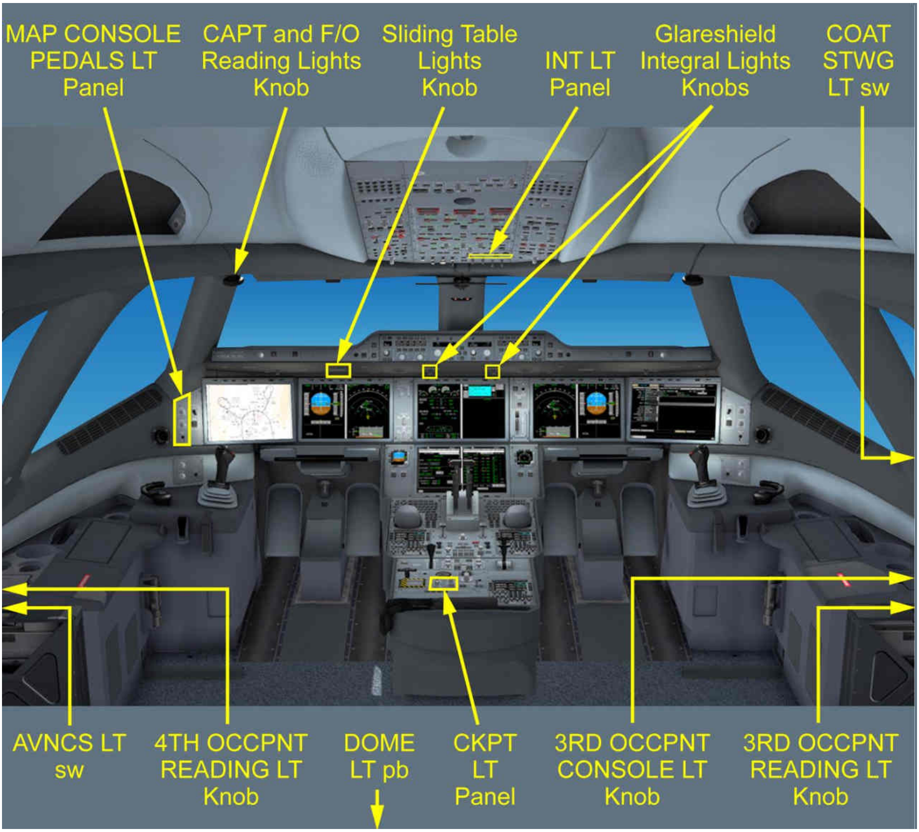
The storm function enables the flight crew to manually obtain maximum lighting in the cockpit, via:
- The dome lights
- The pedestal lights
- The main instrument panel lights.


Storm Function
Overview

COCKPIT VIEW

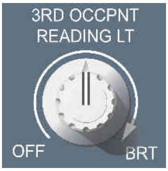
Ident.: DSC-33-20-20-00013504.0001001 / 29 APR 14
Applicable to: ALL

Cockpit View

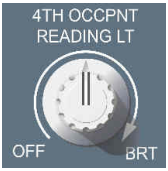

MAP CONSOLE PEDALS LT Panel
CAPT and F/O Reading Lights Knob
Sliding Table Lights Knob
INT LT Panel
Glareshield Integral Lights Knobs
COAT STWG LT sw
AVNCS LT sw
4TH OCCPNT READING LT Knob
DOME LT pb
CKPT LT Panel
3RD OCCPNT CONSOLE LT Knob
3RD OCCPNT READING LT Knob

3RD AND 4TH OCCPNT READING LT KNOBS

Ident.: DSC-33-20-20-00013769.0001001 / 29 APR 14
Applicable to: ALL

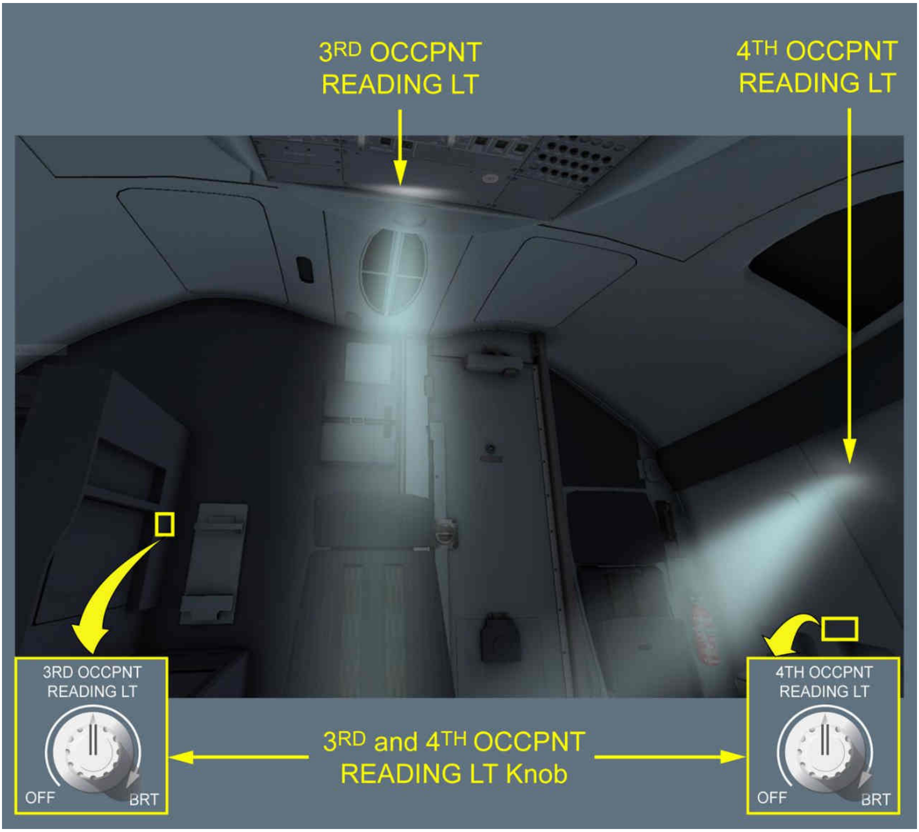

3RD OCCPNT
READING LT
OFF
BRT

Turns on or off, and adjusts the brightness of the reading light of the third occupant.


4TH OCCPNT
READING LT
OFF
BRT

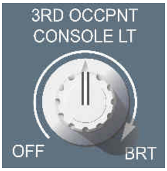
Turns on or off, and adjusts the brightness of the reading light of the fourth occupant.

Third and Fourth Occupant Reading Light and Controls


3RD OCCPNT READING LT
4TH OCCPNT READING LT
3RD OCCPNT READING LT
OFF
BRT
3RD and 4TH OCCPNT READING LT Knob
4TH OCCPNT READING LT
OFF
BRT

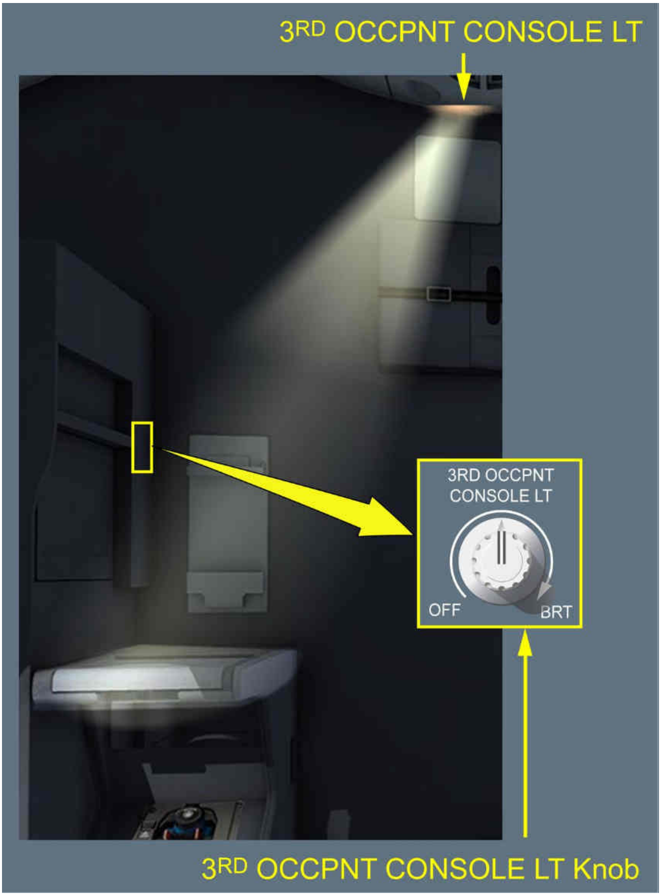
3RD OCCPNT CONSOLE LT KNOB

Ident.: DSC-33-20-20-00013768.0001001 / 29 APR 14
Applicable to: ALL


3RD OCCPNT CONSOLE LT
OFF
BRT

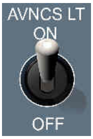
Turns on or off, and adjusts the brightness of the lateral console light of the third occupant.

3rd Occupant Console Light and Control


3RD OCCPNT CONSOLE LT
3RD OCCPNT
CONSOLE LT
OFF
BRT
3RD OCCPNT CONSOLE LT Knob

AVNCS LT SW

Ident.: DSC-33-20-20-00013790.0001001 / 29 APR 14
Applicable to: ALL


AVNCS LT
ON
OFF

The light in the avionics bay is on.

AVNCS LT
ON
OFF

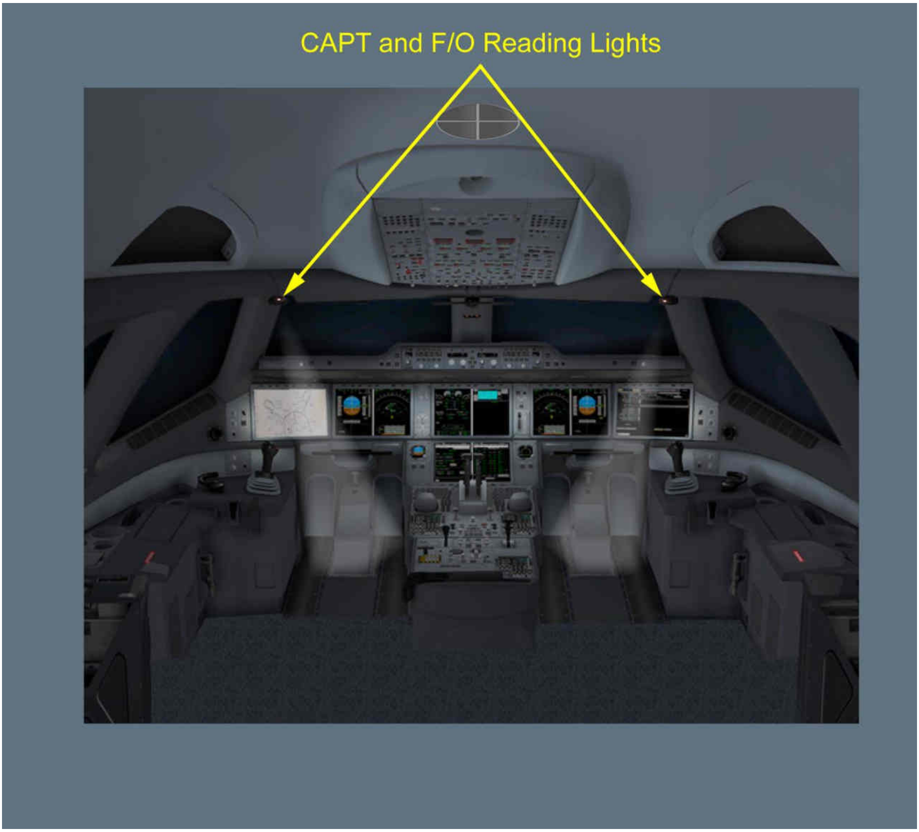
The light in the avionics bay is off.

CAPT AND F/O READING LIGHTS KNOB

Ident.: DSC-33-20-20-00013445.0001001 / 29 APR 14
Applicable to: ALL

The CAPT and the F/O can move their reading lights in order to change the direction of the lights. In addition, the CAPT and the F/O lights have two knobs in order to adjust the brightness and the size of the lighted area.

CAPT and F/O Reading Lights

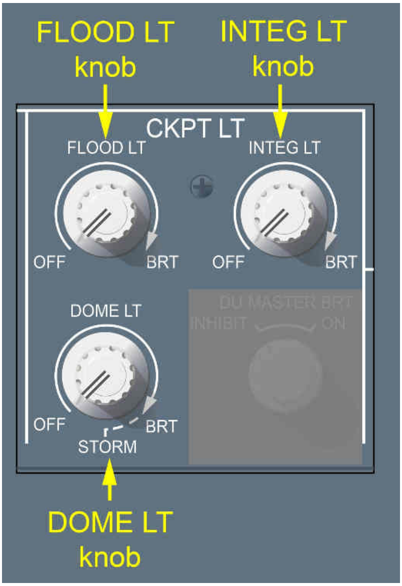

CAPT and F/O Reading Lights

CKPT LT PANEL

Applicable to: ALL

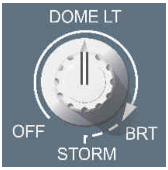
Ident.: DSC-33-20-20-10-00013757.0001001 / 29 APR 14

CKPT LT Panel


FLOOD LT knob
INTEG LT knob
CKPT LT
FLOOD LT
INTEG LT
OFF
BRT
OFF
BRT
DOME LT
DU MASTER BRT
INHIBIT
ON
OFF
BRT
STORM
DOME LT knob

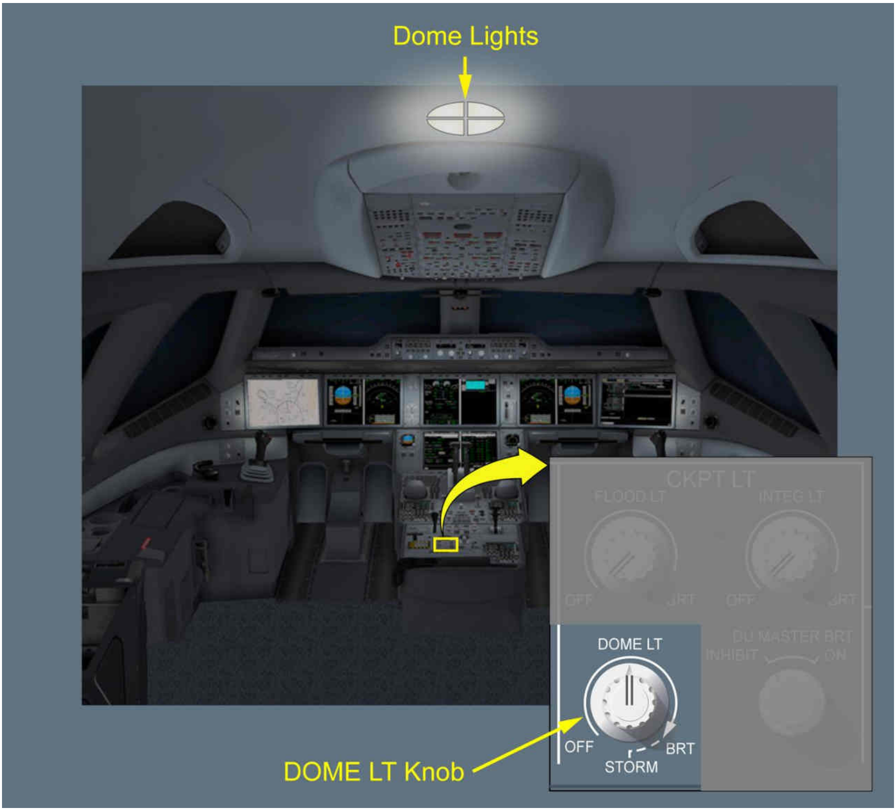
Ident.: DSC-33-20-20-10-00013437.0001001 / 29 APR 14

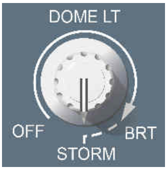
DOME LT KNOB


DOME LT
OFF
BRT
STORM

Turns on or off, and adjusts the brightness of the dome lights.

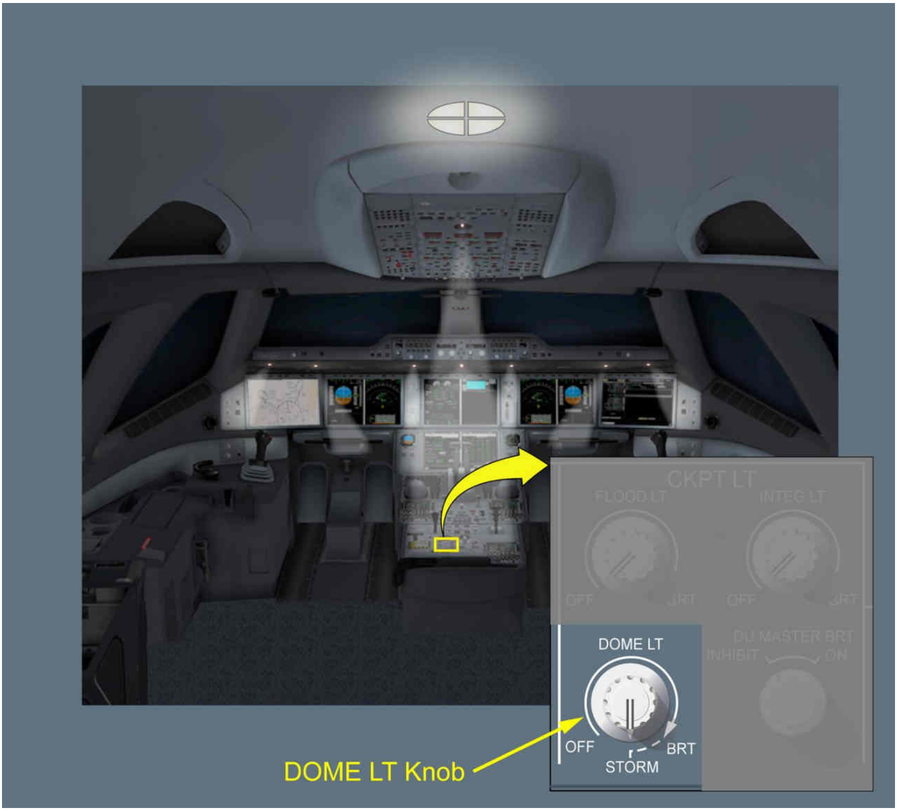
Dome Lights and Control


Dome Lights
CKPT LT
FLOOD LT
INTEG LT
OFF
BRT
OFF
BRT
DU MASTER BRT
INHIBIT
ON
DOME LT
OFF
BRT
STORM
DOME LT Knob


DOME LT
OFF
BRT
STORM

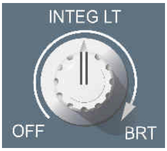
Turns on at full brightness the dome lights, the pedestal lights, the main instrument panel lights, and the sliding table lights.

Storm Function and Control


CKPT LT
FLOOD LT
INTEG LT
OFF
BRT
OFF
BRT
DOME LT
OFF
BRT
STORM
DU MASTER BRT
INHIBIT
ON
DOME LT Knob

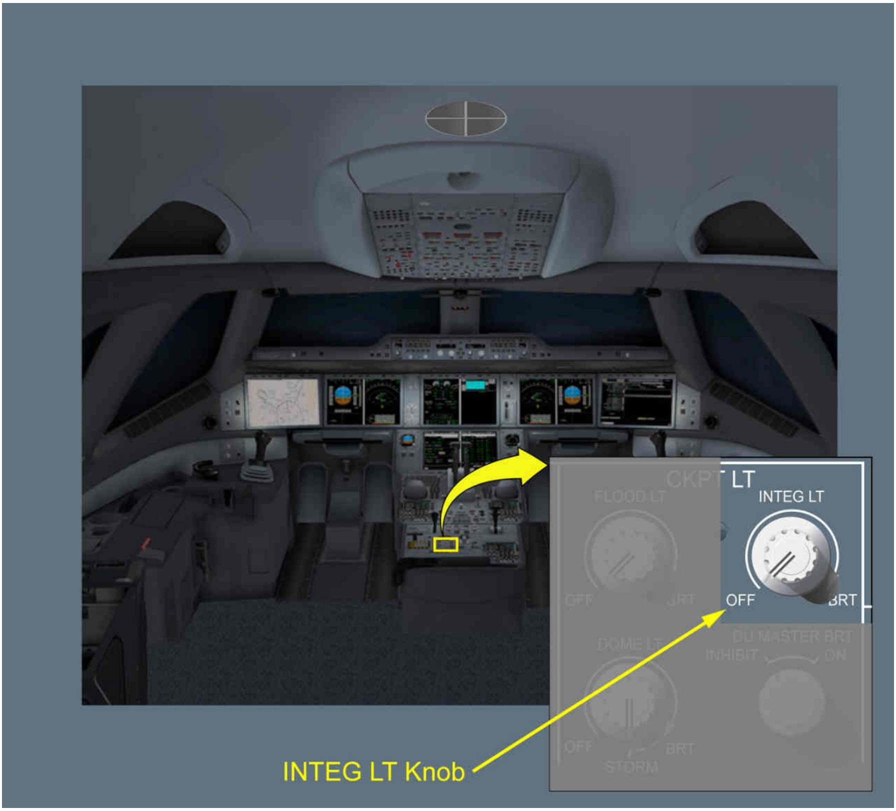
Ident.: DSC-33-20-20-10-00013438.0001001 / 29 APR 14

INTEG LT KNOB


INTEG LT
OFF
BRT

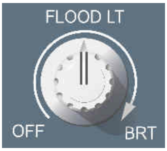
Turns on or off, and adjusts the brightness of the integral lights of:
- The main instrument panel
- The center pedestal
- The overhead panel.

Integral Lights and Control


CKPT LT
FLOOD LT
INTEG LT
OFF
BRT
OFF
BRT
DOME LT
DU MASTER BRT
INHIBIT
ON
OFF
BRT
STORM
INTEG LT Knob

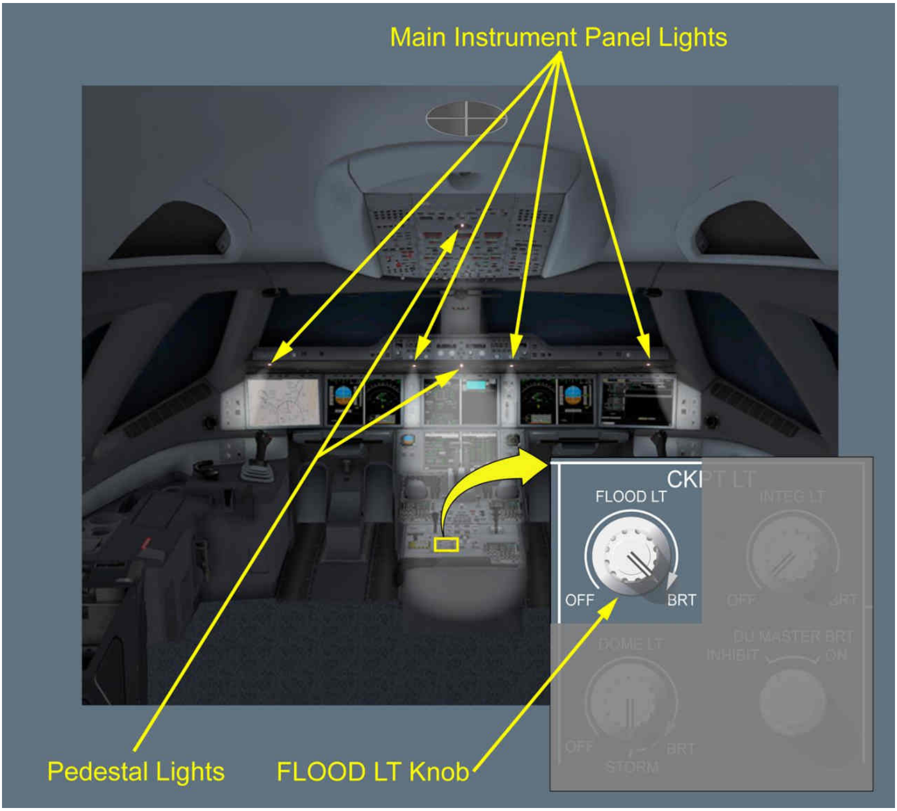
Ident.: DSC-33-20-20-10-00013439.0001001 / 29 APR 14

FLOOD LT KNOB


FLOOD LT
OFF
BRT

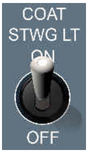
Turns on or off, and adjusts the brightness of the following lights:
- The pedestal lights
- The main instrument panel lights.

Pedestal Lights, Main Instrument Panel Lights, and Control

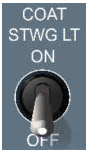

Main Instrument Panel Lights
CKPT LT
FLOOD LT
OFF
BRT
INTEG LT
OFF
BRT
DOME LT
DU MASTER BRT
INHIBIT
ON
OFF
BRT
STORM
Pedestal Lights
FLOOD LT Knob

COAT STWG LT SW

Ident.: DSC-33-20-20-00013446.0001001 / 29 APR 14
Applicable to: ALL

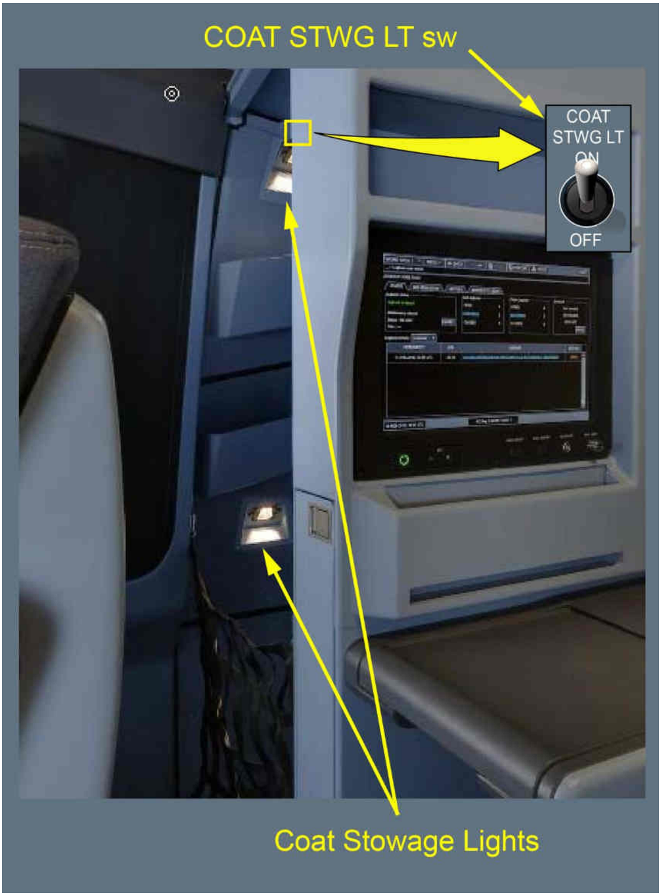

COAT
STWG LT
ON
OFF

The coat stowage lights are on.


COAT
STWG LT
ON
OFF

The coat stowage lights are off.

Coat Stowage Lights and Control


COAT STWG LT sw
COAT
STWG LT
ON
OFF
Coat Stowage Lights

DOME LT PB

Ident.: DSC-33-20-20-00013791.0001001 / 29 APR 14
Applicable to: ALL

When the flight crew enters in the cockpit, the DOME LT pb is located on the doorframe of the cockpit door.

L12

Turns on or off the dome lights. The DOME LT pb enables the flight crew to turn on the dome lights at full brightness, regardless of the position of the DOME LT knob.
When the flight crew presses the pushbutton in flight, the lights turn off, and when the flight crew presses the pushbutton again, the lights turn on.

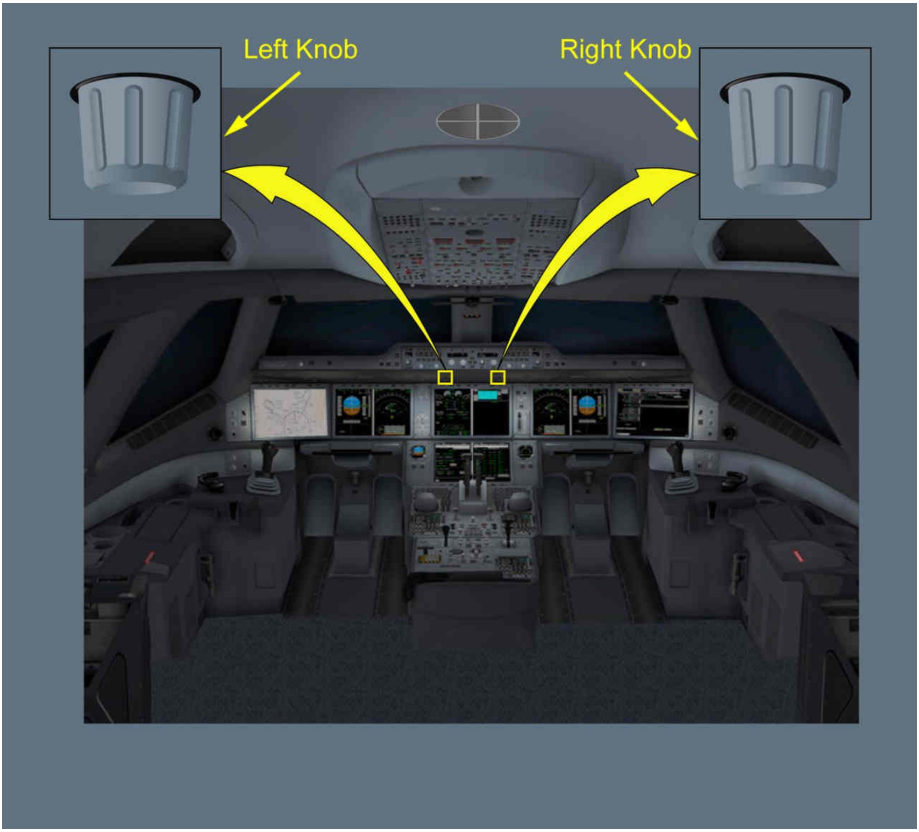
GLARESHIELD INTEGRAL LIGHTS KNOB

Ident.: DSC-33-20-20-00013758.0001001 / 29 APR 14
Applicable to: ALL

L12

Turns on or off, and adjusts the brightness of the glareshield integral lights.
For more information about the left and right knobs, *Refer to DSC-22-FG-90-40 FCU Brightness Knobs*.

Glareshield Integral Lights and Control

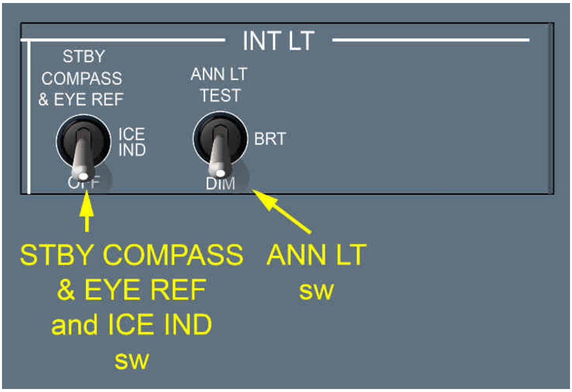


INT LT PANEL

Applicable to: ALL

Ident.: DSC-33-20-20-30-00013771.0001001 / 29 APR 14

INT LT Panel

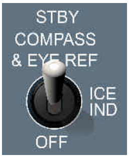
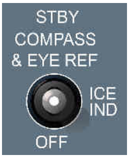
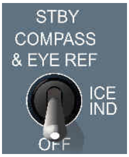


STBY COMPASS & EYE REF and ICE IND sw

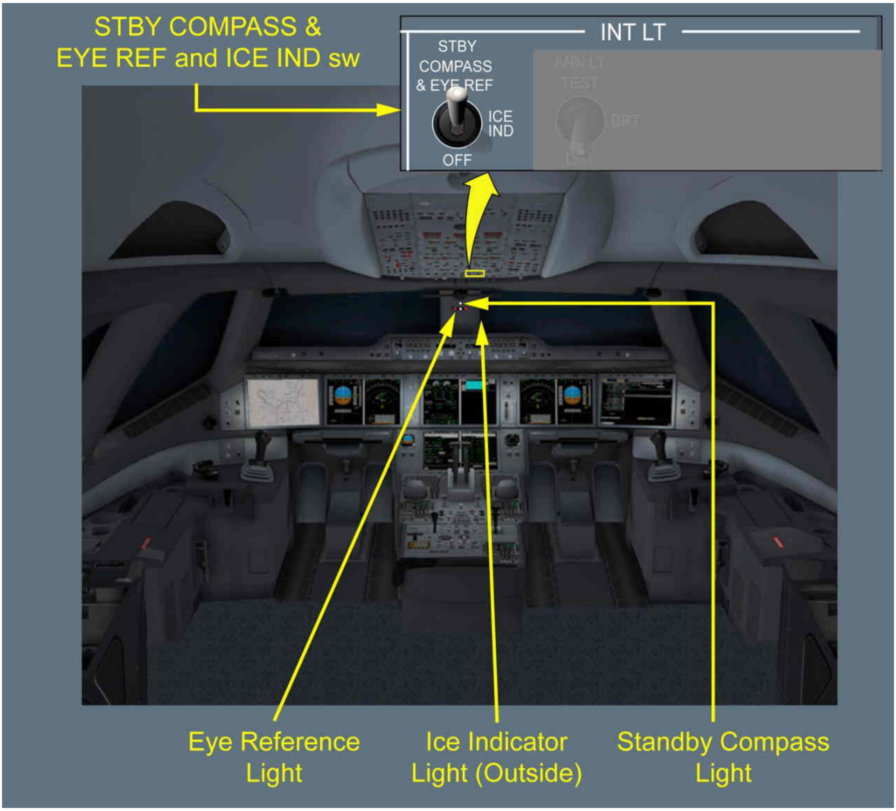
ANN LT sw

Ident.: DSC-33-20-20-30-00013447.0001001 / 29 APR 14

STBY COMPASS & EYE REF AND ICE IND SW

	The standby compass and the eye reference lights are on.
	The ice indicator light is on.
	The ice indicator, the standby compass, and the eye reference lights are off.

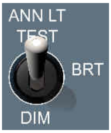
Standby Compass, Eye Reference, Ice Indicator Lights, and Control


STBY COMPASS &
EYE REF and ICE IND sw
INT LT
STBY
COMPASS
& EYE REF
ICE
IND
OFF
ANN LT
TEST
BRT
DIM
Eye Reference
Light
Ice Indicator
Light (Outside)
Standby Compass
Light

Ident.: DSC-33-20-20-30-00013448.0001001 / 29 APR 14

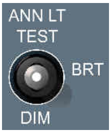
ANN LT SW

L13

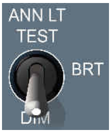

ANN LT
TEST
BRT
DIM

Turns on the lights of all the annunciators pushbuttons, pushbutton-switches, and selectors. The flight crew can use this position to make sure that the lighting of all annunciators is operative.

The number 8 appears on:
- The BAT voltage indication on the maintenance panel
- All indications on the AFS CP
- The barometric reference on the EFIS CP.


ANN LT
TEST
BRT
DIM

The annunciators lighting is at its maximum brightness.


ANN LT
TEST
BRT
DIM

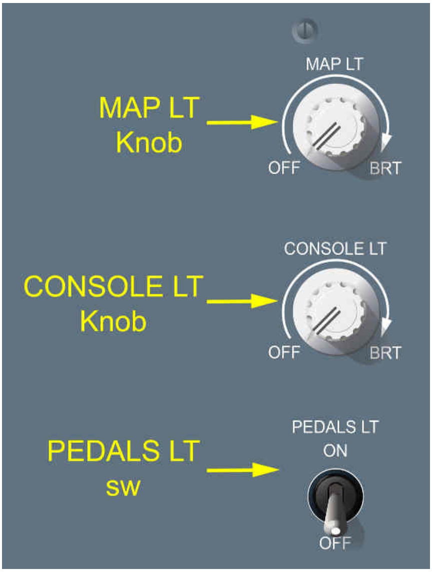
Dims the annunciators lighting.

MAP CONSOLE PEDALS LT PANEL

Applicable to: ALL

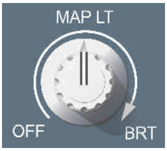
Ident.: DSC-33-20-20-20-00013762.0001001 / 29 APR 14

MAP CONSOLE PEDALS LT Panel


MAP LT
MAP LT Knob
OFF
BRT
CONSOLE LT
CONSOLE LT Knob
OFF
BRT
PEDALS LT
ON
PEDALS LT sw
OFF

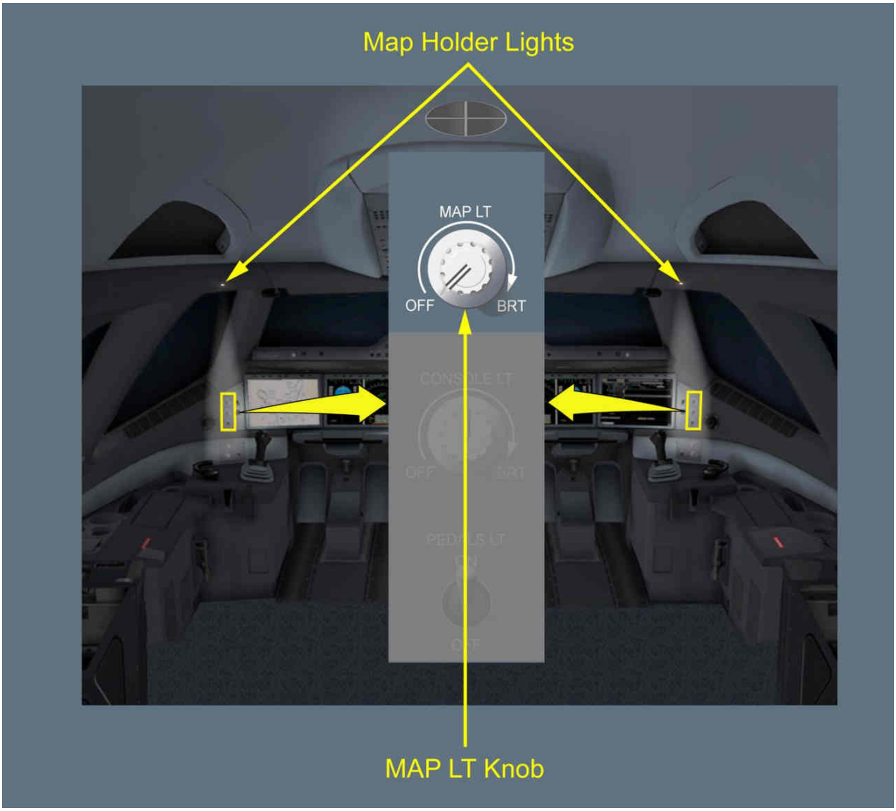
Ident.: DSC-33-20-20-20-00013444.0001001 / 29 APR 14

MAP LT KNOB


MAP LT
OFF
BRT

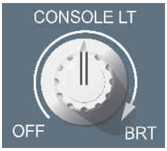
Turns on or off, and adjusts the brightness of the onside map holder lights.

Map Holder Lights and Control


Map Holder Lights
MAP LT
OFF
BRT
CONSOLE LT
OFF
BRT
PEDALS LT
ON
OFF
MAP LT Knob

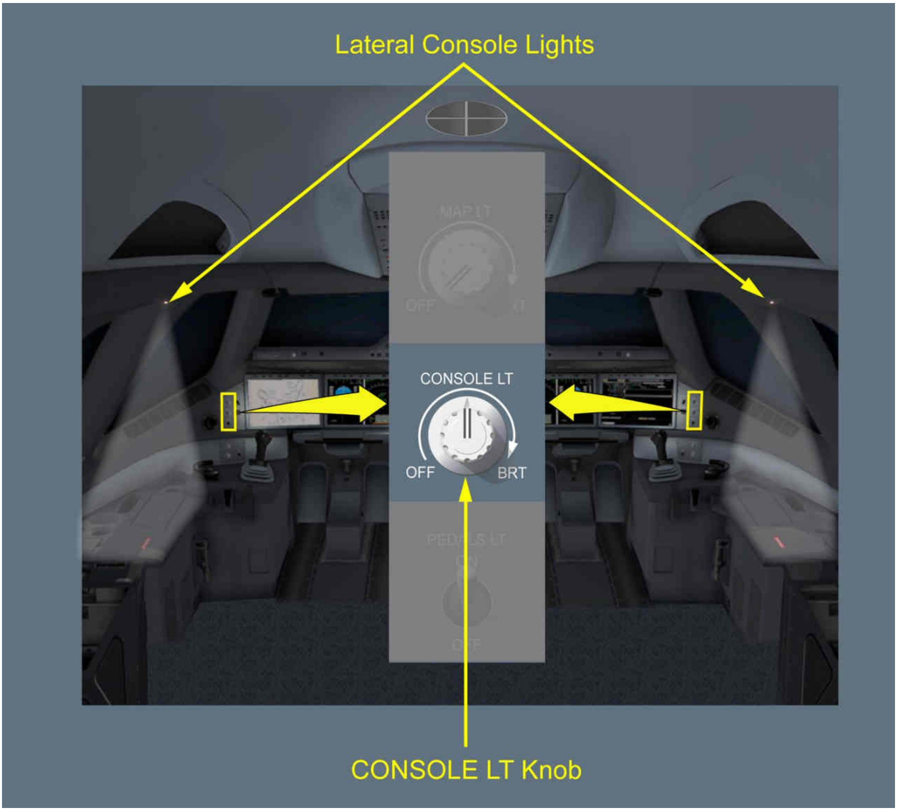
Ident.: DSC-33-20-20-20-00013443.0001001 / 29 APR 14

CONSOLE LT KNOB


CONSOLE LT
OFF
BRT

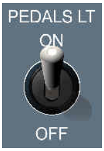
Turns on or off, and adjusts the brightness of the onside lateral console lights of the CAPT and the F/O.

Lateral Console Lights and Control

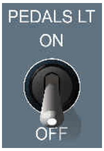

Lateral Console Lights
MAP LT
OFF
LT
CONSOLE LT
OFF
BRT
PEDALS LT
ON
OFF
CONSOLE LT Knob

Ident.: DSC-33-20-20-20-00013442.0001001 / 29 APR 14

PEDALS LT SW

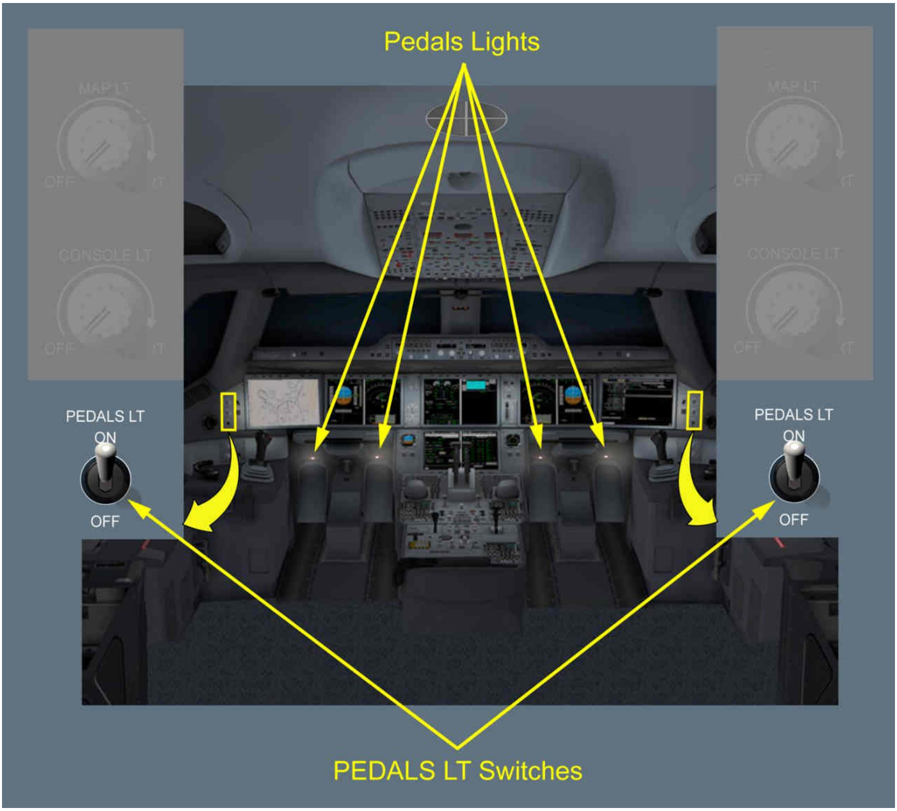


The onside pedals lights are on.



The onside pedals lights are off.

Pedals Lights and Control

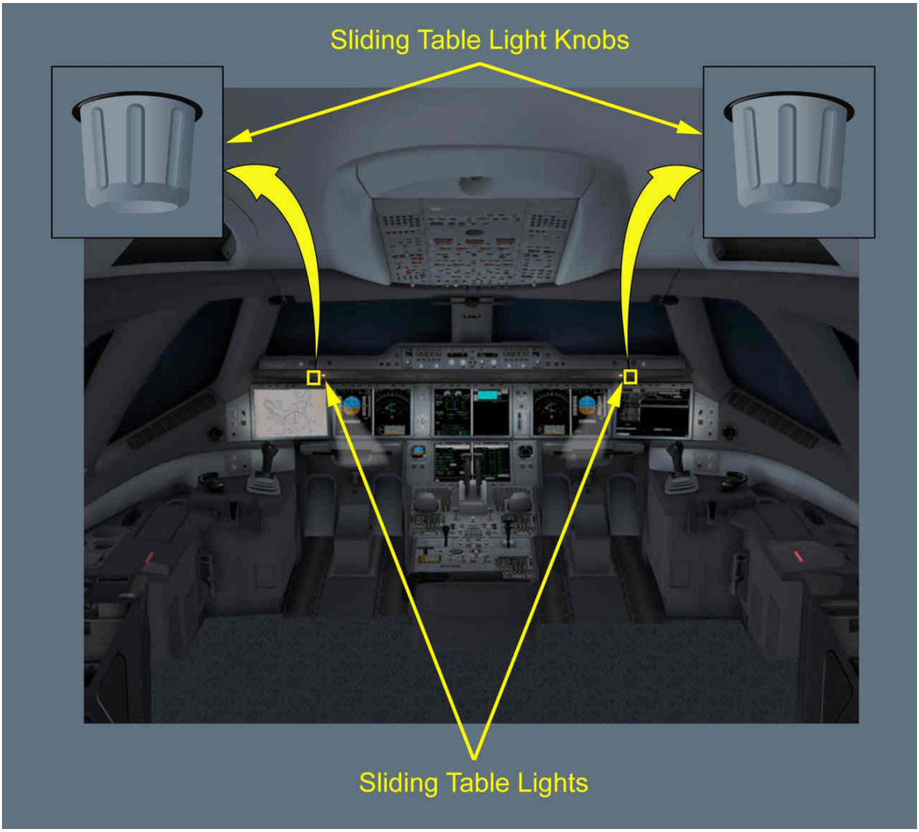

Pedals Lights
MAP LT
OFF
CONSOLE LT
OFF
PEDALS LT
ON
OFF
MAP LT
OFF
CONSOLE LT
OFF
PEDALS LT
ON
OFF
PEDALS LT Switches

SLIDING TABLE LIGHTS KNOB

Ident.: DSC-33-20-20-00013441.0001001 / 29 APR 14
Applicable to: ALL

Turns on or off, and adjusts the brightness of the onside sliding table lights.

Sliding Table Lights and Control


Sliding Table Light Knobs
Sliding Table Lights

OVERVIEW

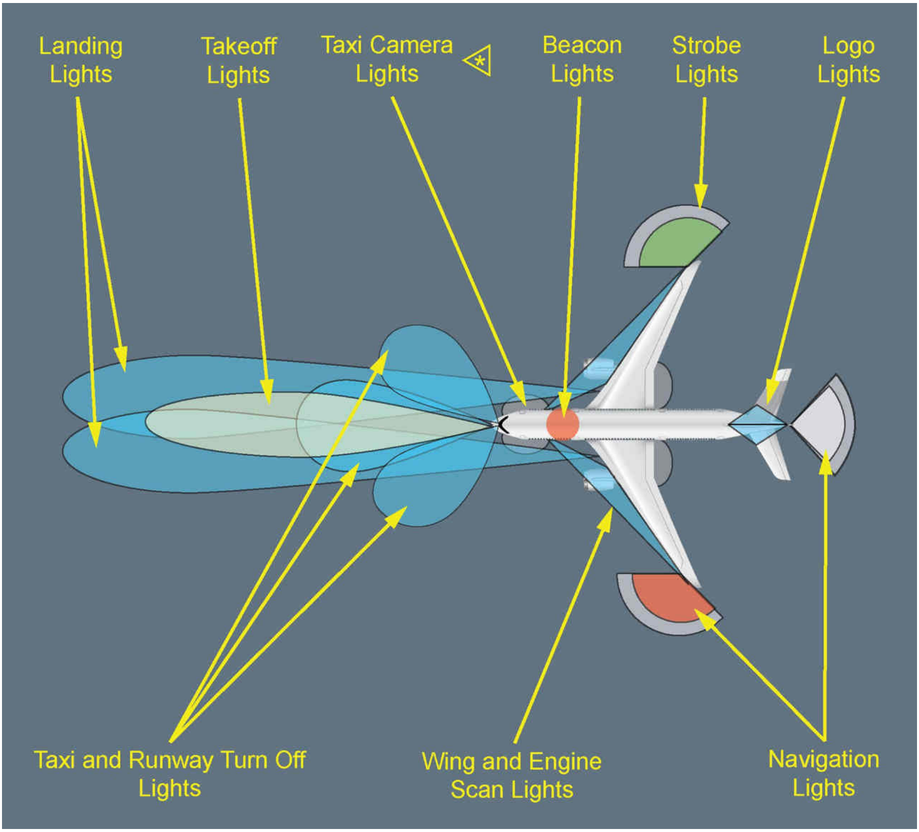
Ident.: DSC-33-30-10-00002460.0001001 / 09 MAR 16
Applicable to: ALL

The exterior lights:
- Increase the visibility around the aircraft during operations and improve the flight crew's awareness
- Enable the identification of the aircraft and its position.

The exterior lights are:
- The navigation lights
- The landing lights
- The takeoff lights
- The taxi and the runway turn off lights
- The taxi camera lights ◁
- The logo lights
- The anti-collision lights:
  - The strobe lights
  - The beacon lights
- The wing and engine scan lights.

The Exterior Lights Controller (ELCO) control and monitor the exterior lights.
L3 Two redundant ELCOs are hosted in the CPIOMs J71 and J72.

Overview


Landing Lights
Takeoff Lights
Taxi Camera Lights
Beacon Lights
Strobe Lights
Logo Lights
Taxi and Runway Turn Off Lights
Wing and Engine Scan Lights
Navigation Lights

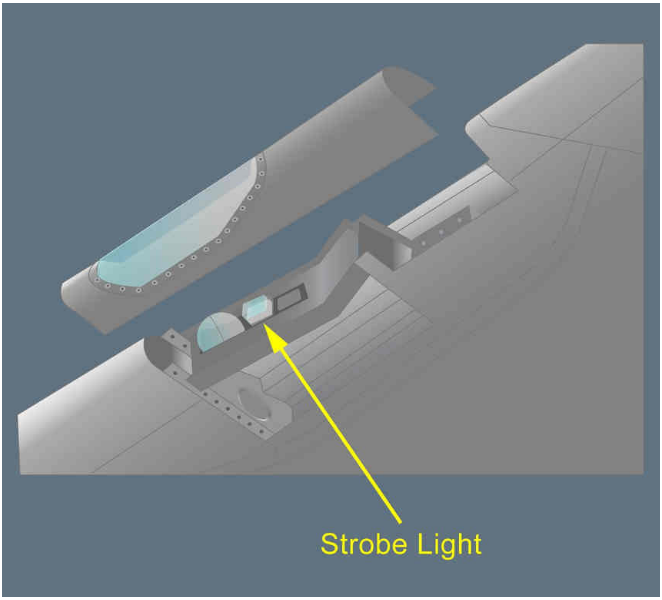
STROBE LIGHTS

Ident.: DSC-33-30-10-00013580.0002001 / 05 NOV 18
Applicable to: ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB

The aircraft has three anti-collision strobe lights:

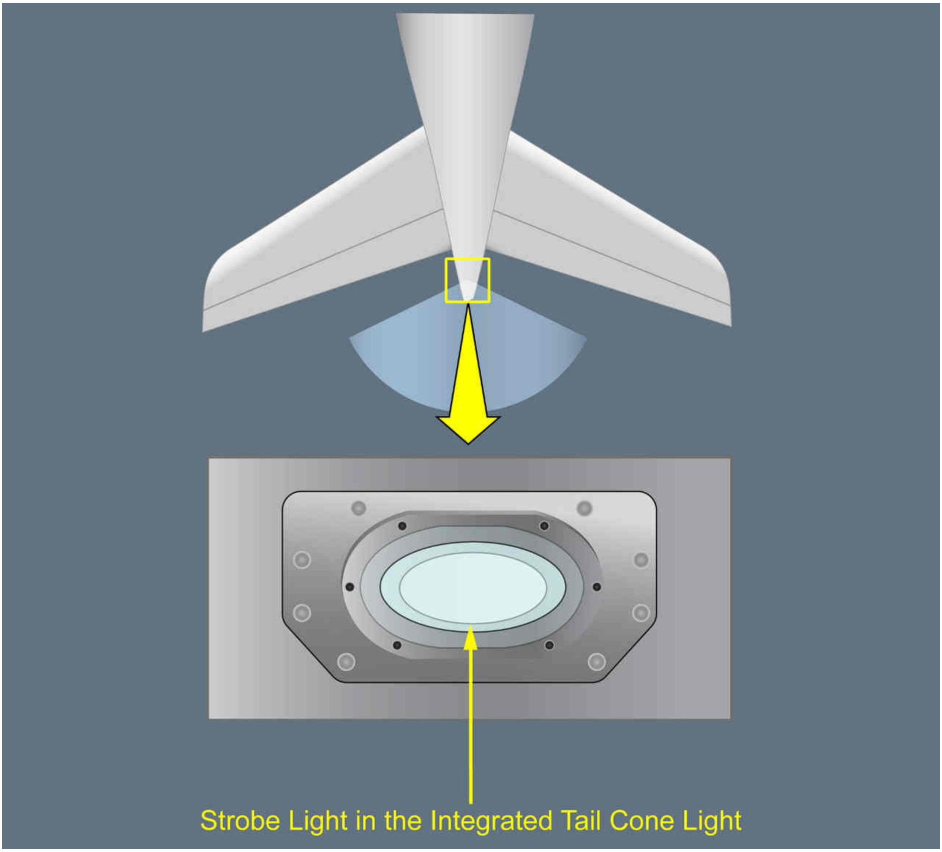
- One strobe light on each wingtip

Wingtip Strobe Light

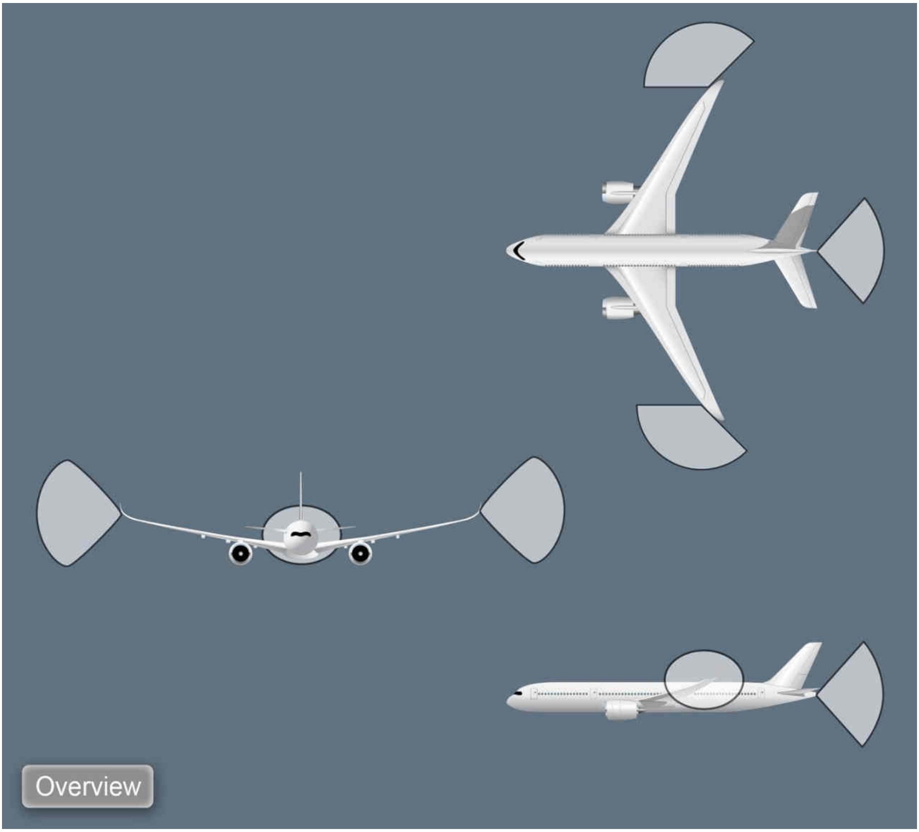


- One strobe light in the integrated tail cone light below the APU exhaust.

Tail Cone Strobe Light


Strobe Light in the Integrated Tail Cone Light

Strobe Lights



The strobe lights, as anti-collision lights, provide a white flashing light with high brightness.

STROBE LIGHTS

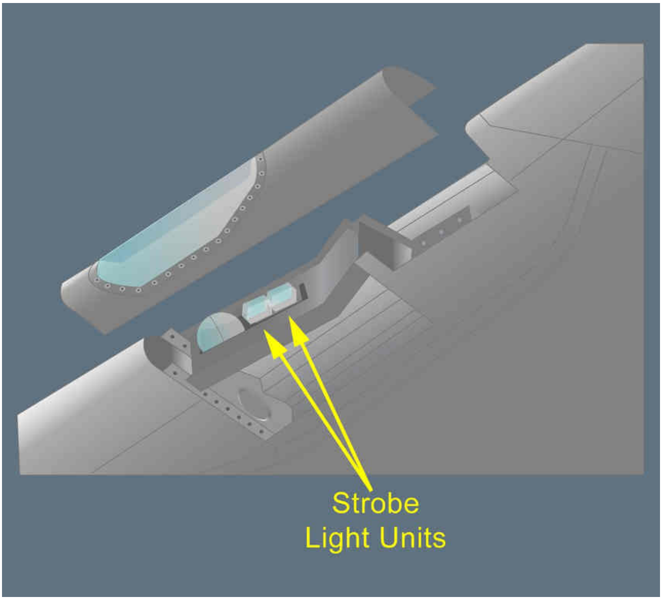
Ident.: DSC-33-30-10-00013580.0001001 / 27 JUN 17

Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD

The aircraft has three anti-collision strobe lights:

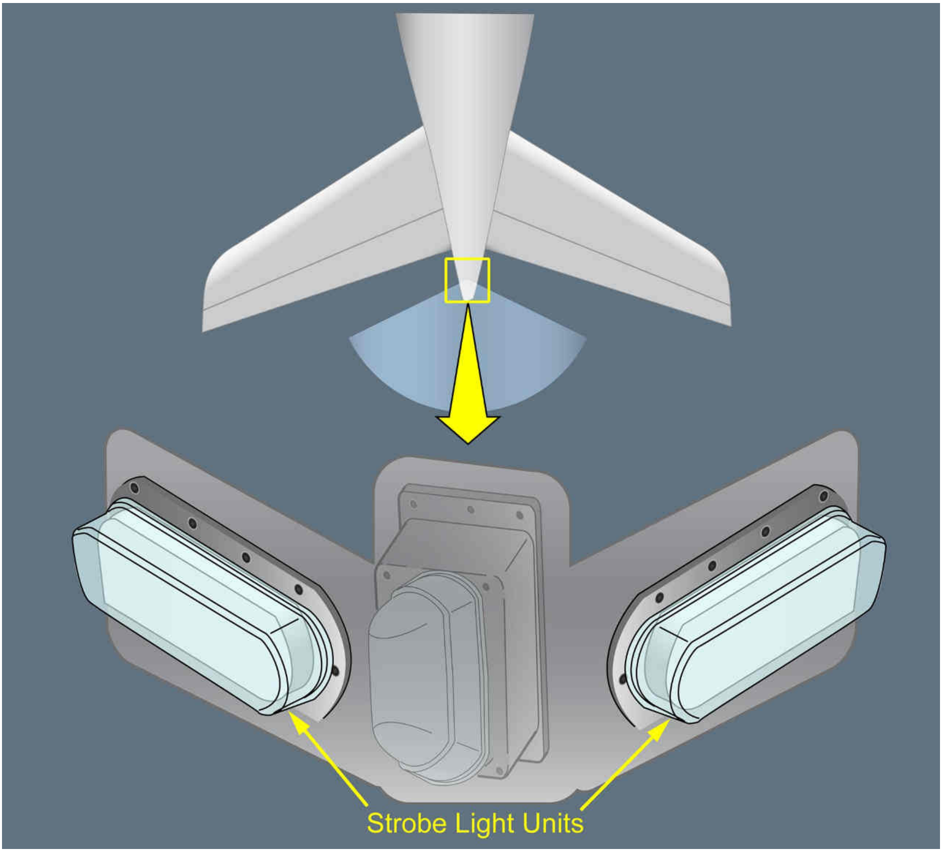
- One strobe light on each wingtip

Wingtip Strobe Light



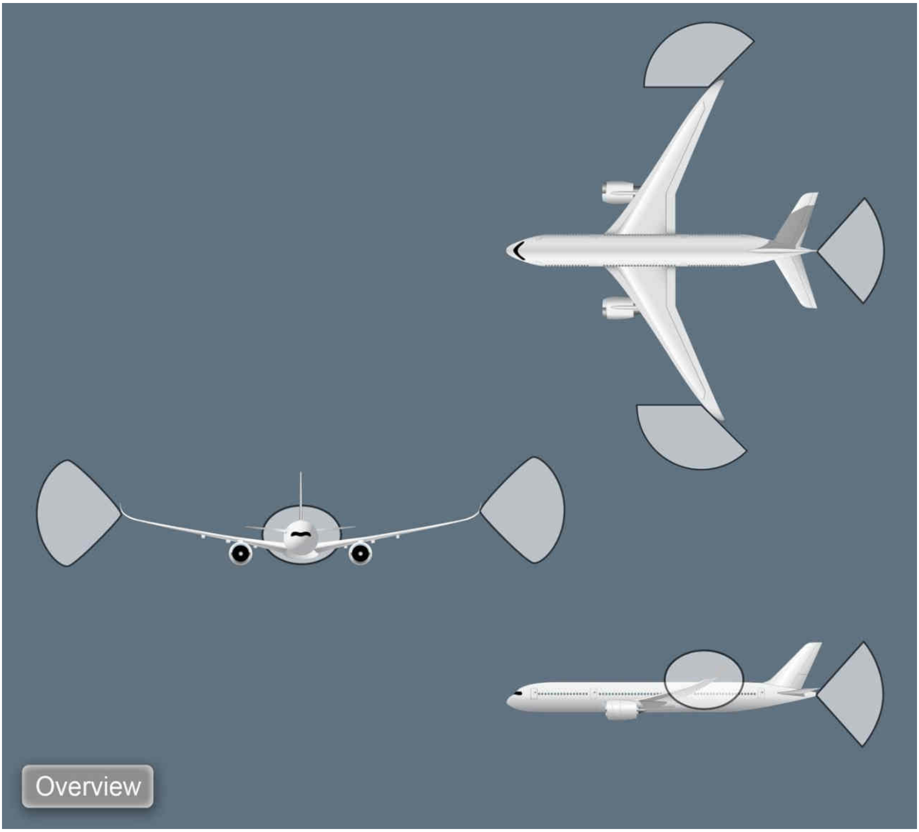
- One strobe light on the tail cone below the APU exhaust.

Tail Cone Strobe Light



Each strobe light includes two light units.

Strobe Lights



The strobe lights, as anti-collision lights, provide a white flashing light with high brightness.

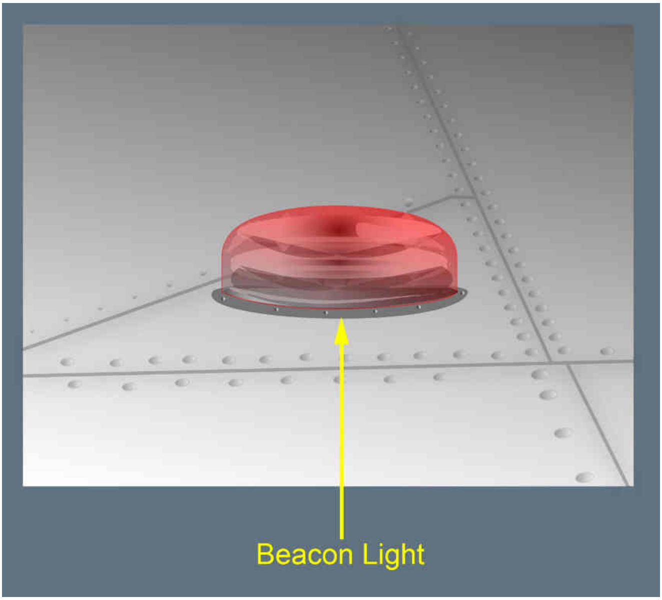
BEACON LIGHTS

Ident.: DSC-33-30-10-00013581.0001001 / 29 APR 14
Applicable to: ALL

The aircraft has two red beacon lights:

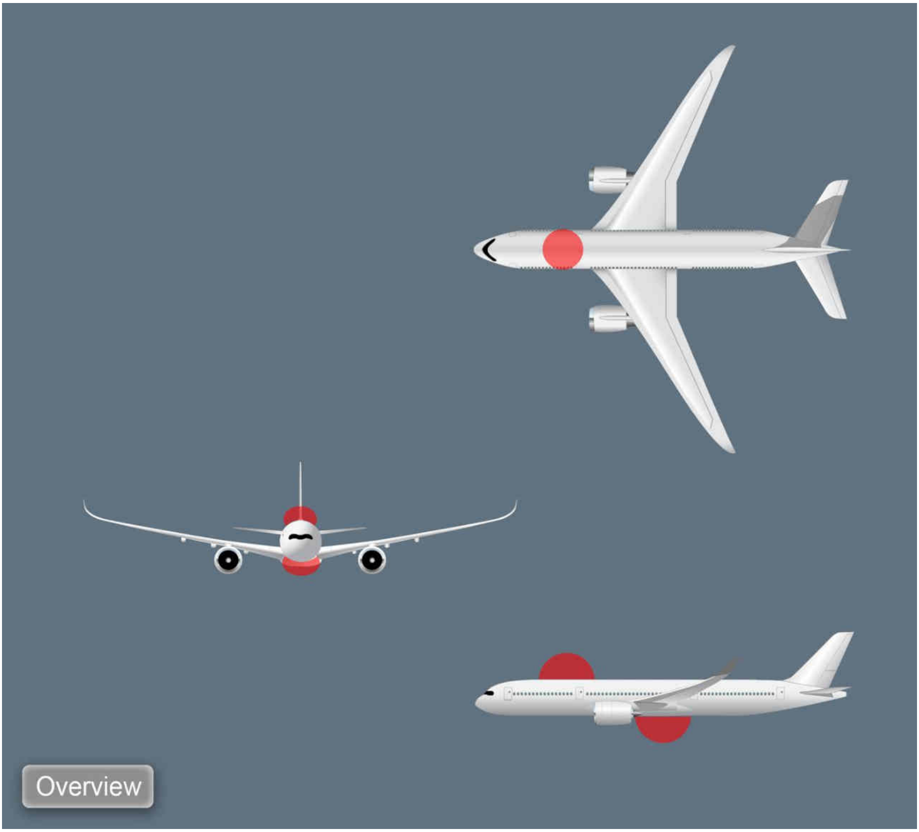
- One red beacon light on the top of the aircraft fuselage

Beacon Light



- One red beacon light in the lower part of the belly fairing.

Beacon Lights



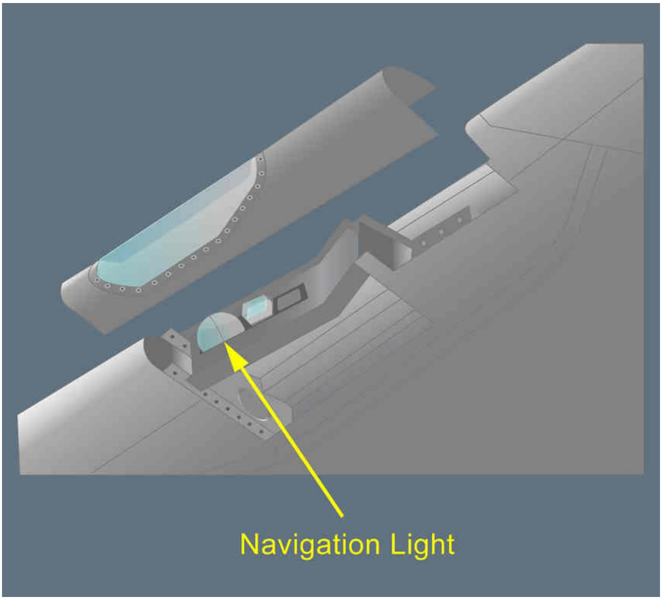
The beacon lights, as anti-collision lights, provide a red flashing light with high brightness.

NAVIGATION LIGHTS

Ident.: DSC-33-30-10-00013582.0002001 / 05 NOV 18
Applicable to: ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB

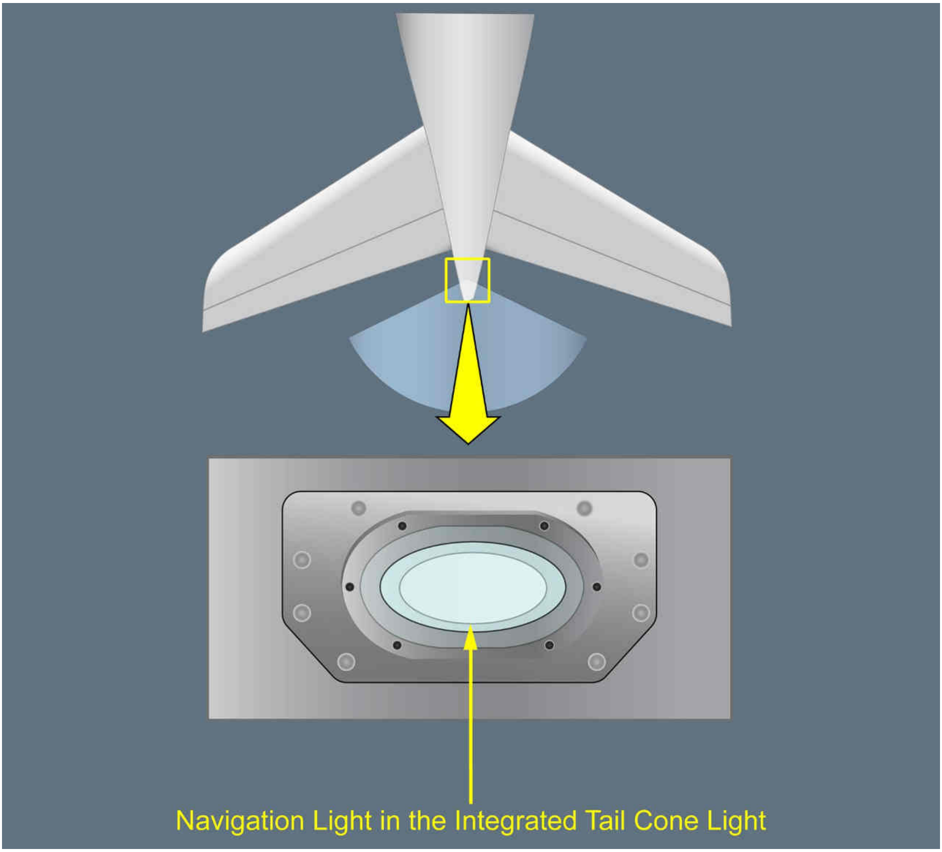
The aircraft has three navigation lights:
- One red navigation light on the left wingtip

Wingtip Navigation Light

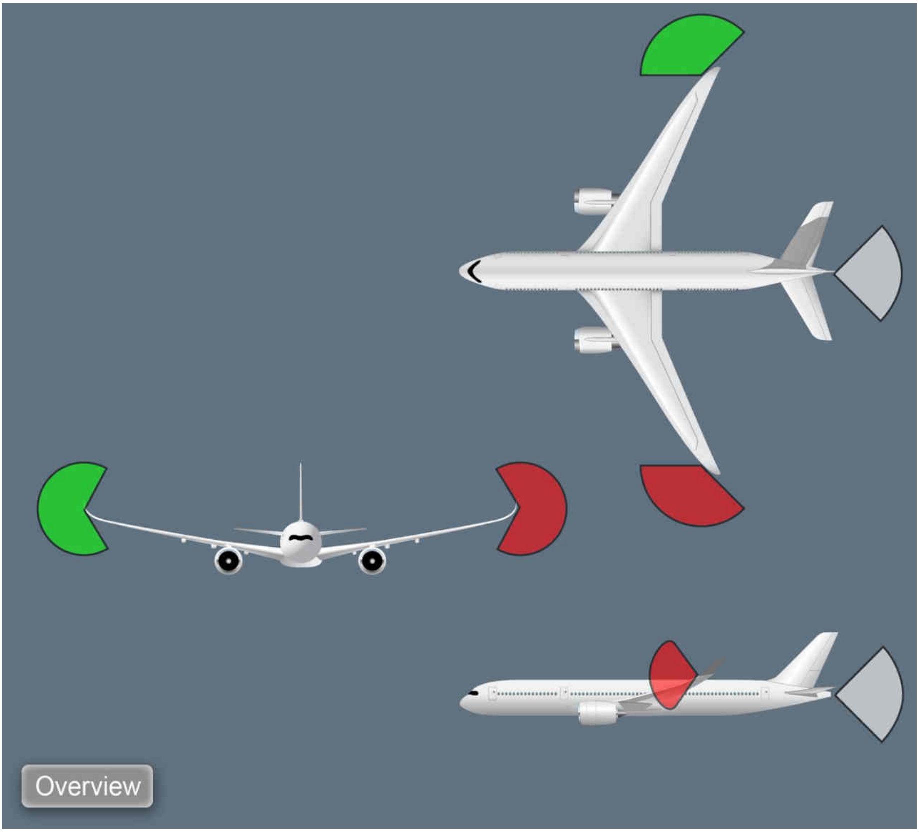


- One green navigation light on the right wingtip
- One white navigation light in the integrated tail cone light below the APU exhaust.

Tail Cone Navigation Light


Navigation Light in the Integrated Tail Cone Light

Navigation Lights



The navigation lights provide:
- An exterior and visual indication of the aircraft position
- The direction of flight of the aircraft.

The navigation lights have two independent systems: NAV LT 1 and NAV LT 2. In normal operation, NAV LT 1 is always used. NAV LT 2 is used only when NAV LT 1 fails (EXT LT NAV LT 1 FAULT).

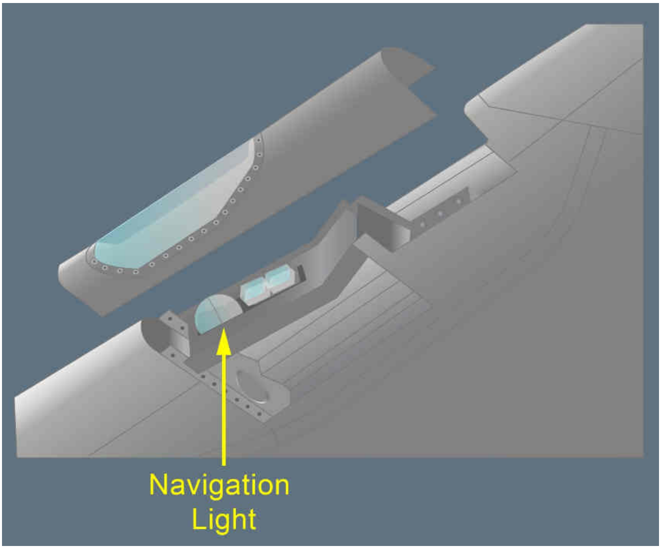
NAVIGATION LIGHTS

Ident.: DSC-33-30-10-00013582.0001001 / 29 APR 14
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD

The aircraft has three navigation lights:

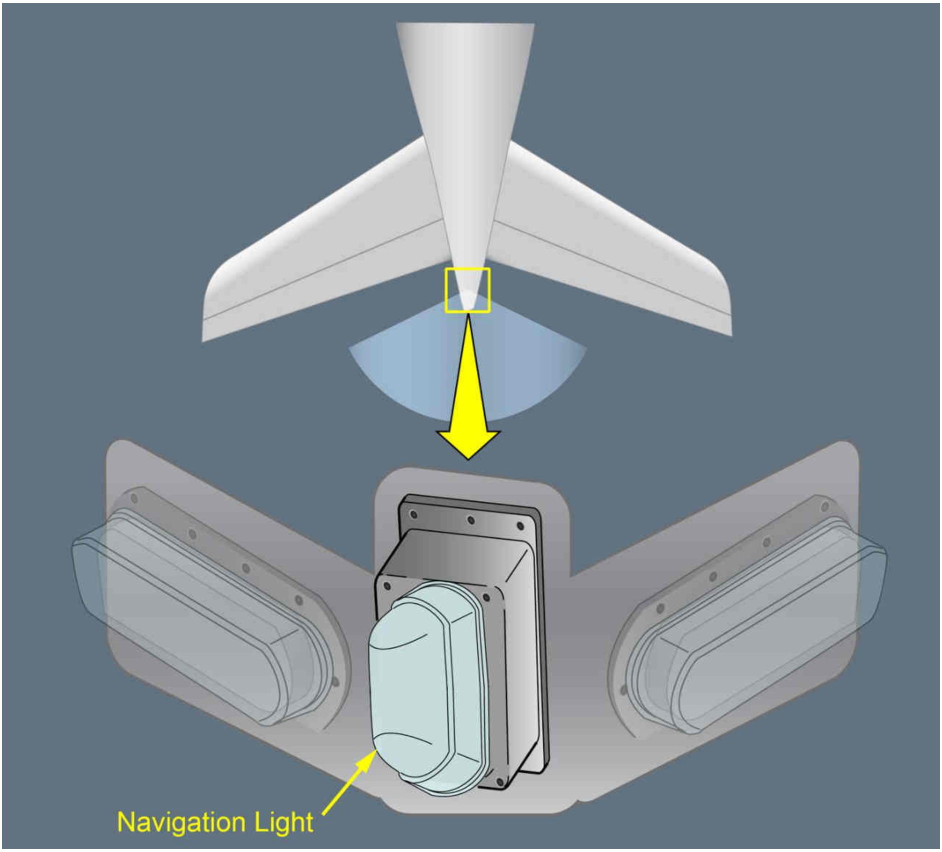
- One red navigation light on the left wingtip

Wingtip Navigation Light

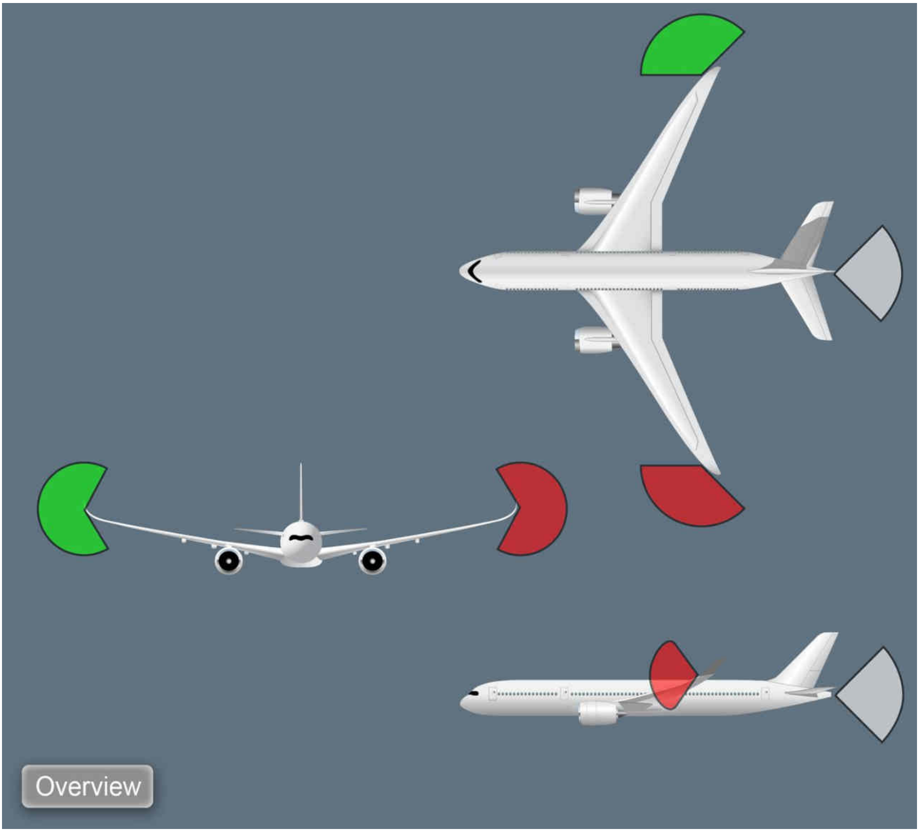


- One green navigation light on the right wingtip
- One white navigation light on the tail cone below the APU exhaust.

Tail Cone Navigation Light



Navigation Lights



The navigation lights provide:
- An exterior and visual indication of the aircraft position
- The direction of flight of the aircraft.

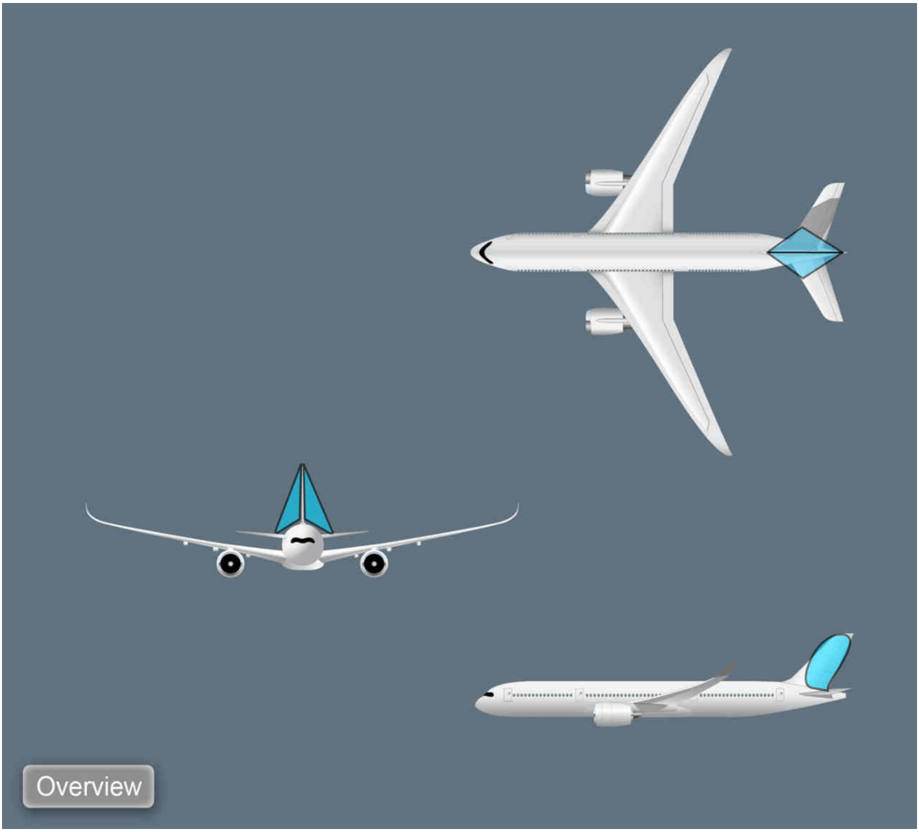
The navigation lights have two independent systems: NAV LT 1 and NAV LT 2. In normal operation, NAV LT 1 is always used. NAV LT 2 is used only when NAV LT 1 fails (EXT LT NAV LT 1 FAULT).

LOGO LIGHTS

Ident.: DSC-33-30-10-00013583.0001001 / 29 APR 14
Applicable to: ALL

The aircraft has two logo lights: One logo light on each side of the horizontal stabilizer.

Logo Lights



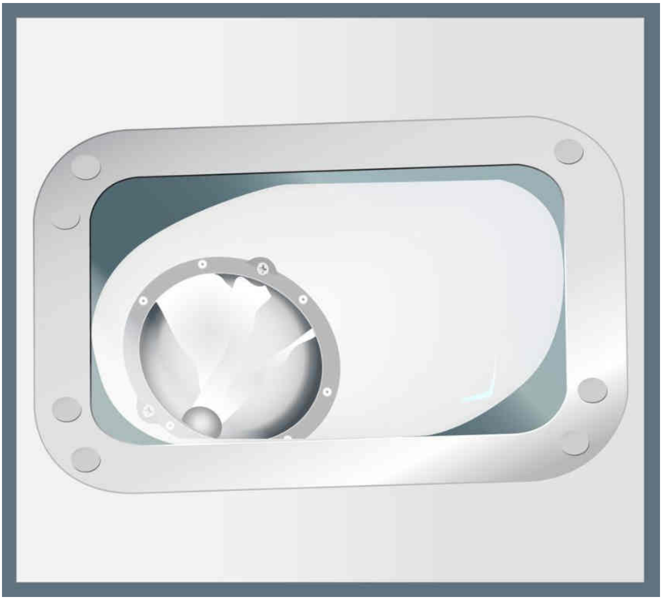
The logo lights provide lighting on the company logo.

WING AND ENGINE SCAN LIGHTS

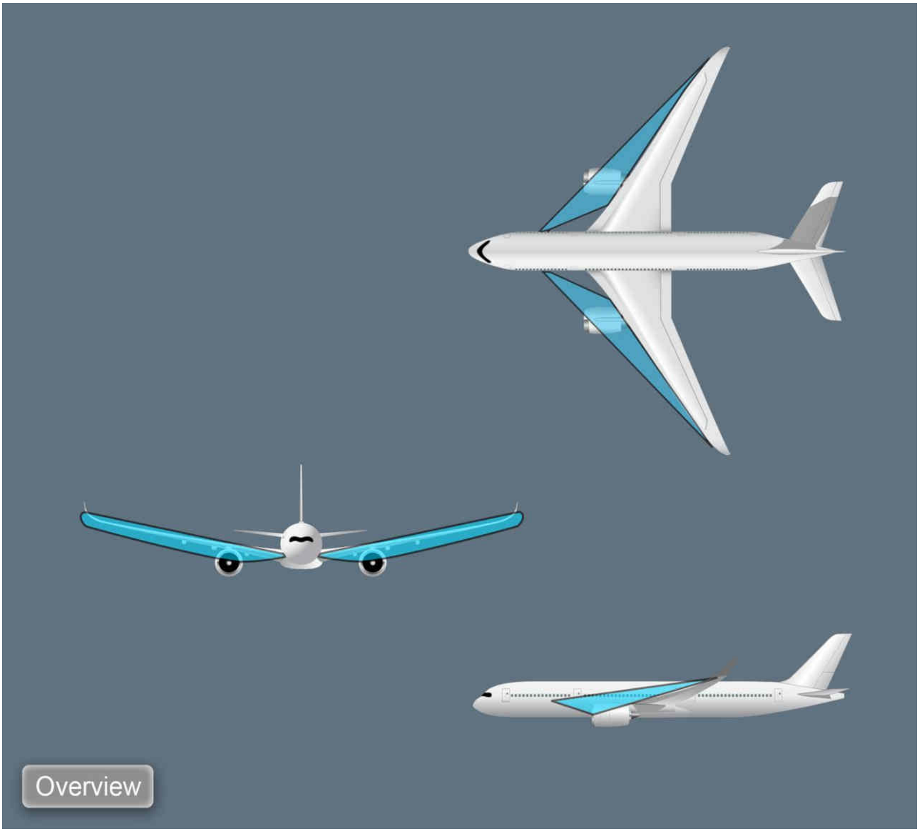
Ident.: DSC-33-30-10-00013584.0001001 / 29 APR 14
Applicable to: ALL

The aircraft has two wing and engine scan lights: One wing and engine scan light on each side of the fuselage.

Wing and Engine Scan Lights



Wing and Engine Scan Lights



The wing and engine scan lights provide lighting on:
- The leading edges of the wings
- The engines air inlet.

The wing and engine scan lights enable the flight crew to visually detect ice accretion.

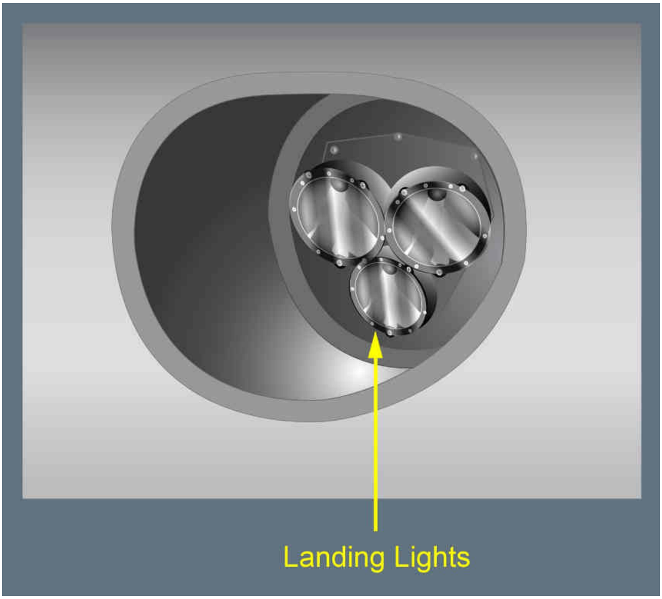
LANDING LIGHTS

Ident.: DSC-33-30-10-00013585.0001001 / 15 APR 19
Applicable to: ALL

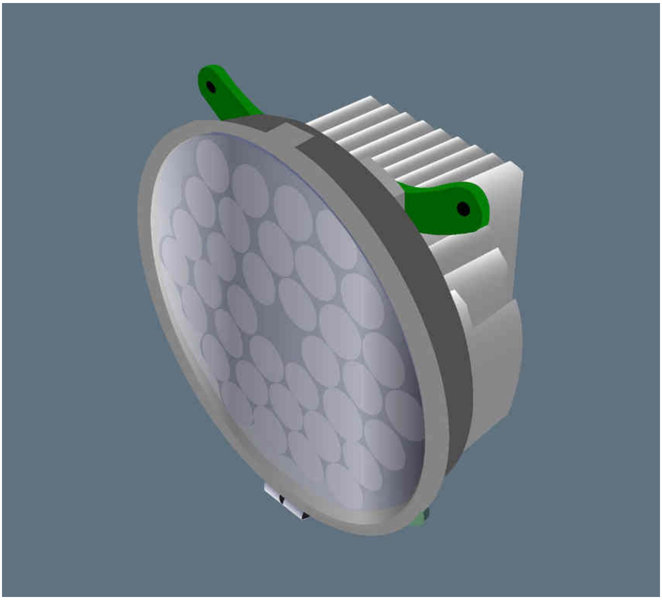
The aircraft has two landing lights units: One unit on the leading edge of each wing root.

L2 The aircraft is equipped with:
- Bulb-based landing lights, or
- LED-based landing lights ⊲✳ .

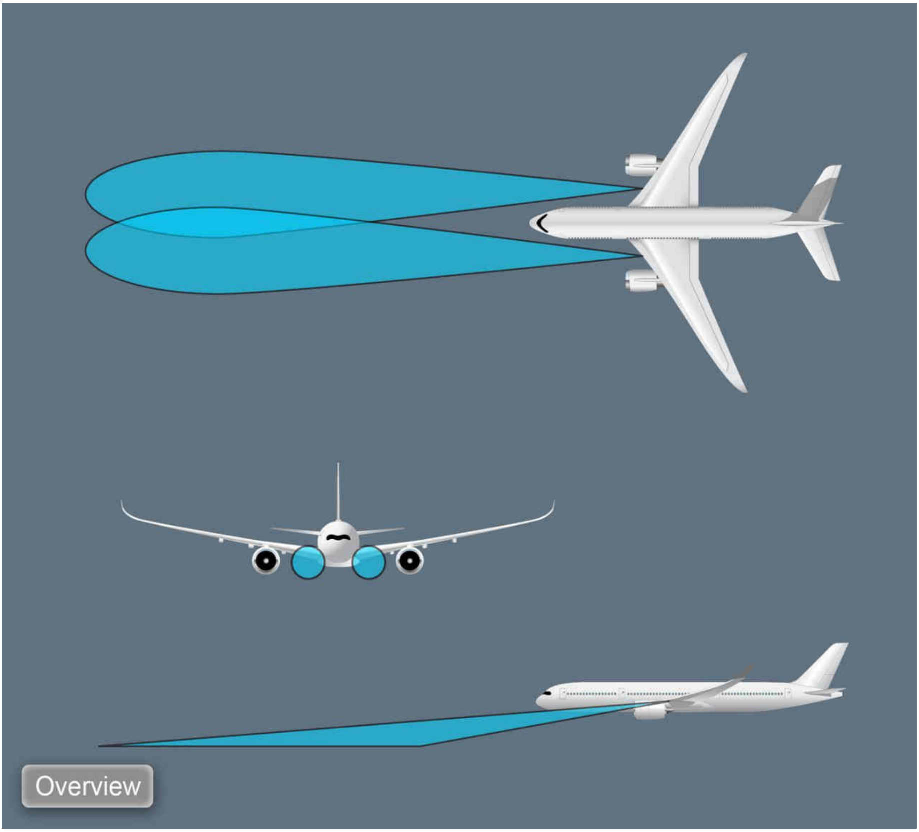
Bulb-Based Landing Lights



LED-Based Landing Lights



Landing Lights



L1 The landing lights provide lighting during landing and takeoff:
- At night
- In adverse weather conditions.

The landing lights help the flight crew to detect any obstacle on the runway.

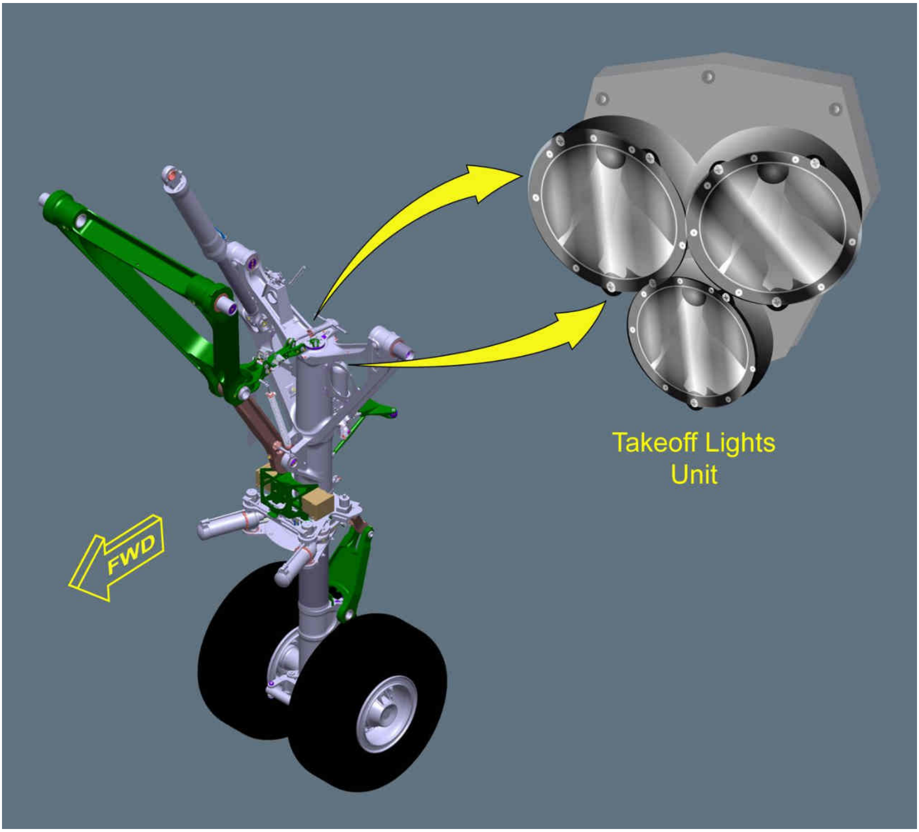
TAKEOFF LIGHTS

Ident.: DSC-33-30-10-00013586.0001001 / 15 APR 19
Applicable to: ALL

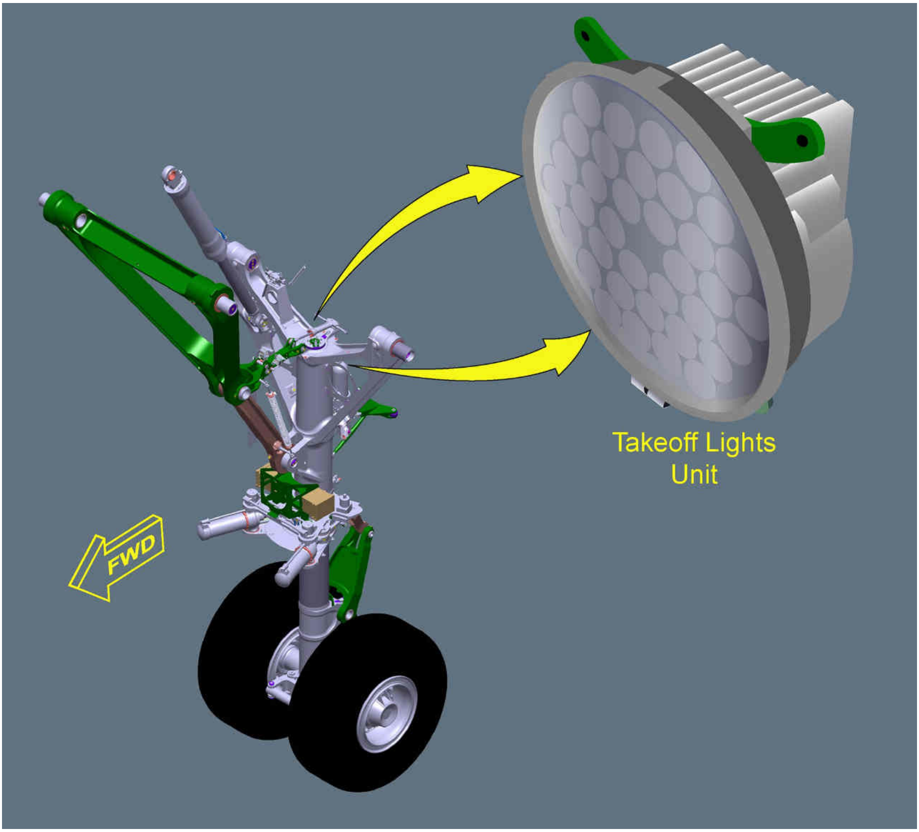
The aircraft has two takeoff lights units: One unit on each side of the NLG.

L2 The aircraft is equiped with:
- Two bulb-based takeoff lights units, or
- Two LED-based takeoff lights units ◁ .

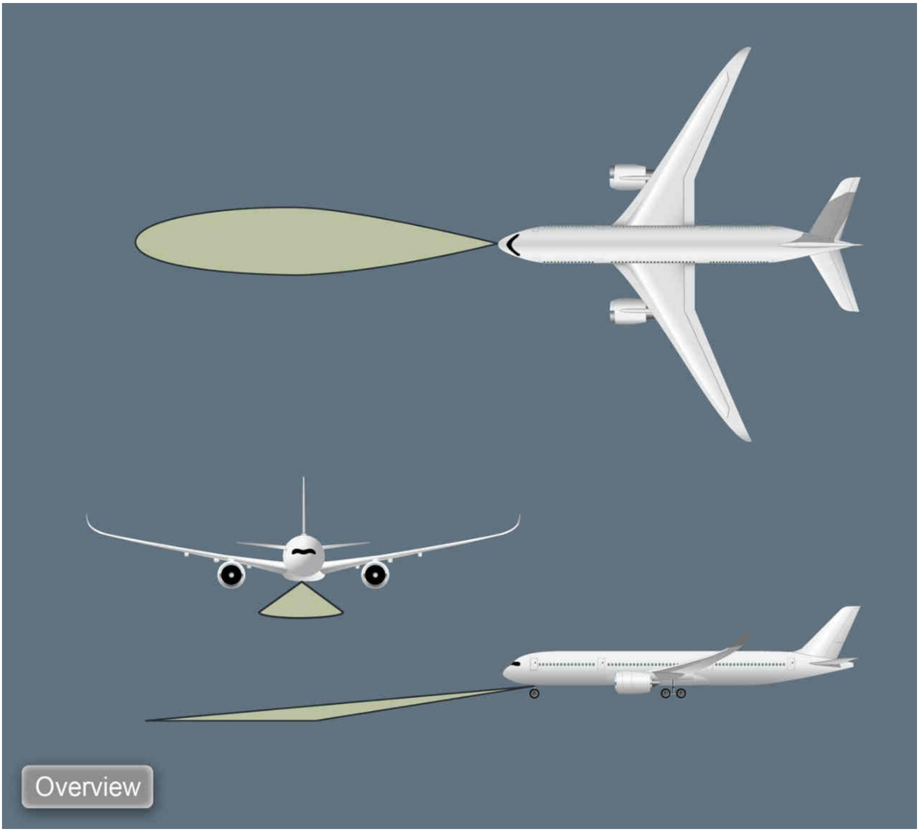
Bulb-Based Takeoff Lights Unit



LED-based Takeoff Lights Unit


FWD
Takeoff Lights Unit

Takeoff Lights



L1 The takeoff lights provide lighting ahead of the aircraft. The takeoff lights enable the flight crew:
- To obtain a better visibility during takeoff
- To help identify any obstruction on the runway during takeoff
- To obtain a better visibility during landing.

The takeoff lights are controlled by the NOSE sw on the EXT LT panel.

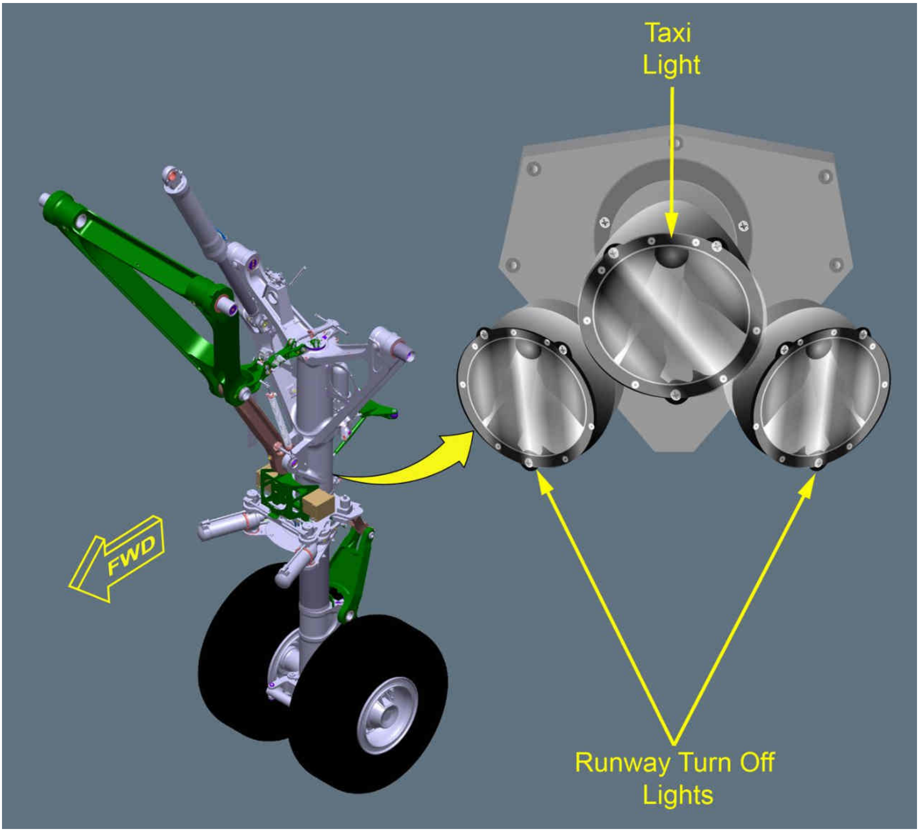
TAXI AND RUNWAY TURN OFF LIGHTS

Ident.: DSC-33-30-10-00013587.0001001 / 15 APR 19
Applicable to: ALL

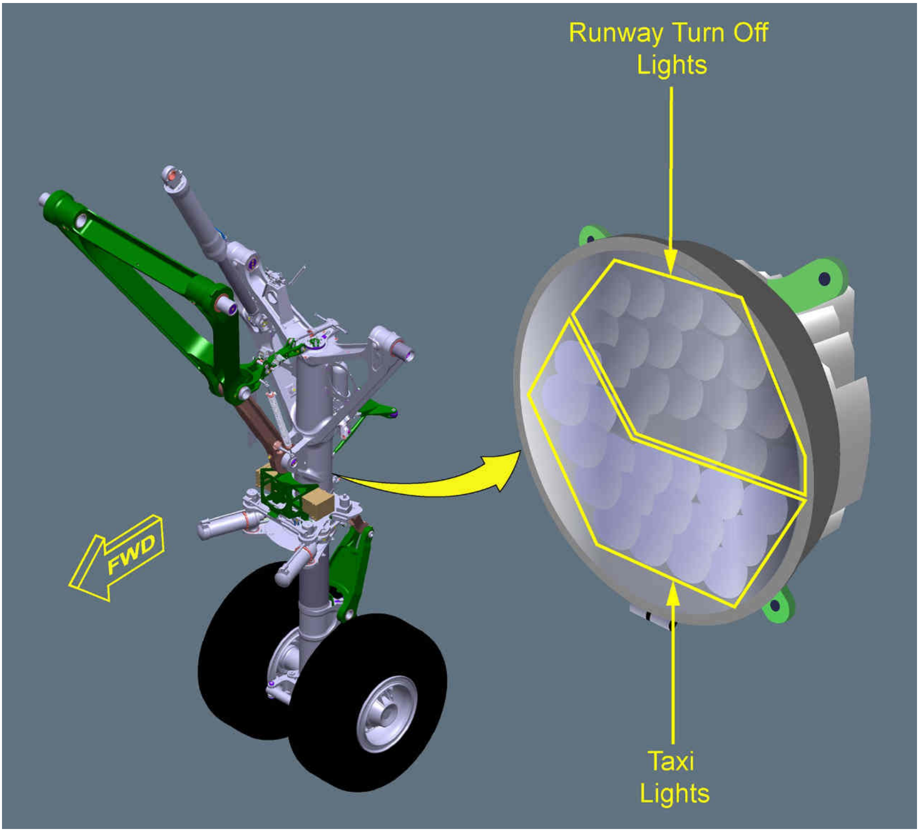
The aircraft has one taxi light and two runway turn off lights on the NLG.

L2 The aircraft is equipped with:
- Bulb-based taxi and runway turn off lights, or
- LED-based taxi and runway turn off lights ⧏ .

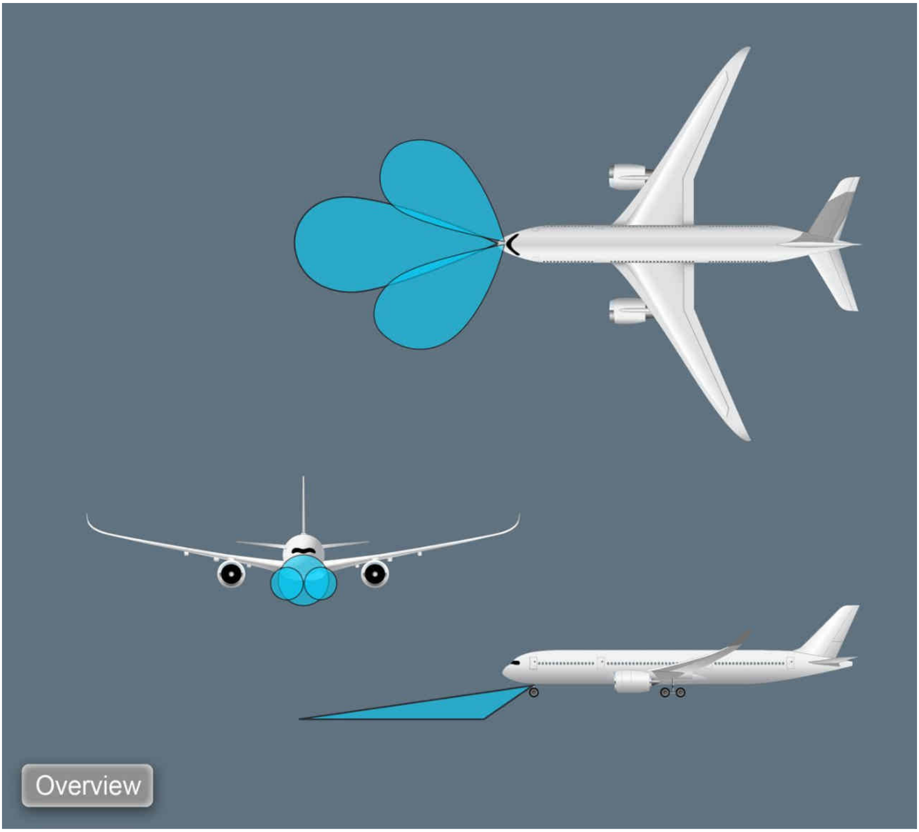
Bulb-Based Taxi and Runway Turn Off Lights


Taxi Light
FWD
Runway Turn Off Lights

LED-Based Taxi and Runway Turn Off Lights


Runway Turn Off Lights
FWD
Taxi Lights

Taxi and Runway Turn Off Lights



L1 The taxi light provides lighting to identify:
- Any obstruction on the aircraft path on ground
- The taxiways and runways during landing, takeoff, and taxi.

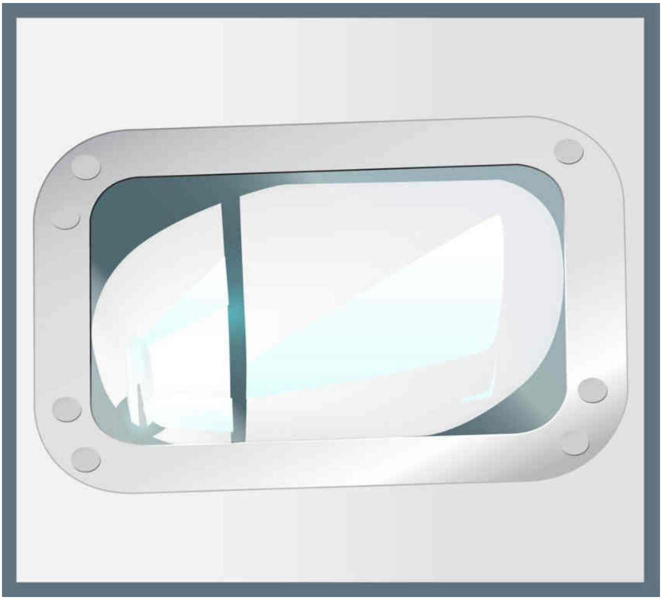
The runway turn off lights provide lighting on each side of the NLG.
The taxi and the runway turn off lights are controlled by the NOSE sw on the EXT LT panel.

TAXI CAMERA LIGHTS

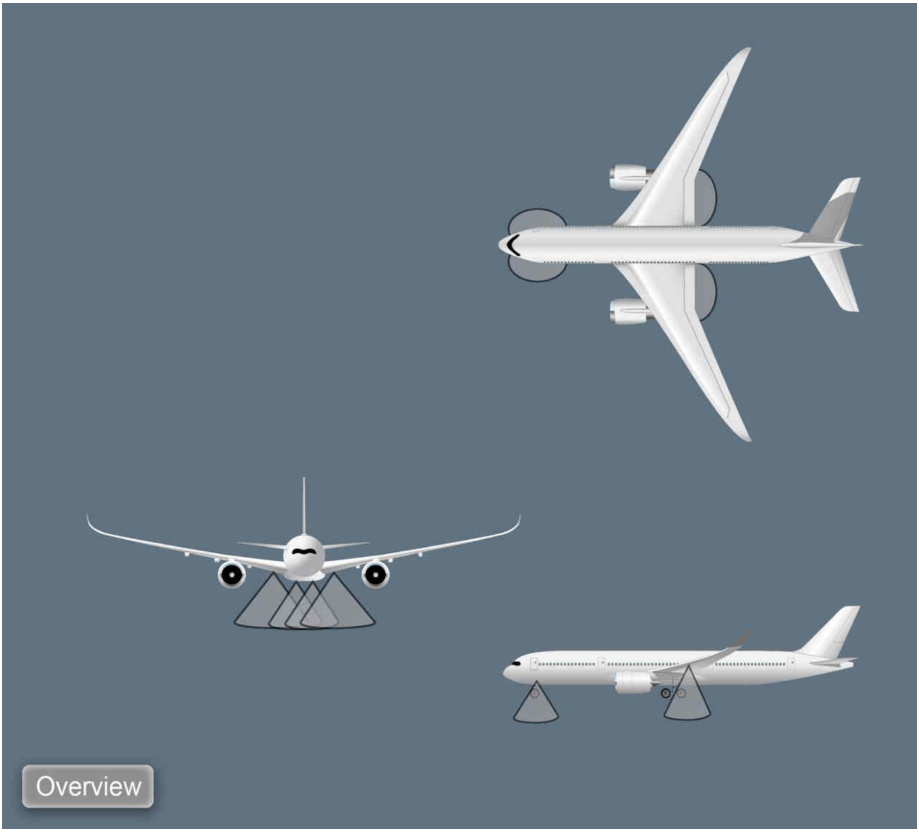
Ident.: DSC-33-30-10-00013588.0001001 / 09 MAR 16
Applicable to: ALL

The aircraft has four taxi camera lights: One on each side of the NLG, and one under each wing.

Taxi Camera Lights



Taxi Camera Lights

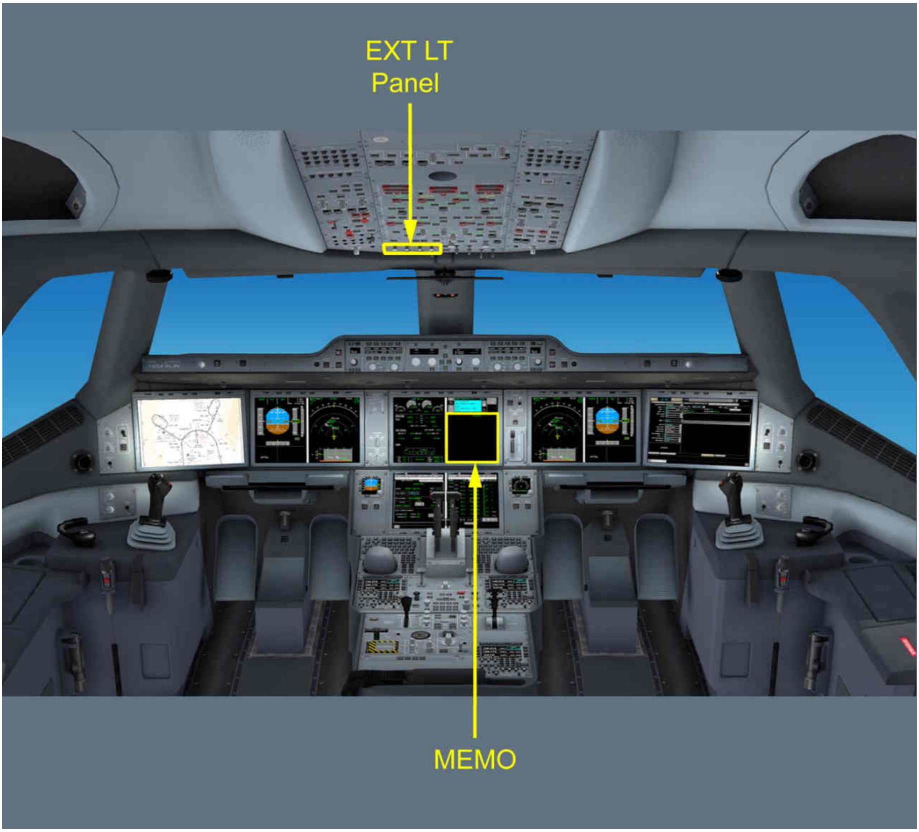


The taxi camera lights provide lighting on the NLG and the MLG during taxi. The taxi camera lights enable the flight crew to observe the position of the NLG and the MLG.
The taxi camera lights are controlled by the NOSE sw on the EXT LT panel.

COCKPIT VIEW

Ident.: DSC-33-30-20-00002461.0001001 / 29 APR 14
Applicable to: ALL

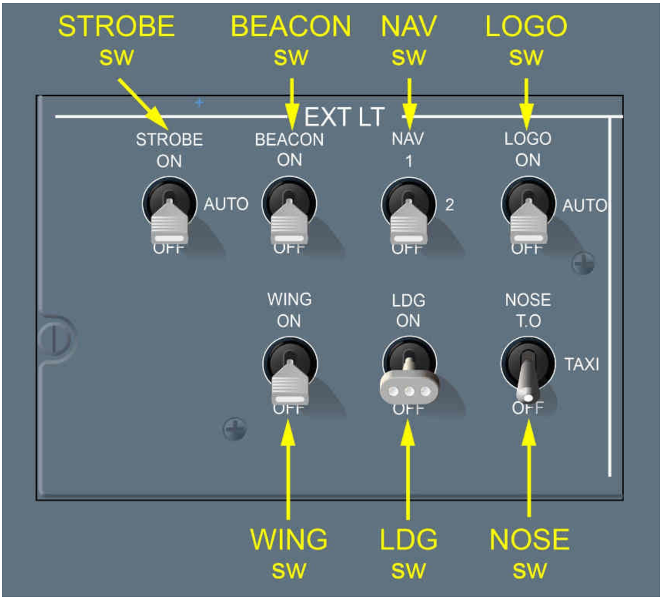
Cockpit View



EXT LT PANEL

Applicable to: ALL

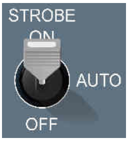
Ident.: DSC-33-30-20-GEXTL-00002462.0001001 / 29 APR 14


STROBE SW
BEACON SW
NAV SW
LOGO SW
EXT LT
STROBE ON
AUTO
OFF
BEACON ON
OFF
NAV 1
2
OFF
LOGO ON
AUTO
OFF
WING ON
OFF
LDG ON
OFF
NOSE T.O
TAXI
OFF
WING SW
LDG SW
NOSE SW

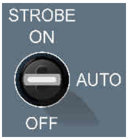
EXT LT Panel

Ident.: DSC-33-30-20-GEXTL-00002464.0001001 / 29 APR 14

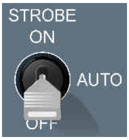
STROBE SW


STROBE
ON
AUTO
OFF

The strobe lights are on, and flash in white.


STROBE
ON
AUTO
OFF

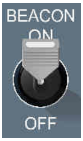
The strobe lights automatically flash when the aircraft is in flight.


STROBE
ON
AUTO
OFF

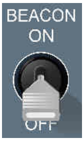
The strobe lights are off.

Ident.: DSC-33-30-20-GEXTL-00002465.0001001 / 29 APR 14

BEACON SW


BEACON
ON
OFF

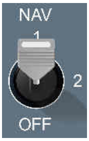
The beacon lights are on, and flash in red.


BEACON
ON
OFF

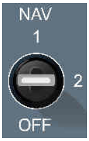
The beacon lights are off.

Ident.: DSC-33-30-20-GEXTL-00002466.0001001 / 29 APR 14

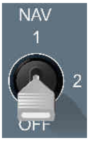
NAV SW



The NAV sw is in the normal operation position. NAV LT 1 is active and the navigation lights are on.



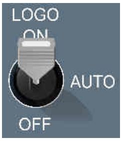
The NAV sw is in the abnormal operation position (EXT LT NAV LT 1 FAULT). NAV LT 2 is active and the navigation lights are on.



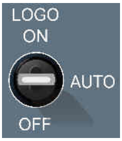
The navigation lights are off.

Ident.: DSC-33-30-20-GEXTL-00002467.0001001 / 29 APR 14

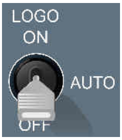
LOGO SW


LOGO
ON
AUTO
OFF

The logo lights are on.


LOGO
ON
AUTO
OFF

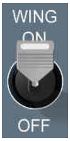
The logo lights come on automatically, when the aircraft is:
- On ground, or
- In flight, with the slats extended.


LOGO
ON
AUTO
OFF

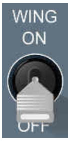
The logo lights are off.

Ident.: DSC-33-30-20-GEXTL-00002468.0002001 / 29 APR 14

WING SW



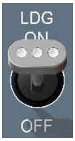
The wing and engine scan lights are on.



The wing and engine scan lights are off.

Ident.: DSC-33-30-20-GEXTL-00002470.0001001 / 29 APR 14

LDG SW



The landing lights are on.

The landing lights are off.

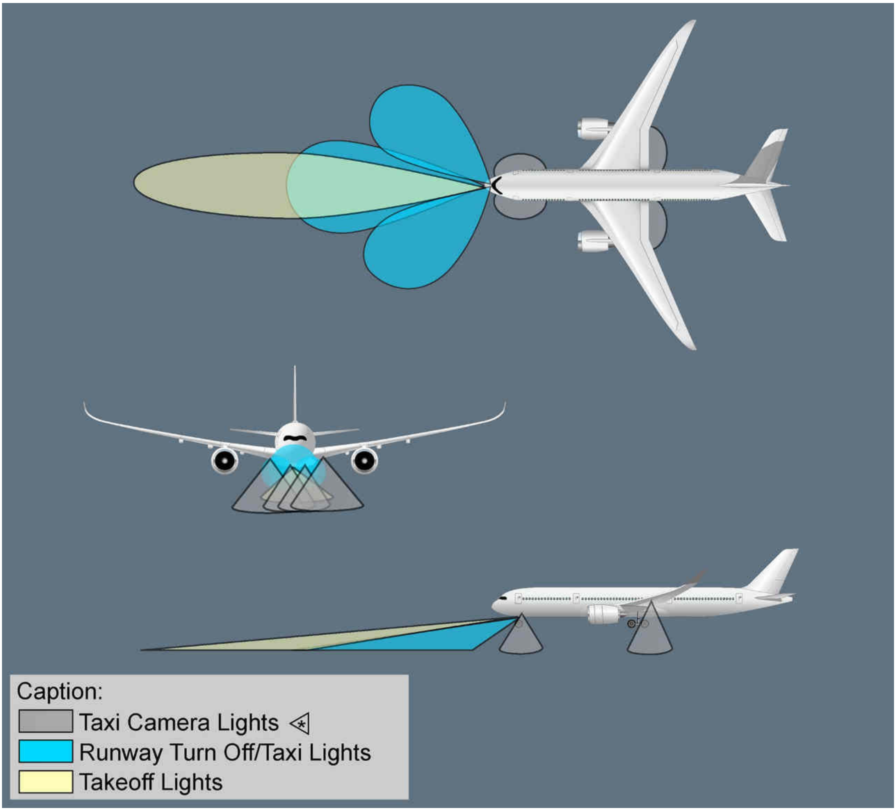
Ident.: DSC-33-30-20-GEXTL-00002471.0002001 / 09 MAR 16

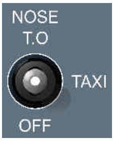
NOSE SW

NOSE
T.O
TAXI
OFF

The takeoff, the taxi, and the runway turn off lights come on when the NLG is down and locked.
The taxi camera lights come on when the MLG is on ground and the cameras are active.

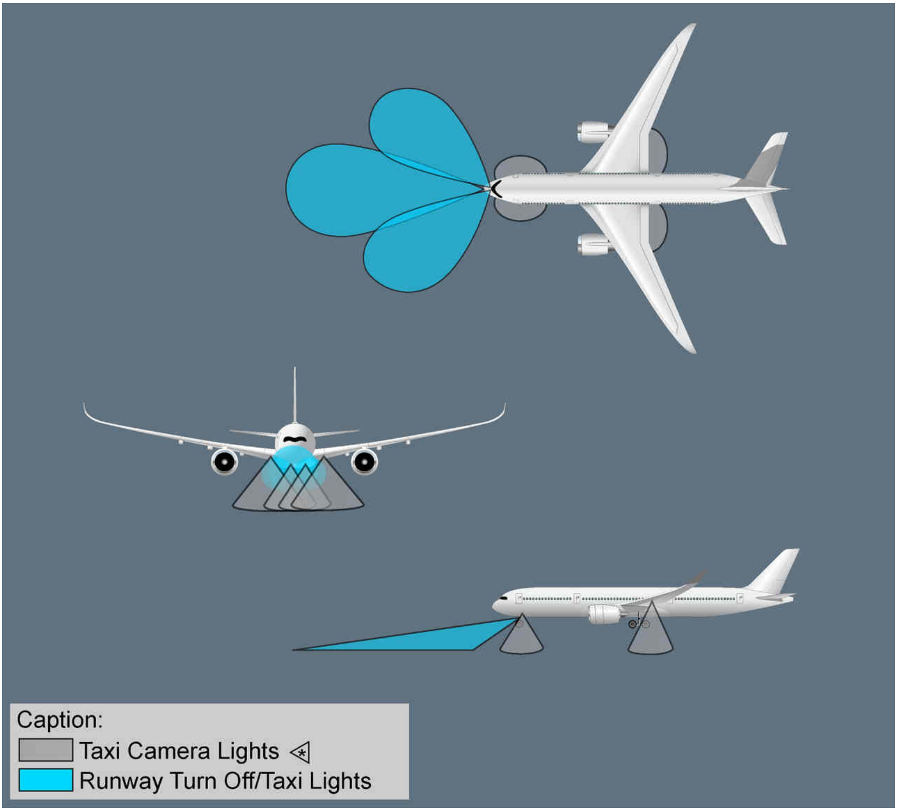
T.O Position

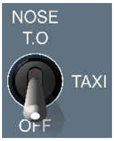

Caption:
▨ Taxi Camera Lights ◁
🟦 Runway Turn Off/Taxi Lights
🟨 Takeoff Lights


NOSE
T.O
TAXI
OFF

The taxi and the runway turn off lights come on when the NLG is down and locked.
The taxi camera lights ◁ come on when the MLG is on ground and the cameras are active.

TAXI Position


Caption:
▨ Taxi Camera Lights ◁
🟦 Runway Turn Off/Taxi Lights


NOSE
T.O
TAXI
OFF

The takeoff, the taxi, the runway turn off, and the taxi camera lights ◁ are off.

MEMO

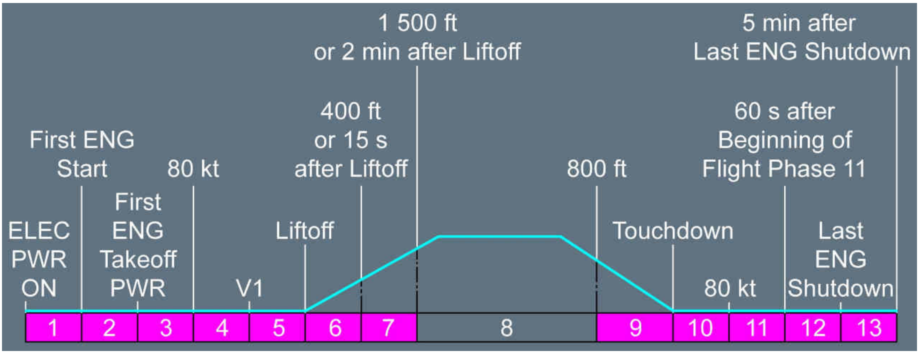
Applicable to: ALL

Ident.: DSC-33-30-20-GMEMO-00013464.0001001 / 29 APR 14

BEACON LT OFF	The aircraft is in flight, and the BEACON sw is set to OFF.

L2 Flight Phase Inhibition:

Flight Phase Inhibition

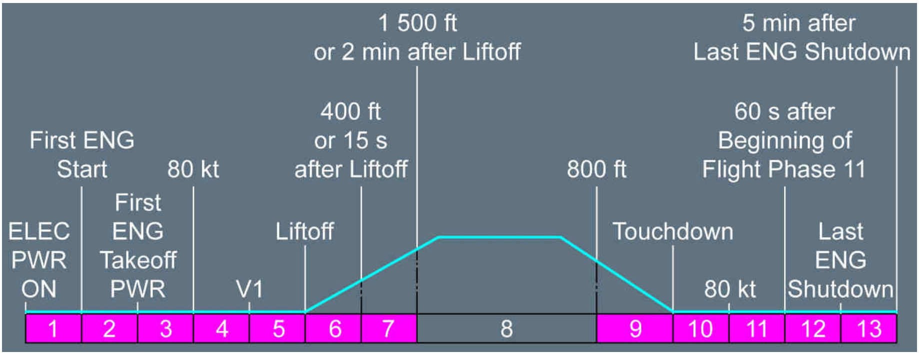

1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
2
3
4
5
6
7
8
9
10
11
12
13

Ident.: DSC-33-30-20-GMEMO-00002463.0001001 / 29 APR 14

STROBE LT OFF The aircraft is in flight, and the STROBE sw is set to OFF.

L2 Flight phase inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
2
3
4
5
6
7
8
9
10
11
12
13

OVERVIEW

Ident.: DSC-33-40-10-00002472.0002001 / 29 APR 14
Applicable to: ALL

The aircraft has emergency lights that provide the cabin and the flight crew rest compartment with sufficient lighting, in the case of an emergency or an electrical power loss.

L2 The emergency lights have different functions:
- In normal operation and in emergency situation, the emergency lights indicate the way to the exit to leave the aircraft
- In emergency situation, the emergency lights provide lighting to:
  - The cabin
  - The flight crew rest compartment
  - The exit areas
  - The evacuation slides
  - The evacuation areas.

L1 The emergency lights of the cabin are:
- The floor path marking system (*Refer to DSC-33-40-10 Floor Path Marking System*)
- The overhead emergency lights (*Refer to DSC-33-40-10 Overhead Emergency Lights*)
- The flight crew rest compartment emergency lights (*Refer to DSC-33-40-10 Flight Crew Rest Compartment (FCRC) Emergency Lights*)
- The exit signs (*Refer to DSC-33-40-10 Exit Signs*)
- The evacuation area lights (*Refer to DSC-33-40-10 Evacuation Area Lights*)
- The emergency slide lights (*Refer to DSC-33-40-10 Emergency Slide Lights*)
- The lavatory emergency lights (*Refer to DSC-33-40-10 Lavatory Emergency Lights*).

All the cabin emergency lights (except the emergency slide lights) have an independent power supply (*Refer to DSC-33-40-10 Power Supply*).

FLOOR PATH MARKING SYSTEM

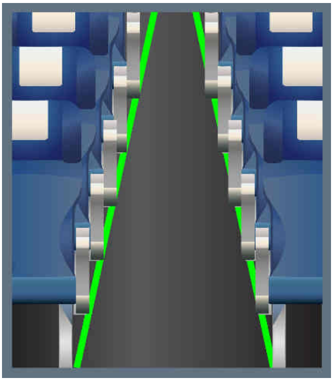
Ident.: DSC-33-40-10-00013913.0001001 / 29 APR 14
Applicable to: ALL

The floor path marking will guide the passengers to the exits if the overhead emergency and the exit signs are no longer visible (e.g. due to the smoke).

The floor path marking has:

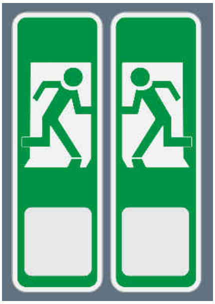
- The aisle and the galley lights that are light strips on the floor, located:
  - At both sides of the aisles

Aisle and Galley Lights



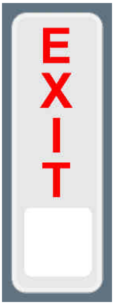
  - Where there is not carpet (e.g. galleys, stowage, and lavatories).
- The exit identifiers that provide lighting on the floor near the doors and the emergency exits. There are two types of exit identifiers:
  - The exit identifiers with the upper portion with a green pictogram

Green Exit Identifiers

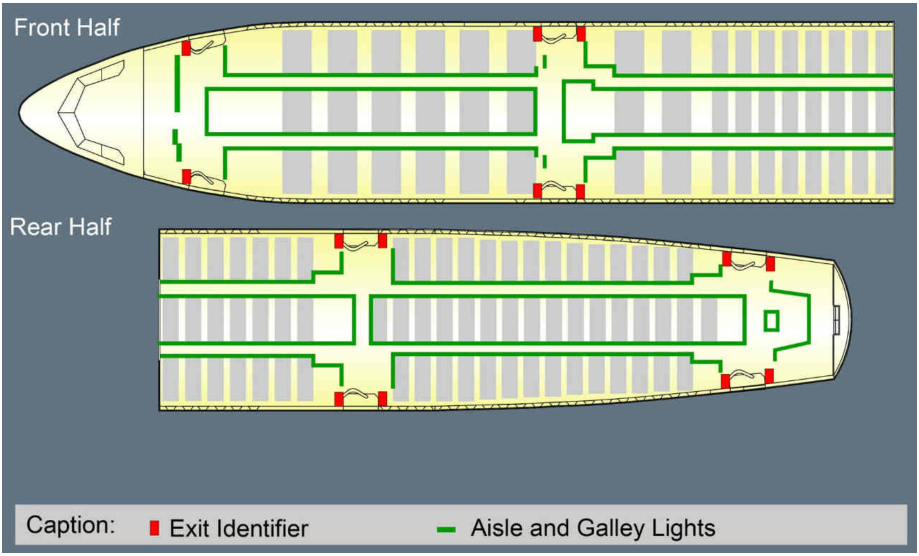


  - The exit identifiers with the EXIT caption in red.

Red Exit Identifier



Exit Identifier, Aisle, and Galley Lights


Front Half
Rear Half
Caption:
🟥 Exit Identifier
🟩 Aisle and Galley Lights

FLIGHT CREW REST COMPARTMENT (FCRC) EMERGENCY LIGHTS

Ident.: DSC-33-40-10-00016580.0001001 / 29 APR 14
Applicable to: ALL

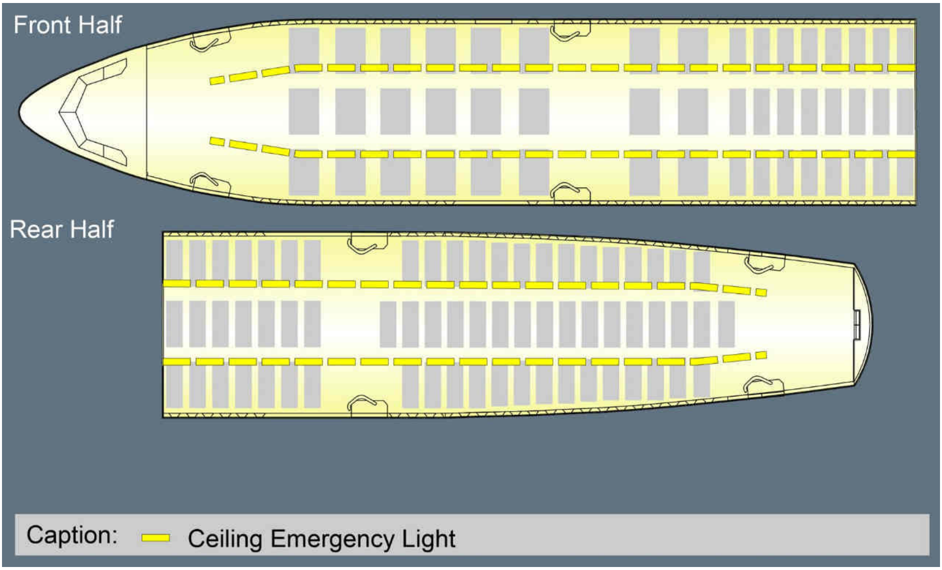
The Flight Crew Rest Compartment (FCRC) has:
- One emergency light that provide the FCRC and the door handle near the stairs with lighting
- Two emergency lights in the bunks that provide the oxygen masks with lighting.

OVERHEAD EMERGENCY LIGHTS

Ident.: DSC-33-40-10-00013915.0001001 / 29 APR 14
Applicable to: ALL

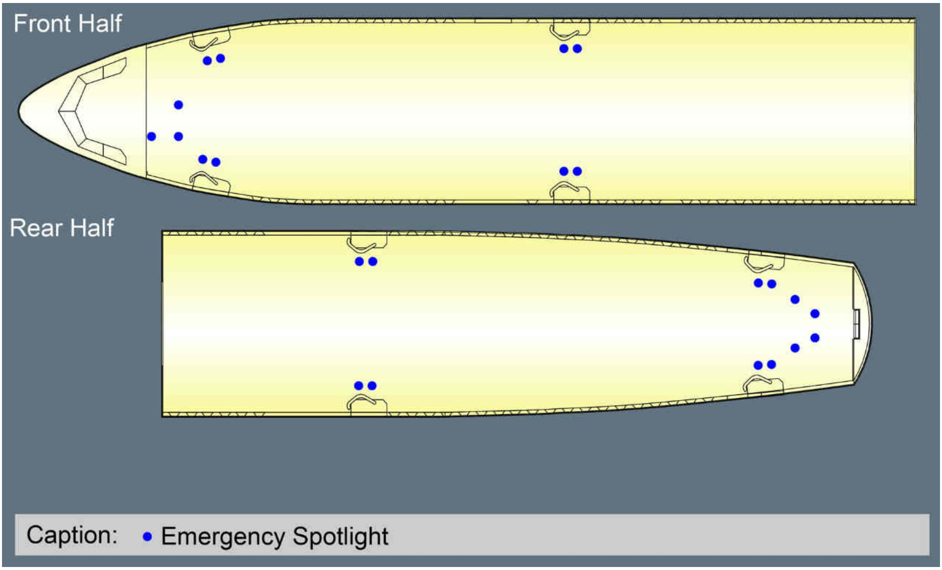
The overhead emergency lights are:
- The ceiling emergency lights that provide the main aisles with lighting

Ceiling Lights



- The emergency spotlights that provide the areas where it is not possible to install the ceiling emergency lights (e.g. the entry areas and the cross-aisles) with lighting.

Emergency Spotlights


Front Half
Rear Half
Caption: ● Emergency Spotlight

EXIT SIGNS

Ident.: DSC-33-40-10-00013914.0001001 / 24 SEP 19
Applicable to: ALL

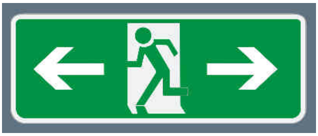
The exit signs indicate the next exit to the passengers.

Depending on the configuration, the aircraft has:

- The exit location signs that indicate the position of the exit areas. The exit location signs are in the cross-aisles, and are visible throughout the main aisles

  There are two types of exit location signs:
  - The exit location signs with the green pictogram

    Exit Location Sign

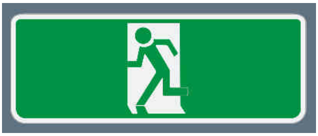
    

  - The exit location signs with the EXIT caption in red.

- The exit marking signs that indicate the position of the doors. The exit marking signs are above the emergency exits

  There are two types of exit marking signs:
  - The exit marking signs with the green pictogram

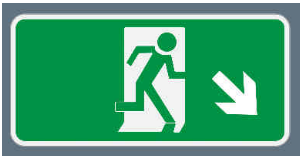
    Exit Marking Sign

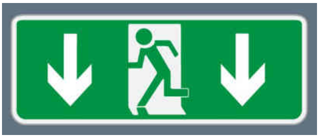
  - The exit marking signs with the EXIT caption in red.

- The additional exit signs that are in front of a possible obstacle that covers an exit location sign or an exit marking sign.

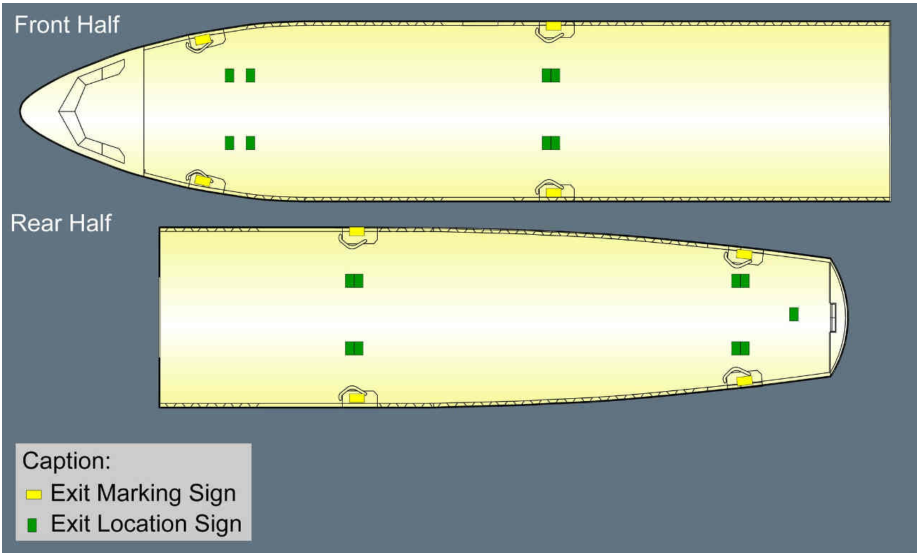
Additional Exit Sign



- The exit marking signs that indicate the position of the door Type A+ emergency exits. The exit signs have 2 arrows on the lens to highlight the dual lane of the slides.



Exit Signs


Front Half
Rear Half
Caption:
🟨 Exit Marking Sign
🟩 Exit Location Sign

EVACUATION AREA LIGHTS

Ident.: DSC-33-40-10-00013919.0001001 / 29 APR 14
Applicable to: ALL

The evacuation area lights provide the area of the ground where the slides will touch with lighting.
The aircraft has one evacuation area light in each door.

EMERGENCY SLIDE LIGHTS

Ident.: DSC-33-40-10-00013917.0001001 / 29 APR 14
Applicable to: ALL

The emergency slide lights provide the escape slides and the area in front of the slides with lighting, when the slides are deployed.
The emergency slide lights automatically come on when the slides are deployed.

LAVATORY EMERGENCY LIGHTS

Ident.: DSC-33-40-10-00013918.0001001 / 29 APR 14
Applicable to: ALL

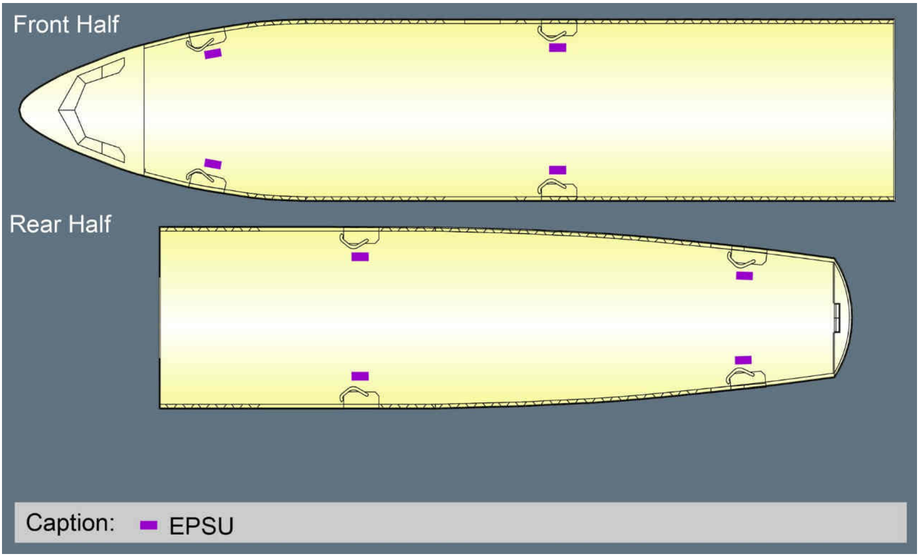
The lavatory emergency lights provide the lavatories with lighting in the case of a total loss of the cabin lighting.

POWER SUPPLY

Ident.: DSC-33-40-10-00013920.0001001 / 29 APR 14
Applicable to: ALL

All the cabin emergency lights (except the emergency slide lights) have an independent power supply: The Emergency Power Supply Units (EPSUs). A battery pack supplies the emergency slide lights.
The EPSUs are the control center of the cabin emergency lights (except the emergency slide lights).
There are 8 EPSUs: One for each door.
L2 For each door, an EPSU provides the cabin emergency lights with non essential DC power supply, or emergency DC power supply if not available.
If the non essential and emergency DC power supplies are not available, the internal battery pack of the EPSU automatically takes over the power supply of the cabin emergency lights for at least 10 min.

EPSUs


Front Half
Rear Half
Caption: ▬ EPSU

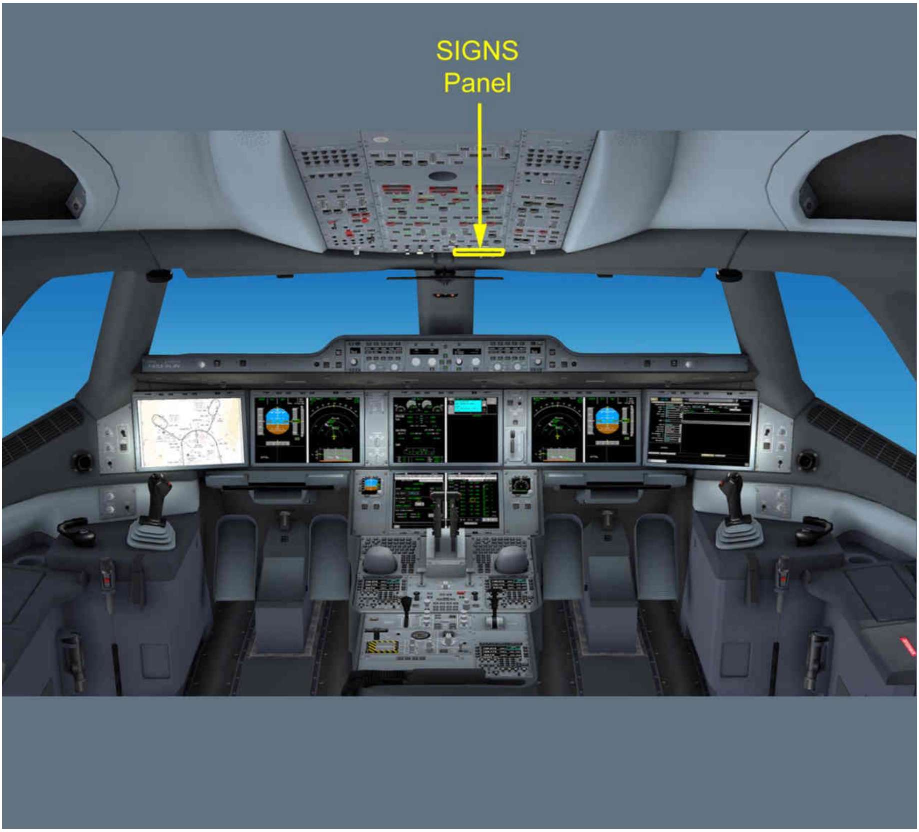
L1 For redundancy purposes, several cabin emergency lights are connected to two EPSUs.

Intentionally left blank

COCKPIT VIEW

Ident.: DSC-33-40-20-00002476.0001001 / 29 APR 14
Applicable to: ALL

Cockpit View

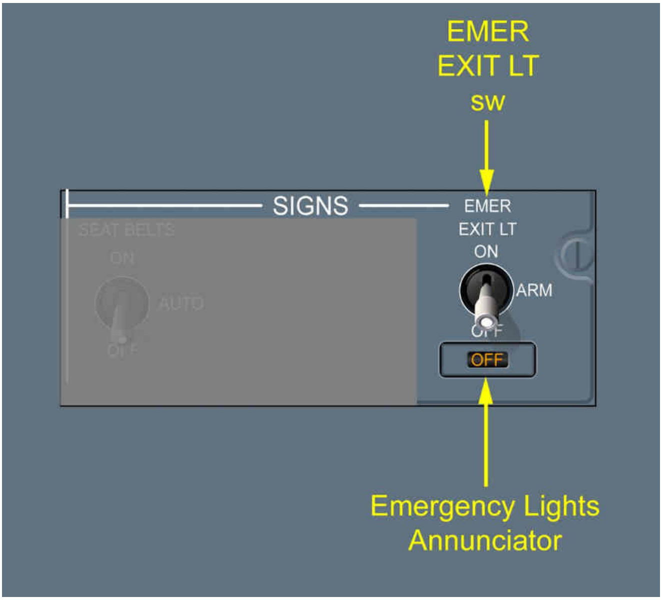


SIGNS PANEL

Applicable to: ALL

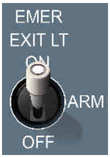
Ident.: DSC-33-40-20-10-00002477.0001001 / 29 APR 14

SIGNS Panel

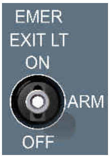

EMER
EXIT LT
SW
SIGNS
SEAT BELTS
ON
AUTO
OFF
EMER
EXIT LT
ON
ARM
OFF
OFF
Emergency Lights
Annunciator

Ident.: DSC-33-40-20-10-00013927.0001001 / 29 APR 14

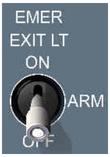
EMER EXIT LT SW


EMER
EXIT LT
ON
ARM
OFF

The cabin emergency lights (except the emergency slide lights) are on.


EMER
EXIT LT
ON
ARM
OFF

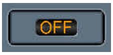
The cabin emergency lights (except the emergency slide lights) are on if the aircraft is no more electrically powered.



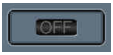
The cabin emergency lights are off as long as the cabin crew does not press the EMER pb-sw on the FAP.
When the cabin crew presses the EMER pb-sw on the FAP, the cabin emergency lights (except the emergency slide lights) come on.

Ident.: DSC-33-40-20-10-00013928.0001001 / 29 APR 14

EMERGENCY LIGHTS ANNUNCIATOR



The EMER EXIT LT sw is set to OFF.



The EMER EXIT LT sw is not set to OFF.

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NORMAL OPERATIONS

Ident.: DSC-33-40-30-00013924.0001001 / 07 MAY 18
Applicable to: ALL

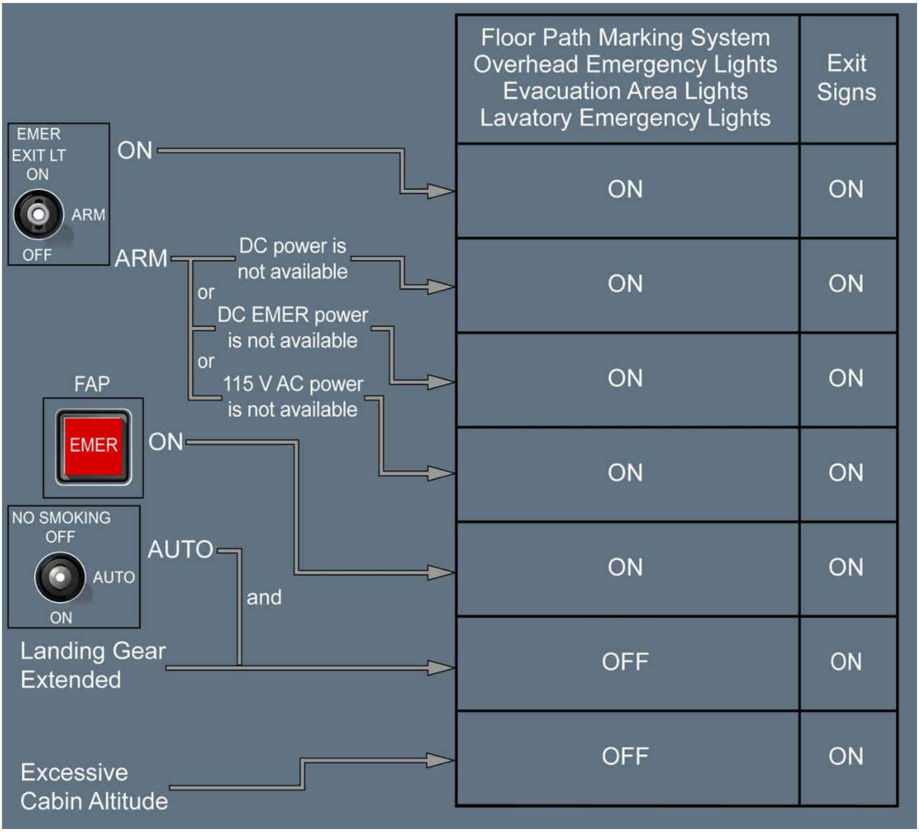
The cabin emergency lights (except the emergency slide lights) can be controlled by:
- The flight crew, via the EMER EXIT LT sw
- The cabin crew, via the EMER pb-sw of the Flight Attendant Panels (FAPs).

However, the cabin emergency lights (except the emergency slide lights) automatically come on when the EMER EXIT LT sw is set to ARM, and :
- The 115 V AC power supply for the general lighting is no longer available, and/or
- The DC power supply is no longer available, and/or
- The DC EMER power supply is no longer available.

L2 The exit signs automatically come on in the case of an excessive cabin altitude.
Depending on Operator customization of the CIDS, actions on other SIGNS switches may automatically switch on or off the exit signs. For more information on the SIGNS switches, *Refer to DSC-33-50-10 Overview*.

L1 The emergency slide lights automatically come on when the slides are deployed.

Normal Operations


Floor Path Marking System
Overhead Emergency Lights
Evacuation Area Lights
Lavatory Emergency Lights
Exit Signs
EMER
EXIT LT
ON
ARM
OFF
ON
ARM
DC power is not available
or
DC EMER power is not available
or
115 V AC power is not available
FAP
EMER
ON
NO SMOKING
OFF
AUTO
ON
AUTO
and
Landing Gear Extended
Excessive Cabin Altitude
ON
ON
ON
ON
ON
ON
ON
ON
ON
ON
OFF
ON
OFF
ON

OVERVIEW

Ident.: DSC-33-50-10-00002479.0001001 / 09 MAR 16
Applicable to: ALL

The flight crew can turn on the following signs via the appropriate switches of the SIGNS panel in the cockpit:

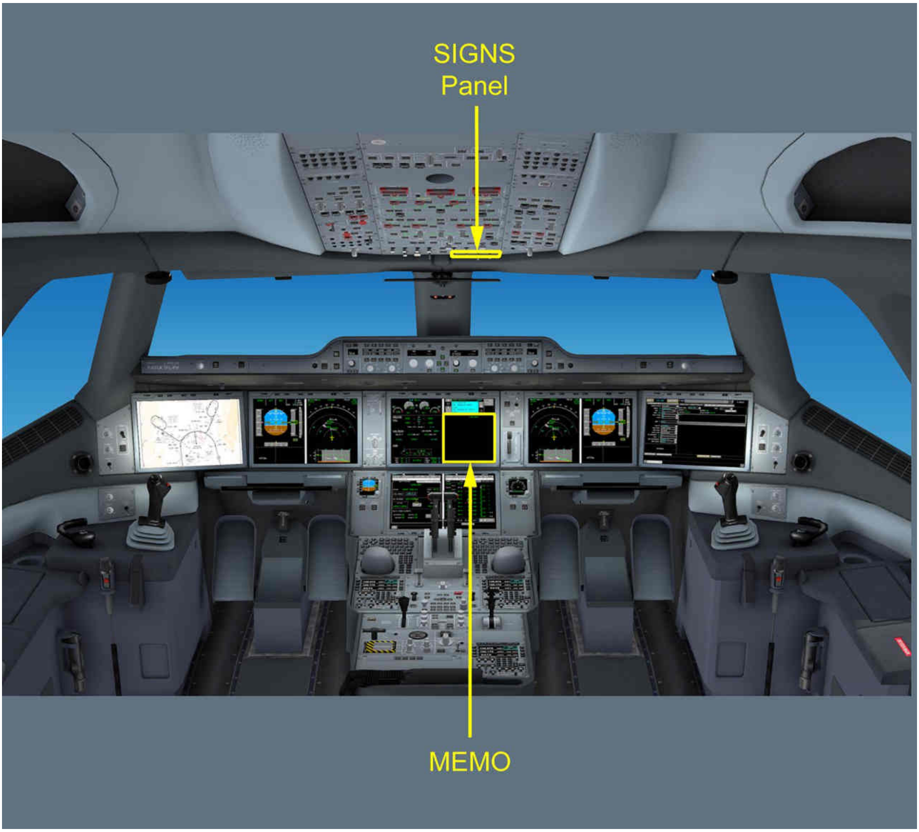
- Fasten Seat Belt
- No Smoking ◁
- No Portable Electronic Devices ◁
- No Mobile ◁ .

Intentionally left blank

COCKPIT VIEW

Ident.: DSC-33-50-20-00002480.0001001 / 07 JUL 16
Applicable to: ALL

Cockpit View



MEMO

Applicable to: ALL

Ident.: DSC-33-50-20-GMEMO-00002486.0001001 / 09 MAR 16

SEAT BELTS	The Fasten Seat Belt signs are on.

Ident.: DSC-33-50-20-GMEMO-00019226.0001001 / 09 MAR 16

NO SMOKING ◁	The No Smoking signs are on.

Ident.: DSC-33-50-20-GMEMO-00019227.0001001 / 09 MAR 16

NO MOBILE ◁	The No Mobile signs are on.

Ident.: DSC-33-50-20-GMEMO-00019228.0001001 / 09 MAR 16

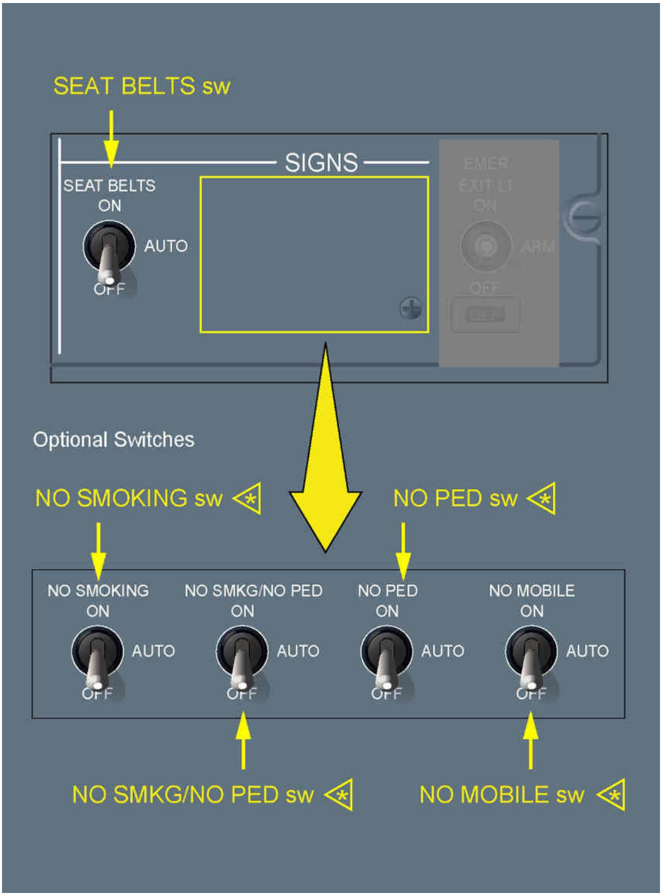
NO PORTABLE DEVICES ◁	The No Portable Electronic Devices signs are on.

SIGNS PANEL

Applicable to: ALL

Ident.: DSC-33-50-20-GSIGN-00002481.0001001 / 07 MAY 18

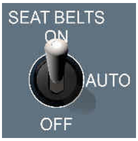
SIGNS Panel


SEAT BELTS sw
SIGNS
SEAT BELTS
ON
AUTO
OFF
EMER
EXIT LT
ON
ARM
OFF
Optional Switches
NO SMOKING sw
NO PED sw
NO SMOKING
ON
AUTO
OFF
NO SMKG/NO PED
ON
AUTO
OFF
NO PED
ON
AUTO
OFF
NO MOBILE
ON
AUTO
OFF
NO SMKG/NO PED sw
NO MOBILE sw

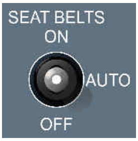
Depending on Operator customization of the CIDS, if the EMER EXIT LT sw is on the AUTO position, an action on a SIGNS sw may switch on or off the exit signs.

Ident.: DSC-33-50-20-GSIGN-00002484.0001001 / 27 FEB 17

SEAT BELTS SW

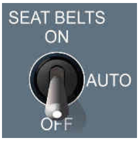


The Fasten Seat Belt and the Return To Seat signs come on in the cabin.



The Fasten Seat Belt and the Return To Seat signs automatically come on in the cabin when at least one engine is running and:

- The slats are extended, or
- The landing gear is extended.



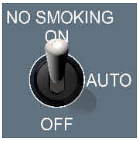
The Fasten Seat Belt and the Return To Seat signs go off in the cabin.

Depending on Operator customization of the CIDS, an associated low tone chime sounds in the cabin each time the Fasten Seat Belt and the Return To Seat signs go on or off.

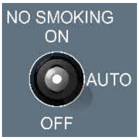
Note: *In the case of excessive cabin altitude (i.e. if the cabin altitude exceeds the maximum of: 9 550 ft and the landing field elevation + 1 000 ft), the Fasten Seat Belt, the No Smoking ◁ , the No Portable Electronic Devices ◁ , and the Exit signs come on in the cabin, regardless of the position of the associated SIGNS switches.*

Ident.: DSC-33-50-20-GSIGN-00019223.0001001 / 07 MAY 18

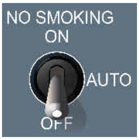
NO SMOKING SW ◁



The No Smoking signs come on in the cabin.



The No Smoking signs automatically come on in the cabin, when the landing gear is down and locked.

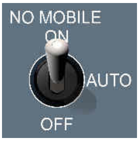


The No Smoking signs go off in the cabin.

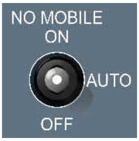
Depending on Operator customization of the CIDS, an associated low tone chime sounds in the cabin each time the No Smoking signs go on or off.

Ident.: DSC-33-50-20-GSIGN-00019224.0001001 / 27 FEB 17

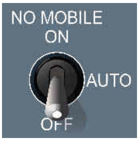
NO MOBILE SW



The No Mobile signs come on in the cabin.



The No Mobile signs automatically come on in the cabin, when:
- The aircraft flies over a country where the use of mobile phones is not authorized
- The aircraft flies below an altitude threshold that depends on the On-Board Mobile Telephony System (OMTS).

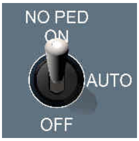


The No Mobile signs go off in the cabin.

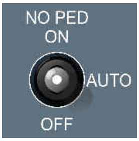
Depending on Operator customization of the CIDS, an associated low tone chime sounds in the cabin each time the No Mobile signs go on or off.

Ident.: DSC-33-50-20-GSIGN-00019229.0001001 / 07 MAY 18

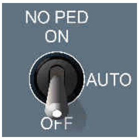
NO PED SW



The No Portable Electronic Devices signs come on in the cabin.



The No Portable Electronic Devices signs automatically come on in the cabin, when the landing gear is down and locked.

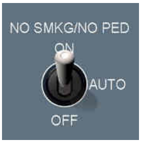


The No Portable Electronic Devices signs go off in the cabin.

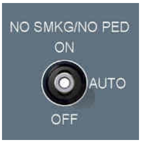
Depending on Operator customization of the CIDS, an associated low tone chime sounds in the cabin each time the No Portable Electronic Devices signs go on or off.

Ident.: DSC-33-50-20-GSIGN-00023339.0001001 / 07 MAY 18

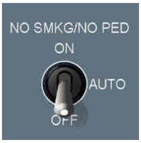
NO SMKG/NO PED SW ◁



The No Smoking and the No Portable Electronic Device signs come on in the cabin.



The No Smoking and the No Portable Electronic Devices signs automatically come on in the cabin, when the landing gear is down and locked.



The No Smoking and the No Portable Electronic Devices signs go off in the cabin.

Depending on Operator customization of the CIDS, an associated low tone chime sounds in the cabin each time the No Smoking and the No Portable Electronic Devices signs go on or off.

AIRCRAFT SYSTEMS

34 - NAVIGATION

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DSC-34-NAV-20 ADIRS

DSC-34-NAV-20-10 System Description

DSC-34-NAV-20-10-10 Overview

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ADIRS Monitoring.... A

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Position Accuracy and Navigation Accuracy....B
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DSC-34-NAV-30-20 Architecture

Architecture....A

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FLS....C
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KCCU........C
ND........D
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DSC-34-NAV-90 RNP AR

RNP AR........A

Localization Title	Toc Index	ID	Reason
DSC-34-NAV-20-20 IR1(2)(3) Mode Selector	B	1	Update of the control title from IR MODE SEL to IR MODE SELECTOR. This if for harmonization purpose with other Airbus aircraft.
DSC-34-NAV-20-20 IR1(2)(3) Mode Selector	B	2	Update of the control title from IR MODE SEL to IR MODE SELECTOR. This if for harmonization purpose with other Airbus aircraft.

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GENERAL

Ident.: DSC-34-NAV-10-00012626.0001001 / 15 JUL 14
Applicable to: ALL

The navigation system includes the following equipment that provides the flight crew with flight and navigation parameters:
- Three Air Data/Inertial Reference Units (ADIRUs)
- The standby instruments
- Two Multi-Mode Receivers (MMRs)
- Three Radio Altimeters (RAs)
- The radio navigation system
- Two Airport Navigation Functions (ANFs).

ADIRS

The ADIRS provide primary flight and navigation parameters that are independent of the ground navigation aids.

L2 For more information, *Refer to DSC-34-NAV-20-10-10 Overview*.

L1 STANDBY INSTRUMENTS

The standby instruments include the Integrated Standby Instrument System (ISIS) and the standby magnetic compass. They provide the flight crew with backup flight and navigation parameters, that are independent of the ground navigation aids, in the case of loss of the three ADIRS.

L2 For more information, *Refer to DSC-34-NAV-30-10 Overview*.

L1 MMR

GNSS, LOC and G/S antennas provide navigation data to MMRs.

Each MMR enables:
- Global Navigation Satellite System (GNSS) function, which provides navigation parameters independent of ground navigation aids
- Landing functions, which provide several approach and landing means.

L2 For more information about the GNSS, *Refer to DSC-34-NAV-40 General*.
For more information about the landing systems, *Refer to DSC-34-NAV-50 Overview*.

L1 RA

The RAs provide the height of the aircraft above ground level.

L2 For more information, *Refer to DSC-34-NAV-60-10 General*.

L1 RADIO NAVIGATION SYSTEM

The radio navigation system provides navigation parameters dependent of ground navigation aids.

L2 For more information, *Refer to DSC-34-NAV-70-10 General*.

L1 ANF

The ANF displays airport moving maps.

L2 For more information, *Refer to DSC-34-NAV-80-10 General*.

Overview

OVERVIEW

Ident.: DSC-34-NAV-20-10-10-00003265.0001001 / 06 AUG 14
Applicable to: ALL

The Air Data/Inertial Reference System (ADIRS) provides flight and navigation data. The ADIRS supplies temperature, anemometric, barometric, time and inertial data primarily to the EFIS (PFD and ND) and to the ISIS, in addition to other aircraft systems (FMS, FADECs, PRIMs, ECAM, etc.).

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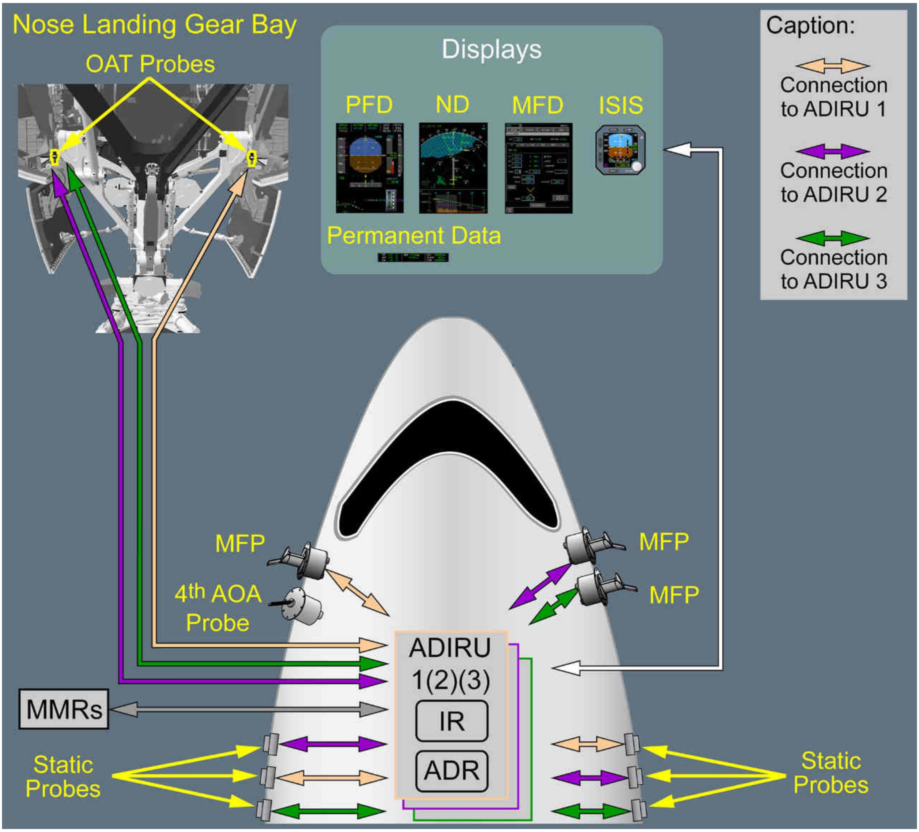
Architecture

ARCHITECTURE

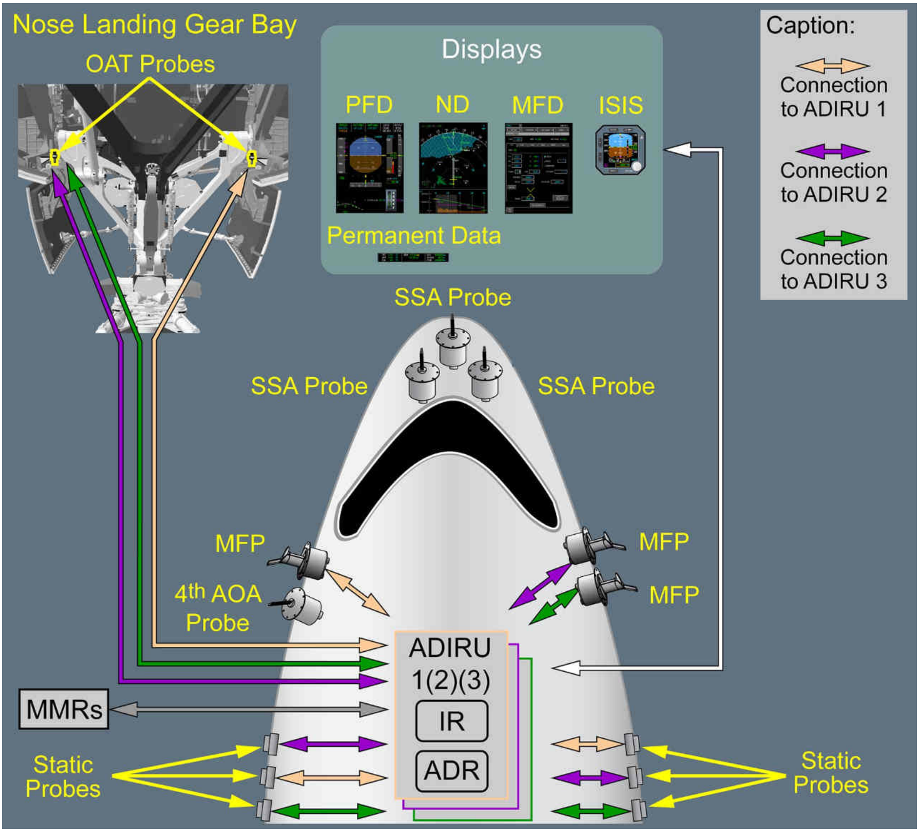
Ident.: DSC-34-NAV-20-10-20-10-00003266.0005001 / 07 JUN 19
Applicable to: ET-AWO, ET-AWP, ET-AYA, ET-AYB

ADIRS Architecture


Nose Landing Gear Bay
OAT Probes
Displays
PFD
ND
MFD
ISIS
Permanent Data
Caption:
Connection to ADIRU 1
Connection to ADIRU 2
Connection to ADIRU 3
MFP
4th AOA Probe
MFP
MFP
ADIRU 1(2)(3)
IR
ADR
MMRs
Static Probes
Static Probes

Ident.: DSC-34-NAV-20-10-20-10-00003266.0003001 / 07 JUN 19
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN

ADIRS Architecture


Nose Landing Gear Bay
OAT Probes
Displays
PFD
ND
MFD
ISIS
Permanent Data
Caption:
Connection to ADIRU 1
Connection to ADIRU 2
Connection to ADIRU 3
SSA Probe
SSA Probe
SSA Probe
MFP
MFP
MFP
4th AOA Probe
ADIRU 1(2)(3)
IR
ADR
MMRs
Static Probes
Static Probes

Ident.: DSC-34-NAV-20-10-20-10-00003269.0001001 / 06 AUG 14
Applicable to: ALL

ADIRU 1(2)(3)

There are three identical Air Data/Inertial Reference Units (ADIRUs).

Each ADIRU has two independent parts:
- The Air Data Reference (ADR)

L2 For more information, *Refer to DSC-34-NAV-20-10-30 Air Data Source & Display Reconfiguration*.

L1
- The Inertial Reference (IR).

L2 For more information, *Refer to DSC-34-NAV-20-10-40 General*.

L1 Each part (either the ADR or the IR) can operate independently.

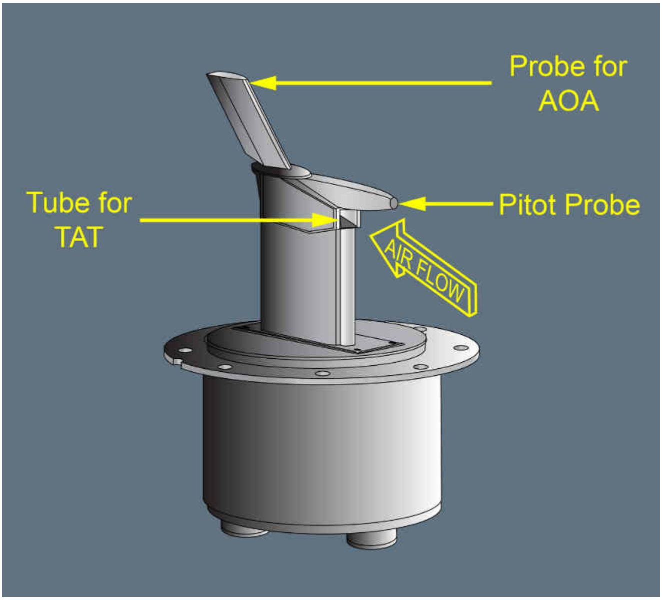
Ident.: DSC-34-NAV-20-10-20-10-00003270.0001001 / 06 AUG 14
Applicable to: ALL

MFP

The Multi Function Probes (MFPs) provide the Angle-Of-Attack (AOA), the Total Air Temperature (TAT), and the total pressure.
There are three MFPs.
Each ADIRU is connected to one MFP.
One MFP is on the left side of the aircraft, and the two other MFPs are on the right side of the aircraft.

L2 Each MFP sends a raw measurement of the AOA to the PRIMs for the Gust Load Alleviation (GLA) function (*Refer to DSC-27-10-30 Load Alleviation Function*).

MFP probe



Ident.: DSC-34-NAV-20-10-20-10-00003271.0001001 / 06 AUG 14
Applicable to: ALL

STATIC PROBES

The static probes provide the local static pressure.
There are 6 static probes.
Three static probes are on the right side of the aircraft, and three others are on the left side of the aircraft.
Each ADIRU is connected to two static probes, one on each side of the fuselage.

Ident.: DSC-34-NAV-20-10-20-10-00003272.0002001 / 07 JUN 19
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN

SSA PROBE

There are three Side Slip Angle (SSA) probes.
The SSA probes are on the nose of the aircraft.
The SSA probes are deactivated and do not provide any data to the aircraft.

Ident.: DSC-34-NAV-20-10-20-10-00012084.0001001 / 04 DEC 14
Applicable to: ALL

OAT PROBES

The Outside Air Temperature (OAT) probes provide the static air temperature on ground, during takeoff and landing.
There are two OAT probes.
The OAT probes are in the nose landing gear bay.

L2 The three ADIRUs use the data of the OAT probes:
- The OAT 1 is connected to the ADIRU 1
- The OAT 2 is connected to the ADIRU 2 and ADIRU 3.

Ident.: DSC-34-NAV-20-10-20-10-00012085.0001001 / 02 APR 15
Applicable to: ALL

FOURTH AOA PROBE

The fourth AOA probe provides the flight control computers with a raw measurement of the angle-of-attack.
The fourth AOA probe is on the left side of the aircraft.

Ident.: DSC-34-NAV-20-10-20-10-00003273.0001001 / 06 AUG 14
Applicable to: ALL

MMRs

Two Multi Mode Receivers (MMRs) provide the ADIRS with the GNSS data.
L2 For more information about the GNSS data that the ADIRS uses, *Refer to DSC-34-NAV-40 GNSS Data to ADIRS*.
L1 Each ADIRU is connected to both MMRs.

Ident.: DSC-34-NAV-20-10-20-10-00016465.0001001 / 06 AUG 14
Applicable to: ALL

DISPLAYS

The ADIRS data appears on the:
- PFD
L2 For more information, *Refer to DSC-34-NAV-20-20 PFD*.
- L1 ND
L2 For more information, *Refer to DSC-34-NAV-20-20 ND*.
- L1 ISIS
L2 For more information,*Refer to DSC-34-NAV-20-20 ISIS*.

L1 - MFD

L2 For more information,*Refer to DSC-34-NAV-20-20 MFD*.

L1 - Permanent Data

L2 For more information,*Refer to DSC-34-NAV-20-20 Permanent Data*.

ADR

ADR

Applicable to: ALL

Ident.: DSC-34-NAV-20-10-30-10-00021270.0002001 / 07 JUN 19

GENERAL

The ADR provides the following air data:
- Total pressure
- Static pressure
- Altitude
- Mach number
- Computed airspeed
- True airspeed
- Total air temperature
- Static air temperature
- Vertical speed
- Angle-of-attack.

Each ADR is connected to the following probes:
- One Multi Function Probe (MFP)
- Two static probes
- One Outside Air Temperature (OAT) probe.

All the probes connected to the ADRs , except the OAT probes, are automatically heated to prevent ice formation.

L2 For more information, *Refer to DSC-30-20-10 Probe Heating*.

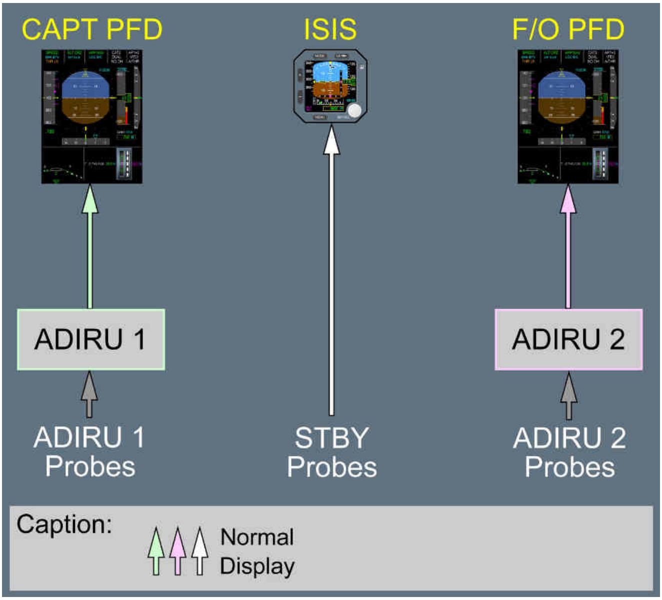
Ident.: DSC-34-NAV-20-10-30-10-00016338.0001001 / 06 AUG 14

AIR DATA SOURCE AND DISPLAY RECONFIGURATION

The ADIRS has three fully segregated sources of air data parameters.
With the ISIS system that is independent from the ADIRS, the aircraft has four fully segregated sources of air data.
The CDS uses the ADIRS for display on the PFD. In case of loss of air data from ADIRS, the CDS can also use the ISIS for display on the PFD.

L2 For more information about the display of ISIS air data on the PFD, *Refer to DSC-34-NAV-20-30 Display of ISIS Speed and Altitude Indications*.

Display Architecture

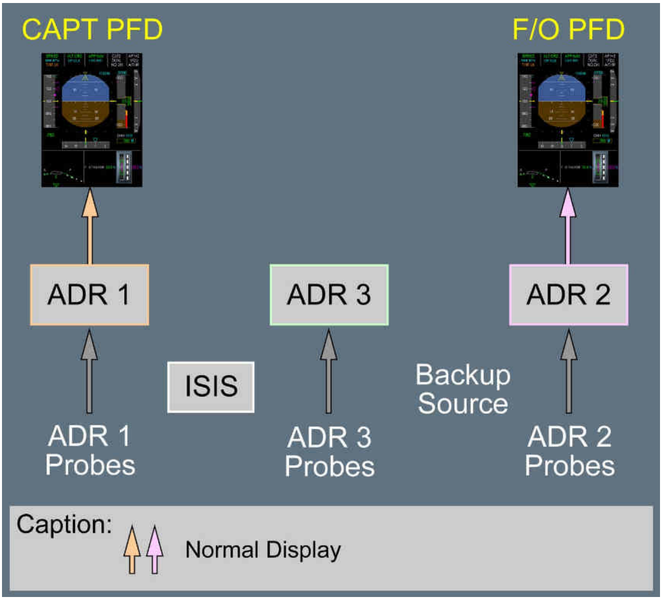

CAPT PFD
ISIS
F/O PFD
ADIRU 1
ADIRU 2
ADIRU 1
Probes
STBY
Probes
ADIRU 2
Probes
Caption:
Normal
Display

L1 For airspeed and altitude, the CDS can also use a backup source of air data based on AOA probes and engines parameters.

L2 For more information about the backup airspeed and altitude indications, *Refer to DSC-34-NAV-20-30 Backup Speed and Backup Altitude Indications*.

L1 The illustration below shows the different automatic reconfigurations of the PFD that exist.

Air Data Display — Automatic Reconfiguration (for airspeed and altitude)


CAPT PFD
F/O PFD
ADR 1
ADR 3
ADR 2
ISIS
Backup Source
ADR 1 Probes
ADR 3 Probes
ADR 2 Probes
Caption:
Normal Display

The display reconfiguration is done automatically (for all air data sources) and, in specific cases, manually (for backup air data source).

L2 For more information about the ADIRS monitoring that enables the automatic reconfiguration, *Refer to DSC-34-NAV-20-10-50 ADIRS Monitoring*.

For more information about the backup manual reconfiguration, *Refer to DSC-34-NAV-20-30 Backup Speed and Backup Altitude Indications*.

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IR

IR

Applicable to: ALL

Ident.: DSC-34-NAV-20-10-40-10-00003296.0001001 / 06 AUG 14

GENERAL

The IR provides the following inertial reference data:
- Navigation information

L3 The navigation information includes:
  - The position
  - The ground speed
  - The barometric inertial vertical speed
  - The speeds and accelerations all along the aircraft and earth axes.

L1
- Attitude information

L3 The attitude information includes:
  - The pitch and roll angles
  - The pitch and roll rotation rates
  - The pitch and roll rotation accelerations.

L1
- Heading information.

L3 The heading information includes:
  - The magnetic heading and the true heading
  - The magnetic track and the true track
  - The yaw rotation rates
  - The yaw rotation acceleration.

L1 Each IR uses data from its internal gyrometer and accelerometer sensors.
Each IR also receives GNSS data from both MMRs for initial alignment, and for the computation of the Global Positioning and Inertial Reference System (GPIRS) position.

L2 For more information about:
- The GNSS data that the ADIRS uses, *Refer to DSC-34-NAV-40 GNSS Data to ADIRS*
- The GPIRS position, *Refer to DSC-34-NAV-20-10-60 Position Computation*.
- The IR alignment, *Refer to IR Alignment*

L1 The flight crew can check the status, deviation, and drift of each IR on the FMS POSITION/IRS page of the MFD.

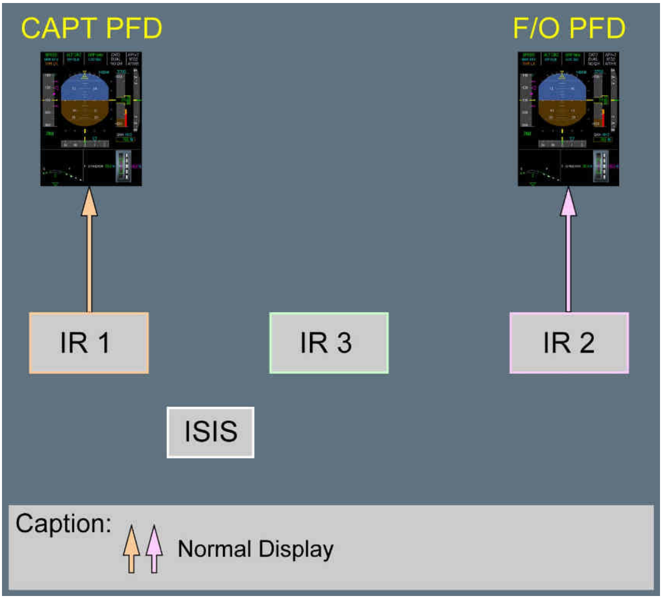
Ident.: DSC-34-NAV-20-10-40-10-00021422.0001001 / 06 AUG 14

INERTIA DISPLAY RECONFIGURATION

For inertial data, the PRIMs and the CDS can also use the ISIS data.

L2 For more information about the display of ISIS air data on the PFD, *Refer to DSC-34-NAV-20-30 Display of ISIS Inertial Data*.

Inertial Data Display — Automatic Reconfiguration



Ident.: DSC-34-NAV-20-10-40-10-00003297.0001001 / 06 NOV 14

IR MODES

Each IR can operate in the following two modes:
- NAV mode
- ATT mode.

The flight crew can change the IR mode via the IR mode selector.

L2 For more information, *Refer to IR 1(2)(3) mode selector*.

L1 NAV MODE

NAV mode is the normal mode of operation of the IR after alignment.
In NAV mode, the IR provides navigation, attitude and heading data.

ATT MODE

ATT mode is the abnormal mode of operation of the IR.
In ATT mode, the IR only provides the attitude and the heading data.
The heading data is only available after the flight crew enters the current heading on the FMS POSITION/IRS page of the MFD.

L2 In ATT mode, heading will drift over time. The flight crew must monitor and periodically correct the heading.
For more information about abnormal operations in ATT mode, *Refer to DSC-34-NAV-20-30 ATT Only Operation*.

L1 The flight crew can only recover the NAV mode on ground after a complete alignment.
When an IR is in ATT mode, the PFD automatically displays another IR in NAV mode.

L2 For more information, *Refer to DSC-34-NAV-20-10-40 Inertia Display Reconfiguration*.

Ident.: DSC-34-NAV-20-10-40-10-00003294.0001001 / 08 JUL 19

IR ALIGNMENT

The IRs must be aligned in order to operate in NAV mode and continuously provide the aircraft position.
To start an alignment, the IRs must be initialized to an appropriate position, from which the IRs determine the subsequent aircraft positions during flight.
To perform an alignment, the aircraft must be stopped. In the case of aircraft movement during the IRS alignment, the flight crew must perform a new full alignment.

Note: *The alignment during engine start or while engines are running is possible.*

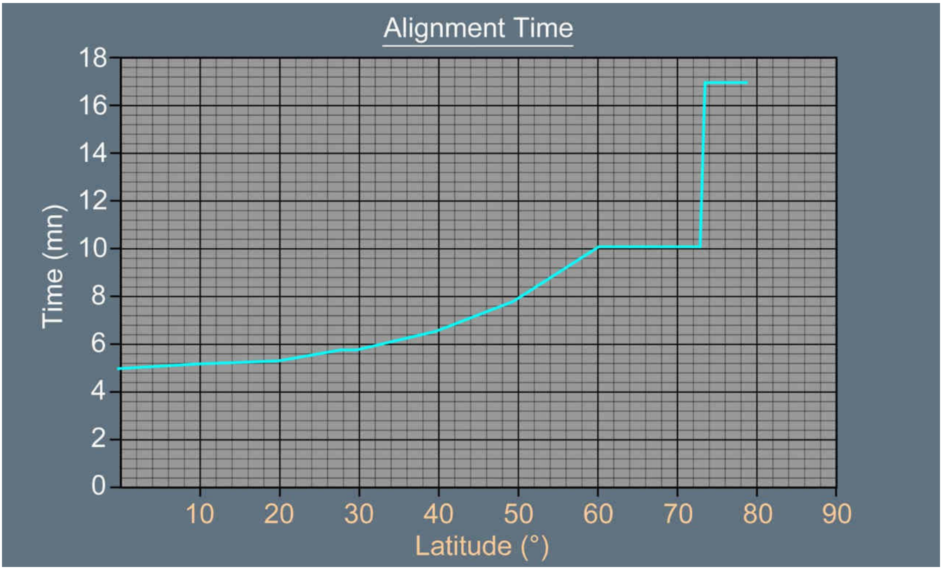
The flight crew may decide to perform:

- A complete alignment, or

L2 A complete alignment lasts between 5 and 17 min, depending on the aircraft latitude.

L3 A complete alignment is only possible between 82 ° N and 78 ° S.

Alignment Time



L1 - A fast alignment.

L2 A fast alignment lasts approximately 30 s.

L1 COMPLETE ALIGNMENT

During a complete alignment, the IR automatically determines the following inertial reference data:

- The navigation information
- The attitude information
- The heading information.

The IR starts a complete alignment at power-up, as soon as the flight crew sets the IR mode selector to NAV.

L2 To perform a new complete alignment with the IR already on, the flight crew must perform the following actions, in the following sequence:
- Turn off the IR
  To turn off the IR, the flight crew must set the IR mode selector to OFF for more than 5 s.
- Set the IR mode selector to NAV.

L3 During a complete alignment, the IR uses gravity to determine the aircraft attitude. Then, the IR determines the true heading, and estimates the current latitude.

L1 When the IR starts a complete alignment, the IR initializes the aircraft position. There are two types of position initialization:
- If the GNSS is available, the initialization is automatic, and uses the GNSS position. No flight crew action is necessary
- If the GNSS is not available, or if the flight crew wants to override the automatic initialization, manual initialization is possible, at any moment during the alignment phase.
  To perform manual initialization, the flight crew must enter the required position on the FMS POSITION/IRS page of the MFD.
  L2 For more information, *Refer to ALIGN ON OTHER REF function*.

L3 During a complete alignment, the IR checks the GNSS position (or the manually-entered position) with the last-known aircraft position stored in the ADIRU, and with the IR computed latitude.

L1 FAST ALIGNMENT

The flight crew can perform a fast alignment, only if the IR is in NAV mode.
During a fast alignment, the IR automatically updates the aircraft ground speed.
L2 During a fast alignment, the IR resets the ground speed to 0. Therefore, the IR computes the navigation data with updated ground speed.
L3 During a fast alignment, the IR does not update the latitude, attitude and heading.
L1 The IR starts a fast alignment, when the flight crew sets the IR mode selector from NAV to OFF, and then back to NAV within 5 s.
The IR updates the aircraft position, only if the flight crew enters a position via the ALIGN ON OTHER REF function on the FMS POSITION/IRS page of the MFD.
L2 For more information, *Refer to ALIGN ON OTHER REF function*.
L3 If the flight crew enters a position on the FMS POSITION/IRS page on the MFD, the IR checks the new position with the last-known aircraft position stored in the ADIRU.

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ADIRS Monitoring

ADIRS MONITORING

Ident.: DSC-34-NAV-20-10-50-00016563.0003001 / 18 MAR 19
Applicable to: ALL

The ADIRS provides essential air data and inertial reference data for many aircraft systems. The below systems continuously monitor this data:

- The ADIRUs

L2 If the ADIRUs reject one or more air data sources, the ECAM triggers:

- One or more of the following alerts:
  - ■ NAV ADR 1(2)(3) FAULT (*Refer to procedure*)
  - ■ NAV ADR 1+2(1+3)(2+3) FAULT (*Refer to procedure*)
  - ■ NAV ADR 1+2+3 DATA DEGRADED (*Refer to procedure*)
  - ■ NAV ADR 1+2+3 FAULT (*Refer to procedure*)
  - ■ NAV IR 1(2)(3) FAULT (*Refer to procedure*)
  - ■ NAV IR 1+2(1+3)(2+3) FAULT (*Refer to procedure*)
  - ■ NAV IR NOT ALIGNED (*Refer to procedure*)
  - ■ NAV ISIS FCUB BARO REF DISAGREE (*Refer to procedure*)

L3
- One or more of the following dispatch messages:
  - ■ NAV ADR 1(2)(3) STATIC PROBE (*Refer to MMEL/ME-DM-NAV NAV ADR 1(2)(3) STATIC PROBE*)
  - ■ NAV GNSS 1(2)(1+2) REJECTED BY IRs (*Refer to MMEL/ME-DM-NAV NAV GNSS 1(2)(1+2) REJECTED BY IRs*)
  - ■ NAV MFP 1(2)(3) TAT (*Refer to MMEL/ME-DM-NAV NAV MFP 1(2)(3) TAT*)
  - ■ NAV OAT 1(2) PROBE (*Refer to MMEL/ME-DM-NAV NAV OAT 1(2) PROBE*)
  - ■ NAV SIDESLIP PROBE 1(2)(3) (*Refer to MMEL/ME-DM-NAV NAV SIDESLIP PROBE 1(2)(3)*).

L1
- The PRIMs

L2 If the PRIMs reject one or more sources of air data or inertial reference data, the ECAM triggers:

- One or more of the following alerts:
  - ■ AUTO FLT A/THR OFF (*Refer to procedure*)
  - ■ AUTO FLT AP OFF (*Refer to procedure*)
  - ■ F/CTL DIRECT LAW (PROT LOST) (*Refer to procedure*)
  - ■ NAV AIR DATA REDUNDANCY LOST (*Refer to procedure*)
  - ■ NAV AOA DISAGREE (*Refer to procedure*)
  - ■ NAV ISIS ALT(ATT)(SPD) UNRELIABLE (*Refer to procedure*)
  - ■ NAV ISIS ALT(SPD) RECOVERED (*Refer to procedure*)
  - ■ SURV REACTIVE W/S DET FAULT (*Refer to procedure*).

L3
- One or more of the following dispatch messages:
  - ■ NAV ADR 1(2)(3) REJECTED BY PRIMs (*Refer to MMEL/ME-DM-NAV NAV ADR 1(2)(3) REJECTED BY PRIMs*)
  - ■ NAV AOA 4 PROBE (*Refer to MMEL/ME-DM-NAV NAV AOA 4 PROBE*)
  - ■ NAV IR 1(2)(3) REJECTED BY PRIMs (*Refer to MMEL/ME-DM-NAV NAV IR 1(2)(3) REJECTED BY PRIMs*)
  - ■ NAV ISIS INERT DATA REJECTED BY PRIMs (*Refer to MMEL/ME-DM-NAV NAV ISIS INERT DATA REJECTED BY PRIMs*)
  - ■ NAV ISIS AIR DATA REJECTED BY PRIMs (*Refer to MMEL/ME-DM-NAV NAV ISIS AIR DATA REJECTED BY PRIMs*)

L1 The PRIMs send information about the rejection to the CDS for display reconfiguration.

L3 The PRIMs monitor the air and inertial data: when one source diverges from the median value, above a certain threshold, the PRIMs automatically reject this source, and the PRIMs continue to operate with the remaining sources. Based on this monitoring, the CDS automatically reconfigures the data sources. It ensures the display of consistent values on both PFDs.

The PRIMs continue to monitor the rejected air data source. If the PRIMs confirm that a rejected air data source is back to normal (compared to two other valid sources), the automatic reconfiguration of the PFD display may allow to reuse this air data source.

L1 The PRIMs use the ADIRUs for the flight control laws.

L2 For the flight control laws, the PRIMs cannot reuse a rejected air or inertial data source even if this source is back to normal. In case of rejection of all ADRs or IRs, the PRIMs reconfigure the flight control law to alternate law. For more information, *Refer to DSC-27-10-40 Alternate Law*.

L1 - The FADECs

L3 Each FADEC monitors the computed air data from the three ADIRUs, the ISIS, and the engine sensors, for its air data selection.

L1 - The FWS.

L2 If the FWS detects a difference between two values or a failure, the ECAM triggers:

- One or more of the following alerts:
  - ■ NAV CAPT & F/O ATT DISAGREE (*Refer to procedure*) associated with the CHECK ATT message on the PFD
  - ■ NAV CAPT & F/O HDG DISAGREE (*Refer to procedure*) associated with the CHECK HDG message on the PFD and ND
  - ■ NAV GNSS/ACFT POS DISAGREE (*Refer to procedure*)
  - ■ NAV CAPT & F/O BARO VALUE DISAGREE (*Refer to procedure*)
  - ■ NAV CAPT & F/O BARO REF DISAGREE (*Refer to procedure*)
- L3 The following dispatch message:
  - ■ NAV RESIDUAL AIRSPEED 1(2)(3) (*Refer to MMEL/ME-DM-NAV NAV RESIDUAL AIRSPEED 1(2)(3)*).

The FWS compares the air data and inertial data displayed on the CAPT inner DU with the data displayed on the F/O inner DU.

L2 The FWS also monitors the temperature probes and residual airspeed to detect failures.

L1 The CDS receives:

- Air data and inertial data from four sources: the ADIRS and the ISIS
- The backup air data from the backup sources: the FADECs or the AOA Probes
- Confirmation that this data is accurate from the PRIMs.

When a source is rejected or inoperative, the CDS automatically reconfigures the PFD display. It reconfigures as below:

- In the case of failure that affects up to three air data and inertial data sources, the PFD display uses the remaining sources
- In the case of failure of all air data sources, the PFD display uses the backup air data source.

L2 For more information about the backup speed and altitude indications, *Refer to DSC-34-NAV-20-30 Backup Speed and Backup Altitude Indications*.

Aircraft Position

POSITION COMPUTATION

Ident.: DSC-34-NAV-20-10-60-00012087.0001001 / 06 AUG 14
Applicable to: ALL

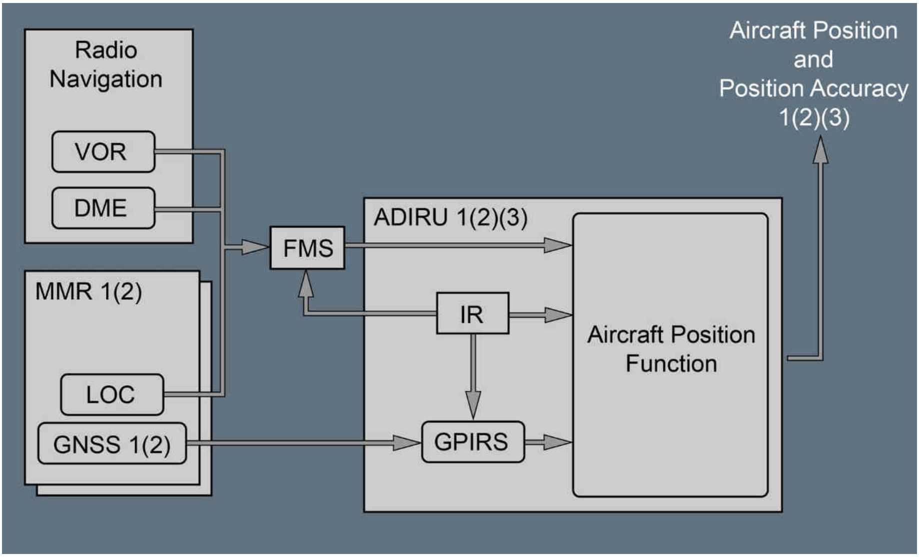
Each ADIRU computes its own aircraft position, and the associated position accuracy, with the three following sources:
- The IRs
- The GNSS
- The radio navaids (VOR, DME, LOC).

L2 The ADIRS provides the following parameters:
- Position (latitude and longitude)
- North-South and East-West horizontal speeds and accelerations
- True track angle
- Ground speed
- Time (*Refer to Time Function*)
- Position accuracy (*Refer to DSC-34-NAV-20-10-60 Position Accuracy and Navigation Accuracy*).

L1 The aircraft position function of each ADIRU provides the aircraft systems with the most accurate position that is available, using the following priority:
- The consolidated GPIRS position
- Its own GPIRS position
- The IR/radio position
  The FMS provides the IR/radio position
- Its own IR position.

L2 ADIRU 1 provides the aircraft position to FMS 1, and ADIRU 2 provides the aircraft position to FMS 2

Aircraft Position


Radio Navigation
VOR
DME
MMR 1(2)
LOC
GNSS 1(2)
FMS
ADIRU 1(2)(3)
IR
GPIRS
Aircraft Position Function
Aircraft Position and Position Accuracy 1(2)(3)

L1 GPIRS AND CONSOLIDATED GPIRS POSITION

When the GNSS data is available, each ADIRU uses the GNSS and the IR sources to compute an aircraft position. This hybrid position, that includes the GNSS position and of IR position, is referred to as the GPIRS position.
When the GPIRS positions from the three ADIRUs are available, the ADIRS provides a consolidated GPIRS position.

L2 The ADIRS compares the three GPIRS positions, and selects the most accurate position to be the consolidated GPIRS position.

L1 IR/RADIO POSITION

The FMS computes a position based on all the available IRs sources, and on the available radio navaids. This position, that includes the IRs positions and the radio position, is referred to as the IR/radio position.

L2 If the GNSS data is not available, or is deselected via the MFD, each ADIRU provides the IR/radio position from the FMS.

L1 IR POSITION

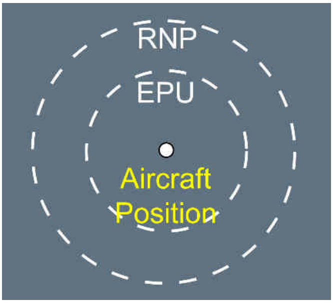
Each ADIRU computes a position based only on its IR source, referred to as the IR position.

L2 If the GNSS, the radio navaids and one IR data are not available, each remaining ADIRU provides its IR position.

POSITION ACCURACY AND NAVIGATION ACCURACY

Ident.: DSC-34-NAV-20-10-60-00016348.0001001 / 03 AUG 16
Applicable to: ALL

EPU - RNP



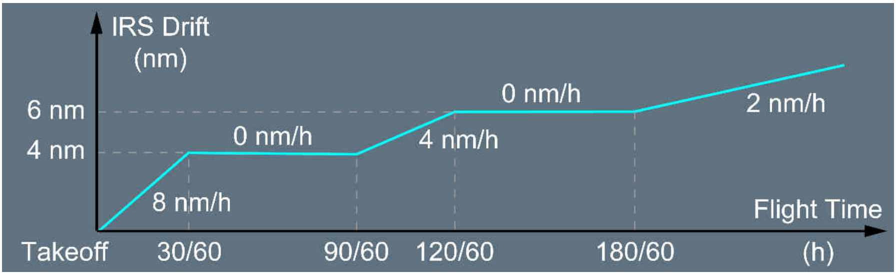
ESTIMATED POSITION UNCERTAINTY (EPU)

Each ADIRU continuously computes the Estimated Position Uncertainty (EPU) that is related to the computed aircraft position.

L2 The EPU corresponds to the radius (in nautical miles) of the circle around the computed aircraft position in which the real aircraft position is during 95 % of the time.

L3 Each ADIRU provides the position with the best EPU to the other aircraft systems.

L2 When the aircraft position is based only on IRs, the figure shows the mean inertial EPU evolution:



L1 REQUIRED NAVIGATION PERFORMANCE (RNP)

The FMS uses the RNP value, together with the EPU, to define the navigation accuracy.
The FMS has a default RNP value.

L2 The following table indicates the FMS-default RNP values:

Flight segment	FMS - default RNP
En route and oceanic	2 NM
Terminal and takeoff	1 NM
Approach	GPS and RNAV 0.3 NM Other cases 0.5 NM

L1 A terminal area procedure may have an associated specific RNP value, defined in the navigation database. If this procedure is entered, this RNP value overwrites the default FMS value.
The flight crew can manually overwrite the FMS default or terminal area procedure value.

L2 When the flight crew enters an RNP value that is more than the existing navigation database value, the PROC RNP IS XX.XX message appears on the MFD (in the FMS message area). If there is no navigation database value and the flight crew-entered value is more than the area default value, the AREA RNP IS XX.XX message appears on the MFD (in the FMS message area).
Both messages can also appear, if the navigation database value or area default value becomes less than the flight crew-entered value, when the flight area changes.

Note: The RNP shall be in accordance with the specified RNP values of the navigation and approach charts (if an RNP is specified).

L1 EVALUATION OF NAVIGATION ACCURACY

NAVIGATION ACCURACY: HIGH, LOW

The FMS continuously compares the current EPU from the ADIRS with the current RNP, and defines the navigation accuracy as:
- HIGH, if the EPU is less than or equal to the RNP
- LOW, if the EPU is more than the RNP.

L2 If the navigation mode is not IRS/GNSS:
- The NAV ACCUR DOWNGRADED message will appear on the MFD (in the FMS message area) and on the ND, when the navigation accuracy changes from HIGH to LOW
- The NAV ACCUR UPGRADED message will appear on the MFD (in the FMS message area) and on the ND, when the navigation accuracy changes from LOW to HIGH.

L1 NAV PRIMARY

The aircraft is in NAV PRIMARY, when the two following conditions are satisfied:
- The navigation mode is IRS/GNSS, and
- The navigation accuracy is HIGH.

If at least one of the two above-listed conditions is no longer satisfied, the aircraft is no longer in NAV PRIMARY: The NAV PRIMARY LOST message appears on the MFD (in the FMS message area) and on the ND. When this message appears, the automatic position reporting of the ADS-B function is lost.

Note: During a non-precision approach that is flown with the FLS function, the NAV PRIMARY LOST condition degrades the FLS capability. The triple-click audio indicator sounds.

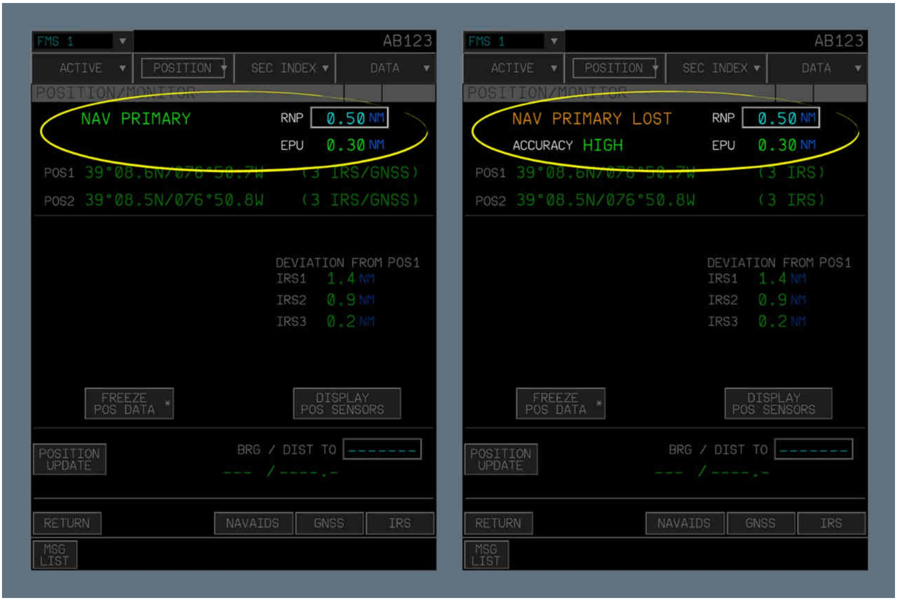
When both above-listed conditions are satisfied again, the NAV PRIMARY message appears on the MFD (in the FMS message area) and on the ND.

CONTROLS AND INDICATORS

On the MFD, the FMS POSITION/MONITOR page displays the RNP, the EPU, and the NAV PRIMARY status.

Note: The MFD POSITION/MONITOR page also displays the navigation accuracy, if the aircraft is in NAV PRIMARY LOST.

POSITION/MONITOR Page



NAV PRIMARY RNP 0.50 NM
EPU 0.30 NM
POS1 39°08.6N/076°50.7W (3 IRS/GNSS)
POS2 39°08.5N/076°50.8W (3 IRS/GNSS)
DEVIATION FROM POS1
IRS1 1.4 NM
IRS2 0.9 NM
IRS3 0.2 NM

NAV PRIMARY LOST RNP 0.50 NM
ACCURACY HIGH EPU 0.30 NM
POS1 39°08.6N/076°50.7W (3 IRS)
POS2 39°08.5N/076°50.8W (3 IRS)
DEVIATION FROM POS1
IRS1 1.4 NM
IRS2 0.9 NM
IRS3 0.2 NM

FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
POSITION/MONITOR
FREEZE POS DATA
DISPLAY POS SENSORS
POSITION UPDATE
BRG / DIST TO
RETURN
NAVAIDS
GNSS
IRS
MSG LIST

L2 For more information, *Refer to DSC-22-FMS-20-20-20 POSITION/MONITOR Page*.

NAVIGATION MODES

Ident.: DSC-34-NAV-20-10-60-00016528.0001001 / 06 AUG 14
Applicable to: ALL

The ADIRS determines the navigation mode.
The navigation mode depends on the sources that the ADIRS uses for the aircraft position computation.

L2 For more information about the computation of the aircraft position, *Refer to DSC-34-NAV-20-10-60 Position Computation*

L1 The navigation mode is displayed on the FMS POSITION/MONITOR page of the MFD.

L2 For more information about the FMS POSITION/MONITOR page, *Refer to DSC-34-NAV-20-20 MFD*

L1

Navigation mode	Aircraft position
3 IRS/GNSS	Consolidated GPIRS.
1 IRS/GNSS	GPIRS from one ADIRU.
1(3) IRS/DME/DME 1(3) IRS/VOR/DME 1(3) IRS/LOC 1(3) IRS/DME/LOC 1(3) IRS/VOR/LOC	IR/radio position from the FMS.
3 IRS	IR/radio position from the FMS, with no radio navaids available.
1 IRS	IR position from one ADIRU.

Time Function

TIME FUNCTION

Ident.: DSC-34-NAV-20-10-70-00012086.0001001 / 06 AUG 14
Applicable to: ALL

The time function of the ADIRS provides the aircraft time reference (UTC time and date) to the other aircraft systems.

L3 Each IR hosts the time function.

L1 The permanent data displays the UTC time. In addition, the permanent data can display the date.
The flight crew selects the data to be displayed on the permanent data via the PERM DATA SETUP list on the FMS POSITION/TIME page of the MFD.
The time function can operate either in AUTO mode or in MANUAL mode.
The AUTO mode is the default mode of operation. The flight crew can change the mode of operation via the ACFT TIME REF option list on the FMS POSITION/TIME page of the MFD.

L2 For more information about the FMS POSITION/TIME page on the MFD, *Refer to DSC-22-FMS-20-20-20 POSITION/TIME Page*.

L1 AUTO MODE

In AUTO mode, the ADIRS provide the aircraft time reference from the GNSS data, if available.
If the GNSS data is not available, the three ADIRUs provide a time reference based on their internal clock. The ADIRUs use the last valid data of the GNSS to initialize their own internal clock.

L2 If the GNSS data becomes available again, the ADIRS will provide the GNSS time reference.

L1 MANUAL MODE

In MANUAL mode, the ADIRUs provides the aircraft time reference from their own internal clock. The ADIRUs use the time data entered by the flight crew to initialize their own internal clock. The flight crew enters the time data on the FMS POSITION/TIME page of the MFD.

L2 If the time function is in MANUAL mode and the GNSS data is available, the MFD displays the CHECK TIME REF message in the FMS message area.

L1 *Note:* *The ATC datalink applications are degraded if the time function is in MANUAL mode. For more information, Refer to DSC-46-ATC-30 Manual Time Setting.*
The RNP capability is downgraded if the time function is in MANUAL mode.

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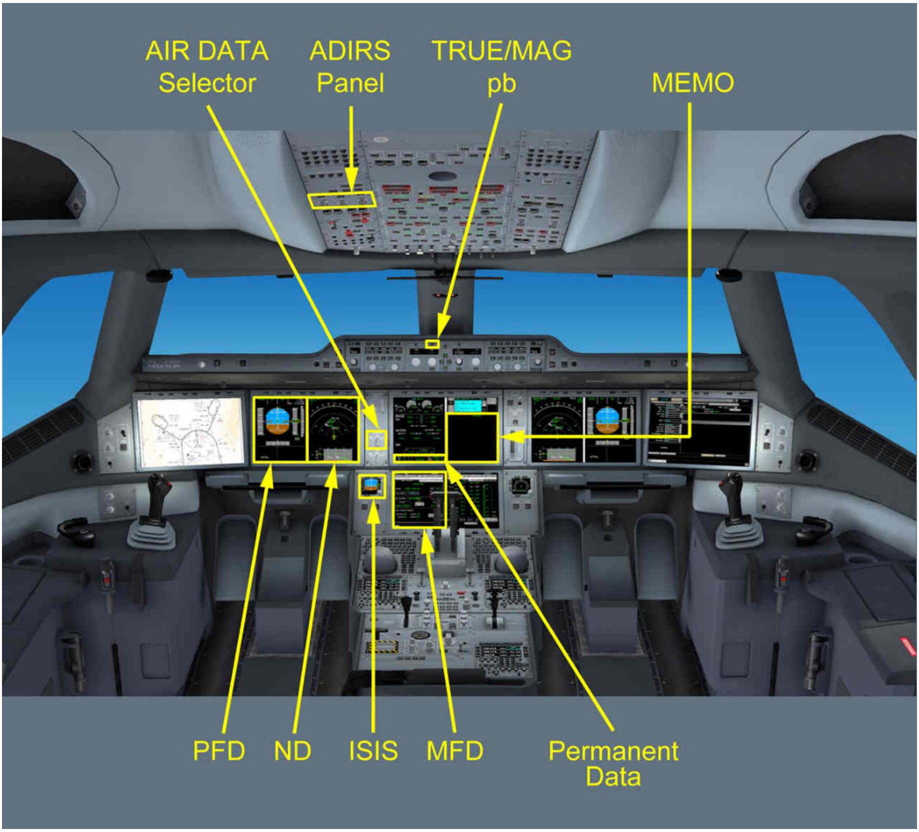
COCKPIT VIEW

Ident.: DSC-34-NAV-20-20-00003281.0001001 / 06 AUG 14
Applicable to: ALL

Cockpit View

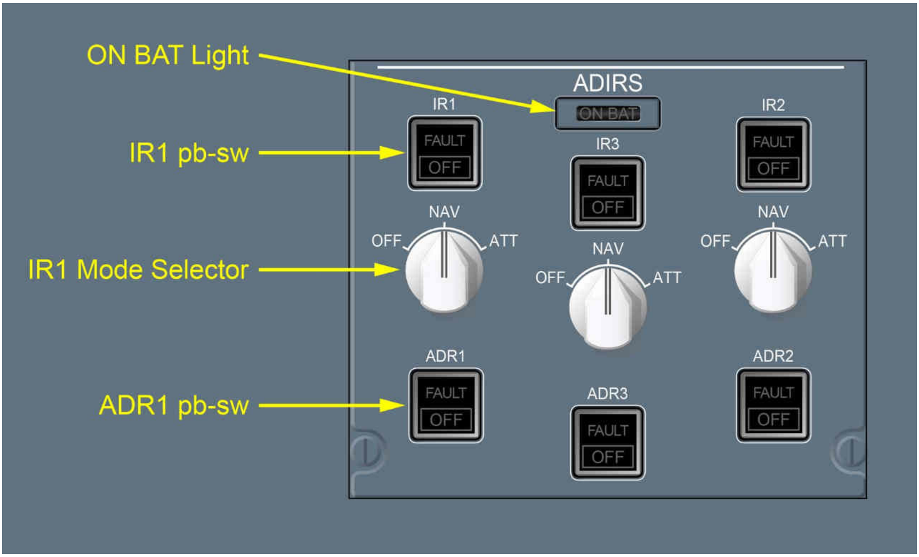

AIR DATA Selector
ADIRS Panel
TRUE/MAG pb
MEMO
PFD
ND
ISIS
MFD
Permanent Data

ADIRS PANEL

Applicable to: ALL

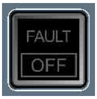
Ident.: DSC-34-NAV-20-20-10-00003282.0001001 / 06 AUG 14

ADIRS Panel

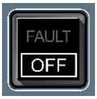

ON BAT Light
IR1 pb-sw
IR1 Mode Selector
ADR1 pb-sw
ADIRS
ON BAT
IR1
IR2
IR3
FAULT
OFF
NAV
OFF
ATT
ADR1
ADR2
ADR3

Ident.: DSC-34-NAV-20-20-10-00003286.0001001 / 06 AUG 14

IR1(2)(3) PB

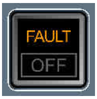


IR 1(2)(3) is on.
When pressed, turns off the IR 1(2)(3).



IR 1(2)(3) is off.
When pressed, turns on the IR 1(2)(3).

L12



IR 1(2)(3) is failed.
Associated with the following ECAM alert: NAV IR 1(2)(3) FAULT (*Refer to procedure*).
When pressed, turns off the IR 1(2)(3). The FAULT light goes off.

Ident.: DSC-34-NAV-20-20-10-00003287.0001001 / 06 AUG 14

ADR1(2)(3) PB

ADR 1(2)(3) is on.
When pressed, turns off the ADR 1(2)(3).

ADR 1(2)(3) is off.
When pressed, turns on the ADR 1(2)(3).

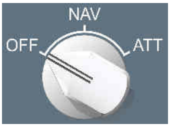
L12

ADR 1(2)(3) is failed.
Associated with the following ECAM alert: NAV ADR 1(2)(3) FAULT (*Refer to procedure*).
When pressed, turns off the ADR 1(2)(3). The FAULT light goes off.

Ident.: DSC-34-NAV-20-20-10-00003288.0001001 / 03 JUL 20

1
2

IR1(2)(3) MODE SELECTOR



ADIRU 1(2)(3) is not energized.
Both the IR 1(2)(3) data and the ADR 1(2)(3) data are not available.

IR 1(2)(3) operates in NAV mode.
IR 1(2)(3) provides full inertial data to the aircraft systems.

Note: *ADR 1(2)(3) provides full air data to the aircraft systems.*

L12

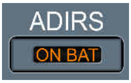
IR 1(2)(3) operates in ATT mode.
IR 1(2)(3) only provides attitude and heading data (if entered by the flight crew). The navigation data are not available.
For more information about the ATT mode, *Refer to DSC-34-NAV-20-10-40 IR Modes*.

Note: *ADR 1(2)(3) provides full air data to the aircraft systems.*

Ident.: DSC-34-NAV-20-20-10-00012088.0001001 / 06 AUG 14

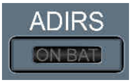
ON BAT LIGHT

L12



Batteries supply at least one ADIRU.

Note: *When the aircraft is on the ground, if at least one ADIRU is supplied by the aircraft batteries, an external horn sounds.*

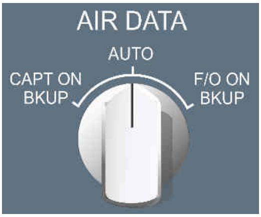


One of the following applies:
- All three ADIRUs are on, and not supplied by batteries, or
- All three ADIRUs are off.

AIR DATA SELECTOR

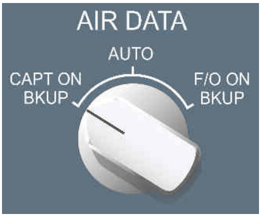
Ident.: DSC-34-NAV-20-20-00003290.0001001 / 06 AUG 14
Applicable to: ALL

L12



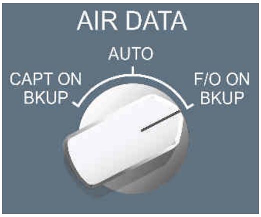
The CDS automatically reconfigures the PFD based on the availability of the air data sources.
For more information, *Refer to DSC-34-NAV-20-10-30 Air Data Source & Display Reconfiguration*.

L12



The PRIMs provide the backup speed and altitude (computed from FADEC data) to the PFD of the Captain. This only changes the air data used for associated PFD and has no effect on the air data used for flight control law.
The CAPT ON BKUP memo appears on the WD.
If the flight crew has selected AP 1, the NAV CAPT PFD ON BKUP alert is displayed on the WD.
For more information about the NAV CAPT PFD ON BKUP alert, *Refer to PRO-ABN-NAV NAV CAPT(F/O) PFD ON BKUP*.
This selector position may be used for the NAV UNRELIABLE AIR SPEED INDICATION, *Refer to PRO-ABN-NAV [ABN] NAV UNRELIABLE AIR SPEED INDICATION*.

L12



The PRIMs provide the backup speed and altitude (computed from FADEC data) to the PFD of the First Officer. This only changes the air data used for associated PFD and has no effect on the air data used for flight control law.

The F/O ON BKUP memo appears on the WD.

If the flight crew has selected AP 2, the NAV F/O PFD ON BKUP alert is displayed on the WD.

For more information about the NAV F/O PFD ON BKUP alert, *Refer to PRO-ABN-NAV NAV CAPT(F/O) PFD ON BKUP*.

This selector position may be used for the NAV UNRELIABLE AIR SPEED INDICATION, *Refer to PRO-ABN-NAV [ABN] NAV UNRELIABLE AIR SPEED INDICATION*.

L2 For more information about the backup speed and altitude indications on the PFD, *Refer to DSC-34-NAV-20-30 Backup Speed and Backup Altitude Indications*.

ISIS

Ident.: DSC-34-NAV-20-20-00016470.0001001 / 06 AUG 14
Applicable to: ALL

For information about the ADIRS data on the ISIS, *Refer to Navigation Indications on ISIS*

MEMO

Applicable to: ALL

Ident.: DSC-34-NAV-20-20-40-00020097.0001001 / 06 AUG 14

L12

CAPT(F/O) ON BKUP	Appears when the flight crew sets the AIR DATA selector to CAPT(F/O) ON BKUP. For more information, *Refer to DSC-34-NAV-20-20 AIR DATA Selector*. Appears on the WD.

Ident.: DSC-34-NAV-20-20-40-00012090.0001001 / 22 NOV 17

L12

CLOCK MAN	The time function operates in MANUAL mode. Appears on the WD. For more information on the impact on ATC Datalink applications, *Refer to DSC-46-ATC-30 Manual Time Setting*

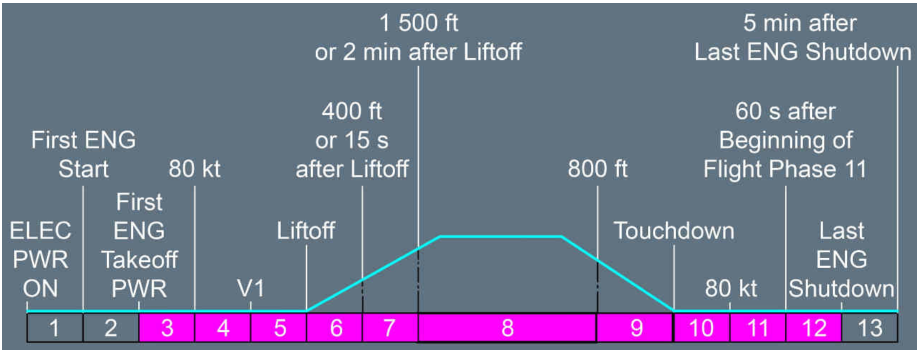
Ident.: DSC-34-NAV-20-20-40-00003285.0001001 / 06 AUG 14

L12

IR IN ALIGN > 7 MIN or IR IN ALIGN X MIN (1<X<6)	Appears as soon as one IR starts an alignment to recover the NAV mode. Indicates the remaining time to finish the alignment of the IRs. Flashes green in flight phase 1 if a problem occurs on one IR alignment. Appears in amber as soon as one engine is running (flight phase 2). The ECAM triggers the NAV IR NOT ALIGNED alert as soon as one engine is running (flight phase 2). Appears on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

Ident.: DSC-34-NAV-20-20-40-00003291.0001001 / 06 AUG 14

L12

IR 1(2)(3)(1+2)(2+3)(1+3) IN ATT ALIGN	The corresponding IRs started an alignment to recover the ATT mode. For more information, *Refer to DSC-34-NAV-20-30 ATT Only Operation*. Appears on the WD.

L12

ALL IRs IN ATT ALIGN	All IRs started an alignment to recover the ATT mode. Appears on the WD.

Ident.: DSC-34-NAV-20-20-40-00003292.0001001 / 06 AUG 14

L12

TRUE NORTH REF	Indicates that the flight crew selected the true north reference. Pulses for 10 s during the preflight phase (flight phases 1 and 2), or before approach (when the slats are extended). Appears on the WD.

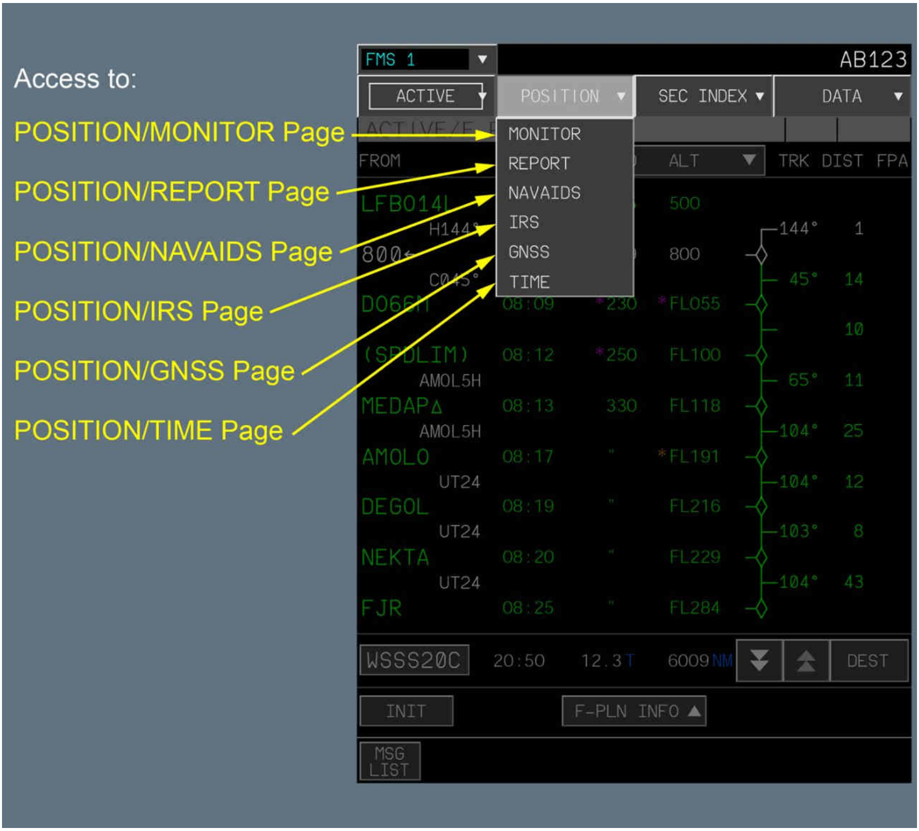
MFD

Ident.: DSC-34-NAV-20-20-00016469.0001001 / 06 AUG 14

Applicable to: ALL

All information about the aircraft position, navigation modes, position accuracy, navigation accuracy, and aircraft time reference is available on 6 specific POSITION pages on the MFD.

The flight crew can access these pages via the POSITION menu on the general menu bar.


FMS 1
AB123
ACTIVE
POSITION
SEC INDEX
DATA
MONITOR
REPORT
NAVAIDS
IRS
GNSS
TIME
FROM
ALT
TRK DIST FPA
LFB014L
H144°
800
C045°
D066M
(SPDLIM)
AMOL5H
MEDAPΔ
AMOL5H
AMOLO
UT24
DEGOL
UT24
NEKTA
UT24
FJR
WSSS20C
20:50
12.3 T
6009 NM
DEST
INIT
F-PLN INFO
MSG LIST

Access to:

POSITION/MONITOR Page

POSITION/REPORT Page

POSITION/NAVAIDS Page

POSITION/IRS Page

POSITION/GNSS Page

POSITION/TIME Page

ND

Ident.: DSC-34-NAV-20-20-00016467.0001001 / 06 AUG 14
Applicable to: ALL

For information about the ND, *Refer to Navigation Display*.

PERMANENT DATA

Ident.: DSC-34-NAV-20-20-00016468.0001001 / 06 AUG 14
Applicable to: ALL

For information about:

- The time and G load data on the permanent data, *Refer to DSC-31-CDS-60-10-80 Time and G Load Data*
- The temperature data on the permanent data, *Refer to DSC-31-CDS-60-10-80 Temperature Data*.

PFD

Ident.: DSC-34-NAV-20-20-00016466.0001001 / 06 AUG 14
Applicable to: ALL

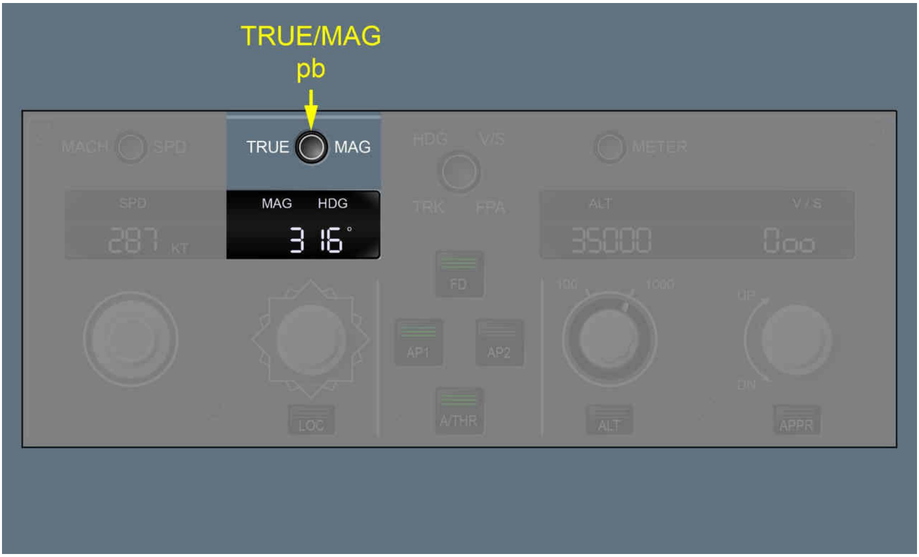
For information about the PFD, *Refer to Primary Flight Display*.

TRUE/MAG PB

Applicable to: ALL

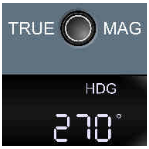
Ident.: DSC-34-NAV-20-20-30-00016846.0001001 / 06 AUG 14

TRUE/MAG pb

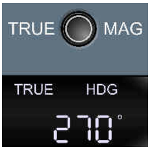

TRUE/MAG
pb
MACH
SPD
TRUE
MAG
HDG
V/S
METER
SPD
287
KT
MAG
HDG
316°
TRK
FPA
ALT
V/S
35000
000
FD
100
1000
UP
AP1
AP2
DN
LOC
A/THR
ALT
APPR

Ident.: DSC-34-NAV-20-20-30-00003283.0001001 / 06 AUG 14

TRUE/MAG PB



The window displays the HDG/TRK based on the magnetic north reference.
When pressed, the North reference changes to the TRUE north reference.



The window displayed the HDG/TRK based on the TRUE north reference.
When pressed, the north reference changes to the magnetic north reference.

The north reference is magnetic, unless the aircraft is in the polar zone.

When the aircraft reaches the polar zone:
- The following messages ask the flight crew to change from the magnetic reference to the TRUE north reference:
  - The SELECT TRUE NORTH REF memo appears on the ND
  - The NAV EXTREME LATITUDE triggers.
- The north reference automatically changes to TRUE in the ADIRS.

ATT ONLY OPERATION

Ident.: DSC-34-NAV-20-30-00003298.0001001 / 06 AUG 14
Applicable to: ALL

In the case of a short power shutdown of an ADIRU, or an IR failure, the NAV mode is lost. However, the ATT mode will probably be available.
The NAV IR 1(2)(3) FAULT abnormal sensed procedure (*Refer to procedure*) and the NAV IR ALIGNMENT IN ATT MODE abnormal not-sensed procedure (*Refer to procedure*) provide the applicable procedure to try to recover the ATT mode.

DISPLAY OF ISIS INERTIAL DATA

Ident.: DSC-34-NAV-20-30-00020099.0001001 / 06 NOV 14
Applicable to: ALL

USE OF ISIS INERTIAL DATA

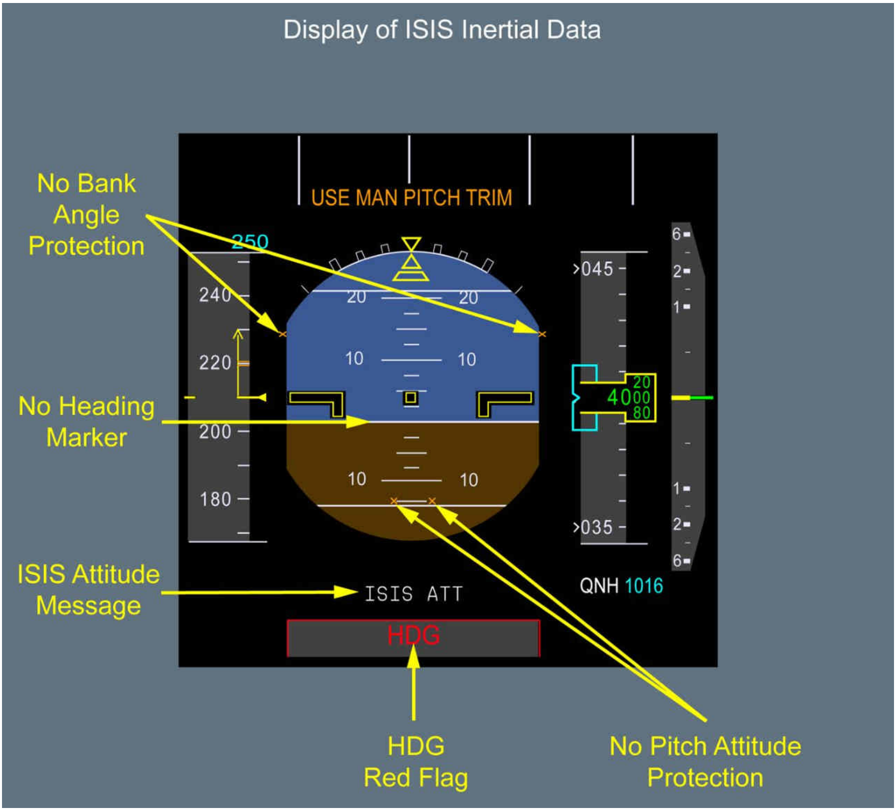
The PFDs display the ISIS inertial data, when the automatic monitoring of inertial data (by the PRIMs and the ADIRS) rejects the inertial data of the three IRs.

L2 For more information about the ADIRS monitoring, *Refer to DSC-34-NAV-20-10-50 ADIRS Monitoring*.

L1 The flight controls are in direct law.

L2 For more information about the direct law, *Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW (PROT LOST)*.

L1 DISPLAY


Display of ISIS Inertial Data
USE MAN PITCH TRIM
No Bank Angle Protection
No Heading Marker
ISIS Attitude Message
ISIS ATT
HDG
HDG Red Flag
No Pitch Attitude Protection
250
240
220
200
180
20
10
045
035
4000
QNH 1016

The FPV and the VV are not available. If the TRK-FPA(HDG-V/S) is selected, the red FPV(VV) flag is displayed.

L2 For more information about the red FPV(VV) flag, *Refer to DSC-31-CDS-40-20-30 Flight Path Vector or Velocity Vector*.

DISPLAY OF ISIS SPEED AND ALTITUDE INDICATIONS

Ident.: DSC-34-NAV-20-30-00020100.0001001 / 08 JUL 19
Applicable to: ALL

USE OF ISIS SPEED AND ALTITUDE INDICATIONS

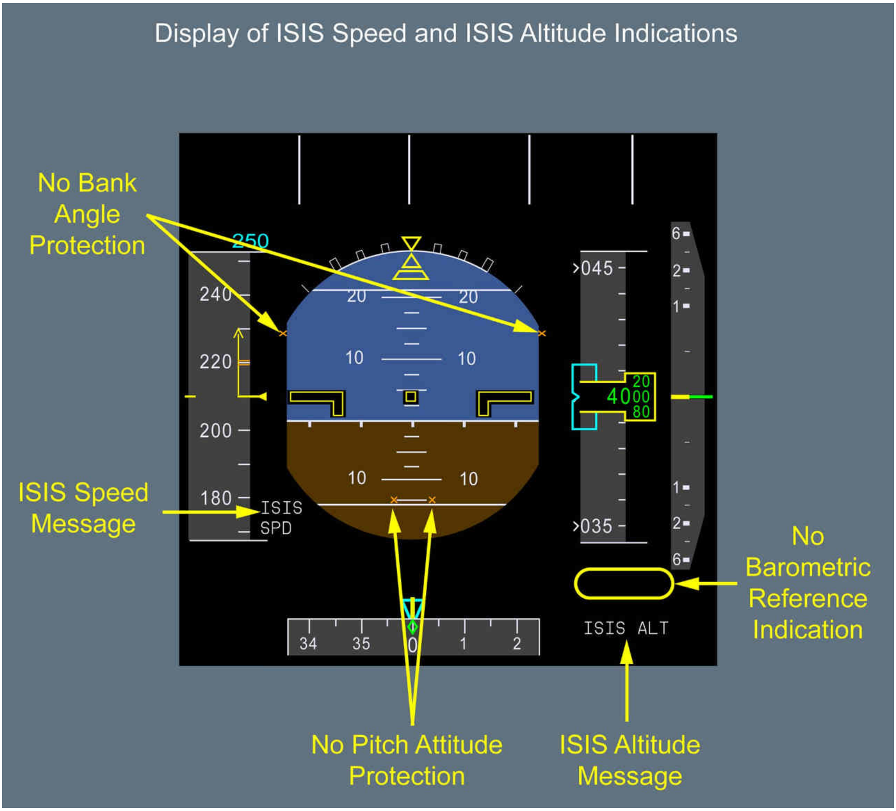
The PFDs display the ISIS speed indication or the ISIS altitude indication, when the automatic monitoring of air data (by the PRIMs and the ADIRS) rejects the speed or the altitude of the three ADRs.

L2 For more information about the ADIRS monitoring, *Refer to DSC-34-NAV-20-10-50 ADIRS Monitoring*.

L1 The barometric reference cannot be set on the EFIS CP, it must be set on ISIS.
The flight controls are in alternate law.

L2 For more information about the alternate law, *Refer to PRO-ABN-F_CTL F/CTL ALTN LAW (PROT LOST)*.

L1 DISPLAY


Display of ISIS Speed and ISIS Altitude Indications
No Bank Angle Protection
ISIS Speed Message
No Pitch Attitude Protection
ISIS Altitude Message
No Barometric Reference Indication
ISIS
SPD
ISIS ALT

BACKUP SPEED AND BACKUP ALTITUDE INDICATIONS

Ident.: DSC-34-NAV-20-30-00020096.0001001 / 08 JUL 19
Applicable to: ALL

USE OF BACKUP INDICATIONS

The PFDs displays the backup speed indication or backup altitude indication (from the FADECs and AOA probes), when:

- The automatic monitoring of air data (by the PRIMs and the ADIRS) rejects the three ADRs and the ISIS air data. The flight controls are in direct law.

  L2 For more information about the ADIRS monitoring, *Refer to DSC-34-NAV-20-10-50 ADIRS Monitoring*.

  For more information about the direct law, *Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW (PROT LOST)*.

- L1 The flight crew detects an unreliable air data indication. The flight crew must apply the NAV UNRELIABLE AIR SPEED INDICATION abnormal not-sensed procedure. This procedure enables to manually select the display of the backup speed and backup altitude indications. As a consequence:

  - The flight controls are in alternate law, if all ADRs are set to OFF and the ISIS is operative.

    L2 For more information about the procedure, *Refer to PRO-ABN-NAV [ABN] NAV UNRELIABLE AIR SPEED INDICATION*.

    For more information about the alternate law, *Refer to PRO-ABN-F_CTL F/CTL ALTN LAW (PROT LOST)*.

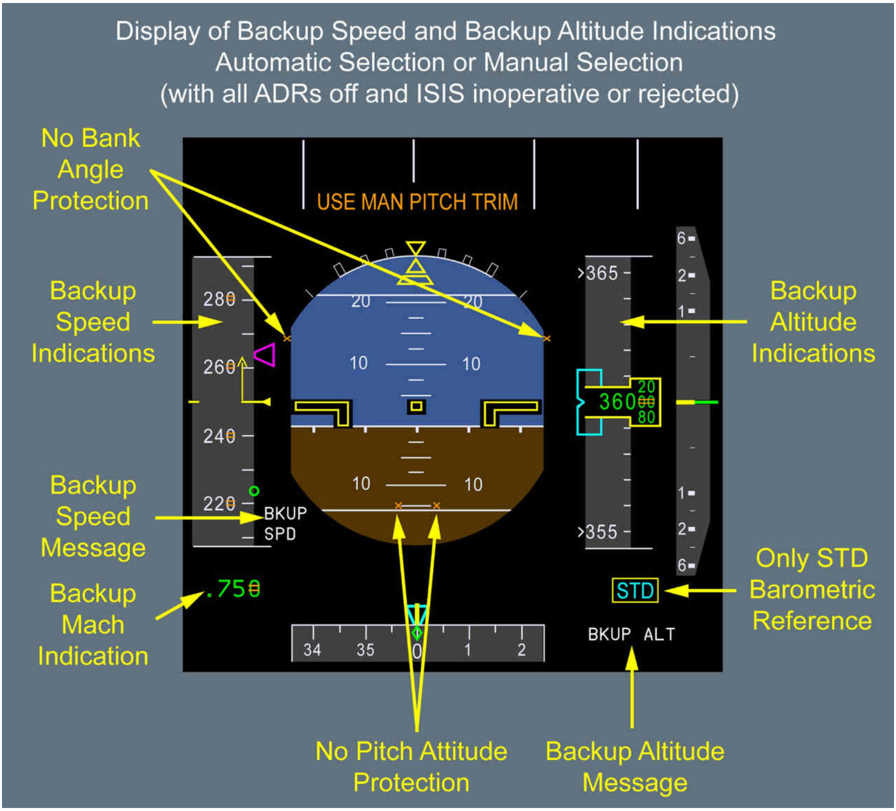
  - L1 The flight controls are in direct law, if all ADRs are set to OFF and the ISIS is failed or rejected by the PRIMs.

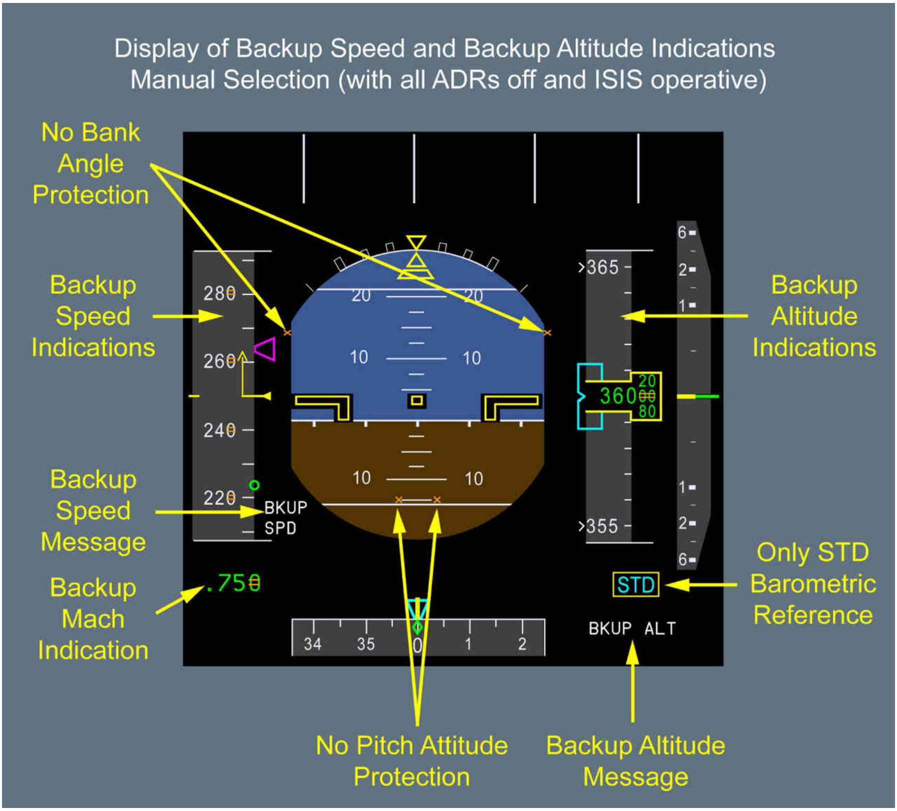
    L2 For more information about the procedure, *Refer to PRO-ABN-NAV [ABN] NAV UNRELIABLE AIR SPEED INDICATION*.

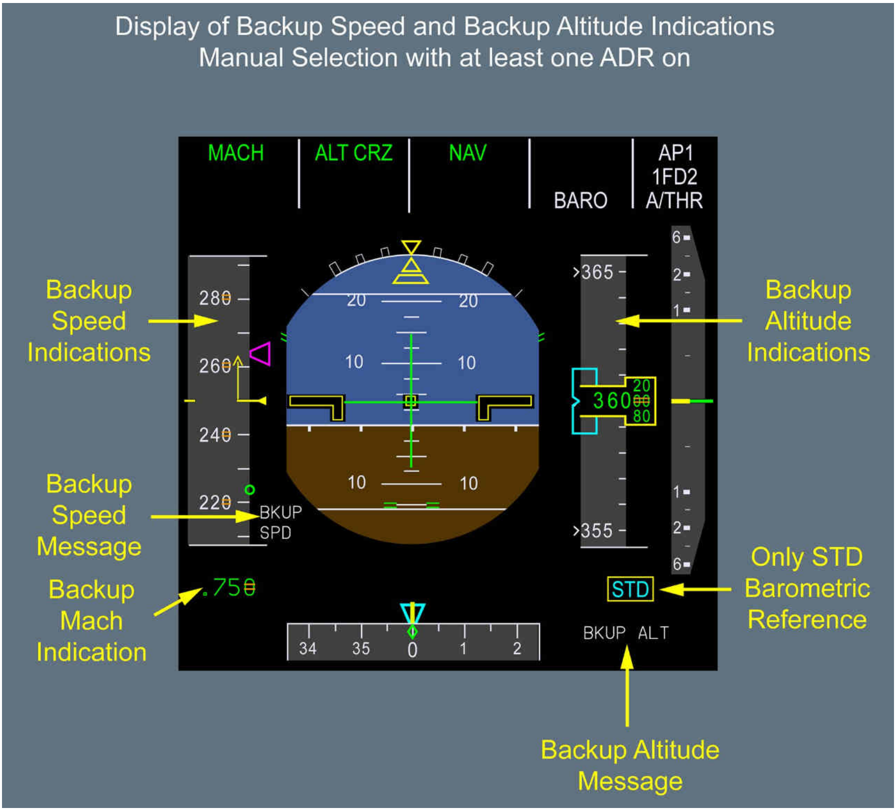
    For more information about the direct law, *Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW (PROT LOST)*.

L1 *Note:* *On ground, at low speed (below 60 kt), the backup speed indication freezes as the backup speed accuracy is too low.*

DISPLAY


Display of Backup Speed and Backup Altitude Indications
Automatic Selection or Manual Selection
(with all ADRs off and ISIS inoperative or rejected)
No Bank Angle Protection
USE MAN PITCH TRIM
Backup Speed Indications
Backup Altitude Indications
280
260
240
220
20
10
>365
>355
36000
20
80
6
2
1
Backup Speed Message
BKUP SPD
Backup Mach Indication
.750
Only STD Barometric Reference
STD
BKUP ALT
34
35
0
No Pitch Attitude Protection
Backup Altitude Message


Display of Backup Speed and Backup Altitude Indications
Manual Selection (with all ADRs off and ISIS operative)
No Bank Angle Protection
Backup Speed Indications
Backup Speed Message
Backup Mach Indication
Backup Altitude Indications
Only STD Barometric Reference
No Pitch Attitude Protection
Backup Altitude Message
280
260
240
220
BKUP
SPD
.750
20
10
>365
>355
36000
20
80
6
2
1
STD
BKUP ALT
34
35
0


Display of Backup Speed and Backup Altitude Indications
Manual Selection with at least one ADR on
MACH
ALT CRZ
NAV
BARO
AP1
1FD2
A/THR
Backup Speed Indications
Backup Speed Message
Backup Mach Indication
Backup Altitude Indications
Only STD Barometric Reference
Backup Altitude Message
280
260
240
220
BKUP SPD
.750
>365
>355
36000
STD
BKUP ALT
34
35
0
1
2
20
10

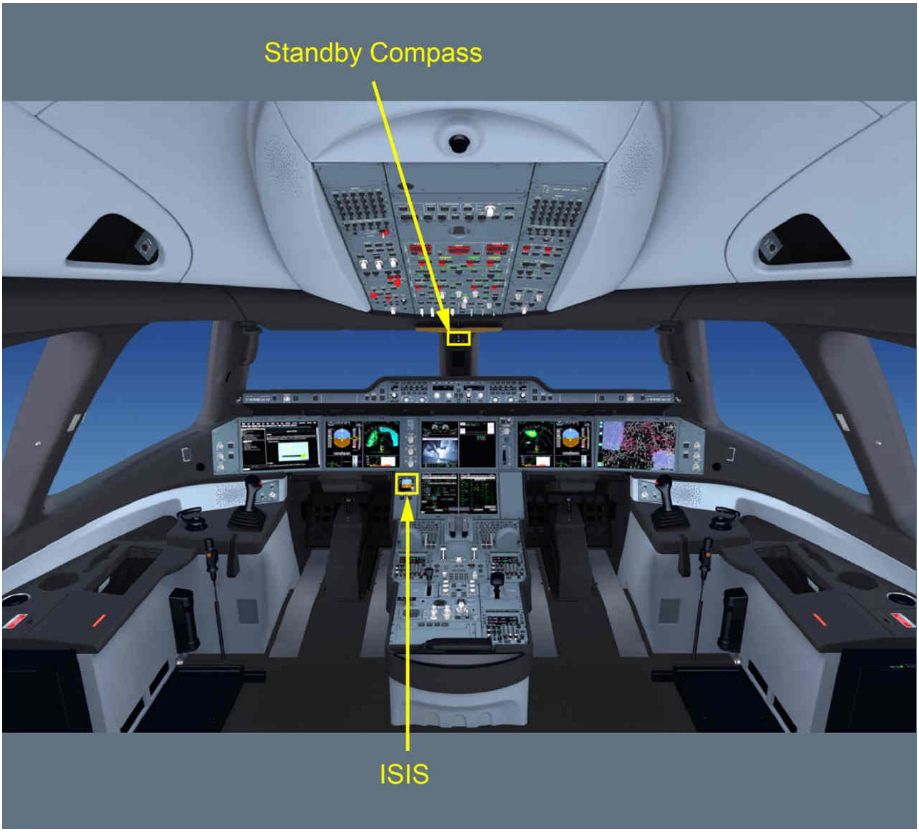
OVERVIEW

Ident.: DSC-34-NAV-30-10-00003127.0001001 / 01 JUL 14
Applicable to: ALL

The standby instruments include:
- One Integrated Standby Instrument System (ISIS)
- One standby compass.

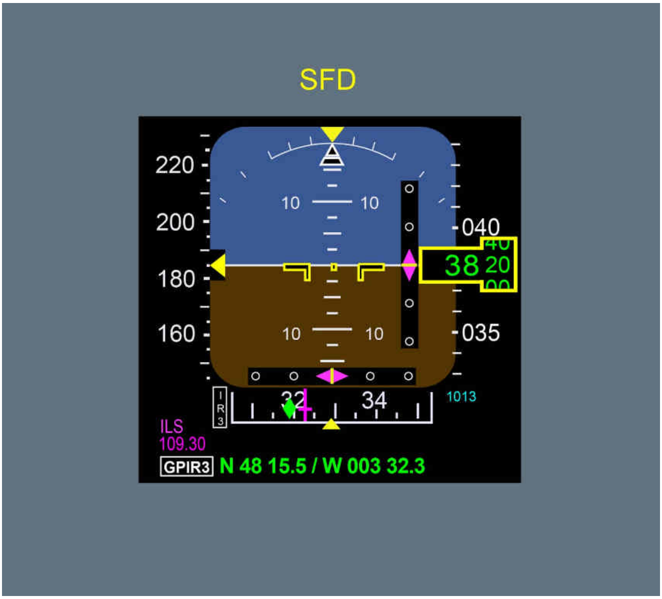
In addition to the PFD and the ND, the ISIS provides an independent source of information for:
- Air data and inertial reference parameters (e.g. altitude, attitude, airspeed, etc.)
- Navigation information.

Cockpit view



The ISIS displays a Standby Flight Display (SFD).

SFD

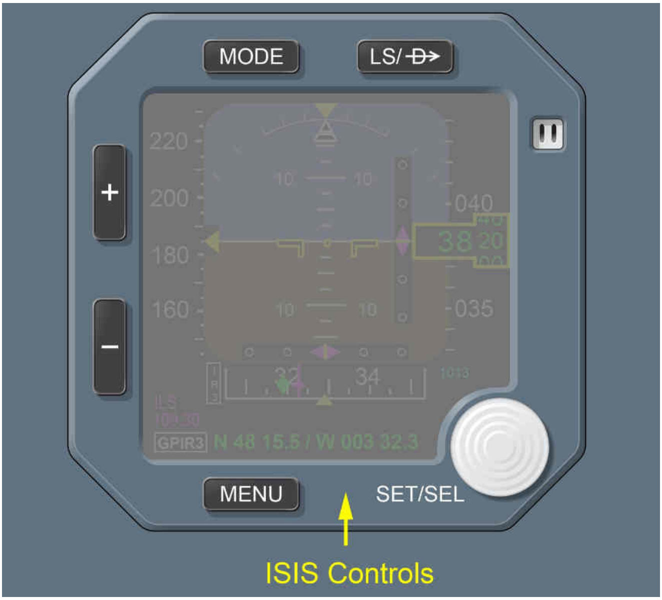

SFD
220
200
180
160
10
10
10
10
040
035
38 20
1013
IR3
32
34
ILS
109.30
GPIR3
N 48 15.5 / W 003 32.3

The ISIS is connected to three independent probes:

- One standby pitot probe
- Two standby static probes.

The ISIS includes its own controls.

ISIS Controls



The standby compass provides the magnetic heading of the aircraft.

L2 For more information about the standby compass, *Refer to DSC-34-NAV-30-50 Standby Compass*

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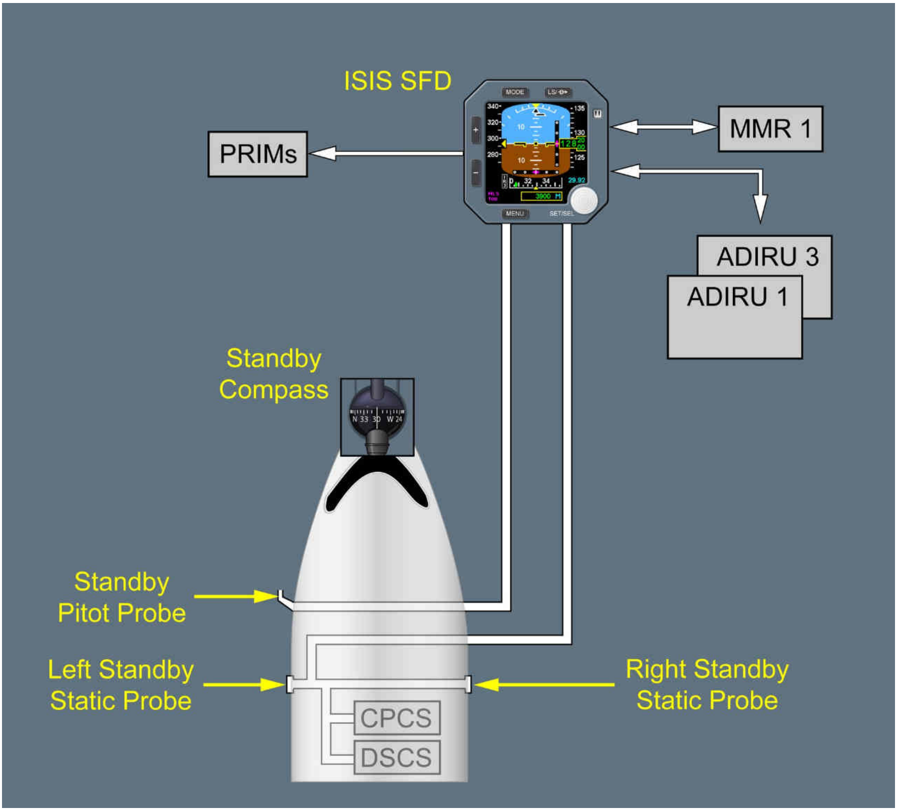
ARCHITECTURE

Applicable to: ALL

Ident.: DSC-34-NAV-30-20-10-00003128.0001001 / 12 NOV 14

ARCHITECTURE


ISIS SFD
PRIMs
MMR 1
ADIRU 3
ADIRU 1
Standby Compass
Standby Pitot Probe
Left Standby Static Probe
Right Standby Static Probe
CPCS
DSCS

Ident.: DSC-34-NAV-30-20-10-00003132.0001001 / 09 MAR 16

INTEGRATED STANDBY INSTRUMENT SYSTEM (ISIS)

There are two ISIS, one displays a SFD and one displays a SND ⪡ .
Each ISIS can operate in any mode. However, one SFD is always displayed.
They are on both sides of the main instrument panel.

L3 The ISIS includes the following elements:

- Internal gyrometers and accelerometers that compute and display aircraft attitude
- Segregated standby probes that measure total pressure and static pressure.
  Each ISIS uses these air data parameters in order to compute and display aircraft altitude, and indicated airspeed.

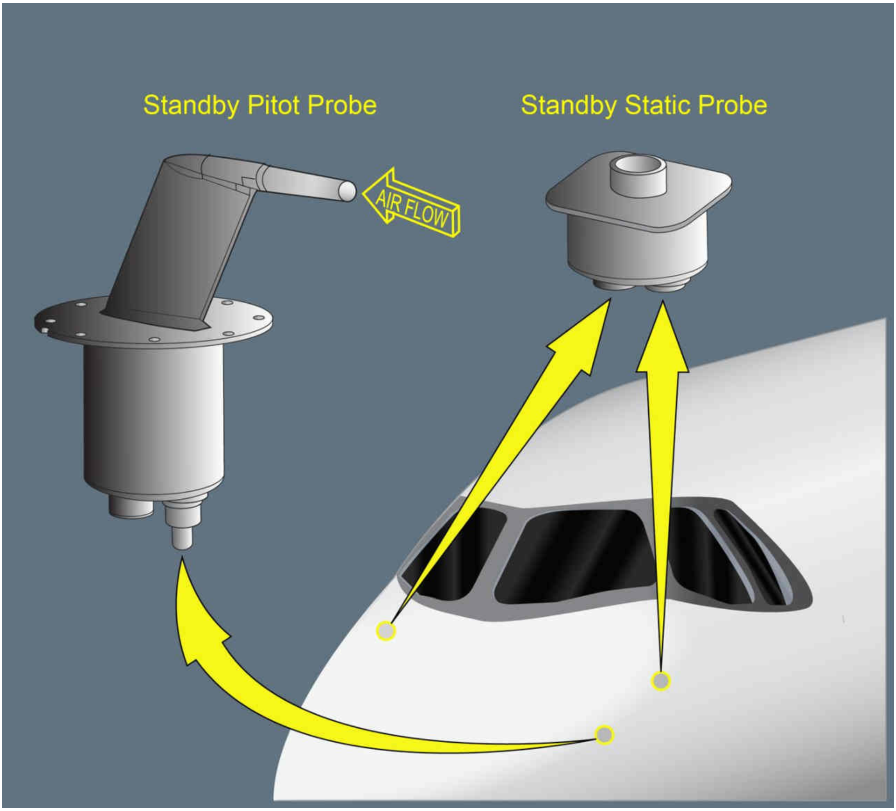
Ident.: DSC-34-NAV-30-20-10-00003133.0001001 / 01 JUL 14

ISIS PROBES

The ISIS uses three dedicated probes that are independent of the ADIRS probes:

- One pitot probe on the left side of the fuselage
- Two static probes, one probe on each side of the fuselage.

ISIS Probes



L3 The standby static probes also provide the static pressure to the following equipment:
- The Cabin Pressure Control System (CPCS)
- The Doors and Slides Control System (DSCS).

Ident.: DSC-34-NAV-30-20-10-00003129.0001001 / 01 JUL 14

MMR 1

MMR 1 provides GNSS and LS data to the ISIS.

L3 The ISIS receives the following data from MMR 1:
- LS data:
  - LS source
  - LOC and GLIDE deviations
  - Associated identifier and frequency
  - Selected course
- GNSS data
  - Ground speed
  - Latitude and longitude
  - True track.

Ident.: DSC-34-NAV-30-20-10-00003130.0001001 / 01 JUL 14

ADIRS

ADIRUs 1 and 3 provide navigation information to the ISIS.

L3 The ISIS receives the following information from the ADIRUs:
- Magnetic and the true heading
- True track
- Ground speed
- Latitude and longitude

Ident.: DSC-34-NAV-30-20-10-00003131.0001001 / 06 NOV 14

PRIMs

The ISIS provides the PRIMs with air data and inertial reference parameters.

L2 The PRIMs use the air data and the inertial reference parameters from the ISIS in order to monitor the ADIRS.

For more information about the PRIMs monitoring of the ADIRS, *Refer to DSC-34-NAV-20-10-50 ADIRS Monitoring*.

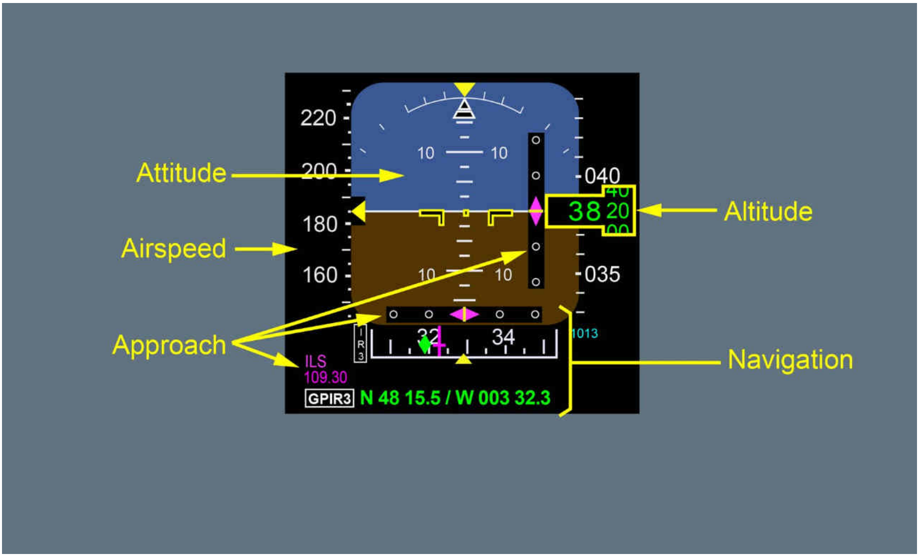
Ident.: DSC-34-NAV-30-20-10-00003135.0001001 / 01 JUL 14

STANDBY COMPASS

There is one standby compass on the top of the windshield center post.

SFD INDICATIONS

Ident.: DSC-34-NAV-30-30-00003142.0001001 / 01 JUL 14
Applicable to: ALL

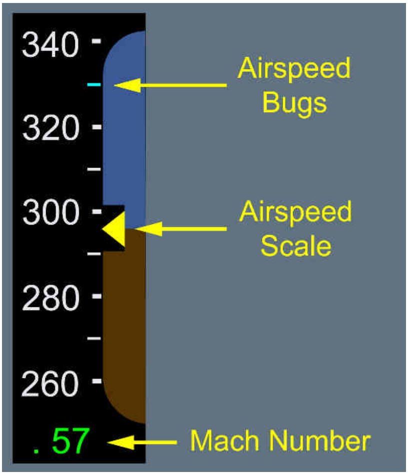

Attitude
Airspeed
Approach
Altitude
Navigation
220
200
180
160
10
10
10
10
040
035
38 20
1013
32
34
IR3
ILS
109.30
GPIR3
N 48 15.5 / W 003 32.3

AIRSPEED

Applicable to: ALL

Ident.: DSC-34-NAV-30-30-10-00003143.0001001 / 01 JUL 14

Airspeed Indications



Ident.: DSC-34-NAV-30-30-10-00003145.0001001 / 01 JUL 14

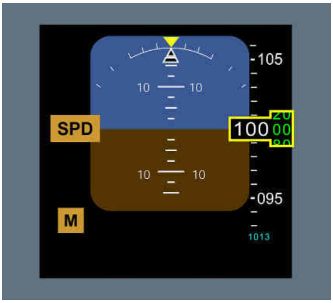
AIRSPEED SCALE

A white scale moves in front of a fixed yellow triangle that indicates the airspeed.

L2 The airspeed scale has markers every 5 kt, from 30 kt to 250 kt, and every 10 kt, from 250 kt to 520 kt. There are digital markers every 20 kt.

L1 **SPD**	Appears instead of the airspeed scale if the airspeed data is not available.

Speed Flags on the SFD



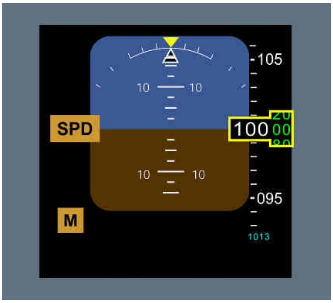
Ident.: DSC-34-NAV-30-30-10-00003146.0001001 / 01 JUL 14

MACH NUMBER

The Mach number appears in green in the left bottom part of the SFD.
The Mach number appears when it goes above M 0.50, and then disappears if it goes below M 0.45

M	Appears instead of the Mach number indications when the Mach data is not available.

Speed Flags on the SFD



Ident.: DSC-34-NAV-30-30-10-00003147.0001001 / 01 JUL 14

AIRSPEED BUGS

When the flight crew sets an airspeed bug, the corresponding blue line appears on the airspeed scale.
No bug appears if the flight crew enters an airspeed bug value that goes above or below the airspeed scale.
Two airspeed bugs can be displayed at the same time.

L2 The airspeed bugs can be set every 1 kt, from 100 kt to 520 kt.

L1 The flight crew sets an airspeed bug via the MENU/SET SPD BUG 1(2) function.

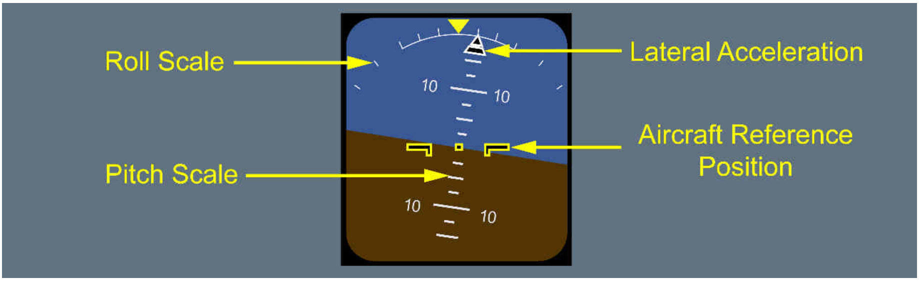
L2 For more information about SFD menu, *Refer to DSC-34-NAV-30-60 MENU pb*.

ATTITUDE

Applicable to: ALL

Ident.: DSC-34-NAV-30-30-20-00003148.0001001 / 06 NOV 14

Attitude Indications



Ident.: DSC-34-NAV-30-30-20-00003150.0001001 / 01 JUL 14

AIRCRAFT REFERENCE POSITION

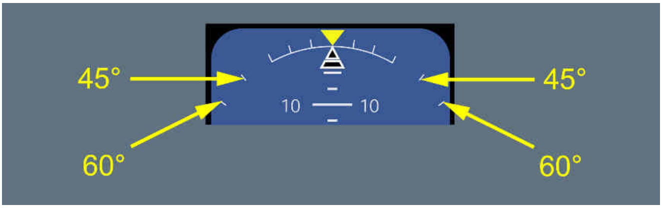
A fixed black symbol with a yellow frame indicates the fixed reference position of the aircraft.

Ident.: DSC-34-NAV-30-30-20-00003151.0001001 / 03 JAN 20

ROLL SCALE

The roll scale indicates the bank angle of the aircraft.
The roll index, displayed as a black triangle, indicates the current aircraft bank angle.

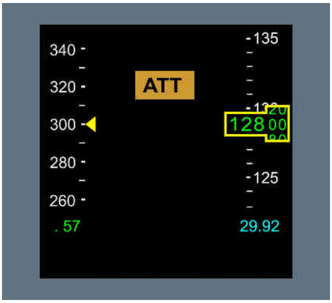
L2 The scale has markers at 0 °,10 °, 20 °, 30 °, 45 °, and 60 ° of bank.



L1 *Note:* *In the case of a long turn at a small bank angle (less than 5 °), the displayed roll attitude may temporary be incorrect by few degrees.*

ATT Appears instead of the attitude indicator if the attitude data is not available.

ATT Flag on the SFD



Ident.: DSC-34-NAV-30-30-20-00003152.0001001 / 06 NOV 14

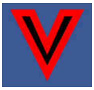
PITCH SCALE

The pitch scale indicates the pitch angle of the aircraft.

L2 The scale has markers:

- Every 10 °, below -30 ° and above 30 °
- Every 2.5 °, between -30 ° and 30 °.

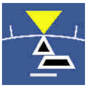
L12



Indicates an excessive pitch angle of the aircraft, and shows the direction to reduce it.
This symbol appears if the pitch angle goes above 30 ° or below -30 °.

Ident.: DSC-34-NAV-30-30-20-00003153.0001001 / 06 NOV 14

LATERAL ACCELERATION



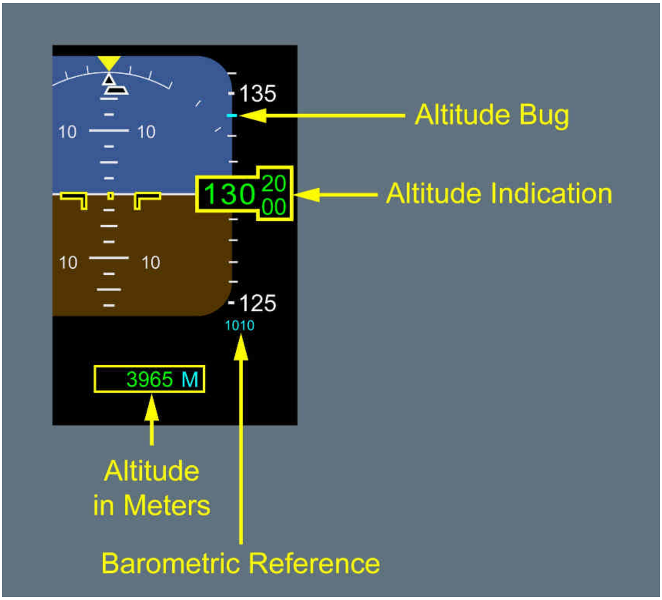
Indicates the lateral acceleration of the aircraft.

ALTITUDE

Applicable to: ALL

Ident.: DSC-34-NAV-30-30-30-00003154.0001001 / 01 JUL 14

Altitude Indications


135
10
10
130
20
00
10
10
125
1010
3965 M
Altitude Bug
Altitude Indication
Altitude
in Meters
Barometric Reference

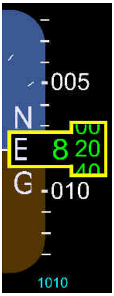
Ident.: DSC-34-NAV-30-30-30-00003155.0001001 / 01 JUL 14

ALTITUDE INDICATION

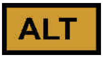
A green digital indication enclosed in yellow indicates the altitude on a white moving scale.

L2 The altitude scale has markers every 100 ft from -2 000 ft to 50 000 ft, with digital markers every 500 ft.

L1

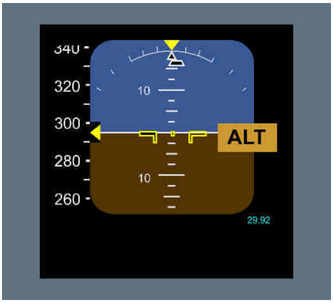


When the altitude is negative, "NEG" appears on the left of the altitude scale



Replaces the altitude scale when the altitude data is not available.

ALT Flag on the SFD



Ident.: DSC-34-NAV-30-30-30-00003156.0001001 / 01 JUL 14

ALTITUDE IN METERS

The current altitude can also be displayed in meters.
The display is activated via the MENU/DISPLAY METERS function.

L2 For more information about the SFD menu, *Refer to DSC-34-NAV-30-60 MENU pb*.

Ident.: DSC-34-NAV-30-30-30-00003157.0001001 / 01 JUL 14

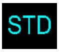
BAROMETRIC REFERENCE

L12

The barometric reference pressure is in hectopascals (hPa).
The barometric pressure display goes from 745 hPa to 1 100 hPa.

L12

The barometric reference pressure is in inches of mercury (inHg).
The barometric pressure display goes from 22 inHg to 32.48 inHg.



The barometric pressure is standard.

The display is activated using the MENU/SET BARO UNIT function.

L2 For more information about the SFD menu, *Refer to DSC-34-NAV-30-80 How to use the MENU pb in SFD mode*.

Ident.: DSC-34-NAV-30-30-30-00003158.0001001 / 01 JUL 14

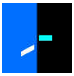
ALTITUDE BUG

When the flight crew enters an altitude bug, the corresponding bug appears in blue on the altitude scale.

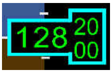
Only one altitude bug can be displayed.

L2 The altitude bug can be set every 100 ft, from 100 ft to 50 000 ft.

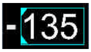
L1



When the flight crew enters an altitude bug, the corresponding blue line is displayed on the altitude scale.



When the altitude bug is set at the current aircraft altitude, the current altitude is enclosed in blue.



When the altitude bug is set in front of a digital marker, the altitude bug is indicated by a blue box.

The flight crew enters an altitude bug via the MENU/SET ALT BUG function.

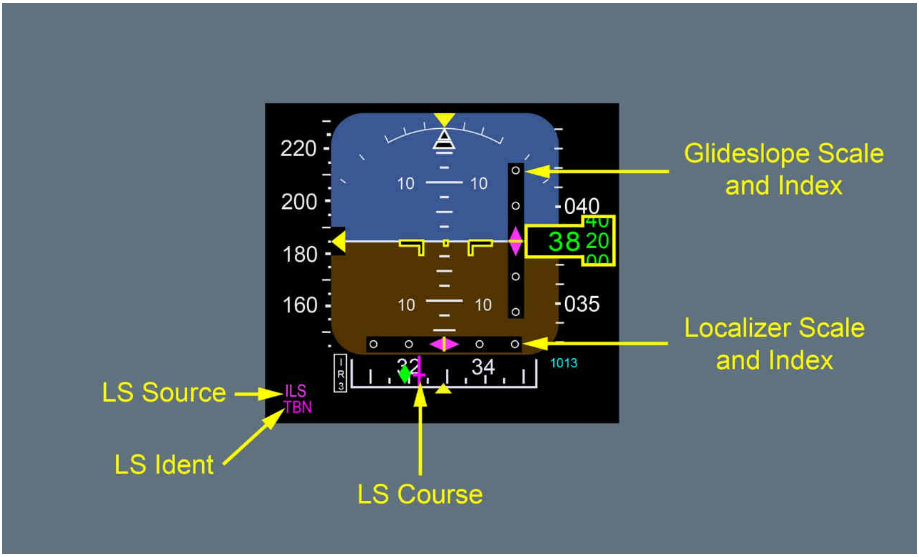
L2 For more information about the SFD menu, *Refer to DSC-34-NAV-30-80 How to use the MENU pb in SFD mode*.

APPROACH

Applicable to: ALL

Ident.: DSC-34-NAV-30-30-40-00003159.0001001 / 01 JUL 14

Approach Indications


Glideslope Scale and Index
Localizer Scale and Index
LS Source
LS Ident
LS Course
220
200
180
160
10
10
10
10
040
035
38 20
1013
32
34
ILS
TBN

Ident.: DSC-34-NAV-30-30-40-00003160.0001001 / 01 JUL 14

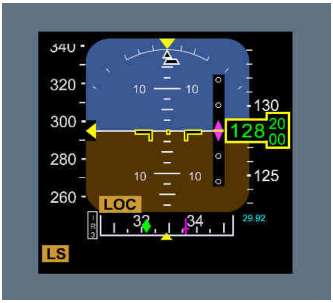
LOCALIZER SCALE AND INDEX

When the flight crew presses the LS/DIR TO pb, the localizer scale and the index are displayed.

CAUTION	Do not use the ISIS LS for: - A back-course takeoff - A back-course localizer. In these cases, the ISIS SFD displays the LOC B/C deviations in the opposite direction.

LOC LS	If the LOC receiver is failed and the flight crew presses the LS/DIR TO pb, the LOC and the LS flags are displayed.

LOC and LS Flags on the SFD


340
320
300
280
260
10
10
10
10
LOC
32
34
130
128
20
00
125
29.92
LS

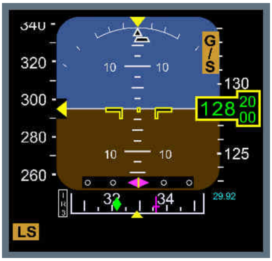
Ident.: DSC-34-NAV-30-30-40-00003161.0001001 / 01 JUL 14

GLIDESLOPE SCALE AND INDEX

When the flight crew presses the LS/DIR TO pb, the glideslope scale and the index are displayed.

G/S **LS** If the G/S receiver is failed and the flight crew presses the LS/DIR TO pb, both G/S and LS flags are displayed.

G/S and LS Flags on the SFD


340
320
300
280
260
10
10
10
10
G/S
130
128
20
00
125
32
34
29.92
LS

Ident.: DSC-34-NAV-30-30-40-00003162.0001001 / 09 MAR 16

LS SOURCE

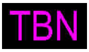
ILS	An ILS approach is selected.
LOC	A LOC only approach is selected.

Note: *1. The LS source can be:*
- *ILS*
- *GLS* ◁
- *SLS* ◁
- *LOC.*

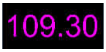
2. The ISIS cannot display FLS approaches.

Ident.: DSC-34-NAV-30-30-40-00003163.0002001 / 09 MAR 16

LS IDENT



Indicates the identifier of the selected LS station.

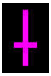


Indicates the frequency or the channel ◁ of the selected LS station.
The frequency or the channel ◁ appears if the LS station is not identified.

Note: *The ISIS cannot display FLS approaches.*

Ident.: DSC-34-NAV-30-30-40-00003164.0001001 / 01 JUL 14

LS COURSE



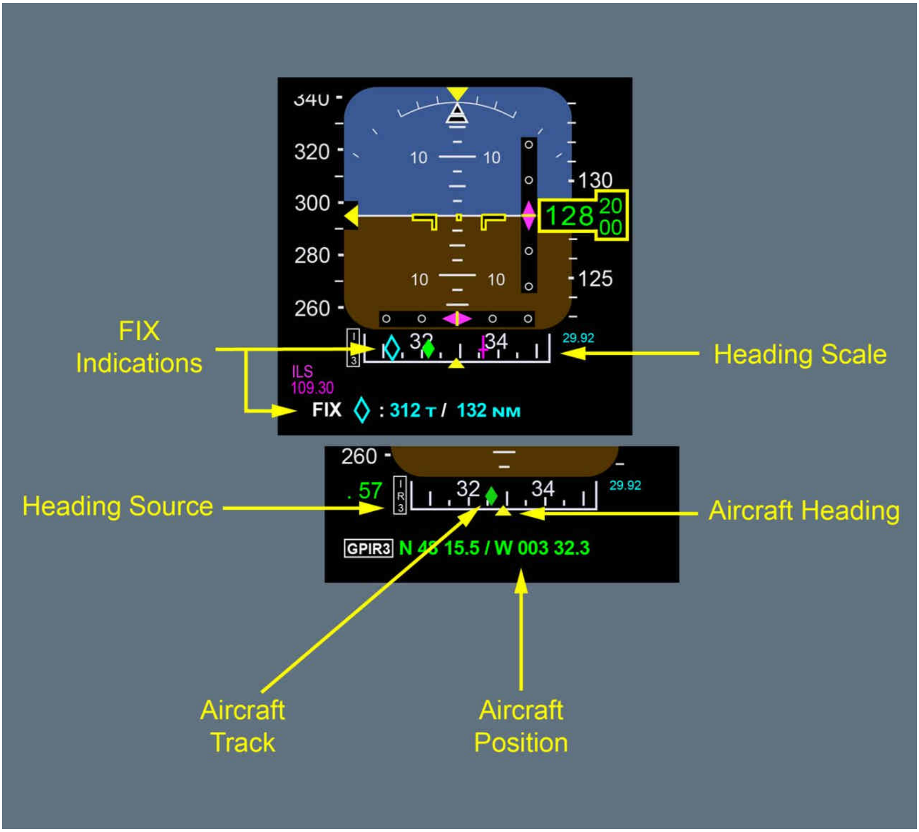
Indicates the course of the LS approach on the heading scale.

NAVIGATION

Applicable to: ALL

Ident.: DSC-34-NAV-30-30-50-00003165.0001001 / 01 JUL 14

Navigation Indications


FIX
Indications
Heading Scale
ILS
109.30
FIX : 312 T / 132 NM
29.92
Heading Source
Aircraft Heading
.57
GPIR3
N 48 15.5 / W 003 32.3
Aircraft
Track
Aircraft
Position

Ident.: DSC-34-NAV-30-30-50-00003166.0001001 / 01 JUL 14

HEADING SCALE

The heading scale is displayed when the flight crew selects the display of:

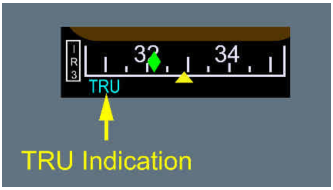
- The approach information, via the LS/DIR TO pb (*Refer to DSC-34-NAV-30-30 Approach*), or
- The NAV information, via the DISPLAY NAV menu item in the SFD menu (*Refer to DSC-34-NAV-30-60 MENU pb*), or
- The FIX information, via the DISPLAY FIX menu item in the SFD menu (*Refer to DSC-34-NAV-30-60 MENU pb*).

L2 The heading scale has markers every 5 ° with digital markers every 20 °.

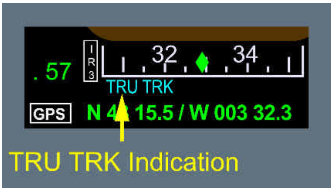
Ident.: DSC-34-NAV-30-30-50-00003167.0001001 / 01 JUL 14

AIRCRAFT HEADING AND AIRCRAFT TRACK

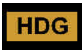
The heading scale indicates the aircraft heading and the aircraft track.
The current aircraft heading is indicated with a yellow triangle in the middle of the heading scale.
The current aircraft track is indicated with a green diamond on the heading scale.



When the flight crew presses the TRUE/MAG pb on the AFS CP, MAG heading and MAG track revert to TRUE heading and TRUE track.

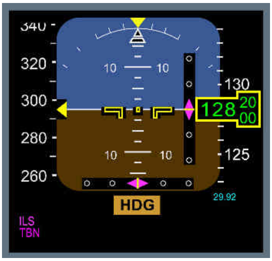


When the TRUE heading is not available or invalid, the TRUE track shall be displayed.



When heading and track data are not available, the HDG flag replaces the heading scale.

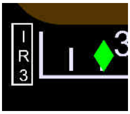
HDG Flag on the SFD



Ident.: DSC-34-NAV-30-30-50-00003168.0001001 / 01 JUL 14

HEADING SOURCE

The source of the current aircraft heading is displayed on the left hand of the heading scale. The source can be either ADIRU 1 or ADIRU 3.

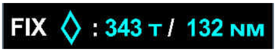


The heading source is ADIRU 3.

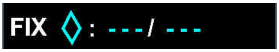
Ident.: DSC-34-NAV-30-30-50-00003169.0001001 / 01 JUL 14

FIX INDICATIONS

The FIX indications include:
- The FIX bearing indicated with an empty blue diamond on the heading scale
- The FIX bearing/distance values indicated in blue under the heading scale.



If a **T** follows the FIX bearing, the FIX bearing is true.



The FIX indications are not available.

L2 If the distance between the aircraft and the FIX is more than 20 NM, the distance is displayed without decimal. If the distance between the aircraft and the FIX is less than 20 NM, the distance is displayed with one decimal.

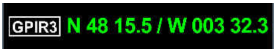
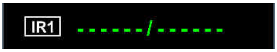
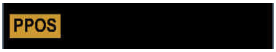
L1 The FIX indications are displayed via the MENU/DISPLAY FIX function.

L2 For more information about the SFD menu, *Refer to DSC-34-NAV-30-60 MENU pb*

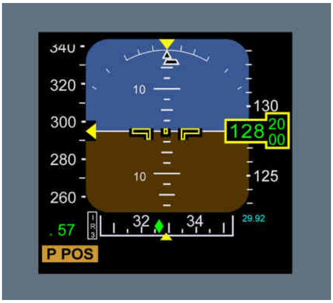
Ident.: DSC-34-NAV-30-30-50-00003170.0001001 / 01 JUL 14

AIRCRAFT POSITION

The aircraft position and the aircraft position source are displayed when the flight crew selects the display of the NAV information via the DISPLAY NAV item in the SFD menu (*Refer to DSC-34-NAV-30-60 MENU pb*).

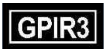
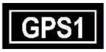
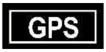
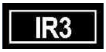
 GPIR3 N 48 15.5 / W 003 32.3	The aircraft position in latitude/longitude.
 IR1 ------/------	The aircraft position is not available.
 PPOS	Appears when the aircraft position is not valid.

PPOS Flag on the SFD



L2 The ADIRS and the MMR 1 provide the aircraft position source in the following order or priority:
- GPIRS computed by the ADIRS (coming from ADIRU 3 then ADIRU 1)
- GNSS computed by the MMR 1 (coming from MMR 1, then ADIRU 3, then ADIRU 1)
- IRS computed by the ADIRS (coming from ADIRU 3 then ADIRU 1).

L1

 GPIR3	The aircraft position comes from the ADIRU 3, and is computed from the GNSS and IRS 3 position.
 GPS1	The aircraft position comes from the MMR 1.
 GPS	The aircraft position comes from the ADIRU 3 or the ADIRU 1, and is computed from the GNSS position.
 IR3	The aircraft position comes from the ADIRU 3.

Intentionally left blank

STANDBY COMPASS

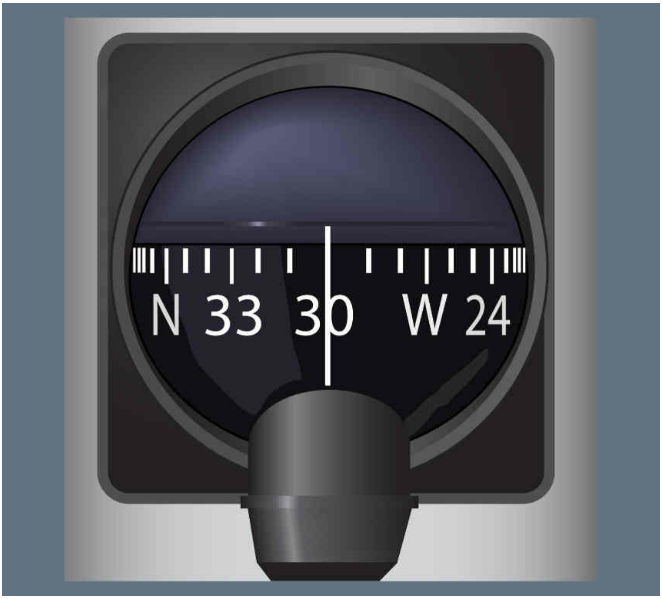
Ident.: DSC-34-NAV-30-50-00014820.0001001 / 01 JUL 14
Applicable to: ALL

The standby compass is on the top of the windshield center post.
The deviation card is above the compass.

L2 The deviation card enables the flight crew to correct the value read on the standby compass in order to obtain the magnetic heading of the aircraft.

L1 The standby compass is equipped with integral illumination.

L2 For more information about standby compass light, *Refer to DSC-33-20-10 Ice Indicator, Standby Compass, and Eye Reference Lights*

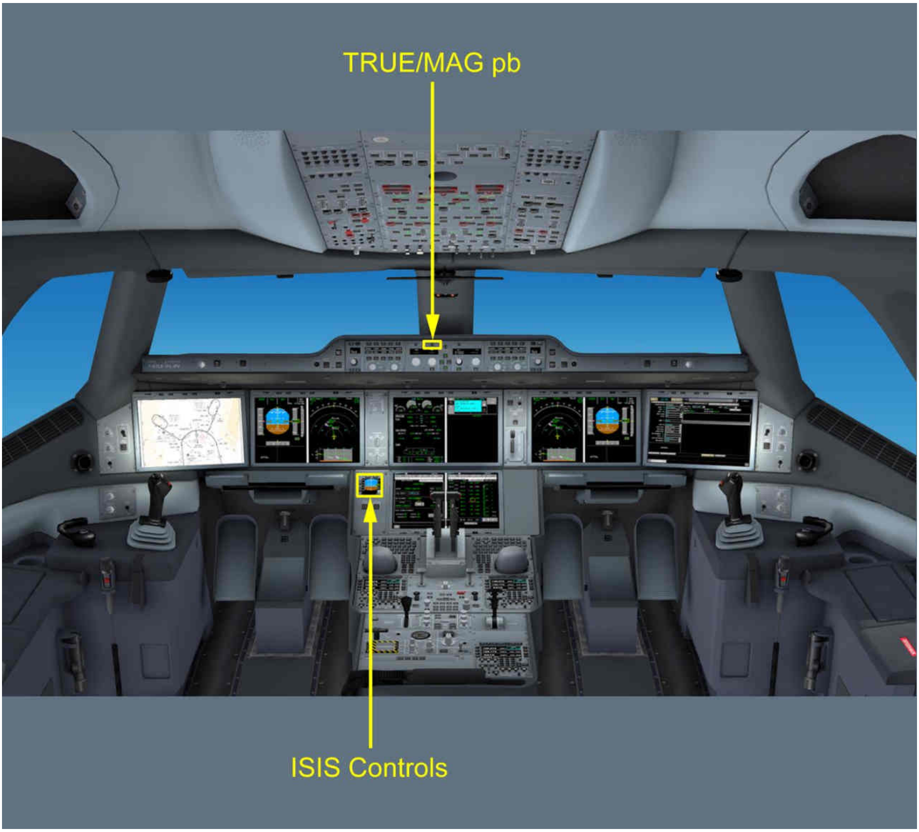


Intentionally left blank

COCKPIT VIEW

Ident.: DSC-34-NAV-30-60-00013478.0001001 / 01 JUL 14
Applicable to: ALL

Cockpit View

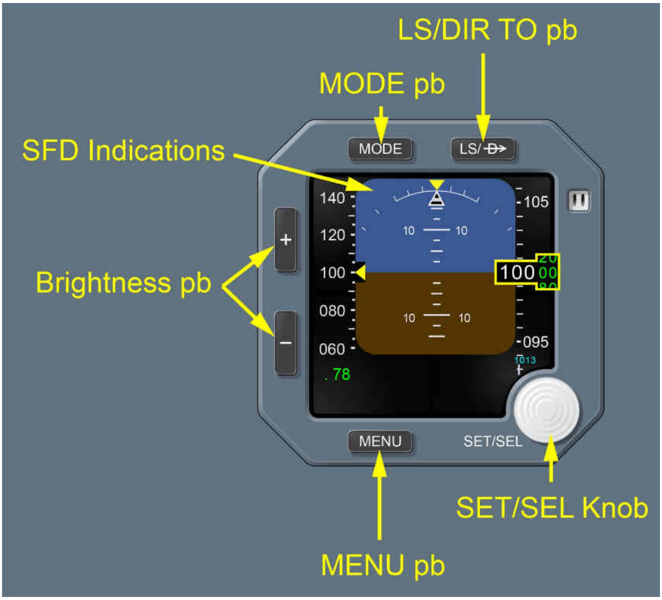


SFD CONTROLS

Applicable to: ALL

Ident.: DSC-34-NAV-30-60-10-00003136.0001001 / 01 JUL 14

SFD Controls


LS/DIR TO pb
MODE pb
SFD Indications
MODE
LS/
140
120
100
080
060
. 78
10
10
10
10
105
100
095
1013
Brightness pb
+
−
MENU
SET/SEL
SET/SEL Knob
MENU pb

Ident.: DSC-34-NAV-30-60-10-00003137.0001001 / 09 MAR 16

MODE PB

The aircraft has only one ISIS. The MODE pb is not applicable.

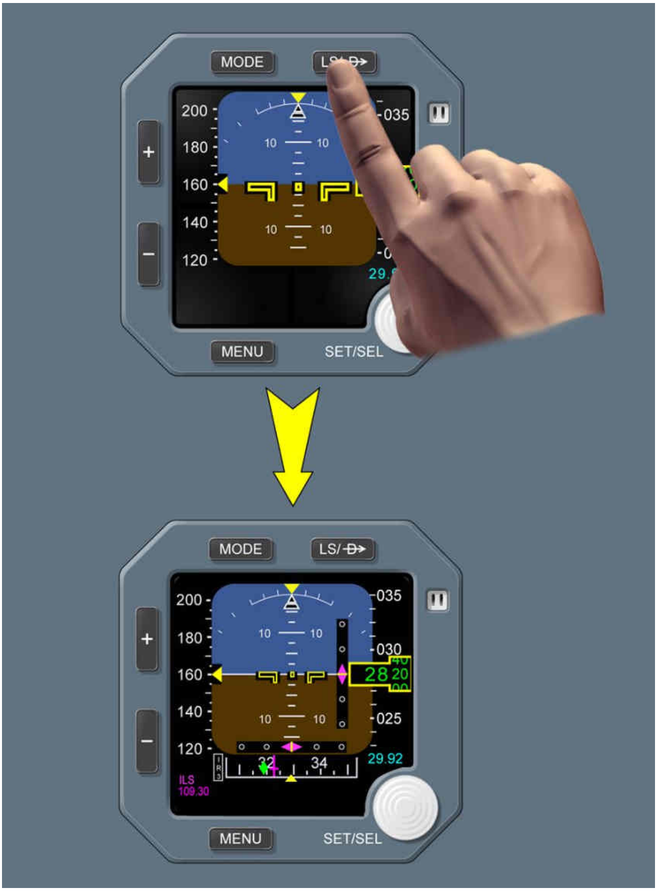
Ident.: DSC-34-NAV-30-60-10-00003138.0001001 / 01 JUL 14

LS/DIR TO PB

When pressed, the ISIS displays the following LS indications on the SFD:
- The localizer scale and index
- The glideslope scale and index
- The LS course
- The LS source
- The LS ident.

CAUTION	Do not use the ISIS LS for: - A back-course takeoff - A back-course localizer. In these cases, the ISIS SFD displays the LOC B/C deviations in the opposite direction.

LS/DIR TO pb


MODE
LS/ D→
200
180
160
140
120
10
035
29.9
MENU
SET/SEL
+
−
MODE
LS/ D→
200
180
160
140
120
035
030
28
025
29.92
32
34
ILS
109.30
MENU
SET/SEL

Ident.: DSC-34-NAV-30-60-10-00003139.0001001 / 01 JUL 14

MENU PB

When pressed, the first item of the SFD menu is displayed.

The content of the SFD menu is as follows:
- SET SPD BUG 1 and SET SPD BUG 2 to adjust, and display the speed bugs
- SET ALT BUG to adjust, and display an altimeter bug
- DISPLAY METERS to display aircraft altitude in meters, in addition to the altitude in ft
- SET BARO UNIT to change the barometric pressure from hPa to inHg
- DISPLAY NAV to display the aircraft position, heading, and track
- DISPLAY FIX to modify and display a FIX
- MAINTENANCE, displayed on ground for maintenance purposes only.

L2 The DISPLAY METERS, the DISPLAY NAV, and the DISPLAY FIX items are exclusive and cannot be displayed at the same time. As soon as one item is activated, the two others are set automatically to off if they were previously displayed.
For more information about the use of the SFD menu, *Refer to DSC-34-NAV-30-80 How to use the MENU pb in SFD mode*.

L1 The MENU pb enables an ISIS reset in some cases.

L2 For more information about the ISIS reset, *Refer to DSC-34-NAV-30-70 Manual or Automatic Attitude Reset*.

Ident.: DSC-34-NAV-30-60-10-00003140.0001001 / 01 JUL 14

SET/SEL KNOB

Enables the flight crew to change barometric reference and to navigate in the menu.

L2 For more information about the use of the SET/SEL knob in SFD mode, *Refer to DSC-34-NAV-30-80 How to use the SET/SEL knob in SFD mode*.

Ident.: DSC-34-NAV-30-60-10-00003141.0001001 / 01 JUL 14

BRIGHTNESS PB

A photosensitive cell installed on the right surface of the ISIS automatically adjusts the screen brightness when the ISIS is set to ON.
The "+" and "-" pushbuttons enable manual adjustment of the level of brightness.

TRUE/MAG PB

Ident.: DSC-34-NAV-30-60-00003134.0001001 / 01 JUL 14
Applicable to: ALL

The selection of true or magnetic reference via the TRUE/MAG pb modifies the ISIS display.
L2 For more information about the TRUE/MAG pb, *Refer to DSC-34-NAV-20-20 AFS CP*.

Intentionally left blank

MANUAL OR AUTOMATIC ATTITUDE RESET

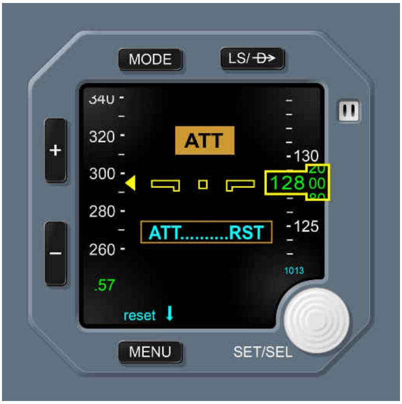
Ident.: DSC-34-NAV-30-70-00003253.0001001 / 01 JUL 14
Applicable to: ALL

MANUAL ATTITUDE RESET

In some cases, a manual attitude reset of the ISIS is required.

L2 A manual attitude reset must be performed in case of:
- 350 h of continuous electrical supply, or
- Excessive aircraft motion during the alignment phase, or
- Failed automatic attitude reset.

L1 In that case, the following messages appear on the SFD:



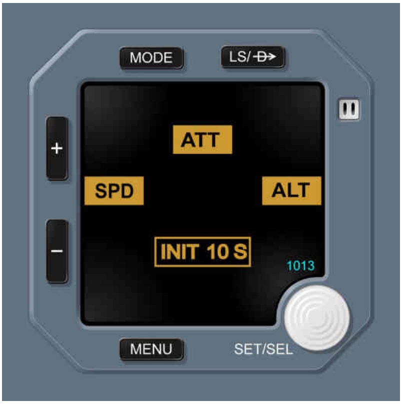
ATT

ATT..........RST

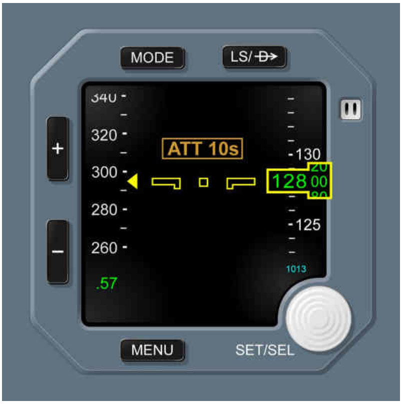
The flight crew must press the MENU pb to initiate the reset. The reset lasts approximately 10 s. During the reset procedure, the aircraft must be stabilized (with wings held level and no acceleration).

During the reset sequence, the SFD displays:

- On ground, the initialization page:


MODE
LS/ D>
+
−
ATT
SPD
ALT
INIT 10 S
1013
MENU
SET/SEL

- In flight, the following flag:


MODE
LS/ D>
+
−
340
320
300
280
260
.57
ATT 10s
130
128 00
125
1013
MENU
SET/SEL

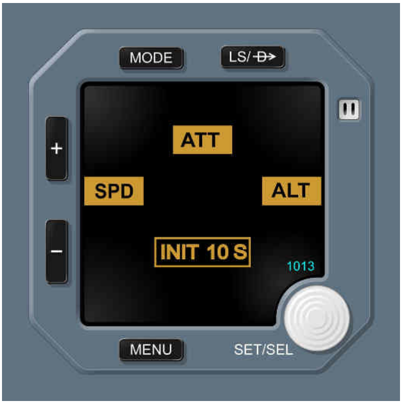
AUTOMATIC ATTITUDE RESET

In some cases, an automatic attitude reset of the ISIS is triggered.

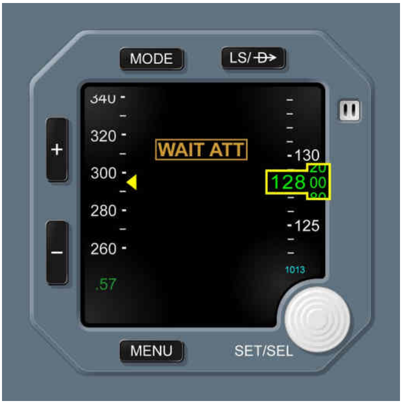
L2 An automatic attitude reset is triggered in case of invalid attitude data.

L1 In the case of an automatic attitude reset, the SFD displays:

- On ground, the initialization page:


MODE
LS/ D>
ATT
SPD
ALT
INIT 10 S
1013
+
−
MENU
SET/SEL

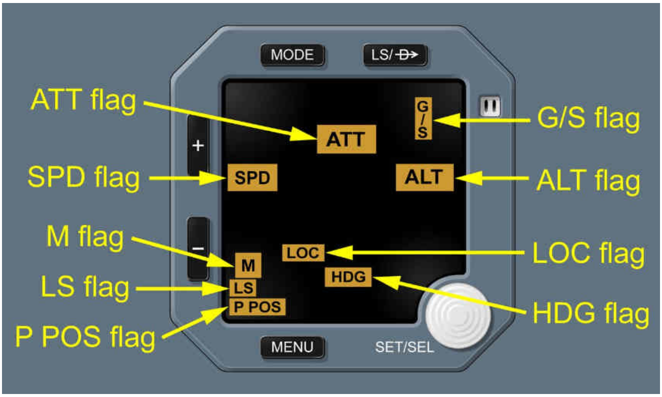
- In flight, the following flag:


MODE
LS/ D>
340
320
300
280
260
.57
WAIT ATT
130
128 00
125
1013
+
−
MENU
SET/SEL

ISIS FAILURE INDICATIONS

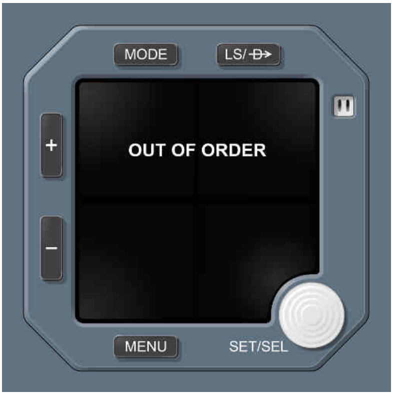
Ident.: DSC-34-NAV-30-70-00012099.0001001 / 01 JUL 14
Applicable to: ALL

FAILURE INDICATIONS ON THE SFD


MODE
LS/-D>
ATT flag
ATT
G/S
G/S flag
SPD flag
SPD
ALT
ALT flag
+
M flag
M
LOC
LOC flag
−
LS flag
LS
HDG
HDG flag
P POS flag
P POS
MENU
SET/SEL

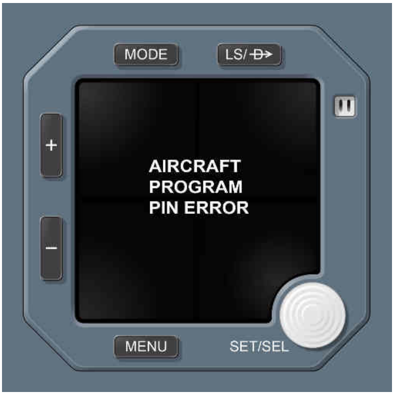
OUT OF ORDER INDICATION

When some internal components of the ISIS fail, the OUT OF ORDER white message appears. The affected ISIS is failed.


MODE
LS/-D>
+
OUT OF ORDER
−
MENU
SET/SEL

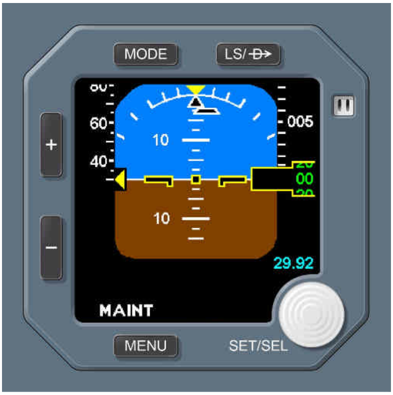
AIRCRAFT PROGRAM PIN ERROR INDICATION

When the aircraft does not detect the ISIS, the AIRCRAFT PROGRAM PIN ERROR white message appears. The affected ISIS is failed.


MODE
LS/
+
–
AIRCRAFT
PROGRAM
PIN ERROR
MENU
SET/SEL

MAINT INDICATION

When a failure that does not affect the ISIS normal operation occurs, a white MAINT flag appears on ground only. If the aircraft electrical network is switched off, the ISIS may fail at the next electrical power-up.

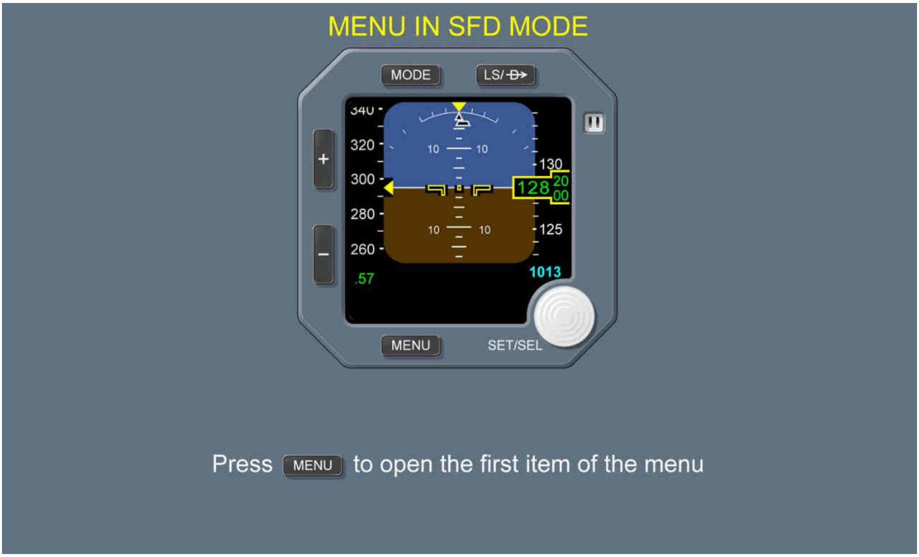

MODE
LS/
+
–
60
40
10
10
005
00
29.92
MAINT
MENU
SET/SEL

Intentionally left blank

HOW TO USE THE MENU PB IN SFD MODE

Ident.: DSC-34-NAV-30-80-00003254.0001001 / 01 JUL 14
Applicable to: ALL

MENU IN SFD MODE


MENU IN SFD MODE
MODE
LS/
+
–
340
320
300
280
260
.57
10
10
130
128
20
00
125
1013
MENU
SET/SEL
Press MENU to open the first item of the menu

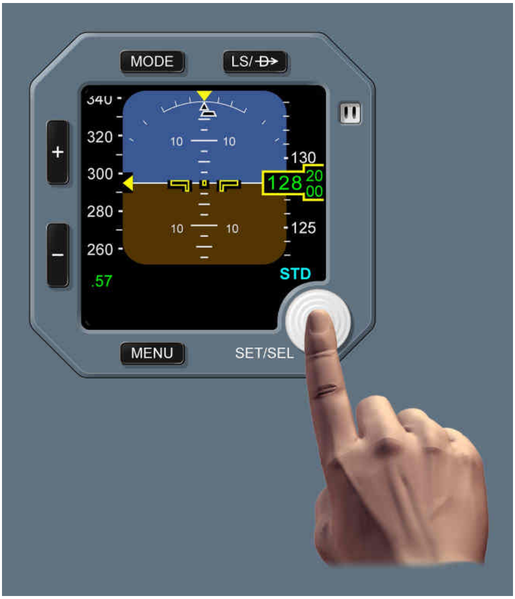
When the ISIS is in SFD mode, press the MENU pb to display the first item of the menu.
Then, rotate the SET/SEL knob to scroll through the items of the menu.
When the desired item is displayed, press the SET/SEL knob to display the item content.
To exit from the menu without selecting any item, press again the MENU pb.

HOW TO USE THE SET/SEL KNOB IN SFD MODE

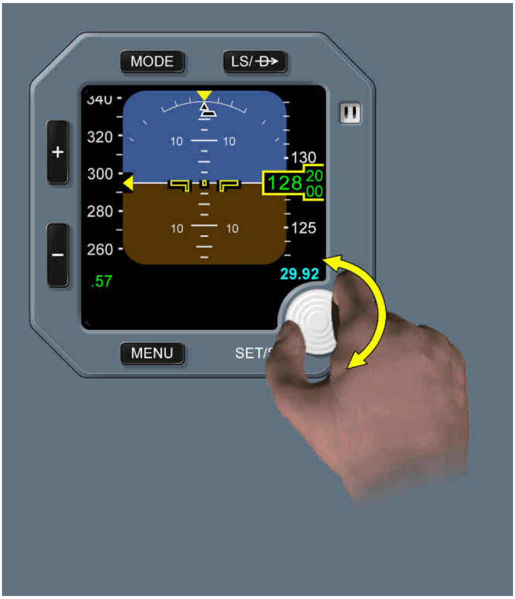
Ident.: DSC-34-NAV-30-80-00003256.0001001 / 01 JUL 14
Applicable to: ALL

WHEN NO MENU ITEM IS DISPLAYED

When no menu is displayed on the ISIS in SFD mode, press the SET/SEL knob to change from standard barometric pressure to QNH, and vice versa.

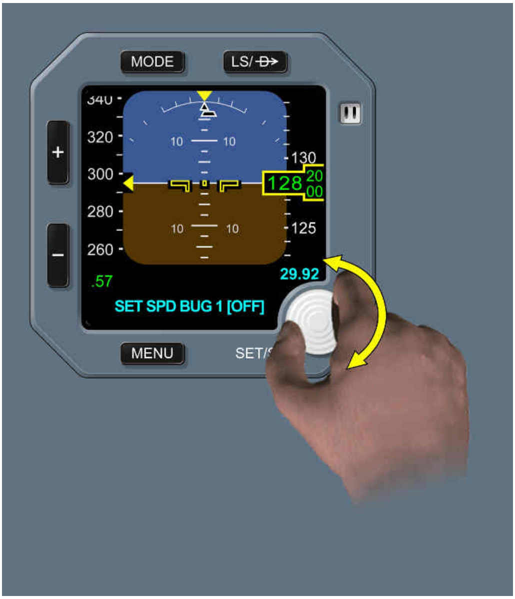

MODE
LS/ D
+
−
340
320
300
280
260
10
10
10
10
130
128
20
00
125
.57
STD
MENU
SET/SEL

When QNH is selected as barometric reference, turn the SET/SEL knob to change the QNH value.

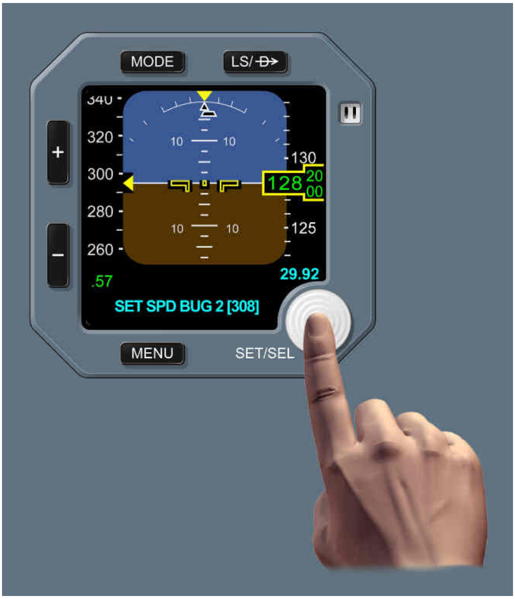

MODE
LS/
+
–
340
320
300
280
260
.57
10
10
10
10
130
128
20
00
125
29.92
MENU
SET/S

WHEN A MENU ITEM IS DISPLAYED

When a menu item is displayed on the ISIS in SFD mode, turn the SET/SEL knob to scroll through the different items of the menu.

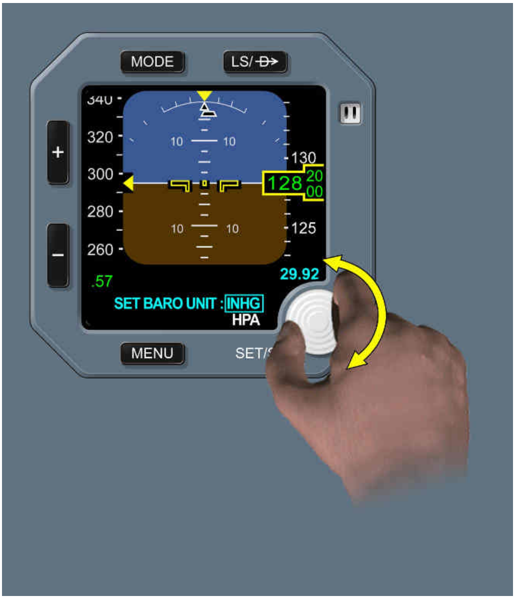

MODE
LS/
340
320
300
280
260
10
10
10
10
130
128
20
00
125
.57
29.92
SET SPD BUG 1 [OFF]
+
–
MENU
SET/S

Press the SET/SEL knob to select the displayed item.

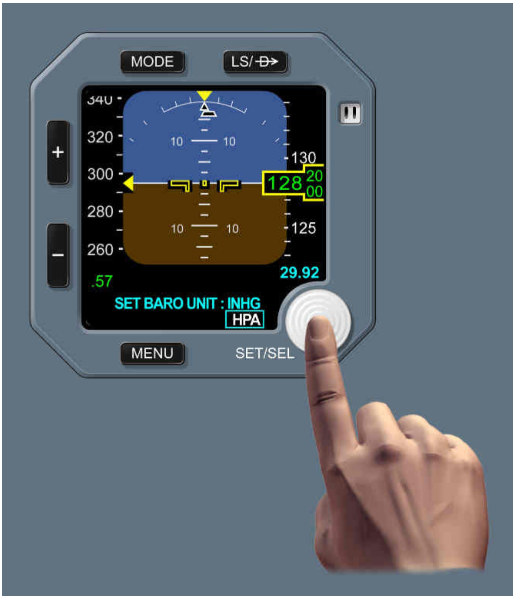

MODE
LS/
+
–
340
320
300
280
260
.57
10
10
10
10
130
128
20
00
125
29.92
SET SPD BUG 2 [308]
MENU
SET/SEL

WHEN A MENU ITEM IS SELECTED

When a menu item is selected on the ISIS in SFD mode, turn the SET/SEL knob to scroll through the different values of the item.


MODE
LS/ -D>
340
320
300
280
260
10
10
10
10
130
128
20
00
125
.57
29.92
SET BARO UNIT : INHG
HPA
MENU
SET/S
+
−

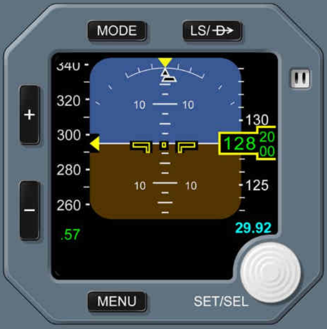
Press the SET/SEL knob to select the value of the item.


MODE
LS/ D>
340
320
300
280
260
10
10
10
10
130
128
20
00
125
+
–
.57
29.92
SET BARO UNIT : INHG
HPA
MENU
SET/SEL

HOW TO SELECT A FIX IN SFD MODE

Ident.: DSC-34-NAV-30-80-00003258.0001001 / 01 JUL 14
Applicable to: ALL

DISPLAY FIX


MODE
LS/ -D->
+
–
340
320
300
280
260
10
10
10
10
130
128
20
00
125
.57
29.92
MENU
SET/SEL

Press MENU to enter the SFD menu.

GENERAL

Ident.: DSC-34-NAV-40-00003320.0001001 / 03 SEP 14
Applicable to: ALL

The Global Navigation Satellite System (GNSS) is a navigation system that uses satellite signals.

L2 GNSS is a general term for satellite navigation systems, and includes for example:
- Global Positioning System (GPS)
- Global Orbiting Navigation Satellite System (GLONASS)
- Regional Satellite Based Augmentation System (SBAS) such as Wide Area Augmentation System (WAAS)

Note: *GPS is the only GNSS satellite navigation system that ADIRS consider to compute the aircraft position.*

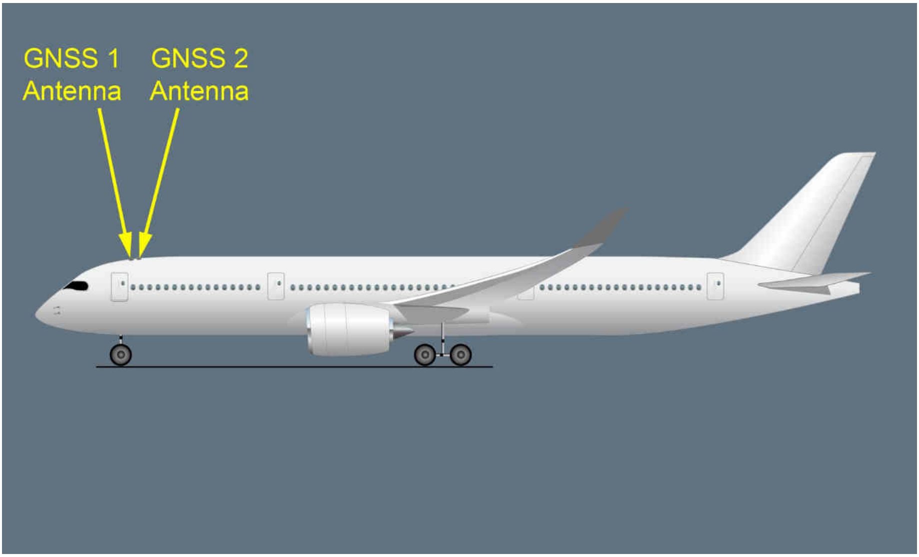
L1 The GNSS provides an independent source for:
- The position
- The speed
- The altitude
- The true track
- The time data.

The aircraft has two independent GNSS antennas.

Each GNSS has a dedicated GNSS receiver and GNSS antenna:
- GNSS 1 has a GNSS 1 receiver in Multi-Mode Receiver (MMR) 1 and a GNSS 1 antenna
- GNSS 2 has a GNSS 2 in receiver in MMR 2 and a GNSS 2 antenna.

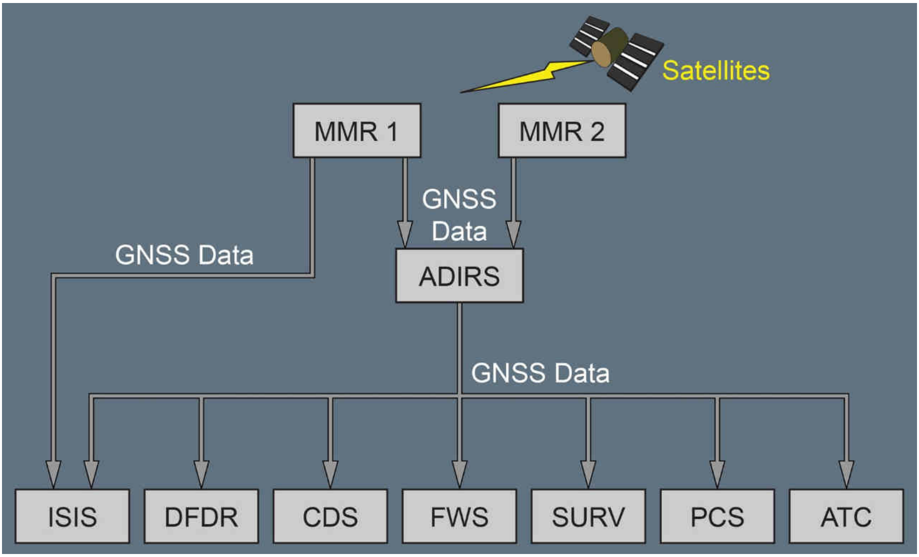
The GNSS antennas are installed on top of the fuselage.
Each GNSS antenna receives GNSS signals from the GNSS constellation.

GNSS Antennas


GNSS 1 Antenna
GNSS 2 Antenna

L2 The MMRs send the GNSS data to:

GNSS Data


Satellites
MMR 1
MMR 2
GNSS Data
GNSS Data
ADIRS
GNSS Data
ISIS
DFDR
CDS
FWS
SURV
PCS
ATC

GNSS DATA TO ADIRS

Ident.: DSC-34-NAV-40-00003321.0001001 / 23 APR 14
Applicable to: ALL

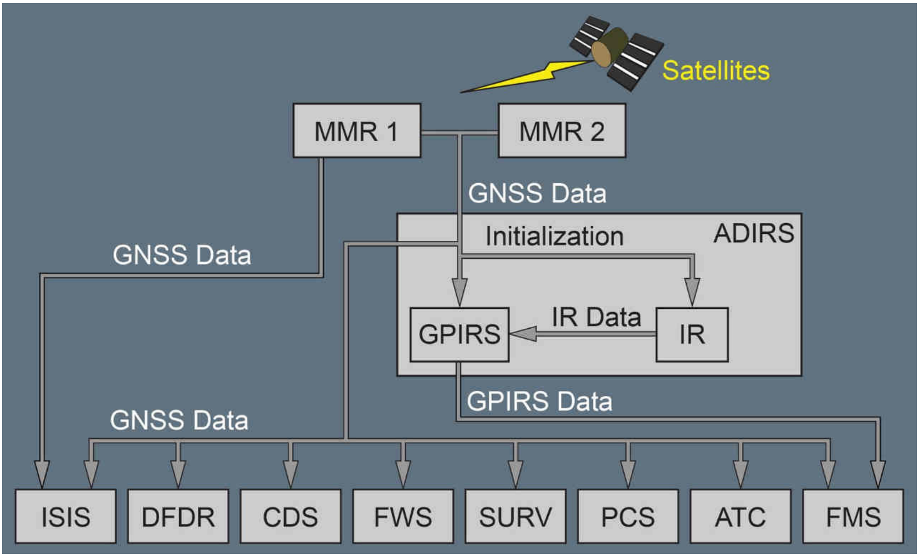
Each MMR is connected to each ADIRU.

L2 The ADIRS uses:

- The GNSS data to compute an hybrid GPIRS position between the IR and the GNSS data
  For more information about the computation of the aircraft position, *Refer to DSC-34-NAV-20-10-60 Position Computation*.
- The GNSS navigation data, and the GNSS UTC time for ADIRS initialization.

The ADIRS also sends the GNSS data to the DFDR, the CDS, the FWS, the SURV, the FMS, the PCS, the ISIS, and the ATC.

GNSS Data to ADIRS

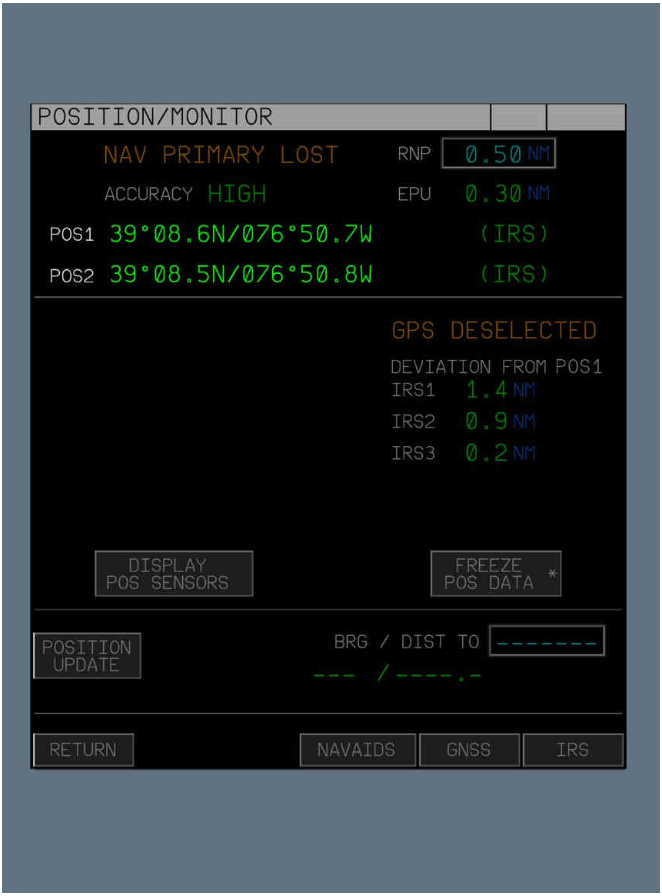

Satellites
MMR 1
MMR 2
GNSS Data
Initialization
ADIRS
GNSS Data
GPIRS
IR Data
IR
GPIRS Data
GNSS Data
ISIS
DFDR
CDS
FWS
SURV
PCS
ATC
FMS

GNSS DATA TO FMS

Ident.: DSC-34-NAV-40-00003322.0001001 / 23 APR 14
Applicable to: ALL

The MMRs provide the GNSS data to the FMS via the ADIRS.
The MMRs provide the GNSS data to the FMS for display on the FMS POSITION/MONITOR page and the FMS POSITION/GNSS page:

FMS POSITION/MONITOR Page



POSITION/MONITOR

NAV PRIMARY LOST

RNP 0.50 NM

ACCURACY HIGH

EPU 0.30 NM

POS1 39°08.6N/076°50.7W (IRS)

POS2 39°08.5N/076°50.8W (IRS)

GPS DESELECTED

DEVIATION FROM POS1

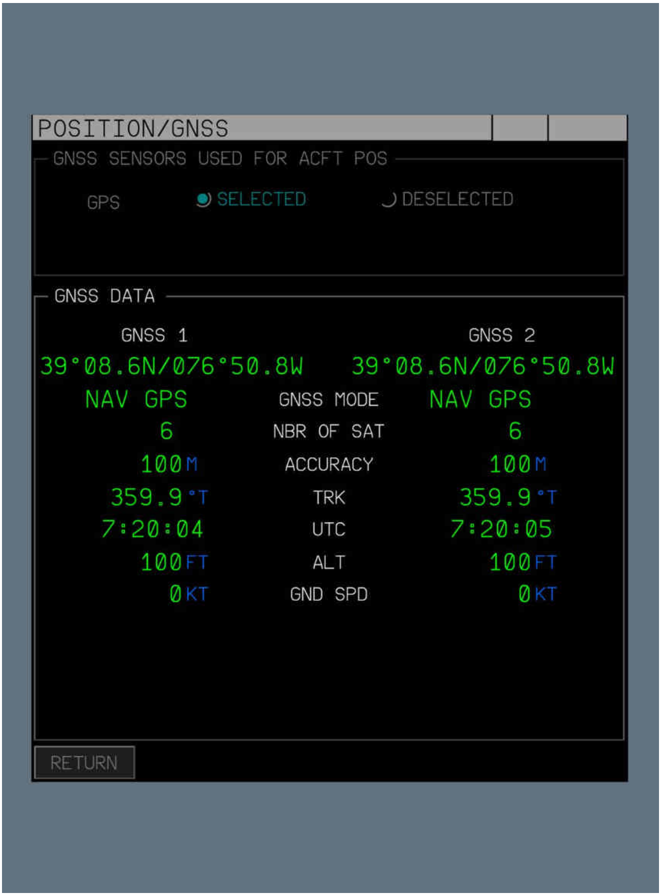
IRS1	1.4 NM
IRS2	0.9 NM
IRS3	0.2 NM

BRG / DIST TO --------

--- / ----.-

DISPLAY
POS SENSORS
FREEZE
POS DATA *
POSITION
UPDATE
RETURN
NAVAIDS
GNSS
IRS

FMS POSITION/GNSS Page



POSITION/GNSS

GNSS SENSORS USED FOR ACFT POS

GPS ● SELECTED ○ DESELECTED

GNSS DATA

GNSS 1		GNSS 2
39°08.6N/076°50.8W		39°08.6N/076°50.8W
NAV GPS	GNSS MODE	NAV GPS
6	NBR OF SAT	6
100M	ACCURACY	100M
359.9°T	TRK	359.9°T
7:20:04	UTC	7:20:05
100FT	ALT	100FT
0KT	GND SPD	0KT

L2 For more information about the FMS POSITION/MONITOR page, *Refer to DSC-22-FMS-20-20-20 POSITION/MONITOR Page*.
For more information about the FMS POSITION/GNSS page, *Refer to DSC-22-FMS-20-20-20 POSITION/GNSS Page*.
For information about the GNSS Modes, *Refer to DSC-34-NAV-40 GNSS Modes*.

GNSS DATA TO ISIS

Ident.: DSC-34-NAV-40-00003323.0001001 / 06 NOV 14
Applicable to: ALL

The MMRs send the GNSS data to ISIS.

L2 The ISIS displays the aircraft position on the SFD.
The displayed position comes from ADIRU 1 or 3 (the GPIRS, or the GNSS, or the IRS position), or MMR 1 (the GNSS position) in accordance with the ISIS internal logic.
For more information about the aircraft position on the ISIS SFD, *Refer to DSC-34-NAV-30-30 Aircraft Position*.

GNSS MODES

Ident.: DSC-34-NAV-40-00017175.0001001 / 22 NOV 17
Applicable to: ALL

The GNSS can operate in the following modes:

- The initialization (INIT) mode

L3 The INIT mode is associated with the GNSS initialization. GNSS initialization begins at power-up, and ends when the GNSS begins the satellite acquisition process.

L1 - The acquisition (ACQ) mode

L3 The ACQ mode enables the search of the satellites. The GNSS initiates this mode after INIT mode, or after a long period of satellite signal loss. The GNSS remains in this mode, until the GNSS is able to be connected with at least four satellites.
As soon as four satellites are connected, the navigation (NAV) mode becomes active. The ACQ mode can become active when the GNSS is in the NAV, the DIRSPDAID, the ALTAID, or the SBAS NAV mode.

L1 - The NAV GPS mode

L3 The NAV mode is only based on the GPS data. This mode provides the GPS measurement and navigation data. This mode is the primary navigation mode for the en route, terminal, and non-precision approach flight phases. The NAV GPS mode can become active when the GNSS is in the ACQ mode.

L1 - The NAV SBAS ◁✳ mode

L3 The NAV SBAS mode provides the GNSS measurement and navigation data that the SBAS monitors. This mode is automatically activated when the SLS ◁✳ approach is selected. The NAV SBAS mode can become active when the GNSS is in the NAV or the ACQ mode.

L1 - The altitude aiding (ALTAID) mode

L3 The ALTAID mode:
- Uses the altitude that the ADIRS provides
- Provides the GNSS measurement and navigation data.

This mode is used if the GNSS is degraded or can not connect to four satellites.

L1 - The direction/speed aiding (DIRSPDAID) mode

L3 The DIRSPDAID mode:
- Uses the ground speed, the vertical speed, and the track angle that the ADIRS provides
- Provides the GNSS measurement and navigation data.

L1 - The test (TEST) mode

L3 The TEST mode checks the status of various GNSS receiver circuits.

L1 - The fault (FAULT) mode.

L3 The FAULT mode becomes active if a failure can affect the validity of the GNSS data.

L1 These modes are indicated on the POSITION/GNSS page (*Refer to DSC-22-FMS-20-20-20 POSITION/GNSS Page*).

OVERVIEW

Ident.: DSC-34-NAV-50-00003376.0001001 / 09 MAR 16
Applicable to: ALL

The Multi-Mode Receivers (MMRs) provide the different approach modes via the following landing systems:
- The Instrument Landing System (ILS)
- The FMS Landing System (FLS)
- The mixed Localizer/FLS (LOC/FLS) system
- The GBAS Landing System (GLS) ◁
- The Satellite Landing System (SLS) ◁ .

The aircraft has two independent Landing Systems (LS) antennas:
- The Localizer/Differential Global Positioning System(LOC/DGPS) antenna that receives localizer signal, and data from the GLS ◁ ground station
- The Glide Slope (G/S) capture antenna that receives G/S signals.

Both antennas are in the radome. Each MMR uses both antennas.
L2 For more information about the GNSS antennas, *Refer to GNSS/Overview*.

ILS

Ident.: DSC-34-NAV-50-00012154.0001001 / 23 APR 14
Applicable to: ALL

The ILS enables the flight crew to perform approaches based on the vertical and lateral deviations received from the LOC and G/S ground stations.

The MMRs provide:
- The radio lateral deviation from the LOC reference
- The radio vertical deviation from the G/S reference
- The identification of the LOC and G/S ground stations.

L2 For more information about the ILS approaches, *Refer to DSC-22-FG-70-80-00 ILS Guidance Mode*.

FLS

Ident.: DSC-34-NAV-50-00012157.0001001 / 23 APR 14
Applicable to: ALL

The FLS enables the flight crew to perform non-precision approaches, in accordance with the "ILS look-alike" feature.

For FLS, the MMRs use:
- The aircraft position from the ADIRS.
- The approach database from the FMS.

The MMRs provide:

- The computed lateral deviation (pseudo LOC)
- The computed vertical deviation (pseudo G/S)
- The horizontal distance between the aircraft and the anchor point of the FLS beam.

L2 For more information about the FLS beam, *Refer to DSC-22-FMS-10-30-40 FLS Beam Computation*.

For more information about approaches with FLS, *Refer to DSC-22-FG-70-80-00 Approaches Flown with Lateral and Vertical FLS Guidance*.

LOC/FLS

Ident.: DSC-34-NAV-50-00012158.0001001 / 23 APR 14
Applicable to: ALL

The LOC/FLS enables the flight crew to perform approaches with the LOC ground station only, in accordance with the "ILS look-alike" feature.

For LOC/FLS, the MMRs use:

- The aircraft position from the ADIRS
- The signals from the LOC ground station
- The approach database from the FMS.

The MMRs provide:

- The radio lateral deviation from the LOC reference
- The computed vertical deviation (pseudo G/S)
- The identification of the LOC ground station.

L2 For more information about LOC approaches with vertical FLS guidance, *Refer to DSC-22-FG-70-80-00 Approaches Flown with Vertical FLS Guidance*.

GLS ◁

Ident.: DSC-34-NAV-50-00012159.0001001 / 09 MAR 16
Applicable to: ALL

The GLS uses the Global Navigation Satellite System (GNSS) position, with correction signal from a local ground station also known as Ground Based Augmentation System (GBAS).
The GLS enables the flight crew to fly straight-in approaches, in accordance with the "ILS look-alike" feature.

For GLS, the MMRs use:

- The aircraft position from the GNSS satellites
- The position correction from the GBAS station
- The approach database from the GBAS station.

The MMRs provide:
- The computed lateral deviation
- The computed vertical deviation
- The horizontal distance between the aircraft and the runway threshold
- The identification of the GBAS ground station.

L2 For more information about approaches with GLS, *Refer to DSC-22-FG-70-80-00 GLS Guidance Mode*.

SLS

Ident.: DSC-34-NAV-50-00012162.0001001 / 09 MAR 16
Applicable to: ALL

The SLS uses the Global Navigation Satellite System (GNSS) position, with correction signals from satellite constellations also known as Satellite Based Augmentation System (SBAS).

L3 To compute the correction signals, the SBAS geostationary satellites communicate with regional ground stations.

L1 The SLS approach enables the flight crew to fly RNAV(GNSS) straight-in approaches, in accordance with the "ILS look-alike" feature.

For SLS, the MMRs use:
- The aircraft position from the GNSS satellites
- The position correction from the SBAS geostationary satellites

L3 The MMRs can receive the SBAS signal from satellite constellations such as:
  - Wide Area Augmentation Signal (WAAS) over north America
  - European Geostationary Navigation Overlay Service (EGNOS) over Europe
  - Japanese Multi-functional Satellite Augmentation System (MSAS) over Japan

L1
- The approach database from the FMS.

The MMRs provide:
- The computed lateral deviation
- The computed vertical deviation
- The horizontal distance between the aircraft and the runway threshold.

L2 For more information about precision approaches with SLS, *Refer to DSC-22-FG-70-80-00 SLS Guidance Mode*.

CONTROLS AND INDICATORS

Ident.: DSC-34-NAV-50-10-00019676.0001001 / 23 APR 14
Applicable to: ALL

For information about the PFD, *Refer to DSC-31-CDS-40-20-110 xLS Approaches*.

Ident.: DSC-34-NAV-50-10-00019679.0001001 / 23 APR 14
Applicable to: ALL

For information about the SFD, *Refer to DSC-34-NAV-30-30 Approach*.

Ident.: DSC-34-NAV-50-10-00019678.0001001 / 23 APR 14
Applicable to: ALL

For information about the ARC mode, *Refer to DSC-31-CDS-40-40-20 ARC Mode Overview*.
For information about the ROSE-NAV mode, *Refer to DSC-31-CDS-40-40-40 ROSE-NAV Mode Overview*.
For information about the ROSE-VOR mode, *Refer to DSC-31-CDS-40-40-50 ROSE-VOR Mode Overview*.
For information about the ROSE-LS mode, *Refer to DSC-31-CDS-40-40-60 ROSE-LS Mode Overview*.

Ident.: DSC-34-NAV-50-10-00019680.0001001 / 23 APR 14
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB

For information about the HUD, *Refer to DSC-31-CDS-50-30-110 xLS Approaches*.

GENERAL

Ident.: DSC-34-NAV-60-10-00003329.0001001 / 23 APR 14
Applicable to: ALL

The aircraft has three Radio Altimeters (RAs). The RAs provide the height of the aircraft above the ground mainly for:

- The display on the PFD, VD and HUD, if installed
- The auto callouts
- The autoland mode

L2 For more information about the autoland mode, *Refer to DSC-22-FG-70-110-90 ILS Approach and Autoland*.

L1 - The flight control laws

L2 For more information about the flight control system, *Refer to DSC-27-10-10 Flight Control System*.

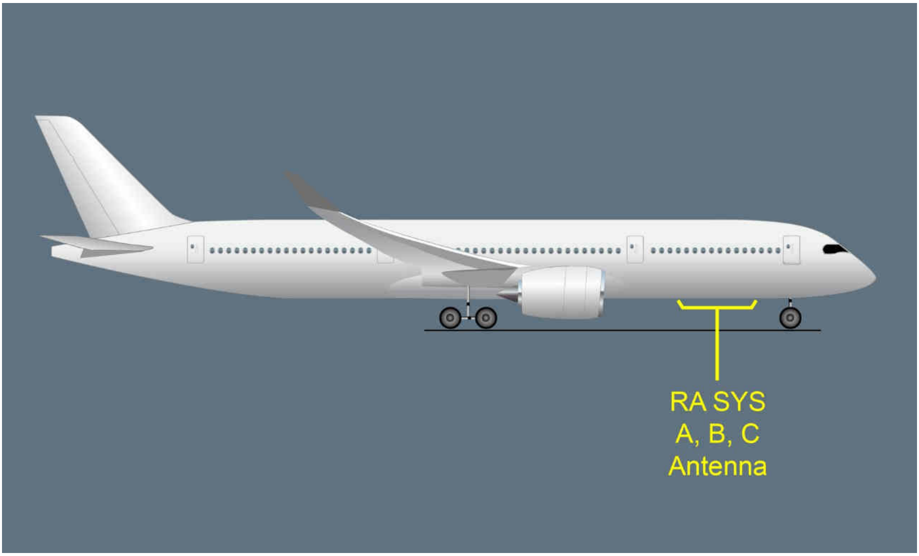
L1 - The SURV calculation.

L2 For more information about the SURV calculation, *Refer to SURV/Overview*.

L3 The RAs operate below 5 500 ft AGL.

L1 The RA height is the minimum distance between the MLG wheels and the ground.

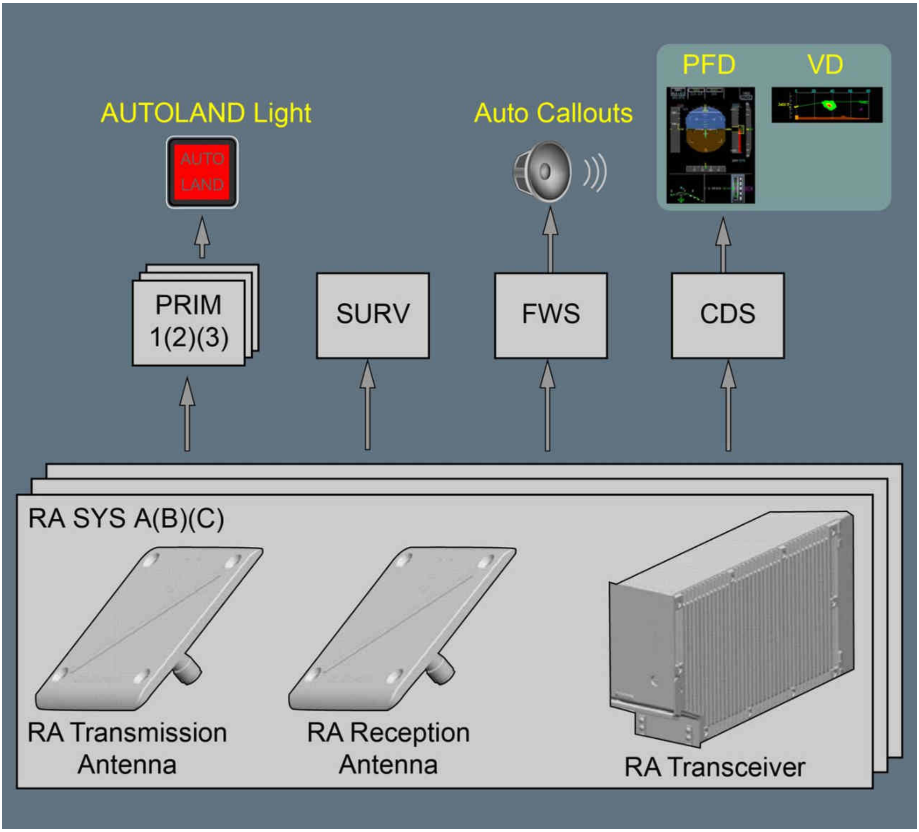
Antennas



ARCHITECTURE

Ident.: DSC-34-NAV-60-10-00012618.0001001 / 23 APR 14
Applicable to: ALL

Architecture


PFD
VD
AUTOLAND Light
AUTO
LAND
Auto Callouts
PRIM
1(2)(3)
SURV
FWS
CDS
RA SYS A(B)(C)
RA Transmission
Antenna
RA Reception
Antenna
RA Transceiver

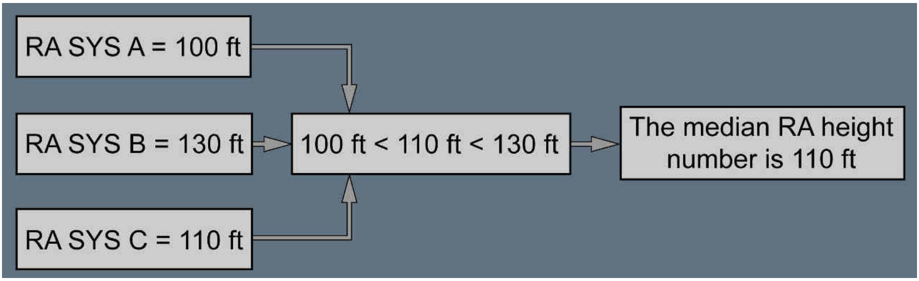
Each RA provides its RA height to the user aircraft systems.

L2 The PRIMs use the RA height for autoland warning computation, guidance and flight control laws.
For more information, *Refer to DSC-22-FG-100-20 Autoland Warning*.

The SURV system uses the RA height for:
- The PWS. For more information, *Refer to DSC-34-SURV-30-10 Predictive Windshear (PWS) Function*.
- The TCAS. For more information, *Refer to DSC-34-SURV-40-10 Principle*.
- The GPWS. For more information, *Refer to DSC-34-SURV-20-10 GPWS*.

The FWS uses the RA height in order to compute the auto callouts and the flight phases.
The CDS displays the RA height.
L1 In normal operation, the aircraft systems use the median RA height number.

Median RA Height Number



L2 Each RA has:
- One RA transceiver
- One RA transmission antenna
- One RA reception antenna.

AUTO CALLOUTS

Applicable to: ALL

Ident.: DSC-34-NAV-60-10-10-00015970.0001001 / 23 APR 14

Below 2 500 ft RA, a synthetic voice generates auto callouts:
- RA height callouts
- Retard (airborne).

These announcements come through the cockpit loudspeakers even if the loudspeakers are turned off.
L3 The FWS triggers these announcements.

Ident.: DSC-34-NAV-60-10-10-00015971.0001001 / 23 APR 14

PREDETERMINED HEIGHT CALLOUTS

Pin programming enables the operator to activate the desired callouts.

Ident.: DSC-34-NAV-60-10-10-00015972.0001001 / 23 APR 14

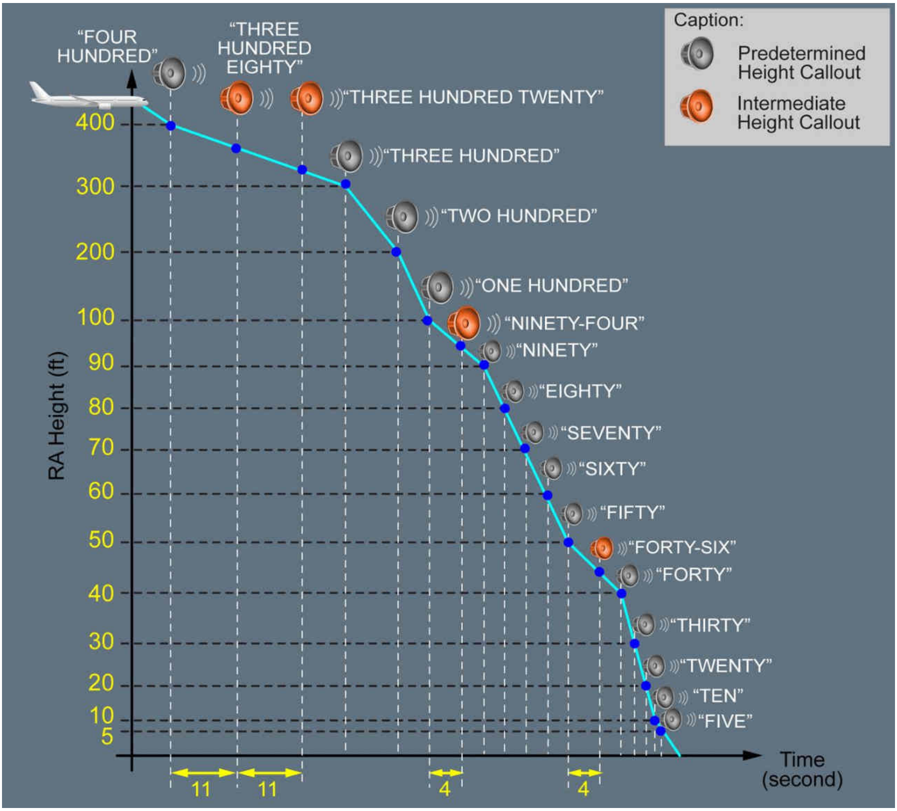
INTERMEDIATE HEIGHT CALLOUTS

Below 400 ft RA, if the time between two consecutive predetermined height callouts exceeds a specific threshold, the current aircraft height is repeated at regular time intervals.
This is referred to as an intermediate RA height callout.
The intermediate RA height callouts are triggered even if the predetermined height callouts are not selected.

L3 Between 400 ft RA and 100 ft RA, the threshold is 11 s.
Below 100 ft RA, the threshold is 4 s.

L2 Between 400 ft RA and 100 ft RA, the height is rounded off to the lower 10 ft (e.g. TWO HUNDRED AND TWENTY).
Between 100 ft RA and 10 ft RA, the height is rounded off to the lower 2 ft.
Below 10 ft RA, the height is rounded off to the lower feet.

Intermediate and Predetermined height Callouts



Ident.: DSC-34-NAV-60-10-10-00015973.0001001 / 23 APR 14

RETARD AUTO CALLOUT

The "RETARD" auto callout is automatically triggered at:
- 10 ft RA, in autoland with the A/THR active
- 20 ft RA, in all the other cases.

L2 For more information about the aural alerts, *Refer to DSC-34-NAV-60-20 Audio Indicators*.

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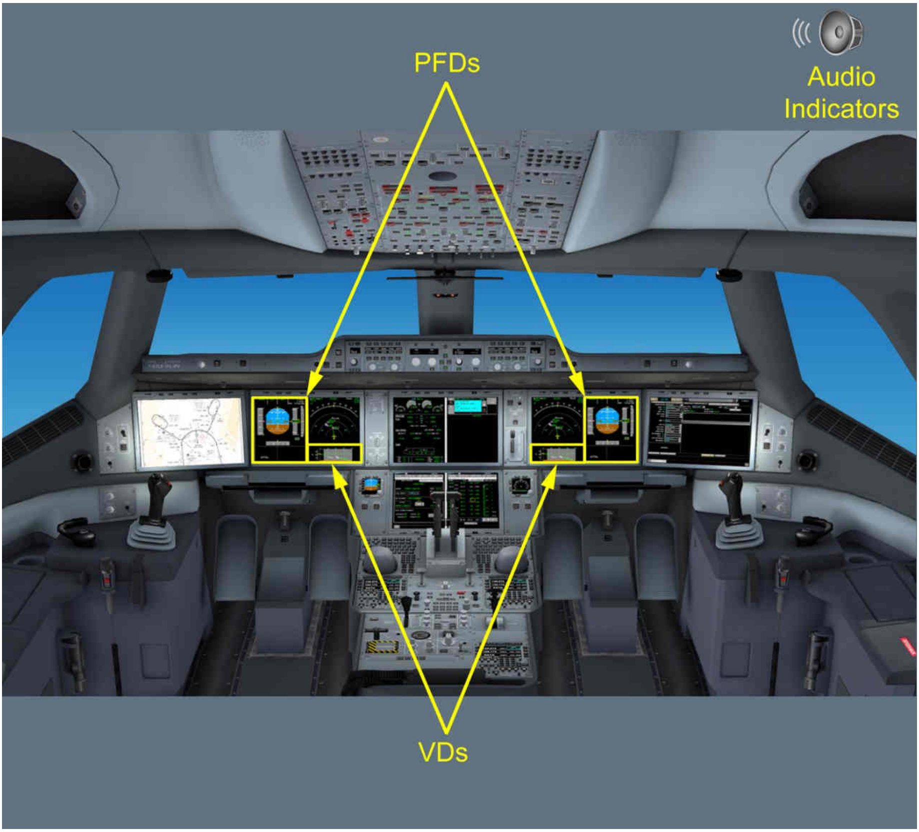
COCKPIT VIEW

Ident.: DSC-34-NAV-60-20-00012640.0001001 / 23 APR 14
Applicable to: ALL

Cockpit View



AUDIO INDICATORS

Ident.: DSC-34-NAV-60-20-00003334.0001001 / 24 MAR 15
Applicable to: ALL

PREDETERMINED HEIGHT CALLOUTS

Pin programming enables the operator to activate the callouts needed.

Audio Indicator	Condition or Cause	Duration See (1)
Two Thousand Five Hundred (Synthetic voice) or Twenty Five Hundred (Synthetic voice) See (2)	The FWS triggers the auto callout when the RA height is 2 500 ft	Sounds one time
Two Thousand (synthetic voice)	The FWS triggers the auto callout when the RA height is 2 000 ft	Sounds one time
One Thousand (synthetic voice)	The FWS triggers the auto callout when the RA height is 1 000 ft	Sounds one time
Five Hundred (synthetic voice)	The FWS triggers the auto callout when the RA height is: - 500 ft, or - 500 ft and an xLS approach is not selected (3), or - 500 ft, an xLS approach is selected and the glide slope deviation exceeds 2 dots (3)	Sounds one time
Four Hundred (synthetic voice)	The FWS triggers the auto callout when the RA height is 400 ft	Sounds one time
Three Hundred (synthetic voice)	The FWS triggers the auto callout when the RA height is 300 ft	Sounds one time
Two Hundred (Synthetic voice)	The FWS triggers the auto callout when the RA height is 200 ft	Sounds one time
One Hundred (synthetic voice)	The FWS triggers the auto callout when the RA height is 100 ft	Sounds one time
Ninety (synthetic voice)	The FWS triggers the auto callout when the RA height is 90 ft	Sounds one time
Eighty (synthetic voice)	The FWS triggers the auto callout when the RA height is 80 ft	Sounds one time
Seventy (synthetic voice)	The FWS triggers the auto callout when the RA height is 70 ft	Sounds one time
Sixty (synthetic voice)	The FWS triggers the auto callout when the RA height is 60 ft	Sounds one time
Fifty (synthetic voice)	The FWS triggers the auto callout when the RA height is 50 ft	Sounds one time
Forty (synthetic voice)	The FWS triggers the auto callout when the RA height is 40 ft	Sounds one time
Thirty (synthetic voice)	The FWS triggers the auto callout when the RA height is 30 ft	Sounds one time

Continued on the following page

Continued from the previous page

Audio Indicator	Condition or Cause	Duration See (1)
Twenty (synthetic voice)	The FWS triggers the auto callout when the RA height is 20 ft	Sounds one time
Ten (synthetic voice)	The FWS triggers the auto callout when the RA height is 10 ft	Sounds one time
Five (synthetic voice)	The FWS triggers the auto callout when the RA height is 5 ft	Sounds one time
Hundred Above (Synthetic voice) or Plus Hundred (Synthetic voice) See (2)	The FWS triggers the auto callout when the RA height is 100 ft above the DH (or MDA/MDH) (4)	Sounds one time
Minimum (Synthetic voice)	The FWS triggers the auto callout when the RA height is the DH (or MDA/MDH) (4)	Sounds one time

(1) *All audio indicators can be canceled by pressing the EMER CANC pb on the ECP.*

(2) *The operator can select one of the following:*
- *The "Hundred Above" callout*
- *The "Plus Hundred" callout, or*
- *No callout at 100 ft above DH(or MDA/MDH).*

(3) *If the operator selects the smart "FIVE HUNDRED" auto callout.*

(4) *The reference altitude for auto callouts is the RA height for CAT II / CAT III precision approaches (RADIO field in the FMS ACTIVE/PERF page), and the barometric altitude (BARO field in the FMS ACTIVE/PERF page) for non precision approaches.*

RETARD AUTO CALLOUT

Audio Indicator	Condition or Cause	Duration (1)
Retard (Synthetic Voice)	The FWS triggers the auto callout when the RA height is: - 10 ft, in autoland with the A/THR active, or - 20 ft, in all the other cases.	Sounds one time at 20 ft (10 ft in autoland with A/THR ON), then sounds until the flight crew sets the thrust levers to IDLE
or Ten Retard (Synthetic voice) See (2)	The FWS triggers the auto callout when the RA height is 10 ft, in autoland with the A/THR active.	Sounds one time
or Twenty retard (Synthetic voice) See (3)	The FWS triggers the auto callout when the RA height is 20 ft, in manual landing or with the A/THR inactive.	Sounds one time

(1) *All audio indicators can be canceled by pressing the EMER CANC pb on the ECP.*

(2) *If the operator selects the "TEN" auto callout.*

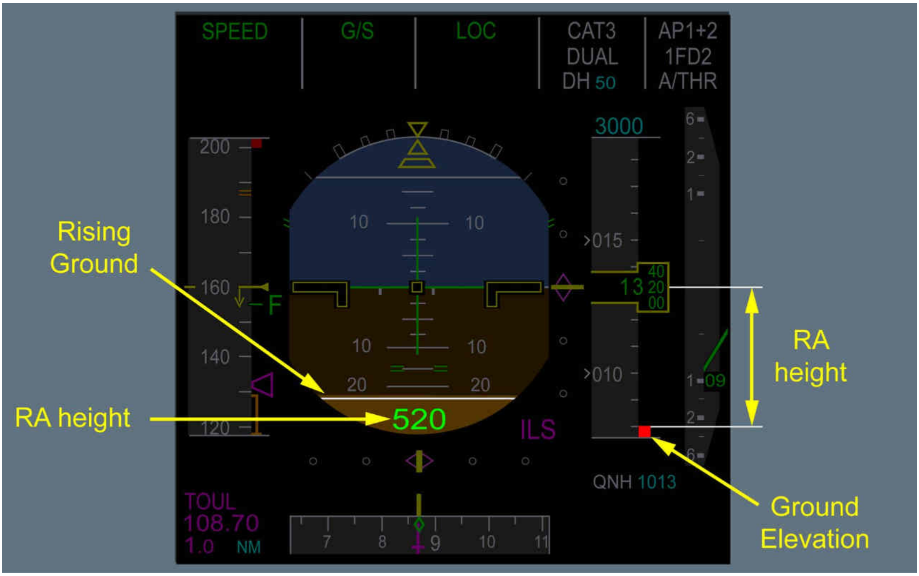
(3) *If the operator selects the "TWENTY" auto callout.*

L2 For more information on the "Retard, Retard" auto callout, *Refer to DSC-70-20 Audio Indicators*.

PFD

Ident.: DSC-34-NAV-60-20-00012641.0001001 / 23 APR 14
Applicable to: ALL

PFD


SPEED
G/S
LOC
CAT3
DUAL
DH 50
AP1+2
1FD2
A/THR
3000
Rising Ground
RA height
520
ILS
RA height
Ground Elevation
QNH 1013
TOUL
108.70
1.0 NM
200
180
160
140
120
F
10
20
015
010
13
09

The PFD displays the following:

- The RA value when the aircraft is below 2 500 ft RA

L2 For more information, *Refer to DSC-31-CDS-40-20-70 RA Height*.

L1 - The ground elevation when the aircraft is below 570 ft RA

L2 For more information, *Refer to DSC-31-CDS-40-20-50 Ground Reference*.

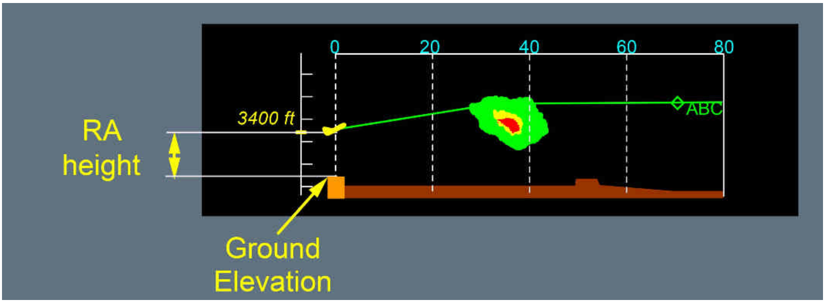
L1 - The rising ground when the aircraft approaches the ground.

L2 For more information about the rising ground, *Refer to DSC-31-CDS-40-20-70 RA Height*.

VD

Ident.: DSC-34-NAV-60-20-00012642.0001001 / 23 APR 14
Applicable to: ALL

VD


0
20
40
60
80
3400 ft
ABC
RA height
Ground Elevation

The VD displays the ground elevation when the aircraft is below 5 000 ft RA.

L2 For more information, *Refer to DSC-31-CDS-40-50 Terrain Profile*.

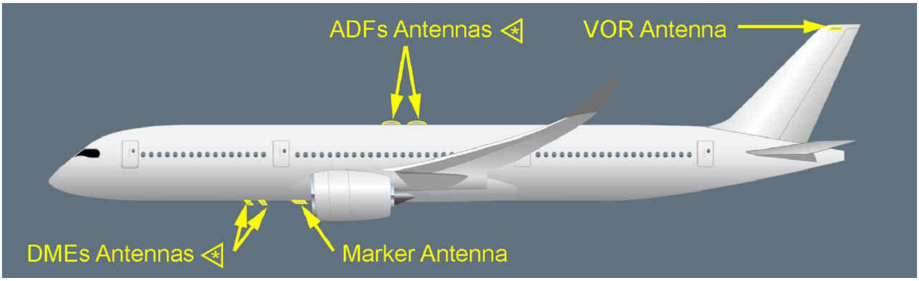
GENERAL

Ident.: DSC-34-NAV-70-10-00012308.0001001 / 09 MAR 16
Applicable to: ALL

The radio navigation system provides the flight crew and the other aircraft systems with navigation information.

The radio navigation system includes the following systems:
- A single VHF Omnidirectional Range (VOR) system, or a dual VOR system ◁
- One Marker Beacon (MKR) system
- A single Distance Measuring Equipment (DME) system, or a dual DME system ◁
- A single Automatic Direction Finder (ADF) system ◁ , or a dual ADF system ◁ .

Antennas



NAVAIDS

Applicable to: ALL

Ident.: DSC-34-NAV-70-10-10-00012309.0001001 / 09 MAR 16

VOR

The VOR system provides:
- The magnetic bearing of the aircraft from the selected ground station
- The selected course
- The aural and digital identification of the selected ground station.

L2 The VOR system has:
- One or two VOR receiver(s)
- One VOR antenna.

L1 The ND displays the VOR data on the CAPT or the F/O side of the cockpit, when the flight crew selects the VOR via the VOR/ADF ◁ pb on the EFIS CP.

L2 For more information about the information that is displayed on the ND, *Refer to DSC-31-CDS-40-40-10 Overview*.
The VOR system operates in a frequency range of 108 MHz to 117.95 MHz.

Ident.: DSC-34-NAV-70-10-10-00012310.0001001 / 20 OCT 14

MKR

The MKR system provides the flight crew with an aural and visual indication when the aircraft is over the marker transmitter. The VOR system includes the MKR system.
L2 The aircraft has a marker antenna that is connected to the VOR system.
L1 Both PFDs display the outer, middle, and inner markers.
L2 For more information about the information that is displayed on the PFD, *Refer to DSC-31-CDS-40-20-110 ILS Marker*.
The MKR system operates in a frequency of 75 MHz.

Ident.: DSC-34-NAV-70-10-10-00012311.0001001 / 03 APR 20

DME

The DME system provides:
- The distance between the aircraft and the selected ground station
- The audio indicator and the digital identification of the selected ground station.

L2 The DME system has:
- One or two DME receiver(s)
- One or two DME antenna(s).

The FMS can tune up to four DME ground stations:
- One for VOR/DME distance display
- Two for DME/DME computation
- One for ILS/DME distance display.

L1 For each side, the DME data is displayed on:
- The ND, when the flight crew selects the VOR via the VOR/ADF ⊲ pb on the EFIS CP
  L2 For more information about the data that is displayed on the ND, *Refer to DSC-31-CDS-40-40-10 Overview*.
- L1 The PFD, when the flight crew presses the LS pb on the EFIS CP.
  L2 For more information about the data that is displayed on the PFD, *Refer to DSC-31-CDS-40-20-10 Overview*.

Ident.: DSC-34-NAV-70-10-10-00012312.0001001 / 09 MAR 16

ADF ◁

The ADF system provides:

- The relative bearing between:
  - The aircraft centerline
  - The direction of the selected ground Non-Directional Beacon (NDB) station
- The aural and digital identification of the selected ground station.

L2 The ADF system has:

- One or two ADF receiver(s)
- One or two ADF active antenna(s).

L1 For each side, the ND displays the ADF data when the flight crew selects the ADF via the VOR/ADF pb on the EFIS CP.

L2 For more information about the information that is displayed on the ND, *Refer to DSC-31-CDS-40-40-10 Overview*.
The ADF system operates in a frequency range from 190 kHz to 1 750 kHz.

NAVAIDS TUNING

Applicable to: ALL

Ident.: DSC-34-NAV-70-10-20-00012313.0001001 / 23 APR 14

NORMAL OPERATION

In normal operation, the FMS automatically tunes the navaids. However, the flight crew can manually tune the navaids, via the FMS POSITION/NAVAIDS page.

L2 For more information about the navaids tuning by the FMS, *Refer to DSC-22-FMS-10-30-20 Description*.

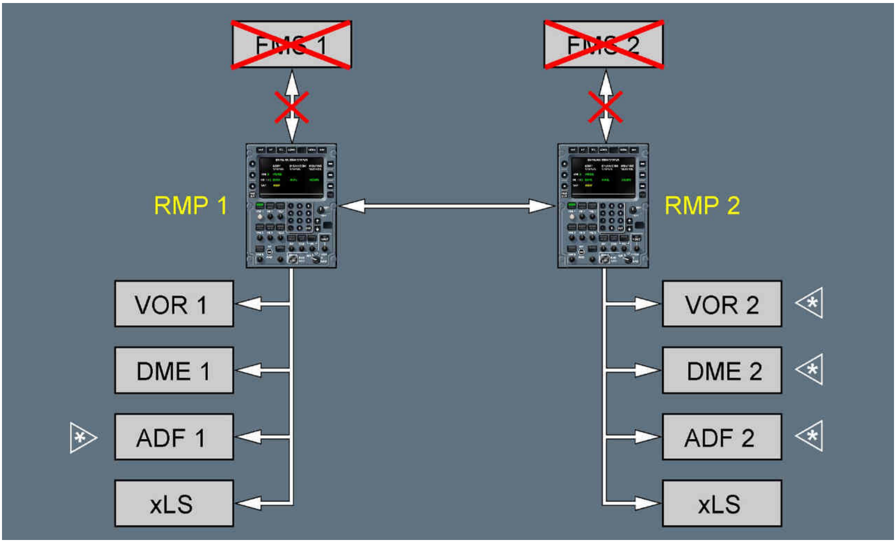
Ident.: DSC-34-NAV-70-10-20-00012314.0001001 / 09 MAR 16

STBY RAD NAV

In the case of dual FMS failure, the flight crew can use RMP 1 or RMP 2 in order to tune the VOR 1, VOR 2 ◁ , DME 1, DME 2 ◁ , ADF 1 ◁ , ADF 2 ◁ and the landing systems. This tuning is the Standby Radio Navigation (STBY RAD NAV) mode.
The flight crew must press the STBY RAD NAV guarded key on RMP 1 or 2 to activate the STBY RAD NAV mode.

L2 The STBY RAD NAV guarded key on RMP 3 is inhibited.
When this mode is activated, the RMP has priority over the FMS in order to manage the navaids.

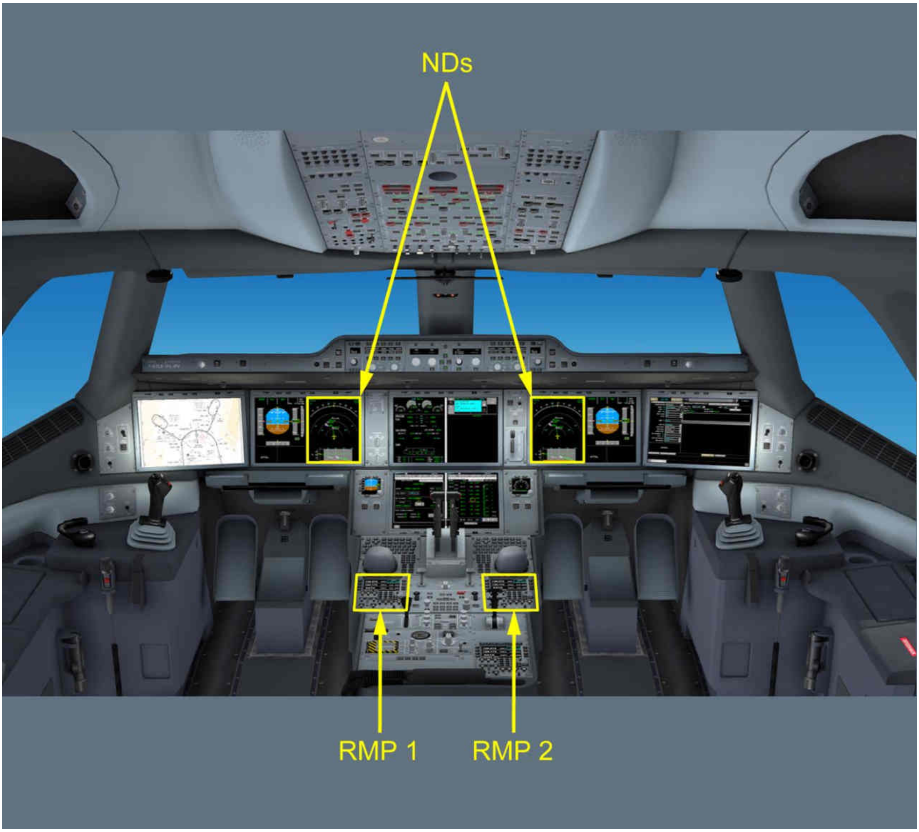
STBY RAD NAV


FMS 1
FMS 2
RMP 1
RMP 2
VOR 1
DME 1
ADF 1
xLS
VOR 2
DME 2
ADF 2
xLS

COCKPIT VIEW

Ident.: DSC-34-NAV-70-20-00003345.0001001 / 23 APR 14
Applicable to: ALL

Cockpit View



ND

Ident.: DSC-34-NAV-70-20-00019702.0001001 / 23 APR 14
Applicable to: ALL

For information about the ARC mode, *Refer to DSC-31-CDS-40-40-20 ARC Mode Overview*.
For information about the ROSE-NAV mode, *Refer to DSC-31-CDS-40-40-40 ROSE-NAV Mode Overview*.

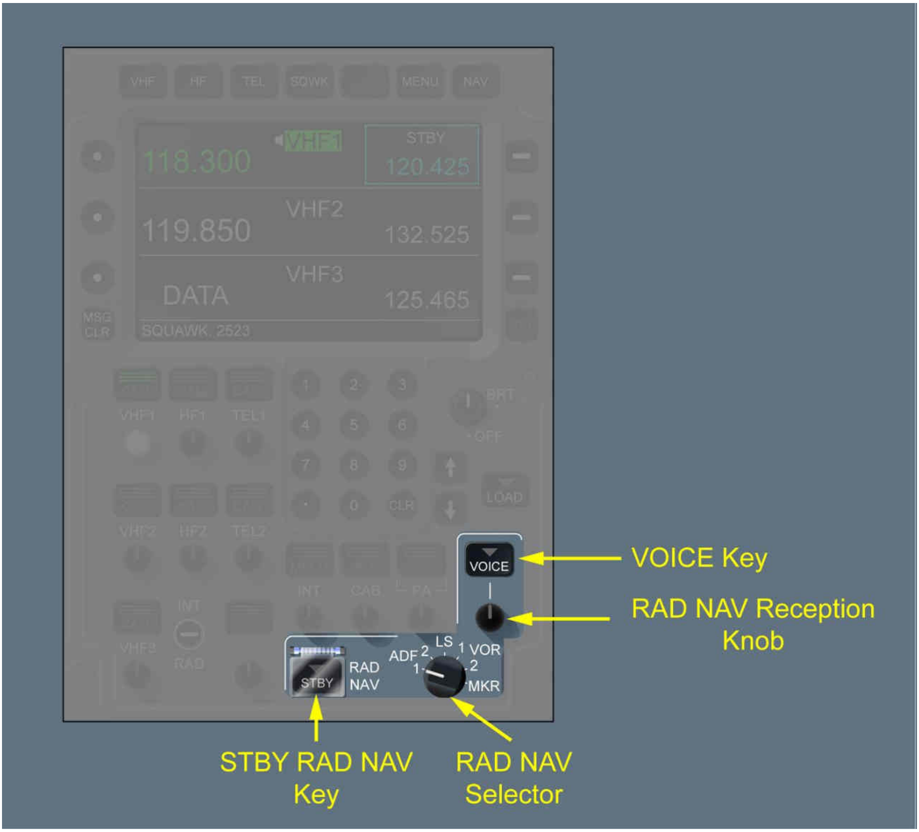
For information about the ROSE-VOR mode, *Refer to DSC-31-CDS-40-40-50 ROSE-VOR Mode Overview*.
For information about the ROSE-LS mode, *Refer to DSC-31-CDS-40-40-60 ROSE-LS Mode Overview*.

RMP 1(2)

Applicable to: ALL

Ident.: DSC-34-NAV-70-20-GRMP-00003346.0001001 / 23 APR 14

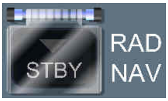
RMP


VHF
HF
TEL
SQWK
MENU
NAV
118.300
VHF1
STBY
120.425
VHF2
119.850
132.525
VHF3
DATA
125.465
SQUAWK 2523
MSG CLR
VHF1
HF1
TEL1
VHF2
HF2
TEL2
VHF3
INT
RAD
CAB
PA
1
2
3
4
5
6
7
8
9
0
CLR
BRT
OFF
LOAD
VOICE
STBY
RAD NAV
ADF
2
1
LS
1
VOR
2
MKR
VOICE Key
RAD NAV Reception Knob
STBY RAD NAV Key
RAD NAV Selector

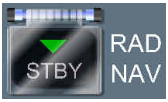
Ident.: DSC-34-NAV-70-20-GRMP-00003347.0001001 / 23 APR 14

STBY RAD NAV KEY

The STBY RAD NAV key enables the flight crew to change the navaid manual selection from the FMS to the RMP.



The FMS tunes the navaids. The RMP is only used to control the communication.

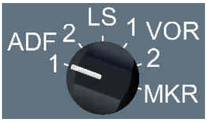


The RMP tunes the navaids. The RMP operates in STBY RAD NAV mode, and still controls the communication.

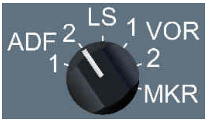
Ident.: DSC-34-NAV-70-20-GRMP-00003348.0001001 / 09 MAR 16

RAD NAV SELECTOR

The flight crew uses the RAD NAV selector to select the navaid that they want to listen to.

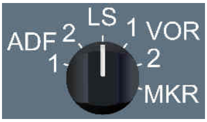


The flight crew can listen to ADF 1 🔊 .



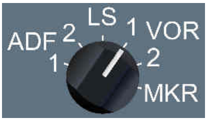
The flight crew can listen to ADF 2 🔊 .

L12



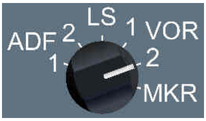
The flight crew can listen to the tuned landing system and to the associated DME.
In order to listen to the DME associated to the tuned landing system, the flight crew shall select the LS pb.

L12

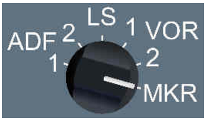


The flight crew can listen to the and VOR 1 and DME 1.
In order to listen to the DME associated to the VOR, the flight crew shall not select the LS pb.

L12



The flight crew can listen to the VOR 2 ◁ and DME 2 ◁ .
In order to listen to the DME associated to the VOR, the flight crew shall not select the LS pb.



The flight crew can listen to the MKR.

L2 In the case of FMS selector on BOTH ON 1 or BOTH ON 2, in order to listen to the DME, the flight crew shall ensure that both LS pb are in the same state.

Ident.: DSC-34-NAV-70-20-GRMP-00003349.0001001 / 23 APR 14

RAD NAV RECEPTION KNOB

The flight crew uses the RAD NAV reception knob to:
- Enable the audio reception of the navaid
- Adjust the volume of the navaid reception.

The associated navaid is not in audio reception mode.

The associated navaid is in audio reception mode.
The flight crew presses the RAD NAV reception knob in order to receive the audio of the navaid.
The flight crew turns the RAD NAV reception knob in order to adjust the volume of the boomsets and the loudspeakers.

Ident.: DSC-34-NAV-70-20-GRMP-00003350.0001001 / 23 APR 14

VOICE KEY

The flight crew uses the VOICE key to remove the audio identification signal from the navaid audio signals.

The reception of the navaid voice signal and the reception of the audio identification signal are active.
When pressed, inhibits the reception of the audio identification signal.

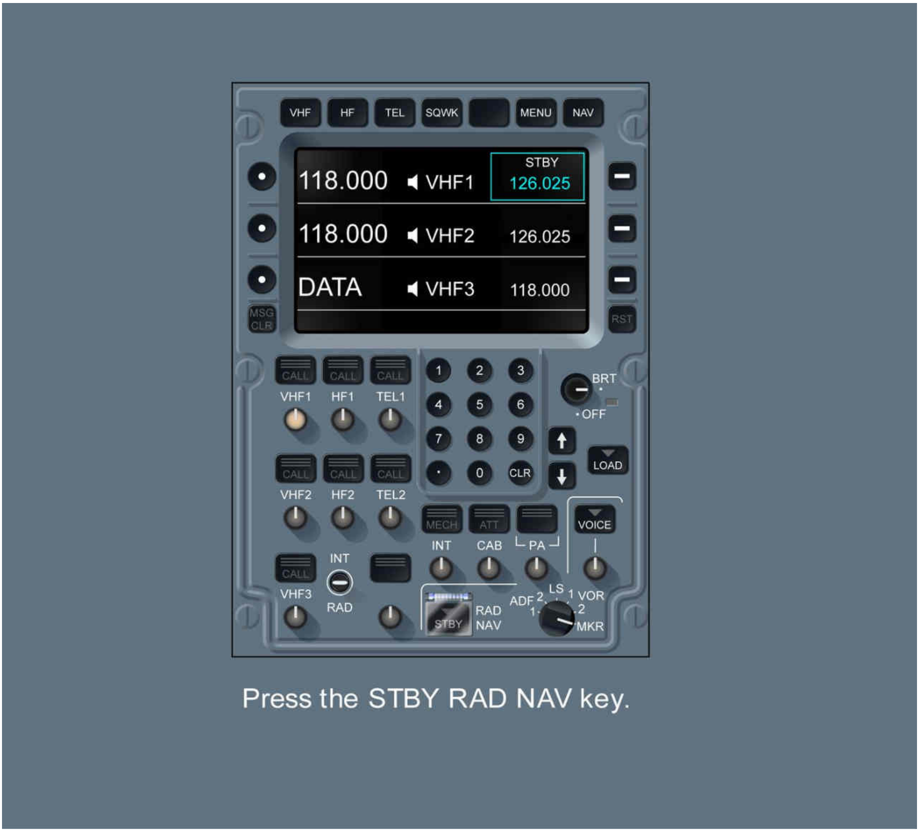
The reception of the navaid voice signal is active. The reception of the audio identification signal is inhibited.
When pressed, enables the reception of the audio identification signal.

HOW TO TUNE THE NAVAIDS IN STBY RAD NAV

Ident.: DSC-34-NAV-70-30-00000517.0002001 / 23 APR 14
Applicable to: ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB

Check that RMP 1 and RMP 2 are ON.

01 How to Tune the Navaids in STBY RAD NAV


VHF
HF
TEL
SQWK
MENU
NAV
118.000
VHF1
STBY
126.025
118.000
VHF2
126.025
DATA
VHF3
118.000
MSG CLR
RST
CALL
VHF1
HF1
TEL1
VHF2
HF2
TEL2
VHF3
INT
RAD
1
2
3
4
5
6
7
8
9
0
CLR
BRT
OFF
LOAD
MECH
ATT
INT
CAB
PA
VOICE
STBY
RAD
NAV
ADF
LS
VOR
MKR

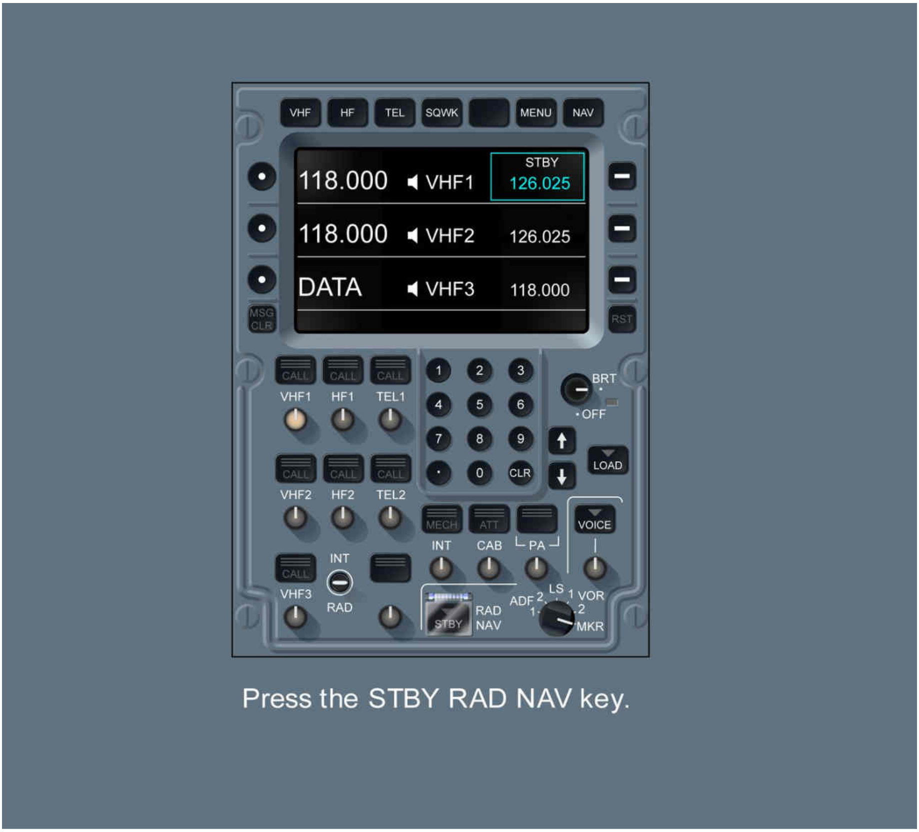
Press the STBY RAD NAV key.

HOW TO TUNE THE NAVAIDS IN STBY RAD NAV

Ident.: DSC-34-NAV-70-30-00000517.0004001 / 23 APR 14
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB

Check that RMP 1 and RMP 2 are ON.

01 How to Tune the Navaids in STBY RAD NAV


VHF
HF
TEL
SQWK
MENU
NAV
118.000
VHF1
STBY
126.025
118.000
VHF2
126.025
DATA
VHF3
118.000
MSG CLR
RST
CALL
VHF1
HF1
TEL1
VHF2
HF2
TEL2
VHF3
INT
RAD
1
2
3
4
5
6
7
8
9
0
CLR
BRT
OFF
LOAD
MECH
ATT
INT
CAB
PA
VOICE
STBY
RAD
NAV
ADF
LS
VOR
MKR

Press the STBY RAD NAV key.

GENERAL

Ident.: DSC-34-NAV-80-10-00003353.0001001 / 05 JUL 16
Applicable to: ALL

GENERAL

The Airport Navigation Function (ANF) helps the flight crew to navigate on airports, and provides better flight crew awareness on the airport.
On each Navigation Display (ND), the ANF provides the following functions:

NAVIGATION

- Display the aircraft position on the current airport moving map, and find any location on the airport
- Display any airport moving map from the ANF database
- Add marks on an airport moving map

ROW/ROP AND BTV

- Set the parameters for the Brake to Vacate (BTV) function, the Runway Overrun Warning (ROW), and the Runway Overrun Protection (ROP)
- Provide situation awareness during the landing roll

L2 For more information about the ROW/ROP and the BTV, *Refer to DSC-34-32-10 General*.

L1 AIRPORT NAVIGATION SURVEILLANCE

- Compute and display the runway approaching advisory alerts
- Provide airport information to the FMS for the computation of the takeoff surveillance function.

L2 For more information about the takeoff surveillance function, *Refer to DSC-22-FMS-10-70-20 Takeoff Surveillance Function*.

ARCHITECTURE

Applicable to: ALL

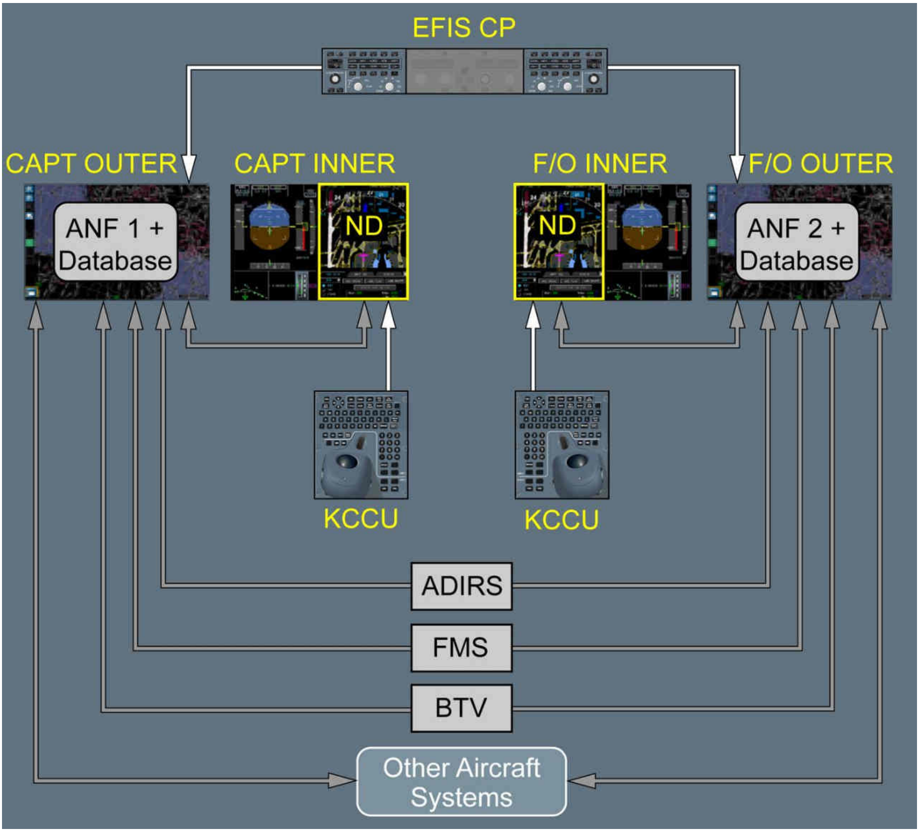
Ident.: DSC-34-NAV-80-10-GARCH-00003354.0001001 / 28 APR 14

The aircraft has two independent ANFs, one for the CAPT side, one for the F/O side.
Each ND displays the airport moving map, when the range selector of the EFIS CP is set to the ZOOM position. The flight crew uses the KCCU to activate the interactive functions of the ND.

L2 In normal operation:

- The ANF on the CAPT side uses data from:
  - ADIRU 1
  - FMS 1
- The ANF on the F/O side uses data from:
  - ADIRU 2
  - FMS 2.

ANF Architecture


EFIS CP
CAPT OUTER
CAPT INNER
F/O INNER
F/O OUTER
ANF 1 + Database
ND
ND
ANF 2 + Database
KCCU
KCCU
ADIRS
FMS
BTV
Other Aircraft Systems

Ident.: DSC-34-NAV-80-10-GARCH-00003358.0001001 / 02 OCT 14

AIRPORT NAVIGATION FUNCTION

The CAPT(F/O) outer display unit computes the ANF that appears on the CAPT(F/O) ND.
L3 The CAPT(F/O) outer display unit cannot display the ANF.

L2 ANF DATABASE

The aircraft has two ANF databases.
An ANF database is loaded in both CAPT and F/O outer display units.
Each ANF database provides information to the onside airport moving map.
The ANF database has two database cycles with a validity period for each cycle.
L3 The validity period and the part number of each ANF database are displayed on the STATUS panel of the ANF, on the ND. For more information about the STATUS panel, *Refer to DSC-34-NAV-80-20 Purpose of STATUS*.

The ANF checks the validity of the database:
- If the date of the aircraft time reference is out of the validity period of the active database cycle, the STATUS panel of the ANF displays the DATABASE CYCLE NOT VALID message.
- If each ANF database has a different part number, the STATUS panel of the ANF displays the CHECK ONSIDE ARPT DATABASE P/N message.

L2 The flight crew can change from one database cycle to the other, via the STATUS panel of the ANF display.

Ident.: DSC-34-NAV-80-10-GARCH-00012573.0001001 / 28 APR 14

L2 ADIRS

Each ANF uses the onside ADIRU data in order to display the aircraft position on the ANF airport moving map.

Ident.: DSC-34-NAV-80-10-GARCH-00003359.0001001 / 28 APR 14

L2 FMS

Each FMS provides the onside ANF with the flight plan data:
- The origin, alternate, and destination airports
- The runway thresholds.

L3 If FMS 1 or FMS 2 is lost, the ANFs receive the FMS data in accordance with the position of the FMS selector.

Ident.: DSC-34-NAV-80-10-GARCH-00019611.0001001 / 28 APR 14

L2 BTV

The ANF provides the BTV with the airport database. The ANF is the interface between the flight crew and the BTV.

AIRPORT MOVING MAP

Ident.: DSC-34-NAV-80-10-00019904.0002001 / 27 FEB 17
Applicable to: ALL

AIRPORT MOVING MAP

The airport moving map is available when the flight crew sets the ND range selector to the ZOOM position, in one of the following ND modes:
- PLAN
- ARC
- ROSE-NAV.

The flight crew can select 5 ND ranges for the ANF display:
- 5 NM
- 2 NM
- 1 NM
- 0.5 NM
- 0.2 NM.

At landing, regardless of the position of the ND mode selector and the ND range selector, the airport moving map appears in ARC mode with a 1 NM or 2 NM range in order to entirely display the runway that is ahead of the aircraft.

L3 In the case of an EFIS CP failure when the range is ZOOM, there is an automatic reconfiguration of the associated ND in ROSE-NAV mode, with 5 NM range.

AIRPORT NAVIGATION SURVEILLANCE

Ident.: DSC-34-NAV-80-10-00019905.0001001 / 05 JUL 16
Applicable to: ALL

The ANF provides the flight crew with several advisories and information.

RUNWAY APPROACHING ADVISORY

During taxi, the runway approaching advisory warns the flight crew that the aircraft is near:
- A runway, or
- A runway intersection.

L2 The ANF triggers the runway approaching advisory at least 7 s before the aircraft enters the runway area.

L3 The runway approaching advisory computes a protection volume in front of the aircraft, and a runway area volume with:

- The aircraft position
- The ground speed
- The runway data of the airport moving map.
  The runway area includes the stopways and the runway displaced areas.

L2 The runway approaching advisory is only active on ground, when the ground speed is below 40 kt, for more than 10 s.

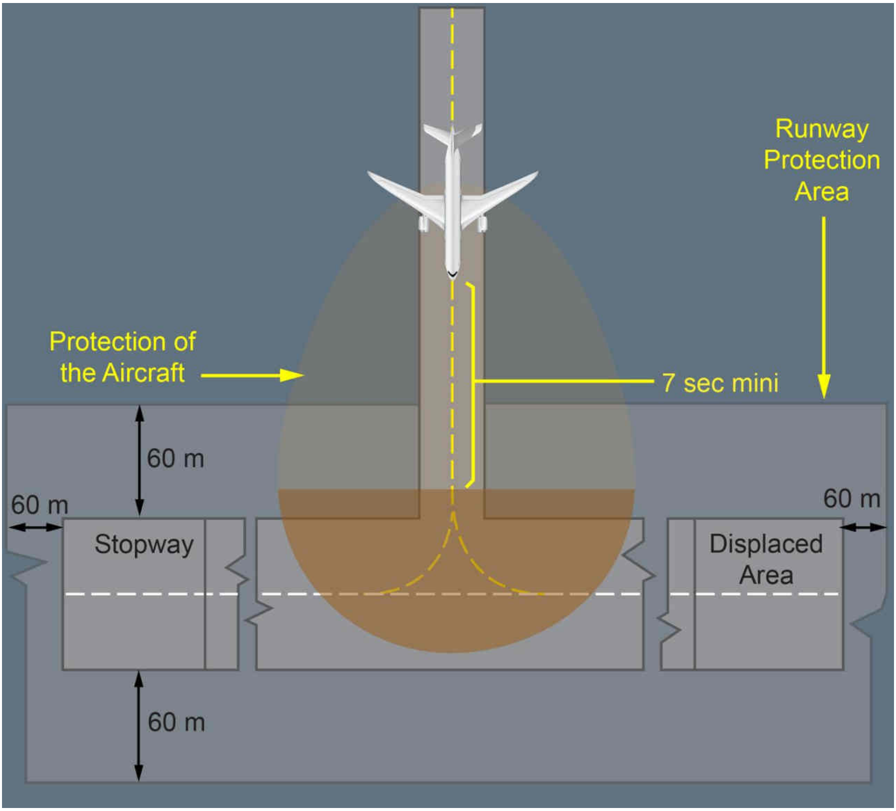
The ANF no longer displays the runway approaching advisory, when:

- The aircraft stops, or
- The aircraft is in the runway area for more than 2 s, or
- The advisory is triggered for more than 30 s, or
- The advisory no longer expects that the aircraft will enter the runway area within the next 7 s.

L1 The ANF displays the indications of the runway approaching advisory on:

- The ND
- The PFD

Runway Approaching Advisory


Runway Protection Area
Protection of the Aircraft
7 sec mini
60 m
60 m
60 m
60 m
Stopway
Displaced Area

L2 For more information about the runway approaching advisory, *Refer to DSC-34-NAV-80-20 Runway Approaching Advisory*.

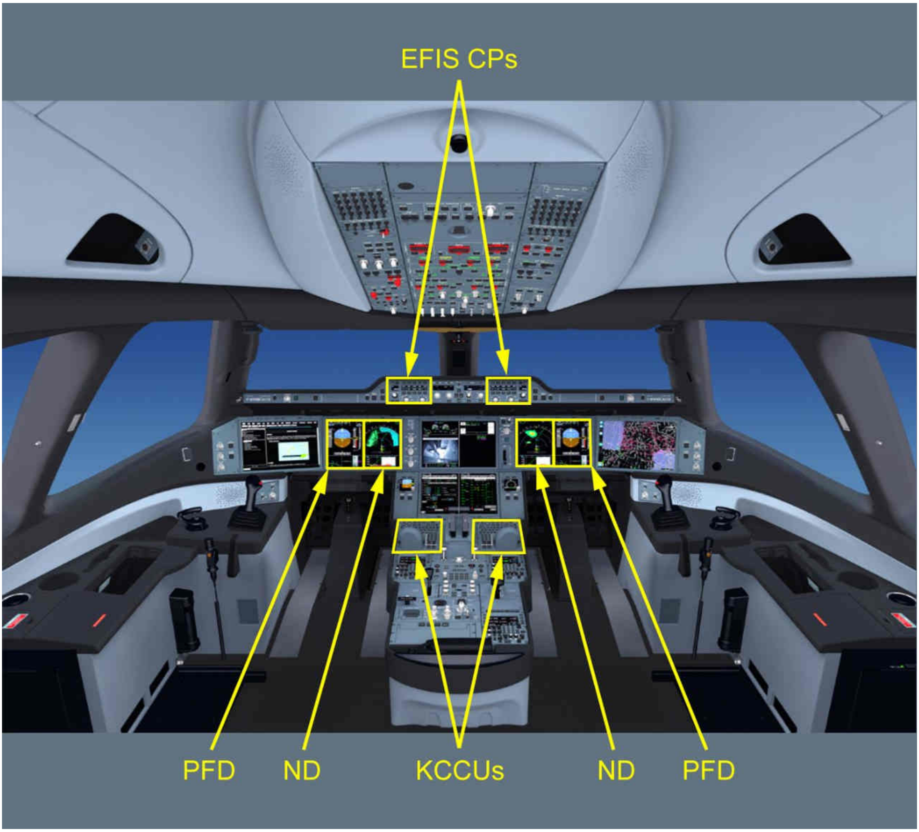
L1 TAKEOFF SURVEILLANCE FUNCTION

The FMS uses ANF information to compute the takeoff surveillance function.

L2 For more information about the takeoff surveillance function, *Refer to DSC-22-FMS-10-70-20 Takeoff Surveillance Function*.

COCKPIT VIEW

Ident.: DSC-34-NAV-80-20-00003360.0001001 / 28 APR 14
Applicable to: ALL



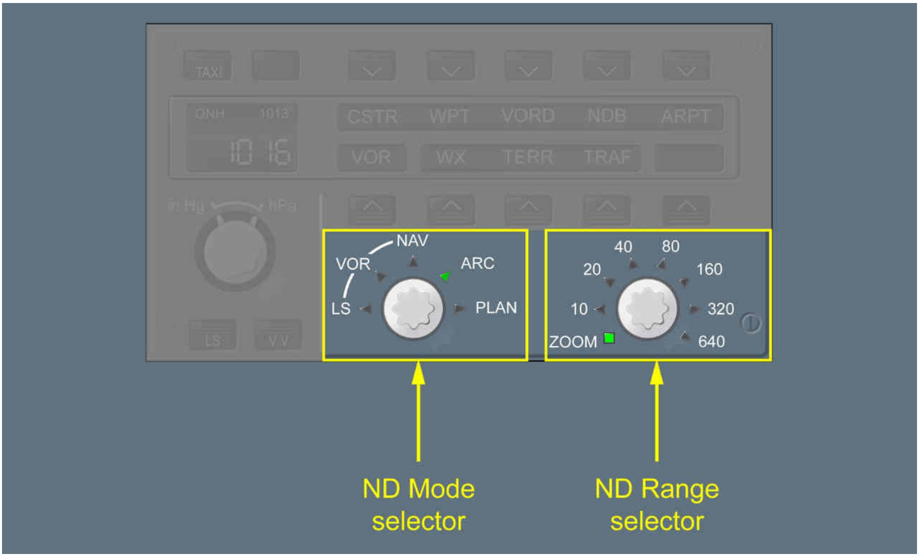
Cockpit View

EFIS CP

Applicable to: ALL

Ident.: DSC-34-NAV-80-20-10-00003362.0001001 / 28 APR 14

EFIS CP


TAXI
QNH 1013
CSTR
WPT
VORD
NDB
ARPT
VOR
WX
TERR
TRAF
in Hg
hPa
LS
V V
NAV
VOR
ARC
LS
PLAN
40
80
20
160
10
320
ZOOM
640
ND Mode selector
ND Range selector

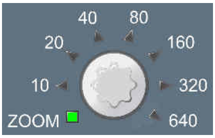
Ident.: DSC-34-NAV-80-20-10-00003364.0001001 / 28 APR 14

ND MODE SELECTOR

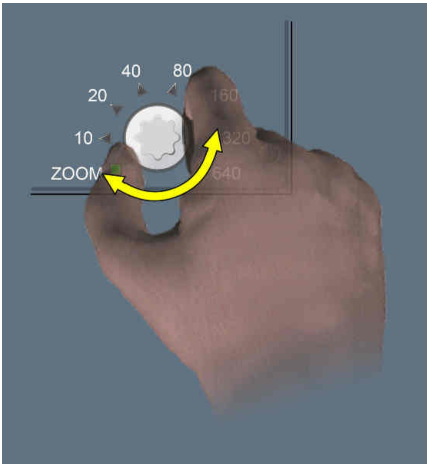
The moving airport map can be displayed on the ND when the position of the ND Mode selector is PLAN, ARC, or ROSE-NAV.
At landing, the ND automatically displays the ANF in ARC mode, with a 2 NM range.

Ident.: DSC-34-NAV-80-20-10-00003365.0001001 / 28 APR 14

ND RANGE SELECTOR


40
80
20
160
10
320
ZOOM
640

In the ZOOM position, the airport moving map is displayed on the ND with a 5 NM range, or below.



When in ZOOM position, the flight crew turns the selector to change the range:

- Counterclockwise to decrease the range, or
- Clockwise to increase the range.

The range of the ZOOM changes with the following sequence:

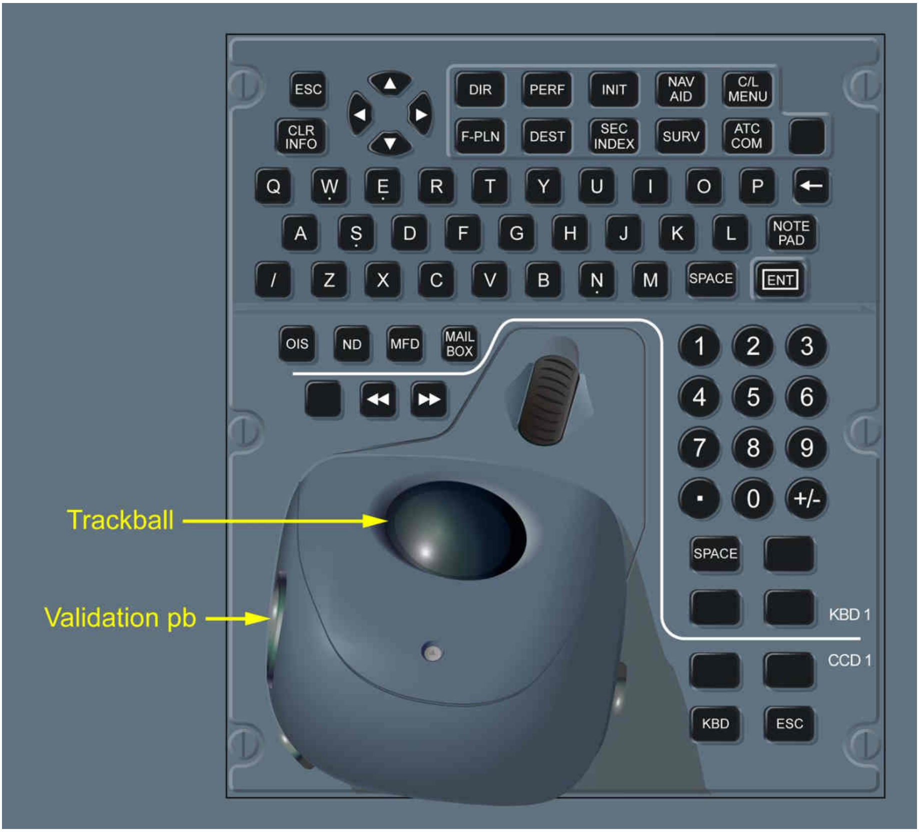
- 5 NM
- 2 NM
- 1 NM
- 0.5 NM
- 0.2 NM.

If the flight crew sets the ND Range selector to a range other than ZOOM, the moving airport map is no longer displayed on the ND.

KCCU

Ident.: DSC-34-NAV-80-20-00003361.0001001 / 28 APR 14
Applicable to: ALL

KCCU


ESC
CLR INFO
DIR
PERF
INIT
NAV AID
C/L MENU
F-PLN
DEST
SEC INDEX
SURV
ATC COM
Q W E R T Y U I O P
A S D F G H J K L
NOTE PAD
/ Z X C V B N M
SPACE
ENT
OIS
ND
MFD
MAIL BOX
1 2 3
4 5 6
7 8 9
· 0 +/-
SPACE
KBD 1
CCD 1
KBD
ESC
Trackball
Validation pb

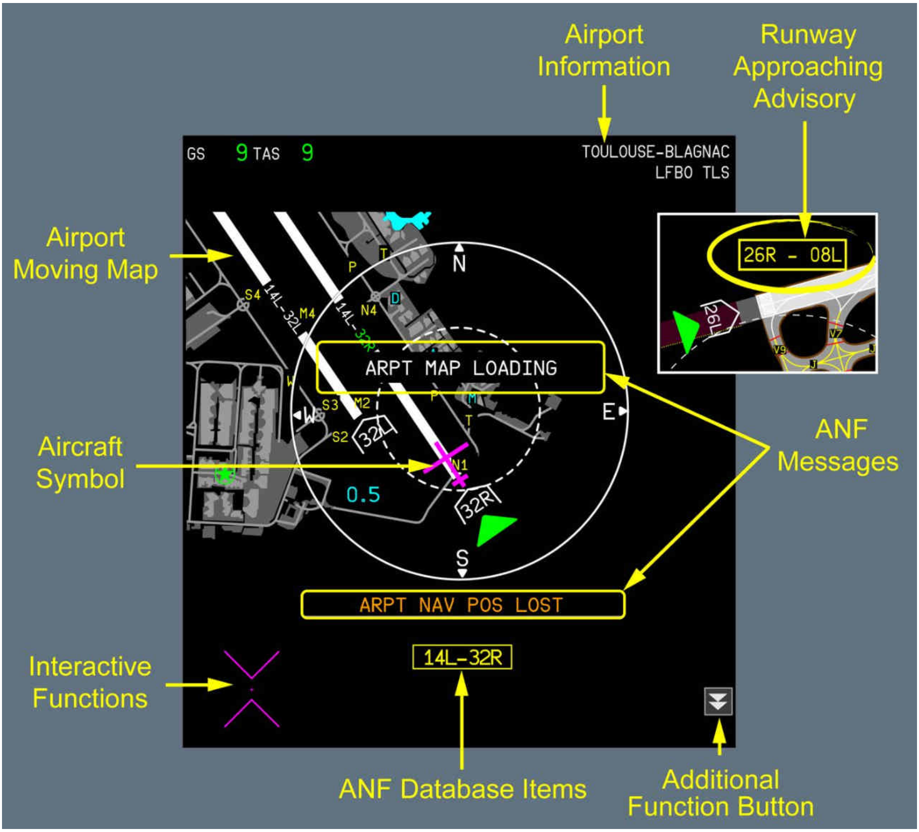
The flight crew uses the KCCU to:
- Activate the interactive functions of the ND
- Move the airport moving map
- Enter data on the ANF function pages.

ND

Applicable to: ALL

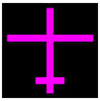
Ident.: DSC-34-NAV-80-20-20-00003363.0001001 / 28 APR 14

ANF on the ND


Airport Information
Runway Approaching Advisory
GS 9 TAS 9
TOULOUSE-BLAGNAC
LFBO TLS
Airport Moving Map
26R - 08L
26L
14L-32L
14L-32R
S4
M4
N4
S3
M2
S2
N1
N
W
E
S
ARPT MAP LOADING
32L
32R
0.5
Aircraft Symbol
ANF Messages
ARPT NAV POS LOST
14L-32R
Interactive Functions
ANF Database Items
Additional Function Button

Ident.: DSC-34-NAV-80-20-20-00003366.0001001 / 28 APR 14

AIRCRAFT SYMBOL



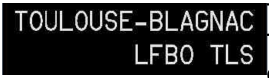
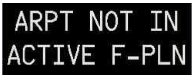
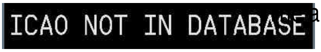
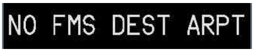
The aircraft symbol is displayed on the airport moving map.

L2 The aircraft symbol is not displayed to the map scale.
L3 The ADIRS computes the aircraft position.
If the ADIRS data is not available, the aircraft symbol is no longer displayed.

L1 *Note:* *The aircraft can disappear from the display, if the flight crew moves the airport moving map and the aircraft is no longer within the ND range. In this case, the flight crew can use the CENTER ON ACFT function.*

Ident.: DSC-34-NAV-80-20-20-00012584.0001001 / 28 APR 14

AIRPORT INFORMATION

 TOULOUSE-BLAGNAC LFBO TLS	The airport is part of the flight plan. The airport IATA and ICAO codes, and the airport name are displayed.
 ARPT NOT IN ACTIVE F-PLN	The airport is not part of the flight plan. This message appears in PLAN mode only, if the flight crew selects an airport that is not part of the flight plan.
 ICAO NOT IN DATABASE	airport to be displayed is not in the ANF database.
 NO FMS DEST ARPT	The airport code to be displayed is not in the FMS database.

Ident.: DSC-34-NAV-80-20-20-00003367.0001001 / 31 JUL 18

AIRPORT MOVING MAP

In normal operation, the ANF displays a default airport, based on the current aircraft position and on the FMS flight plan.
The default airport can be either the departure, destination, or alternate airport of the FMS flight plan, depending on the current aircraft position.
Nevertheless, the flight crew can display any airport of the ANF database in PLAN mode, via the ARPT SEL panel of the ANF.

ARC OR ROSE-NAV MODE

In ARC or ROSE-NAV mode, when the range selector is in the ZOOM position, the ANF displays:
- On ground: the current airport moving map
- In flight:
  - The airport moving map of the departure or the destination airport, or
  - The direction of the destination airport.

Airport Moving Map

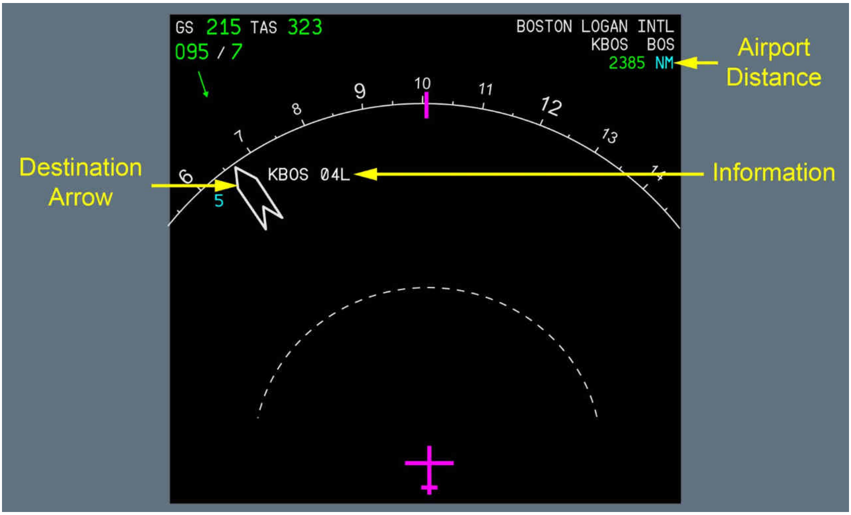
The ANF displays the departure or the destination airport moving map if:
- The airport is in the ND range
- The altitude of the aircraft is less than 5 000 ft above the airport.

The airport moving map is displayed in accordance with the aircraft position. The orientation of the default airport is the magnetic or true heading, in accordance with the position of the TRUE/MAG pb on the AFS CP.

Airport Direction

When the airport moving map of the departure or the destination airport is not displayed, the ANF displays:
- A destination arrow that points to the destination airport
- The ICAO code of the destination airport
  If a runway is selected in the FMS, the runway code is also displayed.
- The distance from current aircraft position to the destination airport.

Destination Arrow


GS 215 TAS 323
095 / 7
BOSTON LOGAN INTL
KBOS BOS
2385 NM
Airport Distance
9
10
11
8
12
7
13
6
5
KBOS 04L
Destination Arrow
Information

L2 The airport information, the distance and the direction are based on the threshold of the destination runway from the FMS.

L1 PLAN MODE

In PLAN mode, the following airport is displayed:
- The default airport, or
- Any airport of the database that the flight crew manually selects for display.

L2 The default airport is the destination airport, when:
- The last consulted airport is the destination airport, or
- In cruise or descent, the distance between the departure and destination airports is less than 300 NM, or
- The distance between the departure and the destination airports is more than 350 NM, and the distance between the aircraft position and the departure airport is more than 50 NM.

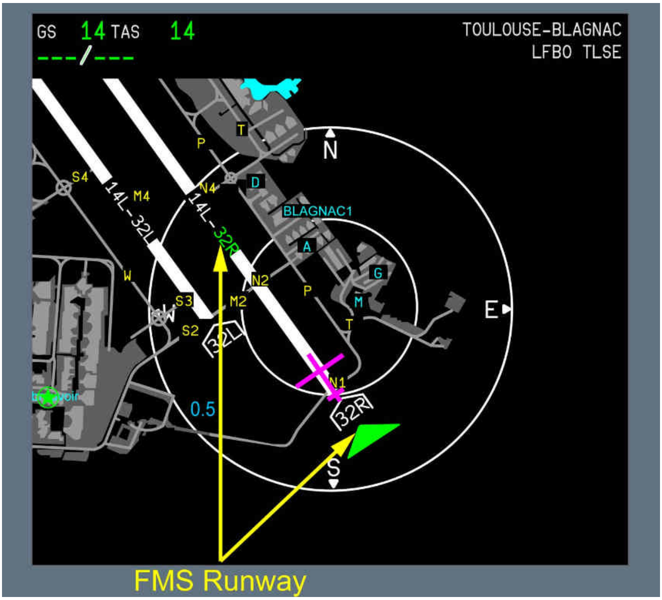
Otherwise, the default airport is the departure airport.

L1 When the flight crew selects a departure or a destination runway in the ACTIVE FMS flight plan:
- A green triangle indicates the selected runway

  L2 When both departure and landing runways are on the same airport, two FMS green triangles are displayed on the same airport moving map.
- L1 The runway ident of the selected runway is displayed in green.

The orientation of the airport moving map is the TRUE north, and the map is centered on:
- The aircraft, when the aircraft is on ground
- The Airport Reference Point (ARP), when the aircraft is in flight.

FMS Runway


GS 14 TAS 14
---/---
TOULOUSE-BLAGNAC
LFBO TLSE
N
E
S
T
P
D
N4
S4
M4
14L-32L
14L-32R
BLAGNAC1
A
G
M
W
N2
P
S3
M2
T
S2
32L
N1
32R
0.5
FMS Runway

Ident.: DSC-34-NAV-80-20-20-00019064.0001001 / 28 APR 14

PURPOSE OF INTERACTIVE FUNCTIONS

MOVE FUNCTION

The flight crew can move the airport moving map via the KCCU. The flight crew presses the validation pb and simultaneously moves the cursor with the trackball.

As soon as the validation pb is released:
- In PLAN mode: The airport moving map remains at the new position
- In ARC or ROSE–NAV mode: The airport moving map is progressively centered on the aircraft symbol.

INTERACTIVE MENU

When the flight crew clicks anywhere on the airport moving map, the interactive menu with the airport navigation functions is displayed.

L2 The interactive menu automatically disappears when the flight crew:
- Clicks out of the interactive menu, or
- Selects one of the functions, or
- Changes the ND range or mode.

Ident.: DSC-34-NAV-80-20-20-00019198.0001001 / 28 APR 14

DECLUTTER RWY ITEM

In order to help the flight crew to select an exit for BTV, and to read the map, some symbols that are not related to the selected runway are displayed in grey and become not interactive.
When the DECLUTTER RWY is active, the DISPLAY ALL function is available in the interactive menu. When clicked, all the hidden symbols appear on the map.

Ident.: DSC-34-NAV-80-20-20-00019067.0001001 / 28 APR 14

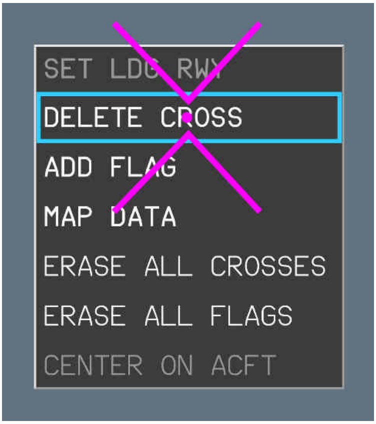
MARK ITEMS

These items enable the flight crew to add or remove marks on the airport moving map.

L12	⚑	Green flags To locate or mark a given point on the airport.
L12	✖	White crosses To indicate a problem, such as a closed taxiway.

When the flight crew clicks on the airport moving map, the symbol appears at the cursor position.
The CAPT and the F/O sides share the marks.
When the flight crew clicks on a mark of the airport moving map, the interactive menu of the ND displays the DELETE function instead of the ADD function.

DELETE Function


SET LDG RWY
DELETE CROSS
ADD FLAG
MAP DATA
ERASE ALL CROSSES
ERASE ALL FLAGS
CENTER ON ACFT

The ANF removes the marks on the airport moving map after engine shutdown.

L3 All flag and cross marks are deleted from database:
- At the start of each flight, when the flight phase of the FWS change to flight phase 1, or
- If the flight crew changes the ANF database cycle.

Ident.: DSC-34-NAV-80-20-20-00019069.0001001 / 28 APR 14

MAP DATA ITEM

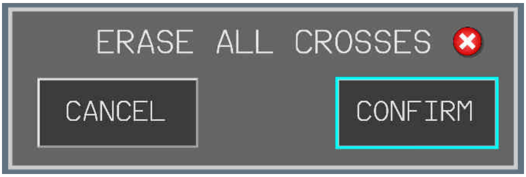
This item enables the flight crew to directly access the MAP DATA panel. For more information about the MAP DATA panel, *Refer to DSC-34-NAV-80-20 Purpose of MAP DATA*.

Ident.: DSC-34-NAV-80-20-20-00019070.0001001 / 28 APR 14

ERASE MARK ITEMS

These items enable the flight crew to delete all marks that appear on the airport moving map. A confirmation box is displayed, when the flight crew selects the ERASE ALL CROSSES or ERASE ALL FLAGS item.

ERASE ALL CROSSES


ERASE ALL CROSSES
CANCEL
CONFIRM

Ident.: DSC-34-NAV-80-20-20-00019071.0001001 / 28 APR 14

CENTER ON ACFT ITEM

This item is only available in PLAN mode. This item enables the flight crew to center the airport moving map on the aircraft position.

Ident.: DSC-34-NAV-80-20-20-00019049.0001001 / 28 APR 14

PURPOSE OF MAP DATA

The MAP DATA panel enables the flight crew:
- To display information of an interactive item of the airport moving map
- To center the display of the airport moving map on an interactive item
- To add or remove marks on an interactive item.

Ident.: DSC-34-NAV-80-20-20-00018998.0001001 / 28 APR 14

MAP ITEM LIST

The flight crew can:
- Select one map item in the list in accordance with the search filter, or
- Use the KCCU to enter the item IDENT.

Ident.: DSC-34-NAV-80-20-20-00019022.0001001 / 28 APR 14

MAP ITEM SEARCH FILTER

The map item search filter enables the flight crew to access the list of one type of the following items:
- The runway
- The taxiway
- The stand
- Other.

Ident.: DSC-34-NAV-80-20-20-00019023.0001001 / 28 APR 14

ADD/REMOVE SYMBOLS BUTTONS

The Add/Remove Symbols buttons enables the flight crew to add or remove crosses and flags on the selected map item.

When the flight crew selects a map item with an existing symbol, the flight crew can, :
- Delete the existing symbol

  Note: *The ADD button changes to a DELETE button.*

- Add a flag instead of a cross (or add a cross instead of a flag).

Ident.: DSC-34-NAV-80-20-20-00019024.0001001 / 28 APR 14

CENTER MAP BUTTON

The CENTER MAP button enables the flight crew to center the airport moving map on the selected item, when in PLAN mode.

Ident.: DSC-34-NAV-80-20-20-00019025.0001001 / 09 MAR 16

MESSAGE/ITEM INFORMATION

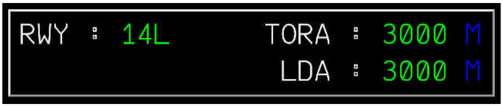
MESSAGE

When the flight crew enters a map item that is not in the search filter, one of the following message appears, instead of the MAP DATA information:
- NOT IN RWY DATABASE
- NOT IN TWY DATABASE
- NOT IN STAND DATABASE
- NOT IN DATABASE.

ITEM INFORMATION

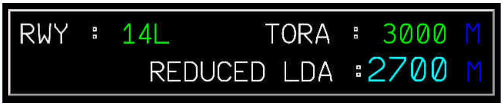
When the flight crew selects a map item, the item information appears in accordance with the selected map item.

L12



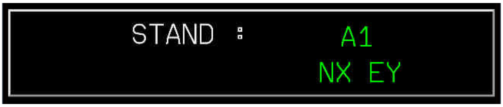
```
RWY : 14L         TORA : 3000 M
                   LDA : 3000 M
```

Information for the runways.
TORA and LDA appears in feet (ft) with the US unit of length option.



```
RWY : 14L         TORA : 3000 M
           REDUCED LDA :2700 M
```

Information for the runways with a shift.



```
        STAND :        A1
                     NX EY
```

Information for the aircraft stand.

Ident.: DSC-34-NAV-80-20-20-00019050.0001001 / 28 APR 14

PURPOSE OF LANDING

The LANDING panel enables the flight crew to display landing information that are mainly used for BTV and ROW/ROP configuration.

L2 For more information about the landing panel for BTV, *Refer to DSC-34-32-30-20-60 ND*.
For more information about the landing panel for ROW/ROP, *Refer to DSC-34-32-20-20-50 ND*.

Ident.: DSC-34-NAV-80-20-20-00019006.0001001 / 07 NOV 16

PURPOSE OF MODIFY RWY

The flight crew can shift the runway threshold or the runway end.

L2 The flight crew can modify only one runway. If another runway is modified, the modification of the previous runway is cleared.
When BTV is armed, the THRESHOLD SHIFT entry field, and the END SHIFT entry field are disabled.

L1 *Note:* *If BTV is armed on a shifted runway, the flight crew may clear this shift if they try to enter a shift on another runway. In this case, BTV remains armed and will revert to BRK MED when the aircraft will be below 300 ft.*

L3 The shifted landing distance is removed:
- 5 min after the last engine shutdown, or
- When the flight crew changes the ANF database cycle.

L1 When the flight crew validates the runway shift with the return button, the runway shift is displayed on the MAP DATA panel.

Ident.: DSC-34-NAV-80-20-20-00019051.0001001 / 28 APR 14

PURPOSE OF ARPT SEL

The ARPT SEL panel enables the flight crew to display the information about the airports of the database.
In PLAN mode, the flight crew can select and display airports different from origin, alternate, and destination airports.

Ident.: DSC-34-NAV-80-20-20-00019030.0001001 / 28 APR 14

LIST OF AIRPORTS

The flight crew can:
- Select one airport in the list in accordance with the item search filter, or
- Use the KCCU to enter the airport ICAO or IATA code.

The ICAO code, IATA code, and city name of the airport are displayed in:
- Yellow, when the selected airport is not the airport displayed on the ND, or
- Green, when the selected airport is displayed on the ND.

Ident.: DSC-34-NAV-80-20-20-00019031.0001001 / 28 APR 14

AIRPORT ITEM SEARCH FILTER

The airport search filter enables the flight crew to access the list of airports via one of the following items:
- The ICAO code
- The IATA code
- The city name.

Ident.: DSC-34-NAV-80-20-20-00019032.0001001 / 28 APR 14

SELECTED AIRPORT INFORMATION

When the flight crew selects an airport, the airport information is displayed in:
- Yellow, when the selected airport is not the airport displayed on the ND, or
- Green, when the selected airport is displayed on the ND.

When an airport is not in the ANF database or the entry is not correct, one of the following message is displayed, instead of the airport information:
- NOT IN ICAO DATABASE
- NOT IN IATA DATABASE
- NOT IN CITY NAME DATABASE.

Ident.: DSC-34-NAV-80-20-20-00019033.0001001 / 28 APR 14

DISPLAY AIRPORT BUTTON

When the flight crew clicks on the DISPLAY AIRPORT button, the ANF displays the associated airport moving map on the ND.
In ARC or ROSE-NAV mode, the SET PLAN MODE message appears if the flight crew selects an airport different from the current airport displayed on the ND, and clicks on the DISPLAY AIRPORT button.

Ident.: DSC-34-NAV-80-20-20-00019034.0001001 / 28 APR 14

FMS AIRPORTS

The flight crew can display the origin, destination, or alternate airport of the FMS flight plan via the corresponding shortcut button.

Ident.: DSC-34-NAV-80-20-20-00019052.0001001 / 28 APR 14

PURPOSE OF STATUS

The STATUS panel enables the flight crew to:
- Check the status of the airport database
- Change the database cycle.

Ident.: DSC-34-NAV-80-20-20-00019035.0001001 / 28 APR 14

VALIDITY PERIOD

The validity period of both database cycles is displayed.

Ident.: DSC-34-NAV-80-20-20-00019036.0001001 / 28 APR 14

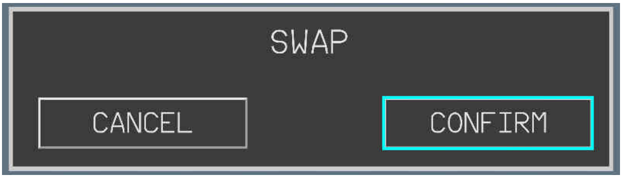
SWAP BUTTON

The SWAP button enables the flight crew to change the database cycle. A confirmation action is required.

L3 When a flight crew changes the database cycle, the databases on both side (CAPT, F/O) switch to the new cycle.

L2 If a database cycle is changed, all symbols of the airport moving map are deleted.

SWAP Confirmation



Ident.: DSC-34-NAV-80-20-20-00019037.0001001 / 28 APR 14

DATABASE PART NUMBER

The AIRPORT DATABASE field displays the part number of the database.

L2 If the ANF database is missing or not correctly loaded, the AIRPORT DATABASE field displays dashes.

Ident.: DSC-34-NAV-80-20-20-00019038.0001001 / 28 APR 14

MESSAGE

When the active database is out of date, the DATABASE CYCLE NOT VALID message appears.
If the database part number on CAPT side is different from the database part number on F/O side, the CHECK ONSIDE ARPT DATABASE P/N message appears.

Ident.: DSC-34-NAV-80-20-20-00003373.0001001 / 28 APR 14

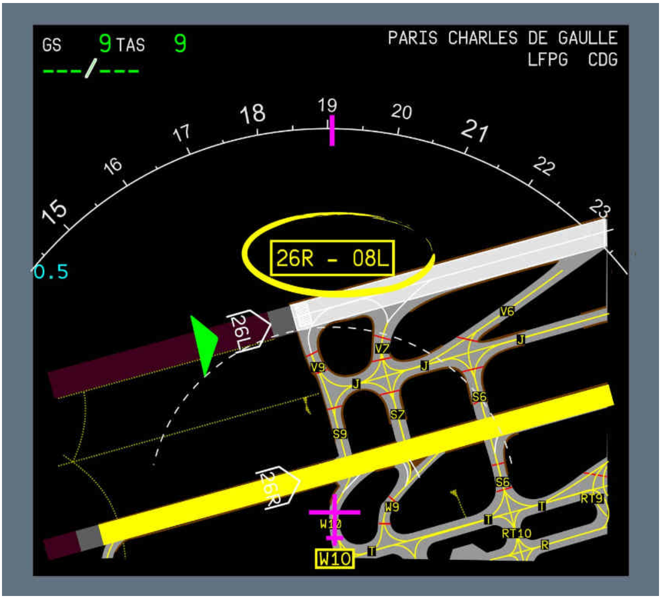
RUNWAY APPROACHING ADVISORY

ARC AND ROSE-NAV MODES

In ARC and ROSE-NAV modes, when the aircraft approaches one or two runways, the ANF displays on the airport moving map:

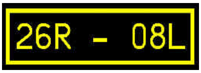
- The runway that the aircraft approaches in yellow
  L2 The runway pulses.
- L1 A runway ident box that indicates the runway(s) the aircraft approaches.

Runway Approaching Advisory

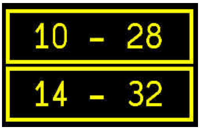

GS 9 TAS 9
---/---
PARIS CHARLES DE GAULLE
LFPG CDG
15
16
17
18
19
20
21
22
23
0.5
26R - 08L
26L
26R
V6
V7
V9
J
S6
S7
S9
W9
W10
RT9
RT10
T
R

Note: The departure runway of the FMS has a green triangle near the associated threshold.

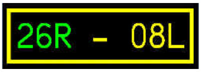
Runway Ident Box



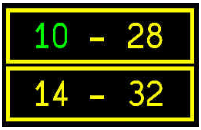
The aircraft approaches one runway that is not in the flight plan.



The aircraft approaches two runways.
None of the runway is in the flight plan.
The bottom box is the nearest runway to the aircraft (14-32).



The aircraft approaches one runway.
The runway 26R is in the flight plan.

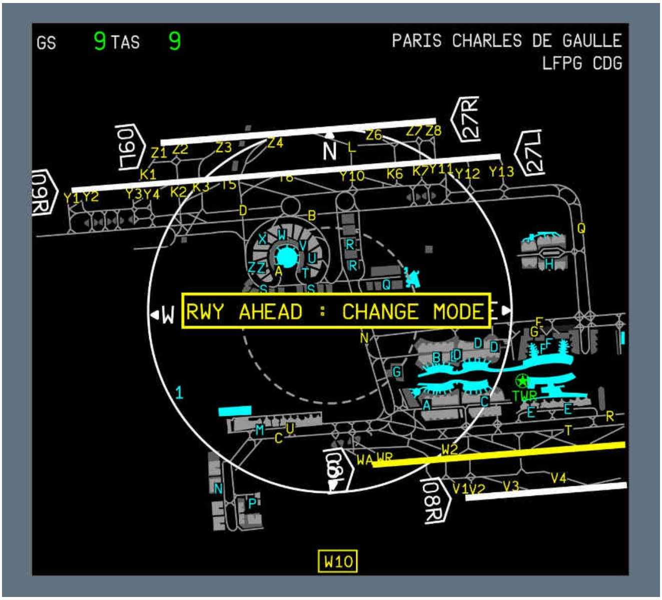


The aircraft approaches two runways.
The runway 10 is in the flight plan.
The bottom box is the nearest runway to the aircraft (14-32).

PLAN MODE

In PLAN mode, when the aircraft approaches a runway, the RWY AHEAD: CHANGE MODE message is displayed to require a change of the ND mode to ARC or ROSE-NAV, in order to display the runway approaching advisory.
This message box pulses.
If the runway that triggers the runway advisory is displayed on the current airport moving map, this runway is displayed in yellow.

RWY AHEAD: CHANGE MODE


RWY AHEAD : CHANGE MODE
GS 9 TAS 9
PARIS CHARLES DE GAULLE
LFPG CDG
09L
27R
27L
09R
08L
08R
N
W
1
W10

NOT ZOOM

RWY AHEAD appears on the ND if a runway approaching advisory occurs, and the ND mode is not in ZOOM.

Ident.: DSC-34-NAV-80-20-20-00003374.0001001 / 04 SEP 17

ANF MESSAGES

ARPT NAV POS LOST

The aircraft position is not available or is not sufficiently accurate for the ANF.

ARPT NAV NOT AVAIL

The ANF function is failed or is not available.

ARPT MAP LOADING

The ANF computes the new map to be displayed.

Ident.: DSC-34-NAV-80-20-20-00014038.0001001 / 28 APR 14

ANF DATABASE ITEMS

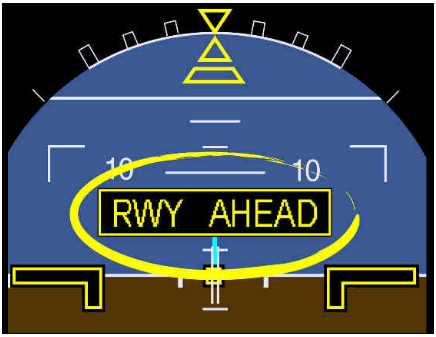
When the aircraft is on ground and the associated ANF is displayed, the lower part of the ANF message area displays the map identifier of the current aircraft location (e.g. W90 if the aircraft is taxiing on the taxiway W90 on the airport map).

PFD

Ident.: DSC-34-NAV-80-20-00012901.0001001 / 27 MAY 14
Applicable to: ALL

On the PFD, the RWY AHEAD message pulses when the aircraft approaches a runway.

RWY AHEAD



RNP AR

Ident.: DSC-34-NAV-90-00020031.0001001 / 20 OCT 14
Applicable to: ALL

For more information about RNP AR, *Refer to DSC-22-FMS-10-30-50 Overview*.

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AIRCRAFT SYSTEMS

34 - SURVEILLANCE

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DSC-34-SURV-10 Overview

Overview.......... A
Architecture.......... B

DSC-34-SURV-20 TAWS

DSC-34-SURV-20-10 System Description

Overview.......... A
GPWS.......... B
Terrain Function.......... C
TAWS Database.......... D

DSC-34-SURV-20-20 Controls and Indicators

Cockpit View.......... A
AUDIO INDICATORS.......... B
EFIS Control Panel (CP).......... C
MEMO.......... D
MFD.......... E
ND.......... F
PFD.......... G
SURV Panel.......... H
VD.......... I

DSC-34-SURV-30 WXR

DSC-34-SURV-30-10 System Description

Overview.......... A
WX Display Function.......... B
On Path Envelope Boundaries Definition.......... C
Turbulence Detection (TURB) Function.......... D
Weather Hazard Prediction Function ◁ .... E
Weather Ahead Function.......... F
Predictive Windshear (PWS) Function.......... G
Ground Mapping Function.......... H

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DSC-34-SURV-30-20 Controls and Indicators

Cockpit View....A
Audio Indicators....B
EFIS Control Panel....C
MEMO....D
MFD....E
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PFD....G
SURV Panel....H
VD....I

DSC-34-SURV-40 TCAS

DSC-34-SURV-40-10 System Description

Overview....A
Principle....B
Intruder Detection Categories....C
TCAS Modes....D
TCAS Display Selection....E

DSC-34-SURV-40-20 Controls and Indicators

Cockpit View....A
Audio Indicators....B
EFIS Control Panel....C
MEMO....D
MFD....E
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PFD....G
SURV Panel....H

DSC-34-SURV-50 XPDR

DSC-34-SURV-50-10 System Description

Overview....A
Principle....B
XPDR Modes....C

Continued on the following page

Continued from the previous page

DSC-34-SURV-50-20 Controls and Indicators

Cockpit View..A
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DSC-34-SURV-60 ADS-B Traffic

DSC-34-SURV-60-10 System Description

Overview..A
Principle..B
ADS-B Traffic Function..C

DSC-34-SURV-60-20 Controls and Indicators

Cockpit View..A
EFIS CP..B
MEMO..C
MFD..D
ND..E

DSC-34-SURV-60-30 How to

How To Perform an In Trail Procedure..A
How To Use Visual Separation on Approach..B

DSC-34-SURV-70 Controls and Indicators

DSC-34-SURV-70-10 Cockpit View

Cockpit View..A

DSC-34-SURV-70-30 EFIS Control Panel

EFIS Control Panel..A

DSC-34-SURV-70-40 KCCU

KCCU..A

DSC-34-SURV-70-50 MFD

MFD..A
CONTROLS Page..B
STATUS & SWITCHING Page..C
TRAFFIC Page (If Installed)..D
SURV Message Area..E
MFD Data Entry Format..F

Continued on the following page

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DSC-34-SURV-70-90 ND

ND....................A

DSC-34-SURV-70-110 PFD

PFD....................A

DSC-34-SURV-70-120 RMP

RMP....................A

DSC-34-SURV-70-20 SURV Panel

SURV Panel....................A

DSC-34-SURV-70-100 VD

VD....................A

DSC-34-SURV-80 Normal Operations

Automatic Operation....................A

DSC-34-SURV-90 Abnormal Operations

Reconfigurations....................A

Localization Title	Toc Index	ID	Reason
DSC-34-SURV-30-20 WXR/PWS Button	E	1	Revision of the if-installed element to be in accordance with the if-installed table.
			Documentation update: Deletion of text.
DSC-34-SURV-30-20 DEFAULT SETTINGS Button	E	2	Revision of the if-installed element to be in accordance with the if-installed table.
			Documentation update: Deletion of text.
DSC-34-SURV-30-20 Weather Colors	F	3	Revision of the if-installed element to be in accordance with the if-installed table.
			Documentation update: Deletion of text.
DSC-34-SURV-30-20 WXR Messages	F	4	Revision of the if-installed element to be in accordance with the if-installed table.
			Documentation update: Deletion of text.
DSC-34-SURV-50-20 XPDR STBY	B	1	Revision of the name of the button from "XPDR mode option list" to "XPDR MODE button" to accurately reflect the MFD.
DSC-34-SURV-50-20 CONTROLS Page	C	2	Revision of the name of the link from "XPDR Mode Option List" to "MODE Button".
			Documentation update: Deletion of text.
DSC-34-SURV-50-20 XPDR MODE Button	C	3	Revision of the title from "XPDR Mode option list" to "XPDR MODE Button" to be in accordance with the MFD.
DSC-34-SURV-50-20 DEFAULT SETTINGS Button	C	4	Revision of the name of the button from "XPDR mode option list" to "MODE button" to accurately reflect the MFD.
DSC-34-SURV-70-50 CONTROLS Page	B	1	Revision of the name of the link from "DEFAULT SETTINGS Button Area" to "DEFAULT SETTINGS Button".
DSC-34-SURV-70-50 DEFAULT SETTINGS Button	B	2	• Enhancement of the layout by grouping the SURV controls in their respective area • Correction of some control names.
			Documentation update: Information "P.00002168.0001001.021" moved from "P.00002168.0001001.003" to "P.00002168.0001001.030"
			Documentation update: Deletion of information.
			Revision of the if-installed element to be in accordance with the if-installed table.

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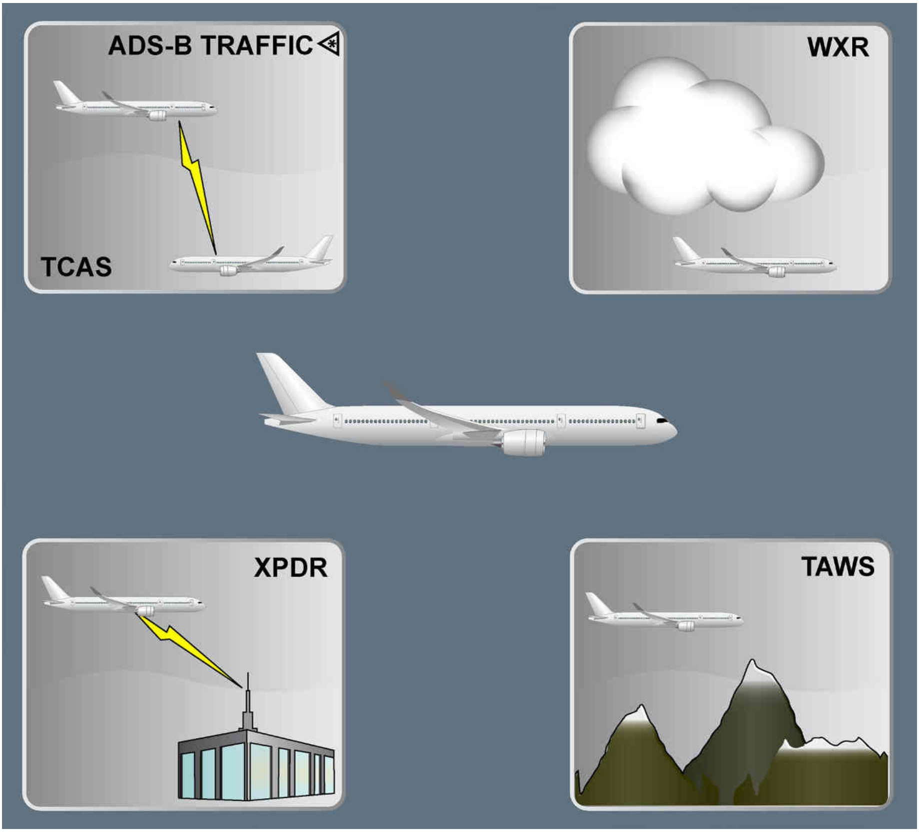
OVERVIEW

Ident.: DSC-34-SURV-10-00003178.0001001 / 14 JUN 16
Applicable to: ALL

The Surveillance (SURV) system includes the following systems that perform aircraft surveillance functions:
- Terrain Awareness and Warning System (TAWS)
- Weather Radar (WXR) system, including the predictive windshear detection
- Traffic Collision Avoidance System (TCAS)
- Automatic Dependent Surveillance - Broadcast -Traffic (ADS-B Traffic ◁)
- Transponder (XPDR).

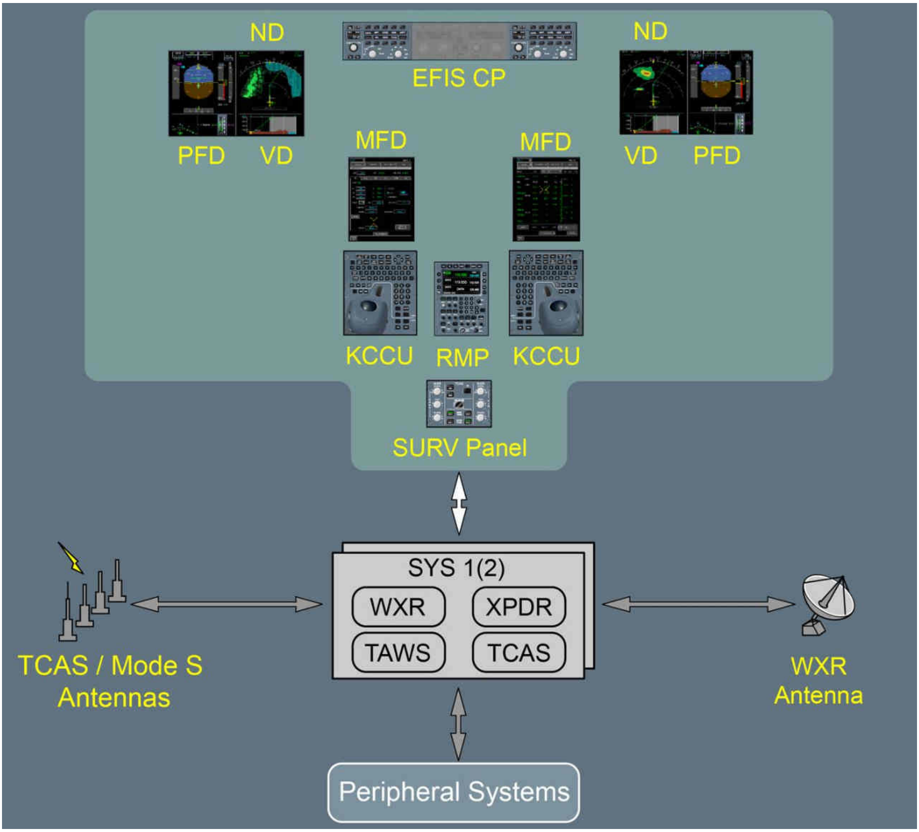


ARCHITECTURE

Applicable to: ALL

Ident.: DSC-34-SURV-10-10-00003179.0001001 / 05 MAY 14

The SURV system has:
- Two identical surveillance systems (SYS 1 and SYS 2)
- A Weather Radar (WXR) antenna
- Four identical antennas with TCAS/Mode S combination
- A SURV panel
- A dedicated MFD pages.


ND
EFIS CP
ND
PFD
VD
MFD
MFD
VD
PFD
KCCU
RMP
KCCU
SURV Panel
SYS 1(2)
WXR
XPDR
TAWS
TCAS
TCAS / Mode S Antennas
WXR Antenna
Peripheral Systems

Ident.: DSC-34-SURV-10-10-00003180.0001001 / 30 APR 14

SURV SYS

The SURV includes two identical surveillance systems, referred to as SYS 1 and SYS 2.

SYS 1 and SYS 2 can both perform all of the environmental surveillance functions that are grouped together as follows:
- The WXR with the TAWS
- The TCAS with the XPDR.

L3 The Aircraft Environment Surveillance Unit (AESU) 1(2) provides the SURV SYS 1(2) function.
In normal operation, the AESU that has the WXR/TAWS selected is the master AESU. It manages the alerts and displays for all of the surveillance functions.

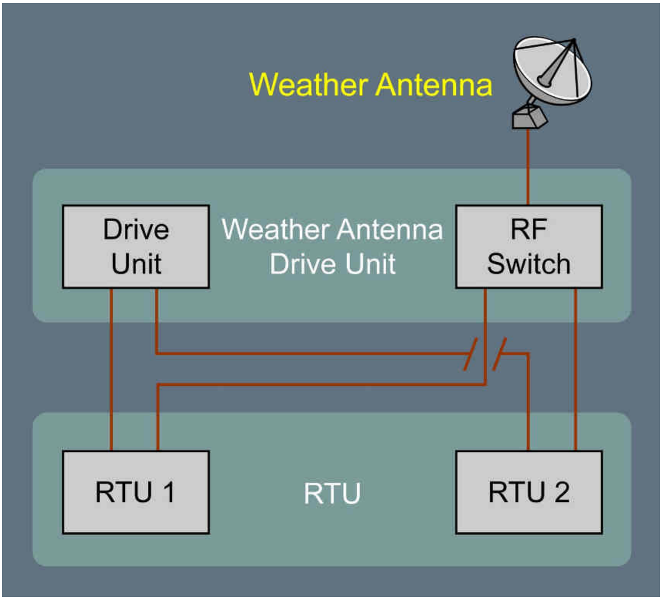
L2 When the aircraft is on ground, SYS 1(2) is automatically selected as the master AESU if the flight number in the FMS is an odd (even) number. It enables the detection of hidden failures.
In the case of an electrical emergency configuration, the flight crew must switch on SYS 2.

Ident.: DSC-34-SURV-10-10-00003181.0001001 / 30 APR 14

WEATHER RADAR (WXR) ANTENNA

The WXR antenna is in the radome.
It receives and transmits signals to the surveillance systems, in order to perform WXR functions.

WXR Antenna Architecture



L3

WEATHER ANTENNA DRIVE UNIT (WADU)

The WADU is next to the antenna in the radome. It supports and controls the antenna in order to perform the WXR functions.

The WADU has:
- A radio frequency switch, to select the SYS that performs the WXR function
- A drive unit that controls the position of the antenna (tilt and azimuth angles).

RADAR TRANSCEIVER UNITS (RTU)

Two RTUs are connected to the WADU in the radome, and each RTU interfaces with an AESU.

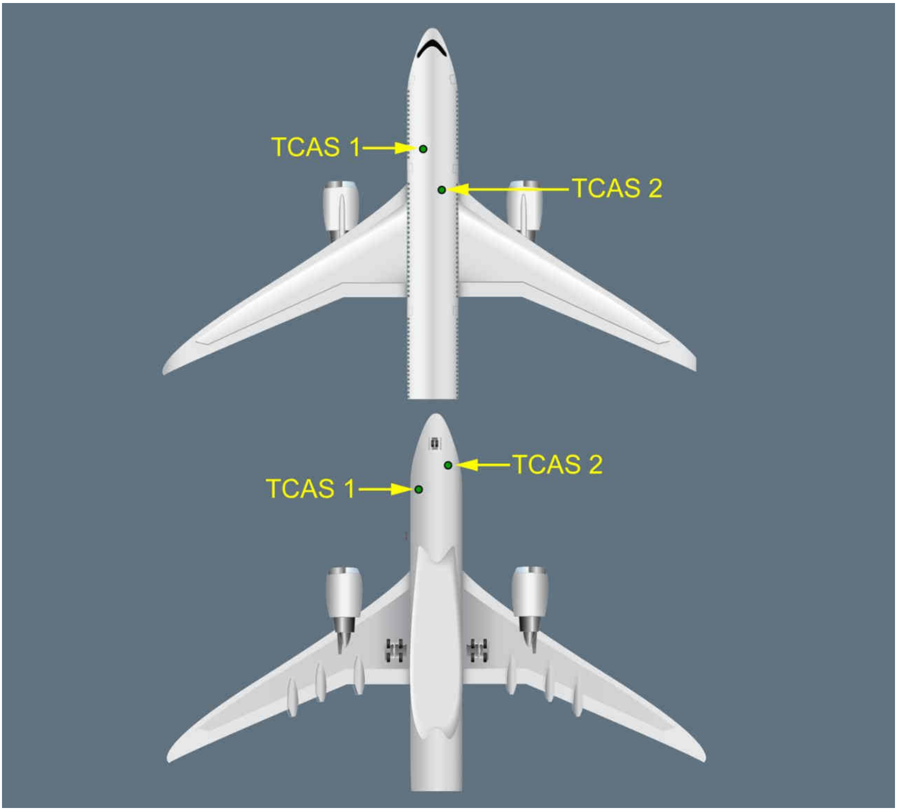
The RTUs:
- Transmit radar pulses
- Receives the return signals from the weather phenomena, and send them to the associated AESU.

Ident.: DSC-34-SURV-10-10-00003182.0001001 / 30 APR 14

TCAS/MODE S ANTENNAS

The aircraft has four combined TCAS/Mode S antennas that transmit and receive data to and from the TCAS and Air Traffic Control (ATC).

Location of TCAS Antennas



Ident.: DSC-34-SURV-10-10-00003183.0001001 / 30 APR 14

SURV PANEL

The flight crew can access the main SURV controls, from the SURV panel.

Note: *The main SURV controls of the SURV panel are also available on the SURV pages of the MFD.*

L2 For more information on the SURV panel *Refer to DSC-34-SURV-70-20 SURV Panel*.

Ident.: DSC-34-SURV-10-10-00003184.0001001 / 30 APR 14

KEYBOARD AND CURSOR CONTROL UNIT (KCCU)

The flight crew uses the KCCU to:
- Access and navigate through the SURV pages on the MFD
- Enter and modify SURV data on the MFD.

Ident.: DSC-34-SURV-10-10-00003185.0001001 / 30 APR 14

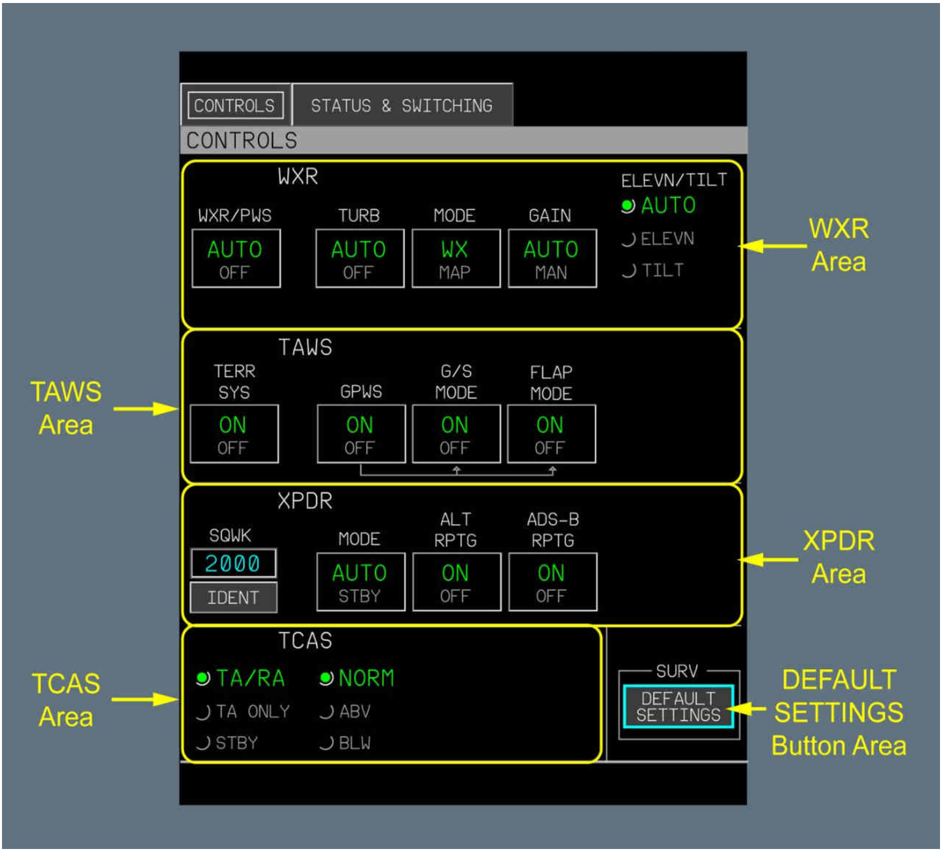
MULTIFUNCTION DISPLAY (MFD)

The MFD displays text data provided by the SURV.
The MFD is interactive. Therefore, the flight crew can navigate through the SURV pages, and can consult, enter, or modify data using the Keyboard and Cursor Control Unit (KCCU).

The MFD can display two SURV pages:

- The CONTROLS page, that monitors all surveillance functions

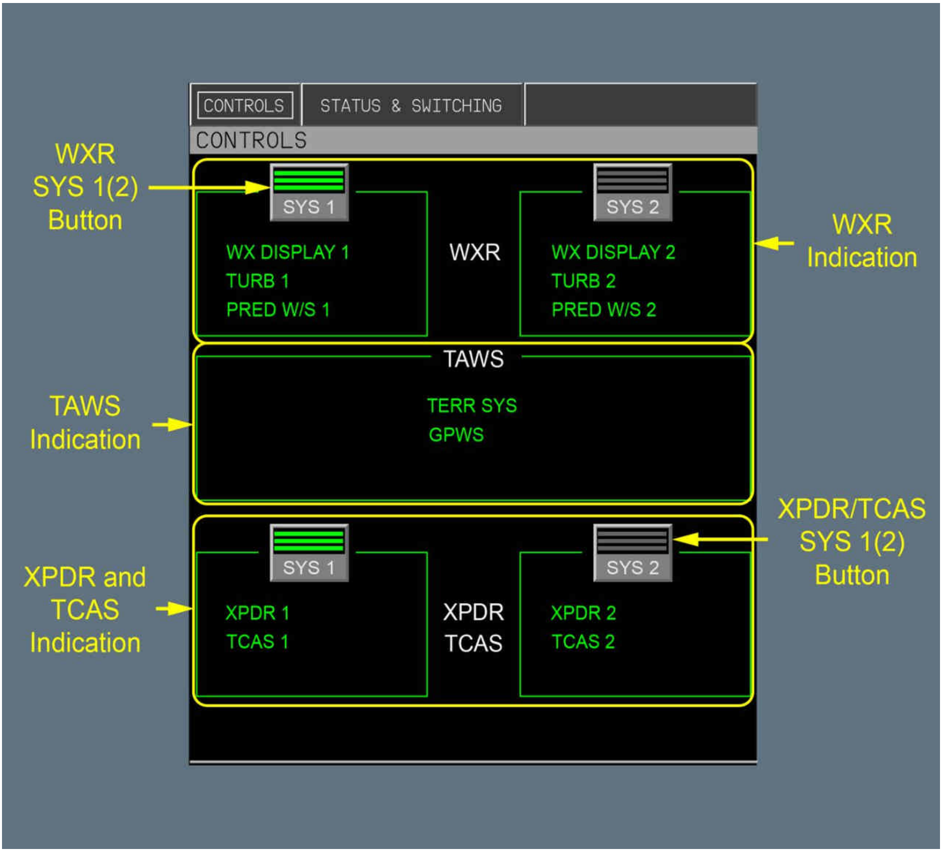
MFD SURV CONTROLS Page


CONTROLS
STATUS & SWITCHING
CONTROLS
WXR
WXR/PWS
AUTO
OFF
TURB
AUTO
OFF
MODE
WX
MAP
GAIN
AUTO
MAN
ELEVN/TILT
AUTO
ELEVN
TILT
WXR Area
TAWS
TERR SYS
ON
OFF
GPWS
ON
OFF
G/S MODE
ON
OFF
FLAP MODE
ON
OFF
TAWS Area
XPDR
SQWK
2000
IDENT
MODE
AUTO
STBY
ALT RPTG
ON
OFF
ADS-B RPTG
ON
OFF
XPDR Area
TCAS
TA/RA
TA ONLY
STBY
NORM
ABV
BLW
TCAS Area
SURV
DEFAULT SETTINGS
DEFAULT SETTINGS Button Area

L2 For more information on the CONTROLS page *Refer to DSC-34-SURV-70-50 CONTROLS Page*.

L1 - The STATUS & SWITCHING page, that indicates the status of each SURV function, and enables the flight crew to select the SYS.

MFD SURV STATUS & SWITCHING Page


CONTROLS
STATUS & SWITCHING
CONTROLS
SYS 1
SYS 2
WX DISPLAY 1
TURB 1
PRED W/S 1
WXR
WX DISPLAY 2
TURB 2
PRED W/S 2
TAWS
TERR SYS
GPWS
SYS 1
SYS 2
XPDR 1
TCAS 1
XPDR
TCAS
XPDR 2
TCAS 2
WXR SYS 1(2) Button
WXR Indication
TAWS Indication
XPDR/TCAS SYS 1(2) Button
XPDR and TCAS Indication

L2 For more information on the STATUS & SWITCHING page *Refer to DSC-34-SURV-70-50 STATUS & SWITCHING Page*.

Ident.: DSC-34-SURV-10-10-00003186.0001001 / 30 APR 14

NAVIGATION DISPLAY (ND), VERTICAL DISPLAY (VD) AND PRIMARY FLIGHT DISPLAY (PFD)

The ND, the VD, and the PFD provide situational awareness information, related to the TAWS, WXR, and TCAS surveillance functions.

L2 For more information on the applicable sections of the ND:
- For the TAWS *Refer to DSC-34-SURV-20-20 ND*
- For the WXR *Refer to DSC-34-SURV-30-20 ND*
- For the TCAS *Refer to DSC-34-SURV-40-20 ND*.

For more information on the applicable sections of the VD:
- For the TAWS *Refer to DSC-34-SURV-20-20 VD*
- Fo the WXR *Refer to DSC-34-SURV-30-20 VD*.

For more information on the applicable sections of the PFD:
- For the TAWS *Refer to DSC-34-SURV-20-20 PFD*
- For the WXR *Refer to DSC-34-SURV-30-20 PFD*
- For the TCAS *Refer to DSC-34-SURV-40-20 PFD*.

Ident.: DSC-34-SURV-10-10-00003187.0001001 / 30 APR 14

EFIS CONTROL PANEL (CP)

The flight crew uses the EFIS CP to display weather, terrain, and traffic information on the ND.

L2 For more information on the EFIS CP, *Refer to DSC-34-SURV-70-30 EFIS Control Panel*.

Ident.: DSC-34-SURV-10-10-00003188.0001001 / 30 APR 14

RADIO MANAGEMENT PANEL (RMP)

RMP 1 and RMP 2 are both connected to SYS 1 and SYS 2 of the SURV.

In addition to radio management functions, the RMPs enable the flight crew to control part of the transponder (XPDR). The flight crew can use the RMPs to:
- Change the transponder code (SQWK)
- Perform an IDENT.

L2 RMP 3 is not directly connected to the SURV. However, if the XPDR code is set from RMP 3, the RMP synchronization function enables RMP 1 or RMP 2 to transmit the code to the SURV.

L1 If both RMP 1 and RMP 2 fail, the XPDR control remains available via the SURV/CONTROLS page of the MFD.

Ident.: DSC-34-SURV-10-10-00003189.0001001 / 09 MAR 16

L2 PERIPHERAL SYSTEMS

The SURV interfaces with other peripheral systems:
- Mainly via the avionics network
- Also via other classic connections.

FLIGHT MANAGEMENT SYSTEM (FMS)

The FMS provides navigation and flight plan data.

AIR DATA AND INERTIAL REFERENTIAL UNIT (ADIRU)

The ADIRUs provide ADR, IR, GPS and GPIRS data.

PRIMARY FLIGHT CONTROL COMPUTER (PRIM)

The PRIM provides AFS engagement information.

FLIGHT CONTROL UNIT (FCU)

Both EFIS CPs provides ND settings and the selected altitude.
In the case of an EFIS CP failure, FCU backup provides data to the SURV SYS.

LANDING GEAR EXTRACTION RETRACTION SYSTEM (LGERS)

LGERS provides flight/ground information, and the landing gear position.

FULL AUTHORITY DIGITAL ENGINE CONTROL (FADEC)

The FADEC indicates:
- The running engines
- The takeoff mode selection.

FLIGHT WARNING SYSTEM (FWS)

The SURV interfaces with the FWS for:
- Alert priority management
- Failure display and annunciation.

AIR TRAFFIC COMMUNICATION (ATC COM)

The SURV provides the ATC with:
- The TCAS system status
- The ADS-B Traffic ◁ computation
- The XPDR system status
- The XPDR altitude reporting.

DIGITAL FLIGHT DATA RECORDER (DFDR)

The SURV provides data required for trouble shooting and accident/incident recording, such as:
- Alerts
- System status.

SLAT FLAP CONTROL COMPUTER (SFCC)

The SFCC provides the flaps position.

RADIO ALTIMETERS

The radio altimeters provide the radio altitudes.

MULTI MODE RECEIVER (MMR)

The MMR provides the information that the aircraft is below the glide slope.

L3

ONBOARD MAINTENANCE SYSTEM (OMS)

The SURV and the OMS share data for maintenance purposes.

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OVERVIEW

Ident.: DSC-34-SURV-20-10-00003379.0001001 / 30 APR 14
Applicable to: ALL

The Terrain Awareness and Warning System (TAWS):
- Detects terrain collision threats
- Displays terrain information
- Triggers applicable aural and visual indicators.

The TAWS has:
- A Ground Proximity Warning System (GPWS) function with five basic modes (*Refer to DSC-34-SURV-20-10 GPWS*)
- A Terrain (TERR) and obstacle function with two modes, including the peaks function (*Refer to DSC-34-SURV-20-10 Terrain Function*)
- A TAWS database (*Refer to DSC-34-SURV-20-10 TAWS Database*).

GPWS

Applicable to: ALL

Ident.: DSC-34-SURV-20-10-10-00003380.0001001 / 30 APR 14

The purpose of the GPWS function is to warn the flight crew of potentially hazardous situations, such as a collision with terrain.

The GPWS function monitors the flight path of the aircraft and triggers visual and audio indicators, when the aircraft is in one of the following situations:
- Excessive rate of descent (Mode 1)
- Excessive terrain closure rate (Mode 2)
- Altitude loss after takeoff or go-around (Mode 3)
- Terrain clearance not sufficient, if not in landing configuration (Mode 4)
- Excessive descent below the glide slope (Mode 5).

Note: *Stall or windshear alerts override GPWS visual and audio indicators.*

Ident.: DSC-34-SURV-20-10-10-00003382.0001001 / 30 APR 14

PRINCIPLE

The GPWS function detects terrain collision threats by comparing the geometric altitude of the aircraft and its trajectory with the information provided by the Radio Altimeters (RA).

L3 The TAWS computes the geometric altitude of the aircraft, by using:
- Pressure altitude
- GPS altitude
- Radio-altitude

- Temperature
- Barometric references
- Data from the TAWS database.

L2 The GPWS envelopes can be slightly modified for some airports, in order to minimize unexpected alerts.

Ident.: DSC-34-SURV-20-10-10-00003383.0001001 / 30 APR 14

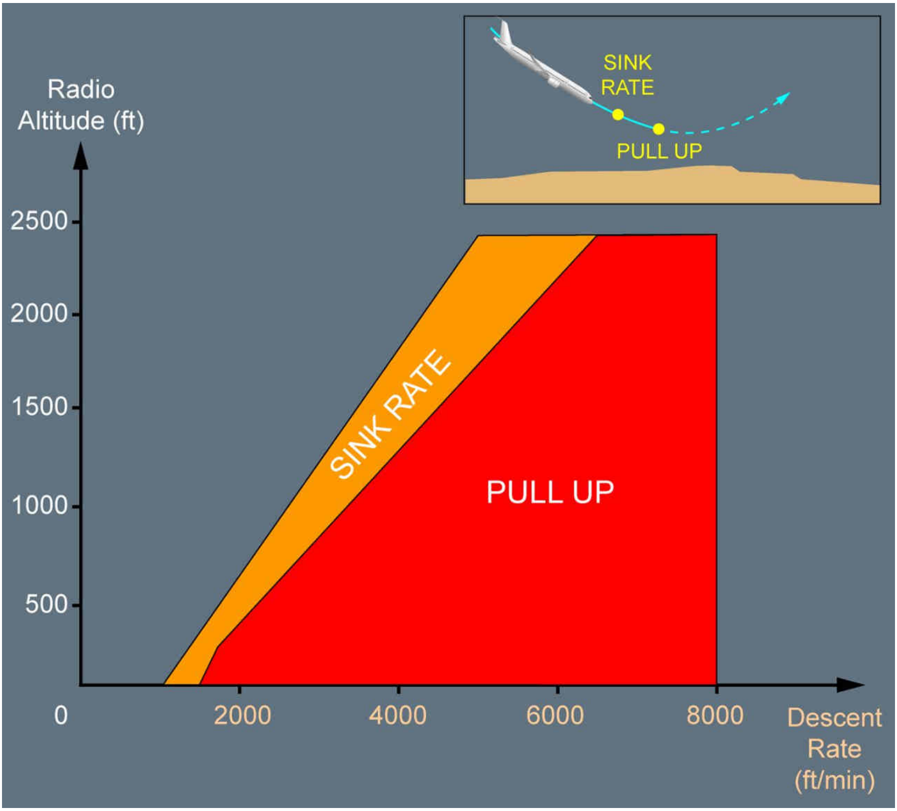
EXCESSIVE RATE OF DESCENT (MODE 1)

If a high rate of descent is detected at low altitude, the following alerts are triggered:
- The “SINK RATE, SINK RATE” audio indicator
- The SINK RATE visual indicator on the PFD.

If this rate is, or becomes excessive, the alert will change to:
- The “PULL UP” audio indicator that repeats as long as the aircraft descends at an excessive rate
- The PULL UP visual indicator on the PFD.

L2 Mode 1 is inhibited when the aircraft is close to the ground.

Excessive Rate of Descent



The "SINK RATE" envelope moves to the right, when the aircraft is above the glide slope beam, in order to avoid any undue alert during a glide slope capture.

L3 The descent rate data is the barometric vertical speed, or the inertial vertical speed, if the barometric vertical speed is not available.

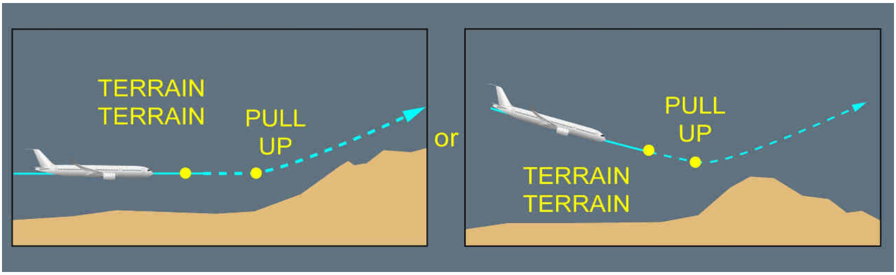
Ident.: DSC-34-SURV-20-10-10-00003384.0001001 / 08 JUL 19

EXCESSIVE TERRAIN CLOSURE RATE (MODE 2)

If the aircraft approaches the terrain with an excessive rate, the following alerts are triggered, even if the aircraft is not descending:
- The “TERRAIN, TERRAIN” audio indicator
- The PULL UP visual indicator on the PFD.

If the closure rate is not reduced, the “PULL UP” audio indicator replaces the “TERRAIN, TERRAIN” audio indicator and repeats as long as the aircraft has an excessive terrain closure rate.

Excessive Terrain Closure Rate



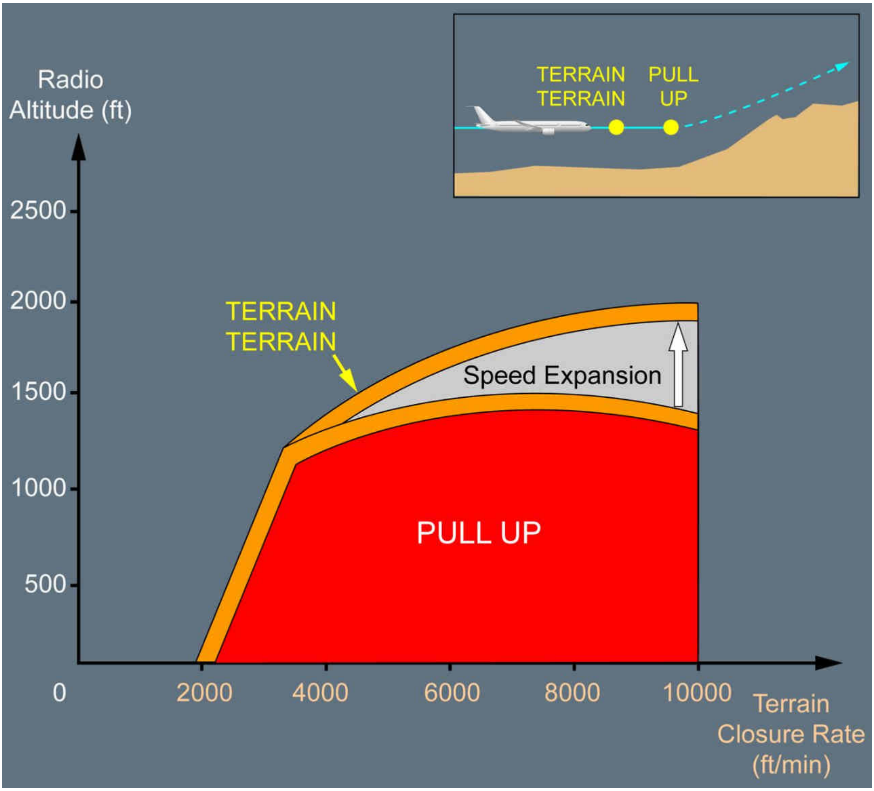
L2

AIRCRAFT NOT IN LANDING CONFIGURATION (MODE 2A)

Mode 2A applies, if the aircraft is at low altitude, and:
- The flaps are not extended for landing, or
- The landing gear is not extended, or
- The aircraft is not flying an XLS approach.

The upper cutoff limit of the envelope will increase, as applicable, depending on the airspeed.

Excessive Terrain Closure Rate While Aircraft Not in Landing Configuration



The alerts stop if:

- The aircraft is no longer in the protection envelope for a minimum of 45 s
- The aircraft increases the altitude at which it exited the protection envelope by 300 ft.

AIRCRAFT AT LANDING OR TAKEOFF (MODE 2B)

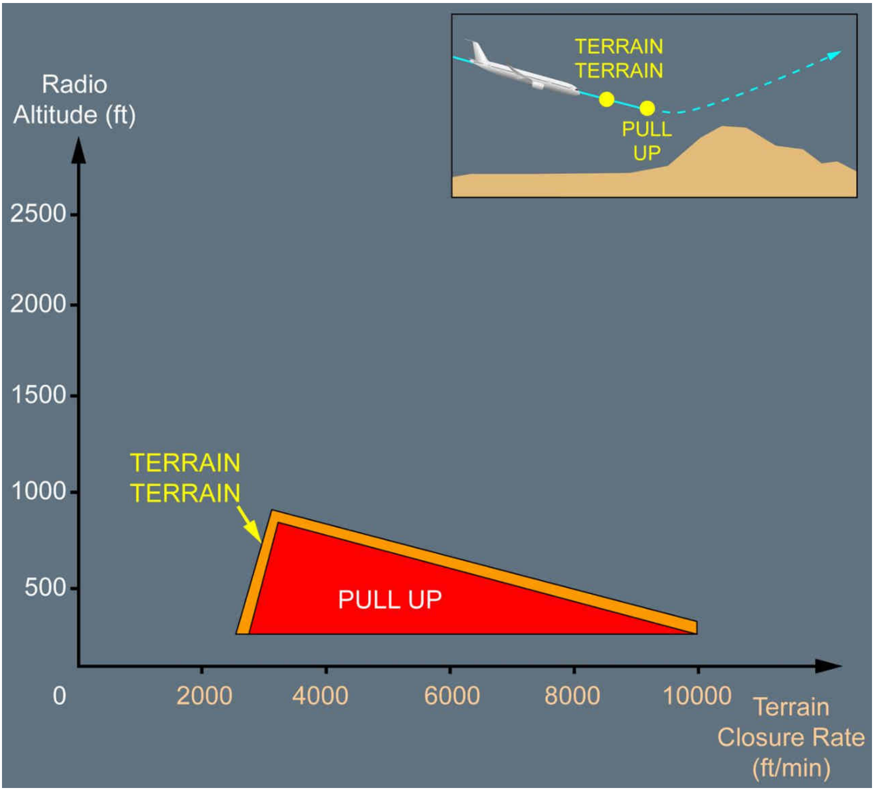
Mode 2B applies, if the aircraft is at low altitude, and:

- The flaps are extended for landing, or
- The aircraft is within 5 NM and 3 500 ft height of the destination, or

- The aircraft is flying an XLS approach, and both glide slope and LOC deviations are below 2 dots, or
- During the first 60 s after takeoff.

L3 This last condition avoids any spurious alerts due to erroneous radio altimeter tracking after takeoff.

Mode 2B



L2 If the aircraft enters the mode 2B envelope, with both the landing gear and the flaps in landing configuration, the following alerts are triggered until the aircraft exits the protection envelope (No “PULL UP” audio indicator):

- The “TERRAIN” audio indicator
- The TERRAIN visual indicator on the PFD.

Ident.: DSC-34-SURV-20-10-10-00003385.0001001 / 30 APR 14

ALTITUDE LOSS AFTER TAKEOFF (MODE 3)

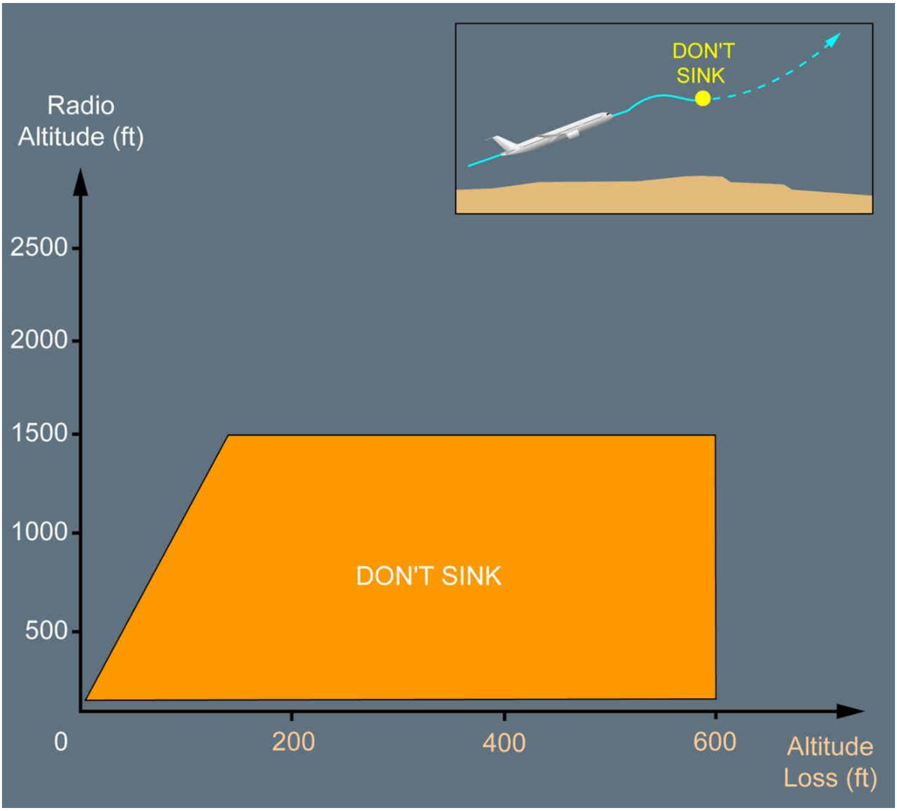
If the GPWS detects an excessive decrease in altitude after takeoff, or during a go-around, when the landing gear or the flaps are not in landing configuration, the following alerts are triggered:

- The “DON’T SINK, DON’T SINK” audio indicator
- The DON'T SINK visual indicator on the PFD.

Both aural and visual indicators stop, if the aircraft gains sufficient altitude.

L2 Mode 3 is inhibited when the aircraft is close to the ground.

Mode 3



Ident.: DSC-34-SURV-20-10-10-00003386.0001001 / 30 APR 14

TERRAIN CLEARANCE NOT SUFFICIENT WHEN NOT IN LANDING CONFIGURATION (MODE 4)

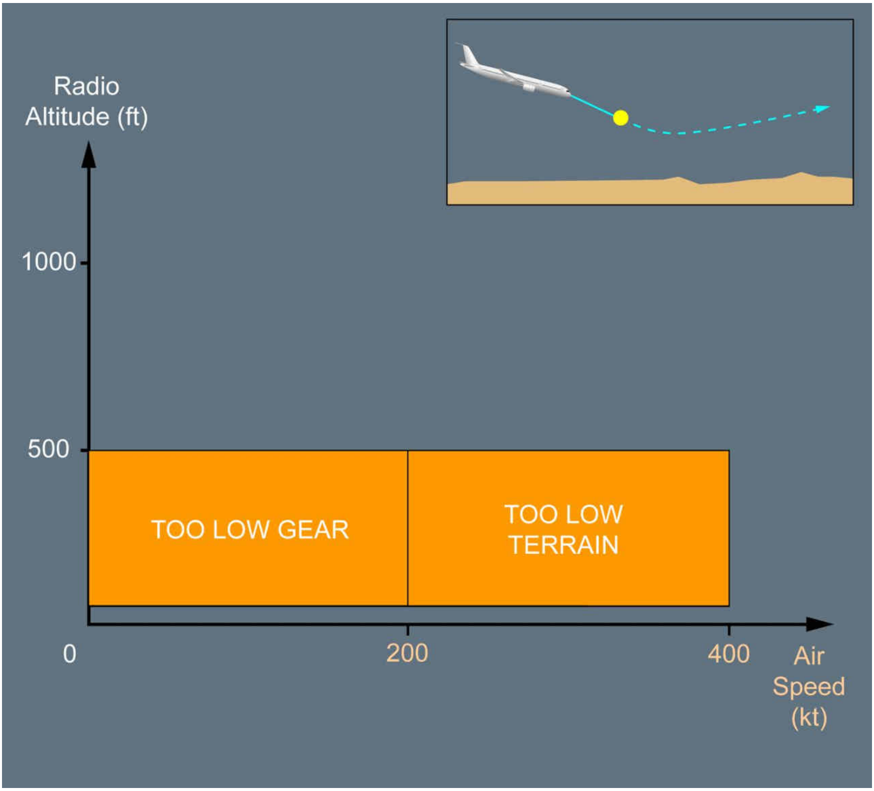
During approach, and depending on the aircraft configuration, mode 4 provides various protections if the terrain clearance is not sufficient.

LANDING GEAR UP AND FLAPS NOT IN LANDING CONFIGURATION (MODE 4A)

If the aircraft approaches terrain with the landing gear up and the flaps not in landing configuration, the following alerts are triggered:
- The “TOO LOW GEAR” audio indicator
- The TOO LOW GEAR visual indicator on the PFD.

In addition, if the aircraft speed is above 200 kt, the following alerts are triggered:
- The “TOO LOW TERRAIN” audio indicator
- The TOO LOW TERRAIN visual indicator on the PFD.

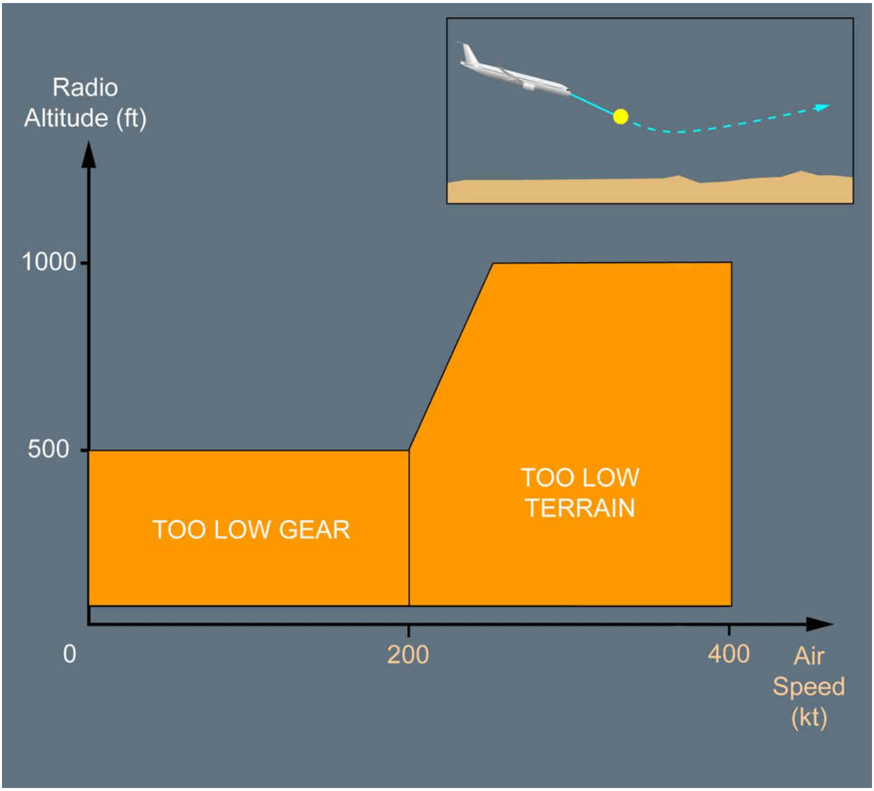
Mode 4A



L2

In addition, if system data (e.g. aircraft position or terrain database) does not enable the flight crew to rely on the TAD function, the mode 4A protection envelope becomes:

Mode 4A and TERR function not operative



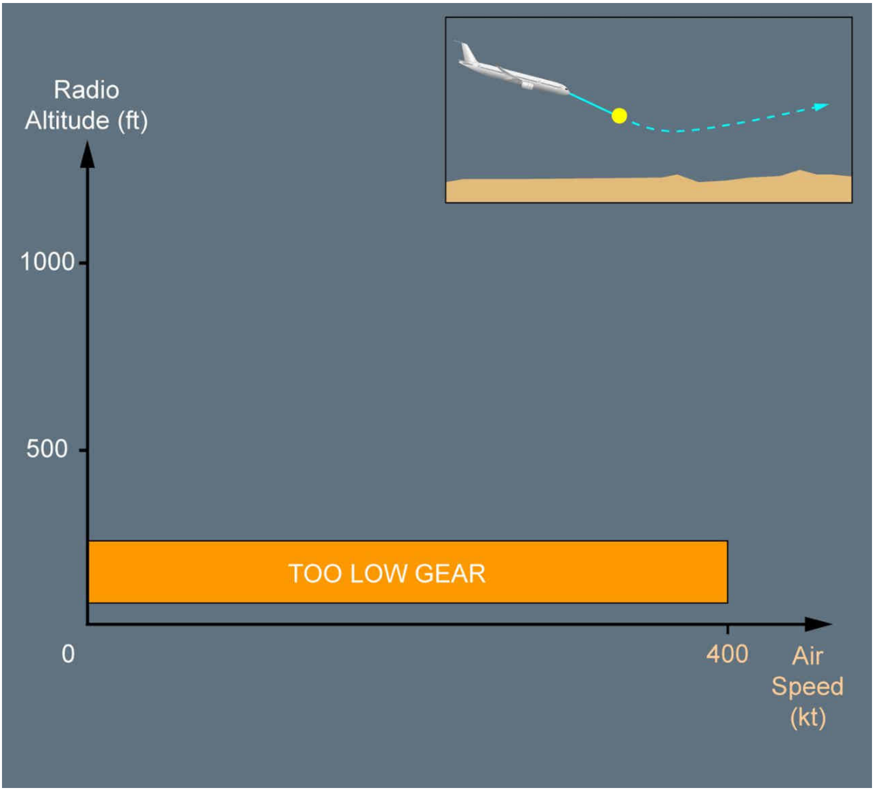
L1

LANDING GEAR DOWN AND FLAPS NOT IN LANDING CONFIGURATION, OR LANDING GEAR UP AND FLAPS IN LANDING CONFIGURATION (MODE 4B)

If the aircraft approaches terrain with the landing gear up and the flaps extended for landing, the following alerts are triggered:

- The “TOO LOW GEAR” audio indicator
- The TOO LOW GEAR visual indicator on the PFD.

Mode 4B Gear Up and Flaps in Landing Configuration



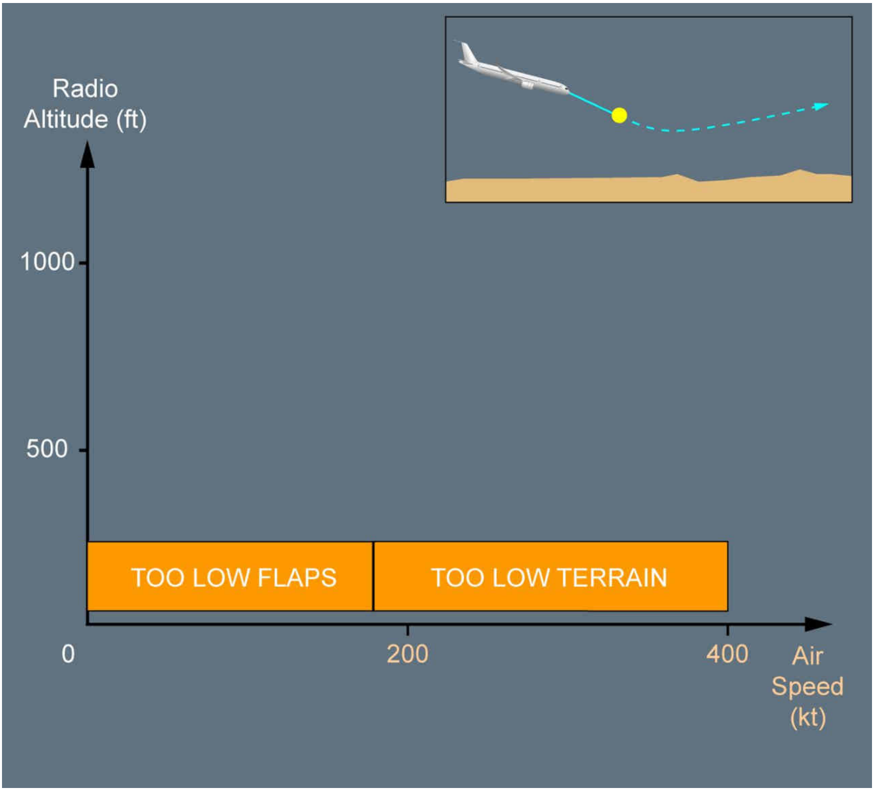
If the aircraft approaches the terrain with the landing gear down and the flaps not in landing configuration, the following alerts are triggered:

- The “TOO LOW FLAPS” audio indicator
- The TOO LOW FLAPS visual indicator on the PFD.

In addition, if the aircraft speed is above 180 kt, the following alerts are triggered:

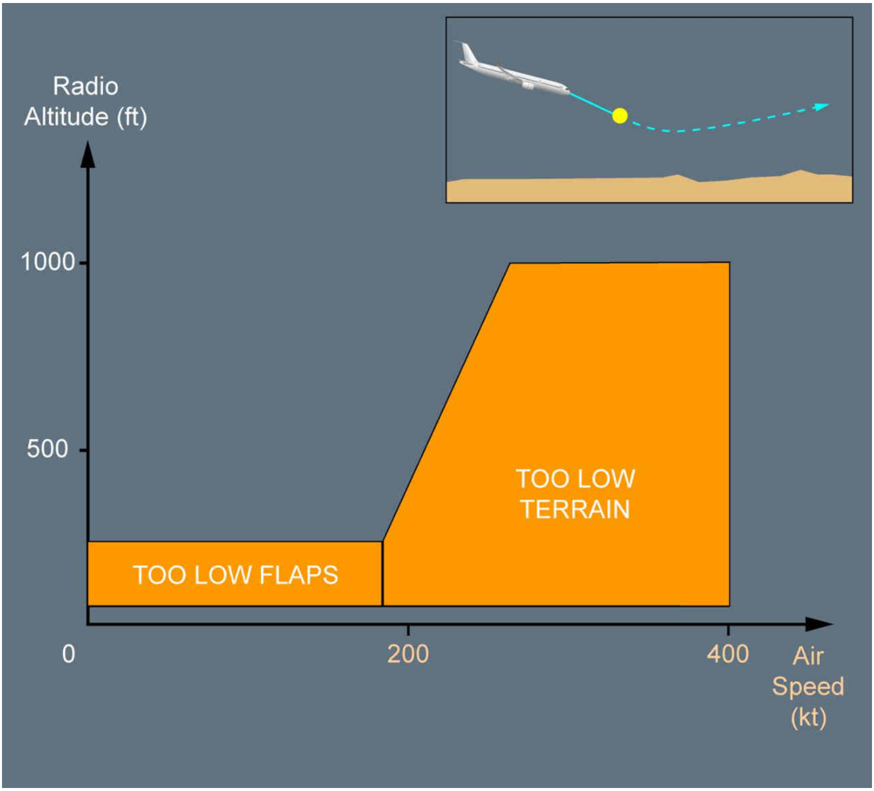
- The “TOO LOW TERRAIN” audio indicator
- The TOO LOW TERRAIN visual indicator on the PFD.

Mode 4B Gear Down and Flaps Not in Landing Configuration



L2 In addition, if system data (e.g. aircraft position or terrain database) does not enable the flight crew to rely on the TAD function, the mode 4B protection envelope becomes:

Mode 4B Gear Down and Flaps Not in Landing Configuration, and TERR Function Not Operative



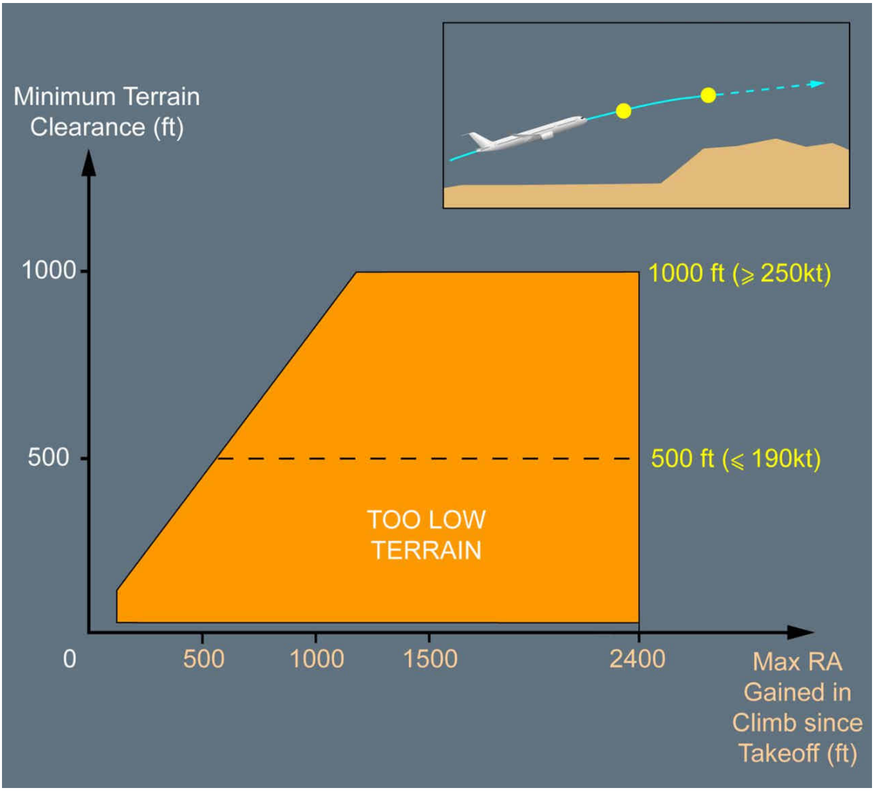
L1 The flight crew can inhibit mode 4B by setting the FLAP MODE button to OFF on the CONTROLS page of the MFD (e.g. in the case of a landing with abnormal flaps configuration).

LANDING GEAR UP OR FLAPS NOT IN LANDING CONFIGURATION (MODE 4C)

As an additional protection for mode 3 (decrease in altitude after takeoff), if the aircraft descends towards terrain during takeoff and climb, with the landing gear up, or if the flaps are not in landing configuration, the following alerts are triggered:
- The “TOO LOW TERRAIN” audio indicator
- The TOO LOW TERRAIN visual indicator on the PFD.

L2 These audio indicators are triggered, if the aircraft goes below 75 % of its current radio-altitude, and enters the protection envelope.

Mode 4C



Ident.: DSC-34-SURV-20-10-10-00003387.0001001 / 30 APR 14

DESCENT BELOW GLIDE SLOPE (MODE 5)

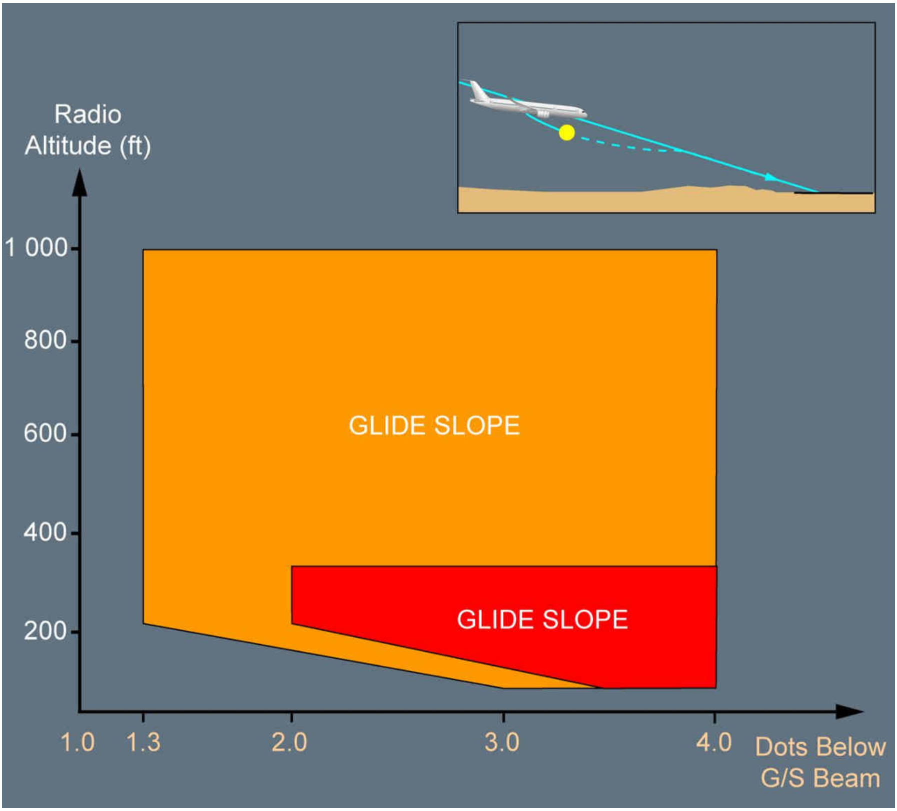
If the aircraft descends below the glide slope by more than 1.3 dots during precision approaches, the following alerts are triggered:

- The “GLIDE SLOPE” aural indicator that repeats as long as the aircraft remains below the glide slope
  If the glide slope deviation is more than 2 dots below 300 ft, the audio indicator becomes louder, and repeats more and more frequently.
- The GLIDE SLOPE visual indicator on the PFD.

L2 Mode 5 is active during approach, if the landing gear is down, and the aircraft is below 1 000 ft AGL.

L1 In order to deactivate mode 5, the flight crew can:
- Set the G/S MODE button to OFF on the CONTROLS page of the MFD, or
- Set the G/S MODE pb to OFF on the SURV panel.

Descent Below Glide Slope



Note: *Usually, the GLIDE SLOPE alert is only triggered, if the landing gear is down. For some airports, the landing gear down condition is not applicable.*

TERRAIN FUNCTION

Applicable to: ALL

Ident.: DSC-34-SURV-20-10-20-00003381.0001001 / 30 APR 14

In addition to the five basic GPWS modes, TAWS also has a TERR function, based on a worldwide database. The TERR function warns the flight crew of potential hazardous conditions with respect to the surrounding terrain.

The TERR function has the following two modes:
- Terrain Awareness and Display (TAD)
  Refer to Terrain Awareness and Display
- Terrain Clearance Floor (TCF).
  Refer to Terrain Clearance Floor

Ident.: DSC-34-SURV-20-10-20-00003388.0001001 / 30 APR 14

PRINCIPLE

The TERR function provides displays and alerts, based on the comparison between the current aircraft position and the TAWS database.

If the flight crew sets the TERR SYS button of the MFD SURV/CONTROLS page to ON, the TERR function provides:
- A horizontal view of the terrain on the ND, if the flight crew presses the TERR pb on the EFIS CP or if the TAWS triggers an alert
  The ND displays terrain in different colors, depending on the terrain altitude in relation to the aircraft altitude.
- A vertical view of the terrain on the VD.

  The VD always displays:
  - Terrain in brown
L2 The color of the terrain does not change depending on relative terrain proximity, nor during terrain or obstacle alerts.
L1
  - Water in blue.

L2 The VD always displays the terrain, even if the TERR pb is not pressed on the EFIS CP.

Ident.: DSC-34-SURV-20-10-20-00003389.0001001 / 12 MAR 15

TERRAIN AWARENESS AND DISPLAY (TAD)

If the TAD detects a terrain or an obstacle collision threat ahead of the aircraft, the following are triggered:

- A caution, if the aircraft is approximately 60 s away from the conflict terrain
- A warning (PULL UP or AVOID), if the aircraft is approximately 30 s away from the conflict terrain.

The TAD function is available in all flight phases, and for all gear and flap configurations.

Note: *On the ND in PLAN mode, with Terrain displayed, a significant delay can be observed when:*
- *A flight crewmember changes the range, or*
- *A flight crewmember scrolls the waypoint list in the F-PLN.*

During this delay, the ND will not display the terrain.

L2 PROTECTION ENVELOPE

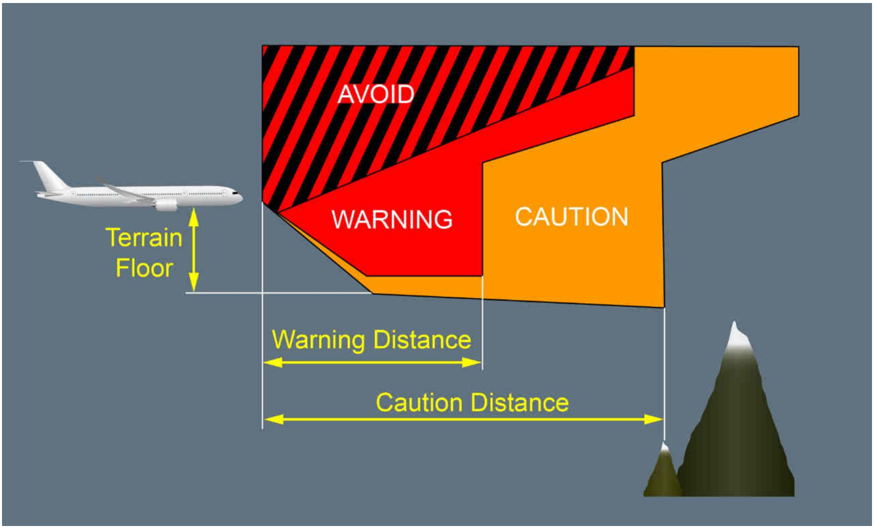
The TAD computes a caution envelope and a warning envelope, based on:

- The aircraft altitude
- Aircraft performances
- The nearest runway altitude
- The range of the nearest collision threats
- The ground speed
- The turn angle.

VERTICAL ENVELOPE

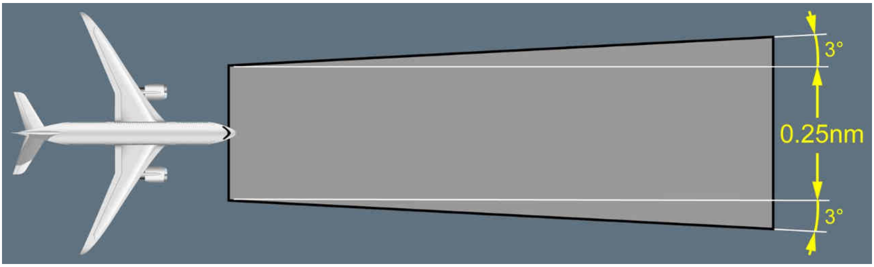
Warning and caution envelopes change, depending on the ground speed and the turn angle.

Vertical Envelope


AVOID
WARNING
CAUTION
Terrain Floor
Warning Distance
Caution Distance

HORIZONTAL ENVELOPE

Horizontal Envelope



Note: *When the aircraft turns, the horizontal envelope changes to take into account the flight path of the aircraft.*

L1 AUTO RANGE/MODE

The AUTO RANGE/MODE function automatically changes the ND setting to the most appropriate range and mode, in particular for specific operational situations.
In the case of terrain or obstacle alert, the ND automatically changes range to 10 NM and mode to ARC. The ND displays the AUTO RANGE/MODE message.

TERRAIN ALERTS

If the TAD detects a terrain collision threat ahead of the aircraft, the following are triggered:

- The “TERRAIN AHEAD, TERRAIN AHEAD” audio indicator that repeats every 7 s, until the terrain is no longer a threat
- The TERRAIN visual indicator on the NDs

L2 The TERR pb is also automatically pressed on the EFIS CP.

L1
- Yellow areas on the NDs, that indicate a terrain conflict with the caution criteria.

If the aircraft continues to approach the terrain, the following are triggered:

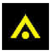
- The “TERRAIN AHEAD, PULL UP” audio indicator, that repeats continuously, until the terrain is no longer a threat
- The PULL UP visual indicator on the PFDs
- The TERRAIN visual indicator on the NDs
- Red areas on the NDs, that indicate a terrain conflict with the warning criteria.

If the aircraft continues to approach the terrain after the PULL UP alert, the following are triggered:

- The “AVOID TERRAIN” audio indicator, that repeats continuously, until the terrain is no longer a threat
- The AVOID TERRAIN visual indicator on the PFDs
- The TERR AHEAD visual indicator on the NDs
- Red areas with black stripes on the NDs, that indicate a terrain conflict with the warning criteria.

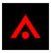
OBSTACLE ALERTS

If the TAD detects an obstacle collision threat ahead of the aircraft, the following are triggered:

- The “OBSTACLE AHEAD, OBSTACLE AHEAD” audio indicator, that repeats every 7 s until the obstacle is no longer a threat
- The OBST visual indicator on the NDs
- The  symbol on the NDs, that indicates an obstacle conflict with the caution criteria.

L2 The point indicates the location of the obstacle.
The TERR pb is also automatically pressed on the EFIS CP.

L1 If the aircraft continues to approach the obstacle, the following are triggered:

- The “OBSTACLE AHEAD, PULL UP” audio indicator, that repeats continuously until the obstacle is no longer a threat
- The PULL UP visual indicator on the PFDs
- The OBST visual indicator on the NDs
- The  symbol on the NDs, that indicates an obstacle conflict with the warning criteria.

L2 The point indicates the location of the obstacle.

L1 If the aircraft continues to approach the obstacle after the PULL UP alert, the following are triggered:

- The “AVOID OBSTACLE” audio indicator, that repeats continuously, until the terrain is no longer a threat
- The AVOID OBSTACLE visual indicator on the PFDs
- The OBST AHEAD visual indicator on the NDs
- The ▲ symbol on the NDs, that indicates an obstacle conflict with the warning criteria.

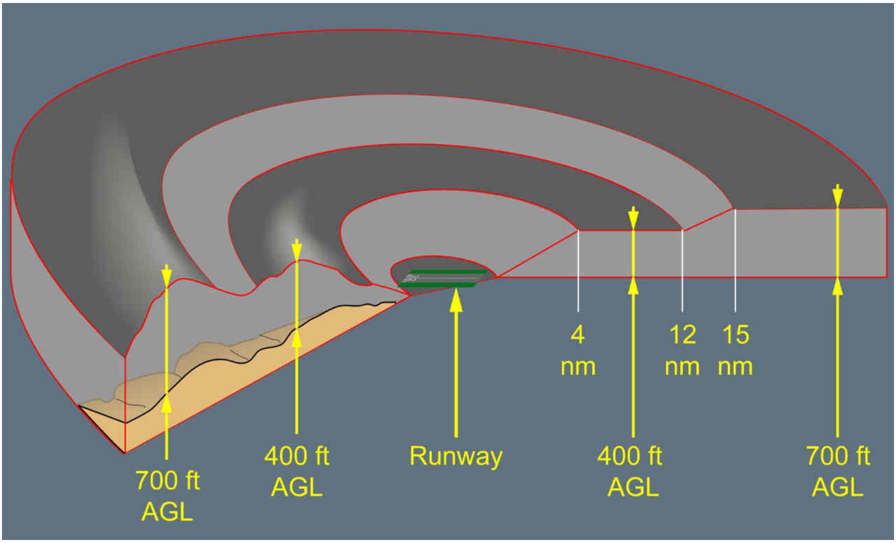
L2 The point indicates the location of the obstacle.

Ident.: DSC-34-SURV-20-10-20-00003390.0001001 / 30 APR 14

TERRAIN CLEARANCE FLOOR (TCF)

The TCF function computes a terrain clearance envelope around the airport runway. This function enhances the GPWS mode 4, by triggering an alert if the terrain clearance is not sufficient, even when the aircraft is in landing configuration.
The TCF function also protects against an attempt to land where there is no airfield.
The TAWS database includes the applicable TCF envelope for each airport runway that has terrain data, and that is longer than 1 067 m (3 500 ft).
The TCF function is active during all the following flight phases: Takeoff, cruise and approach.

TCF Envelope



If the aircraft descends below the protection envelope, the following are triggered:

- The “TOO LOW TERRAIN, TOO LOW TERRAIN” audio indicator, if the aircraft enters the envelope

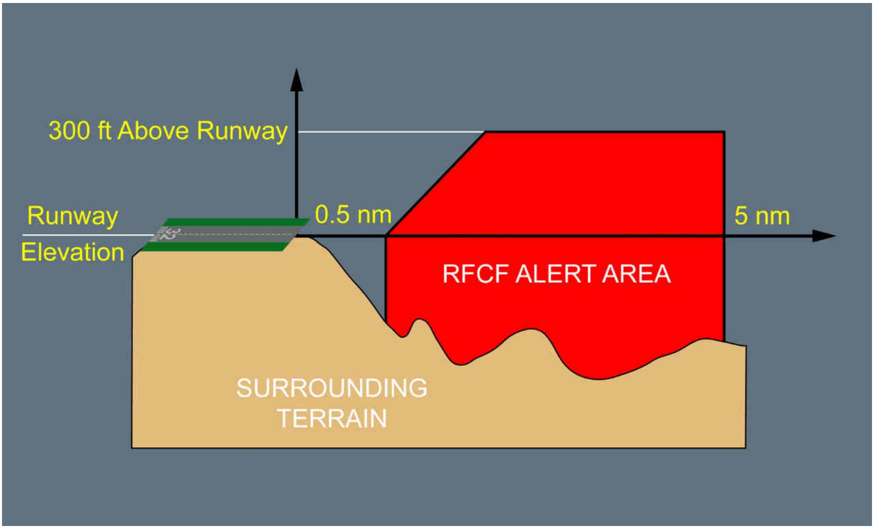
L2 If the aircraft continues to descend below the envelope, the alert is triggered one time for every 20 % degradation in radio altitude.

L1
- The TOO LOW TERRAIN visual indicator on the PFD.

L2 RUNWAY FIELD CLEARANCE FLOOR (RFCF)

The RFCF function provides an additional protection envelope for runways that are significantly higher than the surrounding terrain.
The envelope is a circular band within 5 NM of the runway, and it is based on the geometric altitude and the runway elevation.
If the aircraft descends below this protection envelope, the "TOO LOW TERRAIN" audio and visual indicators are triggered.

RFCF



TAWS DATABASE

Ident.: DSC-34-SURV-20-10-00003391.0001001 / 30 APR 14
Applicable to: ALL

The TAWS database divides the earth surface into grid cells.

L3 These cells are defined by longitude and latitude data, in the World Geodetic System WGS 84.

L1 Each cell contains the highest terrain altitude within the associated terrain area.

The grid resolution varies, depending on the geographic location:
- 0.25 NM × 0.25 NM
- 0.5 NM × 0.5 NM
- 1 NM × 1 NM
- 2 NM × 2 NM
- 5 NM × 5 NM.

The highest resolution (0.25 NM × 0.25 NM) is used for airports areas to accurately reflect the terrain. The lowest resolution (5 NM × 5 NM) is used for non-airport areas, where terrain features are not a collision threat.

The TAWS database has:
- A terrain database
- An obstacle database

L2 The obstacle database includes the location and height of all man-made obstacles that are above 100 ft surrounding terrains.

L1
- An aircraft performance database

L2 The aircraft performance database is used to compute the climb capability of the aircraft.

L1
- A runway database

L2 The runway database includes the length and name of all hard surface runways worldwide that are 3 500 ft long or more. In addition, this database includes information about the runway orientation, elevation, and mean slope.

L1
- An envelope modulation database.

L2 The TAWS uses the envelope modulation database to adapt alert protections to specific areas in the world, in order to improve nuisance margins.

L1 Updating the TAWS database is the vendor's responsibility.

L3 The vendor may use one or more of the following data sources:
- Data from government and/or regulatory agencies
- Data from airlines that have surveyed an airport, while establishing layout, approach, or departure procedures,
- Data from commercial vendors that also produce data sets for FMS and other navigation systems
- Data from commercial and military surveying agencies, when available
- Airport layout and physical properties from high resolution maps and/or digitized data sources
- Airport layout and physical properties from imagery.

L1 Review the manufacturer document "EGPWS Terrain Database Airport Coverage List", to have official information about the most recent TAWS database, and the list of included airports.
To obtain a copy of this document, please contact:

Honeywell - 1500 NE 36th Street
REDMOND, WA, USA 98073
Website: www.egpws.com

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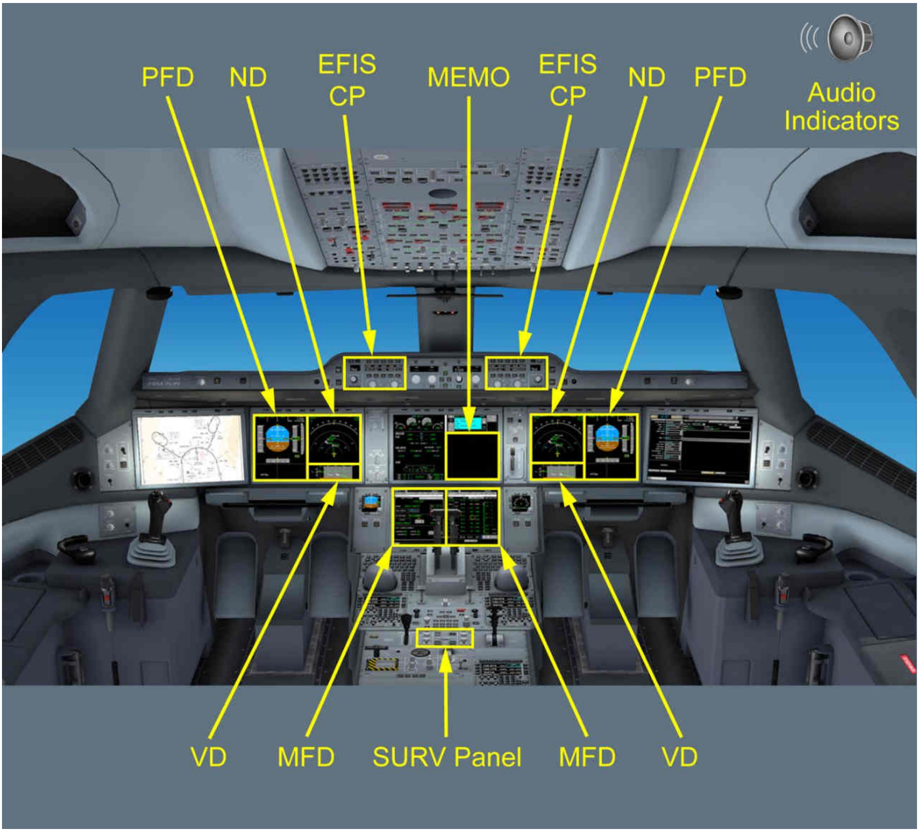
COCKPIT VIEW

Ident.: DSC-34-SURV-20-20-00003392.0001001 / 30 APR 14
Applicable to: ALL

Cockpit View


PFD
ND
EFIS CP
MEMO
EFIS CP
ND
PFD
Audio Indicators
VD
MFD
SURV Panel
MFD
VD

AUDIO INDICATORS

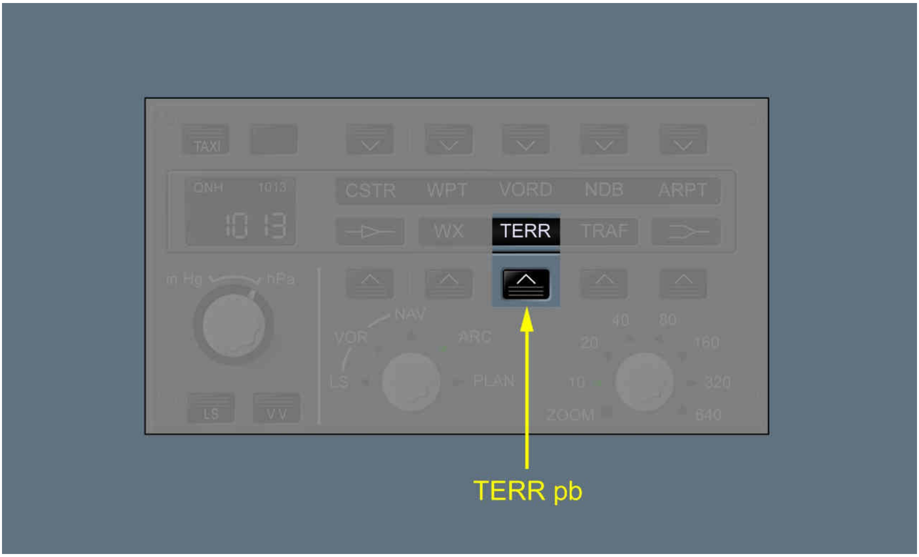
Ident.: DSC-34-SURV-20-20-00003400.0001001 / 06 AUG 14
Applicable to: ALL

Audio Indicator	Condition or Cause	Duration
Don't Sink (Synthetic Voice)	*Refer to DSC-34-SURV-20-10 Altitude Loss After Takeoff (Mode 3)*.	Is repeated if the situation continues to degrade.
Glideslope (Synthetic voice)	*Refer to DSC-34-SURV-20-10 Descent Below Glide Slope (Mode 5)*.	Is repeated as long as the aircraft is below the glide slope.
Obstacle Ahead (Synthetic voice)	*Refer to DSC-34-SURV-20-10 Terrain Awareness and Display*.	Is repeated each 7 s until the obstacle is no longer a threat.
Obstacle Ahead, Pull Up (Synthetic voice)	*Refer to DSC-34-SURV-20-10 Terrain Awareness and Display*.	Is repeated continuously until the obstacle is no longer a threat.
Pull Up (Synthetic voice)	- *Refer to DSC-34-SURV-20-10 Excessive Rate of Descent (Mode 1)*, or - *Refer to DSC-34-SURV-20-10 Excessive Terrain Closure Rate (Mode 2)*.	- Is repeated as long as the aircraft descends at an excessive rate, or - Is repeated as lon as the aircraft has an excessive terrain closure rate.
Sink Rate (Synthetic voice)	*Refer to DSC-34-SURV-20-10 Excessive Rate of Descent (Mode 1)*.	Is repeated if the situation continues to degrade.
Terrain (Synthetic voice)	*Refer to DSC-34-SURV-20-10 Excessive Terrain Closure Rate (Mode 2)*.	Is repeated when returning from the warning envelope (Pull Up) to the caution envelope of GPWS Mode 2, until the terrain clearance stops decreasing.
Terrain, Terrain (Synthetic voice)	*Refer to DSC-34-SURV-20-10 Excessive Terrain Closure Rate (Mode 2)*.	Is repeated until the aircraft exits the protection envelope.
Terrain Ahead, Terrain Ahead (Synthetic voice)	*Refer to DSC-34-SURV-20-10 Terrain Awareness and Display*.	Is repeated each 7 s until the terrain is no longer a threat.
Terrain Ahead, Pull Up (Synthetic voice)	*Refer to DSC-34-SURV-20-10 Terrain Awareness and Display*.	Is repeated continuously until the terrain is no longer a threat.
Too low, flaps (Synthetic Voice)	*Refer to DSC-34-SURV-20-10 Not Sufficient Terrain Clearance (Mode 4)*.	Is repeated if the situation continues to degrade.
Too low gear (Synthetic voice)	*Refer to DSC-34-SURV-20-10 Not Sufficient Terrain Clearance (Mode 4)*.	Is repeated if the situation continues to degrade.
Too Low, Terrain (Synthetic voice)	- *Refer to DSC-34-SURV-20-10 Not Sufficient Terrain Clearance (Mode 4)*, or - *Refer to DSC-34-SURV-20-10 Terrain Clearance Floor*.	Is repeated if the situation continues to degrade.

EFIS CONTROL PANEL (CP)

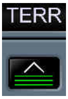
Ident.: DSC-34-SURV-20-20-00003393.0001001 / 30 APR 14
Applicable to: ALL

EFIS CP

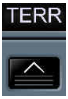

TAXI
QNH
1013
1013
CSTR
WPT
VORD
NDB
ARPT
WX
TERR
TRAF
in Hg
hPa
NAV
VOR
ARC
LS
PLAN
40
80
20
160
10
320
ZOOM
640
LS
VV
TERR pb

TERR pb

L12



The onside ND displays terrain (TERR) information.
Associated with the TERR message on the ND.
The flight crew cannot press the WX pb and the TERR pb at the same time.



The onside ND does not display terrain (TERR) information.

MEMO

Applicable to: ALL

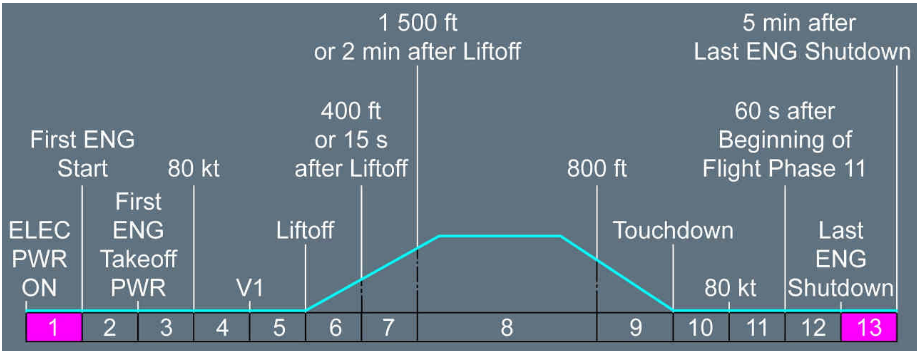
Ident.: DSC-34-SURV-20-20-60-00003399.0001001 / 30 APR 14

L12

GPWS OFF	The flight crew sets the GPWS button to OFF on the SURV CONTROLS page of the MFD. Appears on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

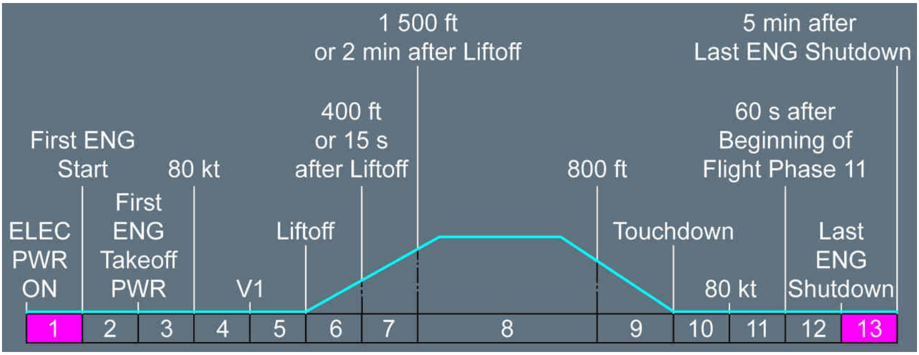
Ident.: DSC-34-SURV-20-20-60-00002147.0001001 / 30 APR 14

L12

TAWS FLAP MODE OFF	The flight crew sets the FLAP MODE button to OFF on the SURV CONTROLS page of the MFD. Appears on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
2
3
4
5
6
7
8
9
10
11
12
13

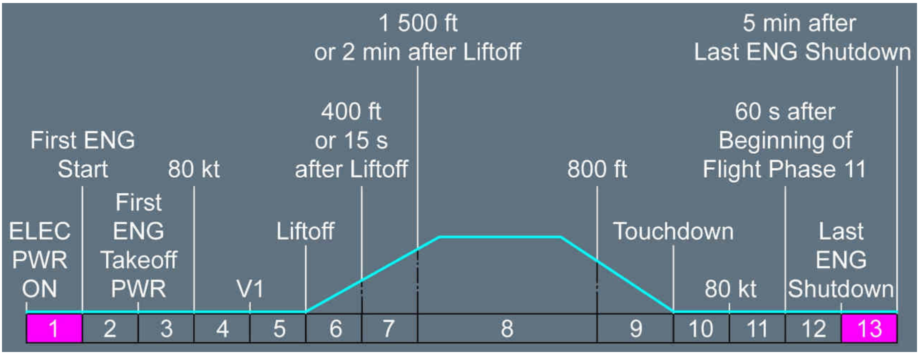
Ident.: DSC-34-SURV-20-20-60-00002698.0001001 / 28 APR 17

L12

TAWS G/S MODE OFF	The flight crew sets the G/S MODE button to OFF on the SURV CONTROLS page of the MFD, or on the SURV panel. Appears on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
2
3
4
5
6
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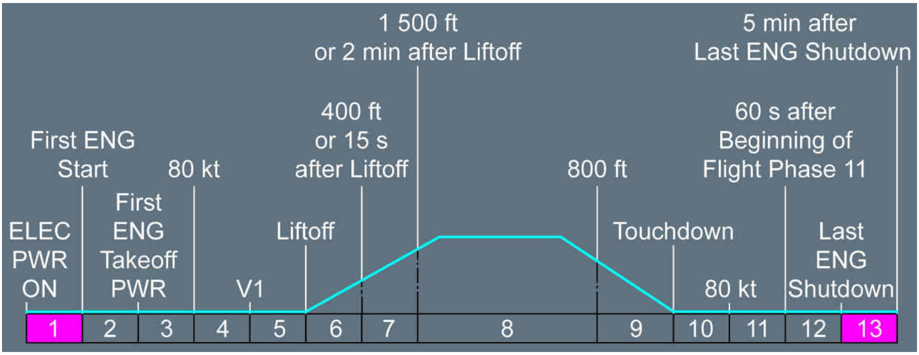
Ident.: DSC-34-SURV-20-20-60-00003646.0001001 / 30 APR 14

L12

TERR STBY	The TAWS is operative, but the TERR function is not available. Appears on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
2
3
4
5
6
7
8
9
10
11
12
13

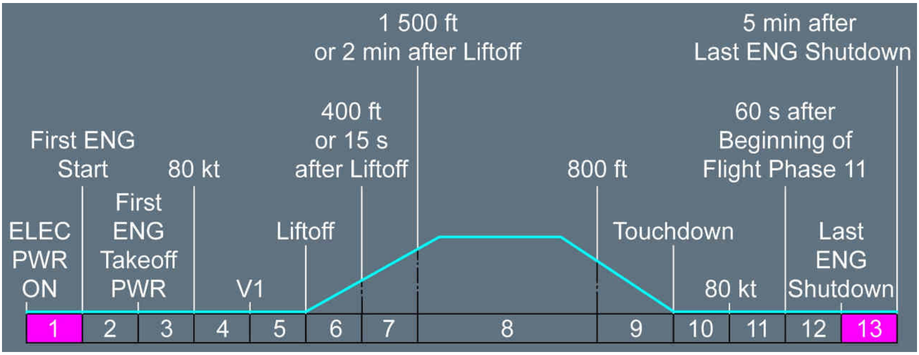
Ident.: DSC-34-SURV-20-20-60-00003627.0001001 / 30 APR 14

L12

TERR SYS OFF	The flight crew sets the TERR SYS button to OFF on the SURV CONTROLS page of the MFD. Appears on the ND and the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
2
3
4
5
6
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12
13

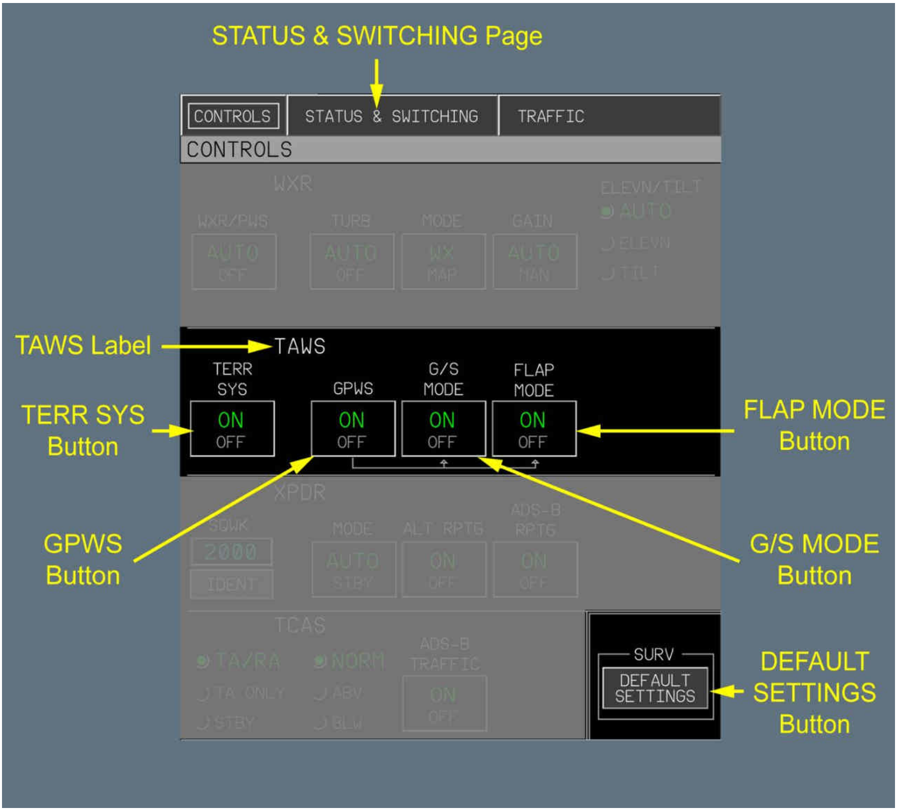
MFD

Applicable to: ALL

Ident.: DSC-34-SURV-20-20-40-00003403.0001001 / 30 APR 14

CONTROLS PAGE

CONTROLS Page

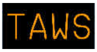

STATUS & SWITCHING Page
CONTROLS
STATUS & SWITCHING
TRAFFIC
CONTROLS
WXR
ELEVN/TILT
AUTO
ELEVN
TILT
WXR/PWS
AUTO
OFF
TURB
AUTO
OFF
MODE
WX
MAP
GAIN
AUTO
MAN
TAWS Label
TAWS
TERR SYS
ON
OFF
GPWS
ON
OFF
G/S MODE
ON
OFF
FLAP MODE
ON
OFF
TERR SYS Button
FLAP MODE Button
XPDR
SQWK
2000
IDENT
MODE
AUTO
STBY
ALT RPTG
ON
OFF
ADS-B RPTG
ON
OFF
GPWS Button
G/S MODE Button
TCAS
TA/RA
TA ONLY
STBY
NORM
ABV
BLW
ADS-B TRAFFIC
ON
OFF
SURV
DEFAULT SETTINGS
DEFAULT SETTINGS Button

Ident.: DSC-34-SURV-20-20-40-00003404.0001001 / 06 AUG 14

TAWS LABEL

TAWS	TAWS (GPWS and TERR) is on.

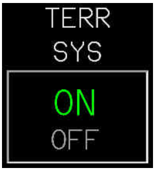
L12



TAWS is failed.
Associated with the SURV TAWS FAULT ECAM alert, *Refer to procedure*.

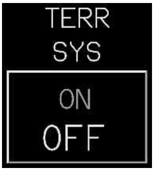
Ident.: DSC-34-SURV-20-20-40-00003405.0001001 / 06 AUG 14

TERR SYS BUTTON



The TERR function is on.
TAD and TCF modes are operative.
Both VDs display the terrain profile.

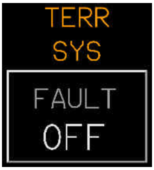
L12



The TERR function is off.
TAD and TCF modes are not available.
None of the VDs display the terrain profile.

Associated with:
- The TERR SYS OFF memo
- The TERR SYS OFF message on the ND.

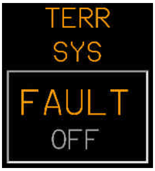
L12



The TAWS is failed and the TERR function is off.

Associated with:
- The SURV TAWS FAULT ECAM alert, *Refer to procedure*, or
- The SURV TERR SYS FAULT ECAM alert, *Refer to procedure*.

L12

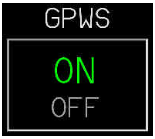


The TAWS and/or TERR function are failed.

Associated with:
- The SURV TAWS FAULT ECAM alert, *Refer to procedure*, or
- The SURV TERR SYS FAULT ECAM alert, *Refer to procedure*.

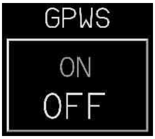
Ident.: DSC-34-SURV-20-20-40-00003406.0001001 / 06 AUG 14

GPWS BUTTON



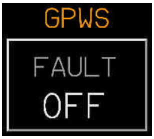
The GPWS is on.

L12



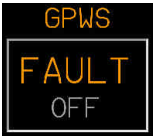
The GPWS is off. The flight crew inhibits all GPWS alerts (modes 1 to 5).
Associated with the GPWS OFF memo.

L12



The TAWS is failed and the GPWS is off.
Associated with the SURV GPWS FAULT ECAM alert, *Refer to procedure*.

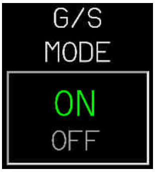
L12



The TAWS and/or GPWS are failed.
Associated with the SURV GPWS FAULT ECAM alert, *Refer to procedure*.

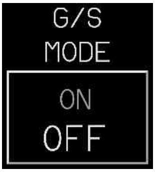
Ident.: DSC-34-SURV-20-20-40-00003407.0001001 / 06 AUG 14

G/S MODE BUTTON



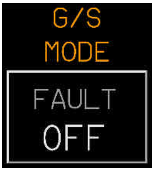
The GPWS mode 5 (DESCENT BELOW GLIDE SLOPE) is on.
On the SURV panel, nothing appears on the G/S MODE pb.

L12



The flight crew inhibits GPWS mode 5 (DESCENT BELOW GLIDE SLOPE) alerts.
Associated with the TAWS G/S MODE OFF memo.
On the SURV panel, the G/S MODE pb is set to OFF.

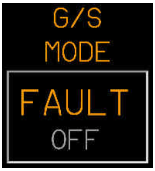
L12



The TAWS is failed and the GPWS mode 5 (DESCENT BELOW GLIDE SLOPE) is off.

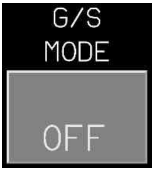
Associated with:
- The SURV TAWS FAULT ECAM alert (*Refer to procedure*), or
- The SURV GPWS FAULT ECAM alert (*Refer to procedure*).

L12



The TAWS and/or GPWS are failed. The GPWS mode 5 (DESCENT BELOW GLIDE SLOPE) is failed.

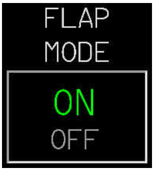
Associated with:
- The SURV TAWS FAULT ECAM alert (*Refer to procedure*), or
- The SURV GPWS FAULT ECAM alert (*Refer to procedure*).



The GPWS is off.

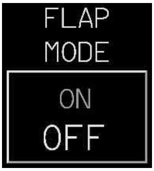
Ident.: DSC-34-SURV-20-20-40-00003408.0001001 / 06 AUG 14

FLAP MODE BUTTON



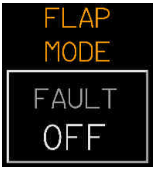
The GPWS mode 4B (TOO LOW FLAPS) is on.

L12



The flight crew inhibits GPWS mode 4B (TOO LOW FLAPS) alerts. Associated with the TAWS FLAP MODE OFF memo.

L12

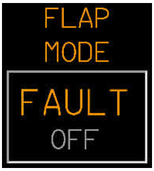


The TAWS is failed and the GPWS mode 4B (TOO LOW FLAPS) is off.

Associated with:

- The SURV TAWS FAULT ECAM alert (*Refer to procedure*), or
- The SURV GPWS FAULT ECAM alert (*Refer to procedure*).

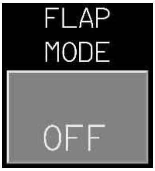
L12



The TAWS and/or GPWS mode 4B (TOO LOW FLAPS) are failed.

Associated with:

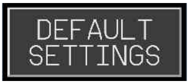
- The SURV TAWS FAULT ECAM alert (*Refer to procedure*), or
- The SURV GPWS FAULT ECAM alert (*Refer to procedure*).



The GPWS is off.

Ident.: DSC-34-SURV-20-20-40-00003409.0001001 / 30 APR 14

DEFAULT SETTINGS BUTTON



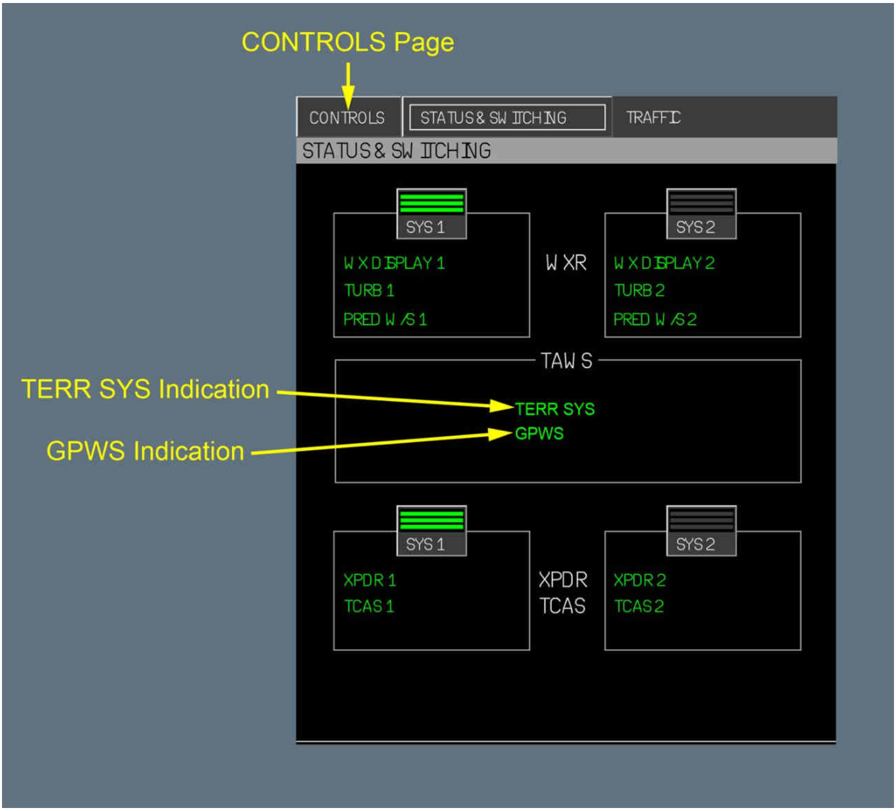
When clicked, automatically sets all the SURV settings to their default position on both MFDs. A confirmation is necessary in order to set the default positions.

- The TERR SYS button is set to ON
- The GPWS button is set to ON
- The G/S MODE button is set to ON
- The FLAP MODE button is set to ON.

Ident.: DSC-34-SURV-20-20-40-00003410.0001001 / 30 APR 14

STATUS & SWITCHING PAGE

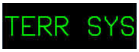
SURV STATUS & SWITCHING Page


CONTROLS Page
CONTROLS
STATUS & SWITCHING
TRAFFIC
STATUS & SWITCHING
SYS 1
SYS 2
WXR
WX DISPLAY 1
TURB 1
PRED W/S 1
WX DISPLAY 2
TURB 2
PRED W/S 2
TAWS
TERR SYS Indication
GPWS Indication
TERR SYS
GPWS
SYS 1
SYS 2
XPDR
TCAS
XPDR 1
TCAS 1
XPDR 2
TCAS 2

- Green indicates that the function is on
- White indicates that the function is set to OFF, or is on standby
- Amber indicates that the function is failed.

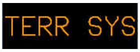
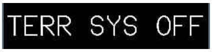
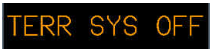
Ident.: DSC-34-SURV-20-20-40-00003411.0001001 / 06 AUG 14

TERR SYS INDICATION



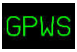
The TERR function is on.

L12

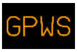
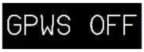
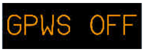
	The TERR function is failed. Associated with the SURV TERR SYS FAULT ECAM alert. *Refer to procedure*.
	The TERR function is off.
	The TERR function is failed, and set to OFF.

Ident.: DSC-34-SURV-20-20-40-00003412.0001001 / 06 AUG 14

GPWS INDICATION

	The GPWS is on.

L12

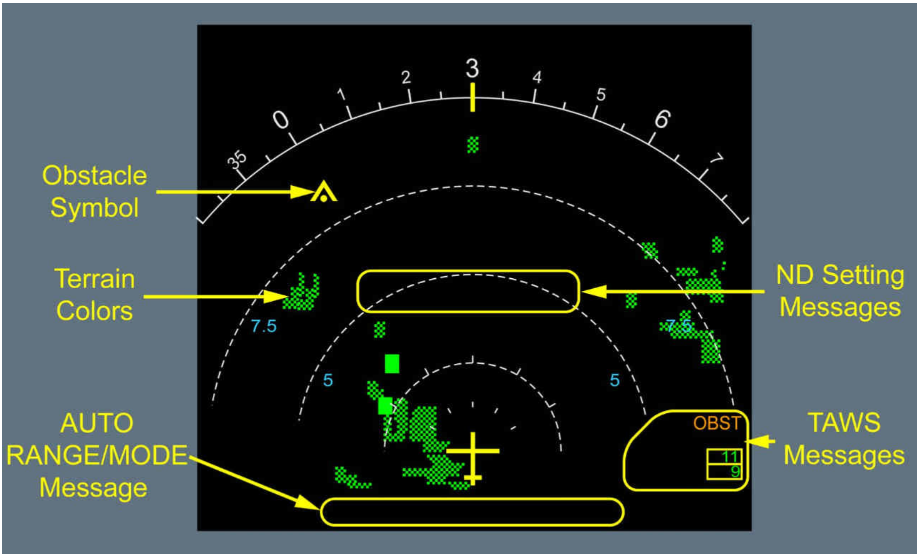
	The GPWS is failed. Associated with the SURV GPWS FAULT ECAM alert. *Refer to procedure*.
	The GPWS is off.
	The GPWS is failed, and set to OFF.

ND

Applicable to: ALL

Ident.: DSC-34-SURV-20-20-20-00003396.0001001 / 30 APR 14

ND


Obstacle Symbol
Terrain Colors
AUTO RANGE/MODE Message
ND Setting Messages
TAWS Messages
OBST
11
9
35
0
1
2
3
4
5
6
7
7.5
5
7.5
5

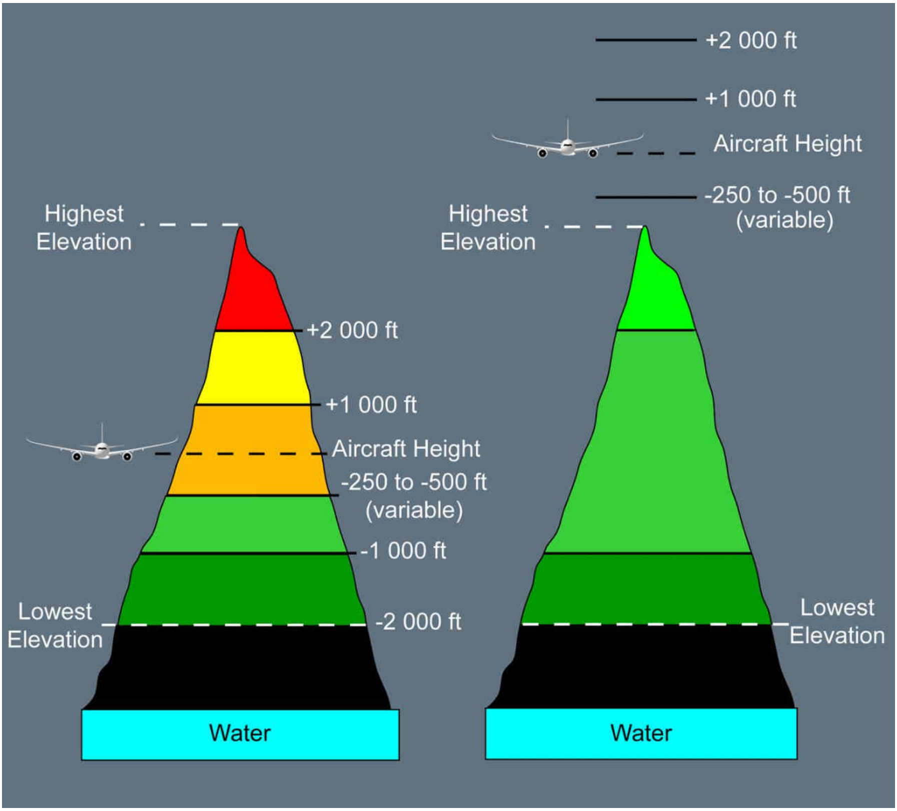
If the TAWS triggers an alert, the ND automatically displays the terrain representation.

Ident.: DSC-34-SURV-20-20-20-00003414.0001001 / 05 MAY 14

TERRAIN COLORS

When in ROSE or ARC mode, the ND displays the terrain in various colors and densities, depending on the height of the aircraft, in relation with the surrounding terrain.

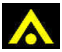
Terrain Colors

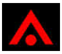

+2 000 ft
+1 000 ft
Aircraft Height
-250 to -500 ft
(variable)
Highest Elevation
Highest Elevation
+2 000 ft
+1 000 ft
Aircraft Height
-250 to -500 ft
(variable)
-1 000 ft
Lowest Elevation
-2 000 ft
Lowest Elevation
Water
Water

L2 *Note:* *Fields for which no terrain data is available in the TAWS database, appear in magenta. If the aircraft approaches the south or north pole, some areas may appear in magenta and/or black. The TAWS is able to display the terrain, if the aircraft flies away from the south or north pole.*

Ident.: DSC-34-SURV-20-20-20-00003415.0001001 / 30 APR 14

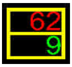
OBSTACLE SYMBOL


Indicates an obstacle that conflicts with the caution criteria.


Indicates an obstacle that conflicts with the warning criteria.

Ident.: DSC-34-SURV-20-20-20-00003416.0001001 / 28 APR 17

TAWS MESSAGES

L12	OBST	The TAWS triggers an obstacle caution. Flashes for 9 s, then remains steady.
L12	OBST	The TAWS triggers an obstacle warning. Flashes for 9 s, then remains steady.
L12	OBST AHEAD	The TAWS triggers an obstacle caution. Flashes for 9 s, then remains steady.
L12	OBST AHEAD	The TAWS triggers an obstacle warning. Flashes for 9 s, then remains steady.
	TERR	The flight crew presses the TERR pb on the EFIS CP, and the TAWS has not triggered any alert.
L12	TERR AHEAD	The TAWS triggers a terrain caution. Flashes for 9 s, then remains steady.
L12	TERR AHEAD	The TAWS triggers a terrain warning. Flashes for 9 s, then remains steady.
	TERR INOP	The TERR function is failed, or on standby.
	TERR RNG	There is a difference in range between the SURV and the ND.
	TERR SYS OFF	The flight crew: - Sets the TERR SYS button to OFF on the CONTROLS page of the MFD - Presses the TERR pb on the EFIS CP.
	TERR TEST	The TERR function is in test mode.
L12	TERRAIN	The TAWS triggers a terrain caution. Flashes for 9 s, then remains steady.
L12	TERRAIN	The TAWS triggers a terrain warning. Flashes for 9 s, then remains steady.
		Indicates the lowest and highest terrain elevations (in Flight Level) within the selected range. The elevation values use the same color code as the terrain displayed on the ND.

Ident.: DSC-34-SURV-20-20-20-00002697.0001001 / 12 MAR 15

AUTO RANGE/MODE MESSAGE

AUTO RANGE/MODE	Appears in the case of terrain or obstacle alert, and the ND automatically changes range to 10 NM and mode to ARC.

Ident.: DSC-34-SURV-20-20-20-00003417.0001001 / 30 APR 14

ND SETTING MESSAGES

If the AUTO RANGE/MODE function is not available, the following ND setting messages appear.

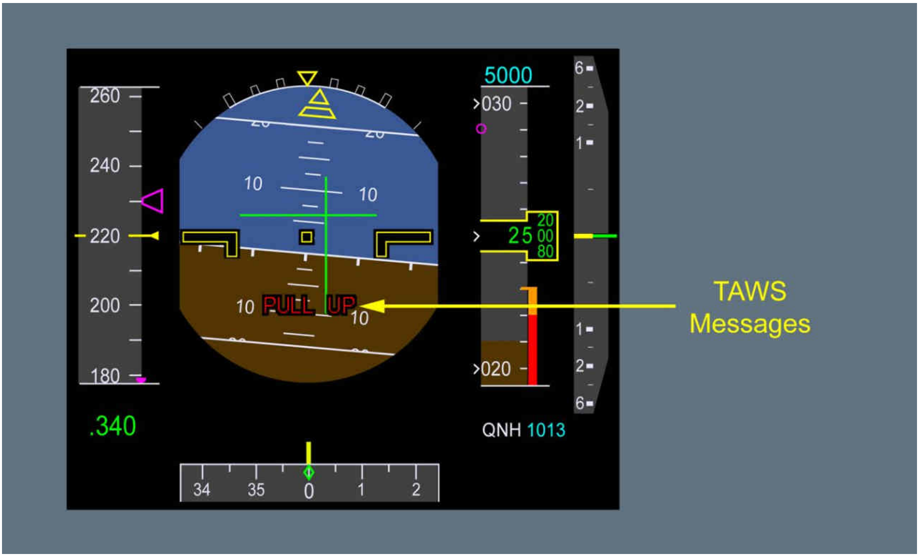
TERR: CHANGE MODE	Appears in PLAN mode, when the TAWS triggers a caution.
TERR: CHANGE MODE	Appears in PLAN mode, when the TAWS triggers a warning.
TERR: INCREASE RANGE	Appears in ARC or ROSE mode, when: - The flight crew sets the range selector to ZOOM - The TAWS triggers a caution.
TERR: INCREASE RANGE	Appears in ARC or ROSE mode, when: - The flight crew sets the range selector to ZOOM - The TAWS triggers a warning.
TERR: REDUCE RANGE	Appears in ARC or ROSE mode, when: - The flight crew selects a range on the EFIS CP that is greater than 160 NM - The TAWS triggers a caution.
TERR: REDUCE RANGE	Appears in ARC or ROSE mode, when: - The flight crew selects a range on the EFIS CP that is greater than 160 NM - The TAWS triggers a warning.

PFD

Applicable to: ALL

Ident.: DSC-34-SURV-20-20-10-00003398.0001001 / 30 APR 14

PFD


260
240
220
200
180
.340
10
10
10
PULL UP
10
5000
030
020
25
20
00
80
QNH 1013
34
35
0
1
2
6
2
1
1
2
6
TAWS
Messages

Ident.: DSC-34-SURV-20-20-10-00003420.0001001 / 30 APR 14

TAWS MESSAGES

TAWS messages flashes for 9 s then remain steady.

AVOID TERRAIN	Terrain awareness warning.
AVOID OBSTACLE	Obstacle awareness warning.
DON'T SINK	TAWS triggers a GPWS mode 3 alert (Don't Sink).
GLIDE SLOPE	TAWS triggers a GPWS mode 5 alert (Glide slope).
PULL UP	TAWS triggers: - A GPWS mode 1 alert (Sink Rate), or - A GPWS mode 2 alert (Excessive Terrain Closure Rate), or - Terrain awareness warning, or - Obstacle awareness warning.
SINK RATE	TAWS triggers a GPWS mode 1 alert (Sink Rate).

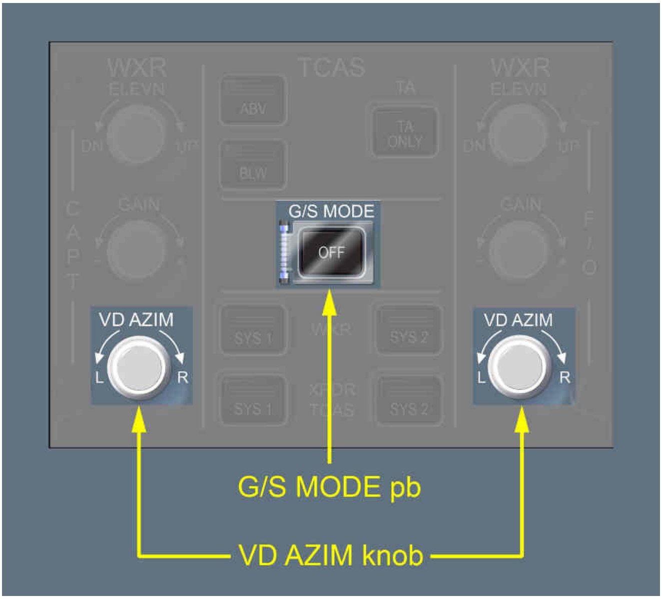
TERRAIN	TAWS triggers a GPWS mode 2 alert (Excessive Terrain Closure Rate).
TOO LOW FLAPS	TAWS triggers a GPWS mode 4B alert (Too Low Flaps).
TOO LOW GEAR	TAWS triggers a GPWS mode 4A, or 4B alert (Too Low Gear).
TOO LOW TERRAIN	TAWS triggers: - A GPWS mode 4 alert (Too Low Terrain), or - A TCF caution.

SURV PANEL

Applicable to: ALL

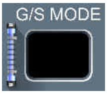
Ident.: DSC-34-SURV-20-20-50-00003394.0001001 / 30 APR 14

SURV Panel


WXR
ELEVN
DN
UP
GAIN
CAPT
TCAS
ABV
BLW
TA
TA ONLY
WXR
ELEVN
DN
UP
GAIN
F/O
G/S MODE
OFF
VD AZIM
L
R
SYS 1
WXR
SYS 2
SYS 1
XPDR TCAS
SYS 2
VD AZIM
L
R
G/S MODE pb
VD AZIM knob

Ident.: DSC-34-SURV-20-20-50-00003401.0001001 / 30 APR 14

G/S MODE pb



The G/S mode (mode 5) is active.
This is the default position.
On the SURV/CONTROLS page of the MFD, the G/S MODE button is automatically set to ON.

L12

The flight crew turns off the G/S mode (mode 5).
Associated with the TAWS GS MODE OFF memo.
On the SURV/CONTROLS page of the MFD, the G/S MODE button is automatically set to OFF.

Ident.: DSC-34-SURV-20-20-50-00003402.0001001 / 30 APR 14

VD AZIM knob

L12

- When pushed, selects the AUTO mode.
  This is the default position.
- When pulled, selects the manual AZIM mode.

  On the VD:
  - The eye symbol appears, instead of the aircraft symbol
  - The terrain appears along the selected azimuth.

  The ND displays a straight white line based on the selected azimuth value.
- When turned, adjusts the AZIM value in degrees.
  The AZIM value is limited to ±60 ° around the current heading.
  The VD displays the selected AZIM value in the VIEW ALONG AZIMUTH message.
  The AZIM line moves on the ND, based on the flight crew's selection.

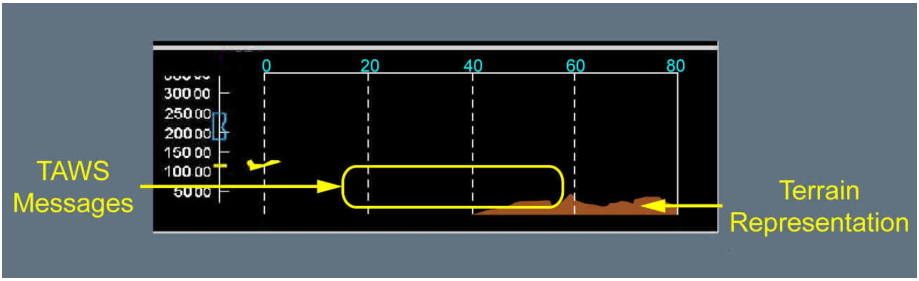
  Note: *The flight crew can preset the AZIM value before pulling the VD AZIM knob.*

VD

Applicable to: ALL

Ident.: DSC-34-SURV-20-20-30-00003397.0001001 / 30 APR 14

VD



Note: VD range is always limited to 160 NM.

Ident.: DSC-34-SURV-20-20-30-00003418.0001001 / 05 MAY 14

TERRAIN REPRESENTATION

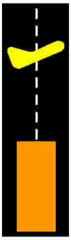
The VD provides the terrain profile along:
- The solid green line displayed on the ND, or
- The solid white line displayed on the ND, if the flight crew has selected the manual AZIM mode of the WXR.

The VD always displays:
- Terrain in brown

L2 The color of the terrain does not change depending on relative terrain proximity, nor during terrain or obstacle alerts.

L1
- Water in blue.

If the TERR function is operative, the VD continuously displays the terrain.



Indicates the real location of the terrain. The zone elevation in amber is based on the measured radio-altimeter information.
Appears when the aircraft radio-altimeter altitude is below 5 000 ft.

L2 For more information on the terrain profile on the VD, *Refer to DSC-31-CDS-40-50 Terrain Profile*.

TAWS MESSAGES

L12

NO TERR & WX DATA AVAIL	Appears when: - The flight crew selects the PLAN mode on the EFIS CP, or - The flight crew sets the TERR SYS button to OFF on the CONTROLS page of the MFD, or The VD does not display the weather when the TERR function is not available, because it cannot locate the weather vertically (i.e. with respect to the terrain). - The aircraft latitude is above 80 ° (North or South).
TERR INOP	Appears when the TAWS has failed.
VIEW ALONG AZIM XXX°	The message is associated with the azimuth value, when the flight crew selects the manual AZIM mode.

OVERVIEW

Ident.: DSC-34-SURV-30-10-00003421.0001001 / 06 NOV 19
Applicable to: ALL

The Weather Radar (WXR) system has:
- A weather (WX) display function
- A Turbulence (TURB) detection function
- A weather hazard prediction function ◁✳
- A weather ahead function
- A Predictive Windshear (PWS) function
- A ground mapping function.

The WXR is armed on ground when the WXR/PWS button has been set to AUTO on the MFD page.

When armed, the WXR will start to scan the envelope ahead of the aircraft if both of the following conditions are met:
- At least one engine is running
- The WX pb is selected on at least one EFIS CP.

Note: *The WXR is automatically activated (will start to scan the envelope ahead of the aircraft) when engine takeoff power thrust is applied. However if the flight crew does not press the WX pb on the EFIS CP , there will be no display on the ND or the VD. The PWS and WX image will be displayed automatically on the ND and VD, only if windshear is detected.*

The WXR is automatically shut down:
- 60 s after landing, or
- When the aircraft is on ground and no engine running, or
- When the aircraft is on ground and the flight crew retract the flaps.

WX DISPLAY FUNCTION

Applicable to: ALL

Ident.: DSC-34-SURV-30-10-10-00003422.0001001 / 30 APR 14

The WX display function enables the flight crew to view precipitation in different colors, depending on the intensity of the precipitation.

The WX display function has several modes, that enable the flight crew to analyze the weather along the vertical and horizontal axes:
- The automatic (AUTO) mode
  This is the default mode of the WXR.
- The elevation (ELEVN) mode
- The tilt (TILT) mode

- The azimuth (AZIM) mode
- The gain (GAIN) mode.

The WX display function displays weather data on:
- The ND: For views along the vertical flight path (in AUTO mode), or along the selected altitude (in ELEVN mode), or along the selected tilt angle (in TILT mode)
- The VD: For views along the lateral flight path in (AUTO mode), or along the selected azimuth (in AZIM mode).

Ident.: DSC-34-SURV-30-10-10-00003426.0001001 / 06 NOV 19

PRINCIPLE

The WXR detects precipitation in the surrounding area, by using the WXR antenna.

L2 The WXR does not detect:
- Cloud, fog, or wind (droplets are too small, or no precipitation at all)
- Clear air turbulence (no precipitation)
- Sandstorms (solid particles are almost transparent to the radar beam)
- Lightning.

The WXR detects:
- Rainfall
- Wet hail and wet turbulence
- Ice crystals, dry hail, and dry snow. However, these three elements give small reflections
- Areas with high probability of lightning, with the weather hazard prediction function ⊲ .

L1 The WXR continuously scans a volume of space ahead of the aircraft, and stores this data in a three dimensional (3D) buffer.

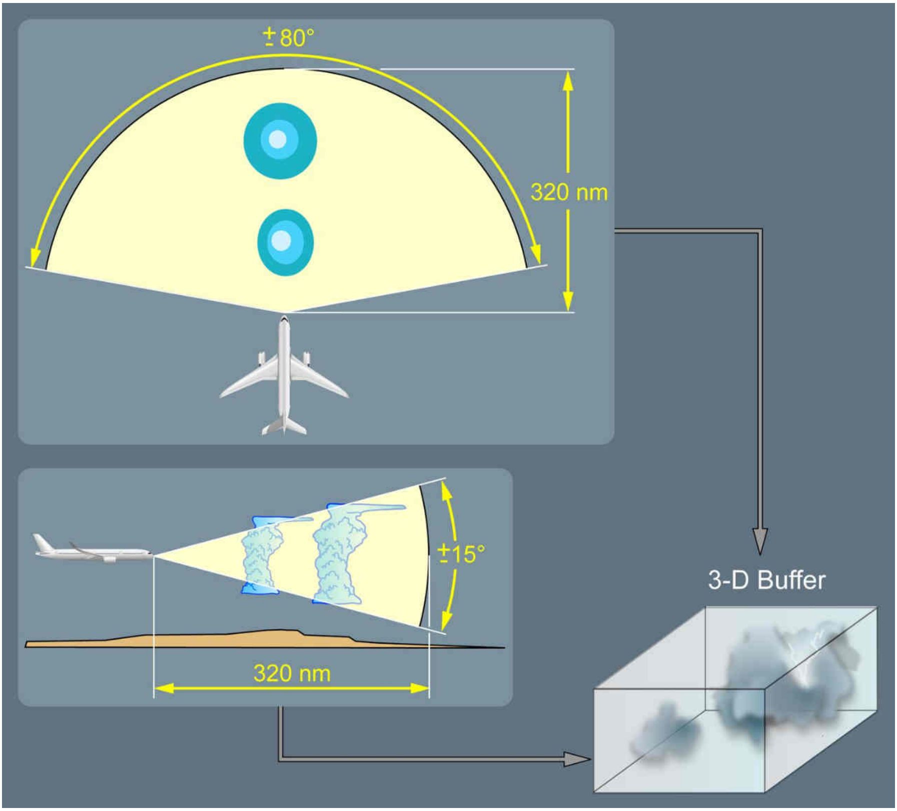
L2 The WXR antenna scans:
- ±80 ° in azimuth
- ±15 ° in tilt
- Up to 320 NM in front of the aircraft.

The 3D buffer stores the weather data up to 5 min behind the aircraft.

L1 The WXR extracts data from the 3D buffer, in order to display the weather on the ND, and on the VD.

L3 The WXR takes into account the curvature of the earth, to display an image based on the mean sea level. It also reduces the ground returns from the displayed weather, by using the terrain data provided by the TAWS database.

WXR Principle



Ident.: DSC-34-SURV-30-10-10-00003427.0002001 / 03 SEP 19

AUTOMATIC (AUTO) MODE

The automatic mode (AUTO) is the default mode of the WXR.
The WXR extracts the weather data from the 3D buffer, along the aircraft flight path.

The WXR takes into account a vertical envelope along the aircraft vertical flight path, in order to display on the ND:

- The on-path weather that the aircraft will encounter (i.e. weather inside the envelope)
  The on-path weather appears on the ND in the conventional colors.
- The off-path weather that is not on the aircraft trajectory (i.e. weather outside the envelope).
  The off-path weather appears on the ND in black parallel lines, with reduced intensity.

For more information about the on-path envelope boundaries, *Refer to DSC-34-SURV-30-10 On Path Envelope Boundaries Definition*.

L3 The aircraft vertical flight path is:
- The FMS flight plan limited by the selected altitude on the AFS CP, if the VD is defined along the FMS trajectory, or
- The flight path extrapolated using the current Flight Path Angle (FPA), and limited by the selected altitude on the AFS CP, if the VD is not defined along the FMS trajectory, or
- The flight path extrapolated up to 60 NM, using the Flight Path Angle (FPA), and limited to the altitude at 60 NM, if the selected altitude is not available.

L2 The WXR may not be able to discriminate the on-path and the off-path weather at ranges above 160 NM, because of the angle of the antenna beam width. The WXR could consider some off-path weather as on-path weather.

L1 For the display on the VD, the WXR extracts the data from the 3D buffer, along the zero-width vertical cut.

L2 For more information about the vertical cut, *Refer to DSC-31-CDS-40-50 VD*.

Ident.: DSC-34-SURV-30-10-10-00003428.0001001 / 30 APR 14

MANUAL ELEVN AND TILT MODES

The manual ELEVN mode enables the flight crew to analyze the weather at a selected altitude.

L2 The selected altitude depends on the barometric reference selected by the flight crew.

L1 The manual TILT mode enables the flight crew to analyze the weather at a selected tilt angle.

L2 Zero tilt value indicates the horizon as seen by the ADIRS.

L1 Depending on the flight crew selection, the WXR extracts data from the 3D buffer:
- At a selected altitude, or
- At a selected tilt angle.

The WXR displays the extracted data on the ND.

The flight crew can select these modes by using:
- The ELEVN knob on the SURV panel

  L2 For more information on the ELEVN knob, *Refer to DSC-34-SURV-30-20 ELEVN/TILT Knob*.

L1
- The ELEVN/TILT option list on the CONTROLS page of the MFD.

  L2 For more information about the ELEVN/TILT option list, *Refer to DSC-34-SURV-30-20 ELEVN/TILT Option List*.

L1 The flight crew must return to the automatic mode when they have completed the analysis.

Ident.: DSC-34-SURV-30-10-10-00003429.0001001 / 30 APR 14

MANUAL AZIMUTH (AZIM) MODE

The manual AZIM mode provides a vertical view of the weather along a selected azimuth.

The WXR extracts data from the 3D buffer along the selected azimuth, and displays the extracted weather on the VD.
The flight crew can select the manual AZIM mode by pulling the VD AZIM knob of the SURV panel.
L2 For more information about the VD AZIM knob, *Refer to DSC-34-SURV-30-20 VD AZIM Knob*.
The WXR automatically returns to the AUTO mode after 30 s, if the flight crew does not select any azimuth value.

Ident.: DSC-34-SURV-30-10-10-00003430.0001001 / 30 APR 14

MANUAL GAIN MODE

The manual GAIN mode enables the flight crew to adjust sensitivity of the weather display on the ND.

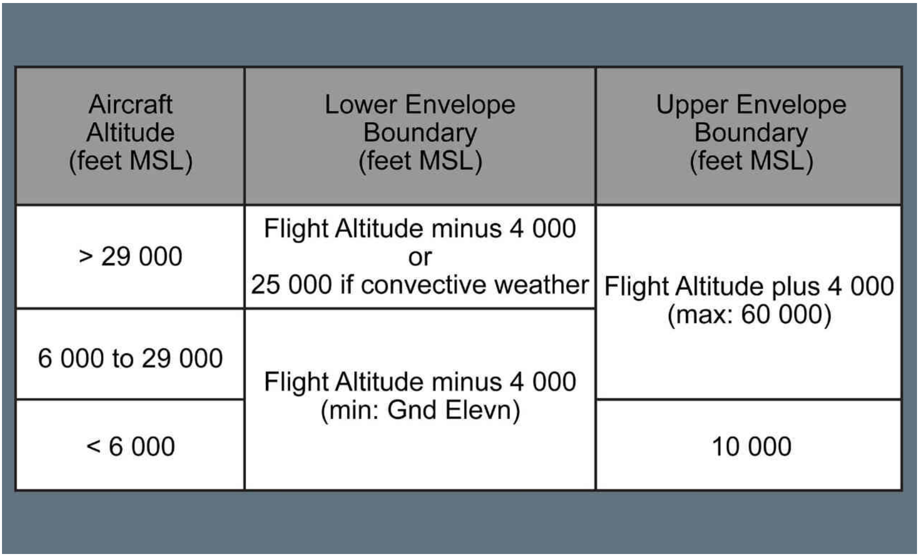
The flight crew can select the manual GAIN mode by using:
- The GAIN knob on the SURV panel
  L2 For more information on the GAIN knob, *Refer to DSC-34-SURV-30-20 GAIN Knob*.
- L1 The GAIN button on the CONTROLS page of the MFD.
  L2 For more information on the GAIN button, *Refer to DSC-34-SURV-30-20 GAIN Button*.

ON PATH ENVELOPE BOUNDARIES DEFINITION

Ident.: DSC-34-SURV-30-10-00025208.0001001 / 03 SEP 19
Applicable to: ALL

In automatic mode, the radar takes into account a vertical envelope along the vertical flight path of the aircraft. It defines if the weather echo is on the aircraft flight path or not.

ON PATH envelope limits



Aircraft Altitude (feet MSL)	Lower Envelope Boundary (feet MSL)	Upper Envelope Boundary (feet MSL)
> 29 000	Flight Altitude minus 4 000 or 25 000 if convective weather	Flight Altitude plus 4 000 (max: 60 000)
6 000 to 29 000	Flight Altitude minus 4 000 (min: Gnd Elevn)	
< 6 000		10 000

The basic ON PATH envelope is bounded at plus and minus 4 000 ft of the reference flight path.

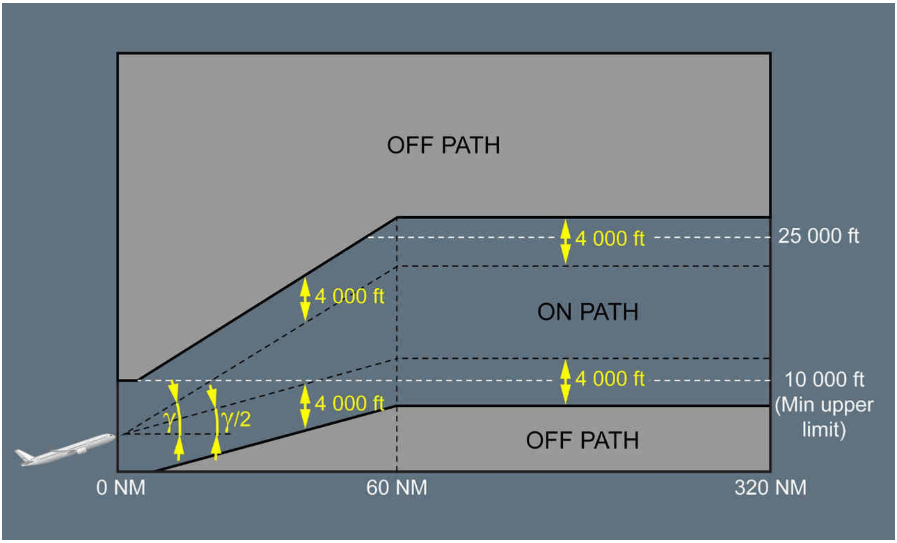
The reference flight path is defined as follows:
- For the first 60 NM, the current speed vector is extrapolated ahead of the aircraft, based on the ratio between vertical speed and ground speed
- Beyond 60 NM, the reference flight path is a levelled flight path.

At high altitude, when the weather radar detects convective weather, the lower boundary of the ON PATH envelope is lowered to 25 000 ft around the convective weather.
The upper boundary of the ON PATH envelope is set at 10 000 ft when the aircraft is below 6 000 ft.
The below paragraphs give the detailed definition of the ON PATH envelope by flight phase.

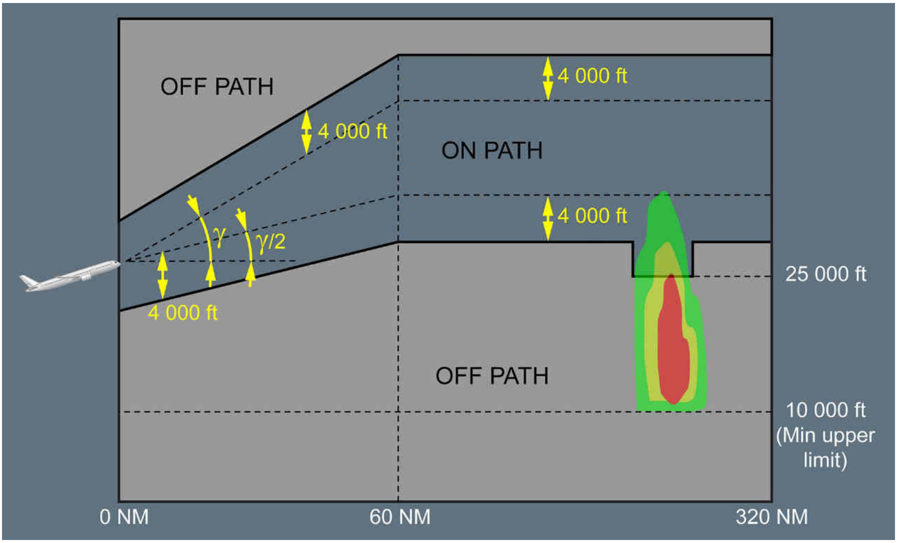
CLIMB PATH

During climb, the top of the ON PATH envelope is 4 000 ft above the expected flight path. The lower boundary is located 4 000 ft below the half of the expected flight path angle (γ).
However, at high altitude, when the weather radar detects convective weather, the lower envelope boundary is lowered to 25 000 ft around the convective weather.

Climb from low altitude


OFF PATH
4 000 ft
25 000 ft
4 000 ft
ON PATH
4 000 ft
10 000 ft
(Min upper limit)
4 000 ft
γ
γ/2
OFF PATH
0 NM
60 NM
320 NM

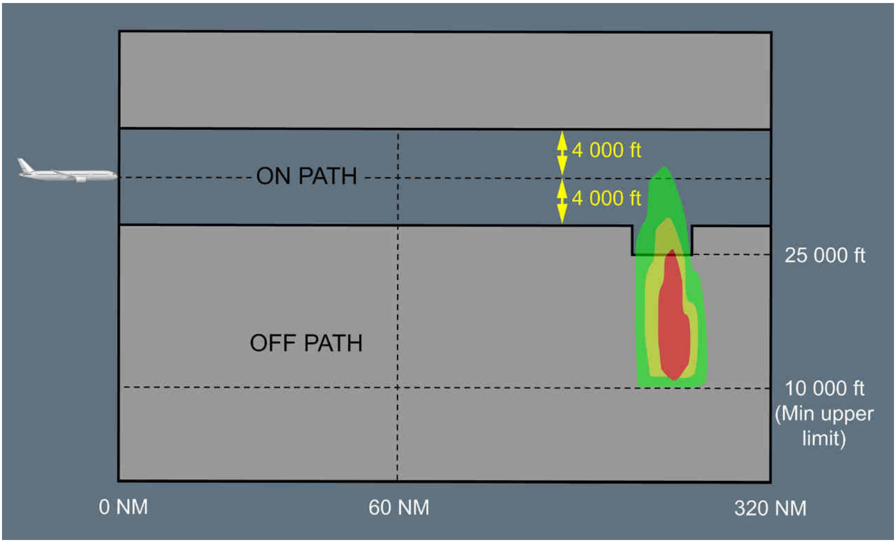
Climb from high altitude


OFF PATH
4 000 ft
4 000 ft
ON PATH
4 000 ft
γ
γ/2
25 000 ft
4 000 ft
OFF PATH
10 000 ft
(Min upper limit)
0 NM
60 NM
320 NM

LEVEL FLIGHT

During level flight, the ON PATH envelope extends from 4 000 ft above to 4 000 ft below the aircraft altitude. However, when the weather radar detects convective weather, the lower envelope boundary is lowered to 25 000 ft around the convective weather. The upper boundary cannot be lower than 10 000 ft.

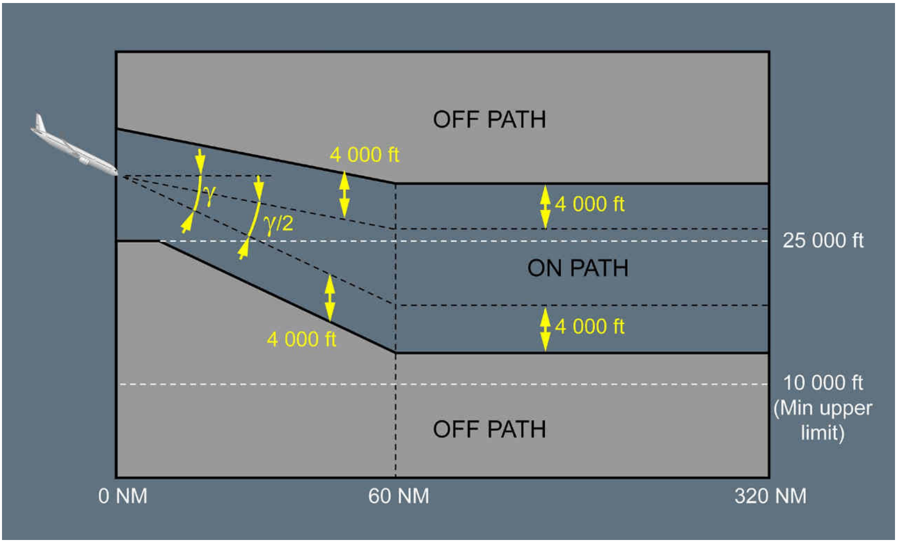
Level flight


4 000 ft
4 000 ft
ON PATH
25 000 ft
OFF PATH
10 000 ft
(Min upper
limit)
0 NM
60 NM
320 NM

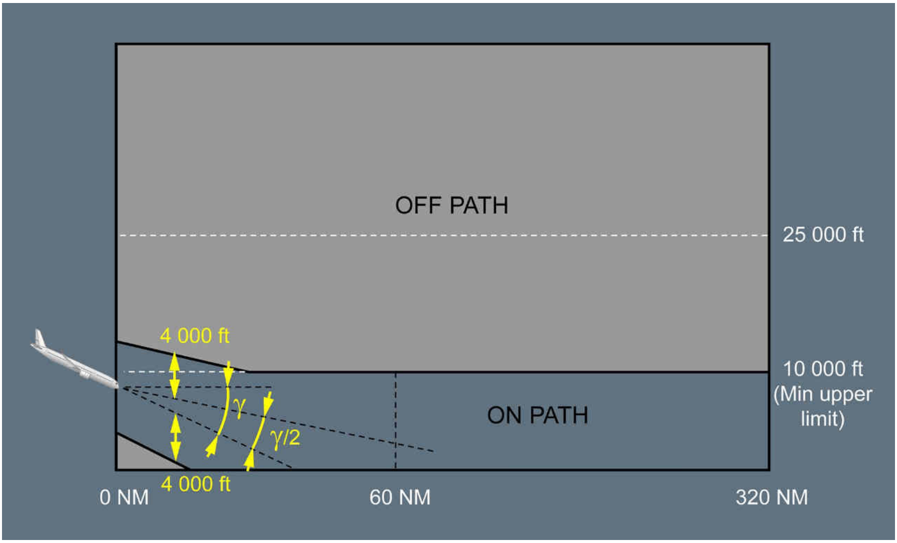
DESCENT PATH

When the aircraft descends, the lower boundary of the ON PATH envelope is 4 000 ft below the expected flight path, while the upper boundary is 4 000 ft above the half of the expected flight path angle (γ).

Descent from high altitude


OFF PATH
4 000 ft
γ
γ/2
4 000 ft
ON PATH
4 000 ft
4 000 ft
25 000 ft
OFF PATH
10 000 ft
(Min upper
limit)
0 NM
60 NM
320 NM

Descent from low altitude


OFF PATH
25 000 ft
4 000 ft
γ
γ/2
ON PATH
10 000 ft
(Min upper
limit)
0 NM
4 000 ft
60 NM
320 NM

TURBULENCE DETECTION (TURB) FUNCTION

Ident.: DSC-34-SURV-30-10-00003423.0001001 / 06 NOV 19
Applicable to: ALL

The turbulence detection (TURB) function detects wet turbulence in a volume of space ahead of the aircraft.

L3 This function is based on the movement of precipitation.

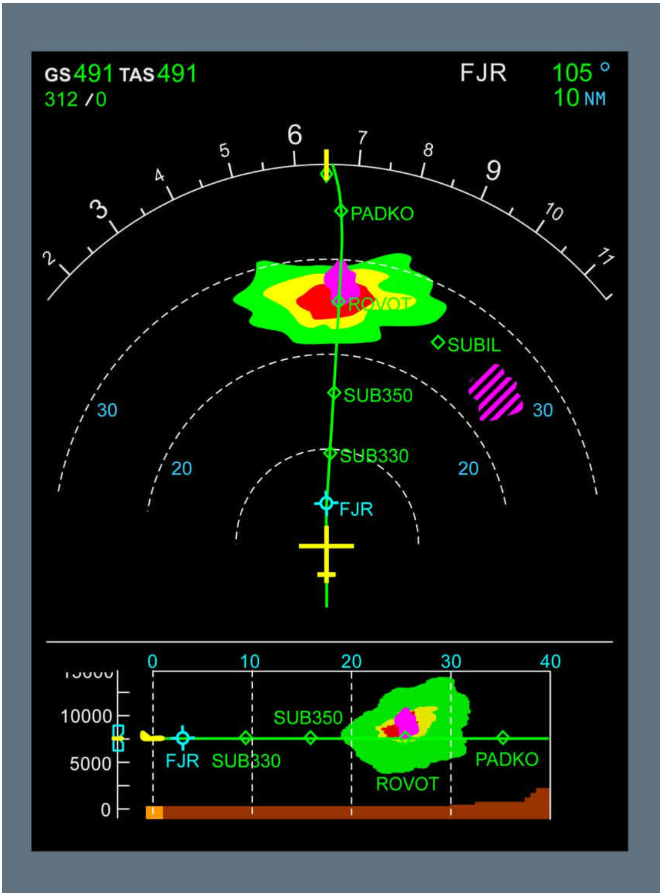
L2 The TURB detection function scans:
- ±60 ° in azimuth
- Between 0 ft and 60 000 ft MSL
- Up to 60 NM in front of the aircraft.

L1 *Note:* *The TURB function does not detect clear air turbulence or dry turbulence.*

TURB detection is available, if:
- The WXR is operative
- The flight crew sets the TURB button to AUTO, or ticks the TURB tick box on the SURV/CONTROLS page of the MFD.

The ND and VD display the areas of turbulence in magenta.

TURB Area Indication


GS 491 TAS 491
312 / 0
FJR
105 °
10 NM
2
3
4
5
6
7
8
9
10
11
PADKO
ROVOT
SUBIL
SUB350
SUB330
FJR
30
20
30
20
0
10
20
30
40
10000
5000
0
SUB350
FJR
SUB330
ROVOT
PADKO

WEATHER HAZARD PREDICTION FUNCTION

Ident.: DSC-34-SURV-30-10-00025314.0001001 / 06 NOV 19
Applicable to: ALL

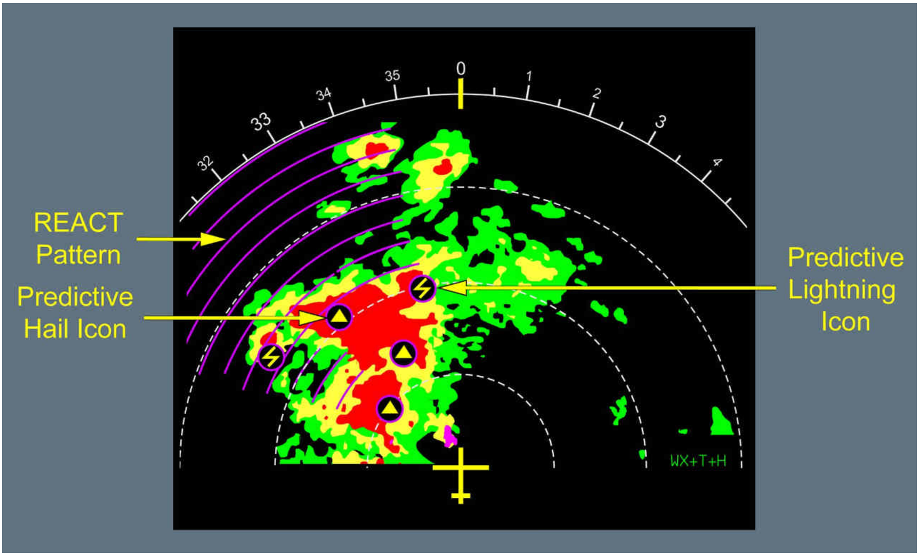
The weather hazard prediction function:
- Computes an automatic threat assessment of the lightning, hail and convective activity in a storm cell and in the area near the storm cell, up to 160 NM in front of the aircraft. The zones with high probability of lightning or hail are represented by specific icons in addition to the basic reflectivity colors
- Is able to detect areas of severe signal attenuation with the Rain Echo Attenuation Compensation Technique (REACT).

The weather hazard prediction function is available, if:
- The WXR is operative
- The flight crew ticks the HZD tick box on the SURV/CONTROLS page of the MFD.

L2 REACT is available and REACT patterns can be displayed on the ND even if the flight crew does not tick the HZD tick box on the SURV/CONTROLS page of the MFD.

L1 When the weather hazard prediction function is on, the ND displays weather hazard prediction indications.

Note:
- *The VD does not display weather hazard prediction indications*
- *The ND does not display weather hazard prediction indications when the flight crew selects the ground mapping function.*



The predictive lightning and hail icons generally appear on red weather but may appear also on green/yellow weather, indicating the building of a convective threat. Each icon is located at the center of the threat area.
Areas of severe signal attenuation detected by the REACT are indicated by a distinct pattern of magenta concentric arcs on top of basic weather reflectivity.

WEATHER AHEAD FUNCTION

Ident.: DSC-34-SURV-30-10-00011691.0001001 / 07 NOV 16
Applicable to: ALL

The weather ahead function improves awareness of potential weather or turbulence hazard.

The weather ahead function:
- Detects weather or turbulence hazard 3 min ahead of the aircraft
- Triggers crew awareness.

The weather ahead function is available when the WXR is on.

AWARENESS TRIGGERING CONDITIONS

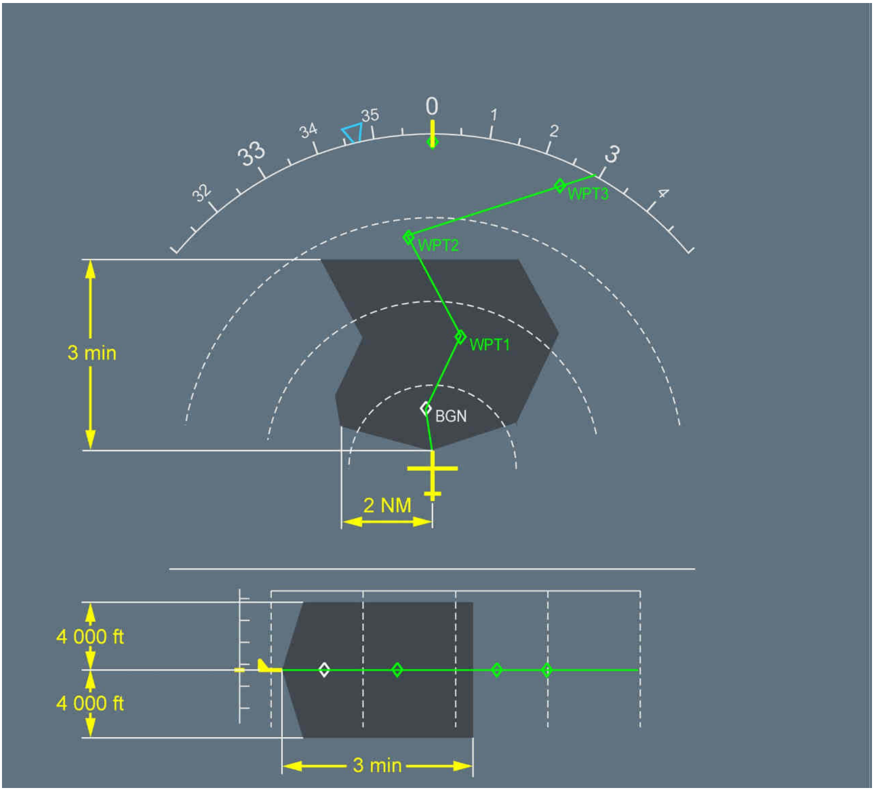
The weather ahead function triggers crew awareness, in the case of:
- Red or yellow weather in the detection area, or
- Turbulence in the detection area.

The detection area depends on the type of lateral guidance, NAV mode or HDG/TRACK mode.

The detection area is:
- 3 min ahead of the aircraft
- In a corridor of 2 NM on each side of the current track
- In a corridor of 4 000 ft above and below the current track.

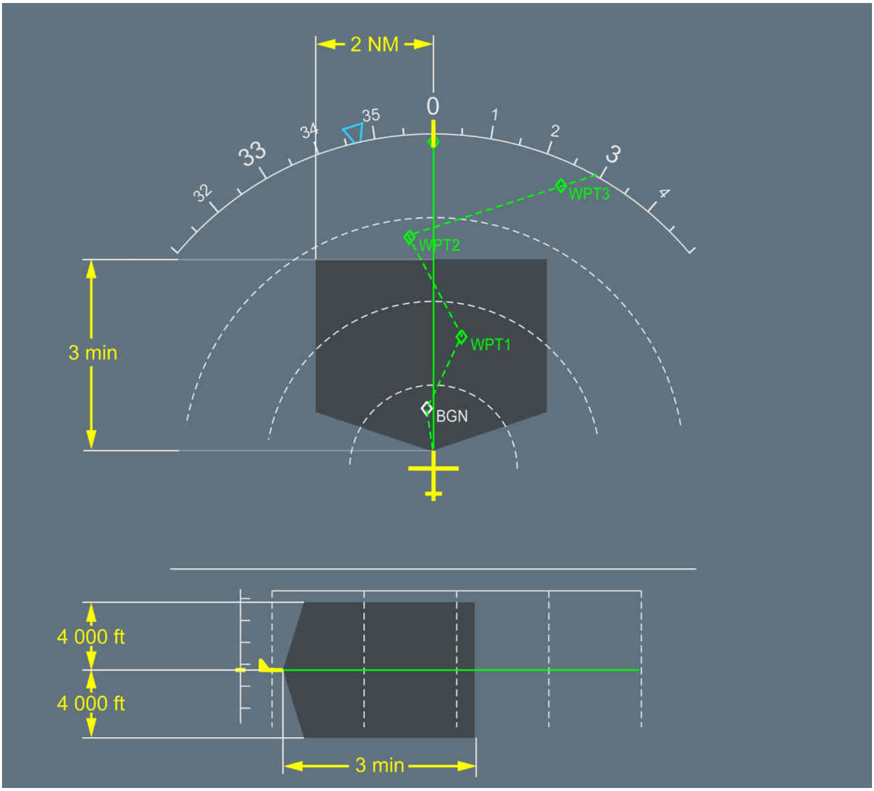
NAV MODE DETECTION AREA

NAV mode detection area


0
1
2
3
4
35
34
33
32
WPT3
WPT2
WPT1
BGN
3 min
2 NM
4 000 ft
4 000 ft
3 min

HDG/TRACK MODE DETECTION AREA

Track mode detection area


2 NM
0
1
2
3
4
35
34
33
32
WPT3
WPT2
WPT1
BGN
3 min
4 000 ft
4 000 ft
3 min

TRIGGERING OF AWARENESS

BELOW 1 500 FT

The WEATHER AHEAD message and the audio indicator are inhibited.

ABOVE 1 500 FT

All of the following occur:

- The ND displays the WEATHER AHEAD message
- If WX is off, on both EFIS CP, the weather ahead function triggers the “WEATHER AHEAD” audio indicator.

PREDICTIVE WINDSHEAR (PWS) FUNCTION

Ident.: DSC-34-SURV-30-10-00003424.0001001 / 05 JUN 18
Applicable to: ALL

The Predictive Windshear (PWS) function:

- Detects windshears:
  - At least 10 s before a possible encounter
  - Between 0.5 NM and 5 NM in front of the aircraft
- Triggers alerts.

L3 The PWS function can detect and display up to 8 different windshears simultaneously.

L1 *Note:* *The PRIMs also provide a reactive windshear function (Refer to DSC-22-27-20 Reactive Windshear Detection).*

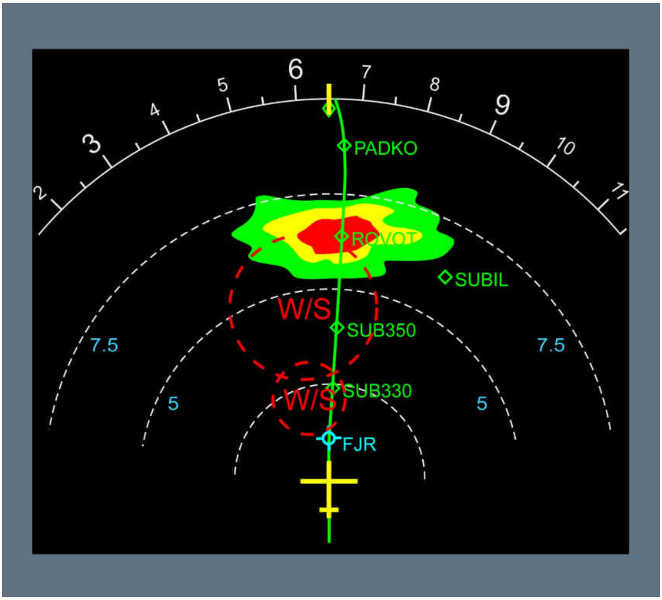
The PWS function is available, if the WXR/PWS button is set to AUTO on the CONTROLS page of the MFD, and:

- On ground:
  - If the WXR is operative
  - During takeoff.
- In flight, if the aircraft is below 1 500 ft AGL.

The ND displays the areas with predicted windshear as dashed red circles.

Note: *The VD does not display areas of windshear.*

PWS Area Indication on ND


2
3
4
5
6
7
8
9
10
11
PADKO
ROVOT
SUBIL
W/S
SUB350
SUB330
W/S
FJR
7.5
7.5
5
5

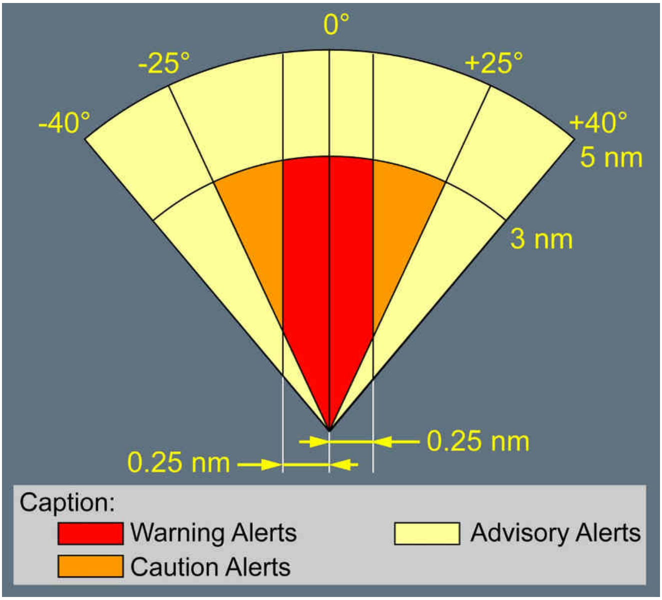
ALERT TRIGGERING CONDITIONS

Depending on the flight phase, and on the aircraft's distance from the windshear, the PWS function will trigger:

- A warning, or
- A caution, or
- An advisory.

DURING TAKEOFF ROLL, UP TO 100 KT

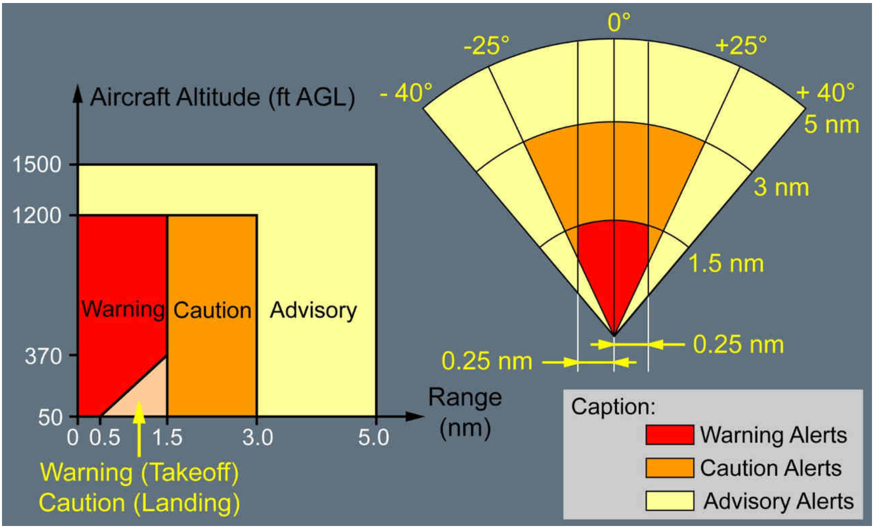
PWS During Takeoff Roll


0°
-25°
+25°
-40°
+40°
5 nm
3 nm
0.25 nm
0.25 nm
Caption:
Warning Alerts
Advisory Alerts
Caution Alerts

During the takeoff roll, and within a range of 3 NM, warnings and cautions are available.
At takeoff, all alerts are inhibited, if the aircraft speed is above 100 kt and up to 50 ft.

ABOVE 50 FT

PWS Above 50ft


Aircraft Altitude (ft AGL)
1500
1200
370
50
0
0.5
1.5
3.0
5.0
Warning
Caution
Advisory
Range (nm)
Warning (Takeoff)
Caution (Landing)
0°
-25°
+25°
- 40°
+ 40°
5 nm
3 nm
1.5 nm
0.25 nm
0.25 nm
Caption:
Warning Alerts
Caution Alerts
Advisory Alerts

At landing:
- All alerts are inhibited, if the aircraft is below 50 ft
- Visual and aural warnings are downgraded to cautions from 370 ft AGL to 50 ft AGL, and range from 0.5 NM to 1.5 NM.

AUTO RANGE/MODE

The AUTO RANGE/MODE function automatically changes the ND setting to the most appropriate range and mode, in particular for specific operational situations.
In the case of W/S AHEAD or W/S AHEAD, the ND automatically changes range to 10 NM and mode to ARC. The ND displays the AUTO RANGE/MODE message.

TRIGGERING OF ALERTS

WARNING

In the case of a warning, the following are triggered:
- During takeoff, the “WINDSHEAR AHEAD, WINDSHEAR AHEAD” audio indicator
- During approach, the “GO AROUND, WINDSHEAR AHEAD” aural indicator

- The W/S AHEAD visual indicator on the PFDs
- PWS area indication on the NDs.

L2 The WX pb is also automatically selected on the EFIS CP.

L1 *Note:* *If the AUTO RANGE/MODE function is not available and:*
- *If the ND is in PLAN mode, the ND displays the W/S: CHANGE MODE message*
- *If the flight crew selects a range different from 10 NM on the EFIS CP, the ND displays the W/S: SET RNG 10 NM message*
- *If the ND is in ZOOM range, the ND displays the W/S: INCREASE RANGE message.*

CAUTION

In the case of a caution, the following are triggered:
- The “MONITOR RADAR DISPLAY” audio indicator
- The W/S AHEAD visual indicator on the PFDs
- The PWS area indication on the NDs.

L2 The WX pb is also automatically selected on the EFIS CP.

L1 *Note:* *If the AUTO RANGE/MODE function is not available and:*
- *If the ND is in PLAN mode, the ND displays the W/S: CHANGE MODE message*
- *If the flight crew selects a range different from 10 NM on the EFIS CP, the ND displays the W/S: SET RNG 10 NM message*
- *If the ND is in ZOOM range, the ND displays the W/S: INCREASE RANGE message.*

ADVISORY

In the case of an advisory, the PWS area is indicated on the NDs.

L2 The WX pb is also automatically selected on the EFIS CP

GROUND MAPPING FUNCTION

Ident.: DSC-34-SURV-30-10-00003425.0001001 / 30 APR 14
Applicable to: ALL

The ground mapping function enables the flight crew to display a map of terrain features on the ND.

The color code is:
- Black for standing water (no return)
- Green for the terrain
- Yellow or red for cities and mountains (strong returns).

L3 The WXR extracts the data from the 3D buffer, by using the ground returns and the elevation data.

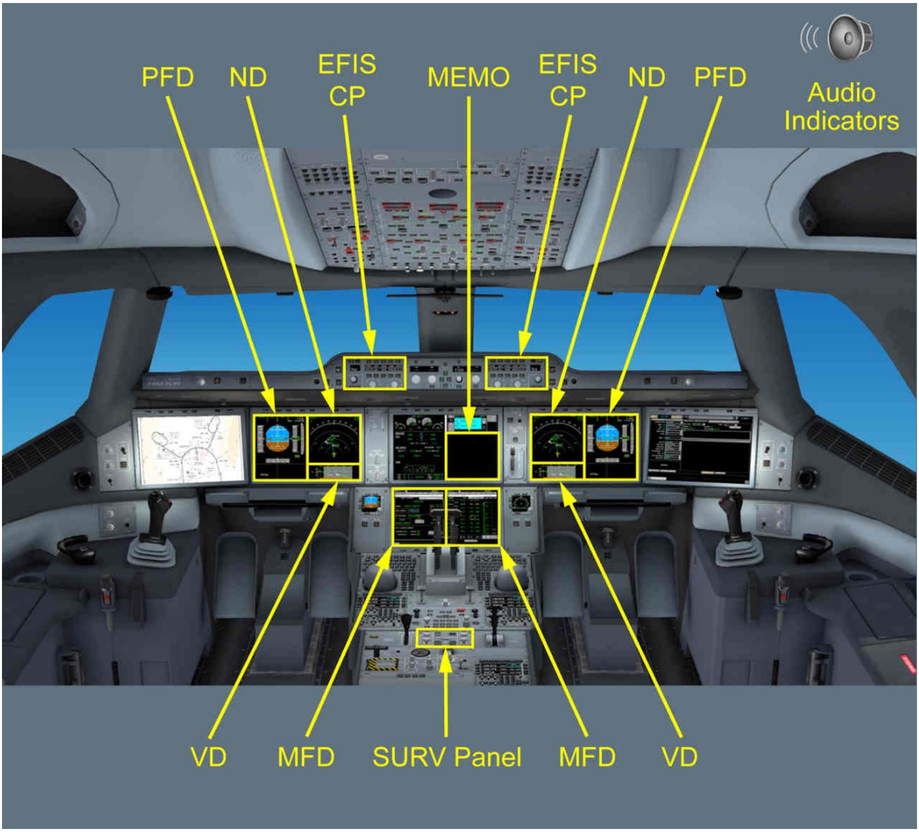
L1 The flight crew can select the ground mapping function via the MODE button on the CONTROLS page of the MFD, if the WXR is on.

Intentionally left blank

COCKPIT VIEW

Ident.: DSC-34-SURV-30-20-00003431.0001001 / 30 APR 14
Applicable to: ALL

Cockpit View


PFD
ND
EFIS CP
MEMO
EFIS CP
ND
PFD
Audio Indicators
VD
MFD
SURV Panel
MFD
VD

AUDIO INDICATORS

Ident.: DSC-34-SURV-30-20-00003439.0001001 / 28 APR 17
Applicable to: ALL

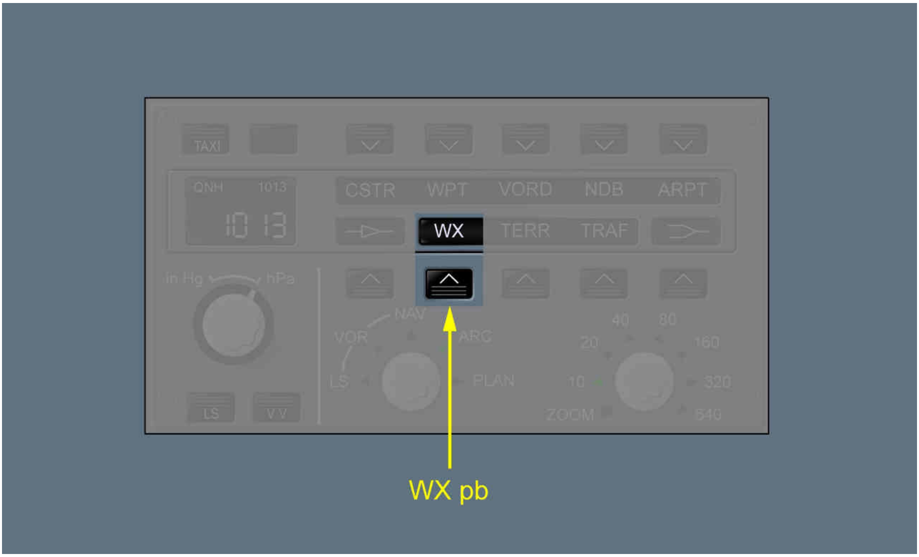
L12

Audio Indicator	Condition or Cause	Duration
Monitor Radar Display (Synthetic Voice)	The PWS triggers a windshear caution, and the aircraft is not in a dangerous zone. For more information, *Refer to DSC-34-SURV-30-10 Predictive Windshear (PWS) Function*.	Sounds one time.
Windshear Ahead (Synthetic Voice)	The PWS triggers a windshear warning during takeoff. For more information, *Refer to DSC-34-SURV-30-10 Predictive Windshear (PWS) Function*.	Sounds two times.
Go Around, Windshear Ahead (Synthetic Voice)	The PWS triggers a windshear warning during approach. For more information, *Refer to DSC-34-SURV-30-10 Predictive Windshear (PWS) Function*.	Sounds one time.
Weather Ahead (Synthetic Voice)	The WXR triggers a weather ahead alert, weather or turbulence detected within 3 min of flight. For more information, *Refer to DSC-34-SURV-30-10 Weather Ahead Function*.	Sounds two times.

EFIS CONTROL PANEL

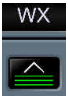
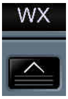
Ident.: DSC-34-SURV-30-20-00003432.0001001 / 05 JUN 18
Applicable to: ALL

EFIS CP


TAXI
QNH 1013
10 13
CSTR
WPT
VORD
NDB
ARPT
WX
TERR
TRAF
in Hg
hPa
NAV
VOR
ARC
LS
PLAN
40
80
20
160
10
320
ZOOM
640
LS
V V
WX pb

WX pb

L12

	The WXR is active. The onside ND and VD display weather information. For more information,*Refer to DSC-34-SURV-30-10 Overview* The flight crew cannot press the WX pb and the TERR pb at the same time. Associated with the WX message on the ND.
	The onside ND and VD do not display weather information.

MEMO

Applicable to: ALL

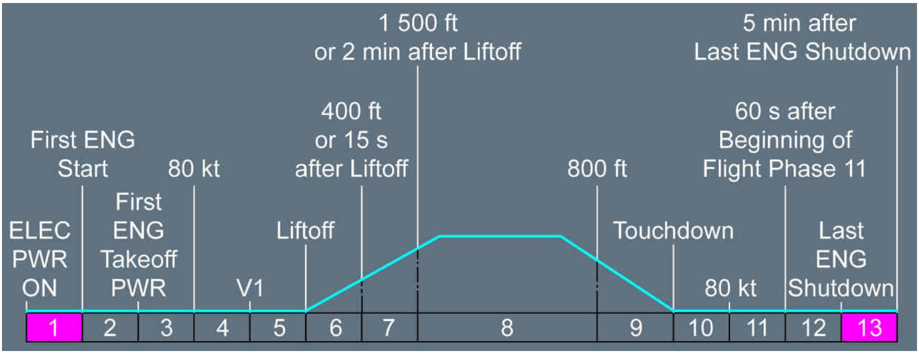
Ident.: DSC-34-SURV-30-20-60-00003438.0001001 / 06 NOV 19

L12

WXR TURB OFF	The flight crew sets the TURB button ⋘ to OFF, or unticks the TURB tick box ⋘ on the SURV CONTROLS page of the MFD. Appears on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

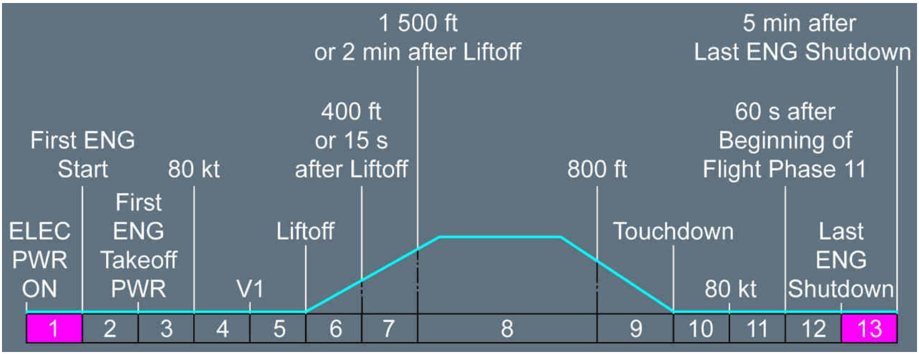
Ident.: DSC-34-SURV-30-20-60-00025315.0001001 / 06 NOV 19

L12

WXR HZD OFF ⋘	The flight crew unticks the HZD tick box ⋘ on the SURV CONTROLS page of the MFD. Appears on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

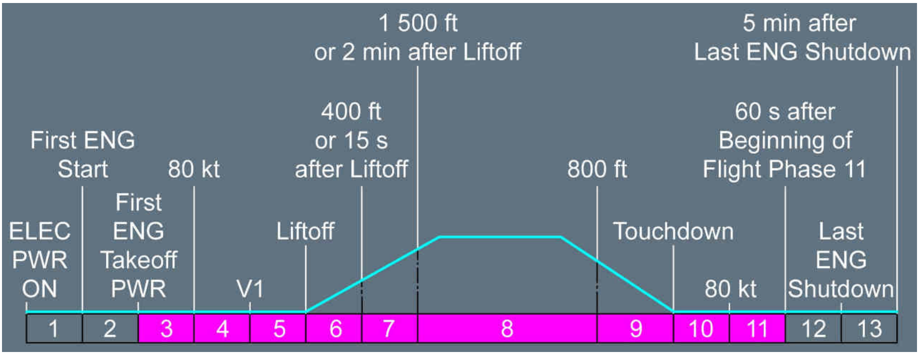
Ident.: DSC-34-SURV-30-20-60-00003644.0001001 / 30 APR 14

L12

WXR/PWS ON	The aircraft is on ground, and the flight crew manually selects the WXR /PWS function. Appears on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

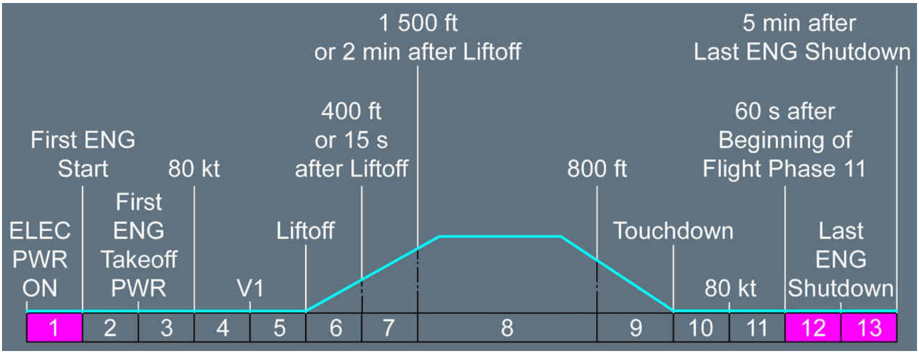
Ident.: DSC-34-SURV-30-20-60-00003642.0001001 / 30 APR 14

L12

WXR/PWS OFF	The flight crew sets the WXR/PWS button to OFF on the SURV CONTROLS page of the MFD. Appears on the ND and on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition

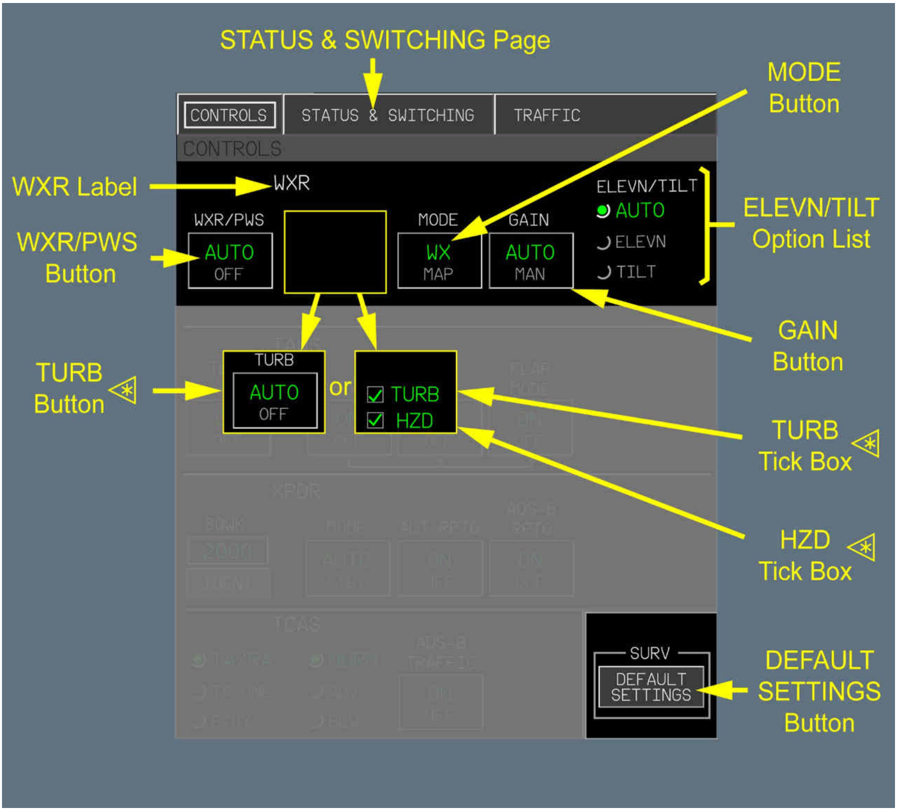

1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

MFD

Applicable to: ALL

Ident.: DSC-34-SURV-30-20-40-00003443.0001001 / 06 NOV 19

CONTROLS PAGE

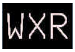

STATUS & SWITCHING Page
CONTROLS
STATUS & SWITCHING
TRAFFIC
CONTROLS
WXR
WXR/PWS
AUTO
OFF
MODE
WX
MAP
GAIN
AUTO
MAN
ELEVN/TILT
● AUTO
○ ELEVN
○ TILT
TURB
AUTO
OFF
or
☑ TURB
☑ HZD
SURV
DEFAULT SETTINGS
MODE Button
WXR Label
WXR/PWS Button
ELEVN/TILT Option List
GAIN Button
TURB Button
TURB Tick Box
HZD Tick Box
DEFAULT SETTINGS Button

CONTROLS Page

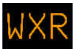
Note: *Flight crew selections (on the SURV/CONTROLS page of the MFD) that are applicable to the weather display, are valid for the onside ND and/or the onside VD.*

Ident.: DSC-34-SURV-30-20-40-00003444.0001001 / 30 APR 14

WXR LABEL


WXR

The WXR is on.

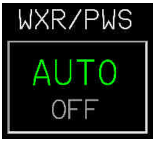

WXR

The WXR is failed.

Ident.: DSC-34-SURV-30-20-40-00003445.0001001 / 03 JUL 20

1 WXR/PWS BUTTON

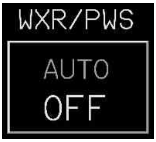
L12



The WXR/PWS automatic mode is on. The WXR and the PWS function operate automatically.
This is the default position.
On ground, associated with the WXR/PWS ON memo.
When clicked, a confirmation is necessary in order to turn off the WXR/PWS.

When the flight crew sets the WXR/PWS button to AUTO:
- The TURB button ◁ is automatically set to AUTO, and the TURB function is on
- The TURB tick box ◁ is automatically ticked, and the TURB function is on
- The HZD tick box ◁ is automatically ticked, and the weather hazard prediction function ◁ is on
- The ELEVN/TILT option list is automatically set to AUTO
- The GAIN button is automatically set to AUTO
- The MODE button is automatically set to WX.

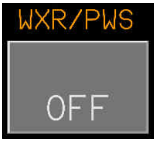
L12



The WXR/PWS is off.
When clicked, a confirmation is necessary in order to turn on the WXR/PWS.

Associated with:
- The WXR/PWS OFF memo, if the aircraft is in flight phases 2 to 11
- The WXR/PWS OFF message on the ND.

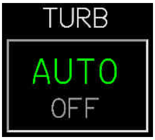
When the flight crew sets the WXR/PWS button to OFF:
- The TURB button ◁ is automatically set to OFF
- The TURB tick box ◁ is automatically unticked
- The HZD tick box ◁ is automatically unticked
- The selected option on the ELEVN/TILT option list is deselected, and the option list is inhibited
- The GAIN button no longer appears
- The MODE button no longer appears.



The WXR or the PWS function is failed.

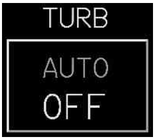
Ident.: DSC-34-SURV-30-20-40-00003447.0001001 / 06 NOV 19

TURB BUTTON ◁

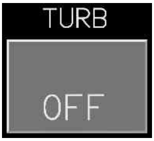


The TURB function operates automatically.
This is the default position.

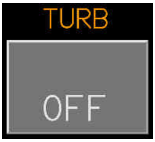
L12



The TURB function is off.
Associated with the WXR TURB OFF memo.



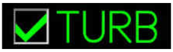
The WXR is set to OFF.



- The WXR is failed, or
- The TURB function is not operational.

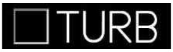
Ident.: DSC-34-SURV-30-20-40-00025316.0001001 / 06 NOV 19

TURB TICK BOX ◁

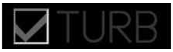


The TURB function operates automatically.
This is the default position.

L12



The TURB function is off.
Associated with the WXR TURB OFF memo.

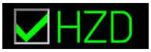


One of the following applies:

- The WXR is set to OFF, or
- The WXR is failed, or
- The TURB function is not operational.

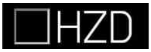
Ident.: DSC-34-SURV-30-20-40-00025317.0001001 / 06 NOV 19

HZD TICK BOX ◁

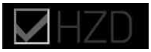


The weather hazard prediction function ◁ operates automatically.
This is the default position.

L12



The weather hazard prediction function ◁ is off.
Associated with the WXR HZD OFF ◁ memo.



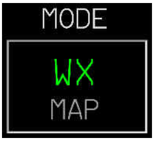
One of the following applies:

- The WXR is set to OFF, or
- The WXR is failed, or
- The weather hazard prediction function ◁ is not operational.

Ident.: DSC-34-SURV-30-20-40-00003450.0001001 / 05 JUN 18

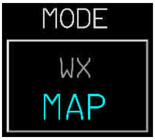
MODE BUTTON

L12

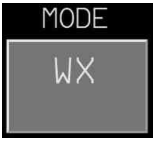


The WX display function is on.
This is the default position.
Associated with the WX message on the ND.

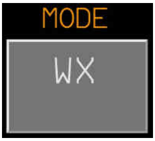
L12



The flight crew selects the ground mapping function.
The ELEVN/TILT option list is no longer available.
Associated with the MAP message on the ND.



The WXR is set to OFF.

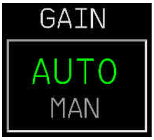


- The WXR is failed, or
- The WX display function is not operational.

Ident.: DSC-34-SURV-30-20-40-00003449.0001001 / 05 JUN 18

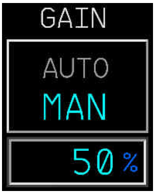
GAIN BUTTON

L12

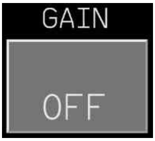


The GAIN mode operates automatically.
This is the default position.
Associated with the WX message on the ND.

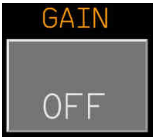
L12



The flight crew manually selects the GAIN value.
When selected, an entry field appears below the GAIN button. The flight crew should enter the applicable GAIN percentage value.
Associated with the GAIN message and the selected value on the ND.



The WXR is set to OFF.

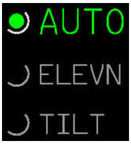


- The WXR is failed, or
- The WX display function is not operational.

Ident.: DSC-34-SURV-30-20-40-00003448.0001001 / 30 APR 14

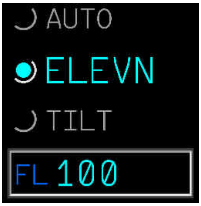
ELEVN/TILT OPTION LIST

L12



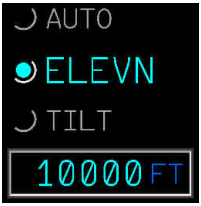
The flight crew selects the AUTO mode.
This is the default position.
Associated with the WX message on the ND.

L12



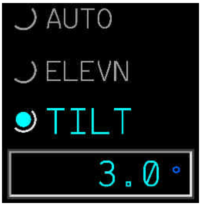
The flight crew selects the ELEVN mode, and the barometric reference is STD.
When selected, an entry field appears below the option list. The flight crew should enter the appropriate FL value in the field.
Associated with the ELEVN message and the selected value on the ND.
Associated with the white line indicating the selected value on the VD.

L12

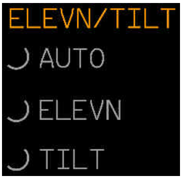


The flight crew selects the ELEVN mode, and the barometric reference is QNH.
When selected, an entry field appears below the option list. The flight crew should enter the appropriate altitude value in feet in the field.
Associated with the ELEVN message and the selected value on the ND.
Associated with the white line indicating the selected value on the VD.

L12



The flight crew selects the TILT mode.
When selected, an entry field appears below the option list. The flight crew should enter the appropriate degrees value in the field.
Associated with the TILT message and the selected value on the ND.
Associated with the white line indicating the selected tilt value on the VD.



- The WXR is failed, or
- The WX display function is failed.

Ident.: DSC-34-SURV-30-20-40-00003452.0001001 / 03 JUL 20

2 DEFAULT SETTINGS BUTTON

L12

DEFAULT
SETTINGS

When clicked, automatically sets all the WXR settings to their default position. A confirmation is necessary in order to set the default positions.

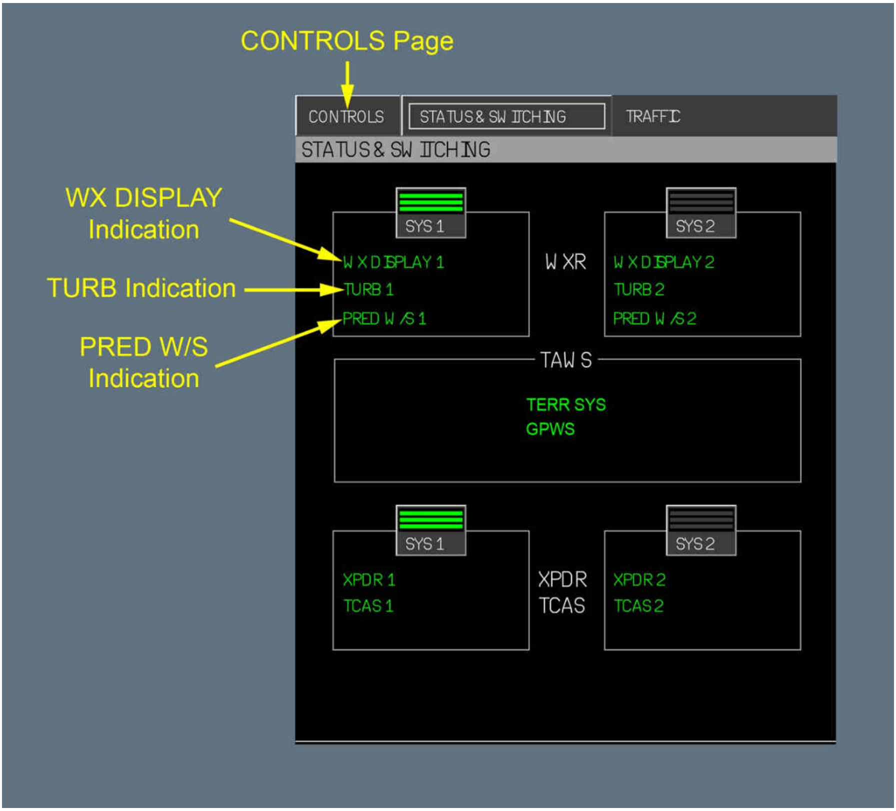
- The WXR/PWS button is set to AUTO
- The TURB button ◁✳ is set to AUTO
- The TURB tick box ◁✳ is ticked
- The HZD tick box ◁✳ is ticked
- The MODE button is set to WX
- The GAIN button is set to AUTO
- The ELEVN/TILT option list is set to AUTO

The following default settings are valid only for the onside MFD and SURV panel setting:
- The MODE button
- The GAIN button
- The ELEVN/TILT option list

Ident.: DSC-34-SURV-30-20-40-00003453.0001001 / 30 APR 14

STATUS & SWITCHING PAGE

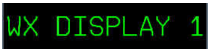
STATUS & SWITCHING Page


CONTROLS Page
CONTROLS
STATUS & SWITCHING
TRAFFIC
STATUS & SWITCHING
WX DISPLAY Indication
TURB Indication
PRED W/S Indication
SYS 1
WX DISPLAY 1
TURB 1
PRED W/S 1
WXR
SYS 2
WX DISPLAY 2
TURB 2
PRED W/S 2
TAWS
TERR SYS
GPWS
SYS 1
XPDR 1
TCAS 1
XPDR
TCAS
SYS 2
XPDR 2
TCAS 2

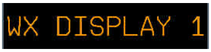
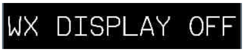
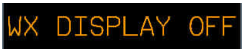
- Green indicates that the function is on
- White indicates that the function is set to OFF, or is on standby
- Amber indicates that the function is failed.

Ident.: DSC-34-SURV-30-20-40-00003454.0001001 / 30 APR 14

WX DISPLAY INDICATION

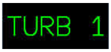
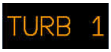
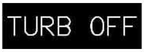
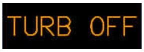

WX DISPLAY 1

The WX display function is on, on SURV SYS 1(2).

 WX DISPLAY 1	The WX display function is failed on SURV SYS 1(2).
 WX DISPLAY OFF	The WX display function is off, on SURV SYS 1(2).
 WX DISPLAY OFF	The WX display function is failed, and set to OFF.

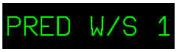
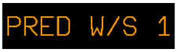
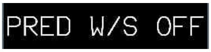
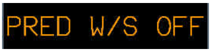
Ident.: DSC-34-SURV-30-20-40-00003455.0001001 / 30 APR 14

TURB INDICATION

 TURB 1	The TURB function is on, on SURV SYS 1(2).
 TURB 1	The TURB function is failed on SURV SYS 1(2).
 TURB OFF	The TURB function is off, on SURV SYS 1(2).
 TURB OFF	The TURB function is failed, and set to OFF.

Ident.: DSC-34-SURV-30-20-40-00003456.0001001 / 30 APR 14

PRED W/S INDICATION

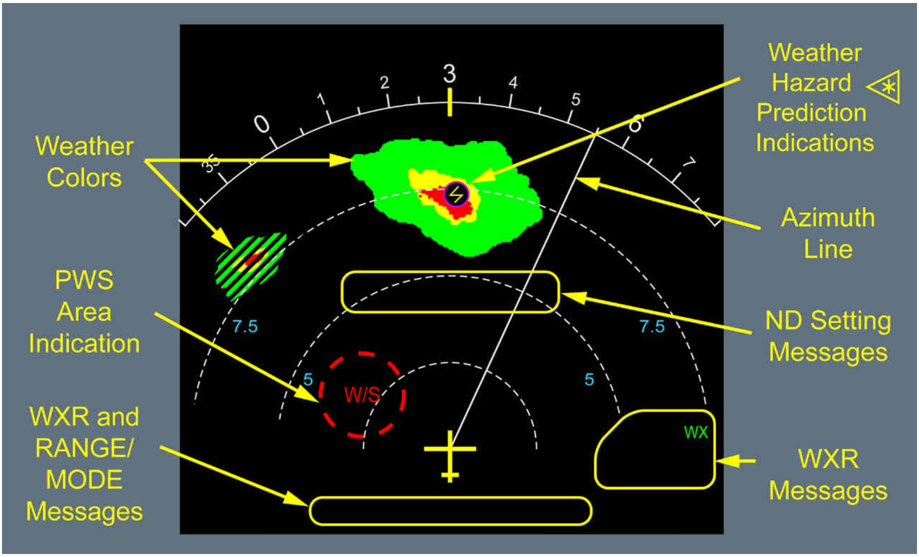
 PRED W/S 1	The PWS function is on, on SURV SYS 1(2).
 PRED W/S 1	The PWS function is failed on SURV SYS 1(2).
 PRED W/S OFF	The PWS function is off, on SURV SYS 1(2).
 PRED W/S OFF	The PWS function is failed, and set to OFF.

ND

Applicable to: ALL

Ident.: DSC-34-SURV-30-20-20-00003435.0001001 / 06 NOV 19

ND


Weather Hazard Prediction Indications ⊲
Weather Colors
Azimuth Line
PWS Area Indication
ND Setting Messages
WXR and RANGE/ MODE Messages
WXR Messages
0
1
2
3
4
5
6
7
35
7.5
7.5
5
5
W/S
WX

The ND automatically displays the weather and predictive windshears if the PWS triggers an alert.

Ident.: DSC-34-SURV-30-20-20-00003457.0001001 / 03 JUL 20

3 WEATHER COLORS

The ND displays the weather precipitation in various colors, depending on the precipitation intensity (black, green, yellow or red) if:
- The WXR/PWS is set to AUTO on the MFD
- In ARC or ROSE mode
- The flight crew presses the WX pb on the EFIS CP.

The ND displays the turbulences area in magenta if:
- The WXR/PWS is set to AUTO on the MFD
- The TURB button ⊲ is set to AUTO on the MFD
- The TURB tick box ⊲ is ticked on the MFD
- In ARC or ROSE mode
- The flight crew presses the WX pb on the EFIS CP.

When in AUTO mode, the ND displays:
- The on-path weather, that the aircraft will encounter, in the conventional colors
- The off-path weather, that is not on the aircraft trajectory, in black parallel lines, with reduced intensity.

Ident.: DSC-34-SURV-30-20-20-00003458.0001001 / 30 APR 14

AZIMUTH LINE

If the flight crew selects the manual AZIM mode of the WXR, the ND displays a white line to indicate the selected azimuth value.

L2 Flashes for 5 s before the WXR automatically reverts to the automatic mode.

Ident.: DSC-34-SURV-30-20-20-00003459.0001001 / 03 JUL 20

4 WXR MESSAGES

ELEVN 12500FT	The flight crew selects the manual ELEVN mode, by: - Pulling the ELEVN knob on the SURV panel, or - Setting the ELEVN/TILT option list to ELEVN on the CONTROLS page of the MFD page. The unit is: - “ft”, if in QNH baro-setting - “FL”, if in STD baro-setting.
GAIN 53%	The flight crew selects the manual GAIN mode, by: - Pulling the GAIN knob on the SURV panel, or - Setting the GAIN button to MAN on the CONTROLS page of the MFD.
MAP	The flight crew selects the ground mapping function of the WXR, by setting the MODE button to MAP on the CONTROLS page of the MFD.
L12	
PRED W/S	The PWS function is failed. Appears when the aircraft is on ground, or when the slats/flaps lever position is not set to zero.
TILT -12.0°	The flight crew selects the manual TILT mode, by: - Pulling the ELEVN knob two times on the SURV panel, or - Setting the ELEVN/TILT option list to TILT on the CONTROLS page of the MFD page.

WX	The flight crew selects the WX display function in automatic mode, by setting: - The MODE button to WX - The TURB button ◁ to OFF - The TURB tick box ◁ to unticked - The HZD tick box ◁ to unticked - The ELEVN/TILT option list to AUTO, on the CONTROLS page of the MFD.
WX	The flight crew selects the WX display function in manual mode, by setting: - The MODE button to WX - The TURB button ◁ to OFF - The TURB tick box ◁ to unticked - The HZD tick box ◁ to unticked - The ELEVN/TILT option list to ELEVN or TILT, on the CONTROLS page of the MFD.
WX+T	The flight crew selects the WX and turbulence display function in automatic mode, by setting: - The MODE button to WX - The TURB button ◁ to AUTO - The TURB tick box ◁ to ticked - The HZD tick box ◁ to unticked - The ELEVN/TILT option list to AUTO, on the CONTROLS page of the MFD.
WX+T	The flight crew selects the WX and turbulence display function in manual mode, by setting: - The MODE button to WX - The TURB button ◁ to AUTO - The TURB tick box ◁ to ticked - The HZD tick box ◁ to unticked - The ELEVN/TILT option list to ELEVN or TILT, on the CONTROLS page of the MFD.

WX+H	The flight crew selects the WX and hazard prediction display function in automatic mode, by setting: - The MODE button to WX - The TURB button to OFF - The TURB tick box to unticked - The HZD tick box to ticked - The ELEVN/TILT option list to AUTO, on the CONTROLS page of the MFD.
WX+H	The flight crew selects the WX and hazard prediction display function in manual mode, by setting: - The MODE button to WX - The TURB button to OFF - The TURB tick box to unticked - The HZD tick box to ticked - The ELEVN/TILT option list to ELEVN or TILT, on the CONTROLS page of the MFD.
WX+T+H	The flight crew selects the WX, turbulence and hazard prediction display function in automatic mode, by setting: - The MODE button to WX - The TURB button to AUTO - The TURB tick box to ticked - The HZD tick box to ticked - The ELEVN/TILT option list to AUTO, on the CONTROLS page of the MFD.
WX+T+H	The flight crew selects the WX, turbulence and hazard prediction display function in manual mode, by setting: - The MODE button to WX - The TURB button to AUTO - The TURB tick box to ticked - The HZD tick box to ticked - The ELEVN/TILT option list to ELEVN or TILT, on the CONTROLS page of the MFD.

L12

WXR DEGRADD	The WXR is in a degraded mode, if the position of the aircraft is not sufficiently precise. Ground returns may appear in the weather display.
WXR INOP	A WXR failure is detected.
WXR OFF	The flight crew sets the WXR/PWS button to OFF on the CONTROLS page of the MFD.

WXR RNG	There is a difference in range between the SURV and the ND.
WXR TEST	The WXR is in the test mode.

Ident.: DSC-34-SURV-30-20-20-00011775.0001001 / 18 JUN 15

WXR AND RANGE/MODE MESSAGES

WEATHER AHEAD	The weather ahead function detects potential weather or turbulence hazard and the aircraft is above 1 500 ft.
AUTO RANGE/MODE	Appears in the case of W/S AHEAD or W/S AHEAD, and the ND automatically changes range to 10 NM and mode to ARC.

Ident.: DSC-34-SURV-30-20-20-00003460.0001001 / 30 APR 14

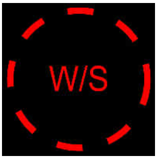
ND SETTING MESSAGES

If the AUTO RANGE/MODE function is not available, the following ND setting messages appear.

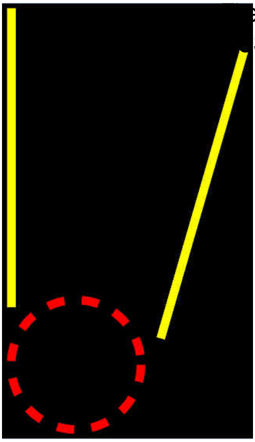
W/S: CHANGE MODE	Appears in PLAN mode, when the PWS triggers a warning.
W/S: INCREASE RANGE	Appears in ROSE mode, when: - The range selector of the ND is set to ZOOM - The PWS triggers a warning.
W/S: SET RNG 10 NM	Appears in ARC or ROSE mode, when: - The flight crew selects a range that is different from 10 NM - The PWS triggers a warning.
W/S: CHANGE MODE	Appears in PLAN mode, when the PWS triggers a caution.
W/S: INCREASE RANGE	Appears in ROSE mode, when: - The range selector of the ND is set to ZOOM - The PWS triggers a caution.
W/S: SET RNG 10 NM	Appears in ARC or ROSE mode, when: - The flight crew selects a range that is different from 10 NM - The PWS triggers a caution.
WXR GND CLUT :	The WXR does not remove the ground returns from the weather display because: - The internal radar topography database is not available, or - There is an aircraft position uncertainty of more than 2.5 NM.

Ident.: DSC-34-SURV-30-20-20-00003461.0001001 / 30 APR 14

PWS AREA INDICATION



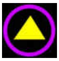
The ND range is set to 10 NM in ARC mode, or to 20 NM in ROSE mode, and a windshear is detected.



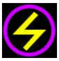
e ND range is more than 10 NM in ARC mode, or more than 20 NM in SE mode, and a windshear is detected.

Ident.: DSC-34-SURV-30-20-20-00025318.0001001 / 06 NOV 19

WEATHER HAZARD PREDICTION INDICATIONS

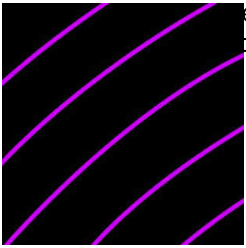


Area with high probability of hail encounter.
Appears only if the flight crew activates the weather hazard prediction function (HZD tick box ticked).



Area with high probability of lightning encounter.
Appears only if the flight crew activates the weather hazard prediction function (HZD tick box ticked).

Note: *The size of predictive lightning and hail icons depends on the range selected on the ND.*



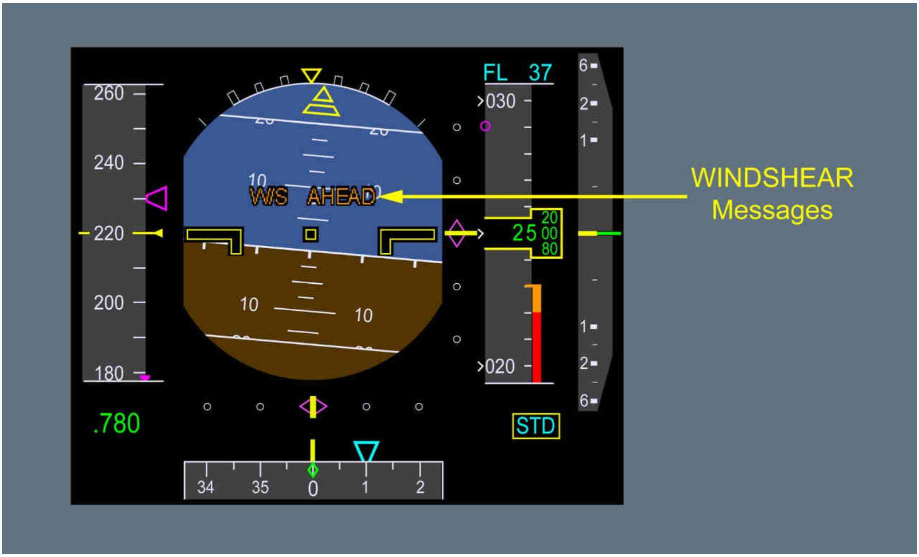
ea where the ability of the radar system to evaluate the weather is duced due to severe signal attenuation (REACT pattern).

PFD

Applicable to: ALL

Ident.: DSC-34-SURV-30-20-10-00003437.0001001 / 30 APR 14

PFD


WINDSHEAR
Messages
W/S AHEAD
260
240
220
200
180
.780
FL 37
030
020
25 20 00 80
STD
10
10
10
34
35
0
1
2
6
2
1
1
2
6

Ident.: DSC-34-SURV-30-20-10-00003465.0001001 / 30 APR 14

WINDSHEAR MESSAGES

L12

W/S AHEAD	PWS detects a windshear in front of the aircraft, and triggers a caution. Flashes for 9 s, then remains steady.

L12

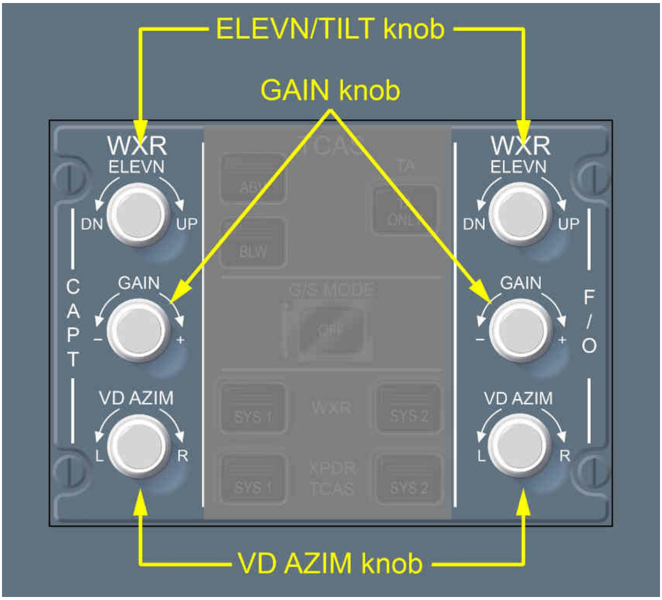
W/S AHEAD	PWS detects a windshear in front of the aircraft, and triggers a warning. Flashes for 9 s, then remains steady.

SURV PANEL

Applicable to: ALL

Ident.: DSC-34-SURV-30-20-50-00003433.0001001 / 30 APR 14

SURV Panel


ELEVN/TILT knob
GAIN knob
WXR
ELEVN
DN
UP
GAIN
–
+
VD AZIM
L
R
CAPT
F/O
VD AZIM knob

Ident.: DSC-34-SURV-30-20-50-00003440.0001001 / 30 APR 14

ELEVN/TILT knob

L12

- When pushed, selects the AUTO mode.
  This is the default position.
  Associated with the WX message on the ND.
- When pulled:
  - Selects the manual ELEVN mode
  - Selects the manual TILT mode, if the previous manual mode was ELEVN.
- When turned, adjusts the elevation or tilt value.
  The ND displays the elevation or tilt value.
  The VD displays a white line indicating the elevation or tilt value.
  The default ELEVN value is the current aircraft altitude.

  The default TILT value is:
  - On ground: +3.00 °
  - In flight: 0 °.

Note: *On the CONTROLS page of the MFD, the ELEVN/TILT option list is automatically updated.*

Ident.: DSC-34-SURV-30-20-50-00003441.0001001 / 30 APR 14

Gain knob

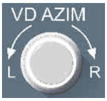
- When pushed, selects the AUTO GAIN mode
  The GAIN function is automatically set to the most appropriate setting.
- When pulled, selects the manual GAIN mode.
- When turned, adjusts the gain value in percentages.
  The ND displays the GAIN value.
  The default GAIN value is 50 %.

Note: *On the SURV/CONTROLS page of the MFD, the GAIN button is automatically updated.*

Ident.: DSC-34-SURV-30-20-50-00003442.0001001 / 30 APR 14

VD AZIM knob

L12



- When pushed, selects the AUTO mode.
  This is the default position.
- When pulled, selects the manual AZIM mode.

  On the VD:
  - The eye symbol appears, instead of the aircraft symbol
  - The terrain appears along the selected azimuth.

  The ND displays a straight white line based on the selected azimuth value.
- When turned, adjusts the AZIM value in degrees.
  The AZIM value is limited to ±60 ° around the current heading.
  The VD displays the selected AZIM value in the VIEW ALONG AZIMUTH message.
  The AZIM line moves on the ND, based on the flight crew's selection.

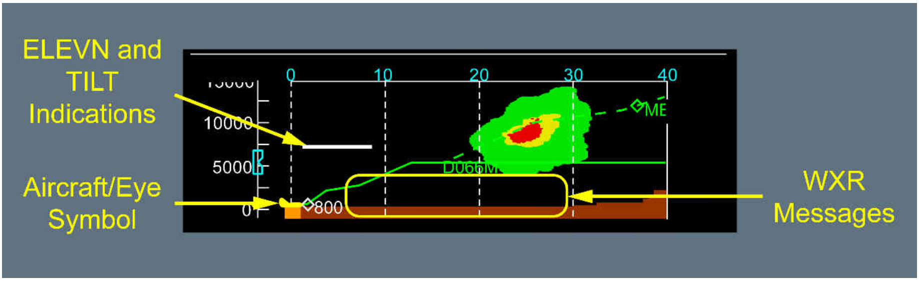
  Note: *The flight crew can preset the AZIM value before pulling the VD AZIM knob.*

VD

Applicable to: ALL

Ident.: DSC-34-SURV-30-20-30-00003436.0001001 / 03 SEP 14

VD

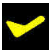

ELEVN and TILT Indications
Aircraft/Eye Symbol
WXR Messages
0
10
20
30
40
10000
5000
0
800
D066M
ME

The VD displays the weather along:
- The solid green line displayed on the ND, or
- The solid white line displayed on the ND, if the flight crew has selected the manual AZIM mode of the WXR.

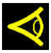
Note: VD range is always limited to 160 NM.

Ident.: DSC-34-SURV-30-20-30-00003462.0001001 / 30 APR 14

AIRCRAFT/EYE SYMBOL



The WXR is in AUTO mode.



The flight crew selects the manual AZIM mode.

Ident.: DSC-34-SURV-30-20-30-00003463.0001001 / 28 APR 17

WXR MESSAGES

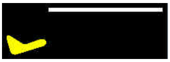
WXR INOP	Appears, when the flight crew presses the WX pb on the EFIS CP, and the WXR is failed.

L12

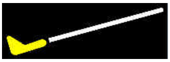
NO TERR & WX DATA AVAIL	Appears when: - The flight crew selects the PLAN mode on the EFIS CP, or - The flight crew sets the TERR SYS button to OFF on the CONTROLS page of the MFD, or The VD does not display the weather when the TERR function is not available, because it cannot locate the weather vertically (i.e. with respect to the terrain). - The aircraft latitude is above 80 ° (North or South).
VIEW ALONG AZIM XXX°	The message is associated with the azimuth value, when the flight crew selects the manual AZIM mode.
VIEW ALONG ACFT TRK	Appears when the VD displays the weather along the aircraft track.

Ident.: DSC-34-SURV-30-20-30-00003464.0001001 / 30 APR 14

ELEVN AND TILT INDICATIONS



Indicates the selected altitude, in manual elevation mode.



Indicates the selected tilt angle, in manual tilt mode.

OVERVIEW

Ident.: DSC-34-SURV-40-10-00003466.0001001 / 30 APR 14
Applicable to: ALL

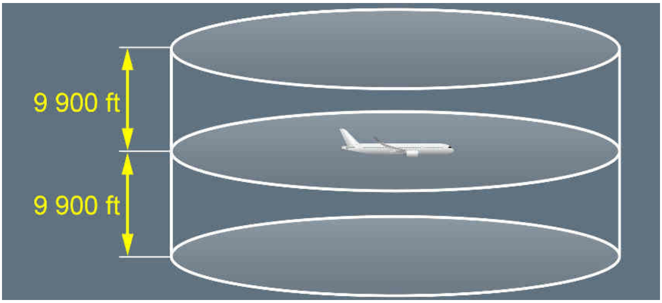
The Traffic Collision Avoidance System (TCAS):
- Detects and displays surrounding aircraft that have a transponder
- Calculates possible collision threats
- Triggers vertical speed orders, in order to avoid collisions.

PRINCIPLE

Ident.: DSC-34-SURV-40-10-00003467.0001001 / 06 MAR 18
Applicable to: ALL

The TCAS detects intruders that are flying within a maximum range of 20 NM to 60 NM (depending on the aircraft configuration and external weather conditions), and within a maximum altitude of 9 900 ft above, and 9 900 ft below, the aircraft.

TCAS Range



L2 *Note: In some circumstances, TCAS intruders may be detected up to 100 NM.*

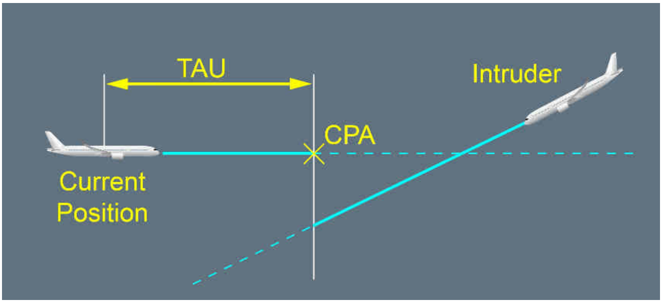
L1 The TCAS obtains data transmitted by the transponders of nearby aircraft, and uses this data to evaluate possible collision threats.

L2 The TCAS determines:
- The bearing of intruders, in relation to the bearing of the aircraft
- The distance between the aircraft and intruders, and the rate of separation or closure
- The relative altitude of intruders, if intruders report their altitude via a Mode-C or Mode-S transponder.

The TCAS then calculates the intruder trajectory, the Closest Point of Approach (CPA), and the estimated time (TAU), before reaching the CPA.

L3 The TAU is the ratio between the distance that separates both aircraft, and the sum of their speed.

TAU Definition



L1 If the TCAS detects that the trajectory of an intruder may be a collision threat, it triggers:
- Audio and visual indicators
- Vertical speed orders, to ensure there is sufficient distance between the trajectory of the aircraft and the trajectory of the intruders. In addition, the TCAS takes all intruders into account, and adjusts the vertical speed orders, in order to avoid a collision.

L2 If the aircraft is below 1 650 ft AGL in descent, or above 1 750 ft AGL in climb, the TCAS does not consider aircraft that are descending below 380 ft or below 400 ft while climbing. These aircraft are considered to be on ground.

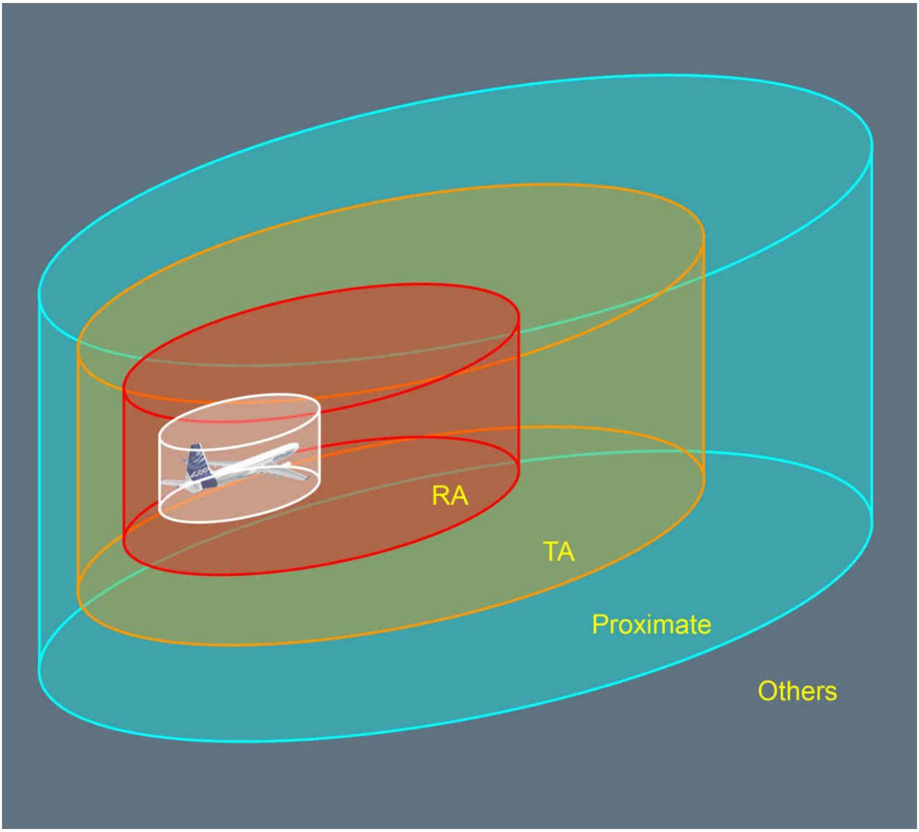
INTRUDER DETECTION CATEGORIES

Applicable to: ALL

Ident.: DSC-34-SURV-40-10-10-00003468.0001001 / 30 APR 14

The TCAS divides the space surrounding the aircraft into the following four zones, in order to evaluate and categorize possible collision threats:
- Resolution Advisory (RA)
- Traffic Advisory (TA)
- Proximate intruders
- Other intruders.

TCAS Envelopes



Ident.: DSC-34-SURV-40-10-10-00003471.0001001 / 03 NOV 16

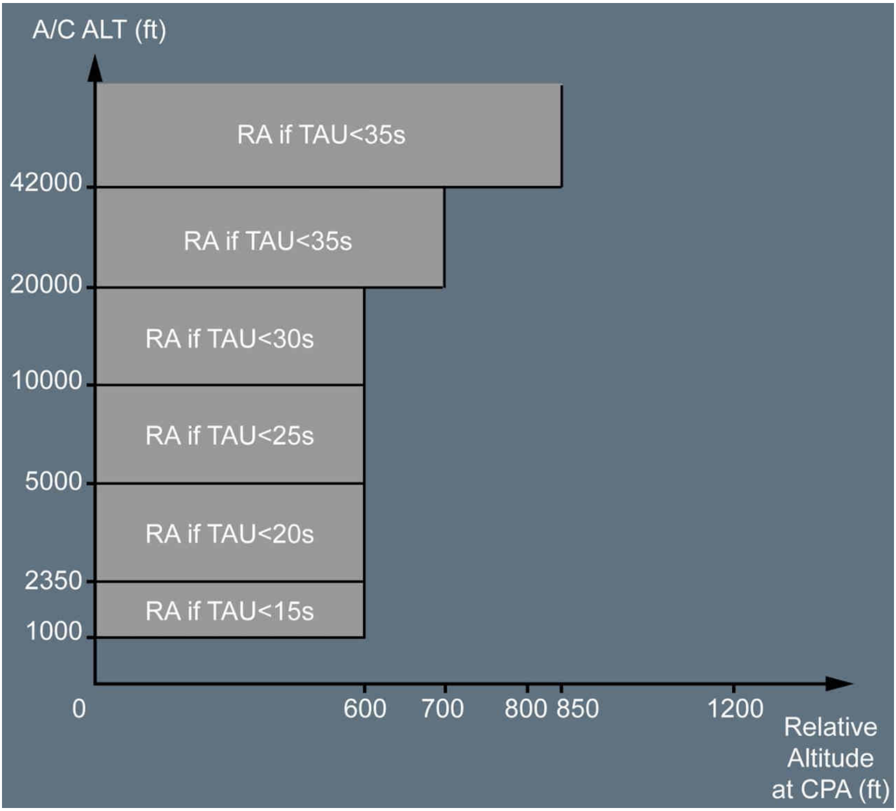
RESOLUTION ADVISORY (RA)

The TCAS triggers a Resolution Advisory (RA) to indicate that there is a high threat of collision.

There are two types of RAs:
- Preventive RA: The flight crew must monitor vertical speed
- Corrective RA: The flight crew must adjust vertical speed.

The PFD displays vertical speed orders that indicate the vertical direction that the aircraft should take, in order to avoid a collision.

RA Intruder



L2 For more information about RA inhibitions, *Refer to DSC-34-SURV-40-10 Advisory Inhibition*.

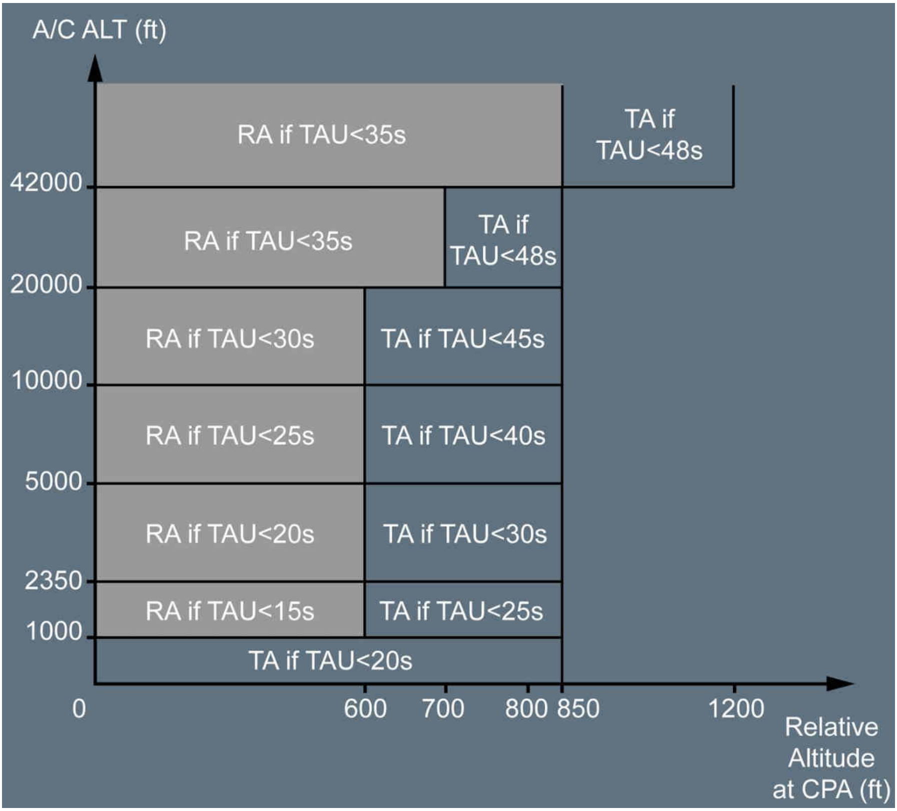
L1 The TCAS associates audio indicators with the RAs.

Ident.: DSC-34-SURV-40-10-10-00003472.0001001 / 03 NOV 16

TRAFFIC ADVISORY (TA)

The TCAS triggers a Traffic Advisory (TA) to indicate a possible collision threat. This advisory helps the flight crew to visually locate the intruder. It also prepares the flight crew for a possible RA. However, a TA may not always occur before an RA.

RA/TA Intruder



L2 For more information about TA inhibitions, *Refer to DSC-34-SURV-40-10 Advisory Inhibition*.

L1 The TCAS associates audio indicators with the TAs.

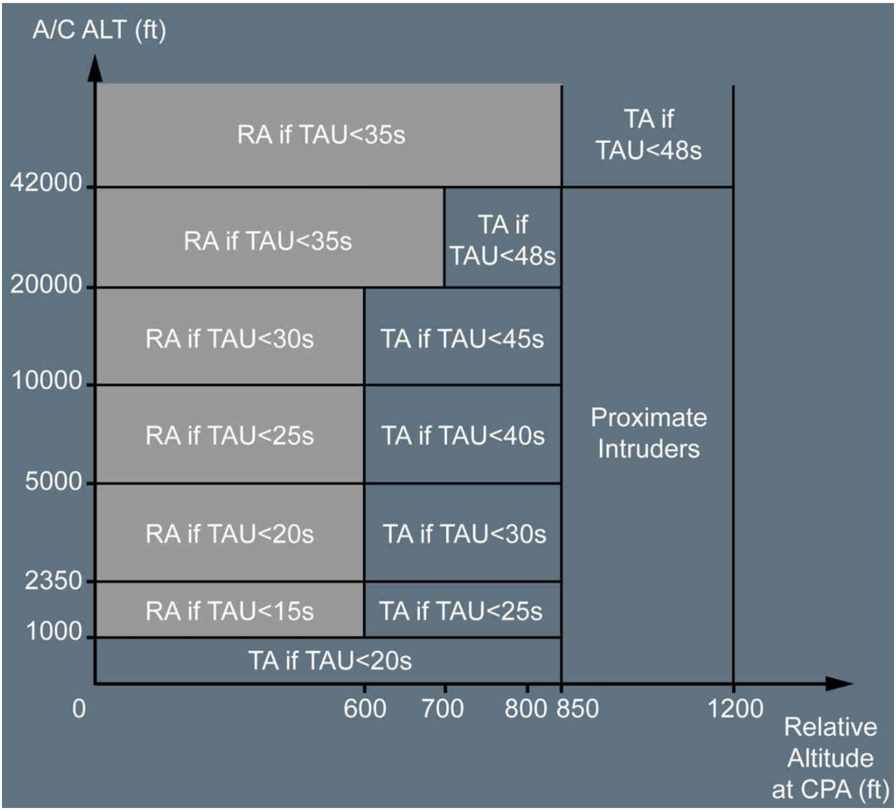
Ident.: DSC-34-SURV-40-10-10-00003473.0001001 / 30 APR 14

PROXIMATE INTRUDER

The TCAS monitors intruders that are in proximity of the aircraft, but that are not a collision threat. These are called proximate intruders.

L2 The difference in altitude between the aircraft and the proximate intruder is less than 1 200 ft, and they are within 6 NM of each other.

RA/TA/Proximate Intruder


A/C ALT (ft)
RA if TAU<35s
TA if TAU<48s
42000
RA if TAU<35s
TA if TAU<48s
20000
RA if TAU<30s
TA if TAU<45s
10000
RA if TAU<25s
TA if TAU<40s
Proximate Intruders
5000
RA if TAU<20s
TA if TAU<30s
2350
RA if TAU<15s
TA if TAU<25s
1000
TA if TAU<20s
0
600
700
800
850
1200
Relative Altitude at CPA (ft)

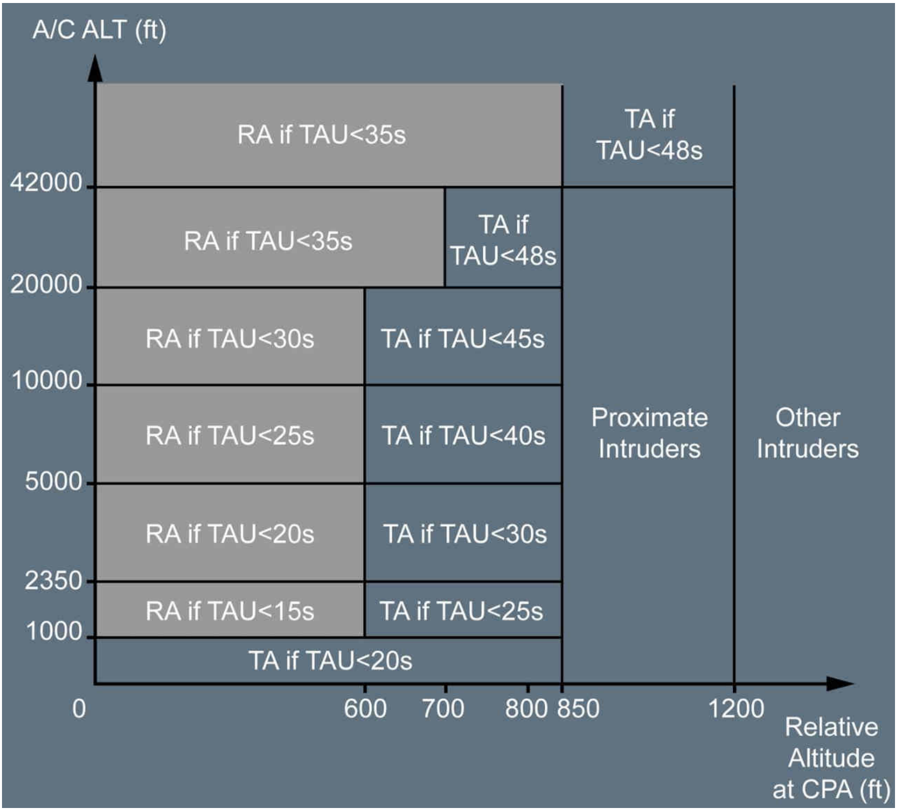
Ident.: DSC-34-SURV-40-10-10-00003474.0001001 / 30 APR 14

OTHER INTRUDERS

The TCAS monitors intruders that are in the detection envelope of the TCAS, but are not in the proximate intruder, TA, or RA category.
These are called other intruders.

L2 The difference in altitude between the aircraft and the other intruder is between 1 200 ft and 9 900 ft above or below.

Other Intruders



Ident.: DSC-34-SURV-40-10-10-00023868.0001001 / 03 NOV 16

L2 ADVISORY INHIBITION

Some advisories are inhibited depending on the following aircraft altitudes:

- All intruders that fly below 380 ft AGL when the aircraft altitude is below 1 700 ft AGL
- All RAs below 1 100 ft AGL in climb and 900 ft AGL in descent. In this case, the RAs are changed to TAs
- "Descend" type RAs below 1 200 ft AGL in climb and 1 000 ft AGL in descent

L3 *Note: When the aircraft receives a "Descend" type RA and goes below 1 000 ft AGL in descent, the vertical speed target is automatically changed to 0 ft/min.*

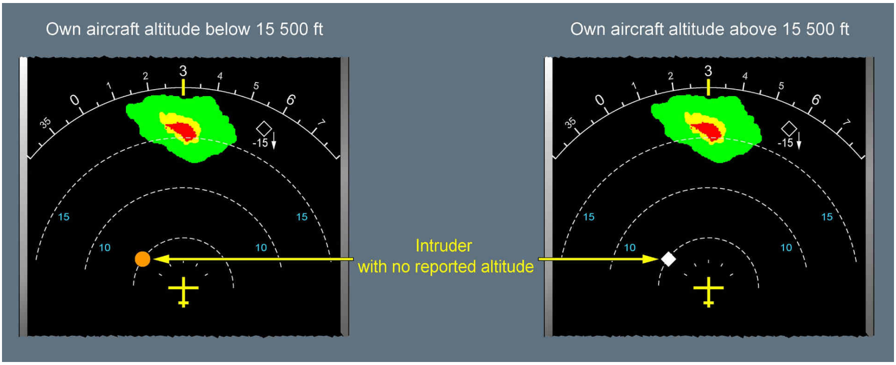
L2
- "Increase Descent" RA below 1 650 ft AGL in climb and 1 450 ft AGL in descent
- All TA aural messages below 600 ft AGL in climb and 400 ft AGL in descent.

Ident.: DSC-34-SURV-40-10-10-00024671.0001001 / 06 MAR 18

TCAS INTRUDER WITH NO REPORTED ALTITUDE

For intruders that do not report their altitude:
- The relative altitude does not appear on ND
- The TCAS never triggers an RA
- The TCAS inhibits the TA when own aircraft altitude is above 15 500 ft.

Intruder with No Reported Altitude


Own aircraft altitude below 15 500 ft
Own aircraft altitude above 15 500 ft
Intruder
with no reported altitude
-15
35
0
1
2
3
4
5
6
7
15
10

TCAS MODES

Applicable to: ALL

Ident.: DSC-34-SURV-40-10-20-00003469.0001001 / 30 APR 14

The TCAS has three different modes of operation:
- The Traffic Advisory/Resolution Advisory (TA/RA) mode
- The Traffic Advisory Only (TA ONLY) mode
- The standby (STBY) mode.

Ident.: DSC-34-SURV-40-10-20-00003475.0001001 / 30 APR 14

TRAFFIC ADVISORY/RESOLUTION ADVISORY (TA/RA) MODE

The Traffic Advisory/Resolution Advisory (TA/RA) mode is the default TCAS mode.

The TA/RA mode enables:
- The ND to display all intruders
- The PFD to display the vertical speed scale
- The triggering of audio indicators.

Ident.: DSC-34-SURV-40-10-20-00003476.0001001 / 06 NOV 14

TRAFFIC ADVISORY ONLY (TA ONLY) MODE

If the TCAS is in TA ONLY mode:
- All RAs are inhibited, and become TAs
- The PFD does not display vertical speed areas
- The ND displays the TA ONLY message
- L3 The TAU depends on the aircraft altitude, the minimum TAU is 20 s at 1 000 ft.

L1 TA ONLY mode can be selected manually, or automatically.

MANUAL SELECTION

In order to manually select the TA ONLY mode, the flight crew can:
- Press the TA pb on the SURV panel, or
- Select the TA ONLY option on the SURV CONTROLS page of the MFD.

AUTOMATIC SELECTION

The TA ONLY mode is automatically selected, if:
- One of the following alerts is triggered, and/or
  - Windshear
  - Stall
  - TAWS.

  L2 The TCAS returns to TA/RA mode, when the alert is finished.
- L1 The aircraft is below 1 000 ft±100 ft.

Ident.: DSC-34-SURV-40-10-20-00003477.0001001 / 05 MAY 14

STANDBY (STBY) MODE

In the standby mode, the TCAS does not perform any TCAS function, and does not trigger any alert.
The PFD and the ND do not display any TCAS information.

On ground, the STBY mode is associated with:
- The TCAS STBY message on the ND
- The TCAS STBY memo.

In flight, the STBY mode is associated with:
- The TCAS STBY message on the ND
- The SURV TCAS STBY ECAM Alert.

TCAS DISPLAY SELECTION

Applicable to: ALL

Ident.: DSC-34-SURV-40-10-30-00003470.0001001 / 30 APR 14

The ND displays intruders that enter the zone surrounding the aircraft, when:
- In ROSE or ARC mode
- • The flight crew presses the TRAF pb on the EFIS CP, or
  • The flight crew did not press the TRAF pb on the EFIS CP, and the TCAS triggers an alert.

Note: If the ND is in PLAN mode, the ND does not display intruders.

When the aircraft is below 1 700 ft AGL, all advisories indicating intruders below 380 ft AGL are inhibited.

L2 The TCAS manages up to 60 intruders, but the ND displays the 8 most threatening intruders only.

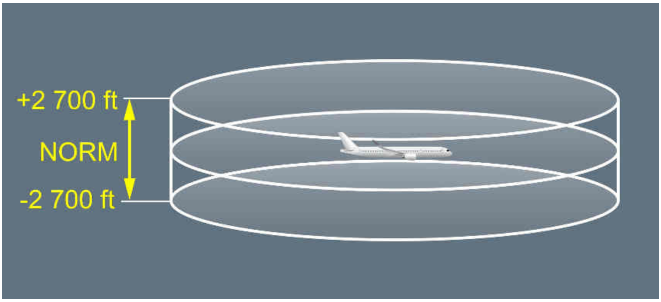
L1 There are three types of TCAS displays:
- Normal (NORM)
- Above (ABV)
- Below (BLW).

Ident.: DSC-34-SURV-40-10-30-00003478.0001001 / 30 APR 14

NORMAL

NORM is the default selection.
In NORM, the TCAS displays intruders that are between 2 700 ft below, and 2 700 ft, above the aircraft.

Normal Mode



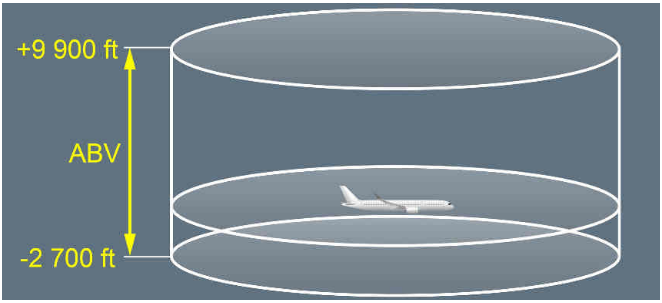
In order to select the NORM TCAS display, the flight crew can:
- Deselect the ABV pb and the BLW pb on the SURV panel, or
- Select the NORM option on the SURV/CONTROLS page of the MFD.

Ident.: DSC-34-SURV-40-10-30-00003479.0001001 / 30 APR 14

ABOVE (ABV)

In ABV mode, the TCAS displays intruders that are between 2 700 ft below, and 9 900 ft above, the aircraft.

Above Mode



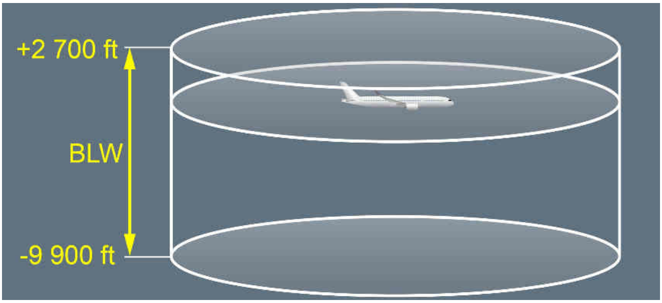
In order to select the ABV TCAS display, the flight crew can:
- Press the ABV pb on the SURV panel, or
- Select the ABV option on the SURV/CONTROLS page of the MFD.

Ident.: DSC-34-SURV-40-10-30-00003480.0001001 / 30 APR 14

BELOW (BLW)

In BLW mode, the TCAS displays intruders that are between 9 900 ft below, and 2 700 ft above, the aircraft.

Below Mode



In order to select the BLW TCAS display, the flight crew can:

- Press the BLW pb on the SURV panel, or
- Select the BLW option on the SURV/CONTROLS page of the MFD.

Ident.: DSC-34-SURV-40-10-30-00021398.0001001 / 02 APR 15

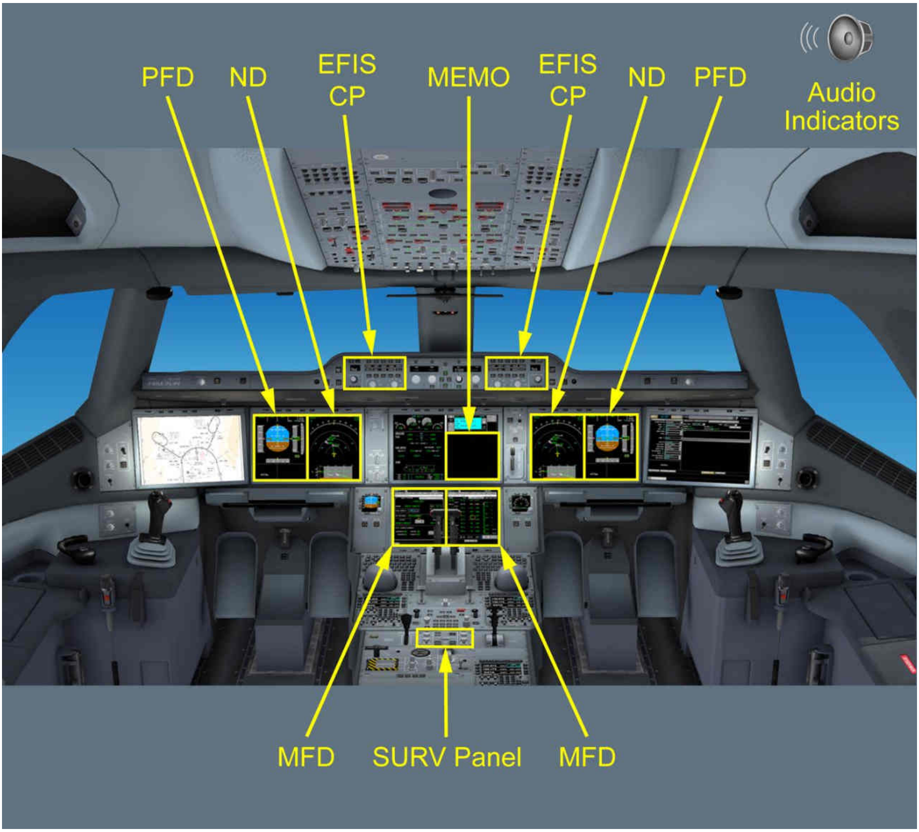
AUTO RANGE/MODE

The AUTO RANGE/MODE function automatically changes the ND setting to the most appropriate range and mode, in particular for specific operational situations.
In the case of TA or RA alert, the ND automatically changes range to 20 NM and mode to ROSE-NAV. The ND displays the AUTO RANGE/MODE message.

COCKPIT VIEW

Ident.: DSC-34-SURV-40-20-00003481.0001001 / 30 APR 14
Applicable to: ALL

Cockpit View


PFD
ND
EFIS CP
MEMO
EFIS CP
ND
PFD
Audio Indicators
MFD
SURV Panel
MFD

AUDIO INDICATORS

Ident.: DSC-34-SURV-40-20-00003488.0001001 / 04 MAY 16
Applicable to: ALL

L12

Audio Indicator	Condition or Cause	Duration
Traffic, Traffic (Synthetic voice)	The TCAS triggers a TA. For more information on the procedure, *Refer to PRO-ABN-SURV [MEM] TCAS CAUTION - TRAFFIC ADVISORY*.	Sounds one time.
Climb, climb (Synthetic voice)	The TCAS triggers a corrective RA. The aircraft must climb with the vertical speed that is indicated by the green area on the vertical speed scale of the PFD. For more information on the procedure, *Refer to PRO-ABN-SURV [MEM] TCAS WARNING - RESOLUTION ADVISORY*.	Sounds one time.
Climb crossing climb, climb crossing climb (Synthetic voice)	The TCAS triggers a corrective RA, and the aircraft will cross the intruder's altitude. The aircraft must climb with the vertical speed that is indicated by the green area on the vertical speed scale of the PFD. For more information on the procedure, *Refer to PRO-ABN-SURV [MEM] TCAS WARNING - RESOLUTION ADVISORY*.	Sounds one time.
Increase climb, increase climb (Synthetic voice)	The TCAS triggers a corrective RA, and has already triggered a CLIMB alert. The vertical speed is not sufficient to achieve safe vertical separation. For more information on the procedure, *Refer to PRO-ABN-SURV [MEM] TCAS WARNING - RESOLUTION ADVISORY*.	Sounds one time.

Continued on the following page

Continued from the previous page

Audio Indicator	Condition or Cause	Duration
Climb climb now, Climb climb now (Synthetic voice)	The TCAS triggers a corrective RA, and has already triggered a DESCEND alert. The intruder's trajectory has changed. For more information on the procedure, *Refer to PRO-ABN-SURV [MEM] TCAS WARNING - RESOLUTION ADVISORY*.	Sounds one time.
Descend, descend (synthetic voice)	The TCAS triggers a corrective RA. The aircraft must descend with the vertical speed that is indicated by the green area on vertical speed scale of the PFD. For more information on the procedure, *Refer to PRO-ABN-SURV [MEM] TCAS WARNING - RESOLUTION ADVISORY*.	Sounds one time.
Descend crossing descend, descend crossing descend (Synthetic voice)	The TCAS triggers a corrective RA, and the aircraft will cross the intruder's altitude. The aircraft must descend with the vertical speed that is indicated by the green area on vertical speed scale of the PFD. For more information on the procedure, *Refer to PRO-ABN-SURV [MEM] TCAS WARNING - RESOLUTION ADVISORY*.	Sounds one time.
Increase descent, increase descent (Synthetic voice)	The TCAS triggers a corrective RA, and has already triggered a DESCEND alert. The vertical speed is not sufficient to achieve safe vertical separation. For more information on the procedure, *Refer to PRO-ABN-SURV [MEM] TCAS WARNING - RESOLUTION ADVISORY*.	Sounds one time.
Descend descend now, descend descend now (Synthetic voice)	The TCAS triggers a corrective RA, and has already triggered a CLIMB alert. The intruder's trajectory has changed. For more information on the procedure, *Refer to PRO-ABN-SURV [MEM] TCAS WARNING - RESOLUTION ADVISORY*.	Sounds one time.

Continued on the following page

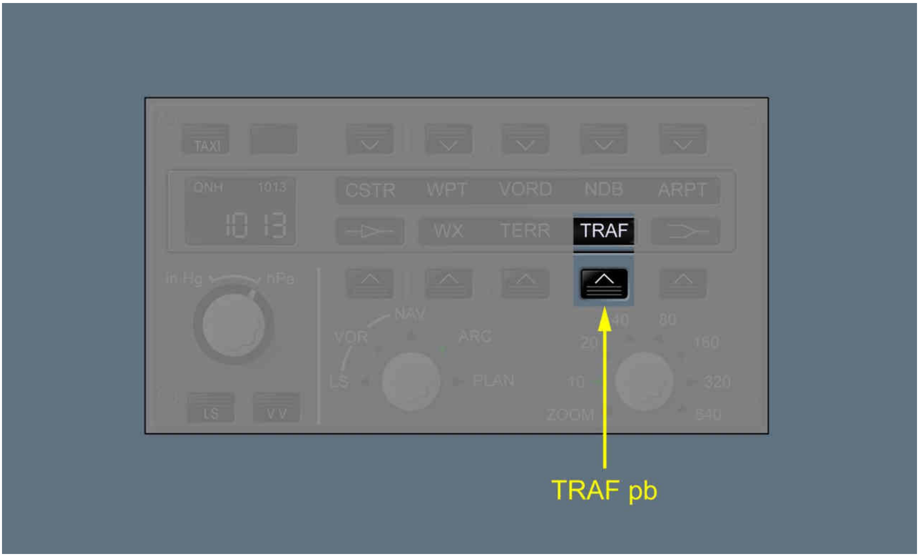
Continued from the previous page

Audio Indicator	Condition or Cause	Duration
Level off, Level off (Synthetic voice)	The TCAS triggers a corrective RA. The flight crew must reduce the vertical speed that is indicated by the green area on vertical speed scale of the PFD. For more information on the procedure, *Refer to PRO-ABN-SURV [MEM] TCAS WARNING - RESOLUTION ADVISORY*.	Sounds one time.
Monitor vertical speed (Synthetic voice)	The TCAS triggers a preventive RA. The flight crew must ensure that vertical speed remains outside the red area on the vertical speed scale of the PFD. For more information on the procedure, *Refer to PRO-ABN-SURV [MEM] TCAS WARNING - RESOLUTION ADVISORY*.	Sounds one time.
Maintain vertical speed maintain (Synthetic voice)	The TCAS triggers a corrective RA. The flight crew must maintain the vertical speed that is indicated in the green area on the vertical speed scale of the PFD. For more information on the procedure, *Refer to PRO-ABN-SURV [MEM] TCAS WARNING - RESOLUTION ADVISORY*	Sounds one time.
Maintain vertical speed, crossing maintain (Synthetic voice)	The TCAS triggers a corrective RA, and the aircraft will cross the intruder's altitude. The flight crew must maintain the vertical speed that is indicated in the green area on the vertical speed scale of the PFD. For more information on the procedure, *Refer to PRO-ABN-SURV [MEM] TCAS WARNING - RESOLUTION ADVISORY*.	Sounds one time.
Clear of conflict (Synthetic voice)	The range increases, and separation is sufficient.	Sounds one time.

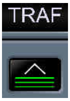
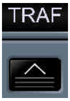
EFIS CONTROL PANEL

Ident.: DSC-34-SURV-40-20-00003482.0001001 / 30 APR 14
Applicable to: ALL

EFIS CP


TAXI
QNH
1013
10 13
CSTR
WPT
VORD
NDB
ARPT
WX
TERR
TRAF
in Hg
hPa
NAV
VOR
ARC
LS
PLAN
40
80
20
160
10
320
ZOOM
640
LS
V V
TRAF pb

TRAF pb

	The onside ND displays traffic information.
	The onside ND does not display traffic information.

MEMO

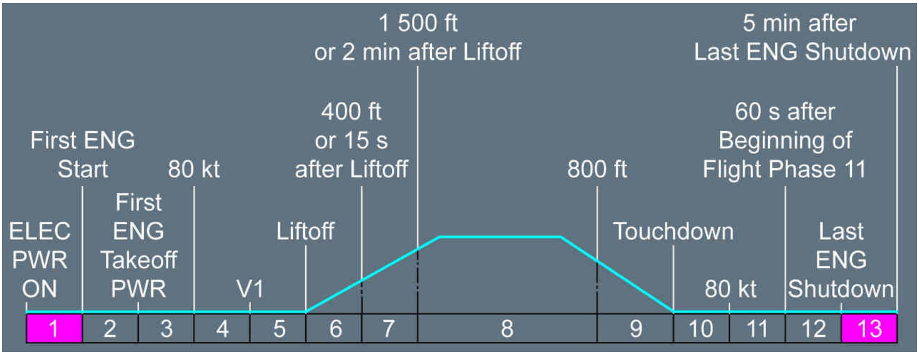
Ident.: DSC-34-SURV-40-20-00003487.0001001 / 30 APR 14
Applicable to: ALL

L12

TCAS STBY	On ground, the flight crew: - Selects STBY in the TCAS mode option list on the SURV CONTROLS page of the MFD, or - Selects STBY in the XPDR mode option list on the SURV CONTROLS page of the MFD, or - Sets the ALT RPTG button to OFF on the SURV CONTROLS page of the MFD. Appears on the ND and the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition

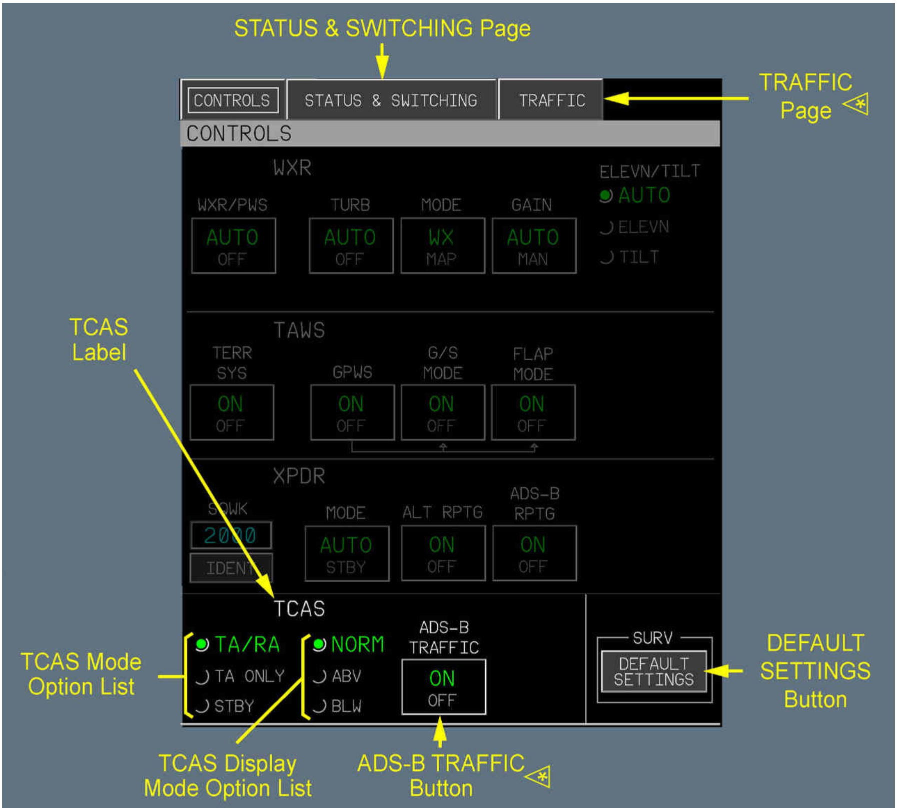

1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

Applicable to: ALL

Ident.: DSC-34-SURV-40-20-20-00003491.0001001 / 14 JUN 16

CONTROLS PAGE

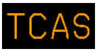
SURV CONTROLS Page


STATUS & SWITCHING Page
TRAFFIC Page
CONTROLS
STATUS & SWITCHING
TRAFFIC
CONTROLS
WXR
WXR/PWS
AUTO OFF
TURB
AUTO OFF
MODE
WX MAP
GAIN
AUTO MAN
ELEVN/TILT
AUTO
ELEVN
TILT
TAWS
TERR SYS
ON OFF
GPWS
ON OFF
G/S MODE
ON OFF
FLAP MODE
ON OFF
XPDR
SQWK
2000
IDENT
MODE
AUTO STBY
ALT RPTG
ON OFF
ADS-B RPTG
ON OFF
TCAS
TA/RA
TA ONLY
STBY
NORM
ABV
BLW
ADS-B TRAFFIC
ON OFF
SURV
DEFAULT SETTINGS
TCAS Label
TCAS Mode Option List
TCAS Display Mode Option List
ADS-B TRAFFIC Button
DEFAULT SETTINGS Button

Ident.: DSC-34-SURV-40-20-20-00003492.0001001 / 30 APR 14

TCAS LABEL

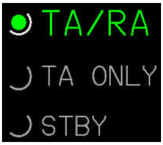
TCAS	TCAS is on.



The TCAS or XPDR is failed.

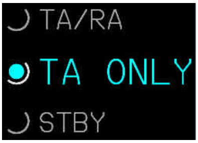
Ident.: DSC-34-SURV-40-20-20-00003493.0001001 / 05 MAY 14

TCAS MODE OPTION LIST


TA/RA
TA ONLY
STBY

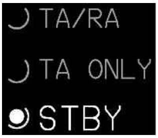
The flight crew selects the TA/RA mode.

L12


TA/RA
TA ONLY
STBY

The flight crew selects the TA ONLY mode.
Associated with the TA ONLY message on the ND.

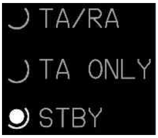
L12


TA/RA
TA ONLY
STBY

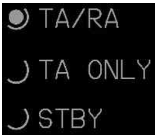
The flight crew selects the STBY mode. The TCAS does not provide any alerts or displays.

On ground, the STBY mode is associated with:
- The TCAS STBY message on the ND
- The TCAS STBY memo.

In flight, the STBY mode is associated with:
- The TCAS STBY message on the ND
- The SURV TCAS STBY ECAM alert.


TA/RA
TA ONLY
STBY

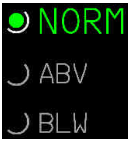
The XPDR is on standby.


TA/RA
TA ONLY
STBY

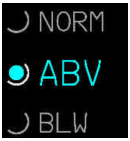
The TCAS or XPDR is failed.

Ident.: DSC-34-SURV-40-20-20-00003494.0001001 / 04 MAY 16

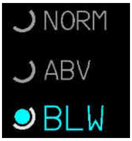
TCAS DISPLAY MODE OPTION LIST



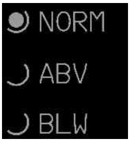
The flight crew selects the NORM mode.



The flight crew selects the ABV mode.



The flight crew selects the BLW mode.



- The XPDR is on standby, or
- The TCAS or XPDR is failed.

Ident.: DSC-34-SURV-40-20-20-00003495.0001001 / 30 APR 14

DEFAULT SETTINGS BUTTON

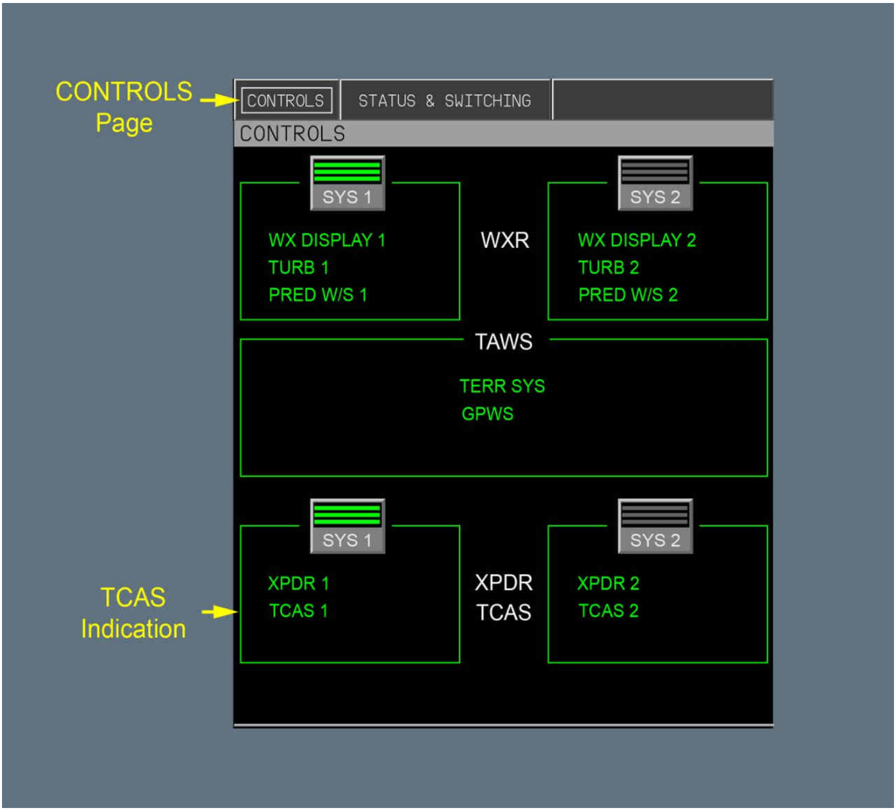
DEFAULT SETTINGS

When clicked, automatically sets all the TCAS settings to their default position on both MFDs. A confirmation is necessary in order to set the default positions.

- The TCAS mode option list is set to TA/RA
- The TCAS display mode option list is set to NORM.

STATUS & SWITCHING PAGE

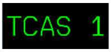
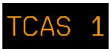
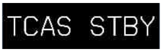
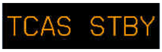
SURV STATUS & SWITCHING Page


CONTROLS
Page
TCAS
Indication
CONTROLS
STATUS & SWITCHING
CONTROLS
SYS 1
SYS 2
WX DISPLAY 1
TURB 1
PRED W/S 1
WXR
WX DISPLAY 2
TURB 2
PRED W/S 2
TAWS
TERR SYS
GPWS
SYS 1
SYS 2
XPDR 1
TCAS 1
XPDR
TCAS
XPDR 2
TCAS 2

- Green indicates that the function is on
  The green box indicates that the function is selected.
- White indicates that the function is set to OFF, or is on standby
- Amber indicates that the function is failed.

Ident.: DSC-34-SURV-40-20-20-00003497.0001001 / 30 APR 14

TCAS INDICATION

	The TCAS is on, on SURV SYS 1(2).
	The TCAS is failed on SURV SYS 1(2).
	The TCAS is not operating on SURV SYS 1(2).
	The TCAS is failed, and set to OFF.

Ident.: DSC-34-SURV-40-20-20-00023563.0001001 / 07 MAY 18

ADS-B TRAFFIC BUTTON ◁

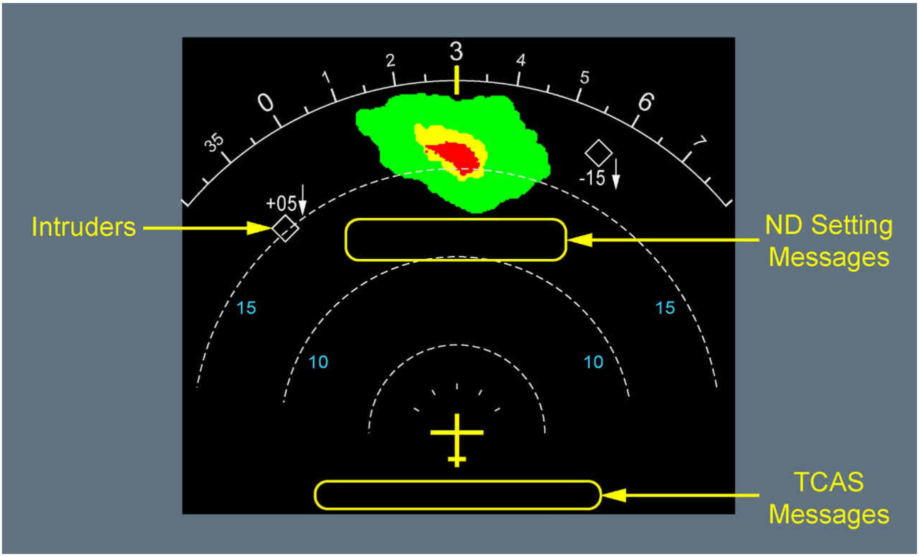
This button is displayed when the ADS-B Traffic option is available on the aircraft. More information is available in ADS-B Traffic section.

ND

Applicable to: ALL

Ident.: DSC-34-SURV-40-20-40-00003485.0001001 / 07 MAY 18

ND


3
2
4
1
5
0
6
35
7
-15
+05
Intruders
ND Setting Messages
15
15
10
10
TCAS Messages

The ND automatically displays the intruders, if the TCAS triggers an alert.

L2 The TRAF pb is automatically selected on the EFIS CP.

Ident.: DSC-34-SURV-40-20-40-00003498.0001001 / 06 MAR 18

INTRUDERS

The following symbols indicate the range and location of intruders:

🟥	An intruder is in the RA range.
🟠	An intruder is in the TA range.
◆	An intruder is in the proximate range.
◇	Other intruder.

These symbols appear with:
- Two digits, that indicate the relative altitude of the intruder (in hundreds of feet)
  They appear below the symbol, if the intruder is below the aircraft, and above the symbol if the intruder is above the aircraft.
- A plus (+) or minus (-) symbol that appears to the left of the digits, and that indicates if the intruder is above (+) or below (-) the aircraft
- An arrow, to the right of the digits, that indicates the vertical movement of the intruder. No arrow appears if the traffic vertical speed is less than 500 ft/min.

When an intruder does not report their altitude, the relative altitude and vertical movement indicators do not appear.

Ident.: DSC-34-SURV-40-20-40-00003499.0001001 / 03 JUL 14

TCAS MESSAGES

22.1 NM +12↑	Provides information (range, relative altitude, and vertical speed arrow) about the two most dangerous RA intruders without bearing.
22.1 NM +12↑	Provides information (range, relative altitude, and vertical speed arrow) about the two most dangerous TA intruders without bearing.
TA ONLY	Automatic selection of the TA ONLY mode or the flight crew selects the TA ONLY mode, by: - Pressing the TA pb on the SURV panel, or - Setting the TCAS mode option list to TA ONLY on the SURV CONTROLS page of the MFD.
TCAS	The TCAS is failed, and the TRAF pb is pressed on the EFIS CP.
TCAS STBY	On ground, the TRAF pb is pressed on the EFIS CP, and: - The TCAS is on standby, or - The XPDR is on standby, or - The XPDR is failed.
TCAS STBY	In flight, the TRAF pb is pressed on the EFIS CP, and: - The TCAS is on standby, or - The XPDR is on standby, or - The XPDR is failed.
TCAS TEST	The TCAS is in test, and the TRAF pb is pressed on the EFIS CP

Ident.: DSC-34-SURV-40-20-40-00022684.0001001 / 02 APR 15

AUTO RANGE/MODE MESSAGE

AUTO RANGE/MODE	Appears in the case of TA or RA alert, and the ND automatically changes range to 20 NM and mode to ROSE-NAV.

Ident.: DSC-34-SURV-40-20-40-00003500.0001001 / 02 APR 15

ND SETTING MESSAGES

If the AUTO RANGE/MODE function is not available, the following ND setting messages appear.

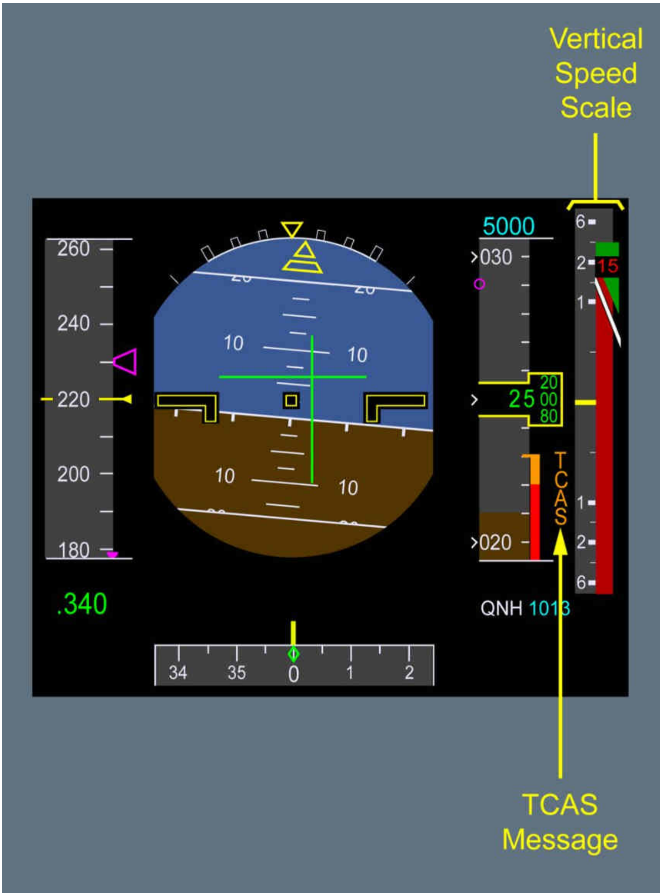
TCAS: INCREASE RANGE	Appears in ROSE-VOR or ROSE-LS mode, when: - The flight crew sets the range selector to ZOOM - The aircraft is not on ground - The TCAS identifies at least one TA intruder.
TCAS: INCREASE RANGE	Appears in ROSE-VOR or ROSE-LS mode, when: - The flight crew sets the range selector to ZOOM - The aircraft is not on ground - The TCAS identifies at least one RA intruder.
TCAS: REDUCE RANGE	Appears, when: - The flight crew selects a range on the EFIS CP that is more than 40 NM - The TCAS identifies at least one TA intruder.
TCAS: REDUCE RANGE	Appears, when: - The flight crew selects a range on the EFIS CP that is more than 40 NM - The TCAS identifies at least one RA intruder.
TCAS: CHANGE MODE	Appears in PLAN mode, when the TCAS identifies at least one TA intruder.
TCAS: CHANGE MODE	Appears in PLAN mode, when the TCAS identifies at least one RA intruder.

PFD

Applicable to: ALL

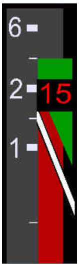
Ident.: DSC-34-SURV-40-20-50-00003486.0001001 / 30 APR 14

PFD


Vertical Speed Scale
260
240
220
200
180
.340
10
10
10
10
5000
030
25
20
00
80
020
QNH 1013
6
2
15
1
1
2
6
TCAS
34
35
0
1
2
TCAS Message

Ident.: DSC-34-SURV-40-20-50-00003501.0001001 / 06 NOV 14

VERTICAL SPEED SCALE



When the TCAS triggers an RA, green and red areas appear instead of the grey background:

- A red area indicates the vertical speed range that is not authorized
- A green area indicates the vertical speed range within which the aircraft should fly, in order to avoid a threat of collision with one or more intruders.

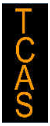
Note: *The aircraft can also fly in the grey vertical speed range area without a threat of collision.*

L3 BACKUP ALTITUDE

In the case of the backup altitude is automatically selected, the TCAS is failed.
For more information on the backup automatic selection,*Refer to DSC-34-NAV-20-30 Backup Speed and Backup Altitude Indications*.
In the case of the backup altitude is manually selected on one side, the TCAS alert indications (red and green areas) are not displayed on the vertical speed scale. These information remain available on the opposite side.
For more information on the backup manual selection, *Refer to DSC-34-NAV-20-20 AIR DATA Selector*.

Ident.: DSC-34-SURV-40-20-50-00003502.0001001 / 30 APR 14

TCAS MESSAGE



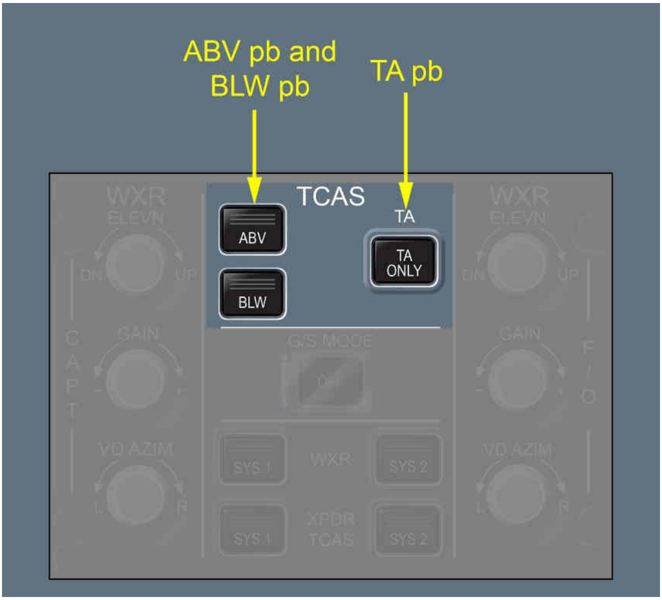
The TCAS is failed.

SURV PANEL

Applicable to: ALL

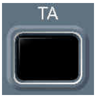
Ident.: DSC-34-SURV-40-20-10-00003483.0001001 / 30 APR 14

SURV Panel


ABV pb and
BLW pb
TA pb
TCAS
ABV
BLW
TA
TA
ONLY
WXR
ELEVN
DN
UP
GAIN
VD AZIM
L
R
CAPT
F/O
G/S MODE
OFF
SYS 1
WXR
SYS 2
SYS 1
XPDR
TCAS
SYS 2

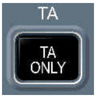
Ident.: DSC-34-SURV-40-20-10-00003489.0001001 / 30 APR 14

TA pb



The TCAS is in TA/RA mode.

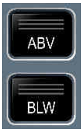
L12



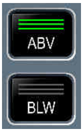
The TCAS is in TA ONLY mode.
Associated with the TA ONLY message on the ND.

Ident.: DSC-34-SURV-40-20-10-00003490.0001001 / 30 APR 14

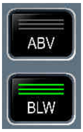
ABV pb AND BLW pb



The TCAS display is in NORM mode.



The TCAS display is in ABV mode.



The TCAS display is in BLW mode.

OVERVIEW

Ident.: DSC-34-SURV-50-10-00003503.0001001 / 30 APR 14
Applicable to: ALL

The transponder (XPDR) responds to Air Traffic Control (ATC) requests, and helps the ground controller to identify and locate each aircraft, and monitor air traffic.
The XPDR supports the TCAS surveillance function, and uses the TCAS/MODE S antennas.
The MFDs display the XPDR status.

Both SURV SYS 1 and SYS 2 interface with the RMPs, in order to:
- Control the transponder code
- Activate the identification function
- Synchronize data displayed on the MFDs.

PRINCIPLE

Ident.: DSC-34-SURV-50-10-00003504.0001001 / 30 APR 14
Applicable to: ALL

The XPDR automatically responds to requests:
- From the ATC, to ensure effective air traffic surveillance
- From another aircraft that has a TCAS, to ensure that traffic alerts are triggered.

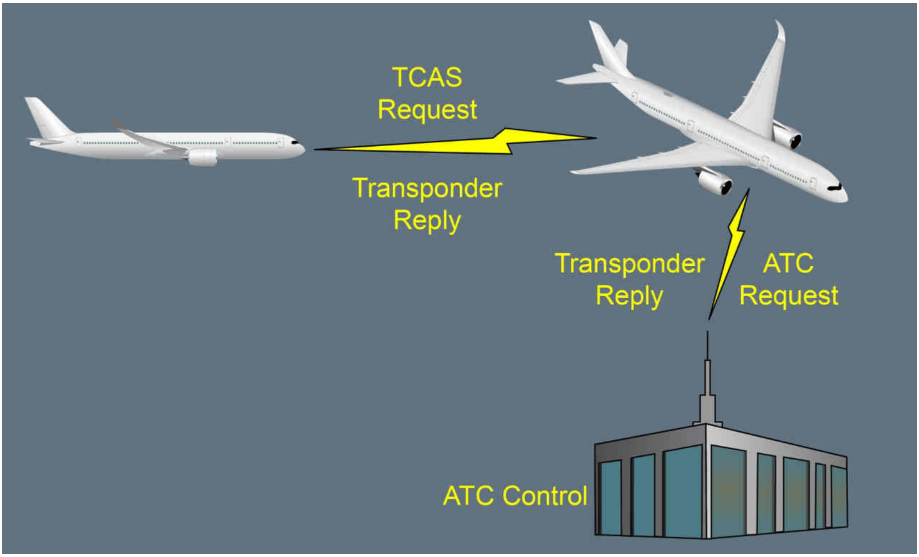
The XPDR provides the ATC with:
- Mode A: Transmission of aircraft identification
- Mode C: Transmission of aircraft barometric altitude
- Mode S ELS / EHS: Selective calling
- Mode ADS-B: Data broadcast.

The XPDR receives information from:
- Aircraft that have a TCAS
- Mode S ground stations.

L2 ADIRUs provide the necessary parameters to each XPDR function on both SURV SYS.

The XPDR transmits the following parameters to the ATC center, upon ground request:
- The indicated airspeed, Mach number, and baro vertical speed, that are supplied by the ADRs
- The magnetic heading, ground speed, track angle, track angle rate, and inertial vertical speed, that are all supplied by the IRs
- The selected altitude and barometric reference settings supplied by the FCUs.

XPDR Principle


TCAS
Request
Transponder
Reply
Transponder
Reply
ATC
Request
ATC Control

XPDR MODES

Ident.: DSC-34-SURV-50-10-00003505.0001001 / 30 APR 14
Applicable to: ALL

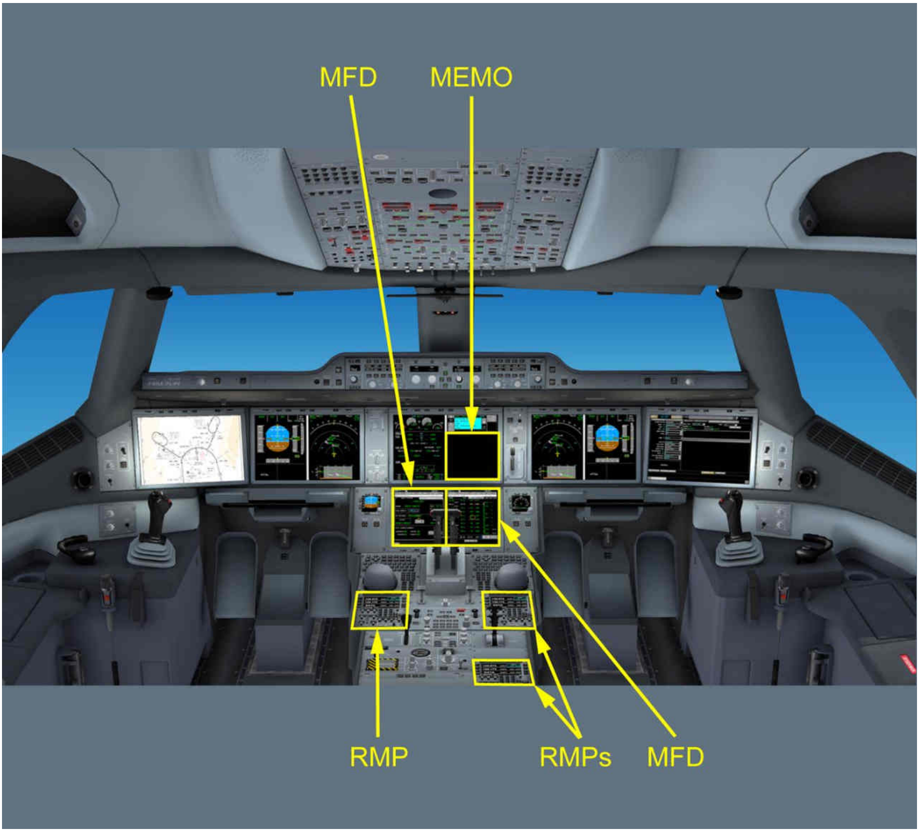
The XPDR has three different modes of operation:

- AUTO
  - In flight, mode S continuously transmits information to other aircraft and replies to requests from aircraft and ground stations
  - On ground, modes A and C are inhibited. Mode S (selective calling) and mode ADS-B (data broadcast) are operative.
- STBY.
  The XPDR does not transmit either reply to ground stations and other aircraft. The TCAS is also in the standby mode.

COCKPIT VIEW

Ident.: DSC-34-SURV-50-20-00000518.0001001 / 30 APR 14
Applicable to: ALL

Cockpit View



MEMO

Applicable to: ALL

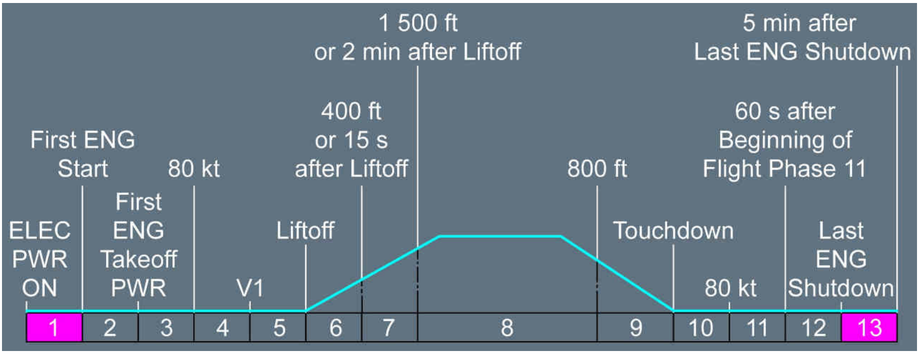
Ident.: DSC-34-SURV-50-20-30-00000541.0001001 / 30 APR 14

L12

ALT RPTG OFF	The flight crew sets the ALT RPTG button to OFF on the SURV CONTROLS page of the MFD. Appears on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition

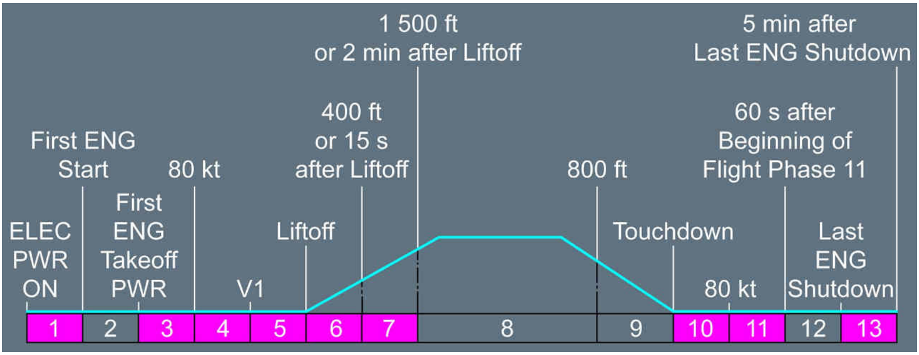

1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

Ident.: DSC-34-SURV-50-20-30-00020424.0002001 / 08 JUL 19

L12

ADS-B POS RPTG LOST	The automatic position reporting of the ADS-B function is lost due to the failure or loss of the aircraft position source. Appears on the WD.

L2 Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

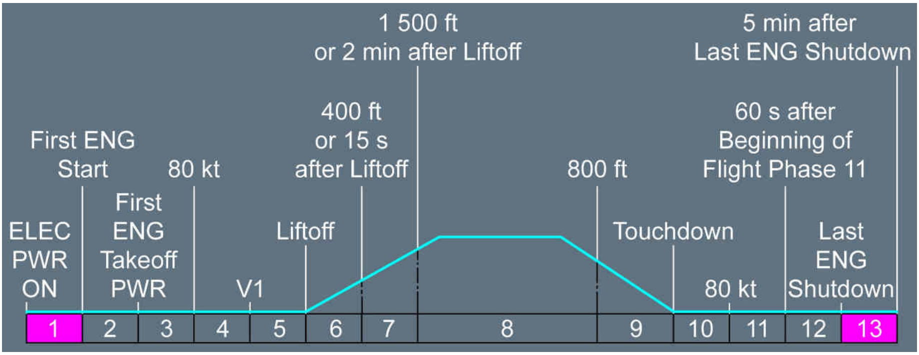
Ident.: DSC-34-SURV-50-20-30-00020423.0001001 / 30 APR 14

L12

ADS-B RPTG OFF	The flight crew has set the ADS-B RPTG button to OFF on the SURV CONTROLS page of the MFD. Appears on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

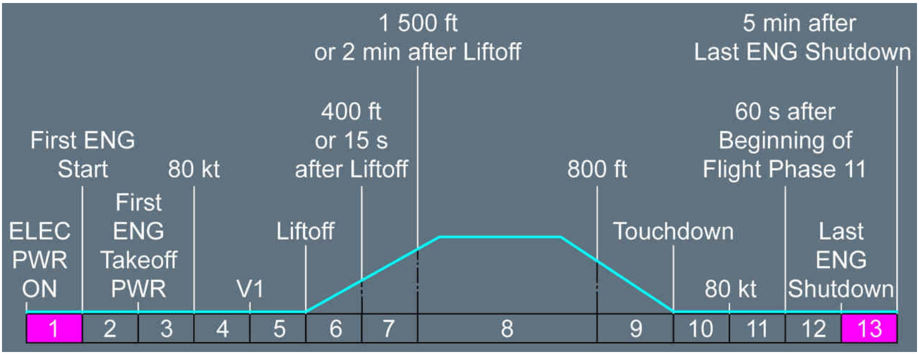
Ident.: DSC-34-SURV-50-20-30-00016714.0001001 / 03 JUL 20

1 L12

XPDR STBY	On ground, the flight crew has set the XPDR MODE button to STBY on the SURV CONTROLS page of the MFD. Appears on the ND and the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition

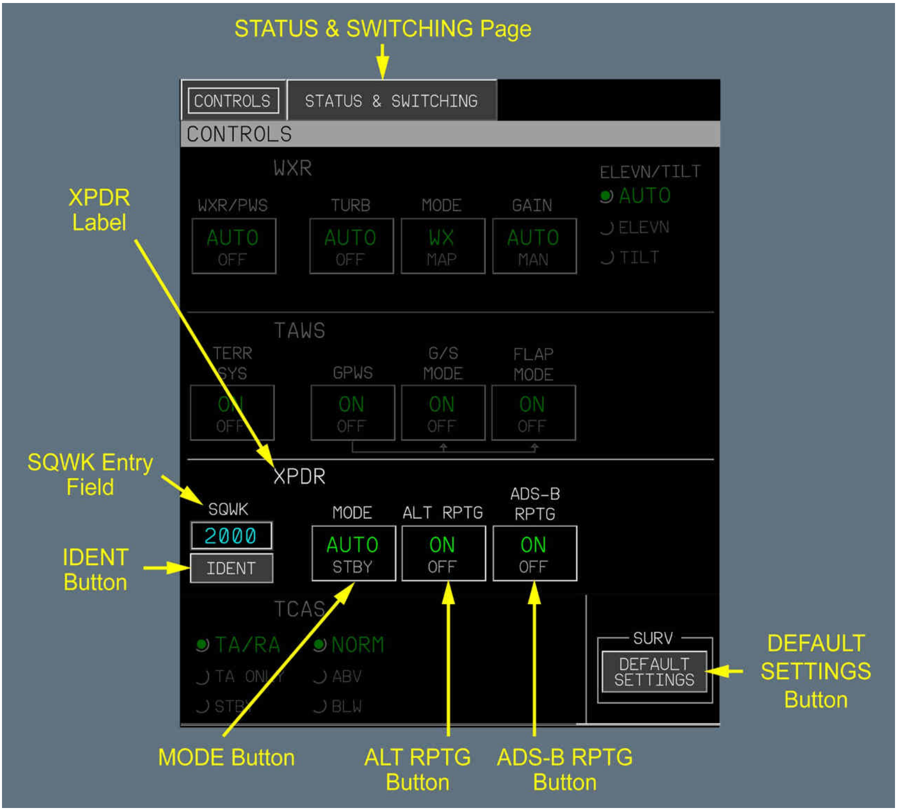

1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

Applicable to: ALL

Ident.: DSC-34-SURV-50-20-20-00000544.0001001 / 03 JUL 20

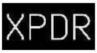
2 CONTROLS PAGE

SURV CONTROLS Page


STATUS & SWITCHING Page
CONTROLS
STATUS & SWITCHING
CONTROLS
WXR
WXR/PWS
AUTO
OFF
TURB
AUTO
OFF
MODE
WX
MAP
GAIN
AUTO
MAN
ELEVN/TILT
AUTO
ELEVN
TILT
XPDR Label
TAWS
TERR SYS
ON
OFF
GPWS
ON
OFF
G/S MODE
ON
OFF
FLAP MODE
ON
OFF
SQWK Entry Field
XPDR
SQWK
2000
IDENT Button
IDENT
MODE
AUTO
STBY
ALT RPTG
ON
OFF
ADS-B RPTG
ON
OFF
TCAS
TA/RA
TA ONLY
STBY
NORM
ABV
BLW
SURV
DEFAULT SETTINGS
DEFAULT SETTINGS Button
MODE Button
ALT RPTG Button
ADS-B RPTG Button

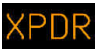
Ident.: DSC-34-SURV-50-20-20-00000545.0001001 / 02 APR 15

XPDR LABEL



The XPDR is on.

L12



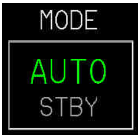
The XPDR is failed.

Associated with one of the following ECAM alerts:
- SURV XPDR 1+2 FAULT (*Refer to procedure*)
- SURV SYS 1+2 FAULT (*Refer to procedure*).

Ident.: DSC-34-SURV-50-20-20-00000546.0001001 / 03 JUL 20

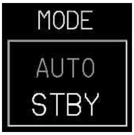
3 XPDR MODE BUTTON

L12



The flight crew selects the AUTO mode.
The XPDR Mode Indication is AUTO on the RMP SQWK page.

L12



The flight crew selects the STBY mode. The XPDR neither transmits information, nor replies to other aircraft or ground stations.

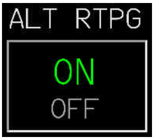
When selected:
- The TCAS display mode option list is no longer available
- The TCAS mode option list is no longer available
- The ALT RPTG button is set to OFF and is no longer available.

On ground, the STBY mode is associated with:
- The XPDR Mode Indication is STBY on the RMP SQWK page
- The STBY message on the RMP HF page, RMP VHF page, and RMP TEL page
- The TCAS STBY message on the ND
- The XPDR STBY and the TCAS STBY memos.

In flight, the STBY mode is associated with:
- The XPDR Mode Indication is STBY on the RMP SQWK page
- The STBY message on the RMP HF page, RMP VHF page, and the RMP TEL page
- The TCAS STBY message on the ND
- The SURV XPDR STBY ECAM alert
- The ADS-B POS RPTG LOST memo.

Ident.: DSC-34-SURV-50-20-20-00000547.0001001 / 05 MAY 14

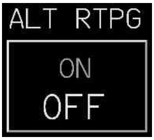
ALT RPTG BUTTON



The flight crew activates the altitude data transmission.

When selected:
- The TA/RA option is selected on the TCAS mode option list
- The NORM option is selected on the TCAS display mode option list.

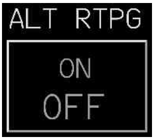
L12



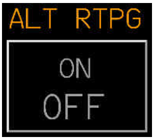
The flight crew deactivates the altitude data transmission.

When selected:
- The TCAS mode option list is not available
- The TCAS display mode option list is not available.

Associated with:
- The TCAS STBY message on the ND
- The ALT RPTG OFF and the TCAS STBY memos.



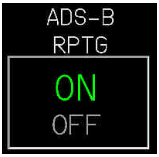
The XPDR is in STBY mode.



The XPDR is failed.

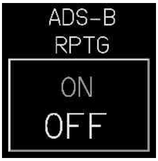
Ident.: DSC-34-SURV-50-20-20-00020422.0001001 / 05 MAY 14

ADS-B RPTG BUTTON



The flight crew activates the broadcast of data.

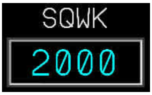
L12



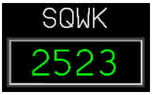
The flight crew deactivates the broadcast of data.
Associated with the ADS-B RPTG OFF memo.

Ident.: DSC-34-SURV-50-20-20-00000548.0001001 / 02 APR 15

SQWK ENTRY FIELD

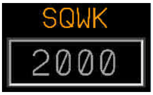


The XPDR is on.
The flight crew can enter the XPDR code in the entry field.



The XPDR is on.
The flight crew modifies the XPDR code in the entry field. It automatically updates the SQWK value on the RMP.

L12

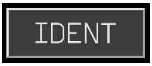


The XPDR is failed.

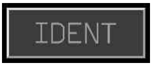
Associated with one of the following ECAM alerts:
- SURV XPDR 1+2 FAULT (*Refer to procedure*)
- SURV SYS 1+2 FAULT (*Refer to procedure*).

Ident.: DSC-34-SURV-50-20-20-00000549.0001001 / 30 APR 14

IDENT BUTTON



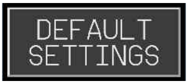
When clicked, the aircraft identification signal is sent.



The XPDR is failed.

Ident.: DSC-34-SURV-50-20-20-00000550.0001001 / 03 JUL 20

4 DEFAULT SETTINGS BUTTON

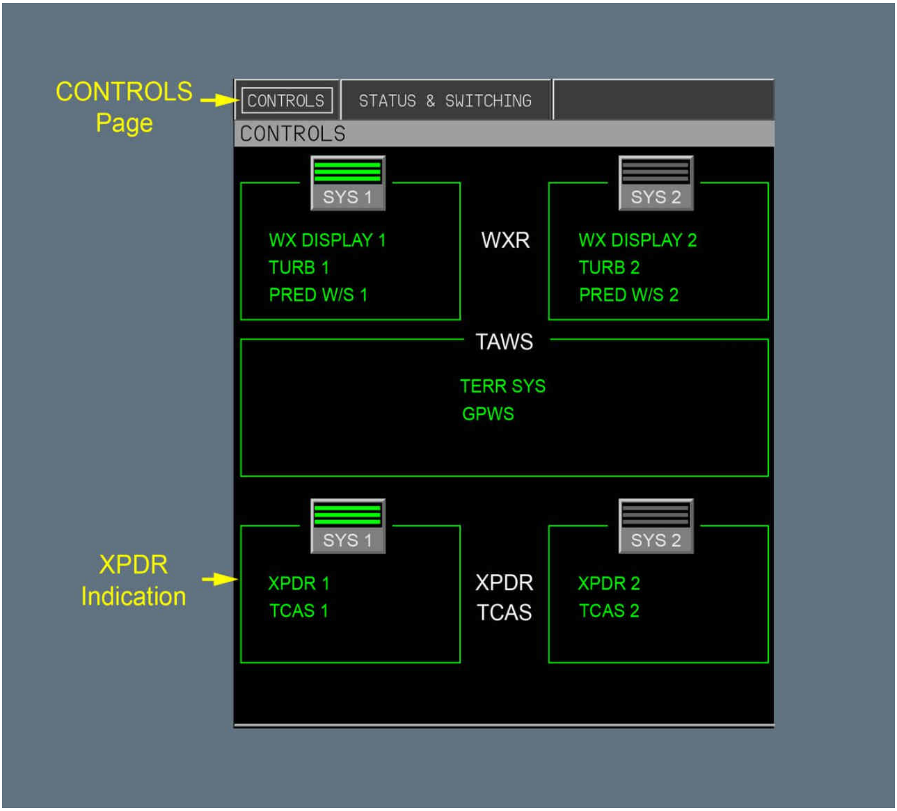


When clicked, automatically sets all the XPDR settings to their default position on both MFDs. A confirmation is necessary in order to set the default positions:

- The MODE button is set to AUTO
- The ALT RPTG button is set to ON
- The ADS-B RPTG button is set to ON.

STATUS & SWITCHING PAGE

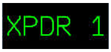
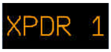
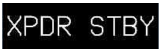
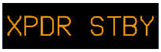
SURV STATUS & SWITCHING Page


CONTROLS Page
CONTROLS
STATUS & SWITCHING
CONTROLS
SYS 1
SYS 2
WX DISPLAY 1
TURB 1
PRED W/S 1
WXR
WX DISPLAY 2
TURB 2
PRED W/S 2
TAWS
TERR SYS
GPWS
XPDR Indication
SYS 1
SYS 2
XPDR 1
TCAS 1
XPDR
TCAS
XPDR 2
TCAS 2

- Green indicates that the function is on
  The green box indicates that the function is selected.
- White indicates that the function is set to OFF, or is on standby
- Amber indicates that the function is failed.

Ident.: DSC-34-SURV-50-20-20-00000552.0001001 / 30 APR 14

XPDR INDICATION

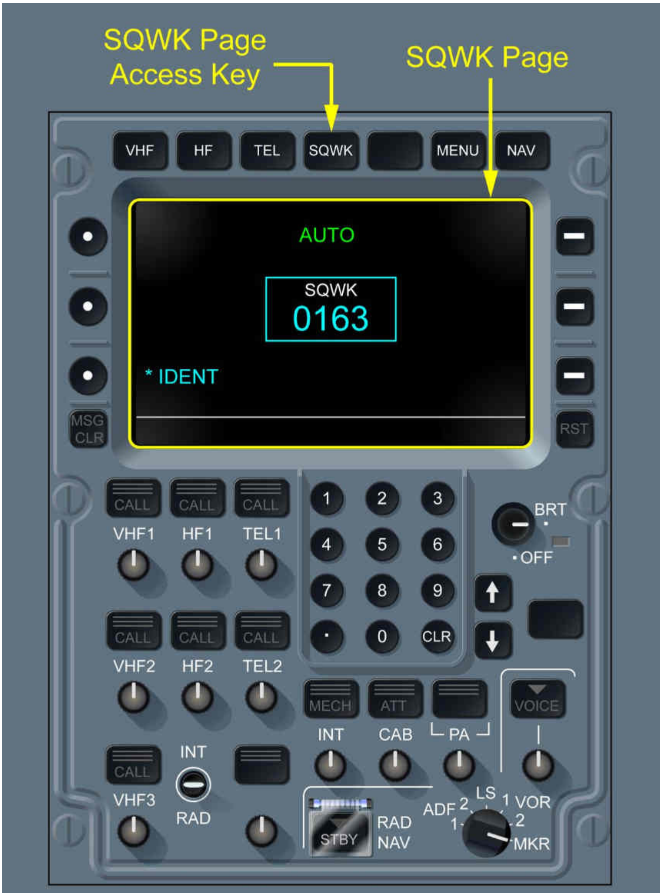
 XPDR 1	The XPDR is on, on SURV SYS 1(2).
 XPDR 1	The XPDR is failed on SURV SYS 1(2).
 XPDR STBY	The XPDR is not operating on SURV SYS 1(2).
 XPDR STBY	The XPDR is failed, and set to OFF.

RMP

Applicable to: ALL

Ident.: DSC-34-SURV-50-20-10-00000519.0001001 / 30 APR 14

RMP


SQWK Page
Access Key
SQWK Page
VHF
HF
TEL
SQWK
MENU
NAV
AUTO
SQWK
0163
* IDENT
MSG CLR
RST
CALL
VHF1
HF1
TEL1
VHF2
HF2
TEL2
VHF3
INT
RAD
1 2 3 4 5 6 7 8 9 · 0 CLR
BRT
OFF
MECH
ATT
INT
CAB
PA
VOICE
STBY
RAD NAV
ADF 2 1
LS
1 VOR 2
MKR

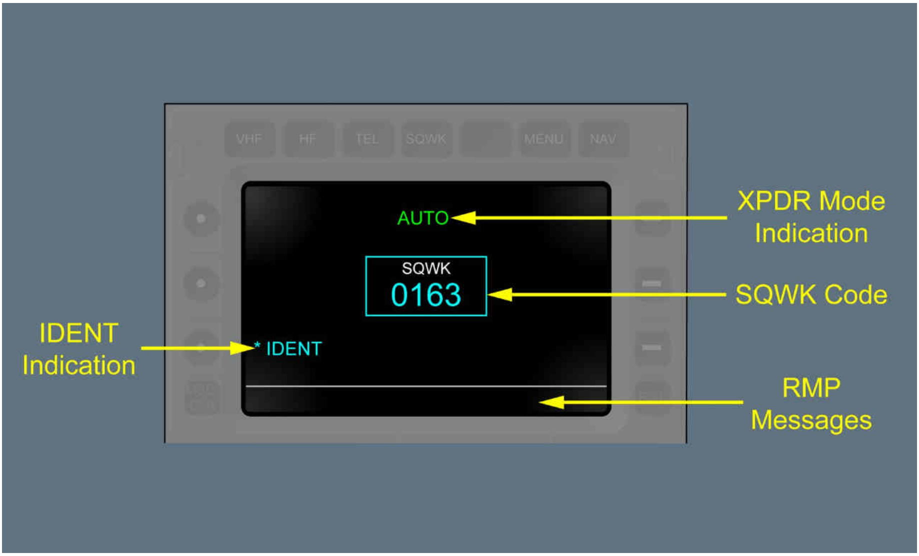
Ident.: DSC-34-SURV-50-20-10-00000542.0001001 / 30 APR 14

SQWK PAGE ACCESS KEY

SQWK	When pressed, RMP 1(2)(3) displays the SQWK page. The flight crew can enter the XPDR code on the SQWK page.

Ident.: DSC-34-SURV-50-20-10-00000543.0001001 / 03 JUL 14

SQWK Page

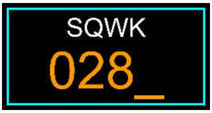

VHF
HF
TEL
SQWK
MENU
NAV
AUTO
SQWK
0163
* IDENT
XPDR Mode Indication
SQWK Code
IDENT Indication
RMP Messages

XPDR MODE INDICATION

AUTO	The flight crew selects the AUTO mode.
STBY	The flight crew selects the STBY mode.

SQWK CODE

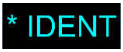
SQWK 0163	The flight crew enters a SQWK code.



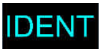
The flight crew enters an erroneous digit in the SQWK code.
Associated with the SQUAWK CODE NOT VALID message in the RMP messages area.

If the flight crew attempts to manually validate the erroneous SQWK code:
- The previous valid code appears, instead of the erroneous SQWK code
- The RMP messages area displays the SQUAWK CODE REVERTED TO PREV ENTRY message.

IDENT INDICATION



The associated ADK 3 key enables the flight crew to send the aircraft identification signal.
This is the default position.



The star symbol disappears for 5 s, after the flight crew presses the ADK 3 key, in order to send the aircraft identification signal.

RMP MESSAGES

SQUAWK CODE NOT VALID	The flight crew enters an erroneous SQWK code.
SQUAWK CODE REVERTED TO PREV ENTRY	The flight crew attempts to manually validate an erroneous or incomplete SQWK code.
TRANSMITTING IDENT	The aircraft identification signal has been transmitted.

Intentionally left blank

OVERVIEW

Ident.: DSC-34-SURV-60-10-00016476.0001001 / 06 AUG 14
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP

The Automatic Dependent Surveillance - Broadcast (ADS-B) Traffic provides the flight crew with better situation awareness, via the display of information about the airborne traffic.
The ADS-B Traffic is complementary to the TCAS.
L2 For more information about TCAS, *Refer to DSC-34-SURV-40-10 Overview*.

PRINCIPLE

Ident.: DSC-34-SURV-60-10-00016477.0001001 / 08 JUL 19
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP

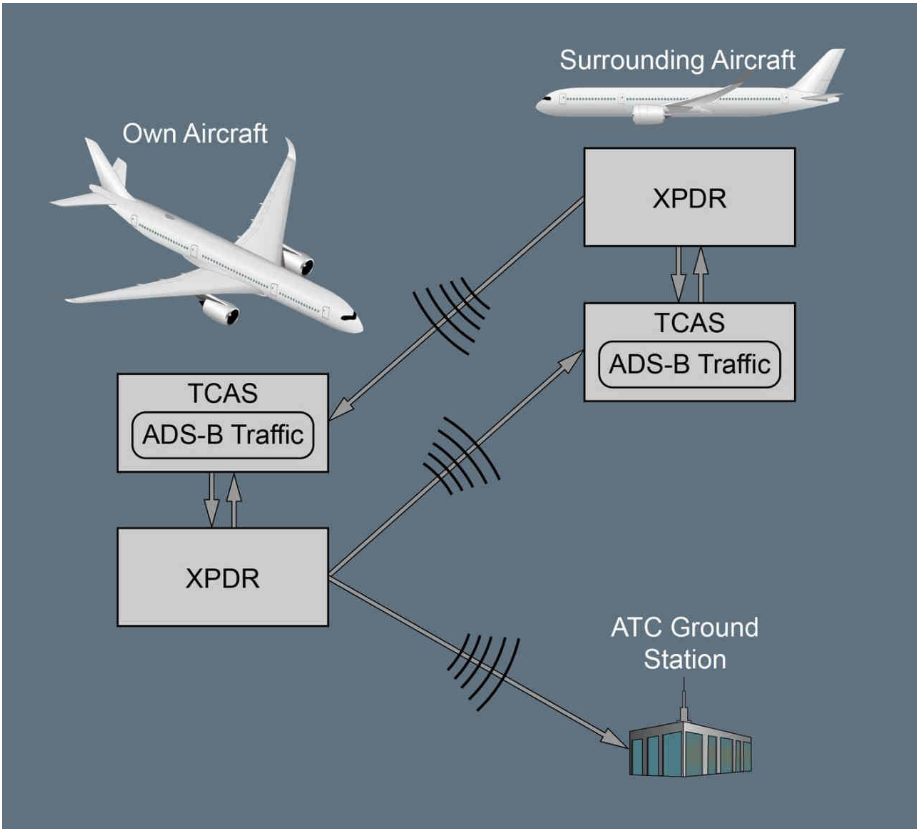
The ADS-B Traffic depends on the TCAS.

The ADS-B Traffic is a tool that assists the flight crew in:
- The visual acquisition of the surrounding aircraft equipped with ADS-B
- The visual separation during Visual Separation Approach (VSA)
- The preparation of a level change with reduced longitudinal separation, referred to as the In-Trail Procedures (ITP).

CAUTION	The flight crew must always confirm the ADS-B Traffic information by visual contact (out of the window) or with ATC. The flight crew must not use the ADS-B Traffic to maneuver or to avoid collision and must always follow the TCAS orders.

The ADS-B Traffic uses information about the surrounding airborne traffic that broadcasts ADS-B data.
L2 For more information on the ADS, *Refer to DSC-46-ATC-10-10 Overview*.
L3 Each aircraft equipped with the ADS-B, automatically and continuously transmits traffic surveillance data to the Air Traffic Control (ATC) ground stations and to other aircraft. The TCAS receives and processes this traffic surveillance data.
The ADIRS computes the relative position of the surrounding traffic, via the GPIRS position.

ADS-B Traffic Principle

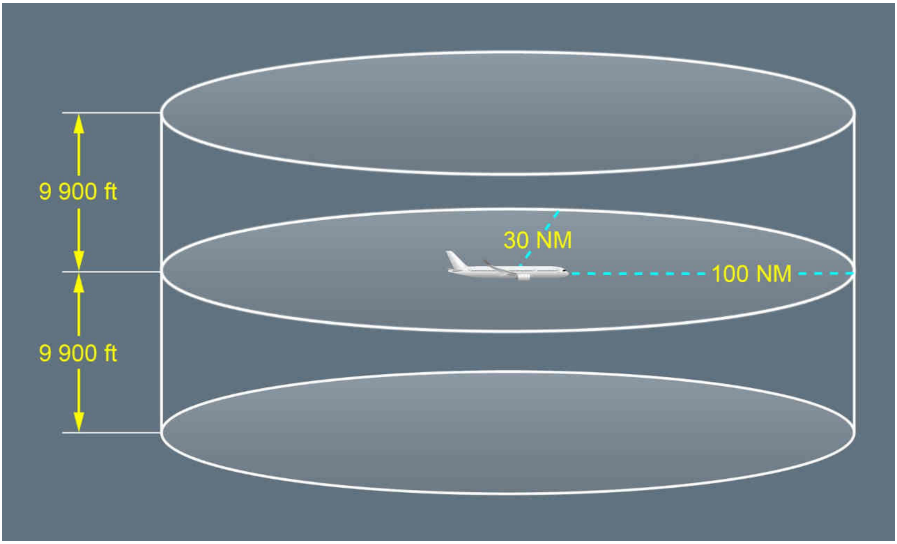

Surrounding Aircraft
Own Aircraft
XPDR
TCAS
ADS-B Traffic
TCAS
ADS-B Traffic
XPDR
ATC Ground Station

L2 The ADS-B Traffic function can:
- Receive ADS-B information from up to 400 aircraft equipped with ADS-B
- Display the traffic information from up to 90 aircraft equipped with the ADS-B on the MFD
- Display up to 8 aircraft equipped with ADS-B on the ND.

L1 RANGE

The ADS-B Traffic detects the aircraft that are in an area defined by the following limits:
- 30 NM on each side of the aircraft
- Up to 100 NM in front of and behind the aircraft, depending on weather conditions
- 9 900 ft above and below the aircraft.

Range Detection of ADS-B Traffic



CONTROLS

The flight crew can interact with the ADS-B Traffic via:
- The ND
- The MFD
- The EFIS CP
- The KCCU.

ADS-B TRAFFIC SYSTEM

The ADS-B Traffic has two redundant systems: ADS-B Traffic 1 and the ADS-B Traffic 2.
The SURV SYS 1(2) hosts the ADS-B Traffic 1(2).

Note: *The ADS-B Traffic 1(2) depends on the TCAS SYS 1(2). In the case of the flight crew sets the ADS-B Traffic to ON, when TCAS SYS 1 is activated, the ADS-B Traffic 1 is activated. When TCAS SYS 2 is activated, the ADS-B Traffic 2 is activated.*

L2 The ADS-B Traffic uses information from the following systems:
- TCAS
- ADIRS
- FMS
- Others.

ADS-B TRAFFIC FUNCTION

Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP

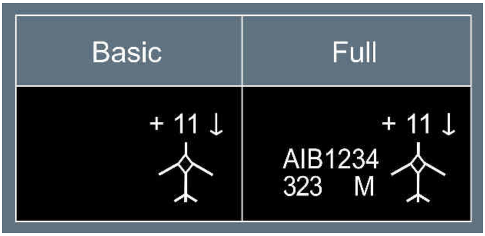
Ident.: DSC-34-SURV-60-10-10-00016478.0001001 / 06 AUG 14

ADS-B TRAFFIC FUNCTION

TRAFFIC DISPLAY ON ND

The ADS-B Traffic can display the surrounding traffic on the ND.

There are two different labels with different level of information about each traffic:
- The basic label displays:
  - The traffic symbol
  - The relative altitude in hundreds of feet
  - The altitude variation.
- The full label displays:
  - The traffic symbol
  - The relative altitude in hundreds of feet
  - The altitude variation
  - The flight identification
  - The ground speed
  - The wake vortex category (L, M or H).



L2 For more information on the traffic symbol and label, *Refer to DSC-34-SURV-60-20 Traffic Information*.

L1 The flight crew can display the surrounding traffic and change the level of information in the label via the TRAF pb on the EFIS CP (*Refer to DSC-34-SURV-60-20 EFIS CP*).

When the flight crew moves the KCCU cursor over one of the traffic symbols:
- A blue square appears around the traffic symbol
- The full label is displayed next to the traffic symbol.

The flight crew can select a traffic on the ND via the KCCU cursor.

Note: When a traffic comes within the range of the TCAS, the traffic symbol changes accordingly. If the ADS-B Traffic is not available or TCAS information does not agree with the ADS-B Traffic information, the basic TCAS symbol is displayed.

TRAFFIC DISPLAY ON MFD

The SURV TRAFFIC page displays a list of the surrounding aircraft.
The flight crew can select a traffic in the list via the KCCU cursor. When the flight crew selects a traffic, the SURV TRAFFIC page displays the traffic information window.

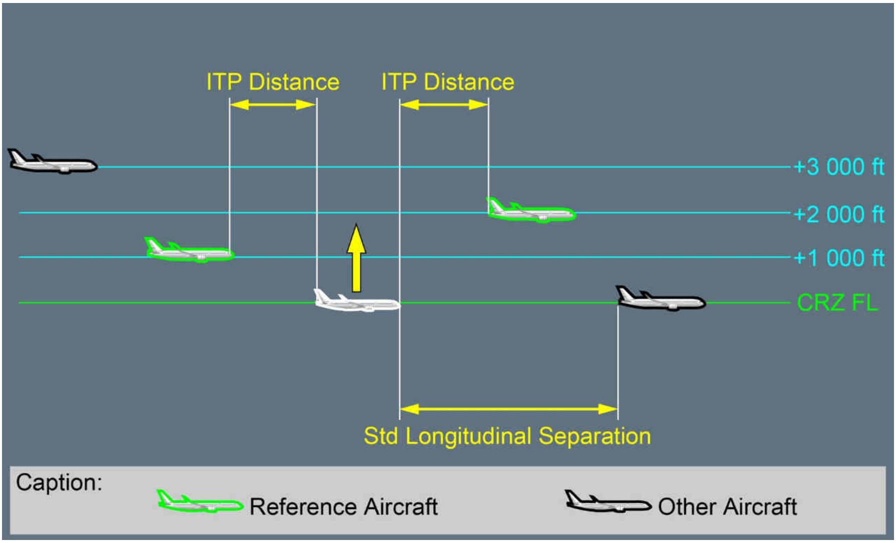
The traffic information window displays the following information about the selected traffic:
- The true or magnetic heading, depending on the position of the TRUE/MAG pb
- The true track of the traffic
- The true heading of the traffic, if the TRK value is not available
- The wake vortex category of the traffic
- The distance between the aircraft and the traffic
- The ground speed of the traffic
- The indicated airspeed of the traffic, if the GS is not available
- The relative altitude of the traffic
- The flight level of the traffic
- The vertical speed of the traffic.

The flight crew can use the list to prepare an In-Trail Procedure (ITP).

Ident.: DSC-34-SURV-60-10-10-00016479.0001001 / 02 APR 15

IN-TRAIL PROCEDURE (ITP)

The In-Trail Procedure (ITP) assists the flight crew in the preparation of a flight level change with reduced longitudinal separation.
At the end of the preparation, the ITP function prepares a text message that the flight crew can transfer to the mailbox and send to the ATC.


ITP Distance
ITP Distance
+3 000 ft
+2 000 ft
+1 000 ft
CRZ FL
Std Longitudinal Separation
Caption:
Reference Aircraft
Other Aircraft

The ITP is mainly used in oceanic areas or areas that do not have radar coverage.

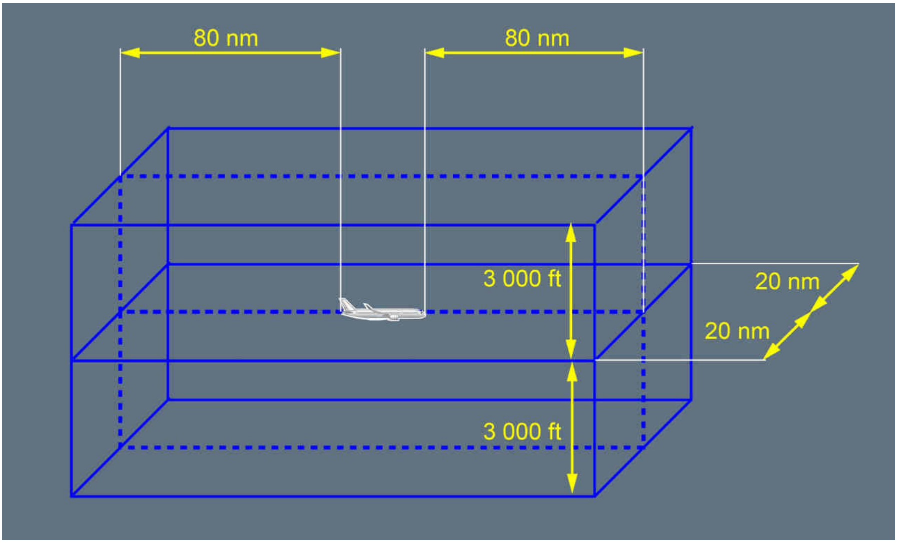
The ITP traffic list displays all the traffic that:

- Have the same track as this aircraft

L2 Traffic is considered to have the same track when its relative track is less than 45 °.

L1
- Are equipped with ADS-B
- Are in the area illustrated below.

The minimum ITP altitude change is 1 000 ft, the maximum ITP altitude change is 3 000 ft, and the maximum ITP longitudinal separation is 80 NM.


80 nm
80 nm
3 000 ft
3 000 ft
20 nm
20 nm

L2 For more information on the ITP, *Refer to DSC-34-SURV-60-30 How To Perform an In Trail Procedure*.

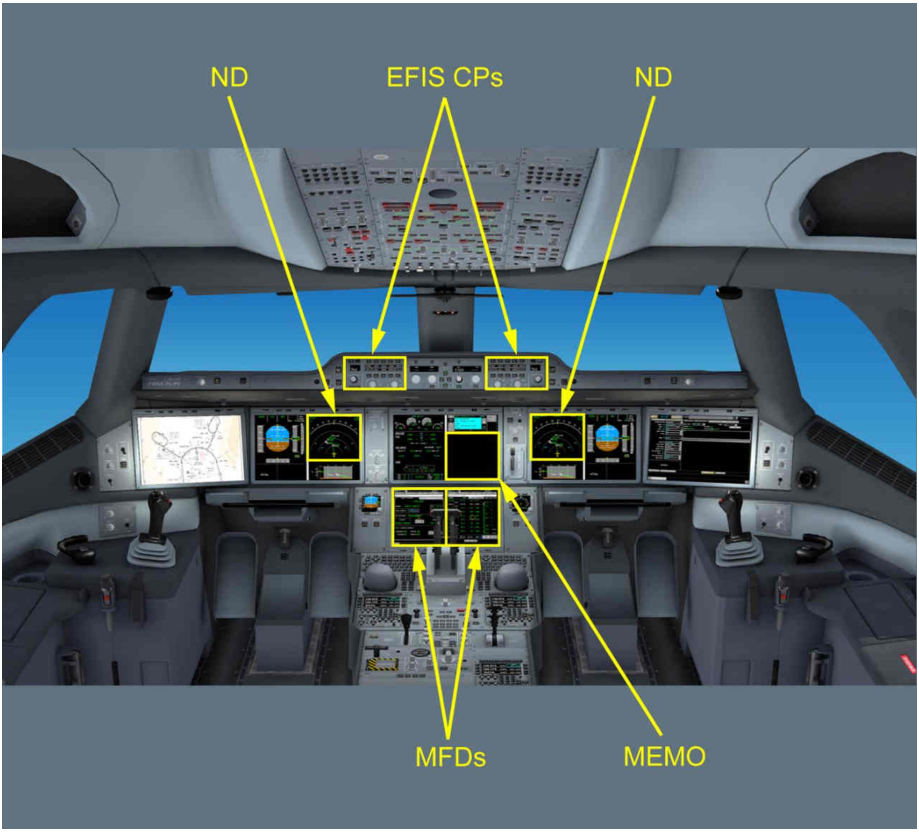
Intentionally left blank

COCKPIT VIEW

Ident.: DSC-34-SURV-60-20-00016480.0001001 / 06 AUG 14

Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP

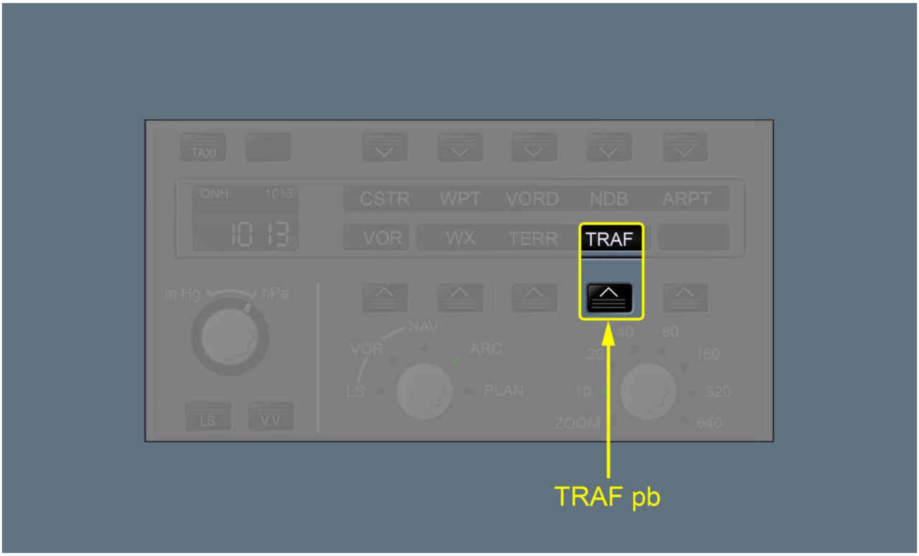
Cockpit View



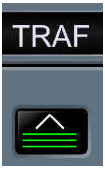
EFIS CP

Ident.: DSC-34-SURV-60-20-00016481.0001001 / 02 OCT 14
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP

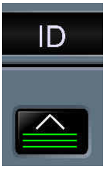
EFIS CP


TAXI
QNH 1013
1013
CSTR
WPT
VORD
NDB
ARPT
VOR
WX
TERR
TRAF
in Hg
hPa
NAV
VOR
ARC
LS
PLAN
40
80
20
160
10
320
ZOOM
640
LS
VV
TRAF pb

TRAF pb



The onside ND displays the traffic information.



The onside ND displays the traffic information and the traffic flight identification.

The onside ND does not display traffic information.

Note: 1. *If the ADS-B Traffic is not available, the TRAF pb only controls the display of the TCAS symbols (other and proximate)*
2. *To display the full label, the flight crew can also use the FLT ID DISPLAY ON ND button on the SURV TRAFFIC page of the MFD.*

MEMO

Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP

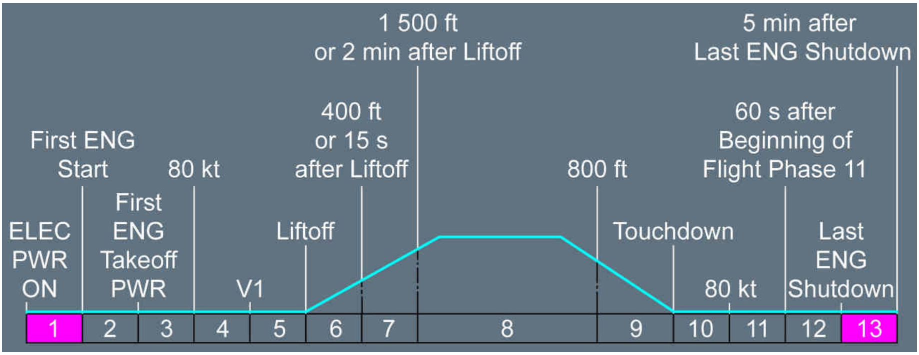
Ident.: DSC-34-SURV-60-20-30-00016492.0001001 / 04 MAY 16

L12

ADS-B TRAFFIC OFF — The flight crew sets the ADS-B TRAFFIC button to OFF, or the TCAS or the XPDR are in STBY mode in flight.
Appears on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

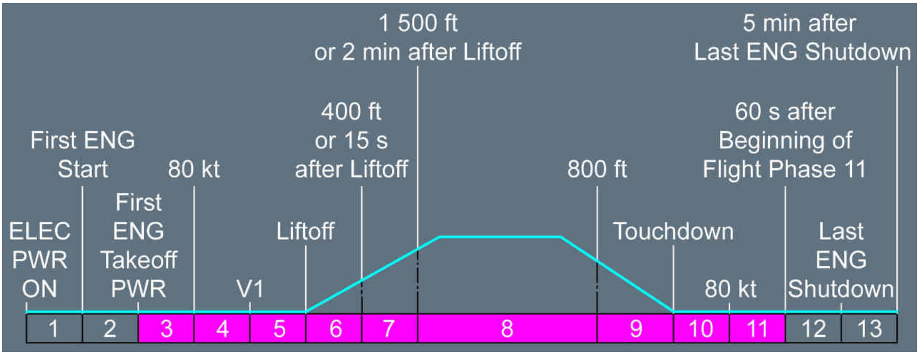
Ident.: DSC-34-SURV-60-20-30-00016493.0001001 / 06 AUG 14

L12

ADS-B TRAFFIC ON — On ground, the TCAS or the XPDR are in STBY mode.
Appears on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition

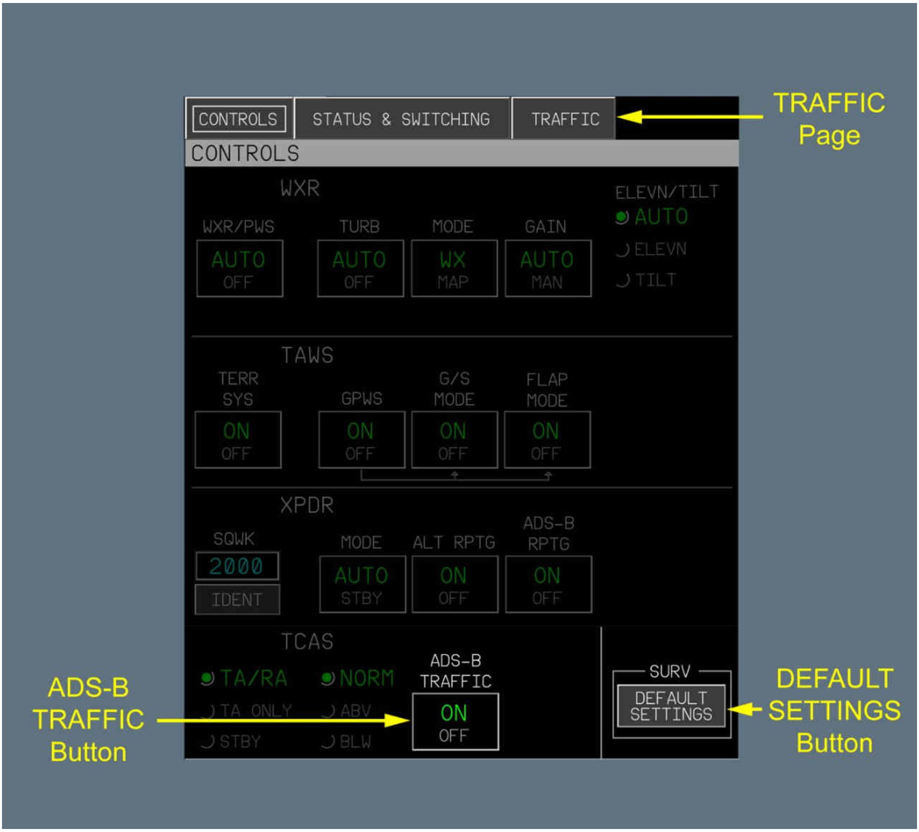

1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

MFD

Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP

Ident.: DSC-34-SURV-60-20-20-00016485.0001001 / 06 AUG 14

MFD SURV Page


CONTROLS
STATUS & SWITCHING
TRAFFIC
CONTROLS
WXR
WXR/PWS
AUTO
OFF
TURB
AUTO
OFF
MODE
WX
MAP
GAIN
AUTO
MAN
ELEVN/TILT
AUTO
ELEVN
TILT
TAWS
TERR SYS
ON
OFF
GPWS
ON
OFF
G/S MODE
ON
OFF
FLAP MODE
ON
OFF
XPDR
SQWK
2000
IDENT
MODE
AUTO
STBY
ALT RPTG
ON
OFF
ADS-B RPTG
ON
OFF
TCAS
TA/RA
TA ONLY
STBY
NORM
ABV
BLW
ADS-B TRAFFIC
ON
OFF
SURV
DEFAULT SETTINGS

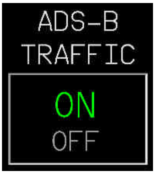
TRAFFIC Page

ADS-B TRAFFIC Button

DEFAULT SETTINGS Button

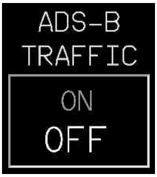
Ident.: DSC-34-SURV-60-20-20-00016486.0001001 / 06 AUG 14

ADS-B TRAFFIC BUTTON



The ADS-B Traffic function is available.
The traffic data appears on both NDs.

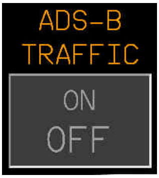
L12



- The ADS-B Traffic function is not available, or
- In flight, the XPDR is in standby.

The traffic data does not appear on any ND, and both TRAFFIC panels of the SURV pages are not available.
Associated with the ADS-B TRAFFIC OFF memo.

L12

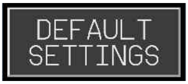


- The ADS-B Traffic function is failed, or
- The TCAS or the XPDR is failed or in standby.

Associated with SURV ADS-B TRAFFIC 1(2) FAULT or SURV ADS-B TRAFFIC 1+2 FAULT ECAM alerts.

Ident.: DSC-34-SURV-60-20-20-00016487.0001001 / 06 AUG 14

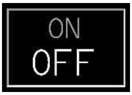
DEFAULT SETTINGS BUTTON



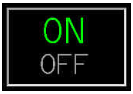
When clicked, a confirmation window appears.
After confirmation, automatically sets the ADS-B TRAFFIC button to ON on both MFDs.

Ident.: DSC-34-SURV-60-20-20-00016488.0001001 / 06 AUG 14

FLT ID DISPLAY ON ND BUTTON



The flight identifications of the traffic do not appear on the associated ND.
This is the default position of the button.



The flight identifications of the traffic that appear on the associated ND are displayed.

Note: *This button has the same function as the TRAF pb of the EFIS CP.*

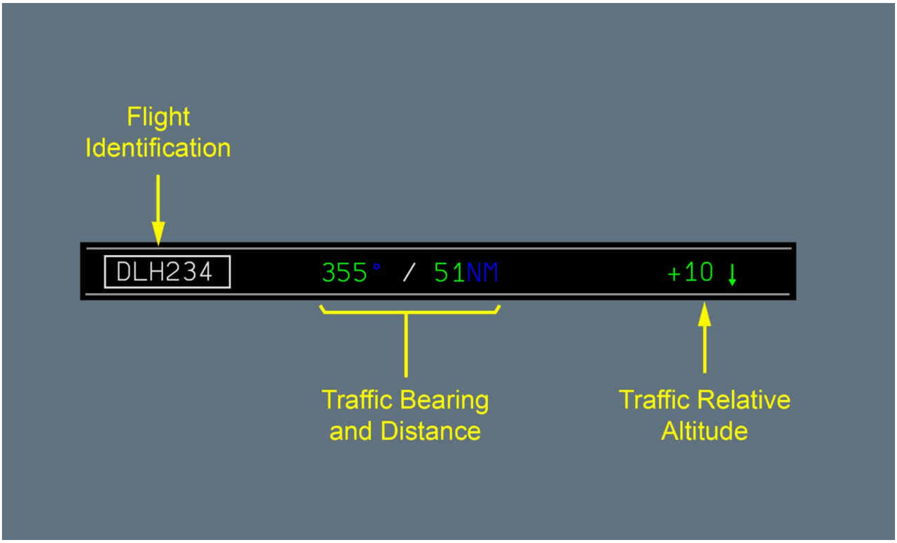
Ident.: DSC-34-SURV-60-20-20-00016489.0001001 / 06 AUG 14

TRAFFIC LIST

This list displays all the traffic that the aircraft can detect, limited to 90 traffic.
The traffic that appear on the ND appear at the top of the list, on a black background. The other traffic appear below, on a dark grey background.

Note: *The flight crew can observe a significant delay for the updating of the traffic list.*

The traffic in these two sub-lists are sorted by alphabetical order of the flight identifications.



FLIGHT IDENTIFICATION

DLH232	Indicates the flight identification of the traffic.
DLH234	The flight crew highlights the traffic.
DLH234	The flight crew selected the traffic. The flight crew can select the traffic via: - The selection of the traffic symbol on the ND, or - The SELECT TRAFF ON ND button.
– – – – – – –	The flight identification is not available. The traffic automatically moves to the end of the corresponding sub-list.

TRAFFIC BEARING AND DISTANCE

Indicates the true or magnetic heading, depending on the position of the TRUE/MAG pb, and the distance of the traffic.
If the bearing value is not available, three dashes appear.

TRAFFIC RELATIVE ALTITUDE

Indicates the relative altitude in hundreds of feet, or the ground status when the traffic is on ground.
A plus (+) or minus (-) symbol appears to the left of the digits, and indicates the position of the traffic based on the position of the aircraft (i.e. the traffic is above (+) or below (-) the aircraft).
An arrow appears to the right of the digits, and indicates the vertical movement of the traffic. No arrow appears when the vertical speed of the traffic is below 500 ft/min.
If the relative altitude is not available, two dashes appear.

Ident.: DSC-34-SURV-60-20-20-00016490.0001001 / 06 AUG 14

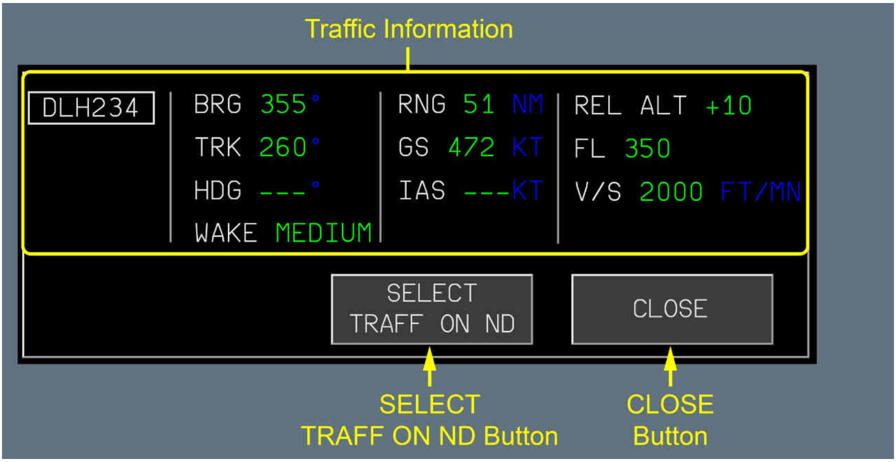
SCROLL BUTTONS

The inner buttons enable the flight crew to move, one by one, downward and upward through the traffic list.
The outer buttons enable the flight crew to move, page by page, downward and upward through the traffic list.

Ident.: DSC-34-SURV-60-20-20-00016491.0001001 / 06 AUG 14

TRAFFIC INFORMATION WINDOW

The traffic information window appears when the flight crew clicks on a traffic area.



DLH234
BRG 355°
TRK 260°
HDG ---°
WAKE MEDIUM
RNG 51 NM
GS 472 KT
IAS ---KT
REL ALT +10
FL 350
V/S 2000 FT/MN

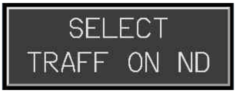
TRAFFIC INFORMATION

Indicates the following data about the selected traffic:

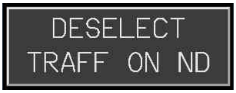
- BRG: The true or magnetic heading, in degrees, depending on the position of the TRUE/MAG pb
- TRK: The true track of the traffic, in degrees
- HDG: The true heading of the traffic, in degrees, if the TRK value is not available
- WAKE: The wake vortex category of the traffic (LIGHT, MEDIUM, or HEAVY)
- RNG: The distance between the aircraft and the traffic, in nautical miles
- GS: The ground speed of the traffic, in knots
- IAS: The indicated airspeed of the traffic, in knots, if the GS is not available
- REL ALT: The relative altitude of the traffic, in hundreds of feet
- FL: The flight level of the traffic
- V/S: The vertical speed of the traffic, in feet per minute.

If the associated information is not available, dashes appear instead of the value.

SELECT TRAFF ON ND BUTTON

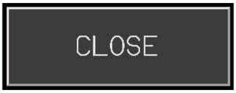


When clicked, the traffic data appears on both NDs, and the label of the button becomes DESELECT TRAFF ON ND.



When clicked, the traffic data no longer appears on the NDs, and the label of the button becomes SELECT TRAFF ON ND.

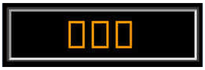
CLOSE BUTTON



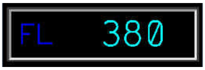
When clicked, closes the traffic information window.

Ident.: DSC-34-SURV-60-20-20-00016591.0001001 / 06 AUG 14

DESIRED FL ENTRY FIELD



The flight crew must enter the flight level value.

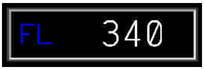


FL 380

The flight crew entered the flight level.

Depending on the value of the DESIRED FL that the flight crew enters, one of the following messages appears:

- ITP LIMITED TO 3000 FT
  This message appears when the flight crew enters a DESIRED FL that exceeds 3 000 ft above or below the current flight level (not in the ITP scope).
  This message informs the flight crew that an altitude change of more than 3 000 ft via the ITP is not possible.
  This message no longer appears when the flight crew enters another value.
- ITP ALT CHANGE > 1000 FT
  This message appears when the flight crew enters a DESIRED FL that does not exceed 1 000 ft above or below the current flight level (not in the ITP scope).
  This message informs the flight crew that an altitude change of less than 1 000 ft via the ITP is not possible.
  This message no longer appears when the flight crew enters another value.
- NO CONFLICTING ADS-B TRAFFIC AT INTERMEDIATE FL
  STANDARD REQUEST READY TO TRANSFER TO MAIL BOX
  This message appears when the ITP is possible (i.e. when there is no conflicting traffic at intermediate flight level).
  The XFR TO MAILBOX button becomes available.



FL 340

The ITP maneuver is engaged.
The entry field is not available, and the VERTICAL MANEUVER IN PROGRESS message appears.

Ident.: DSC-34-SURV-60-20-20-00016592.0001001 / 06 AUG 14

ITP TRAFFIC LIST

For each traffic in the zone of the desired flight level that the flight crew entered, the following information appear:

- The ITP distance
- The aircraft relative position (AHEAD OF/BEHIND) based on the traffic
- The flight identification.

The ITP distance between the aircraft and the traffic, and the relative position of the traffic appear:
- In green when the ITP is possible, or
- In amber when the ITP is not possible.

  In this case, one of the following messages appears to indicate the non-compliance reason:
  - DUE TO REL SPEED, or
  - DUE TO DISTANCE, or
  - DUE TO REL SPEED / DISTANCE.

When the flight crew clicks on a traffic, the traffic information window appears.

Ident.: DSC-34-SURV-60-20-20-00016593.0001001 / 06 AUG 14

ITP STATUS

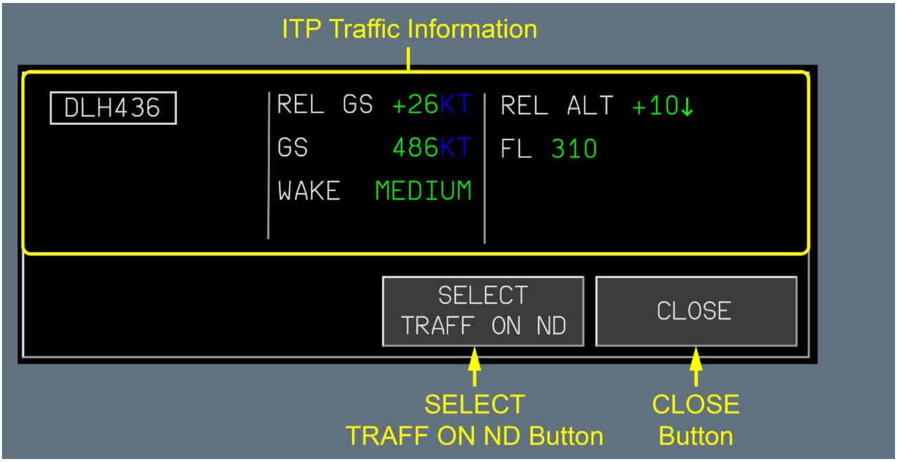
Indicates:
- In green, the time at which the ITP becomes no longer possible, or
- In amber, the time at which the ITP becomes possible.

When the ITP traffic list contains more than two traffic, the TOO MANY TRAFFIC message appears below the status.

Ident.: DSC-34-SURV-60-20-20-00016594.0001001 / 06 AUG 14

ITP TRAFFIC INFORMATION WINDOW

This window only appears when the flight crew clicks on a traffic in the ITP traffic list.


DLH436
REL GS +26KT
GS 486KT
WAKE MEDIUM
REL ALT +10↓
FL 310

ITP TRAFFIC INFORMATION

Indicates the following data about the selected traffic:
- REL GS: The relative ground speed of the traffic, in knots
- GS: The ground speed of the traffic, in knots
- WAKE: The wake vortex category of the traffic (LIGHT, MEDIUM, or HEAVY)
- REL ALT: The relative altitude of the traffic, in hundreds of feet
- FL: The flight level of the traffic.

If the associated information is not available, dashes appear instead of the value.

SELECT TRAFF ON ND BUTTON

SELECT
TRAFF ON ND

When clicked, the traffic data appears on both NDs, and the label of the button becomes DESELECT TRAFF ON ND.

DESELECT
TRAFF ON ND

When clicked, the traffic data no longer appears on the NDs, and the label of the button becomes SELECT TRAFF ON ND.

CLOSE BUTTON

When clicked, closes the ITP traffic information window.

Ident.: DSC-34-SURV-60-20-20-00016595.0001001 / 06 AUG 14

XFR TO MAILBOX BUTTON

L12

XFR
TO MAILBOX

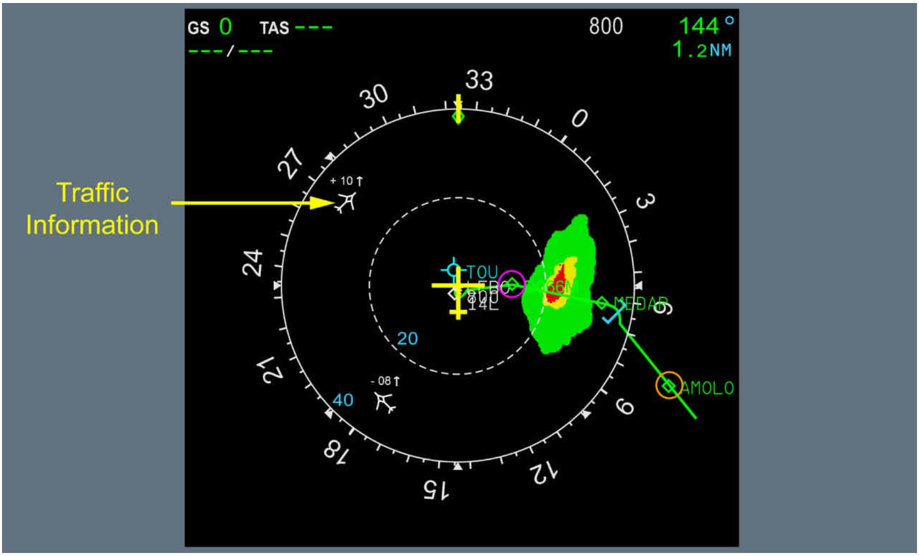
When clicked, transfers the ITP request to the mailbox.
The button is not available as long as the request is not valid.
When the transfer has failed, the message AUTOMATIC TRANSFER FAILED appears at the left of the button.

ND

Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP

Ident.: DSC-34-SURV-60-20-10-00016482.0001001 / 06 AUG 14

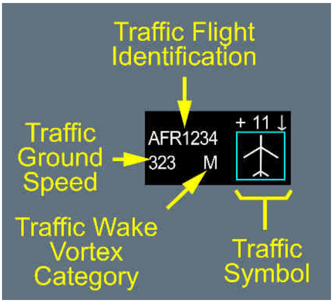
ND


Traffic
Information
GS 0 TAS ---
---/---
800
144 °
1.2NM
33
30
0
27
3
24
6
21
9
18
15
12
+ 10 ↑
- 08 ↑
TOU
20
40
MEDAB
AMOLO

Ident.: DSC-34-SURV-60-20-10-00016483.0001001 / 06 AUG 14

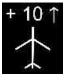
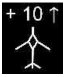
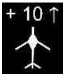
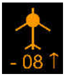
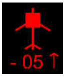
TRAFFIC INFORMATION

Traffic Information


Traffic Flight
Identification
Traffic
Ground
Speed
Traffic Wake
Vortex
Category
Traffic
Symbol
AFR1234
323
M
+ 11 ↓

TRAFFIC SYMBOL

Depending on the traffic display mode, the following symbols indicate the range and location of the traffic:

Surrounding Traffic	TCAS Intruder			
	Other	Proximate	TA	RA
				

- Two digits indicate the relative altitude of the traffic (in hundreds of feet). They appear below the symbol, if the traffic is below the aircraft, and above the symbol if the traffic is above the aircraft
- A plus (+) or minus (-) symbol appears to the left of the digits, and indicates if the traffic is above (+) or below (-) the aircraft
- An arrow indicates the vertical movement of the traffic. No arrow appears if the traffic vertical speed is less than 500 ft/min.

Note: *The flight crew can observe a significant delay for the updating of the traffic information.*

TRAFFIC FLIGHT IDENTIFICATION

Indicates the flight identification of the traffic.

This indication appears when:
- The FLT ID DISPLAY ON ND button is set to ON on the SURV TRAFFIC page of the MFD, or
- The TRAF pb is set to ID on the EFIS CP.

TRAFFIC GROUND SPEED

Indicates the ground speed of the traffic.

TRAFFIC WAKE VORTEX CATEGORY

When available, indicates the wake vortex category of the traffic (L, M, or H).

HOW TO PERFORM AN IN TRAIL PROCEDURE

Ident.: DSC-34-SURV-60-30-00022504.0001001 / 13 JAN 15

Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP

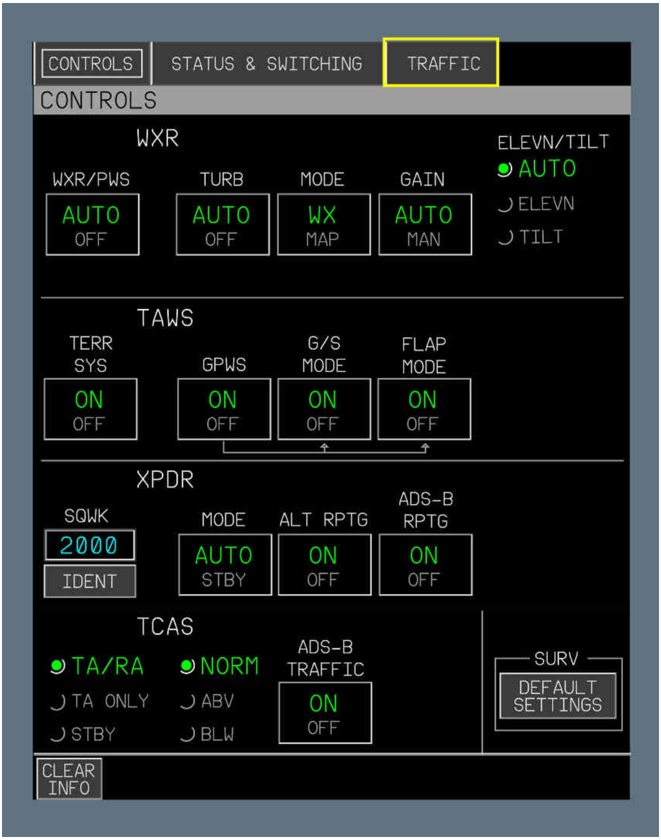
With ITP, ATC can authorize an aircraft to climb or descend with temporarily reduced longitudinal separation from surrounding aircraft, in predefined airspaces, refer to local requirements published in the Aeronautical Information Publication (AIP).

CAUTION	ATC remains responsible for aircraft separation. If any problem occurs during the ITP maneuver, the flight crew must apply the regional contingency procedures (Refer to AIP).

Note: *The following procedure assumes CPDLC is used to communicate with ATC. To request an ITP clearance with Voice Communications, refer to the published phraseology for ITP procedure.*

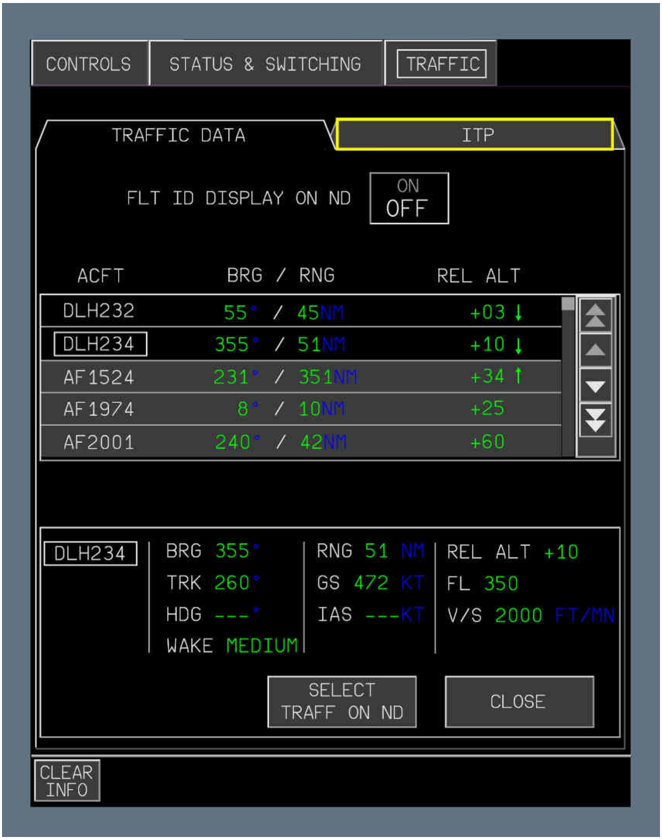
STEP 1

Select Traffic on the MFD SURV Page.


CONTROLS
STATUS & SWITCHING
TRAFFIC
CONTROLS
WXR
WXR/PWS
AUTO
OFF
TURB
AUTO
OFF
MODE
WX
MAP
GAIN
AUTO
MAN
ELEVN/TILT
● AUTO
○ ELEVN
○ TILT
TAWS
TERR SYS
ON
OFF
GPWS
ON
OFF
G/S MODE
ON
OFF
FLAP MODE
ON
OFF
XPDR
SQWK
2000
IDENT
MODE
AUTO
STBY
ALT RPTG
ON
OFF
ADS-B RPTG
ON
OFF
TCAS
● TA/RA
○ TA ONLY
○ STBY
● NORM
○ ABV
○ BLW
ADS-B TRAFFIC
ON
OFF
SURV
DEFAULT SETTINGS
CLEAR INFO

STEP 2

Select the ITP Panel on the TRAFFIC Page.


CONTROLS
STATUS & SWITCHING
TRAFFIC
TRAFFIC DATA
ITP
SELECT TRAFF ON ND
CLOSE
CLEAR INFO

FLT ID DISPLAY ON ND ON OFF

ACFT	BRG / RNG	REL ALT
DLH232	55° / 45NM	+03 ↓
DLH234	355° / 51NM	+10 ↓
AF1524	231° / 351NM	+34 ↑
AF1974	8° / 10NM	+25
AF2001	240° / 42NM	+60

DLH234

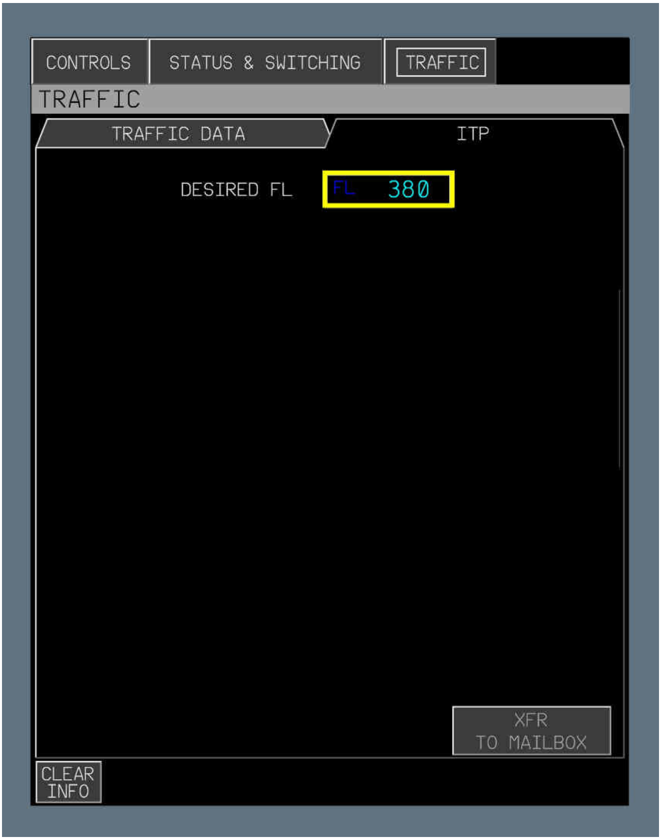
BRG 355°
TRK 260°
HDG ---°
WAKE MEDIUM

RNG 51 NM
GS 472 KT
IAS ---KT

REL ALT +10
FL 350
V/S 2000 FT/MN

STEP 3

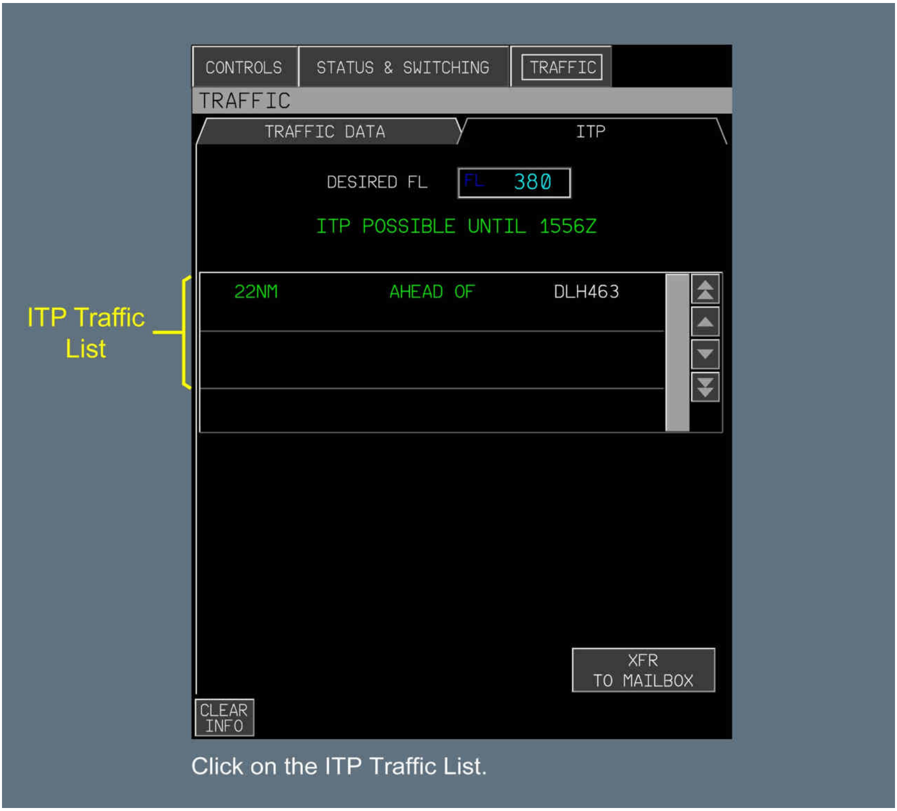
Enter the DESIRED FL for the ITP.
Check that the desired FL is below the REC MAX FL.


CONTROLS
STATUS & SWITCHING
TRAFFIC
TRAFFIC
TRAFFIC DATA
ITP
XFR
TO MAILBOX
CLEAR
INFO

DESIRED FL FL 380

STEP 4

Identify the reference aircraft in the ITP Traffic List (ITP distance, relative positions and flight identification).

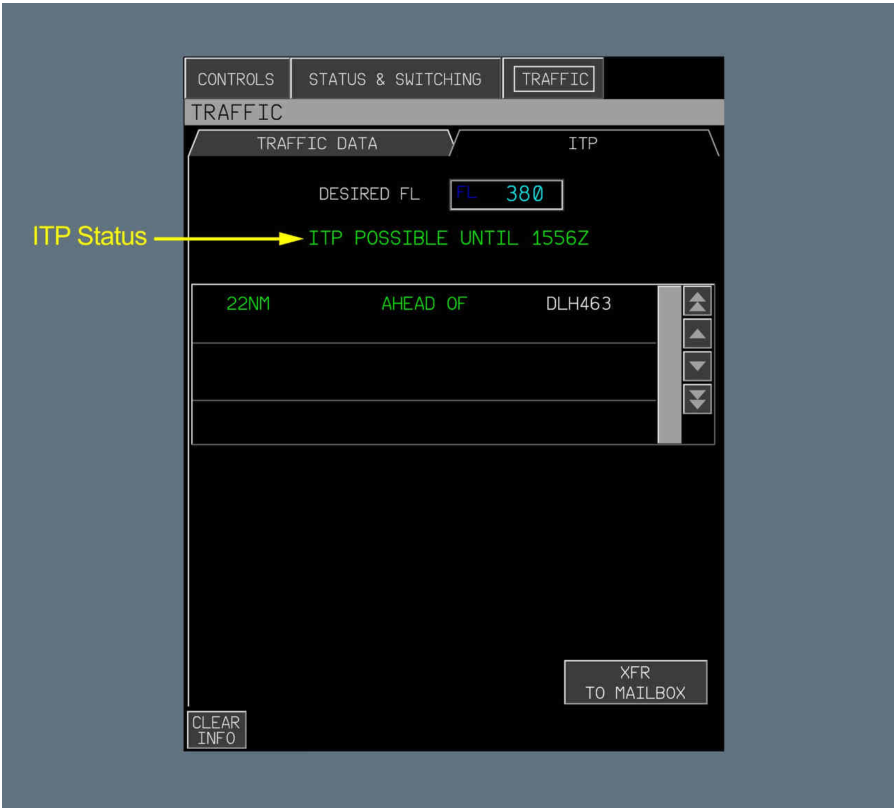

CONTROLS
STATUS & SWITCHING
TRAFFIC
TRAFFIC
TRAFFIC DATA
ITP
DESIRED FL
FL 380
ITP POSSIBLE UNTIL 1556Z
22NM
AHEAD OF
DLH463
XFR
TO MAILBOX
CLEAR
INFO
ITP Traffic List

Click on the ITP Traffic List.

STEP 5

Check if the ITP is possible:

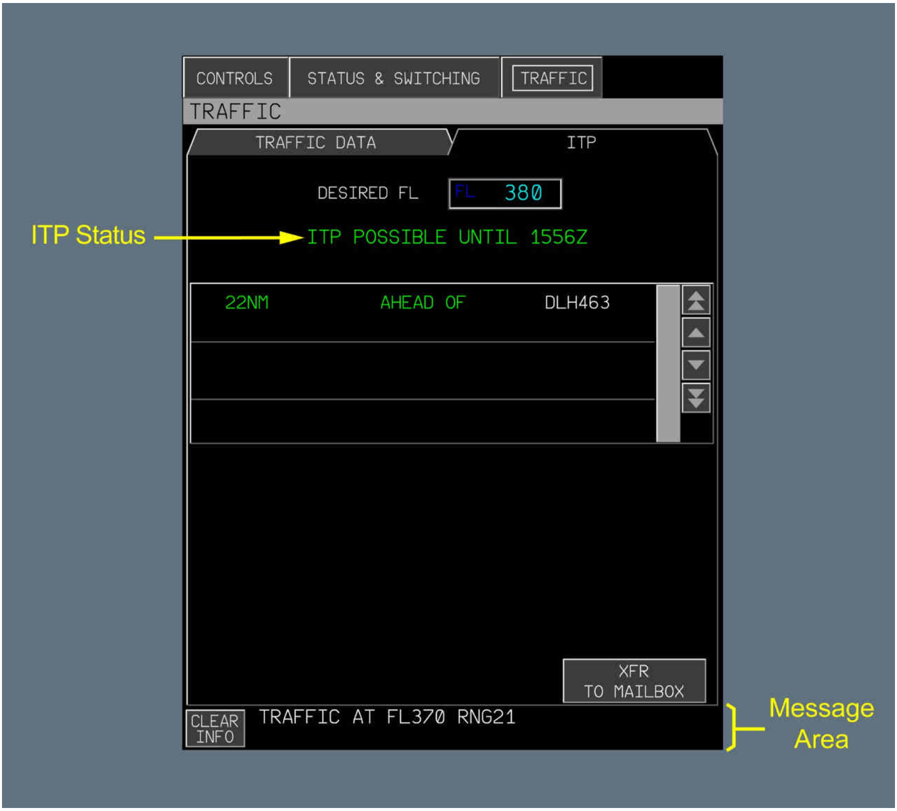
- Check that the "ITP POSSIBLE" and the associated time limit for this ITP "UNTIL NN:NNZ" is displayed.
- Check that the reference aircraft is displayed in green in the ITP Traffic List.


CONTROLS
STATUS & SWITCHING
TRAFFIC
TRAFFIC
TRAFFIC DATA
ITP
DESIRED FL
FL 380
ITP Status
ITP POSSIBLE UNTIL 1556Z
22NM
AHEAD OF
DLH463
XFR
TO MAILBOX
CLEAR
INFO

STEP 6

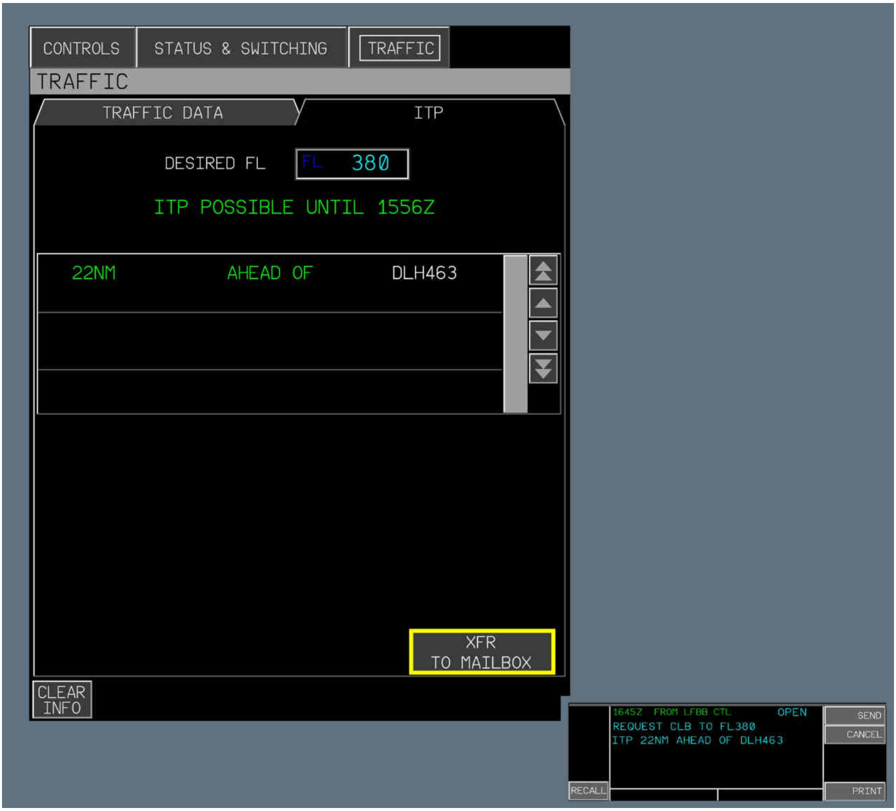
Check if no traffic is identified in the Message Area.

L2 Traffic not equipped with ADS-B Traffic can appear in the Message Area. In this case, even if the ITP Status is possible, request an ITP clearance is not recommended.


CONTROLS
STATUS & SWITCHING
TRAFFIC
TRAFFIC
TRAFFIC DATA
ITP
DESIRED FL
FL 380
ITP Status
ITP POSSIBLE UNTIL 1556Z
22NM AHEAD OF DLH463
XFR
TO MAILBOX
CLEAR
INFO
TRAFFIC AT FL370 RNG21
Message
Area

L1 STEP 7

If ITP is possible, click on the XFR TO MAILBOX button. The ITP request appears in the mailbox.


CONTROLS
STATUS & SWITCHING
TRAFFIC
TRAFFIC
TRAFFIC DATA
ITP
XFR TO MAILBOX
CLEAR INFO
SEND
CANCEL
RECALL
PRINT

DESIRED FL FL 380

ITP POSSIBLE UNTIL 1556Z

22NM AHEAD OF DLH463

```
1645Z  FROM LFBB CTL          OPEN
REQUEST CLB TO FL380
ITP 22NM AHEAD OF DLH463
```

STEP 8

Check the ITP clearance request in the mailbox and send it to ATC.

STEP 9

- **If cleared for ITP:**
  Check if ITP is still possible or not in the ITP Panel.
  - **If ITP is no more possible:**
    Inform ATC that the ITP request is cancelled. Click on the UNABLE button.
  - **If ITP is still possible:**
    Inform ATC that the ITP request is accepted. Click on the WILCO button.
    Perform the ITP without delay.
    Maintain the assigned Mach (or speed) during the ITP.

Maintain a minimum vertical speed of 300 ft/min during the ITP climb or descent.

- **If not cleared for ITP with requested FL but ITP ALTN FL proposed:**
  Request a new ITP clearance to ATC. Restart the procedure from the beginning.

HOW TO USE VISUAL SEPARATION ON APPROACH

Ident.: DSC-34-SURV-60-30-00021598.0001001 / 13 JAN 15
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP

The Visual Separation on Approach (VSA) assist the flight crew to identify an aircraft out of the window during approach following a request by ATC.
When the flight crew uses VSA for visual separation or in case of requested maneuver, the flight crew must maintain visual contact (out the window) with the requested aircraft. The use of VSA does not modify the current visual separation procedure.
When the flight crew uses VSA to identify a traffic, the flight crew must report having the traffic in sight to ATC only if they have a visual contact (out the window) with the traffic. The flight crew must not report a traffic identified on the ND only.

If the flight crew detects that the VSA information on the ND is not consistent, then the flight crew must:
- Stop using VSA, and disregard traffic displayed on the ND
- Only use visual checks to maintain visual separation.

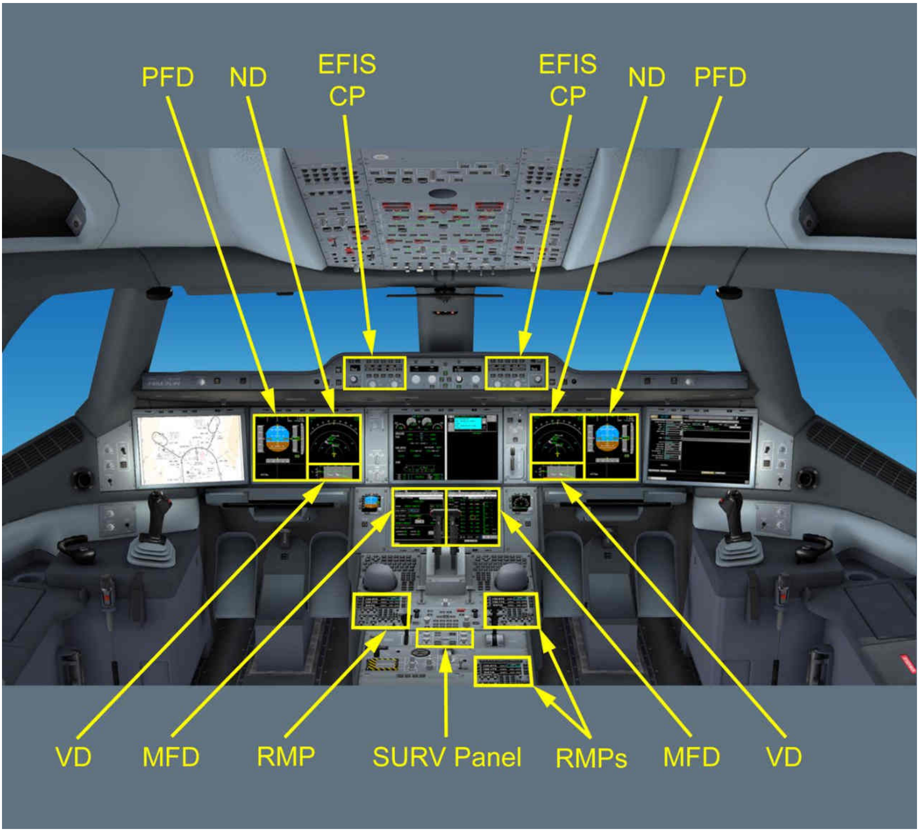
If any problem occurs during an VSA maneuver, the flight crew must apply the regional contingency procedures (Refer to AIP).

Intentionally left blank

COCKPIT VIEW

Ident.: DSC-34-SURV-70-10-00003506.0001001 / 30 APR 14
Applicable to: ALL

Cockpit View


PFD
ND
EFIS CP
EFIS CP
ND
PFD
VD
MFD
RMP
SURV Panel
RMPs
MFD
VD

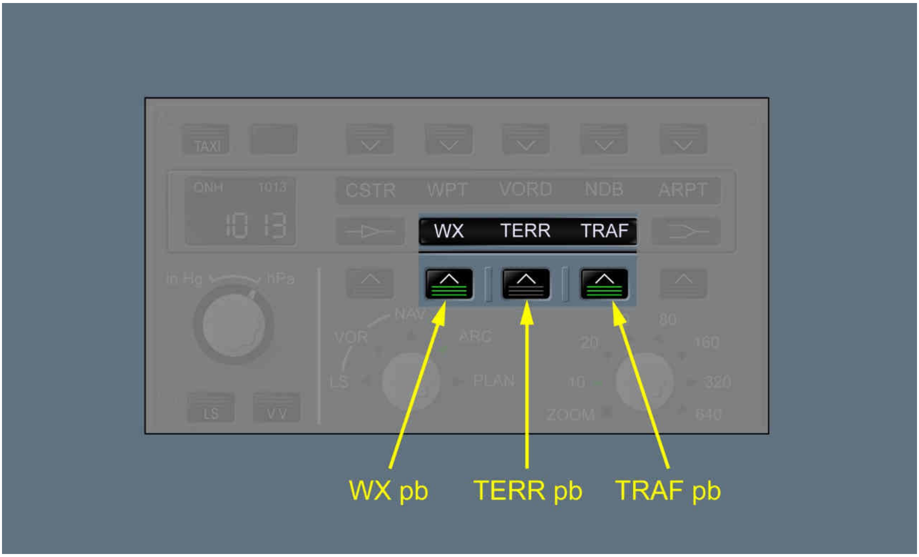
Intentionally left blank

EFIS CONTROL PANEL

Applicable to: ALL

Ident.: DSC-34-SURV-70-30-10-00003513.0001001 / 30 APR 14

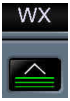
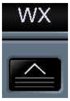
EFIS CP


TAXI
QNH 1013
1013
CSTR
WPT
VORD
NDB
ARPT
WX
TERR
TRAF
in Hg
hPa
NAV
VOR
ARC
LS
PLAN
80
160
20
10
320
640
ZOOM
LS
VV
WX pb
TERR pb
TRAF pb

Ident.: DSC-34-SURV-70-30-10-00003514.0001001 / 05 JUN 18

WX pb

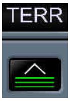
L12

	The WXR is active. The onside ND and VD display weather information. For more information,*Refer to DSC-34-SURV-30-10 Overview* The flight crew cannot press the WX pb and the TERR pb at the same time. Associated with the WX message on the ND.
	The onside ND and VD do not display weather information.

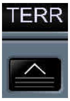
Ident.: DSC-34-SURV-70-30-10-00003515.0001001 / 30 APR 14

TERR pb

L12



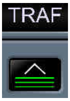
The onside ND displays terrain (TERR) information.
Associated with the TERR message on the ND.
The flight crew cannot press the WXR pb and the TERR pb at the same time.



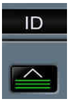
The onside ND does not display terrain (TERR) information.

Ident.: DSC-34-SURV-70-30-10-00003516.0001001 / 09 MAR 16

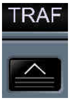
TRAF pb



The onside ND displays traffic information.



The onside ND displays the traffic information and the traffic flight identification (with ADS-B Traffic ◁ option).



The onside ND does not display traffic information.

Note:

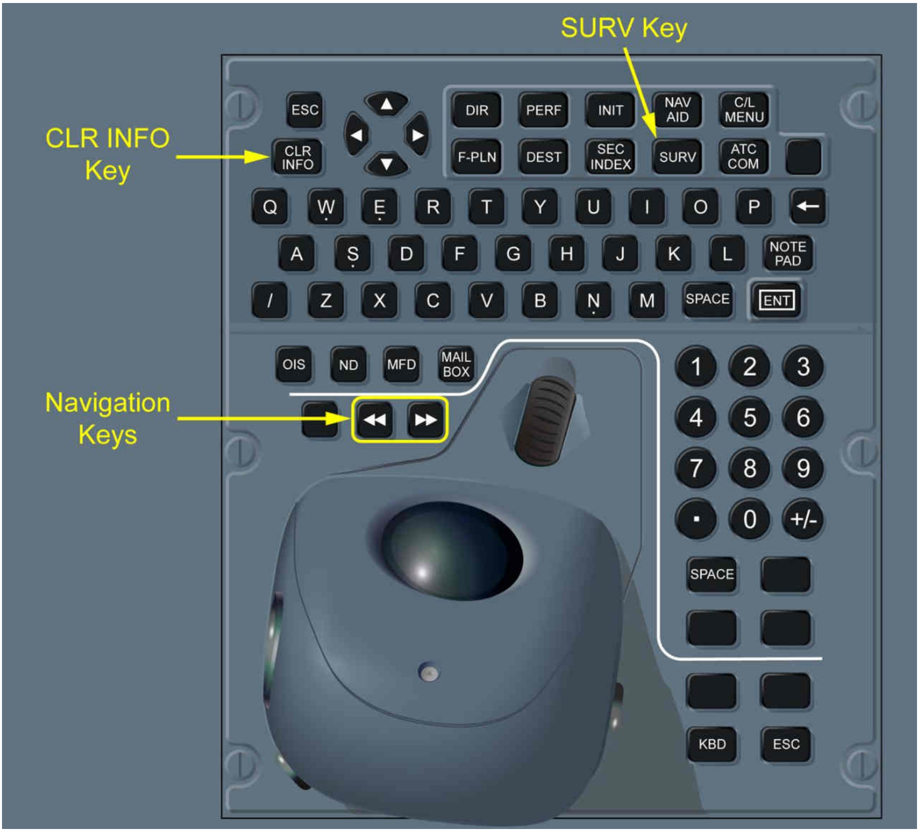
1. *If the ADS-B Traffic ◁ is not available, the TRAF pb only controls the display of the TCAS symbols (other and proximate)*
2. *To display the full label, the flight crew can also use the FLT ID DISPLAY ON ND button on the SURV TRAFFIC page of the MFD (with ADS-B Traffic ◁ option).*

KCCU

Applicable to: ALL

Ident.: DSC-34-SURV-70-40-10-00003517.0001001 / 30 APR 14

KCCU


SURV Key
CLR INFO Key
Navigation Keys
ESC
CLR INFO
DIR
PERF
INIT
NAV AID
C/L MENU
F-PLN
DEST
SEC INDEX
SURV
ATC COM
Q W E R T Y U I O P
A S D F G H J K L
NOTE PAD
/ Z X C V B N M
SPACE
ENT
OIS
ND
MFD
MAIL BOX
1 2 3
4 5 6
7 8 9
. 0 +/-
SPACE
KBD
ESC

Ident.: DSC-34-SURV-70-40-10-00003518.0001001 / 30 APR 14

SURV KEY

	When pressed: - Displays the SURV/CONTROLS page on the MFD (*Refer to DSC-34-SURV-70-50 SURV Pages*) - The cursor returns to the MFD, if it was previously on another display.

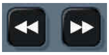
Ident.: DSC-34-SURV-70-40-10-00003519.0001001 / 30 APR 14

CLR INFO KEY

When pressed, clears the message displayed in the FMS, ATC COM, or surveillance message area.

Ident.: DSC-34-SURV-70-40-10-00003520.0001001 / 30 APR 14

NAVIGATION KEYS



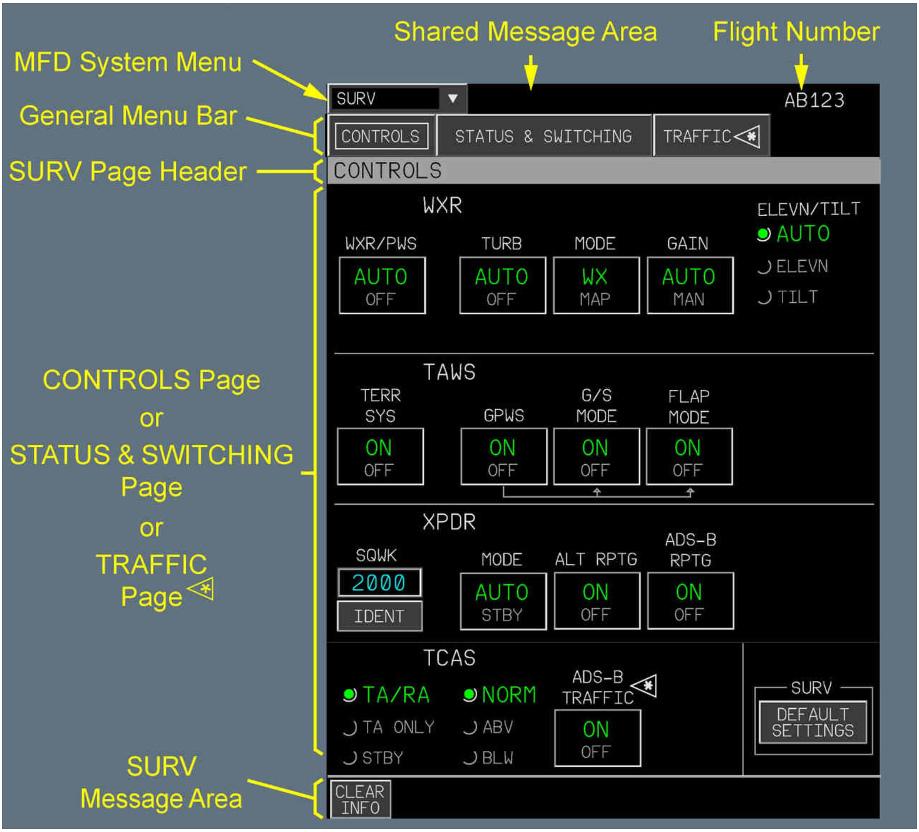
When pressed, moves the cursor to the display unit that is to the right, or to the left, of the one that is currently selected (if applicable).

MFD

Applicable to: ALL

Ident.: DSC-34-SURV-70-50-10-00002154.0001001 / 09 MAR 16

MFD SURV Pages

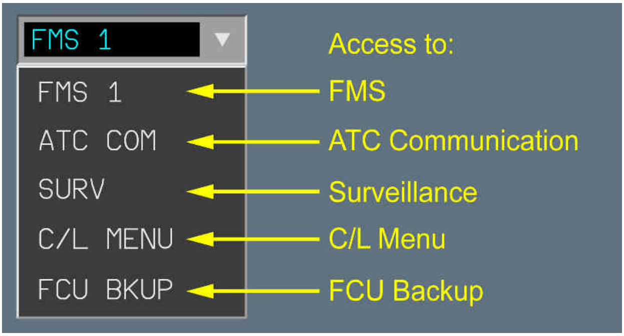

Shared Message Area
Flight Number
MFD System Menu
General Menu Bar
SURV Page Header
CONTROLS Page
or
STATUS & SWITCHING
Page
or
TRAFFIC
Page
SURV
Message Area
SURV ▼
AB123
CONTROLS
STATUS & SWITCHING
TRAFFIC
CONTROLS
WXR
WXR/PWS
AUTO
OFF
TURB
AUTO
OFF
MODE
WX
MAP
GAIN
AUTO
MAN
ELEVN/TILT
● AUTO
○ ELEVN
○ TILT
TAWS
TERR
SYS
ON
OFF
GPWS
ON
OFF
G/S
MODE
ON
OFF
FLAP
MODE
ON
OFF
XPDR
SQWK
2000
IDENT
MODE
AUTO
STBY
ALT RPTG
ON
OFF
ADS-B
RPTG
ON
OFF
TCAS
● TA/RA
○ TA ONLY
○ STBY
● NORM
○ ABV
○ BLW
ADS-B
TRAFFIC
ON
OFF
SURV
DEFAULT
SETTINGS
CLEAR
INFO

Ident.: DSC-34-SURV-70-50-10-00002159.0001001 / 30 APR 14

MFD SYSTEM MENU

Indicates the system identifier that displays data on the MFD.
The menu list displays all systems that can display data on the MFD.
When the flight crew clicks on an option of the menu, the associated page appears in the system page area.

MFD System Menu



Ident.: DSC-34-SURV-70-50-10-00002160.0001001 / 30 APR 14

SHARED MESSAGE AREA

The shared message area displays messages in order to inform the flight crew about an event that is related to the FMS or ATC communication.
The shared message area displays the following messages:

D-ATIS RECEIVED	Indicates that a new ATIS report is received. Only appears if the MFD displays a page that is not an ATC COM page. Disappears when the flight crew accesses an ATC COM page.
D-ATIS GROUND MSG	Indicates that an ATIS FSM message is received. Only appears if the MFD displays a page that is not an ATC COM page. Disappears when the flight crew accesses an ATC COM page.
D-ATIS NO REPLY	Appears when the time-out (7.5 min) is reached and that no ATIS was received. Only appears if the MFD displays a page that is not an ATC COM page. Disappears when the flight crew accesses an ATC COM page.

D-ATIS SEND FAIL	Appears when an ATIS request failed for one of the following reasons: - The sending of the ATIS request failed, or - The time-out (6 min) for acknowledgement is reached, or - A negative answer for the ATIS request is received. Only appears if the MFD displays a page that is not an ATC COM page. Disappears when the flight crew accesses an ATC COM page.
CHECK FMS MESSAGE	Indicates that the FMS triggered an amber FMS message. Only appears if the MFD displays a page that is not an FMS page. Disappears when the flight crew accesses an FMS page.
L12	
IND	Indicates that both FMS operate in INDEPENDENT mode. For information about the INDEPENDENT mode, *Refer to DSC-22-FMS-40 INDEPENDENT Mode*.

L2 *Note:* *The shared message area displays only one message at a time. However, the IND message can appear in addition to another message.*

Ident.: DSC-34-SURV-70-50-10-00002161.0001001 / 30 APR 14

FLIGHT NUMBER

Indicates the flight number that the flight crew entered on the FMS ACTIVE/INIT page (*Refer to DSC-22-FMS-20-20-20 INIT Page*).

Ident.: DSC-34-SURV-70-50-10-00002162.0001001 / 09 MAR 16

GENERAL MENU BAR

The general menu bar provides the flight crew with access to the following SURV pages:
- CONTROLS page
- STATUS & SWITCHING page
- TRAFFIC page ◁ .

Ident.: DSC-34-SURV-70-50-10-00002163.0001001 / 30 APR 14

SURV PAGE HEADER

The SURV page header indicates the title of the displayed SURV page.

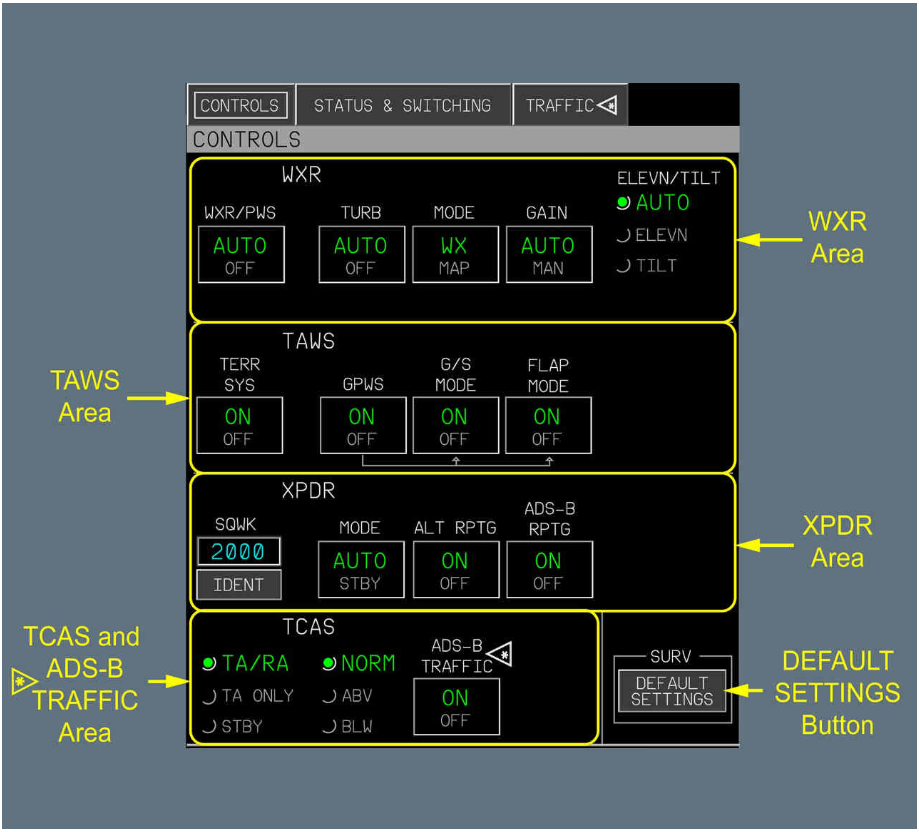
CONTROLS PAGE

Applicable to: ALL

Ident.: DSC-34-SURV-70-50-20-00002155.0001001 / 03 JUL 20

1

SURV CONTROLS Page


CONTROLS
STATUS & SWITCHING
TRAFFIC
CONTROLS
WXR
WXR/PWS
AUTO
OFF
TURB
AUTO
OFF
MODE
WX
MAP
GAIN
AUTO
MAN
ELEVN/TILT
AUTO
ELEVN
TILT
WXR Area
TAWS
TERR SYS
ON
OFF
GPWS
ON
OFF
G/S MODE
ON
OFF
FLAP MODE
ON
OFF
TAWS Area
XPDR
SQWK
2000
IDENT
MODE
AUTO
STBY
ALT RPTG
ON
OFF
ADS-B RPTG
ON
OFF
XPDR Area
TCAS
TA/RA
TA ONLY
STBY
NORM
ABV
BLW
ADS-B TRAFFIC
ON
OFF
TCAS and ADS-B TRAFFIC Area
SURV
DEFAULT SETTINGS
DEFAULT SETTINGS Button

Ident.: DSC-34-SURV-70-50-20-00002164.0001001 / 30 APR 14

XPDR AREA

The XPDR area enables the flight crew to monitor the XPDR function.

L2 For more information, *Refer to DSC-34-SURV-50-20 CONTROLS Page*.

Ident.: DSC-34-SURV-70-50-20-00002165.0001001 / 09 MAR 16

TCAS AND ADS-B TRAFFIC ◁ AREA

The TCAS and ADS-B Traffic ◁ area enables the flight crew to monitor the TCAS and ADS-B Traffic ◁ surveillance function.

L2 For more information, *Refer to DSC-34-SURV-40-20 CONTROLS Page*.

Ident.: DSC-34-SURV-70-50-20-00002166.0001001 / 30 APR 14

WXR AREA

The WXR area enables the flight crew to monitor the WXR surveillance function.

L2 For more information, *Refer to DSC-34-SURV-30-20 CONTROLS Page*.

Ident.: DSC-34-SURV-70-50-20-00002167.0001001 / 30 APR 14

TAWS AREA

The TAWS area enables the flight crew to monitor the TAWS surveillance function.

L2 For more information, *Refer to DSC-34-SURV-20-20 CONTROLS Page*.

2 DEFAULT SETTINGS BUTTON

L12

DEFAULT
SETTINGS

When clicked, automatically sets all the SURV settings to their default position. A confirmation is necessary in order to set the default positions.

- WXR Area:
  - The WXR/PWS button is set to AUTO
  - The TURB button ◁ is set to AUTO
  - The TURB tick box ◁ is ticked
  - The HZD tick box ◁ is ticked
  - The MODE button is set to WX
  - The GAIN button is set to AUTO
  - The ELEVN/TILT option list is set to AUTO.

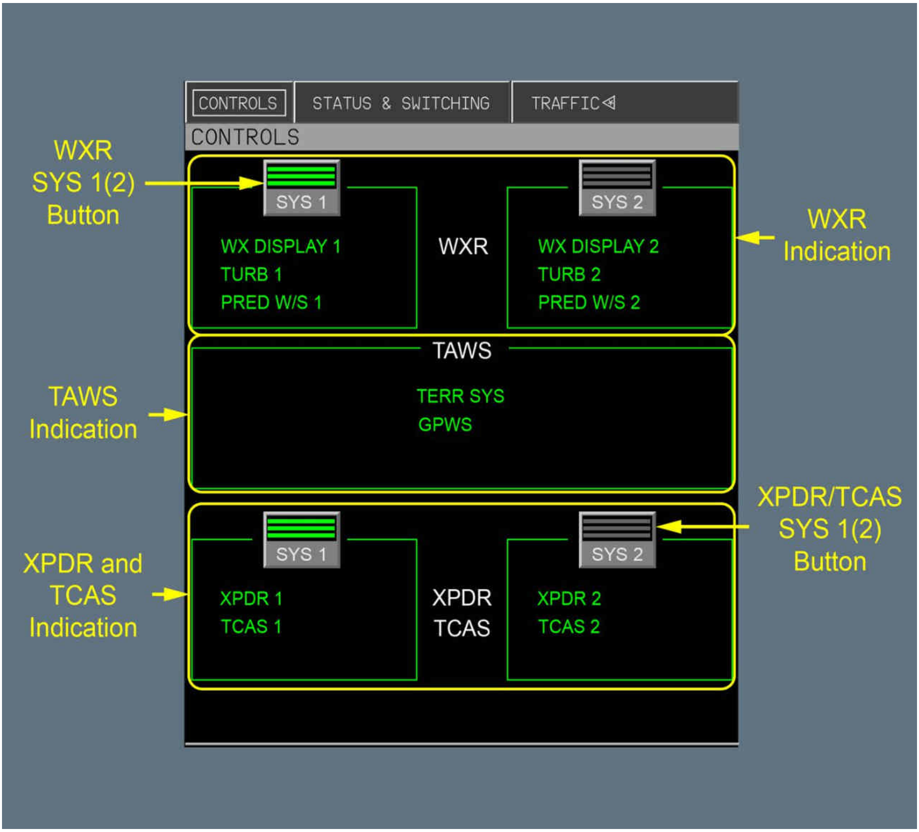
  The following default settings are valid only for the onside MFD:
  - The ELEVN/TILT option list
  - The GAIN button
  - The MODE button.
- TAWS Area:
  - The TERR SYS button is set to ON
  - The GPWS button is set to ON
  - The G/S MODE button is set to ON
  - The FLAP MODE button is set to ON.
- XPDR Area:
  - The MODE button is set to AUTO
  - The ALT RPTG button is set to ON
  - The ADS-B RPTG button is set to ON.
- TCAS and ADS-B TRAFFIC ◁ Area:
  - The TCAS mode option list is set to TA/RA
  - The TCAS display mode option list is set to NORM
  - The ADS-B TRAFFIC button ◁ is set to ON.

STATUS & SWITCHING PAGE

Applicable to: ALL

Ident.: DSC-34-SURV-70-50-30-00002156.0001001 / 09 MAR 16

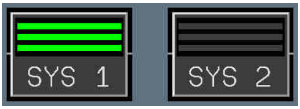
SURV STATUS & SWITCHING Page


CONTROLS
STATUS & SWITCHING
TRAFFIC
CONTROLS
WXR SYS 1(2) Button
SYS 1
SYS 2
WXR Indication
WX DISPLAY 1
TURB 1
PRED W/S 1
WXR
WX DISPLAY 2
TURB 2
PRED W/S 2
TAWS Indication
TAWS
TERR SYS
GPWS
XPDR/TCAS SYS 1(2) Button
XPDR and TCAS Indication
SYS 1
SYS 2
XPDR 1
TCAS 1
XPDR
TCAS
XPDR 2
TCAS 2

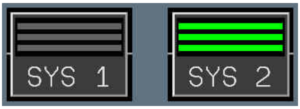
- Green indicates that the function is on
  The green box indicates that the function is selected.
- White indicates that the function is set to OFF, or is on standby
- Amber indicates that the function is failed.

Ident.: DSC-34-SURV-70-50-30-00002169.0001001 / 30 APR 14

WXR SYS 1(2) BUTTONS



SYS 1 provides the WXR function.



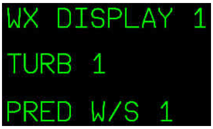
SYS 2 provides the WXR function.

Note: *On the SURV panel, the WXR SYS 1(2) pb is automatically updated.*

Ident.: DSC-34-SURV-70-50-30-00002170.0001001 / 30 APR 14

WXR SYS 1(2) INDICATION

L12



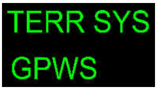
WX DISPLAY 1
TURB 1
PRED W/S 1

Indicates the status of the WXR functions on SYS 1(2).
For more information, *Refer to DSC-34-SURV-30-20 STATUS & SWITCHING Page*.

Ident.: DSC-34-SURV-70-50-30-00002171.0001001 / 30 APR 14

TAWS INDICATION

L12

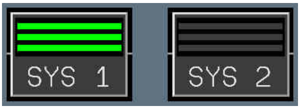


TERR SYS
GPWS

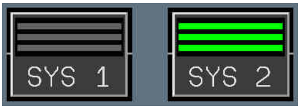
Indicates the status of the TAWS functions.
For more information, *Refer to DSC-34-SURV-20-20 STATUS & SWITCHING Page*.

Ident.: DSC-34-SURV-70-50-30-00002173.0001001 / 30 APR 14

XPDR/TCAS SYS 1(2) BUTTONS



SYS 1 provides the XPDR/TCAS functions.



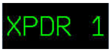
SYS 2 provides the XPDR/TCAS functions.

Note: *On the SURV panel, the XPDR/TCAS SYS 1(2) pb is automatically updated.*

Ident.: DSC-34-SURV-70-50-30-00002174.0001001 / 30 APR 14

XPDR INDICATION

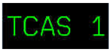
L12


XPDR 1

Indicates the status of the XPDR on SYS 1(2).
For more information, *Refer to DSC-34-SURV-50-20 STATUS & SWITCHING Page*.

TCAS INDICATION

L12


TCAS 1

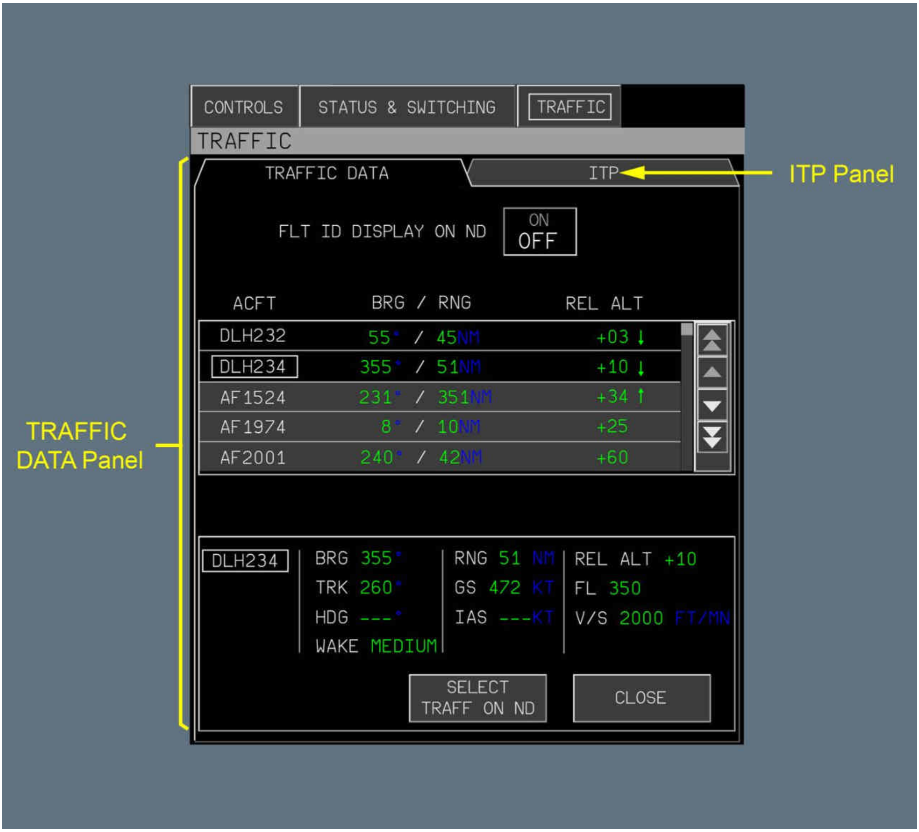
Indicates the status of the TCAS on SYS 1(2).
For more information, *Refer to DSC-34-SURV-40-20 STATUS & SWITCHING Page*.

TRAFFIC PAGE (IF INSTALLED)

Applicable to: ALL

Ident.: DSC-34-SURV-70-50-35-00017173.0001001 / 09 MAR 16

SURV TRAFFIC DATA Panel


CONTROLS
STATUS & SWITCHING
TRAFFIC
TRAFFIC
TRAFFIC DATA
ITP
ITP Panel
TRAFFIC DATA Panel
SELECT TRAFF ON ND
CLOSE

FLT ID DISPLAY ON ND: ON / OFF

ACFT	BRG / RNG	REL ALT
DLH232	55° / 45NM	+03 ↓
DLH234	355° / 51NM	+10 ↓
AF1524	231° / 351NM	+34 ↑
AF1974	8° / 10NM	+25
AF2001	240° / 42NM	+60

DLH234
BRG 355°
TRK 260°
HDG ---°
WAKE MEDIUM
RNG 51 NM
GS 472 KT
IAS ---KT
REL ALT +10
FL 350
V/S 2000 FT/MN

Ident.: DSC-34-SURV-70-50-35-00017174.0001001 / 14 JUN 16

TRAFFIC DATA AND ITP PANELS

The TRAFFIC DATA and ITP Panels enables the flight crew to monitor the ADS-B Traffic function.

SURV MESSAGE AREA

Applicable to: ALL

Ident.: DSC-34-SURV-70-50-40-00002157.0001001 / 30 APR 14

The SURV message area displays messages on two lines of 33 characters.
The flight crew can clear the displayed message by clicking on the CLEAR INFO button, or by pressing the CLR INFO key on the KCCU.

Ident.: DSC-34-SURV-70-50-40-00002176.0001001 / 30 APR 14

ENTRY OUT OF RANGE MESSAGE

If the flight crew enters a value that is not in the correct range, the message area displays:

- The ENTRY OUT OF RANGE message on the first line
- The applicable range on the second line (as indicated in the table below).

Data Type	Out Of Range Messages
ELEVN	■ **If the QNH reference is selected on the EFIS CP baro setting:** RANGE: 0 ft to 60 000 ft ■ **If the STD reference is selected on the EFIS CP baro setting:** RANGE: FL 0 to FL 600
GAIN	RANGE: 0 % to 100 %
TILT	RANGE: -15.0 ° to +15.0 °

Ident.: DSC-34-SURV-70-50-40-00002177.0001001 / 30 APR 14

FORMAT ERROR MESSAGE

If the flight crew enters an ELEVN, GAIN, or TILT value that is not valid, the message area displays:

- The FORMAT ERROR message on the first line
- The applicable format on the second line (as indicated in the table below).

Data Type	Data Format Help Messages
ELEVN	■ **If the QNH reference is selected on the EFIS CP baro setting:** FORMAT: “XXXXX” FT ■ **If the STD reference is selected on the EFIS CP baro setting:** FORMAT: FL “XXX”
GAIN	FORMAT: “XXX” %
TILT	FORMAT: “+/-XX.X” °

Ident.: DSC-34-SURV-70-50-40-00002178.0001001 / 30 APR 14

SQWK CODE NOT VALID MESSAGE

If the flight crew enters a SQWK value that is not valid, the message area displays the SQWK CODE NOT VALID message on the first line.

MFD DATA ENTRY FORMAT

Applicable to: ALL

Ident.: DSC-34-SURV-70-50-50-00002158.0001001 / 30 APR 14

This chapter provides a list of all the data that the flight crew may enter on the MFD.

For each data, the table displays:
- The appropriate format
- The appropriate units
- The appropriate range
- The page(s) on which the flight crew must enter the data.

The following characters are used to indicate the format:
- A: Letters
- B: Magnetic/True reference
- N: Numbers
- X: Letters and Numbers.

Note: *The flight crew can:*
- *Enter the units that are indicated in blue*
- *Omit leading zeros in fields that have numerical data.*

If the flight crew enters an erroneous format, the message area displays the FORMAT ERROR message, followed by the correct format (*Refer to DSC-46-ATC-20-40 FORMAT ERROR*).
If the flight crew enters an erroneous value, the message area displays the ENTRY OUT OF RANGE message, followed by the correct range (*Refer to DSC-46-ATC-20-40 ENTRY OUT OF RANGE*).

Ident.: DSC-34-SURV-70-50-50-00002179.0001001 / 30 APR 14

ELEVN

L12

Format	FLNNN or NNN *Note:* *The flight crew can omit leading zeros.* NNNNNFT or NNNNN *Note:* - *Between 0 ft and 1 000 ft, the flight crew must write "FT"* - *The flight crew can omit leading zeros.*	
Units	FLNNN: Hundreds of Feet (MSL) NNNNNFT: Foot	
Range	FLNNN *Min*: 0 NNNNNFT *Min*: 0	 *Max*: 600 *Max*: 60 000
Resolution	FLNNN: 10 NNNNNFT: 1 000	
Page	*Refer to DSC-34-SURV-30-20 ELEVN/TILT Option List*.	

Ident.: DSC-34-SURV-70-50-50-00002180.0001001 / 30 APR 14

GAIN

Format	NNN	
Units	NNN: Percent	
Range	NNN *Min*: 0	 *Max*: 100
Resolution	NNN: 5	
Page	*Refer to DSC-34-SURV-30-20 GAIN Button*.	

Ident.: DSC-34-SURV-70-50-50-00002181.0001001 / 30 APR 14

SQWK

Format	NNNN	
Range	Each N: *Min*: 0	 *Max*: 7
Page	*Refer to DSC-34-SURV-50-20 SQWK Entry Field*.	

Ident.: DSC-34-SURV-70-50-50-00002182.0001001 / 30 APR 14

TILT

L12

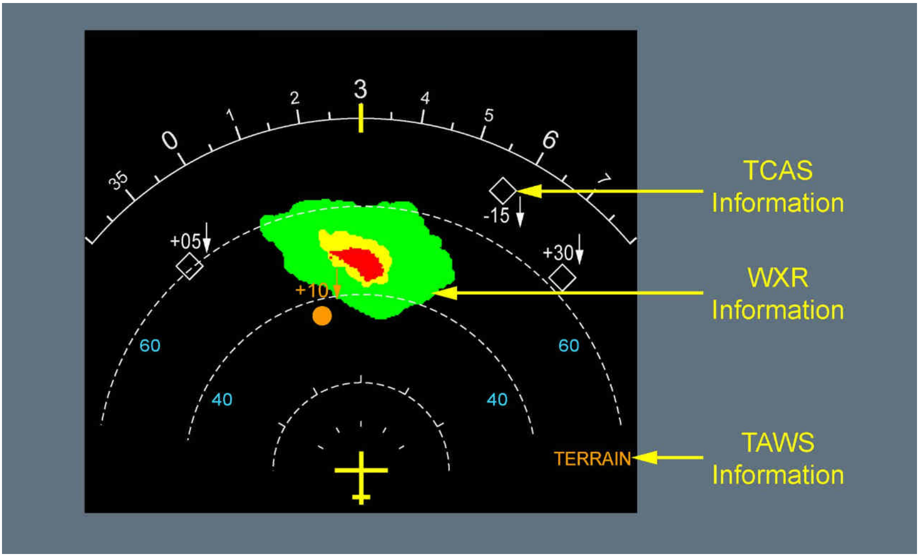
Format	±NN.N or ±NN.N° *Note:* - *“-” may be entered as M* - *If there is "+" or "-" no sign, “+” is displayed by default*
Units	NN.N: Degrees
Range	NN.N: *Min*: -15.0 *Max*: +15.0
Resolution	NN.N: 0.25
Page	*Refer to DSC-34-SURV-30-20 ELEVN/TILT Option List*.

ND

Applicable to: ALL

Ident.: DSC-34-SURV-70-90-10-00003521.0001001 / 07 MAY 18

ND


35
0
1
2
3
4
5
6
7
+05
-15
+30
+10
60
60
40
40
TERRAIN
TCAS Information
WXR Information
TAWS Information

Ident.: DSC-34-SURV-70-90-10-00003522.0001001 / 30 APR 14

TAWS INFORMATION

Refer to DSC-34-SURV-20-20 ND.

Ident.: DSC-34-SURV-70-90-10-00003523.0001001 / 30 APR 14

WXR INFORMATION

Refer to DSC-34-SURV-30-20 ND.

Ident.: DSC-34-SURV-70-90-10-00003524.0001001 / 30 APR 14

TCAS INFORMATION

Refer to DSC-34-SURV-40-20 ND.

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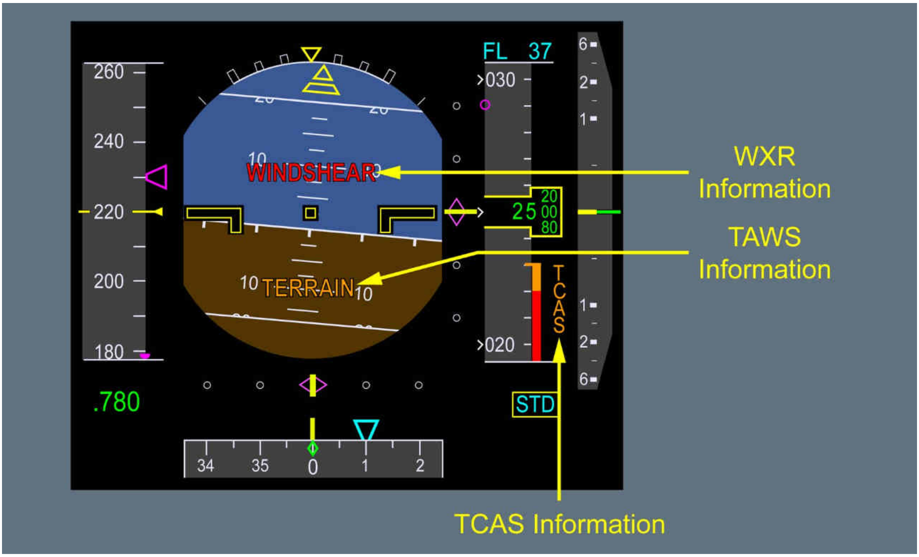
PFD

Applicable to: ALL

Ident.: DSC-34-SURV-70-110-10-00003528.0001001 / 30 APR 14

PFD


WXR Information
TAWS Information
TCAS Information
WINDSHEAR
TERRAIN
FL 37
STD
.780
TCAS

Ident.: DSC-34-SURV-70-110-10-00003529.0001001 / 30 APR 14

TAWS INFORMATION

Refer to DSC-34-SURV-20-20 PFD.

Ident.: DSC-34-SURV-70-110-10-00003530.0001001 / 30 APR 14

WXR INFORMATION

Refer to DSC-34-SURV-30-20 PFD.

Ident.: DSC-34-SURV-70-110-10-00003531.0001001 / 30 APR 14

TCAS INFORMATION

Refer to DSC-34-SURV-40-20 PFD.

Intentionally left blank

RMP

Ident.: DSC-34-SURV-70-120-00003532.0001001 / 30 APR 14
Applicable to: ALL

The RMP enables the flight crew to change the XPDR code or to perform an IDENT.
L2 For more information, *Refer to DSC-34-SURV-50-20 RMP*.

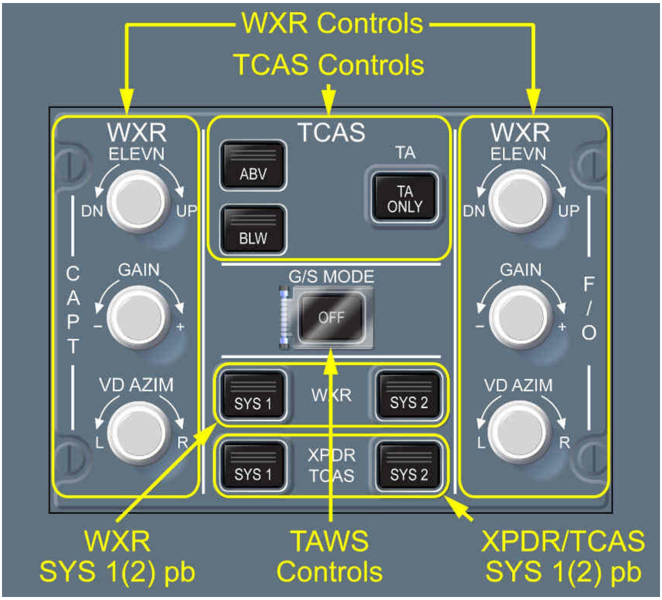
Intentionally left blank

SURV PANEL

Applicable to: ALL

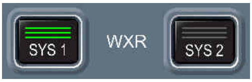
Ident.: DSC-34-SURV-70-20-10-00003507.0001001 / 30 APR 14

SURV Panel

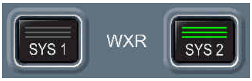

WXR Controls
TCAS Controls
WXR
ELEVN
DN
UP
GAIN
VD AZIM
L
R
CAPT
TCAS
ABV
BLW
TA
TA ONLY
G/S MODE
OFF
WXR
SYS 1
SYS 2
XPDR TCAS
SYS 1
SYS 2
WXR
ELEVN
DN
UP
GAIN
VD AZIM
L
R
F/O
WXR SYS 1(2) pb
TAWS Controls
XPDR/TCAS SYS 1(2) pb

Ident.: DSC-34-SURV-70-20-10-00003508.0001001 / 30 APR 14

WXR SYS 1(2) pb


SYS 1
WXR
SYS 2

SYS 1 provides the WXR function.

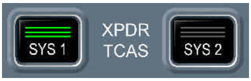

SYS 1
WXR
SYS 2

SYS 2 provides the WXR function.

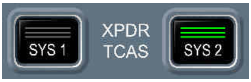
Note: On the SURV/STATUS & SWITCHING page of the MFD, the WXR SYS 1(2) buttons are automatically updated.

Ident.: DSC-34-SURV-70-20-10-00003509.0001001 / 30 APR 14

XPDR/TCAS SYS 1(2) pb



SYS 1 provides the XPDR/TCAS functions.



SYS 2 provides the XPDR/TCAS functions.

Note: *On the SURV/STATUS & SWITCHING page of the MFD, the XPDR/TCAS SYS 1(2) buttons are automatically updated.*

Ident.: DSC-34-SURV-70-20-10-00003510.0001001 / 30 APR 14

TAWS CONTROLS

The TAWS controls enable the flight crew to monitor the TAWS surveillance function (*Refer to DSC-34-SURV-20-20 SURV Panel*).

Ident.: DSC-34-SURV-70-20-10-00003511.0001001 / 30 APR 14

WXR CONTROLS

The WXR controls enable the flight crew to monitor the WXR surveillance function (*Refer to DSC-34-SURV-30-20 SURV Panel*).

Ident.: DSC-34-SURV-70-20-10-00003512.0001001 / 30 APR 14

TCAS CONTROLS

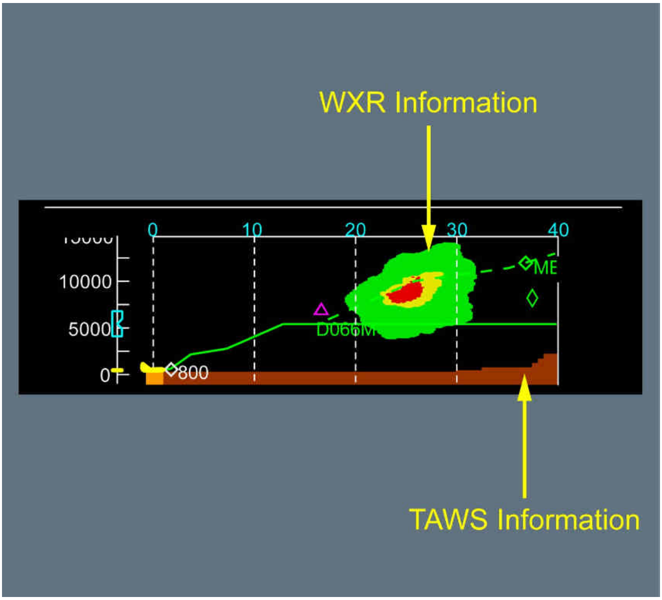
The TCAS controls enable the flight crew to monitor the TCAS surveillance function (*Refer to DSC-34-SURV-40-20 SURV Panel*).

VD

Applicable to: ALL

Ident.: DSC-34-SURV-70-100-10-00003525.0001001 / 30 APR 14

VD


WXR Information
TAWS Information
0
10
20
30
40
10000
5000
0
800
D066M
ME

Ident.: DSC-34-SURV-70-100-10-00003526.0001001 / 30 APR 14

TAWS INFORMATION

Refer to DSC-34-SURV-20-20 VD.

Ident.: DSC-34-SURV-70-100-10-00003527.0001001 / 30 APR 14

WXR INFORMATION

Refer to DSC-34-SURV-30-20 VD.

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AUTOMATIC OPERATION

Applicable to: ALL

Ident.: DSC-34-SURV-80-GAUTO-00003537.0001001 / 30 APR 14

If the flight crew sets the default settings of the SURV system via the DEFAULT SETTINGS button of the SURV/CONTROLS page of the MFD, the SURV system operates as follows:

Ident.: DSC-34-SURV-80-GAUTO-00003544.0001001 / 05 JUN 18

ON GROUND

L2 When the aircraft is on ground, SYS 1(2) is automatically selected as the master AESU if the flight number in the FMS is an odd (even) number. It enables the detection of hidden failures.

L1 The TCAS turns on, and the TRAF pb on the EFIS CP is automatically selected.
The TAWS turns on. The flight crew should press the TERR pb on the EFIS CP to display terrain information.
The XPDR turns on.
The WXR is armed but does not scan the envelope ahead of the aircraft. When the flight crew presses the WX pb on the EFIS CP during the SOP Taxi, it activates the WXR scan and WX information is displayed on the ND and VD.

Ident.: DSC-34-SURV-80-GAUTO-00003545.0001001 / 05 JUN 18

TAKEOFF

If the flight crew does not press the WX pb on the EFIS CP during SOP Taxi:

- The WXR and the PWS are automatically activated at engine takeoff thrust but no information is displayed on the ND and VD
- The PWS image and WX image will be automatically displayed on the ND and VD, only if windshear is detected.

Ident.: DSC-34-SURV-80-GAUTO-00003546.0001001 / 05 JUN 18

LANDING

If the aircraft is below 1 000 ft AGL, the TCAS mode is TA ONLY.

Ident.: DSC-34-SURV-80-GAUTO-00003547.0001001 / 30 APR 14

ON GROUND, AFTER LANDING

60 s after touchdown, the WX pb on the EFIS CP is automatically deselected and the WXR automatically turns off.
The TCAS remains in TA ONLY mode.
The XPDR is in AUTO mode.
The TAWS is operative.

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RECONFIGURATIONS

Ident.: DSC-34-SURV-90-00016895.0001001 / 30 APR 14
Applicable to: ALL

If one or more functions of the SURV system fail, the flight crew can manually reconfigure the remaining functions in order to ensure that the system still operates.

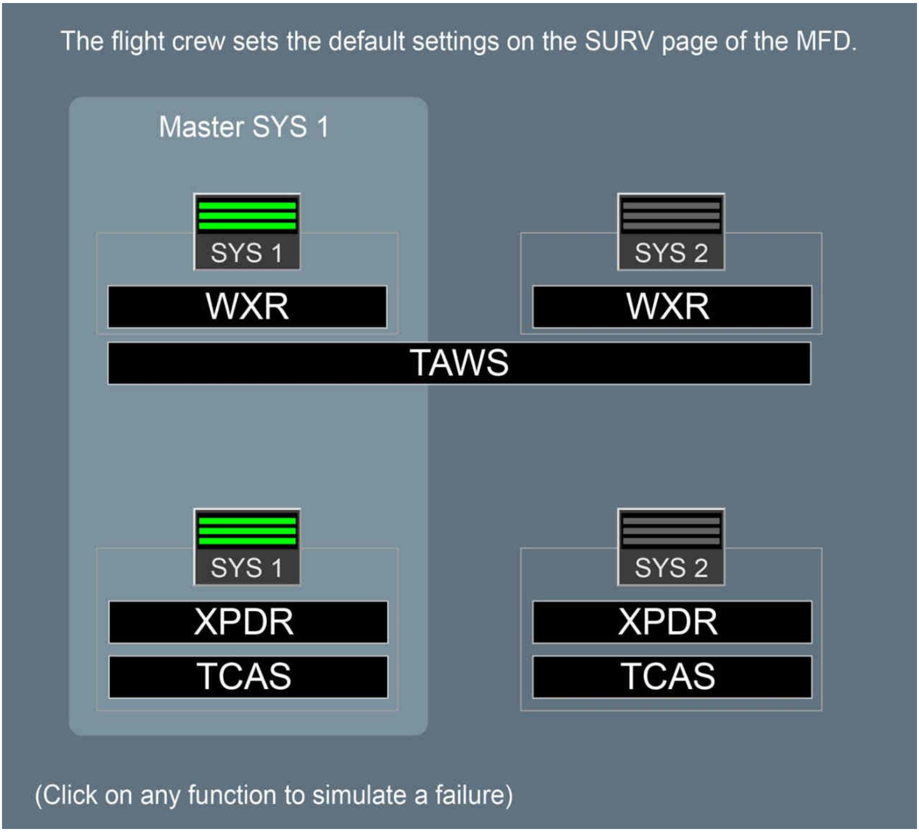
If a failure occurs :
- The ECAM triggers the corresponding ECAM alert
- The flight crew must select the SURV SYS that has the operative WXR function. The active WXR function determines the master SYS.

L12

Note: *If the TAWS function fails only on one SYS, the flight crew cannot manually reconfigure the TAWS function. The TAWS indications do not change on the SURV page of the MFD. Only the associated dispatch message indicates the failure.*

The illustration below illustrates some examples of reconfiguration.
Click on a function to set it as failed.
In this illustration, up to two functions can be set as failed.

SURV Reconfiguration



The flight crew sets the default settings on the SURV page of the MFD.

Master SYS 1
SYS 1
WXR
SYS 2
WXR
TAWS
SYS 1
XPDR
TCAS
SYS 2
XPDR
TCAS

(Click on any function to simulate a failure)

AIRCRAFT SYSTEMS

34-32 - ROW/ROP - BTV

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DSC-34-32-10 General

General......A
Architecture......B

DSC-34-32-20 ROW/ROP

DSC-34-32-20-10 System Description

Overview......A
ROW......B
ROP......C
Runway Condition Degradation......D

DSC-34-32-20-20 Controls and Indicators

DSC-34-32-20-20-10 Cockpit View

Cockpit View......A

DSC-34-32-20-20-20 Audio Indicators

Audio Indicators......A

DSC-34-32-20-20-30 Brake Panel

BRAKE Panel......A

DSC-34-32-20-20-35 FMA

FMA......A

DSC-34-32-20-20-40 MFD

MFD......A

DSC-34-32-20-20-50 ND

ND......A

DSC-34-32-20-20-60 PFD

PFD......A

DSC-34-32-20-20-70 RWY CONDITION/BRAKING ACTION Matrix

RWY CONDITION/BRAKING ACTION Matrix......A

DSC-34-32-20-20-80 SURV Panel on Overhead Panel (if installed)

SURV Panel on Overhead Panel (if installed)......A

DSC-34-32-20-20-90 MEMO

ROW/ROP & BTV OFF......A

Continued on the following page

Continued from the previous page

DSC-34-32-30 BTV

DSC-34-32-30-10 System Description

Overview........A
Principle........B
BTV Arming........C
BTV Disarming........D
BTV Engagement........E
BTV Disengagement........F

DSC-34-32-30-20 Controls and Indicators

DSC-34-32-30-20-10 Cockpit View

Cockpit View........A

DSC-34-32-30-20-20 Audio Indicators

Audio Indicators........A

DSC-34-32-30-20-30 Brake Panel

BRAKE Panel........A

DSC-34-32-30-20-40 FMA

FMA........A

DSC-34-32-30-20-50 MEMO

MEMO........A

DSC-34-32-30-20-60 ND

ND........A

DSC-34-32-35 Abnormal Operations

LDG RWY Not Available In The ANF Database........A
Landing Dist Affected........B
Invalid RWY in the TAWS Database........C

DSC-34-32-40 Temporary Abnormal Behaviors

"Too Short Selection" Indication Not Displayed on the RWY CONDITION / BRAKING ACTION Matrix for LDG PERF CODE 5 (WET - GOOD)........A

AIRCRAFT SYSTEMS

34-32 - ROW/ROP - BTV

PRELIMINARY PAGES - SUMMARY OF HIGHLIGHTS

Localization Title	Toc Index	ID	Reason
DSC-34-32-20-20-35 ROW/ROP MESSAGE	A	1	Correction of a typo. Documentation update: Deletion of text.

Intentionally left blank

GENERAL

Ident.: DSC-34-32-10-00016934.0001001 / 04 MAY 16
Applicable to: ALL

The Brake to Vacate (BTV), the Runway Overrun Warning (ROW), and the Runway Overrun Protection (ROP) are related functions of the PRIM that use the same algorithm to:
- Protect the aircraft against runway excursion (ROW and ROP)
- Optimize the automatic braking (BTV).

The ROW:
- Is a warning function that is in operation in flight during approach
- Warns the flight crew if the landing runway is too short.

L2 For more information about the ROW, *Refer to DSC-34-32-20-10 ROW*.

L1 The ROP:
- Is a protection function that is in operation on ground during rollout
- Activates if the remaining landing runway is too short, and orders the flight crew to take appropriate actions to stop the aircraft
- Can also automatically apply maximum braking to the aircraft, when an autobrake mode is active.

L2 For more information about the ROP, *Refer to DSC-34-32-20-10 ROP*.

L1 The BTV is a function that optimizes the autobrake deceleration at landing, in order to reach an exit that the flight crew selected.

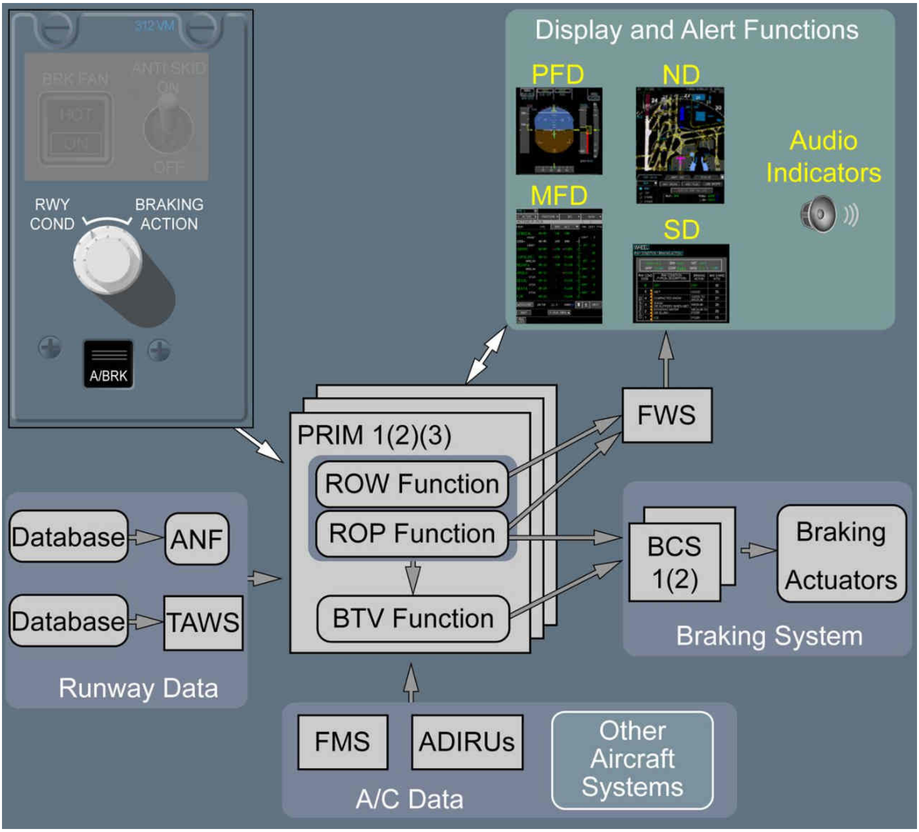
L2 For more information about the BTV, *Refer to DSC-34-32-30-10 Overview*.

ARCHITECTURE

Applicable to: ALL

Ident.: DSC-34-32-10-10-00016935.0001001 / 26 APR 14

Architecture


312 VM
BRK FAN
HOT
ON
ANTI SKID
ON
OFF
RWY COND
BRAKING ACTION
A/BRK
Display and Alert Functions
PFD
ND
MFD
SD
Audio Indicators
FWS
PRIM 1(2)(3)
ROW Function
ROP Function
BTV Function
BCS 1(2)
Braking Actuators
Braking System
Database
ANF
Database
TAWS
Runway Data
FMS
ADIRUs
Other Aircraft Systems
A/C Data

Ident.: DSC-34-32-10-10-00016936.0001001 / 26 APR 14

FWS

The FWS triggers the ROW and ROP messages and audio indicators.

Ident.: DSC-34-32-10-10-00016937.0001001 / 07 NOV 16

RUNWAY DATA

ANF

The ANF:
- Detects the landing runway
L2 The ANF can detect the landing runway via the ANF database.
L1
- Computes the aircraft position for the ROW, ROP, and BTV functions
- Enables the flight crew to select the landing runway and the BTV exit via the airport moving map
- Provides the flight crew with the display of landing information via the airport moving map (i.e. selected landing runway, selected BTV exit, selected runway condition, LDA, landing distance and runway occupancy time)
- Sends the selected data and the detected landing runway to the PRIMs.
- Enables the flight crew to set the runway condition, as a backup of the RWY COND/BRAKING ACTION selector

TAWS

The TAWS:
- Detects the landing runway
L2 The TAWS can detect the landing runway via the TAWS database.
L1
- Computes the aircraft position for the ROW and ROP functions
- Sends the detected landing runway and the computed aircraft position to the PRIMs
- Sends the slope of the runway that is selected on the ANF to the PRIMs.

L2 ANF AND TAWS DATABASES

The ANF and TAWS databases enable the detection of the landing runway.
The BTV, ROW and ROP functions use both the ANF and the TAWS databases.

Ident.: DSC-34-32-10-10-00016938.0001001 / 05 NOV 15

PRIM 1(2)(3)

The PRIMs host the ROW, ROP, and BTV functions.
The ROW and the ROP computes the landing distance, and runway overrun predictions.
The BTV computes braking orders to reach the selected exit. The BTV uses the landing distance from the ROW and ROP to compute the braking orders.

The ROW sends the runway overrun prediction to:
- The FWS to trigger the corresponding messages and audio indicators
- The ANF and CDS for feedback on the PFD and ND.

The ROP sends:

- The overrun prediction to:
  - The FWS to trigger the corresponding messages and audio indicators
  - The ANF and CDS for feedback on the PFD and ND
- The maximum braking order to the BCS.

In order to protect the aircraft against runway excursion, the ROW and ROP use:

- The runway data from the ANF and the TAWS
- The FMS data, when the aircraft is above the ROW transition altitude.
  L2 For more information about the ROW transition altitude, *Refer to DSC-34-32-20-10 ROW*.
- L1 The ADIRUs data, when the aircraft is below the ROW transition altitude.
  L2 For more information about the ROW transition altitude, *Refer to DSC-34-32-20-10 ROW*.
- L1 The runway condition or braking action that the flight crew selected.

Ident.: DSC-34-32-10-10-00016939.0001001 / 26 APR 14

BRAKING SYSTEM

The BCS controls the braking actuators as per the ROP or BTV orders.

Ident.: DSC-34-32-10-10-00016940.0002001 / 07 JUN 19

A/C DATA

FMS

Above the ROW transition altitude, in order to compute the landing distance for the ROW and BTV functions, the FMS provides the PRIMs with the destination airport information and the associated aircraft data:

- The ICAO code of the destination airport
- The QNH of the destination airport
- The OAT at destination airport
- The wind direction and speed at landing runway
- The approach speed
- The landing configuration
- The predicted LW.

L2 For more information about the ROW transition altitude, *Refer to DSC-34-32-20-10 ROW*.

L1 **ADIRUS**

Below the ROW transition altitude, in order to compute the landing distance for the ROW, ROP, and BTV functions, the ADIRUs provide the PRIMs with:
- The current GS
- The OAT
- The pressure altitude.

L2 For more information about the ROW transition altitude, *Refer to DSC-34-32-20-10 ROW*.

Ident.: DSC-34-32-10-10-00020784.0001001 / 26 APR 14

BRAKE PANEL

The brake panel enables the flight crew to set the runway condition/ braking action, and to arm, or disarm the BTV.

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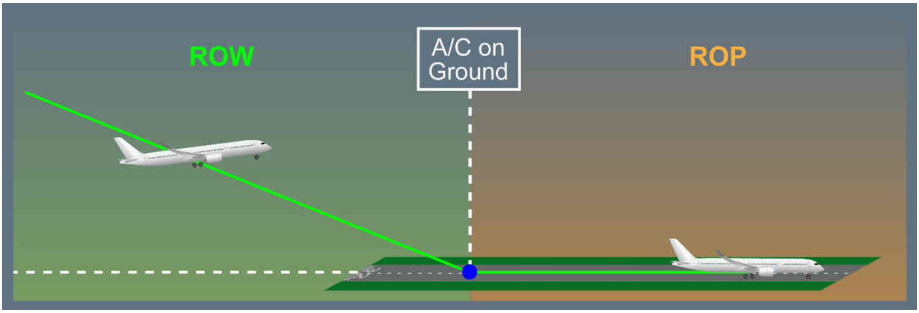
OVERVIEW

Ident.: DSC-34-32-20-10-00016941.0001001 / 04 DEC 14
Applicable to: ALL

The ROW and ROP functions alert the flight crew if a potential runway overrun is detected at landing, both in manual or automatic braking.
The ROW function is armed during the airborne phase of landing (before the ROW/ROP transition point), and the ROP function is armed during the ground phase of landing (after the ROW/ROP transition point).

ROW/ROP Transition Point



L12

Note: *The ROW/ROP transition point is the point where the aircraft is confirmed to be on ground.*

The aircraft is at the ROW/ROP transition point when one of the following occurs:
- *The nose landing gear is on ground, or*
- *The ground spoilers are extended for 5 s.*

The ROW and ROP functions:
- Monitor the computed landing distance (ROW and ROP)
- Predict potential landing runway overrun in flight (ROW) and during rollout (ROP)
- Provide specific indications on the displays for runway overrun monitoring in flight (ROW) and during rollout (ROP)
- If the landing runway is too short:
  - Trigger the applicable aural and visual alerts (ROW and ROP)
  - Automatically order maximum braking, when the BRK MED or the BTV is active (ROP).

Note: *In the case of a failure affecting the landing performance, the ROW line on the ANF is not displayed and the ROW/ROP remains armed. Alerts may be triggered based on the landing distance computed without failure.*

ROW

Ident.: DSC-34-32-20-10-00016942.0001001 / 07 NOV 16
Applicable to: ALL

ABOVE THE ROW TRANSITION ALTITUDE

The PRIMs compute the ROW landing distance based on predictive data, the associated ROW line is steady.

L2 The PRIMs compute the ROW landing distance based on:
- The FMS data at destination (e.g. QNH of the destination airport, OAT, predicted LW)
- The data of the selected landing runway. (The default runway is the FMS landing runway. The flight crew can select another runway via the ANF.)
- The average runway slope
- The runway condition or the braking action that the flight crew has selected
- A realistic manual or automatic landing, normal flare, and de-rotation technique
- Maximum braking
- IDLE REV, when the selected runway condition/braking action is DRY-6
- MAX REV, when the selected runway condition/braking action is different from DRY-6.

L1 If a runway overrun is predicted, the ROW displays a message on the ND.

BELOW THE ROW TRANSITION ALTITUDE

The ROW is automatically armed as soon as the landing runway is detected.
The PRIMs compute the ROW landing distance based on real time data, for the detected runway.
The associated ROW line can move.

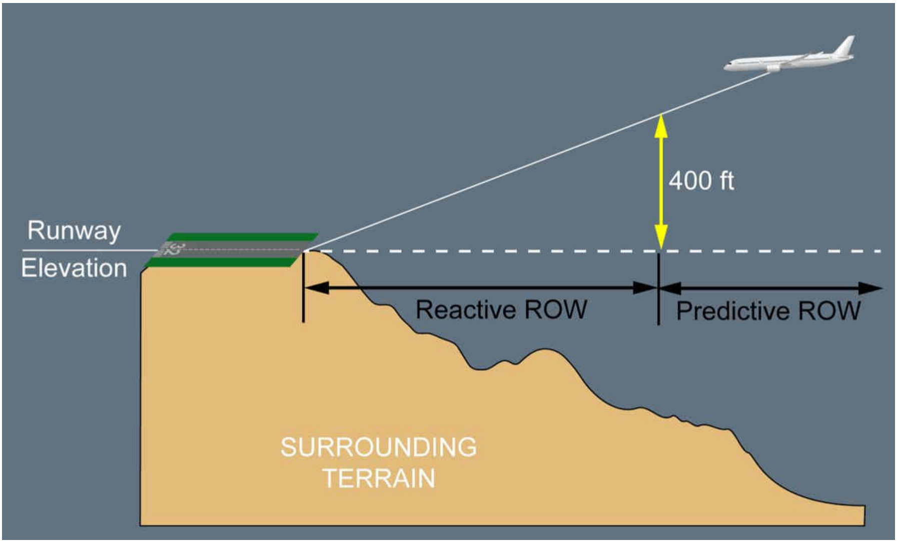
L2 The PRIMs compute the landing distance based on:
- The landing runway that the ANF and the TAWS detect
- The runway condition or the braking action that the flight crew has selected
- The current data of the aircraft (e.g. aircraft position, landing configuration, wind direction and speed)
- The average slope
- A realistic manual or automatic landing, normal flare, and de-rotation technique
- Maximum braking
- IDLE REV, when the selected runway condition/braking action is DRY-6
- MAX REV, when the selected runway condition/braking action is different from DRY-6.

L1 If a runway overrun is predicted, the ROW triggers alerts.
For specific cases, the flight crew can manually deactivate the ROW.

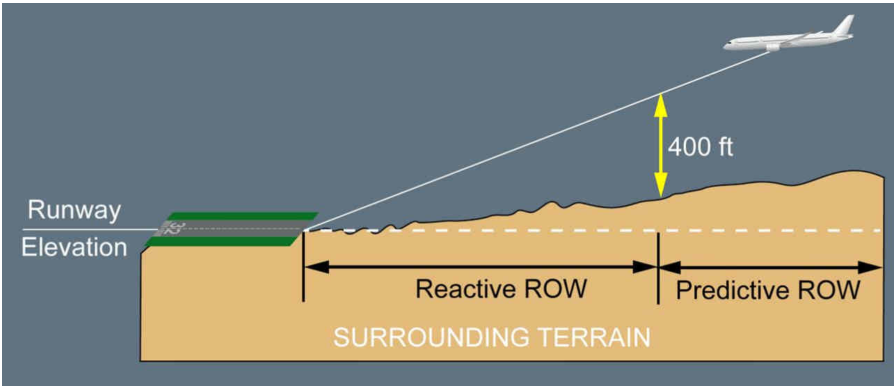
L2 ROW TRANSITION ALTITUDE

The ROW transition altitude is the altitude where the ROW changes from a predictive logic to a reactive logic.
In order to cover the situations where the surrounding terrain is above or below the runway, the ROW transition altitude, and the triggering of the associated ROW alerts are based on the minimum value between the radio altitude and the aircraft height above the runway threshold.

Surrounding Terrain Below The Runway Threshold


400 ft
Runway
Elevation
Reactive ROW
Predictive ROW
SURROUNDING
TERRAIN

Surrounding Terrain Above The Runway Threshold



ROP

Ident.: DSC-34-32-20-10-00016943.0001001 / 08 JUL 19
Applicable to: ALL

The ROP is automatically armed from the ROW/ROP transition point until the aircraft ground speed reaches 30 kt.
The ROP provides the flight crew with the stop bar, when the BRK MED or BTV is active.
The stop bar corresponds to the computed landing distance.

L2 The PRIMs compute the landing distance based on:
- The landing runway that the ANF and the TAWS detect
- The runway condition or braking action that the flight crew selects
- The current data of the aircraft (e.g. aircraft position and speed, landing configuration, wind direction and speed).

L1 If the ROP detects an overrun situation, the ROP:
- In manual braking, triggers alerts, or
- When the BRK MED or BTV is active, triggers alerts and automatically activates the maximum braking.

L2 When the ROP is active, the only possible method to disconnect the autobrake is for the flight crew to apply sufficient pedal deflection on the brake pedals. In this situation, the flight crew reverts to pedal braking. Nevertheless, the ROP remains active as long as a runway overrun is detected.

RUNWAY CONDITION DEGRADATION

Ident.: DSC-34-32-20-10-00023375.0001001 / 27 FEB 17
Applicable to: ALL

When the antiskid activates, the PRIM can downgrade the selected runway condition / braking action. The runway condition degradation is designed to provide awareness to the flight crew via a message on the FMA (*Refer to DSC-34-32-20-20-35 FMA*). The updated runway condition / braking action is set in the RWY CONDITION / BRAKING ACTION matrix, and is displayed on the ND (*Refer to DSC-34-32-20-20-50 RWY COND/BRAKING ACTION (ARC Mode)*). When an autobrake mode is active, the computation of the stop bar displayed on the ANF takes into account the downgraded runway condition / braking action.

L2 When the antiskid activates, the PRIM computes a runway friction coefficient based on the aircraft deceleration. This coefficient is compared to the coefficient that is associated with the runway condition/braking action that the flight crew selected. If the computed friction coefficient is significantly less than the selected coefficient, the PRIM downgrades the selected runway condition/braking action. The PRIM can downgrade the runway condition / braking action as much as necessary.

L1 *Note:* 1. *The runway condition degradation does not improve the braking performance, because it activates only when the antiskid is active.*
2. *The runway condition may become better along the runway, however the PRIM cannot upgrade the runway condition / braking action.*

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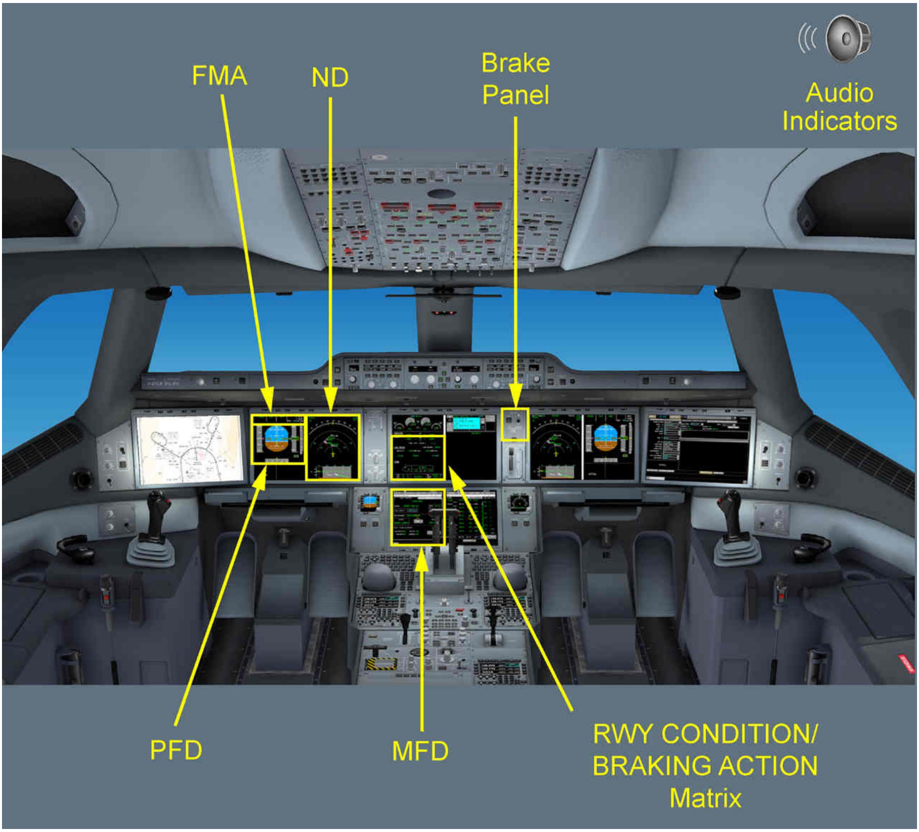
Cockpit View

COCKPIT VIEW

Ident.: DSC-34-32-20-20-10-00016944.0002001 / 27 FEB 17
Applicable to: ALL


FMA
ND
Brake Panel
Audio Indicators
PFD
MFD
RWY CONDITION/ BRAKING ACTION Matrix

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Audio Indicators

AUDIO INDICATORS

Ident.: DSC-34-32-20-20-20-00016950.0002001 / 27 FEB 17
Applicable to: ALL

Audio Indicator	Condition or Cause	Duration
Runway Too Short, Runway Too Short (Synthetic voice)	Runway too short. The aircraft is in flight, below 200 ft, and the ROW predicts that the landing runway is too short.	Sounds as long as: - The ROW predicts that the landing runway is too short - The flight crew does not perform a go-around.
Set Max reverse (Synthetic voice)	Runway too short. - The aircraft is on ground, the ground speed is above 80 kt, and the ROP predicts that the landing runway is too short with a degraded runway condition (e.g. WATER/SLUSH-2 if WET-5 is selected) - The thrust reverser levers are not set to MAX REV.	Sounds one time. Is inhibited as long as all of the following occur: - The rudder deflection is more than 2/3 of the maximum rudder travel - Differential braking is detected.
	Runway too short. The aircraft is on ground and the ROP predicts that the landing runway is too short for the selected runway condition.	Sounds as long as the thrust reverser levers are not set to the MAX REV position. Is inhibited as long as all of the following occur: - The rudder deflection is more than 2/3 of the maximum rudder travel - Differential braking is detected.

Continued on the following page

Continued from the previous page

Audio Indicator	Condition or Cause	Duration
Keep Max Reverse (Synthetic voice)	Runway too short. - The aircraft is on ground and the ROP predicts that the landing runway is too short - The ground speed is 80 kt or below - The thrust reverser levers are set to MAX REV.	Sounds one time. Is inhibited as long as all of the following occur: - The rudder deflection is more than 2/3 of the maximum rudder travel - Differential braking is detected.
Brake, Max Braking, Max Braking (Synthetic voice)	Runway too short. - The aircraft is on ground and the ROP predicts that the landing runway is too short - Neither the BTV nor the BRK MED is active - The full pedal braking is not applied - This audio indicator has priority over the “SET MAX REVERSE” one	Sounds as long as: - The ROP predicts that the landing runway is too short - The flight crew does not apply maximum braking.

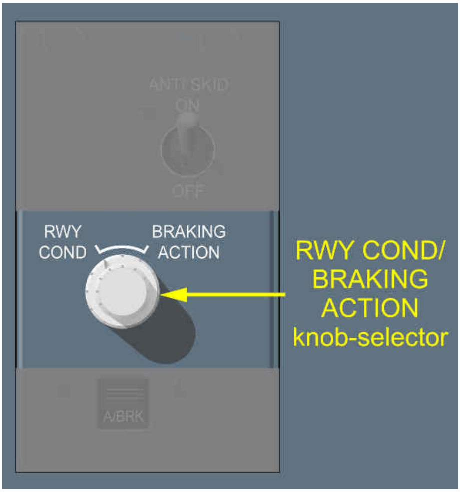
Brake Panel

BRAKE PANEL

Applicable to: ALL

Ident.: DSC-34-32-20-20-30-10-00016945.0001001 / 26 APR 14

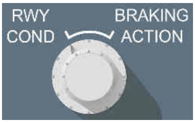
Brake Panel


ANTI SKID
ON
OFF
RWY
COND
BRAKING
ACTION
A/BRK
RWY COND/
BRAKING
ACTION
knob-selector

Ident.: DSC-34-32-20-20-30-10-00016964.0002001 / 27 FEB 17

RWY COND/BRAKING ACTION KNOB-SELECTOR

L12



- The knob has two positions: RWY COND and BRAKING ACTION. For more information,*Refer to DSC-34-32-20-20-70 RWY COND/BRAKING ACTION Mode*.
- When the selector is turned, sets the runway condition or braking action. After selection, the entry is automatically validated after a few seconds. If the flight crew selects a contaminated runway, or if the initial selection was a contaminated runway, the RWY CONDITION / BRAKING ACTION matrix automatically appears on the SD.
- When the selector is pulled, the RWY CONDITION / BRAKING ACTION matrix appears on the SD.
- When the selector is pushed, the RWY CONDITION / BRAKING ACTION matrix disappears.

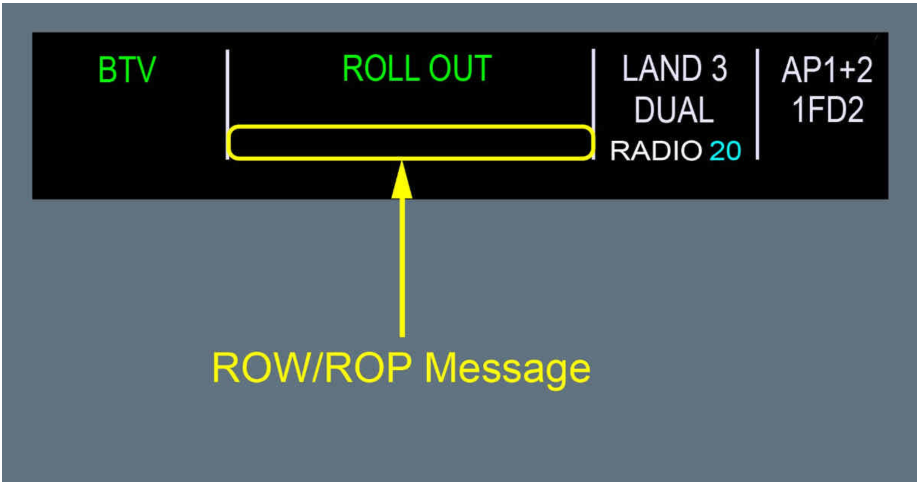
L2 The flight crew can also select the RWY CONDITION / BRAKING ACTION via the LANDING panel of the ANF. For more information, *Refer to DSC-34-32-20-20-50 LDG PERF CODE List*.

FMA

FMA

Applicable to: ALL

Ident.: DSC-34-32-20-20-35-10-00023344.0001001 / 27 FEB 17


BTV
ROLL OUT
LAND 3
DUAL
RADIO 20
AP1+2
1FD2
ROW/ROP Message

Ident.: DSC-34-32-20-20-35-10-00023345.0001001 / 03 JUL 20

1 ROW/ROP MESSAGE

RWY COND DEGRADED	The runway condition/braking action is degraded.

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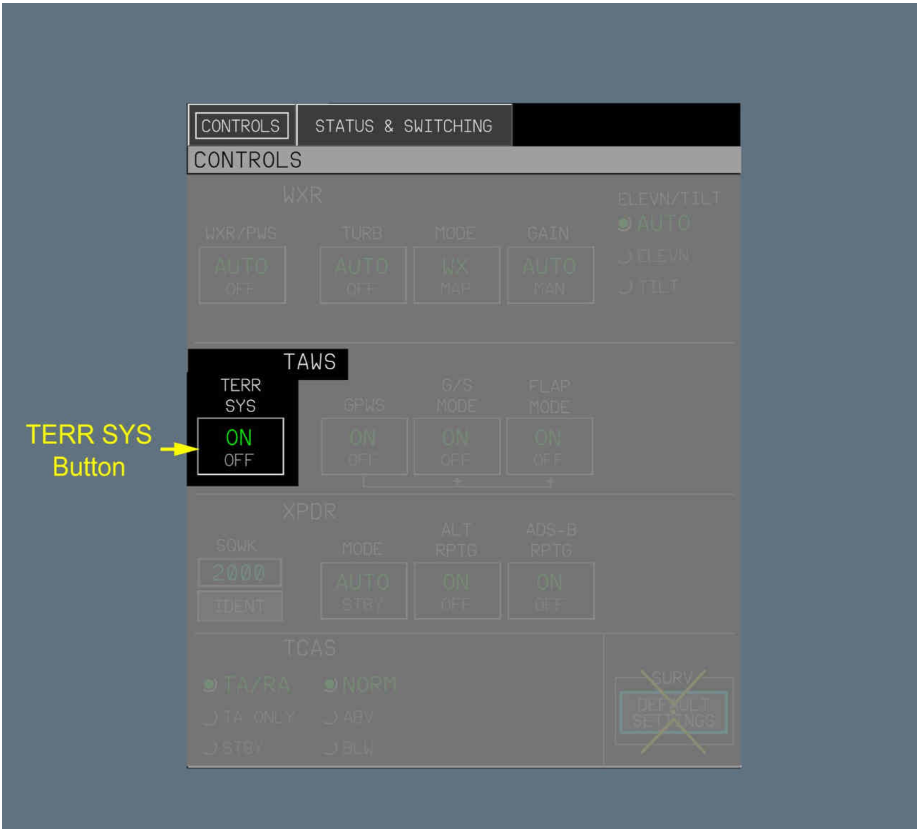
MFD

MFD

Applicable to: ALL

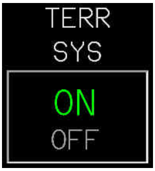
Ident.: DSC-34-32-20-20-40-10-00018135.0001001 / 26 APR 14

MFD

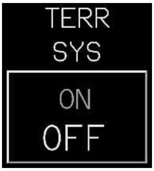

CONTROLS
STATUS & SWITCHING
CONTROLS
WXR
ELEVN/TILT
● AUTO
○ ELEVN
○ TILT
WXR/PWS
AUTO
OFF
TURB
AUTO
OFF
MODE
WX
MAP
GAIN
AUTO
MAN
TAWS
TERR SYS
ON
OFF
GPWS
ON
OFF
G/S MODE
ON
OFF
FLAP MODE
ON
OFF
TERR SYS Button
XPDR
SQWK
2000
IDENT
MODE
AUTO
STBY
ALT RPTG
ON
OFF
ADS-B RPTG
ON
OFF
TCAS
● TA/RA
○ TA ONLY
○ STBY
● NORM
○ ABV
○ BLW
SURV
DEFAULT SETTINGS

Ident.: DSC-34-32-20-20-40-10-00018136.0001001 / 06 AUG 14

TERR SYS BUTTON



The TERR function of the TAWS is on.
The ROW/ROP is on.



The TERR function of the TAWS is off.
The ROW/ROP is off.

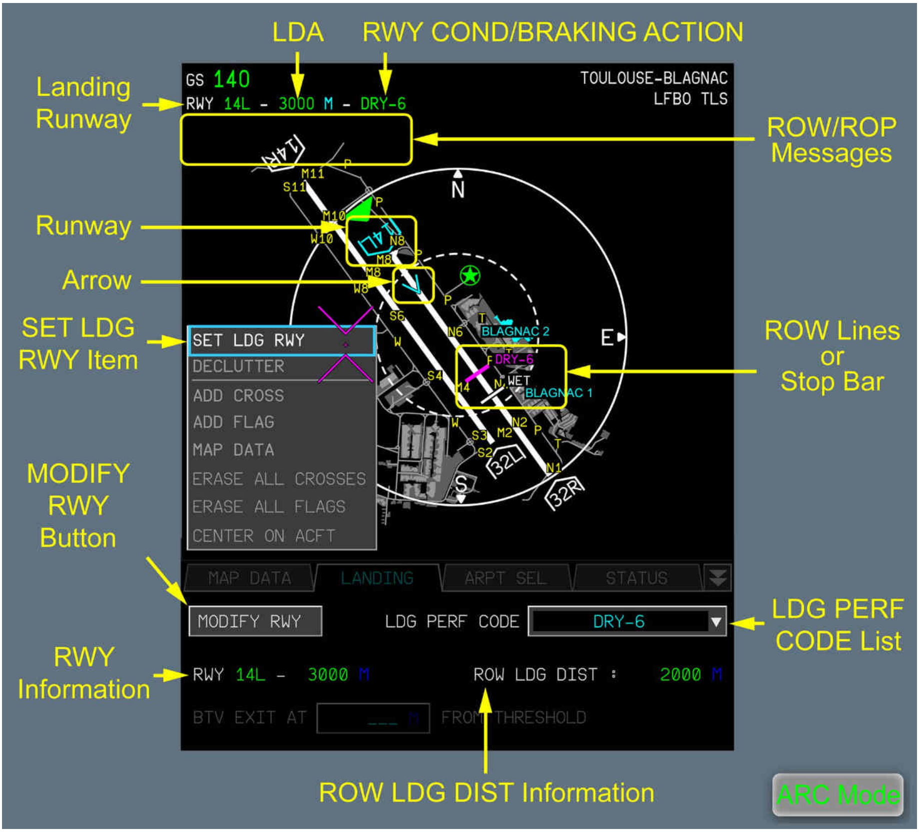
ND

ND

Applicable to: ALL

Ident.: DSC-34-32-20-20-50-10-00016946.0001001 / 07 NOV 16

ND


LDA
RWY COND/BRAKING ACTION
Landing Runway
ROW/ROP Messages
Runway
Arrow
SET LDG RWY Item
ROW Lines or Stop Bar
MODIFY RWY Button
LDG PERF CODE List
RWY Information
ROW LDG DIST Information
ARC Mode
TOULOUSE-BLAGNAC
LFBO TLS
SET LDG RWY
DECLUTTER
ADD CROSS
ADD FLAG
MAP DATA
ERASE ALL CROSSES
ERASE ALL FLAGS
CENTER ON ACFT
MAP DATA
LANDING
ARPT SEL
STATUS
MODIFY RWY
N
E
S
14L
14R
32L
32R
BLAGNAC 2
BLAGNAC 1
DRY-6
WET

GS 140
RWY 14L - 3000 M - DRY-6

LDG PERF CODE DRY-6

RWY 14L - 3000 M

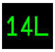
ROW LDG DIST : 2000 M

BTV EXIT AT ___ M FROM THRESHOLD

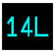
Ident.: DSC-34-32-20-20-50-10-00016969.0001001 / 02 OCT 14

LANDING RUNWAY (PLAN MODE)

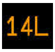
Indicates the landing runway.



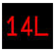
- The computed landing distance is less than the LDA.
- The landing runway is the runway that the flight crew selected via the FMS.



- The computed landing distance is less than the LDA.
- The flight crew selected a landing runway that is different from the FMS runway.



- The landing runway is too short
- The aircraft is above 200 ft.



- The landing runway is too short
- The aircraft is below 200 ft.

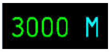
Ident.: DSC-34-32-20-20-50-10-00019502.0002001 / 27 FEB 17

LDA

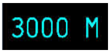
Indicates the Landing Distance Available (LDA) as displayed on the LANDING panel of the ANF.

L2 Appears in feet (ft) with the US unit of length ◁ option.

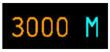
L1



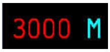
The computed landing distance is less than the LDA.



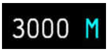
- The flight crew modified the LDA via the LANDING panel
- The computed landing distance is less than the LDA.



- The landing runway is too short
- The aircraft is above 200 ft.



- The landing runway is too short
- The aircraft is below 200 ft.



The system cannot compute the landing distance.

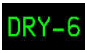
Ident.: DSC-34-32-20-20-50-10-00019503.0002001 / 27 FEB 17

RWY COND / BRAKING ACTION (PLAN MODE)

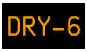
Indicates the runway condition or the braking action that the flight crew selected via the RWY CONDITION/BRAKING ACTION selector of the BRAKE Panel, or the LDG PERF CODE list of the ANF LANDING panel.

L2 The default runway condition is initialized to WET-5 before the flight.
After a go-around, a change of the selected runway, or a change of the autobrake mode, the selected runway condition/braking action remains the same.

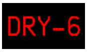
L1 The selected runway condition or the selected braking action can be displayed in the following colors:



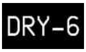
The computed landing distance is less than the LDA.



- The landing runway is too short, and
- The aircraft is above 200 ft.



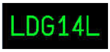
- The landing runway is too short, and
- The aircraft is below 200 ft.



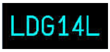
The system cannot compute the landing distance.

Ident.: DSC-34-32-20-20-50-10-00019504.0001001 / 02 OCT 14

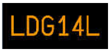
LANDING RUNWAY (ARC MODE)



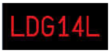
- The computed landing distance is less than the LDA, and
- The landing runway is the runway that the flight crew selected via the FMS.



- The computed landing distance is less than the LDA, and
- The flight crew selected a landing runway that is different from the FMS runway.



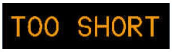
- The landing runway is too short, and
- The aircraft is above 200 ft.



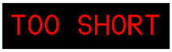
- The landing runway is too short, and
- The aircraft is below 200 ft.

Ident.: DSC-34-32-20-20-50-10-00019505.0001001 / 02 OCT 14

TOO SHORT MESSAGE



- The landing runway is too short, and
- The aircraft is above 200 ft.



- The landing runway is too short, and
- The aircraft is below 200 ft.

- The computed landing distance is less than the LDA, and
- The BTV is not armed.

L2 This area can also display the selected BTV exit. The TOO SHORT message has priority over the BTV Exit. For more information about the BTV Exit, *Refer to DSC-34-32-30-20-60 BTV EXIT*.

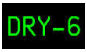
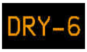
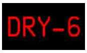
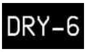
Ident.: DSC-34-32-20-20-50-10-00016974.0002001 / 27 FEB 17

RWY COND / BRAKING ACTION (ARC MODE)

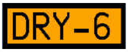
Indicates the runway condition or the braking action that the flight crew selected via the RWY CONDITION/BRAKING ACTION selector of the BRAKE Panel, or the LDG PERF CODE list of the ANF LANDING panel.

L2 The default runway condition is initialized to WET-5 before the flight.
After a go-around, a change of the selected runway, or a change of the autobrake mode, the selected runway condition/braking action remains the same.

L1 The selected runway condition or the selected braking action can be displayed in the following colors:

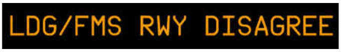
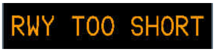
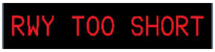
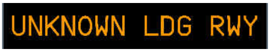
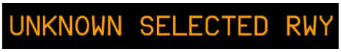
 DRY-6	The computed landing distance is less than the LDA.
 DRY-6	- The landing runway is too short, and - The aircraft is above 200 ft.
 DRY-6	- The landing runway is too short, and - The aircraft is below 200 ft.
 DRY-6	The system cannot compute the landing distance.

Note: When the selected runway condition/braking action is not yet validated, the display appears in black on a colored background. For example :

 DRY-6	*The flight crew selected DRY, the entry will be automatically validated after a few seconds, and the runway is too short for this runway condition.*

Ident.: DSC-34-32-20-20-50-10-00016970.0002001 / 27 FEB 17

ROW/ROP MESSAGES

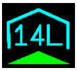
 LDG/FMS RWY DISAGREE	- The selected landing runway is not the FMS runway - The BTV is not armed.
 RWY TOO SHORT	- The runway is too short - The aircraft is above 200 ft.
 RWY TOO SHORT	- The runway is too short - The aircraft is below 200 ft.
 UNKNOWN LDG RWY	- Neither the ANF nor the TAWS detects the landing runway - The aircraft is below 50 ft. - This message can be displayed in PLAN, ARC or ROSE-NAV modes of the ANF
 UNKNOWN SELECTED RWY	The selected landing runway on the ANF is: - Not available in the TAWS database, or - Not valid for ROW/ROP in the TAWS database.

Ident.: DSC-34-32-20-20-50-10-00016971.0001001 / 26 APR 14

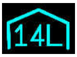
RUNWAY

- The blue color indicates the selected landing runway
- The green triangle indicates the FMS runway.

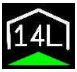
L12



The runway 14L is the selected landing runway, and the FMS runway.
By default, the selected landing runway is the FMS runway.



The runway 14L is the selected landing runway, but not the FMS runway.

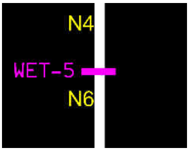


The runway 14L is the FMS runway, but not the selected landing runway.

Ident.: DSC-34-32-20-20-50-10-00016972.0001001 / 02 OCT 14

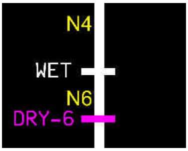
ROW LINES OR STOP BAR

ROW LINES

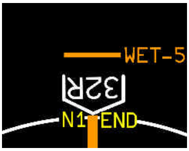


- The label indicates the selected runway condition or braking action
- The aircraft is in flight.

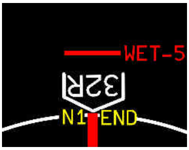
L12



- The WET line is displayed when the flight crew selects DRY-6 as the runway condition or braking action.
  If the flight crew selects BRAKING ACTION, the WET label changes to GOOD.
- Neither the BRK MED nor the BTV is armed
- The aircraft is above 500 ft.



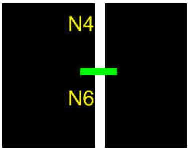
- The landing runway is too short
- The aircraft is above 200 ft
- The label indicates the selected runway condition or braking action.



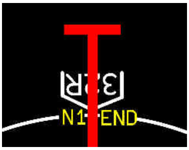
- The landing runway is too short
- The aircraft is below 200 ft
- The label indicates the selected runway condition or braking action.

L2 For more information about ROW lines with BTV armed, *Refer to DSC-34-32-30-20-60 ROW Lines or Stop Bar*.

L1 **STOP BAR**



- The aircraft is on ground
- The BRK MED is active.



- The runway is too short
- The aircraft is on ground
- The BRK MED or the BTV is active.

L2 For more information about stop bars with BTV armed, *Refer to DSC-34-32-30-20-60 ROW Lines or Stop Bar*.

Ident.: DSC-34-32-20-20-50-10-00020550.0001001 / 07 NOV 16

MODIFY RWY BUTTON

The flight crew can shift the runway threshold or the runway end.

L2 The flight crew can modify only one runway. If another runway is modified, the modification of the previous runway is cleared.
When BTV is armed, the THRESHOLD SHIFT entry field, and the END SHIFT entry field are disabled.

L1 *Note:* *If BTV is armed on a shifted runway, the flight crew may clear this shift if they try to enter a shift on another runway. In this case, BTV remains armed and will revert to BRK MED when the aircraft will be below 300 ft.*

L3 The shifted landing distance is removed:
- 5 min after the last engine shutdown, or
- When the flight crew changes the ANF database cycle.

L1 When the flight crew validates the runway shift with the return button, the runway shift is displayed on the MAP DATA panel.

Ident.: DSC-34-32-20-20-50-10-00019981.0001001 / 09 MAR 16

RWY INFORMATION

Indicates the selected runway for ROW/ROP and BTV, and the available landing distance.

L2 The landing distance available appears in feet (ft) with the US unit of length ◁✳ option.

Ident.: DSC-34-32-20-20-50-10-00019982.0001001 / 09 MAR 16

ROW LDG DIST INFORMATION

Indicates the distance between the runway threshold (or modified threshold) and the ROW line.

L2 Appears in feet (ft) with the US unit of length ⊲✻ option.

L1 The value can be displayed in:
- Amber, when the ROW LDG DIST is more than the LDA, or
- Green, when the ROW LDG DIST is less than the LDA.

Ident.: DSC-34-32-20-20-50-10-00019983.0002001 / 27 FEB 17

LDG PERF CODE LIST

The flight crew can select the runway condition.

Note: The LDG PERF CODE can be set only if a runway is selected.

L2 The following selection is available:

Runway Condition	Braking Action
DRY-6	DRY-6
WET-5	GOOD-5
COMP SNOW-4	GOOD TO MED-4
SNOW/SLIP-3	MEDIUM-3
WATER/SLUSH-2	MED TO POOR-2
ICE-1	POOR-1

The flight crew can also use the RWY COND/BRAKING ACTION selector of the BRAKE panel. For more information, *Refer to DSC-34-32-20-20-30 RWY COND/BRAKING ACTION Knob-Selector*.

Ident.: DSC-34-32-20-20-50-10-00019995.0001001 / 26 APR 14

SET LDG RWY ITEM

The SET LDG RWY item is available when the flight crew clicks on a runway. The FMS landing runway is the default selection. The flight crew uses the SET LDG RWY item to select a runway that is different from the FMS landing runway.

Ident.: DSC-34-32-20-20-50-10-00023855.0001001 / 07 NOV 16

ARROW

A blue arrow is displayed on the selected landing runway, next to the threshold.
If the flight crew inserts a threshold shift, the blue arrow also shifts in order to remain next to the threshold.

Intentionally left blank

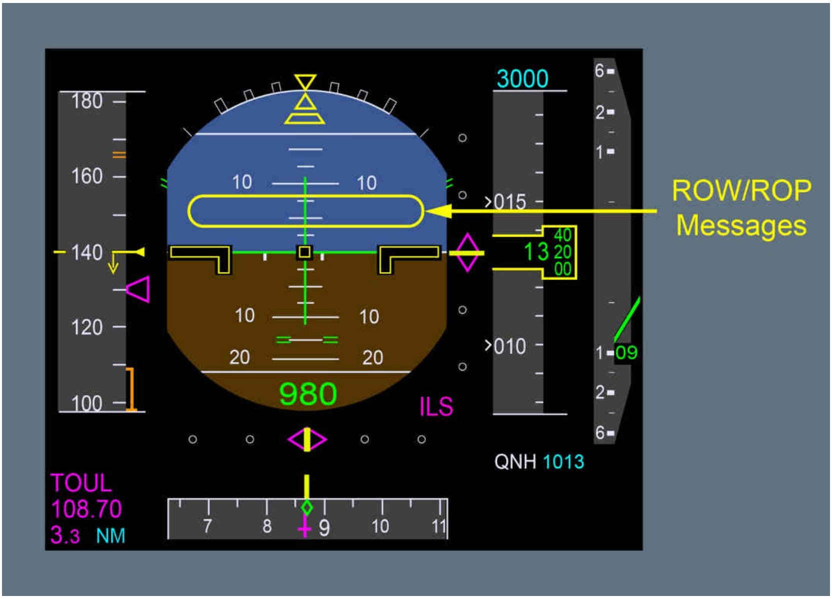
PFD

PFD

Applicable to: ALL

Ident.: DSC-34-32-20-20-60-10-00016947.0001001 / 26 APR 14

PFD

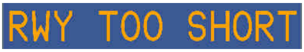
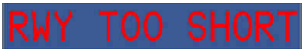

180
160
140
120
100
10
10
10
10
20
20
980
ILS
3000
>015
>010
40
13
20
00
6
2
1
1
09
2
6
QNH 1013
TOUL
108.70
3.3 NM
7
8
9
10
11

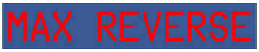
ROW/ROP Messages

Ident.: DSC-34-32-20-20-60-10-00016981.0002001 / 27 FEB 17

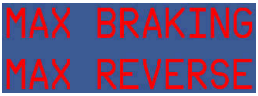
ROW/ROP MESSAGES

L12

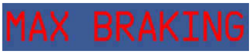
 RWY TOO SHORT	- The landing runway is too short - The aircraft is below the ROW transition altitude, and above 200 ft. For more information about the ROW transition altitude, *Refer to DSC-34-32-20-10 ROW*.
 RWY TOO SHORT	- The landing runway is too short - The aircraft is below 200 ft.


MAX REVERSE

- The landing runway is too short
- The aircraft is on ground
- The autobrake is active.


MAX BRAKING
MAX REVERSE

- The landing runway is too short
- The aircraft is on ground
- No autobrake is active


MAX BRAKING

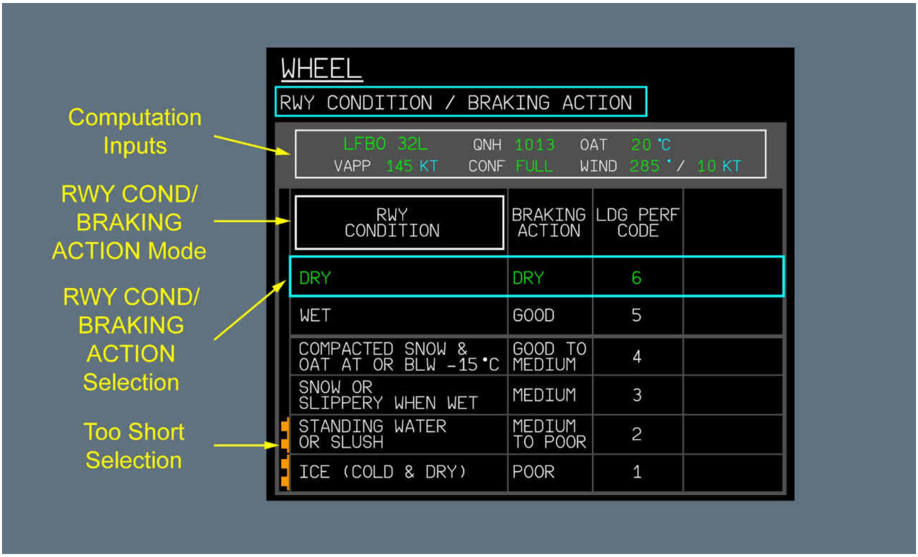
- The landing runway is too short
- The aircraft is on ground
- No autobrake is active
- Maximum reverse thrust is set.

RWY CONDITION/BRAKING ACTION Matrix

RWY CONDITION/BRAKING ACTION MATRIX

Applicable to: ALL

Ident.: DSC-34-32-20-20-70-10-00016948.0002001 / 27 FEB 17


Computation Inputs
RWY COND/ BRAKING ACTION Mode
RWY COND/ BRAKING ACTION Selection
Too Short Selection

WHEEL

RWY CONDITION / BRAKING ACTION

LFBO 32L QNH 1013 OAT 20 °C
VAPP 145 KT CONF FULL WIND 285 ° / 10 KT

RWY CONDITION	BRAKING ACTION	LDG PERF CODE
DRY	DRY	6
WET	GOOD	5
COMPACTED SNOW & OAT AT OR BLW -15 °C	GOOD TO MEDIUM	4
SNOW OR SLIPPERY WHEN WET	MEDIUM	3
STANDING WATER OR SLUSH	MEDIUM TO POOR	2
ICE (COLD & DRY)	POOR	1

Ident.: DSC-34-32-20-20-70-10-00016982.0001001 / 05 NOV 15

COMPUTATION INPUTS

Indicates the inputs for the computation of the ROW landing distance.
Above the ROW transition altitude, the APPR panel of the FMS PERF page provides the inputs for the computation of the ROW landing distance.

L2 For more information about the ROW transition altitude,*Refer to DSC-34-32-20-10 ROW*.

L1 Below the ROW transition altitude, the computation inputs are real-time values, and dashes are displayed.

L2 For more information about the ROW transition altitude, *Refer to DSC-34-32-20-10 ROW*.

If the entry fields of the APPR panel are empty, the ROW uses default values.
If the landing runway is neither selected nor detected, no value appears.
The ICAO code of the destination airport and the runway can appear in blue if the flight crew selected a destination airport or a runway in the ANF that is not the FMS runway.

Ident.: DSC-34-32-20-20-70-10-00016984.0002001 / 27 FEB 17

RWY COND/BRAKING ACTION SELECTION

The blue rectangle indicates the selected runway condition/braking action. The runway condition / braking action is manually selected by the flight crew, or automatically selected in the case of a runway condition degradation.

When selected, the line is displayed in the following colors:
- In green, if the computed landing distance is less than the LDA. This is confirmed with associated green indications on ND.
- In amber, if the runway is too short. This is confirmed with associated amber information on ND.
- In white, if the landing distance cannot be computed. This is confirmed with white indication or absence of information on ND.

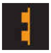
Ident.: DSC-34-32-20-20-70-10-00023626.0001001 / 07 NOV 16

RWY COND/BRAKING ACTION MODE

The white rectangle can indicate either RWY CONDITION or BRAKING ACTION, depending on the position of the RWY COND/BRAKING ACTION knob.
The selection of RWY CONDITION or BRAKING ACTION mode has an effect only on the display of the selected LDG PERF CODE (e.g. for a LDG PERF CODE 5, the display can be WET-5 or GOOD-5).

Ident.: DSC-34-32-20-20-70-10-00023434.0001001 / 27 FEB 17

TOO SHORT SELECTION



Indicates that, for the corresponding runway condition/braking action, the landing runway is too short.

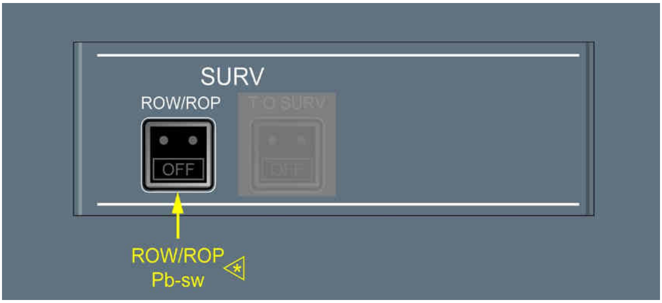
SURV Panel on Overhead Panel (if installed)

SURV PANEL ON OVERHEAD PANEL (IF INSTALLED)

Applicable to: ALL

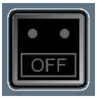
Ident.: DSC-34-32-20-20-80-10-00024728.0001001 / 11 APR 18

SURV Panel



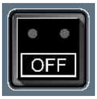
Ident.: DSC-34-32-20-20-80-10-00024670.0001001 / 11 APR 18

ROW/ROP PB-SW



The ROW/ROP and BTV are available.

L12



The ROW/ROP and BTV are off.
Associated with the ROW/ROP & BTV OFF memo.

Intentionally left blank

MEMO

ROW/ROP & BTV OFF

Ident.: DSC-34-32-20-20-90-00024672.0001001 / 11 APR 18
Applicable to: ALL

ROW/ROP & BTV OFF : Appears when the flight crew sets the ROW/ROP pb-sw ◁ to OFF on the SURV overhead panel ◁ .

Intentionally left blank

OVERVIEW

Ident.: DSC-34-32-30-10-00016951.0002001 / 27 FEB 17
Applicable to: ALL

The Brake To Vacate (BTV) is a function that optimizes the autobrake deceleration at landing, in order to reach an exit that the flight crew selected.

The BTV has two modes of operation depending on the selected runway condition/braking action:
- BTV on dry and wet runways,
- BTV CONTAM on contaminated runways.

The FMA indicates the selected mode.
L2 For more information, *Refer to FCTM/AS-BTV BTV Principle*.

PRINCIPLE

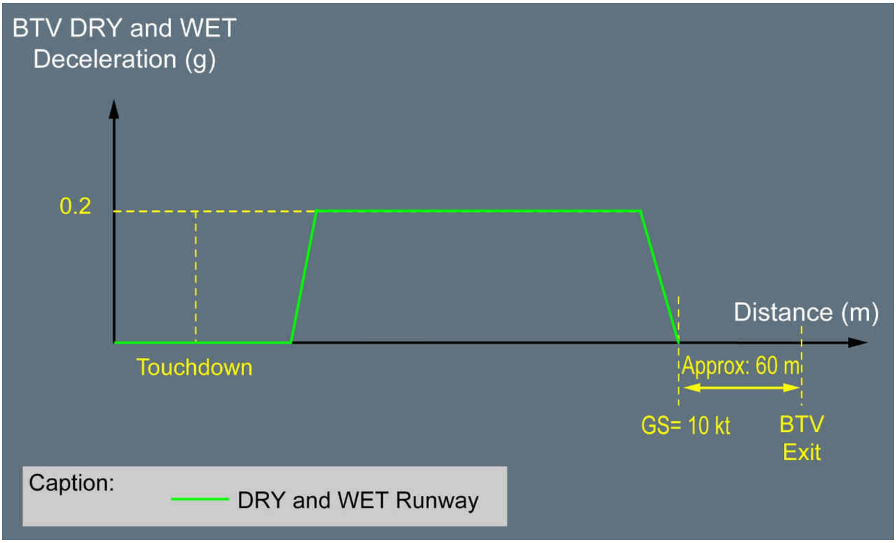
Ident.: DSC-34-32-30-10-00016952.0003001 / 29 JAN 19
Applicable to: ALL

DRY AND WET RUNWAYS

The runway is considered dry or wet if the selected LDG PERF CODE is 6 or 5.

On dry and wet runways, BTV:
- Can delay braking, in order to optimize the brake use, the runway occupancy time (ROT), and the passengers comfort
- Takes into account the distance between the aircraft and the selected exit, in order to release braking when the ground speed is approximately 10 kt, approximately 60 m (200 ft) before the selected exit. If the BTV exit is the runway end, the BTV target is 300 m before the runway end.
- Orders a maximum deceleration of 0.2 g. In the case of a significant BTV exit distance, the maximum deceleration may not be reached. In order to anticipate an exit missed situation, BTV can order a deceleration up to 0.35 g.

BTV Deceleration Logic

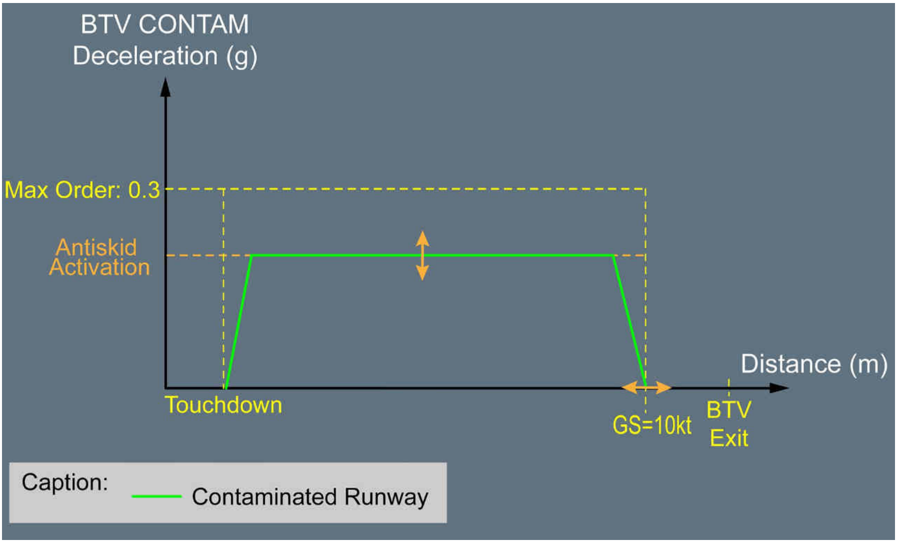


CONTAMINATED RUNWAYS

The runway is considered contaminated if the selected LDG PERF CODE is 4 or less than 4.

On contaminated runways, BTV CONTAM:
- Does not delay the braking
- Orders a deceleration of 0.3 g (up to 0.35 g in anticipation to an exit missed situation). On contaminated runways, these maximum deceleration orders may not be reached due to antiskid activation.
- Does not take into account the distance between the aircraft and the selected exit, and releases the braking when the ground speed is approximately 10 kt.

BTV CONTAM Deceleration Logic



BTV ARMING

Ident.: DSC-34-32-30-10-00016953.0002001 / 27 FEB 17
Applicable to: ALL

BTV or BTV CONTAM arms when all of the following conditions occur:
- The flight crew set a BTV exit beyond the ROW line of the selected landing runway
- The flight crew presses the A/BRK pb
- There is no failure that affects the landing distance.

BTV arms if the runway condition that the flight crew selected is dry or wet. Otherwise, BTV CONTAM arms.
When armed, the FMA displays BTV or BTV CONTAM.

BTV DISARMING

Ident.: DSC-34-32-30-10-00016954.0002001 / 08 JUL 19
Applicable to: ALL

The BTV function can disarm in flight.

BTV MODE CHANGE

BTV changes to BTV CONTAM if the flight crew selects a contaminated runway condition (LDG PERF CODE at or below 4).
BTV CONTAM changes to BTV if the flight crew selects a dry or wet runway (LDG PERF CODE 6 or 5).

L2 *Note:* *At 800 ft, the selected runway condition is memorized, the runway condition can then be changed, but an upgrade above the runway condition that is memorized at 800 ft is not possible.*

L1 When the BTV mode change occurs:
- A triple click audio indicator sounds
- The new autobrake mode appears on the FMA with a white box during 10 s.

L2 If the mode change occurs below 200 ft, the triple click will sound on ground, when the new BTV mode activates.

L1 REVERSION TO BRK MED

BTV or BTV CONTAM reverts to BRK MED if one of the following occurs:
- The flight crew lands on a runway that is different from the selected landing runway, or
- There is a failure, or a combination of failures that affects the landing distance.

When a reversion occurs:
- A triple click audio indicator sounds
- The new autobrake mode appears on the FMA with a white box during 10 s.

L2 If the reversion occurs below 200 ft, the triple click will sound on ground, when BRK MED engages.

L1 AUTOBRAKE DISARMING

The autobrake disarms if one of the following occurs while BTV or BTV CONTAM is armed:
- The flight crew presses the A/BRK pb, or
- The flight crew modifies the selected landing runway on the ANF, or
- The flight crew deselects the BTV exit, or
- The flight crew changes the FMS runway to a runway that is different from the selected landing runway, or

  L2 The flight crew cannot modify the FMS runway below 700 ft RA.
- L1 The flight crew performs a go-around below 600 ft.

  L2 The reversion occurs during the go-around, when the aircraft climbs above 600 ft
  The computation is based on the minimum between the radio altitude, and the aircraft height above the runway threshold.

L1 When the autobrake disarms, all of the following occur:
- An aural indicator sounds (single chime or synthetic voice)
- The MASTER CAUT lights come on
- The AUTO BRK OFF memo appears on the PFD and WD.

Note: *On ground, if the flight crew presses one time the A/THR instinctive disconnect pb, the autobrake disconnects. Immediately after, if the flight crew presses a second time the A/THR instinctive disconnect pb, the AUTO BRK OFF memo disappears and the corresponding audio indicator is not emitted.*

BTV ENGAGEMENT

Ident.: DSC-34-32-30-10-00016955.0002001 / 27 FEB 17
Applicable to: ALL

BTV or BTV CONTAM engages when all of the following conditions occur:
- BTV or BTV CONTAM is armed
- - Immediately after ground spoilers extension if the NLG is on ground, or
  - 5 s after ground spoilers extension, if the NLG is not on ground.

L2 For more information about the ground spoilers extension, *Refer to DSC-27-10-10 Ground Spoiler Control*.

L1 When engaged, the FMA displays BTV or BTV CONTAM.

BTV DISENGAGEMENT

Ident.: DSC-34-32-30-10-00016956.0002001 / 27 FEB 17
Applicable to: ALL

The BTV function can disengage on ground, during rollout.

BTV MODE CHANGE

BTV changes to BTV CONTAM in the case of an automatic degradation of the selected runway condition, from dry or wet to contaminated.

L2 BTV CONTAM cannot change to BTV.

L1 When there is a change to BTV CONTAM, all of the following occur:
- The message RWY COND DEGRADED is displayed on the FMA

L2 For more information, *Refer to DSC-34-32-20-20-35 FMA*.

L1
- The degraded runway condition is displayed in reverse video on the ND.

L2 For more information, *Refer to DSC-34-32-20-20-50 RWY COND/BRAKING ACTION (ARC Mode)*.

For more information, *Refer to DSC-34-32-20-10 Runway Condition Degradation*.

L1

REVERSION TO BRK MED

BTV or BTV CONTAM reverts to BRK MED if the BTV function becomes inoperative.

When a reversion occurs:
- A triple click audio indicator sounds
- The new autobrake mode appears on the FMA with a white box during 10 s.

AUTOBRAKE DISENGAGEMENT

The autobrake disengages if one of the following occurs while BTV or BTV CONTAM is active:
- The aircraft ground speed reaches the BTV disconnection speed (approx. 10 kt), or
- The flight crew uses the brake pedals, or
- The flight crew presses the A/THR instinctive disconnect pb, or
- The ground spoilers retract or disarm.

L2

For more information about the ground spoilers retraction, *Refer to DSC-27-10-10 Ground Spoiler Control*.

L1

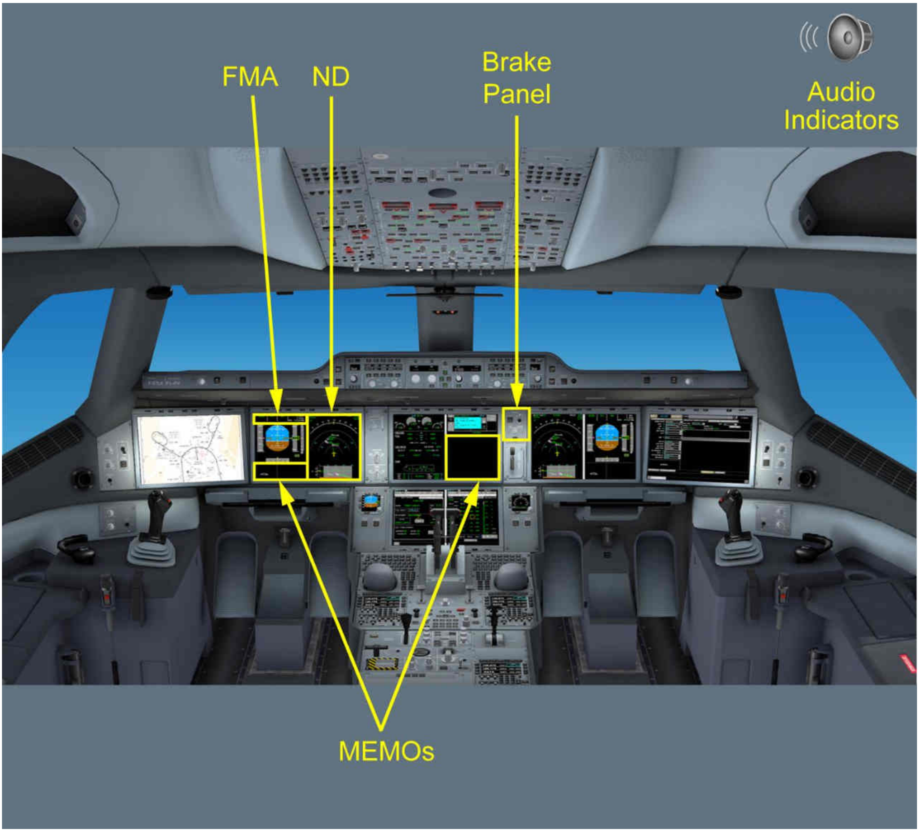
When the autobrake disarms, all of the following occur:
- A single chime audio indicator sounds
- The MASTER CAUT lights comes on
- The AUTO BRK OFF memo appears on the PFD and WD.

Cockpit View

COCKPIT VIEW

Ident.: DSC-34-32-30-20-10-00016958.0001001 / 26 APR 14
Applicable to: ALL

Cockpit View


FMA
ND
Brake Panel
Audio Indicators
MEMOs

Intentionally left blank

Audio Indicators

AUDIO INDICATORS

Ident.: DSC-34-32-30-20-20-00016963.0002001 / 27 FEB 17
Applicable to: ALL

Audio Indicator	Condition or Cause	Duration
Single Chime (Sound)	Reversion from BTV to manual braking.	Sounds one time.
Triple Click (Sound)	Exit missed or A/BRK reversion. - The BTV detects on ground that the BTV exit will be missed, or - Reversion from BTV to BRK MED. If the reversion occurs below 200 ft, the triple click will sound only after the activation of the BRK MED. - Mode change from BTV to BTV CONTAM or from BTV CONTAM to BTV. If the mode change occurs below 200 ft, the triple click will sound only after the activation of the new mode.	Sounds one time.

Intentionally left blank

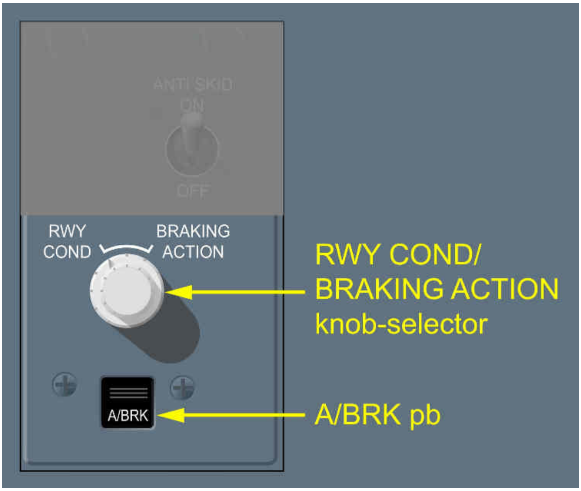
Brake Panel

BRAKE PANEL

Applicable to: ALL

Ident.: DSC-34-32-30-20-30-10-00016959.0001001 / 26 APR 14

BRAKE Panel


ANTI SKID
ON
OFF
RWY COND
BRAKING ACTION
A/BRK
RWY COND/ BRAKING ACTION knob-selector
A/BRK pb

Ident.: DSC-34-32-30-20-30-10-00016965.0001001 / 08 JUL 19

RWY COND/BRAKING ACTION KNOB-SELECTOR

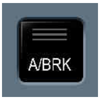
L12

RWY
COND
BRAKING
ACTION

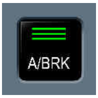
- The knob has two positions: RWY COND and BRAKING ACTION. For more information,*Refer to DSC-34-32-20-20-70 RWY COND/BRAKING ACTION Mode*.
- When the selector is turned, sets the runway condition or braking action. After selection, the entry is automatically validated after a few seconds. If the flight crew selects a contaminated runway, or if the initial selection was a contaminated runway, the RWY CONDITION / BRAKING ACTION matrix automatically appears on the SD.
- When the selector is pulled, the RWY CONDITION / BRAKING ACTION matrix appears on the SD.
- When the selector is pushed, the RWY CONDITION / BRAKING ACTION matrix disappears.

L2 The flight crew can also select the RWY COND/BRAKING ACTION via the LANDING panel of the ANF. For more information, *Refer to DSC-34-32-20-20-50 LDG PERF CODE List*.

Ident.: DSC-34-32-30-20-30-10-00017054.0002001 / 27 FEB 17



The BTV, the BTV CONTAM, the BRK MED and the BRK RTO are not armed.



The BTV or the BTV CONTAM or the BRK MED or the BRK RTO is armed.

L2 For more information about autobrake, *Refer to DSC-32-20-10-50 General*.

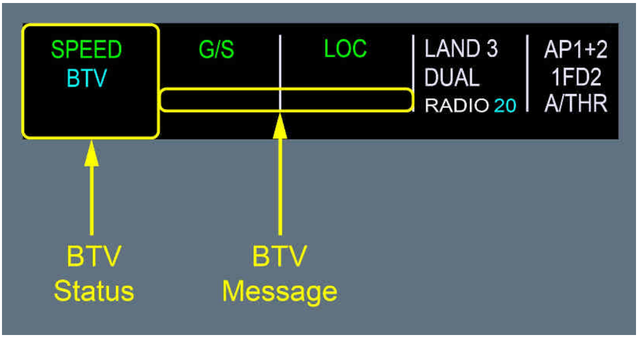
FMA

FMA

Applicable to: ALL

Ident.: DSC-34-32-30-20-40-10-00016961.0001001 / 26 APR 14

FMA



Ident.: DSC-34-32-30-20-40-10-00016986.0002001 / 27 FEB 17

BTV MODES

Display	Meaning	For display conditions:
BTV	The BTV mode is armed.	*Refer to DSC-34-32-30-10 BTV Arming*.
BTV CONTAM	The BTV CONTAM mode is armed.	
BTV	The BTV mode is engaged.	*Refer to DSC-34-32-30-10 BTV Engagement*.
BTV CONTAM	The BTV CONTAM mode is engaged	

Ident.: DSC-34-32-30-20-40-10-00016987.0001001 / 26 APR 14

BTV MESSAGE

EXIT MISSED	The BTV exit will be missed. Appears when the aircraft is on ground with the BTV active.

Intentionally left blank

MEMO

MEMO

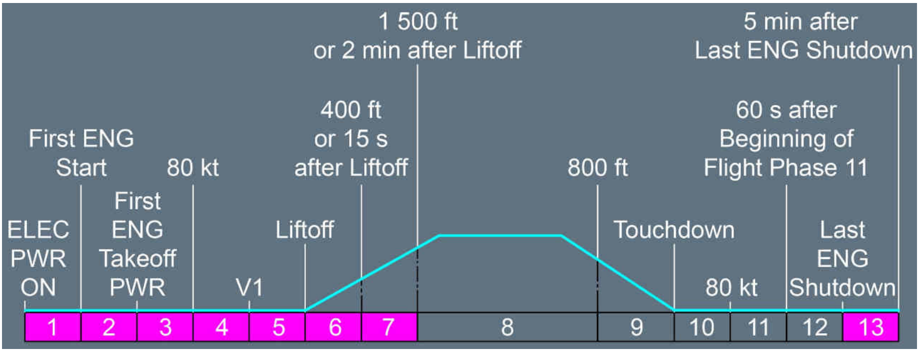
Applicable to: ALL

Ident.: DSC-34-32-30-20-50-10-00016962.0001001 / 26 APR 14

L12

AUTO BRK OFF	The autobrake has been deselected. Appears on the PFD and on the WD.

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

Intentionally left blank

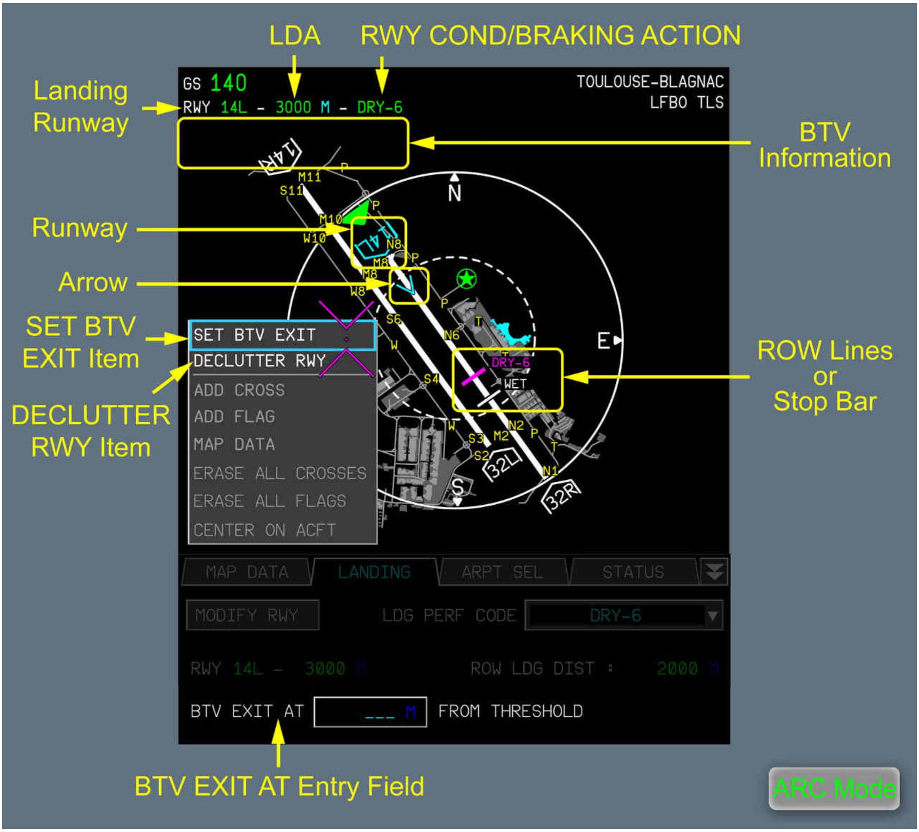
ND

ND

Applicable to: ALL

Ident.: DSC-34-32-30-20-60-10-00016960.0003001 / 27 FEB 17

ND


LDA
RWY COND/BRAKING ACTION
Landing Runway
GS 140
RWY 14L - 3000 M - DRY-6
TOULOUSE-BLAGNAC
LFBO TLS
BTV Information
Runway
Arrow
SET BTV EXIT Item
DECLUTTER RWY Item
ROW Lines or Stop Bar
SET BTV EXIT
DECLUTTER RWY
ADD CROSS
ADD FLAG
MAP DATA
ERASE ALL CROSSES
ERASE ALL FLAGS
CENTER ON ACFT
DRY-6
WET
N
E
S
14R
14L
32L
32R
MAP DATA
LANDING
ARPT SEL
STATUS
MODIFY RWY
LDG PERF CODE
DRY-6
RWY 14L - 3000 M
ROW LDG DIST : 2000 M
BTV EXIT AT ___ M FROM THRESHOLD
BTV EXIT AT Entry Field
ARC Mode

Ident.: DSC-34-32-30-20-60-10-00019525.0001001 / 02 OCT 14

LANDING RUNWAY (PLAN MODE)

Indicates the landing runway.

14L	- The computed landing distance is less than the LDA. - The landing runway is the runway that the flight crew selected via the FMS.
14L	- The computed landing distance is less than the LDA. - The flight crew selected a landing runway that is different from the FMS runway.
14L	- The landing runway is too short - The aircraft is above 200 ft.
14L	- The landing runway is too short - The aircraft is below 200 ft.

Ident.: DSC-34-32-30-20-60-10-00019542.0002001 / 27 FEB 17

LDA

Indicates the Landing Distance Available (LDA) as displayed on the LANDING panel of the ANF.

L2 Appears in feet (ft) with the US unit of length option.

L1

3000 M	The computed landing distance is less than the LDA.
3000 M	- The flight crew modified the LDA via the LANDING panel - The computed landing distance is less than the LDA.
3000 M	- The landing runway is too short - The aircraft is above 200 ft.
3000 M	- The landing runway is too short - The aircraft is below 200 ft.
3000 M	The system cannot compute the landing distance.

Ident.: DSC-34-32-30-20-60-10-00019526.0002001 / 27 FEB 17

RWY COND / BRAKING ACTION (PLAN MODE)

Indicates the runway condition or the braking action that the flight crew selected via the RWY CONDITION/BRAKING ACTION selector of the BRAKE Panel, or the LDG PERF CODE list of the ANF LANDING panel.

L2 The default runway condition is initialized to WET-5 before the flight.
After a go-around, a change of the selected runway, or a change of the autobrake mode, the selected runway condition/braking action remains the same.

L1 The selected runway condition or the selected braking action can be displayed in the following colors:

DRY-6	The computed landing distance is less than the LDA.

DRY-6	- The landing runway is too short, and - The aircraft is above 200 ft.
DRY-6	- The landing runway is too short, and - The aircraft is below 200 ft.
DRY-6	The system cannot compute the landing distance.

Ident.: DSC-34-32-30-20-60-10-00019559.0001001 / 02 OCT 14

LANDING RUNWAY (ARC MODE)

LDG14L	- The computed landing distance is less than the LDA, and - The landing runway is the runway that the flight crew selected via the FMS.
LDG14L	- The computed landing distance is less than the LDA, and - The flight crew selected a landing runway that is different from the FMS runway.
LDG14L	- The landing runway is too short, and - The aircraft is above 200 ft.
LDG14L	- The landing runway is too short, and - The aircraft is below 200 ft.

Ident.: DSC-34-32-30-20-60-10-00019979.0002001 / 28 APR 17

RWY COND / BRAKING ACTION (ARC MODE)

Indicates the runway condition or the braking action that the flight crew selected via the RWY CONDITION/BRAKING ACTION selector of the BRAKE Panel, or the LDG PERF CODE list of the ANF LANDING panel.

L2 The default runway condition is initialized to WET-5 before the flight.
After a go-around, a change of the selected runway, or a change of the autobrake mode, the selected runway condition/braking action remains the same.

L1 The selected runway condition or the selected braking action can be displayed in the following colors:

DRY-6	The computed landing distance is less than the LDA.
DRY-6	- The landing runway is too short, and - The aircraft is above 200 ft.
DRY-6	- The landing runway is too short, and - The aircraft is below 200 ft.
DRY-6	The system cannot compute the landing distance.

Note: *When the selected runway condition/braking action is not yet validated, the display appears in black on a colored background. For example :*

DRY-6	*The flight crew selected DRY, the entry will be automatically validated after a few seconds, and the runway is too short for this runway condition.*

Ident.: DSC-34-32-30-20-60-10-00019527.0001001 / 09 MAR 16

BTV EXIT

The BTV exit can be displayed in one of the following colors:

N2	The selected BTV exit is accessible.
N2	The selected BTV exit will be missed.

L2 This area can also display the RWY TOO SHORT message that has priority over the BTV exit. For information about the RWY TOO SHORT message, *Refer to DSC-34-32-20-20-50 TOO SHORT Message*.

Ident.: DSC-34-32-30-20-60-10-00019529.0001001 / 09 MAR 16

BTV EXIT DISTANCE

Indicates the distance between the threshold or the modified threshold and the selected BTV exit.

L2 Appears in feet (ft) with the US unit of length ⩤ option.

L1

2500 M	The selected BTV exit is accessible.
2500 M	The selected BTV exit will be missed.

Ident.: DSC-34-32-30-20-60-10-00019530.0001001 / 26 APR 14

BTV EXIT INFORMATION

TOO SHORT	The selected BTV exit will be missed.
AFTER RWY END	The selected BTV exit is beyond the runway end. This can occur if the flight crew modifies the runway end, and the selected BTV exit is beyond the modified runway end.
	The selected BTV exit is accessible.

L12

Ident.: DSC-34-32-30-20-60-10-00019531.0002001 / 27 FEB 17

ROT INFORMATION

Indicates the Runway Occupancy Time (ROT) in seconds.

Appears when all of the following occur:
- The selected BTV exit is accessible
- The LDG PERF CODE 6 (dry) or 5 (wet) is selected.

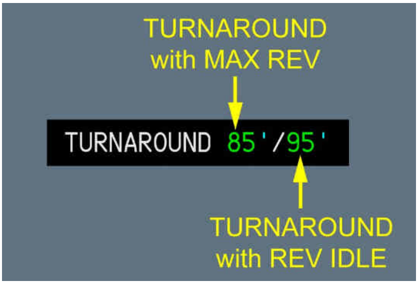
L2 The ROT is the estimated time interval between the moment the aircraft overflies the runway threshold and the moment the aircraft vacates the runway.

Ident.: DSC-34-32-30-20-60-10-00019532.0006001 / 27 FEB 17

TURNAROUND INFORMATION

Indicates the estimated number of minutes necessary for the brakes to reach 150 °C after landing. The flight crew can consider the TURNAROUND information to select the appropriate exit.

L2 The computation takes into account all of the following:
- Use of the brake fans ✻
- The brake energy necessary to reach the selected BTV exit
- A predefined taxi phase, that is independent from the selected airport and the selected exit.

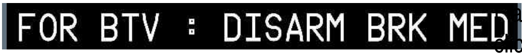


L1 Appears when all of the following occur:
- The selected BTV exit is accessible
- The LDG PERF CODE 6 (dry) or 5 (wet) is selected.

Note: *Dashes can be displayed instead of the numeric values to indicate that the braking energy is too high, and the tires will deflate.*

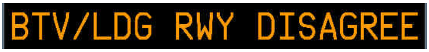
Ident.: DSC-34-32-30-20-60-10-00019902.0002001 / 27 FEB 17

BTV MESSAGES

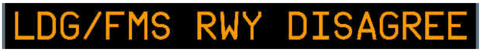


FOR BTV : DISARM BRK MED

ashes in reverse video when the flight crew cks on an exit, and BRK MED is armed.

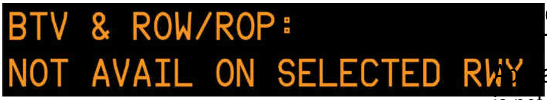

BTV/LDG RWY DISAGREE

The detected landing runway is different from the BTV landing runway.
The A/BRK mode reverts to BRK MED.
The message also appears in ARC and ROSE-NAV modes.


LDG/FMS RWY DISAGREE

- The selected landing runway is not the FMS runway
- The BTV is not armed.

L12


BTV & ROW/ROP:
NOT AVAIL ON SELECTED RWY

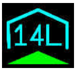
elected landing runway is not available V and ROW/ROP.
ars when the selected landing runway is not valid for ROW/ROP in the TAWS database.

Ident.: DSC-34-32-30-20-60-10-00016978.0001001 / 26 APR 14

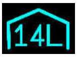
RUNWAY

- The blue color indicates the selected landing runway
- The green triangle indicates the FMS runway.

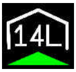
L12



The runway 14L is the selected landing runway, and the FMS runway.
By default, the selected landing runway is the FMS runway.



The runway 14L is the selected landing runway, but not the FMS runway.

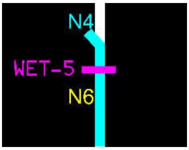


The runway 14L is the FMS runway, but not the selected landing runway.

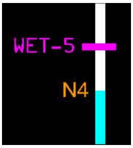
Ident.: DSC-34-32-30-20-60-10-00016979.0001001 / 06 AUG 14

ROW LINES OR STOP BAR

ROW LINES



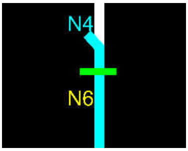
- The label indicates the selected runway condition
- The selected BTV exit is accessible
- The aircraft is in flight.



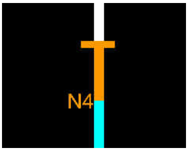
- The label indicates the selected runway condition
- The selected BTV exit will be missed
- The aircraft is in flight
- The ROW is not active.

L2 For more information about ROW lines, *Refer to DSC-34-32-20-20-50 ROW Lines or Stop Bar*.

L1 STOP BAR



- The selected BTV exit is accessible
- The BTV is active
- The aircraft is on ground.



- The selected BTV exit will be missed
- The BTV is active
- The aircraft is on ground
- The ROP is not active.

L2 For more information about the stop bars, *Refer to DSC-34-32-20-20-50 ROW Lines or Stop Bar*.

Ident.: DSC-34-32-30-20-60-10-00019980.0001001 / 09 MAR 16

BTV EXIT AT ENTRY FIELD

The flight crew can create and select a BTV exit via the distance of the exit from the threshold or modified threshold.

L2 Appears in feet (ft) with the length US unit option.

Ident.: DSC-34-32-30-20-60-10-00020001.0001001 / 06 AUG 14

SET BTV EXIT ITEM

The SET BTV EXIT item is available in PLAN mode, when the flight crew clicks on an exit of the selected landing runway. The flight crew uses the SET BTV EXIT item to select an exit that will be the target for the BTV.
After the selection, information related to the exit is displayed on the BTV information area.
When BTV is armed, the flight crew can use the SET BTV EXIT item to set BTV on another exit while BTV remains armed.

Note: *When BTV is armed, the END label is not displayed. The flight crew must disarm BTV in order to set the runway end as the BTV exit.*

Ident.: DSC-34-32-30-20-60-10-00020002.0001001 / 26 APR 14

DECLUTTER RWY ITEM

In order to help the flight crew to select an exit for BTV, and to read the map, some symbols that are not related to the selected runway are displayed in grey and become not interactive.
When the DECLUTTER RWY is active, the DISPLAY ALL function is available in the interactive menu. When clicked, all the hidden symbols appear on the map.

Ident.: DSC-34-32-30-20-60-10-00023856.0001001 / 07 NOV 16

ARROW

A blue arrow is displayed on the selected landing runway, next to the threshold.
If the flight crew inserts a threshold shift, the blue arrow also shifts in order to remain next to the threshold.

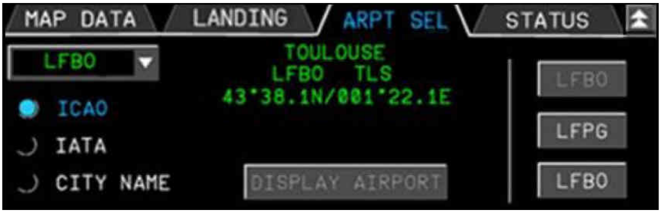
LDG RWY NOT AVAILABLE IN THE ANF DATABASE

Ident.: DSC-34-32-35-00024247.0001001 / 02 MAY 17
Applicable to: ALL

The landing runway may not be available in the ANF database for several reasons:

- The database does not contain the destination airport, or
- The map of the destination airport does not contain the landing runway (e.g. a military runway), or
- The ANF is failed or not available.

The flight crew can check any airport map available in the database via the ARPT SEL panel of the ANF.



CONSEQUENCES ON THE ANF DISPLAY

Depending on the missing data, one of the following can be displayed on the ANF:

- If the database does not contain the destination airport, the message <AIRPORT_ICAO> NOT IN DATABASE (where <AIRPORT_ICAO> is replaced by the airport ICAO code, e.g. LFBO) is displayed in the top right of the ND instead of the airport name.
  The airport moving map is not available
- If the map of the destination airport does not contain the landing runway, the airport moving map is incomplete but remains available
- If the ANF is failed or not available, the ARPT NAV NOT AVAIL message is displayed on the center of the ANF. In some cases, the following ECAM alert is triggered: NAV CAPT(FO)(CAPT +FO) ARPT NAV FAULT.

CONSEQUENCES ON ROW/ROP

The flight crew can select the runway condition/braking action via the knob-selector on the BRAKE panel only. The backup selection from the LANDING panel of the ANF is not available.
In the case of a NOTAM that changes the landing distance available, the flight crew cannot enter the shift in the airport map. As a consequence, the ROW/ROP alerts may not protect the aircraft against a runway overrun.
Above the ROW transition altitude, the ROW cannot predict a runway overrun. The associated message is not displayed. The ROW line is not displayed.

Below the ROW transition altitude, the ROW can be armed when the TAWS detects the landing runway. ROW alerts may be triggered. The ROW line is not displayed.
On ground, ROP alerts may be triggered when the TAWS detects the landing runway.

CONSEQUENCES ON BTV

It is not possible to select an exit on the airport map, the flight crew cannot arm BTV. The basic autobrake (BRK MED) can be used.

LANDING DIST AFFECTED

Ident.: DSC-34-32-35-00023432.0001001 / 27 FEB 17
Applicable to: ALL

LANDING DIST AFFECTED

SYSTEM BEHAVIOR

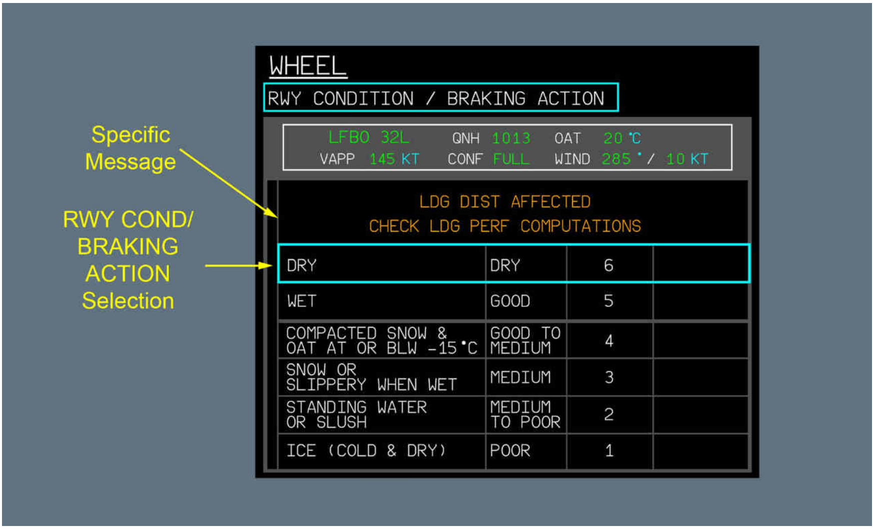
When a failure affects the landing distance, the ECAM displays LDG DIST AFFECTED or LDG PERF AFFECTED. In this case, BTV is inoperative and ROW/ROP alerts may be triggered based on a computation without failure.

CONTROLS

The flight crew cannot set a BTV exit, BRK MED remains available.
The flight crew must select the appropriate RWY CONDITION / BRAKING ACTION, as it is used to trigger ROW/ROP alerts, even if the landing distance computation does not take into account the failure that affects the landing performance.

INDICATORS

On the ANF, the ROW lines are not displayed.
On the RWY CONDITION/BRAKING ACTION matrix, a dedicated message LDG DIST AFFECTED CHECK LDG PERF COMPUTATIONS is displayed.
The indication of the TOO SHORT SELECTION is not displayed.
When selected, the runway condition appears in white instead of green, in order to indicate that the associated landing distance cannot be computed.



WHEEL

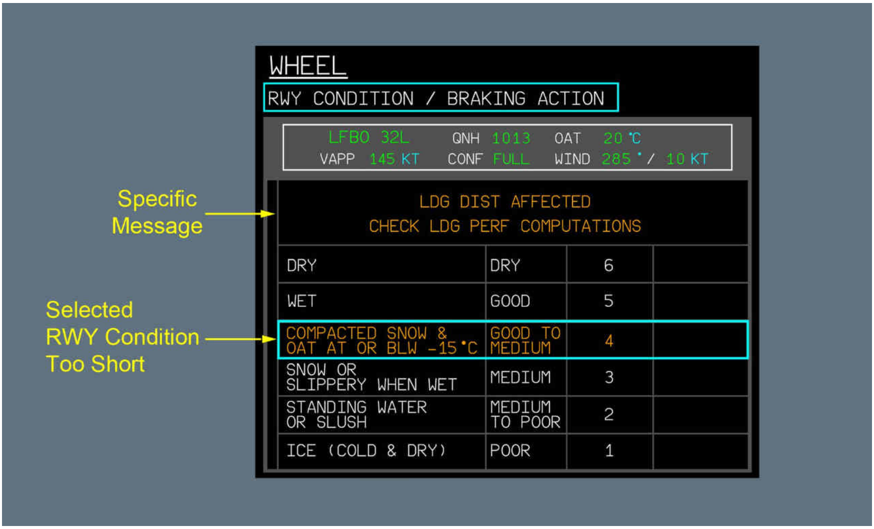
RWY CONDITION / BRAKING ACTION

LFBO 32L QNH 1013 OAT 20 °C
VAPP 145 KT CONF FULL WIND 285 ° / 10 KT

LDG DIST AFFECTED
CHECK LDG PERF COMPUTATIONS

DRY	DRY	6	
WET	GOOD	5	
COMPACTED SNOW & OAT AT OR BLW -15 °C	GOOD TO MEDIUM	4	
SNOW OR SLIPPERY WHEN WET	MEDIUM	3	
STANDING WATER OR SLUSH	MEDIUM TO POOR	2	
ICE (COLD & DRY)	POOR	1	

Below the ROW transition altitude, if the selected runway condition is too short (with a computation without failure), the selected line appears amber in the RWY CONDITION / BRAKING ACTION matrix, associated with the TOO SHORT message on the ANF.



WHEEL

RWY CONDITION / BRAKING ACTION

LFBO 32L QNH 1013 OAT 20 °C
VAPP 145 KT CONF FULL WIND 285 ° / 10 KT

LDG DIST AFFECTED
CHECK LDG PERF COMPUTATIONS

DRY	DRY	6	
WET	GOOD	5	
COMPACTED SNOW & OAT AT OR BLW -15 °C	GOOD TO MEDIUM	4	
SNOW OR SLIPPERY WHEN WET	MEDIUM	3	
STANDING WATER OR SLUSH	MEDIUM TO POOR	2	
ICE (COLD & DRY)	POOR	1	

INVALID RWY IN THE TAWS DATABASE

Applicable to: ALL

Ident.: DSC-34-32-35-TAWS-00024095.0001001 / 07 MAY 18

SYSTEM BEHAVIOR

A runway that is in the TAWS database can be tagged as valid, or invalid for ROW/ROP. If the flight crew selects a runway that is tagged invalid, ROW/ROP and BTV are not available.
Then, if the flight crew selects a valid runway, the BTV and ROW/ROP functions are recovered.

Ident.: DSC-34-32-35-TAWS-00024094.0001001 / 27 FEB 17

CONTROLS

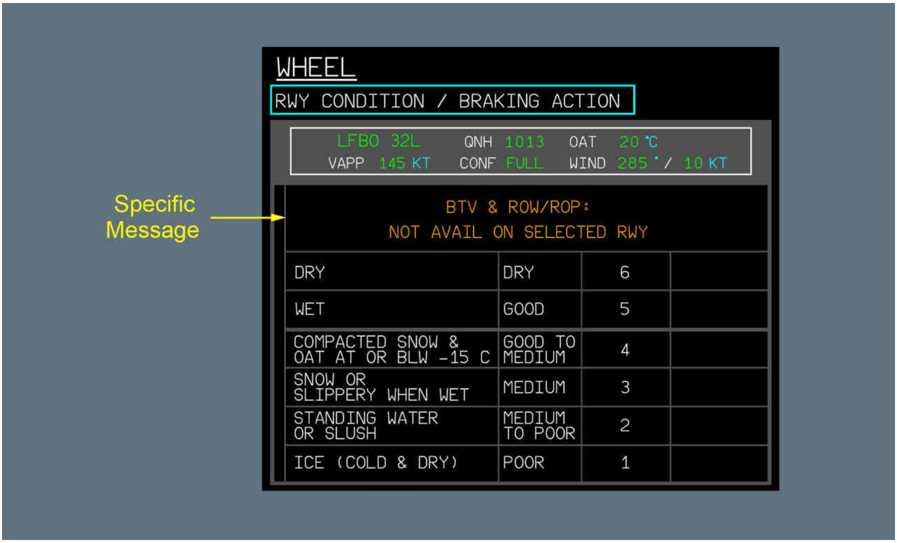
The flight crew cannot select a runway condition.
The flight crew cannot set a BTV exit, BRK MED remains available.

Ident.: DSC-34-32-35-TAWS-00023433.0001001 / 27 FEB 17

INDICATORS

On the ANF:
- The ROW lines are not displayed,
- In PLAN mode, the message BTV & ROW/ROP: NOT AVAIL ON SELECTED RWY is displayed,
- In other ND modes, the message UNKNOWN SELECTED RWY is displayed.

On the RWY COND/BRK ACTION matrix the message BTV & ROW/ROP: NOT AVAIL ON SELECTED RWY is displayed.



Specific Message

WHEEL

RWY CONDITION / BRAKING ACTION

LFBO 32L QNH 1013 OAT 20 °C
VAPP 145 KT CONF FULL WIND 285 ° / 10 KT

BTV & ROW/ROP:
NOT AVAIL ON SELECTED RWY

DRY	DRY	6	
WET	GOOD	5	
COMPACTED SNOW & OAT AT OR BLW -15 C	GOOD TO MEDIUM	4	
SNOW OR SLIPPERY WHEN WET	MEDIUM	3	
STANDING WATER OR SLUSH	MEDIUM TO POOR	2	
ICE (COLD & DRY)	POOR	1	

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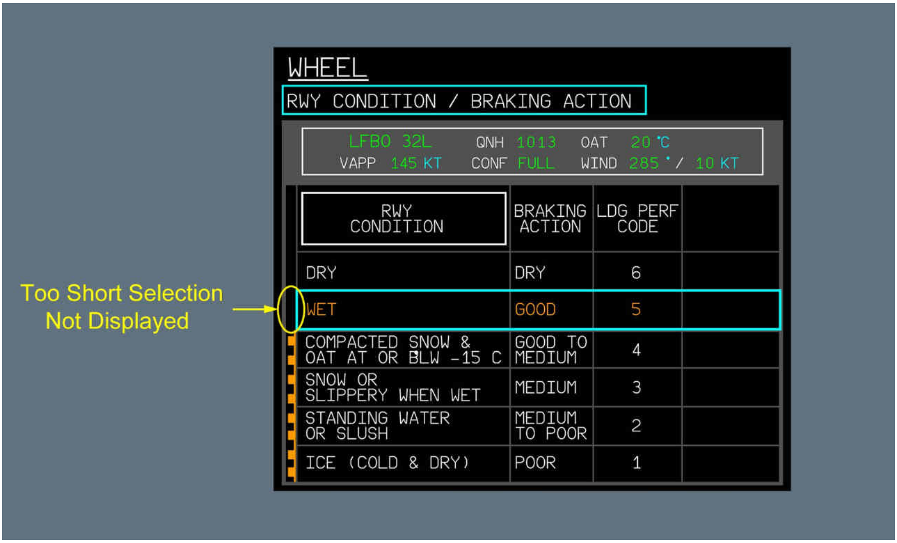
"TOO SHORT SELECTION" INDICATION NOT DISPLAYED ON THE RWY CONDITION / BRAKING ACTION MATRIX FOR LDG PERF CODE 5 (WET - GOOD)

Ident.: DSC-34-32-40-00025462.0003001 / 03 APR 20
Applicable to: ET-AYA

DESCRIPTION

On the RWY CONDITION / BRAKING ACTION matrix, the “Too Short Selection” indication (amber and black barber pole) may not appear in front of the WET / GOOD line when the runway is too short.



Too Short Selection
Not Displayed

WHEEL

RWY CONDITION / BRAKING ACTION

LFBO 32L QNH 1013 OAT 20 °C
VAPP 145 KT CONF FULL WIND 285 ° / 10 KT

RWY CONDITION	BRAKING ACTION	LDG PERF CODE
DRY	DRY	6
WET	GOOD	5
COMPACTED SNOW & OAT AT OR BLW -15 C	GOOD TO MEDIUM	4
SNOW OR SLIPPERY WHEN WET	MEDIUM	3
STANDING WATER OR SLUSH	MEDIUM TO POOR	2
ICE (COLD & DRY)	POOR	1

All the other indications are correct, particularly:

- On the RWY CONDITION / BRAKING ACTION matrix, the WET / GOOD line appears in amber when selected
- On the ND:
  - The Landing Runway, LDA, and RWY COND / BRAKING ACTION (WET-5 or GOOD-5) appear in amber
  - The TOO SHORT message appears in amber.

In addition, ROW/ROP and BTV are not affected.

OPERATIONAL RECOMMENDATION

Do not assess the capability to land on a runway with a LDG PERF CODE 5 (WET - GOOD) on the “Too Short Selection” indication in front of the WET / GOOD line on the RWY CONDITION / BRAKING ACTION matrix.

AIRCRAFT SYSTEMS

35 - OXYGEN

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DSC-35-10 Overview

Overview .... A

DSC-35-20 Fixed Oxygen System for Cockpit

DSC-35-20-10 System Description

Fixed Oxygen System for Cockpit .... A

DSC-35-20-20 Controls and Indicators

Cockpit View .... A
DOOR/OXYGEN SD Page .... B
Flight Crew Oxygen Mask C
Mask Stowage Box .... D
MEMO .... E
Oxygen Panel .... F

DSC-35-20-40 How to

How to Test the Mask .... A
How to Don the Mask .... B
How to Stow the Mask C

DSC-35-30 Fixed Oxygen System for Cabin

DSC-35-30-10 System Description

Fixed Oxygen System for the Cabin .... A

DSC-35-30-20 Controls and Indicators

Cockpit View .... A
MEMO .... B
Oxygen Maintenance Panel C
Oxygen Panel .... D

DSC-35-40 Portable Oxygen System

DSC-35-40-10 System Description

Protective Breathing Equipment (PBE) .... A
Portable Oxygen Cylinder .... B

DSC-35-40-20 How to

How to Don the PBE .... A
How to Put off the PBE .... B

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Localization Title	Toc Index	ID	Reason
DSC-35-30-20 MEMO	B	1	Correction of the procedure color from Amber to Red.

Intentionally left blank

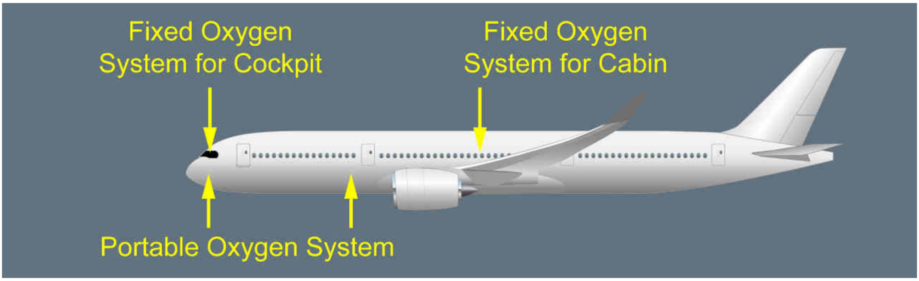
OVERVIEW

Ident.: DSC-35-10-00003085.0001001 / 29 APR 14
Applicable to: ALL

The oxygen system is designed to supply oxygen to the flight crew, cabin crew and passengers, in the case of smoke, fire, noxious gas emissions, or cabin depressurization.

The oxygen system has a:
- Fixed oxygen system in the cockpit
- Fixed oxygen system in the cabin (for cabin crew and passengers)
- Portable oxygen system for the cockpit and the cabin.

General


Fixed Oxygen System for Cockpit
Fixed Oxygen System for Cabin
Portable Oxygen System

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FIXED OXYGEN SYSTEM FOR COCKPIT

Ident.: DSC-35-20-10-00003086.0001001 / 29 APR 14
Applicable to: ALL

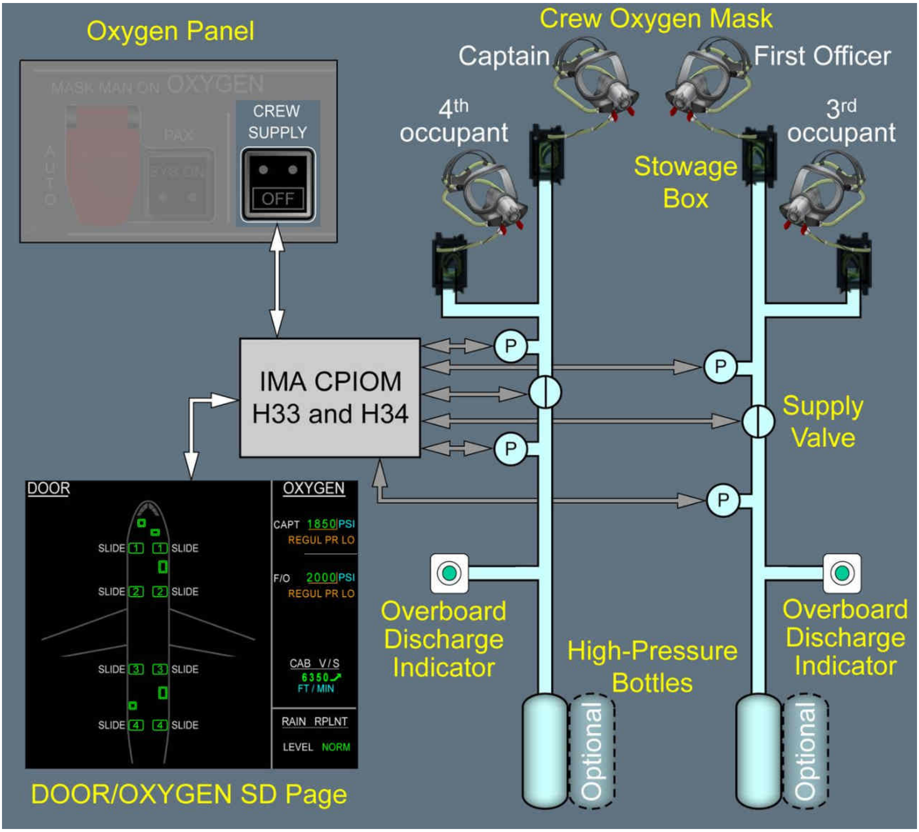
The fixed oxygen system is separated into two sub-systems:

- One sub-system supplies oxygen to the left side of the cockpit (captain and 4th occupant)
- One sub-system supplies oxygen to the right side of the cockpit (first officer and 3rd occupant).

The fixed oxygen system in the cockpit has:

- 4 full-face quick-donning masks.
  Each mask is stowed in its own stowage box.
  Each stowage box is next to each flight crew station (*Refer to DSC-35-20-20 Cockpit View*).
  Each mask contains microphones for cockpit communication.
- Two oxygen bottles (or four, as installed)
- Two supply valves.
  These valves are normally open. The flight crew can manually close the valves to stop oxygen supply, by using the CREW SUPPLY pb-sw that is on the OXYGEN overhead panel.
- L3 Two redundant OXY CTL SYS, hosted in IMA CPIOM H33 and H34 (For more information on CPIOM, *Refer to DSC-42-10 CPIOM*). They monitor and control the cockpit and cabin oxygen system.
- L1 Two overboard discharge indicators.
  These indicators are located on each front side of the aircraft. They are normally green. An indicator turns yellow, if there is any overpressure in the oxygen system.

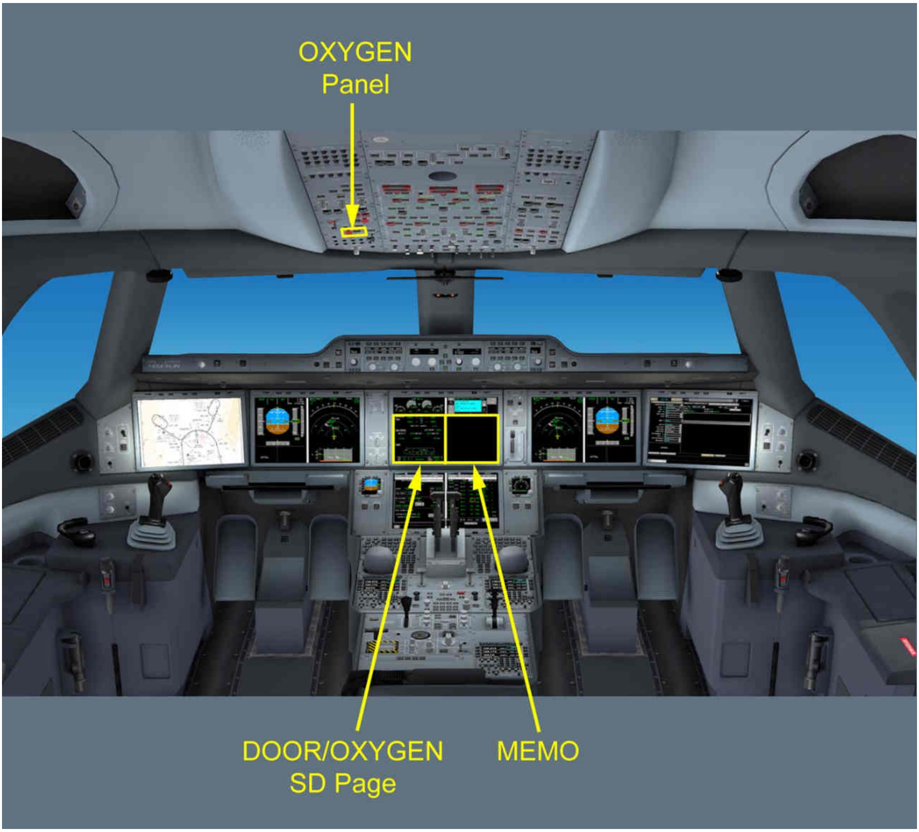
Fixed Oxygen System for the Cockpit


Oxygen Panel
MASK MAN ON
OXYGEN
AUTO
PAX
SYS ON
CREW SUPPLY
OFF
Crew Oxygen Mask
Captain
First Officer
4th occupant
3rd occupant
Stowage Box
IMA CPIOM H33 and H34
P
P
P
P
Supply Valve
Overboard Discharge Indicator
Overboard Discharge Indicator
High-Pressure Bottles
Optional
Optional
DOOR
SLIDE 1 1 SLIDE
SLIDE 2 2 SLIDE
SLIDE 3 3 SLIDE
SLIDE 4 4 SLIDE
OXYGEN
CAPT 1850 PSI
REGUL PR LO
F/O 2000 PSI
REGUL PR LO
CAB V/S
6350
FT / MIN
RAIN RPLNT
LEVEL NORM
DOOR/OXYGEN SD Page

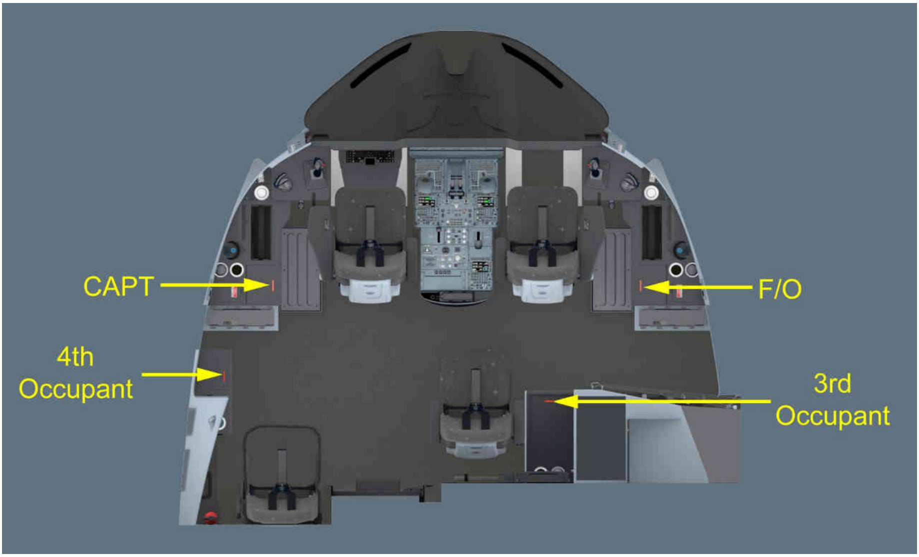
COCKPIT VIEW

Ident.: DSC-35-20-20-00003087.0001001 / 29 APR 14
Applicable to: ALL

Cockpit View


OXYGEN
Panel
DOOR/OXYGEN
SD Page
MEMO

Oxygen Masks Location in the Cockpit

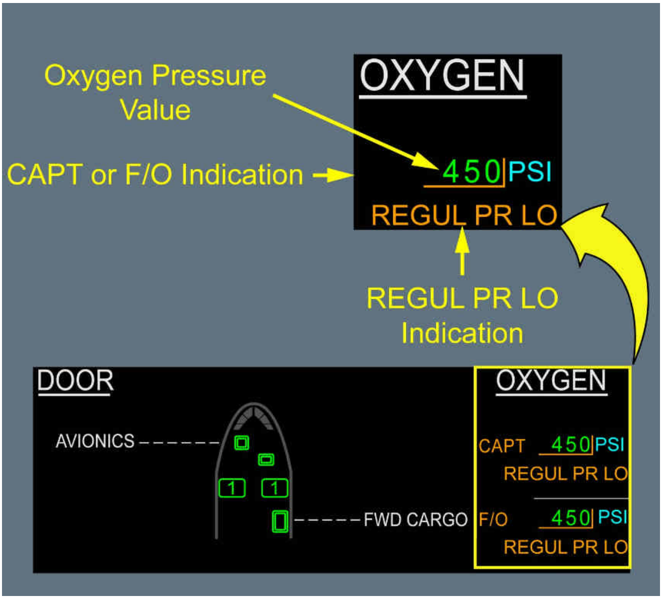


DOOR/OXYGEN SD PAGE

Applicable to: ALL

Ident.: DSC-35-20-20-D-00003091.0001001 / 02 MAY 14

The DOOR/OXYGEN SD page provides the flight crew with information on the oxygen system.


Oxygen Pressure Value
OXYGEN
CAPT or F/O Indication
450 PSI
REGUL PR LO
REGUL PR LO Indication
DOOR
AVIONICS
1
1
FWD CARGO
OXYGEN
CAPT 450 PSI
REGUL PR LO
F/O 450 PSI
REGUL PR LO

Ident.: DSC-35-20-20-D-00003100.0001001 / 02 MAY 14

CAPT AND F/O INDICATIONS

CAPT F/O Normal operation of the oxygen system.

L12

CAPT F/O

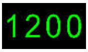
- The oxygen system is off (the CREW SUPPLY pb-sw is OFF)
  The REGUL PR LO indication also appears.
  Or
- The oxygen system has low pressure.

If the oxygen system has low pressure, the CAPT (F/O) indication appears with:

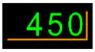
- The REGUL PR LO indication, on ground, if there is a low pressure in the distribution manifold
- The oxygen pressure value in amber, because low pressure is detected in the oxygen bottle.
  Associated with the following ECAM alert: OXY CAPT (F/O) BOTTLE PRESS LO (*Refer to procedure*).

Ident.: DSC-35-20-20-D-00003101.0001001 / 03 DEC 18

OXYGEN PRESSURE VALUE

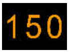


When the value is displayed in green, the pressure is equal to, or above 350 PSI.



On ground only: when the value is green with the amber half-frame, the pressure is below 1 150 PSI.

L12



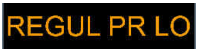
The value is amber, when a low pressure is detected in the oxygen bottle. This occurs, when the pressure is below 350 PSI.
Associated with the following ECAM alert: OXY CAPT (F/O) BOTTLE PRESS LO (*Refer to procedure*)

L3 Note: *The oxygen pressure is temperature compensated. A temperature sensor, located next to the oxygen bottle, measures the temperature in the area.*

Ident.: DSC-35-20-20-D-00003102.0001001 / 02 MAY 14

REGUL PR LO INDICATION

L13



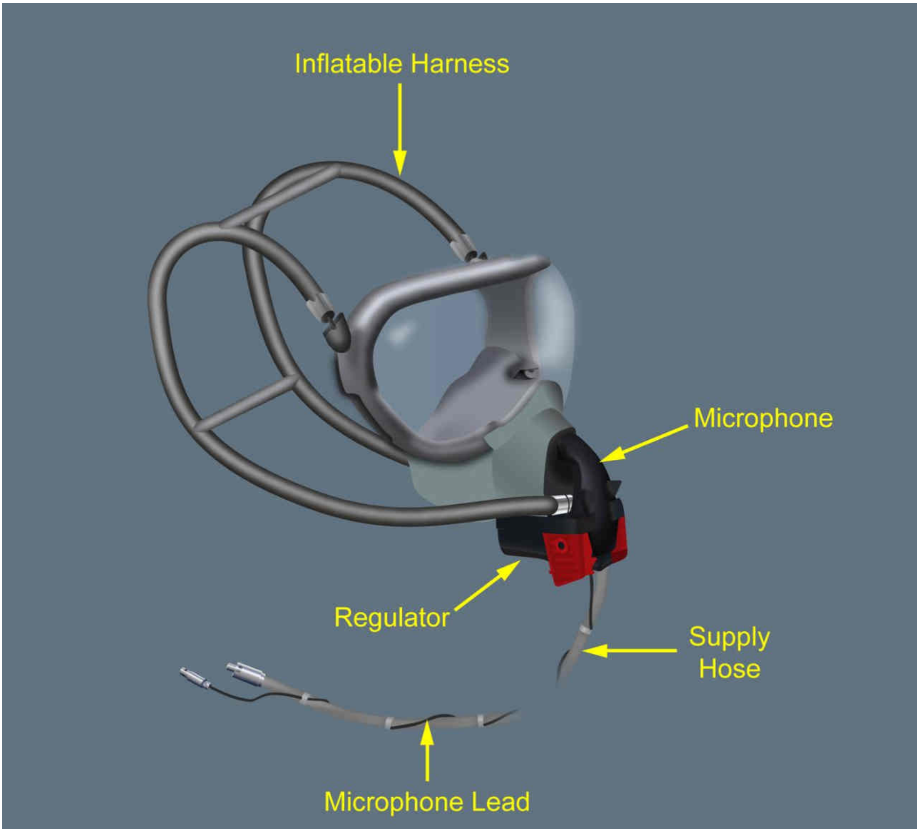
Appears on ground, when:
- The oxygen CREW SUPPLY pb-sw is OFF, or
- The oxygen pressure in the oxygen distribution manifold is low. Oxygen pressure is low, if it goes below 47 PSI.

FLIGHT CREW OXYGEN MASK

Applicable to: ALL

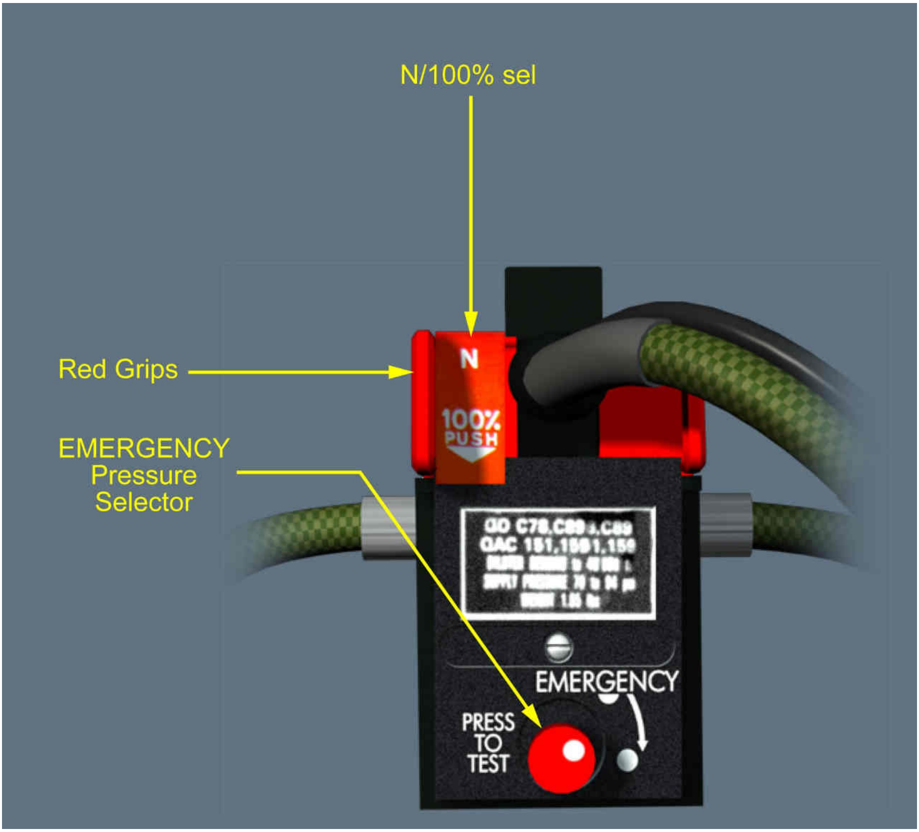
Ident.: DSC-35-20-20-C-00003090.0002001 / 06 NOV 14

Flight Crew Oxygen Mask


Inflatable Harness
Microphone
Regulator
Supply Hose
Microphone Lead

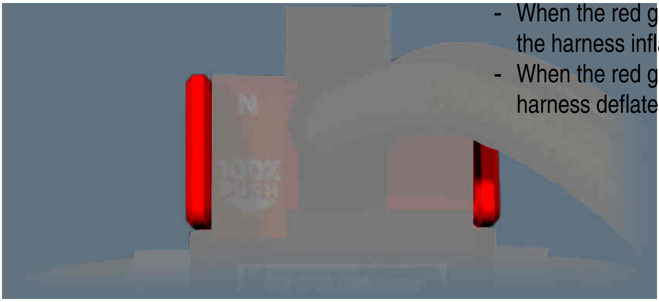
Ident.: DSC-35-20-20-C-00003096.0002001 / 06 NOV 14

Regulator


N/100% sel
Red Grips
EMERGENCY Pressure Selector
N
100% PUSH
EMERGENCY
PRESS TO TEST

Ident.: DSC-35-20-20-C-00003097.0002001 / 06 NOV 14

RED GRIPS

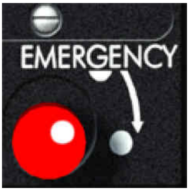


- When the red grips are pressed together, the harness inflates.
- When the red grips are released, the harness deflates.

Ident.: DSC-35-20-20-C-00022109.0001001 / 06 NOV 14

EMERGENCY selector

The EMERGENCY selector provides overpressure, if necessary (e.g. to prevent smoke, smell, or ashes from entering the mask, or to remove condensation).



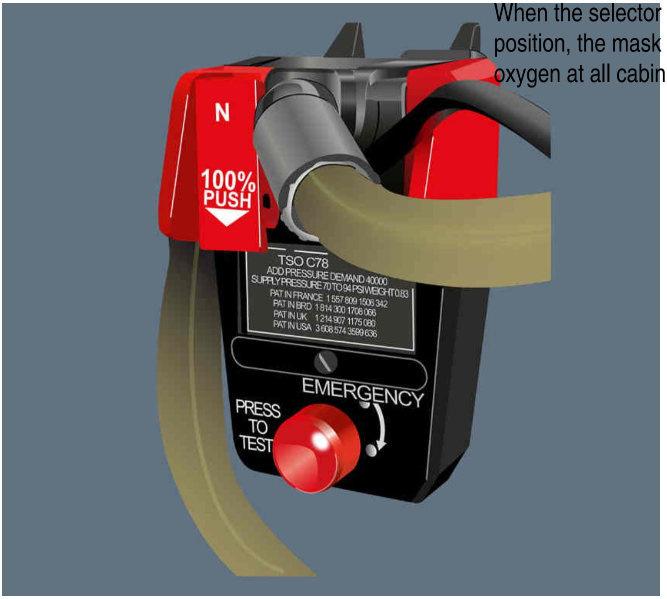
- When pressed, and until released, supplies oxygen overpressure
- When turned, permanently supplies oxygen overpressure.

Note: *If the cabin altitude is above 30 000 ft, oxygen overpressure is automatically supplied.*

Ident.: DSC-35-20-20-C-00022110.0001001 / 05 NOV 15

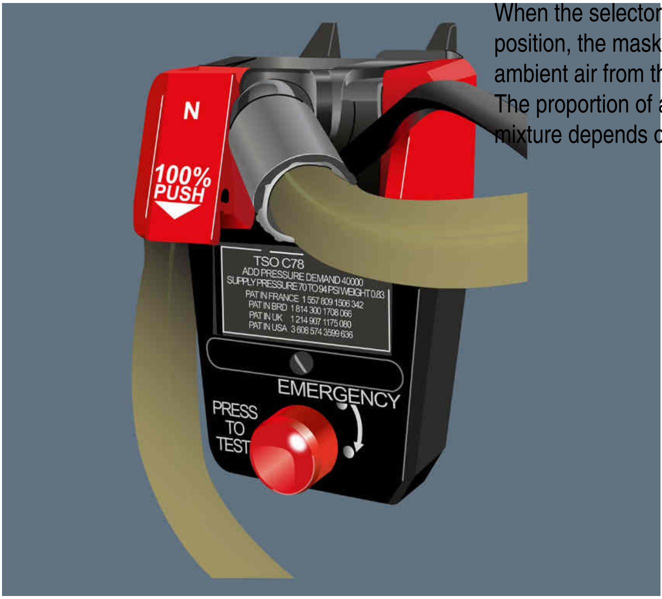
N/100% selector

The N/100% selector has two positions:


N
100%
PUSH
TSO C78
ADD PRESSURE DEMAND 40000
SUPPLY PRESSURE 70 TO 94 PSI WEIGHT 0.83
PAT IN FRANCE 1 557 809 1506 342
PAT IN BRD 1 814 300 1708 066
PAT IN UK 1 214 907 1175 080
PAT IN USA 3 608 574 3599 636
EMERGENCY
PRESS
TO
TEST

When the selector is set to the "100%" position, the mask provides 100 % pure oxygen at all cabin altitudes.

L13


N
100%
PUSH
TSO C78
ADD PRESSURE DEMAND 40000
SUPPLY PRESSURE 70 TO 94 PSI WEIGHT 0.83
PAT IN FRANCE 1 557 809 1506 342
PAT IN BRD 1 814 300 1708 066
PAT IN UK 1 214 907 1175 080
PAT IN USA 3 608 574 3599 636
EMERGENCY
PRESS
TO
TEST

When the selector is set to the "N" (normal) position, the mask provides a mixture of ambient air from the cockpit, and oxygen. The proportion of air and oxygen in the mixture depends on the cabin altitude.

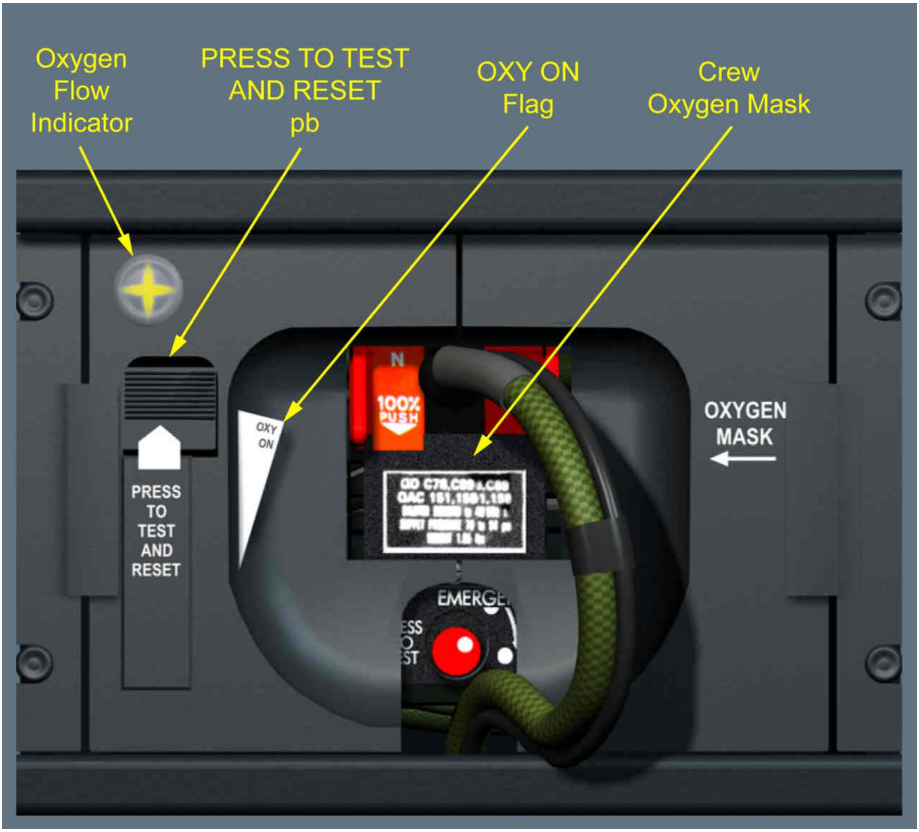
Note: *If the cabin altitude is above 30 000 ft, the mask automatically provides 100% oxygen.*

MASK STOWAGE BOX

Applicable to: ALL

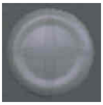
Ident.: DSC-35-20-20-B-00003089.0002001 / 06 NOV 14

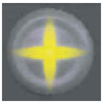
Mask Stowage Box


Oxygen Flow Indicator
PRESS TO TEST AND RESET pb
OXY ON Flag
Crew Oxygen Mask
OXY ON
100% PUSH
N
PRESS TO TEST AND RESET
OXYGEN MASK
EMERG

Ident.: DSC-35-20-20-B-00003093.0002001 / 06 NOV 14

OXYGEN FLOW INDICATOR

	Oxygen is not flowing.



Oxygen is flowing.

Ident.: DSC-35-20-20-B-00022108.0001001 / 06 MAR 15

PRESS TO TEST AND RESET pb

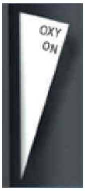
PRESS
TO
TEST
AND
RESET

When pressed, the PRESS TO TEST AND RESET pb either tests, or resets, the oxygen system:

- If the mask has not been taken out of the stowage box (OXY ON flag not visible), this pushbutton tests the oxygen system.
  When the system is operating correctly, the oxygen flow indicator will be yellow for a few seconds.
- If the mask has been taken out of the stowage box and restowed (OXY ON flag visible), this pushbutton resets the oxygen system. Therefore:
  - The oxygen supply to the mask is cut off
  - The mask microphone is deactivated
  - The OXY ON flag disappears.

Ident.: DSC-35-20-20-B-00003095.0002001 / 06 NOV 14

OXY ON FLAG



Appears, after the mask is pulled out of its stowage box, and the left door of the stowage box is closed again. Oxygen flows to the mask.

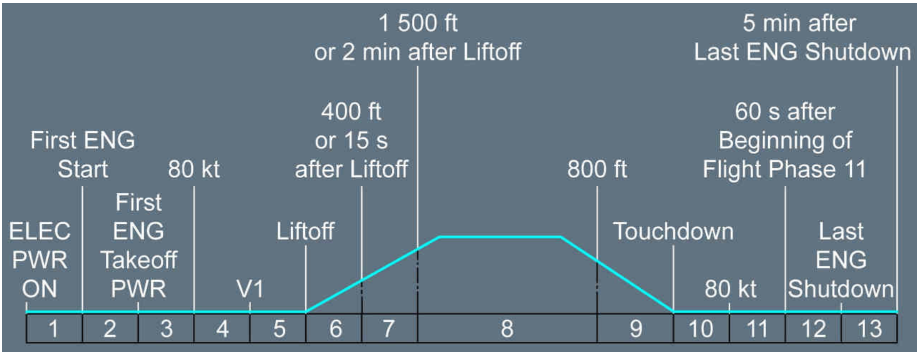
MEMO

Ident.: DSC-35-20-20-00019318.0001001 / 18 JUN 15
Applicable to: ALL

CREW OXY MASK IN USE	At least one crew oxygen mask is used. The oxygen flow is activated when a cockpit occupant pulls the mask.

L2 Appears on the WD.
Flight Phase Inhibition:

Flight Phase Inhibition

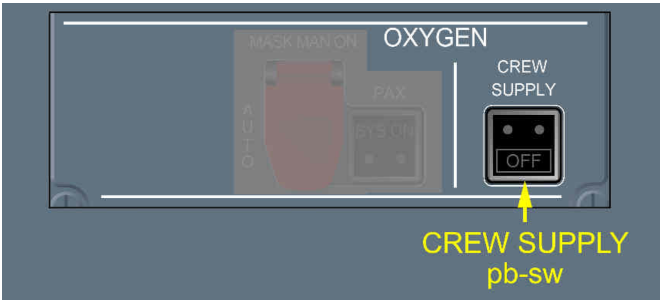

1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

OXYGEN PANEL

Applicable to: ALL

Ident.: DSC-35-20-20-A-00003088.0001001 / 29 APR 14

Oxygen Panel


OXYGEN
MASK MAN ON
AUTO
PAX
SYS ON
CREW
SUPPLY
OFF
CREW SUPPLY
pb-sw

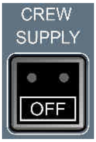
Ident.: DSC-35-20-20-A-00003092.0001001 / 29 APR 14

CREW SUPPLY pb-sw

The CREW SUPPLY pb-sw controls oxygen supply to the masks in the cockpit.

CREW
SUPPLY
OFF

When the CREW SUPPLY pb-sw is pressed (normal position during flight), the OFF indication goes off. The supply valves are open, and the system supplies oxygen to the masks.



When the CREW SUPPLY pb-sw is released, the OFF indication comes on white. The supply valves are closed, and the masks are not supplied with oxygen.

Intentionally left blank

HOW TO TEST THE MASK

Ident.: DSC-35-20-40-00011719.0002001 / 06 NOV 14
Applicable to: ALL

WARNING	To prevent hearing damage to the ground crew connected to the intercom system, inform them that a loud noise may be heard in the headset when performing the oxygen mask test.

- **On the Oxygen Panel:**
  CREW SUPPLY pb-sw .... CHECK ON
- **On the glareshield:**
  LOUDSPEAKERS........ CHECK ON
- **On the RMP:**
  INT reception knob .... PRESS OUT - ADJUST
  INT/RAD sw .... INT
- **On the mask stowage box:**
  Mask stowage box: *Refer to Illustration*

  PRESS TO TEST AND RESET pb .... PRESS AND HOLD

  Check that the oxygen flow indicator turns yellow for a short time, and then goes black.

  Hold the PRESS TO TEST AND RESET pb down, and press the EMERGENCY selector.

  Check that the oxygen flow indicator turns yellow, and remains yellow, as long as the EMERGENCY selector is pressed.
  Listen for oxygen flow through the loudspeakers.

  Check that the PRESS TO TEST AND RESET pb returns to the up position.

  Check that the N/100% selector is in the 100% position.

  Press the EMERGENCY selector again.

  Check that the oxygen flow indicator remains black. This ensures that the mask is not supplied with oxygen.

HOW TO DON THE MASK

Ident.: DSC-35-20-40-00003104.0001001 / 06 NOV 14
Applicable to: ALL

STEP 1

Turn toward the lateral console.

STEP 2

Remove the mask from its stowage box, by squeezing the red grips toward each other, and pulling the mask out of its box.

The stowage box opens, and the:
- Mask is immediately supplied with oxygen
- Mask harness immediately inflates
- Mask microphone is active.

CAUTION	CM1 and CM2 must remain turned toward their respective lateral windows, until they have donned their mask.

STEP 3

Don the mask.

STEP 4

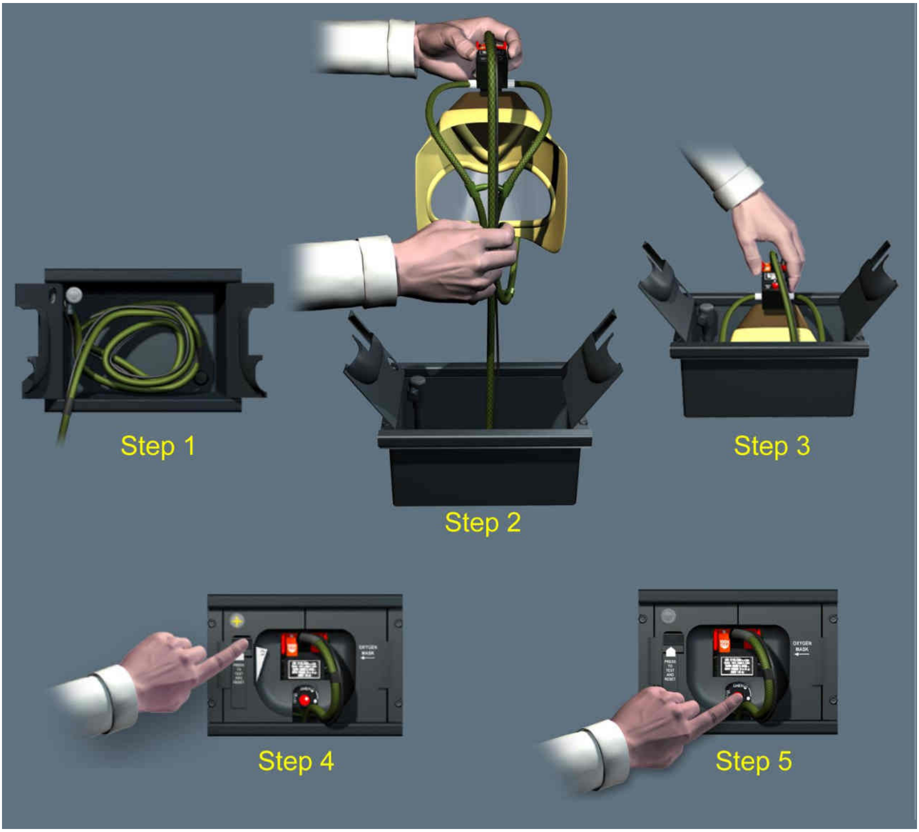
Release the red grips. This will deflate the mask harness, and keep the mask in position.

Note: *The visor of each mask may have a protective film to help prevent scratches. This film is optional, and can be removed at any time.*

HOW TO STOW THE MASK

Ident.: DSC-35-20-40-00003105.0002001 / 06 MAR 15
Applicable to: ALL

How to stow the mask



STEP 1

Coil the hose that is connected to the mask, and put it in the bottom of the stowage box.

STEP 2

Hold the mask by the regulator, and pull the inflatable harness downward with care.

Note: *Ensure that the harness is not inside the mask.*

STEP 3

Put the mask in the stowage box.

Make sure that the:
- Mask touches the bottom of the stowage box
- N/100% selector is face up, and at the 100% position.

STEP 4

Close the doors of the mask stowage box.
Firmly press the PRESS TO TEST AND RESET pb.
When released, check that the OXY ON flag disappears.

STEP 5

Press the EMERGENCY selector, and check that the oxygen flow indicator remains black.

CAUTION	Maintaining the EMERGENCY selector in the EMERGENCY position can deplete the crew oxygen cylinder.

FIXED OXYGEN SYSTEM FOR THE CABIN

Ident.: DSC-35-30-10-00003107.0002001 / 05 NOV 18
Applicable to: ALL

The fixed oxygen system for the cabin provides oxygen to the cabin (passengers and cabin crew), and to the crew rest compartments for a minimum of 22 min, or 15 min ◁✱ .

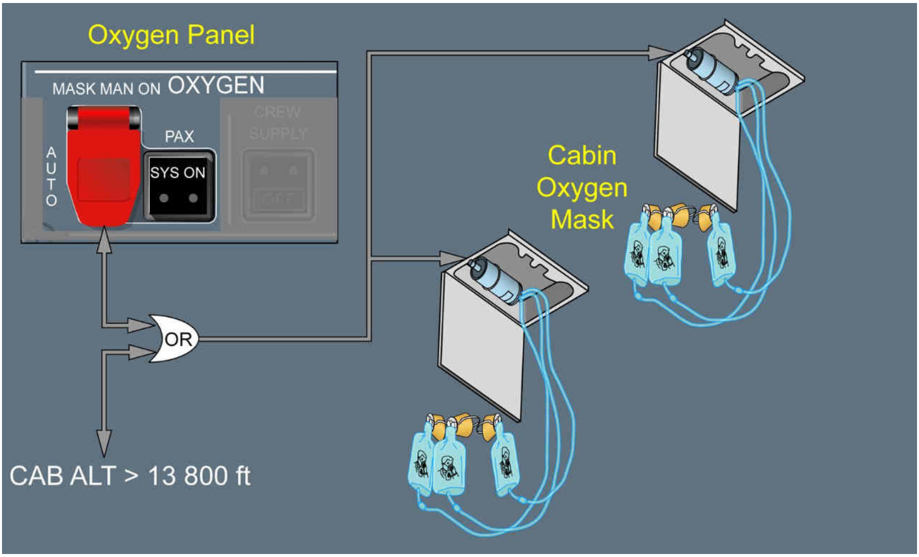
The fixed oxygen system of the cabin has:
- Chemical generators
- Gaseous oxygen cylinders (only in lavatories)
- Masks (stowed in containers)
- L3 Two redundant OXY CTL SYS, hosted in IMA CPIOM H33 and H34 (For more information on CPIOM, *Refer to DSC-42-10 CPIOM*). They monitor and control the cockpit and cabin oxygen system.

L1 The containers are located above the passenger seats, in each lavatory, in each galley, at each cabin crew station, and in each crew rest compartment.

The containers automatically open to release the masks, when:
- The cabin altitude is above 13 800 ft
- The flight crew opens the MASK MAN ON pb guard, and presses the pushbutton.

L2 When a passenger or a cabin crew pulls one mask, the oxygen is supplied for a minimum of 22 min (or 15 min ◁✱) to all masks connected to the same generator/cylinder.
L3 Once activated the system cannot be turned off. The oxygen flows until the oxygen generator/cylinder is empty.

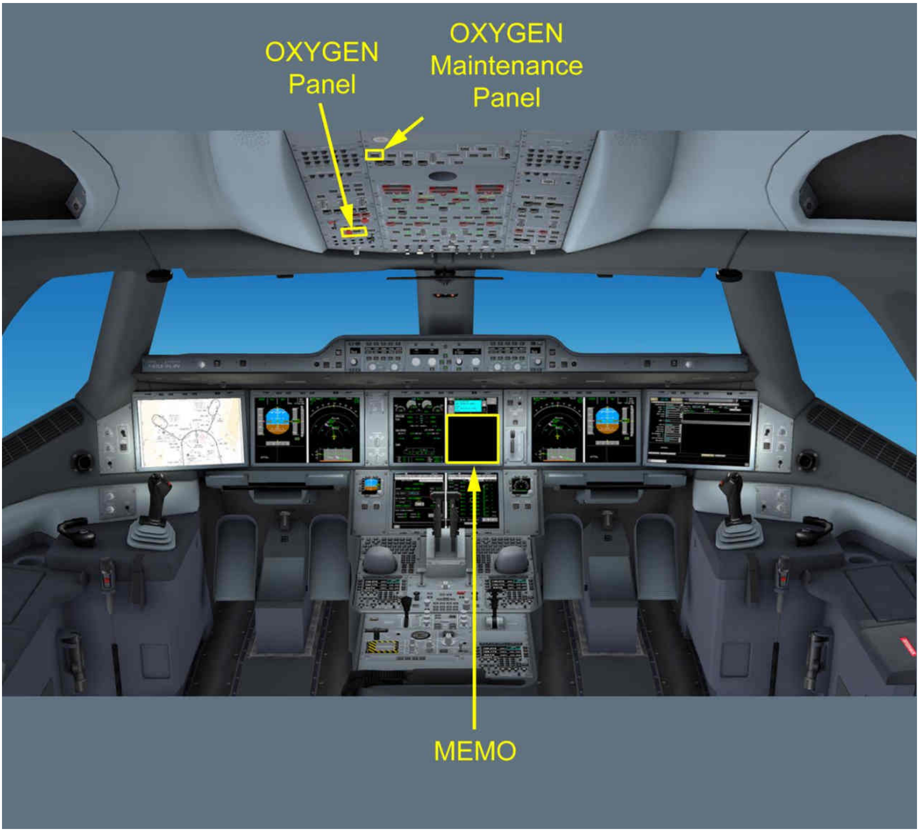
Fixed Oxygen For The Cabin


Oxygen Panel
MASK MAN ON OXYGEN
A
U
T
O
PAX
SYS ON
CREW
SUPPLY
OFF
OR
CAB ALT > 13 800 ft
Cabin
Oxygen
Mask

COCKPIT VIEW

Ident.: DSC-35-30-20-00003109.0001001 / 29 APR 14
Applicable to: ALL

Cockpit View



MEMO

Ident.: DSC-35-30-20-00018068.0001001 / 03 JUL 20
Applicable to: ALL

1 OXY PAX SYS ON	The masks are released in flight, either automatically or manually, with the CAB PRESS EXCESS CAB ALT ECAM alert activated.

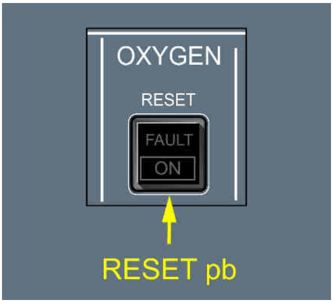
OXY PAX SYS ON	The masks are released in flight, either automatically or manually, without the CAB PRESS EXCESS CAB ALT ECAM alert activated.

OXYGEN MAINTENANCE PANEL

Applicable to: ALL

Ident.: DSC-35-30-20-GOMAI-00003111.0001001 / 29 APR 14

Maintenance Panel

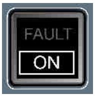
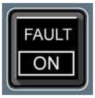


Ident.: DSC-35-30-20-GOMAI-00003116.0001001 / 04 MAY 16

RESET pb

Maintenance personnel uses this pushbutton to reset the control circuit, after the oxygen system has been used.

L13

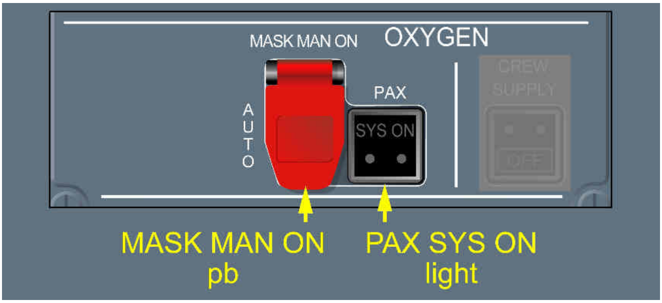
	:	When pressed, it resets the oxygen system: The PAX SYS ON light (on the OXYGEN panel) goes off. When the reset is completed, ON goes off. The reset lasts approximately three seconds.
	:	The reset has failed.

OXYGEN PANEL

Applicable to: ALL

Ident.: DSC-35-30-20-GOPAN-00003110.0001001 / 29 APR 14

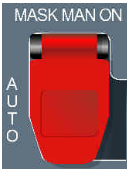
Oxygen Panel


MASK MAN ON
OXYGEN
CREW SUPPLY
PAX
AUTO
SYS ON
OFF
MASK MAN ON pb
PAX SYS ON light

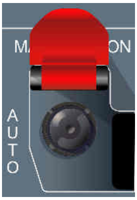
Ident.: DSC-35-30-20-GOPAN-00003114.0001001 / 29 APR 14

MASK MAN ON pb

The MASK MAN ON pb is a guarded pushbutton.


MASK MAN ON
AUTO

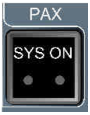
: Normal position.
If the cabin altitude is above 13 800 ft, the masks drop automatically.



: The guard is open, and the pushbutton is pressed: The masks will drop.

Ident.: DSC-35-30-20-GOPAN-00003115.0001001 / 29 APR 14

PAX SYS ON light



: Oxygen flows toward the passenger masks.
The light remains on, until the RESET pb on the OXYGEN maintenance panel is pressed.

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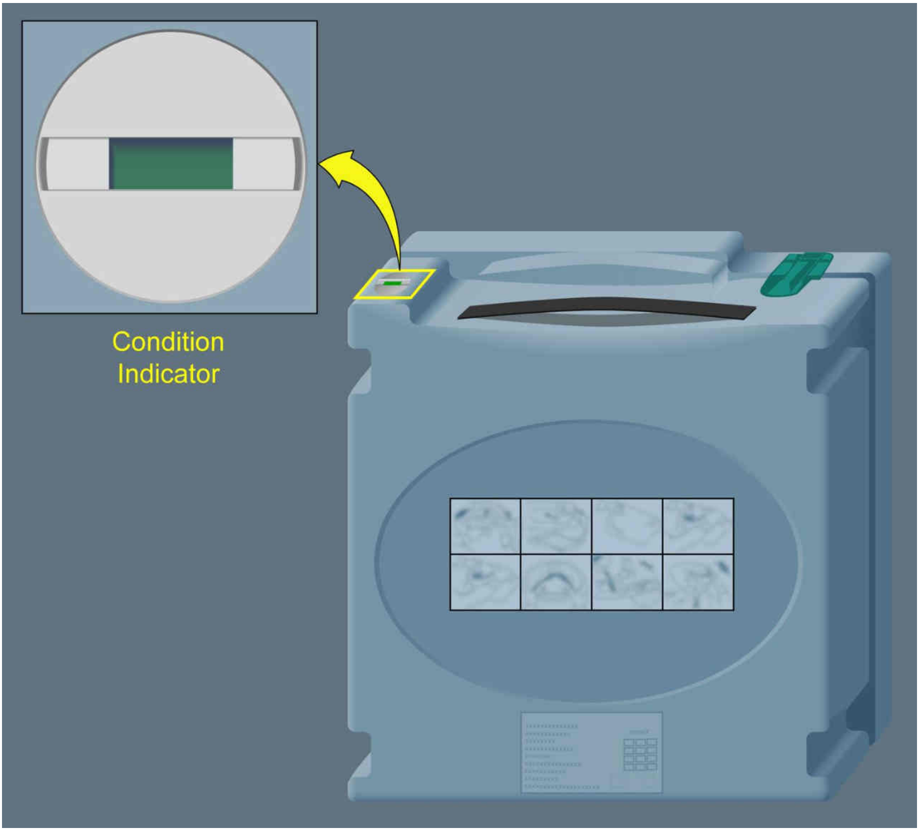
PROTECTIVE BREATHING EQUIPMENT (PBE)

Ident.: DSC-35-40-10-00003123.0001001 / 08 JUL 19
Applicable to: ALL

There is one Protective Breathing Equipment (PBE) in the cockpit. The PBE is a hood, contained in a stowage box.

The PBE can be used in the case of smoke, fire, toxic gases. It:
- Protects the user's eyes and respiratory system for 15 min
- Protects against hypoxia up to a cabin altitude of 25 000 ft. However, the flight crew must not don the PBE when the cabin depressurization begins. In this case the flight crew must use the fixed oxygen mask (*Refer to DSC-35-20-40 How to Don the Mask*)
- L2 Enables the user to leave the station or cockpit
- Enables the user to communicate, via a phonic membrane.

It is possible to remove the hood from its stowage box, and to don it in less than 10 s.
It can be donned, even if the user has long hair, a beard, or glasses.
L3 There is a carbon dioxide absorption system in the hood, and the visor is treated against fog.
L1 The hood is stowed in a stowage box. For location in the cockpit: *Refer to DSC-25-20 Cockpit Emergency Equipment*.
The stowage box has a condition indicator.



L2 If the PBE is in good condition, the indicator is green. If there is a leak, the condition indicator becomes red, and indicates that the PBE may not provide up to 15 min of protection.

PORTABLE OXYGEN CYLINDER

Ident.: DSC-35-40-10-00011774.0001001 / 29 APR 14
Applicable to: ALL

For more information on the Portable Oxygen Cylinder located in the cabin, *Refer to CCOM/Portable Oxygen*.

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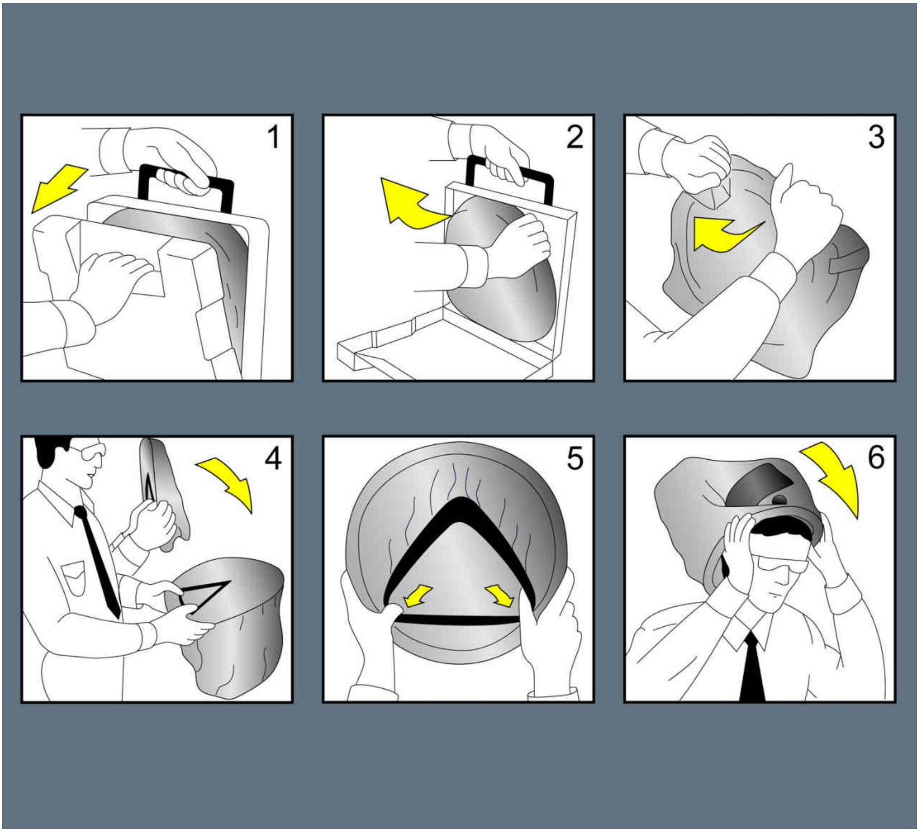
HOW TO DON THE PBE

Ident.: DSC-35-40-20-00003124.0001001 / 29 APR 14
Applicable to: ALL

How to don the PBE



1. Check that the condition indicator is green.
   With one hand, hold the handle that has the "1 LIFT" label. With the other hand, pull sharply the grey part that has the "2 PULL" label. This action enables to break the protective seal, and open the cover.
2. Hold the vacuum bag with one hand, and take it out of the case by pulling it toward you.
3. Hold the vacuum bag with one hand, and pull one of the tear-off strips with the other hand. Take the hood out of the bag.

4. Hold the hood with both hands with the thumbs inside the neck seal. Shake the hood downward in one movement.
5. Put the thumbs on the orange marks, and open the neck seal.
6. Pass the hood over your head, starting from the back.
   The user hears a slight click: The hood is now operational for at least 15 min. Breathe normally.

WARNING	Put the hair above the neck seal inside the hood. Do not damage the neck seal when putting on the PBE. Be especially careful with glasses, sharp-edged necklaces and earrings.

During the 15 min of operation, the temperature increases, and reaches 40 °C at the end of operation. When the noise of oxygen flow stops, the hood is no longer operational. The user must remove the hood: *Refer to DSC-35-40-20 How to Put off the PBE*.

HOW TO PUT OFF THE PBE

Ident.: DSC-35-40-20-00003125.0001001 / 29 APR 14
Applicable to: ALL

1. Go to a safe area, away from fire, flame, and toxic fumes.
2. Put both thumbs inside the neck seal, at the front of the hood.
3. Take hold of the oxygen container, through the fabric.
4. Pull the hood backward.
5. Put the hood in a dry, fire protected place, and away from any source of heat, sunlight or corrosive fluid.

AIRCRAFT SYSTEMS

36 - BLEED AIR

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DSC-36-10 System Description

DSC-36-10-10 Overview

Overview...A

DSC-36-10-20 Engine Bleed Air System

Engine Bleed Air System...A

DSC-36-10-30 APU Bleed Air Supply

APU Bleed Air Supply...A

DSC-36-10-40 HP Ground Air Supply

HP Ground Air Supply...A

DSC-36-10-50 Crossbleed

Crossbleed...A

DSC-36-10-60 Leak Detection

Leak Detection...A

DSC-36-20 Controls and Indicators

Cockpit View...A
AIR Panel...B
BLEED SD Page...C

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OVERVIEW

Ident.: DSC-36-10-10-00003040.0001001 / 23 APR 14
Applicable to: ALL

The Bleed Air System (BAS) supplies high-pressure air to the following systems:
- Air conditioning and cabin pressurization
- Fuel tank inerting

L2 For more information on the FTIS, *Refer to DSC-28-10 Fuel Tank Inerting System*.

L1
- Wing anti-ice
- Engine start
- Pack bay ventilation.

High Pressure (HP) air is supplied by:
- The engines
- The APU
- Ground-air sources, through two HP ground connectors.

There is one crossbleed valve on the crossbleed duct.

The crossbleed valve:
- Ensures that bleed air is supplied to the systems, depending on which bleed air sources are available, and
- Permits to isolate the left and right sides of the bleed air system when required.

A leak detection system detects any overheat near the bleed ducts. For more information, *Refer to DSC-36-10-60 Leak Detection*.

In normal conditions, the bleed air system operates automatically.

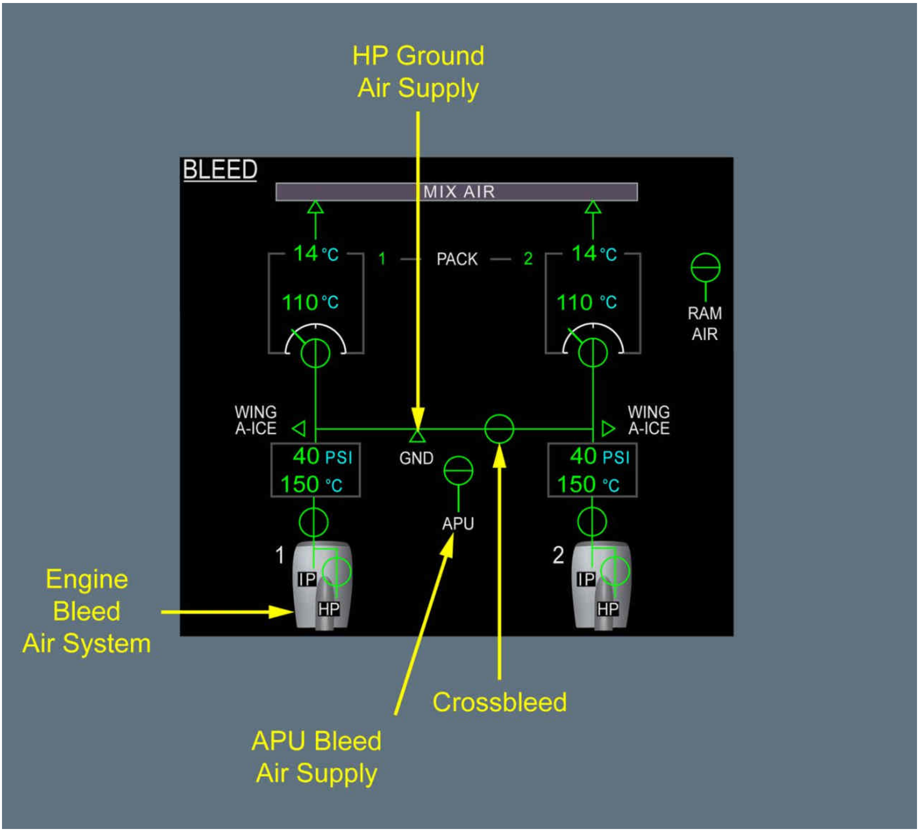
L3 During takeoff phase, the positions of all valves which belong to the BAS are frozen.

L1 If necessary, the pilot can manually operate the bleed air system.

L3 The BAS applications of CPIOMs H43 and H44:
- Control and monitor the bleed air system. For that purpose, each BAS application is dedicated to one engine bleed air system.
- Ensure the automatic control of the crossbleed valve. For that purpose, only one BAS application is used at a time.

In addition, two Bleed and Overheat Monitoring Units (BOMUs):
- Also control and monitor the bleed air system. For that purpose, each BOMU is dedicated to one engine bleed air system.
- Perform the bleed leak detection. For that purpose the two BOMUs are redundant.

Bleed Air System

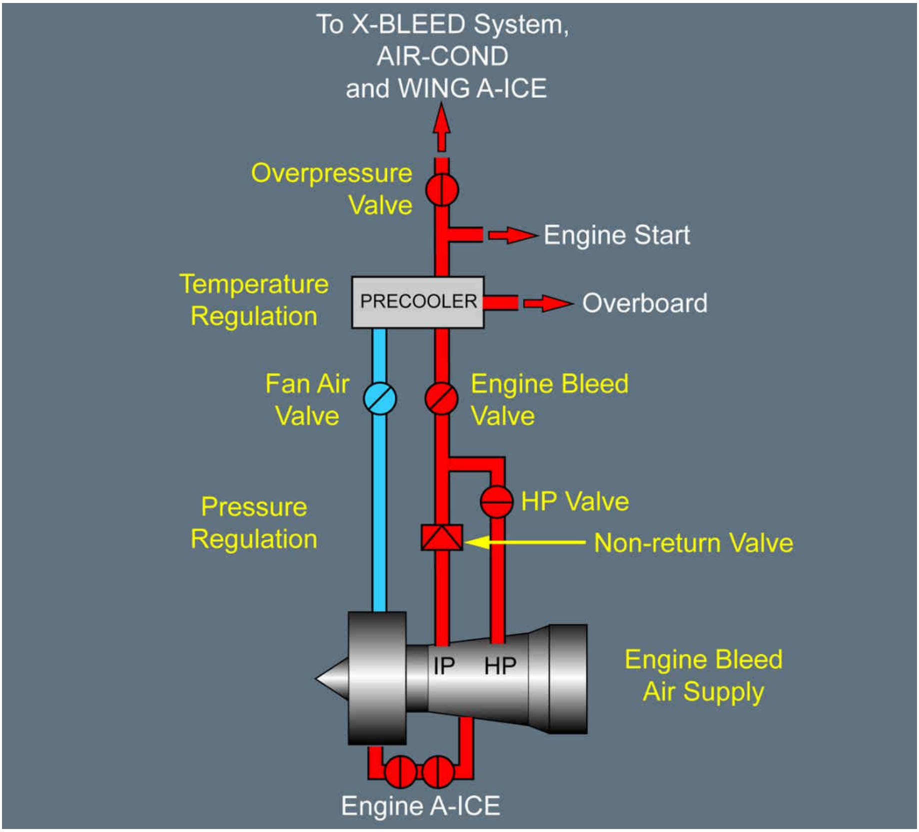

HP Ground
Air Supply
BLEED
MIX AIR
14 °C
1
PACK
2
14 °C
110 °C
110 °C
RAM
AIR
WING
A-ICE
WING
A-ICE
GND
40 PSI
150 °C
40 PSI
150 °C
APU
1
2
IP
HP
IP
HP
Engine
Bleed
Air System
Crossbleed
APU Bleed
Air Supply

ENGINE BLEED AIR SYSTEM

Applicable to: ALL

Ident.: DSC-36-10-20-10-00003041.0001001 / 15 APR 14

Engine Bleed Air System


To X-BLEED System,
AIR-COND
and WING A-ICE
Overpressure
Valve
Engine Start
Temperature
Regulation
PRECOOLER
Overboard
Fan Air
Valve
Engine Bleed
Valve
HP Valve
Pressure
Regulation
Non-return Valve
IP
HP
Engine Bleed
Air Supply
Engine A-ICE

Ident.: DSC-36-10-20-10-00003042.0001001 / 23 APR 14

ENGINE BLEED AIR SUPPLY

L2 Engine bleed air usually comes from the Intermediate Pressure (IP) compressor of the engine. The pressure of the IP compressor is sufficiently high to supply pressurized air to the system users, except at low thrust settings. Using air from the IP compressor minimizes fuel consumption.

L1 At low engine thrust settings, the air pressure is too low, and air is bled from the High Pressure (HP) compressor of the engine, through the HP valve.
The HP valve automatically controls and regulates the pressure of the air supply.
L3 In normal operation, the HP valve is electronically controlled and limits the downstream bleed pressure to 50 PSI.
In degraded mode, the HP valve operates in pneumatic mode and regulates the downstream bleed pressure at about 67.5 ± 12.5 PSI.

L1 The HP valve automatically closes in any one of the following cases:
- When the bleed pressure of the IP compressor is sufficiently high
L3 When the pressure is more than 35 PSI.
L1 - When the bleed pressure of the HP compressor is too low (e.g. at engine start)
L3 When the pressure is less than 15 PSI.
L1 - When the engine bleed valve is commanded to close
- In the case of bleed overtemperature

L3 The temperature downstream of the engine bleed valve exceeds:
  - 257 °C during more than 55 s, or
  - 270 °C during more than 15 s, or
  - 287 °C during more than 5 s.

L1 - In case of bleed overpressure

L3 The pressure downstream of the engine bleed valve exceeds:
  - 58 PSI when the valve is electronically controlled, or
  - 73 PSI when the valve is operated in pneumatic mode.

L1 - To protect the system from an engine-to-engine reverse flow, at low engine thrust settings, with the crossbleed valve in the open position.

L3 When the HP valve is open, a pressure non-return valve prevents air from the HP stage of the compressor from circulating to the IP stage. This non-return valve is mounted downstream of the IP stage of the compressor.

Ident.: DSC-36-10-20-10-00003043.0001001 / 02 APR 15

PRESSURE REGULATION

For each engine, the engine bleed valve regulates the delivered bleed pressure. This valve can also close, and isolate its applicable engine bleed air system.
L3 The engine bleed valve is located downstream of the IP and HP bleed junction.
L2 In normal operation, the engine bleed valve is electronically controlled and maintains the precooler outlet pressure between 37 and 53 PSI.
In degraded mode, the engine bleed valve operates in pneumatic mode and regulates the bleed precooler outlet pressure at about 60 ± 10 PSI.

L1 ENGINE BLEED VALVE OPERATION

Each engine bleed valve automatically operates, when its associated engine is running.
Both engine bleed valves automatically close, when the APU BLEED pb-sw is set to ON.
If necessary, the flight crew can manually close each engine bleed valve by setting the assigned ENG BLEED pb-sw to OFF.
The engine bleed valve closes, when the ENG FIRE pb-sw of the associated engine is pressed.

L2 Automatic Opening

The engine bleed valve automatically opens when the associated engine bleed is available.
The engine bleed valve then regulates the engine bleed air pressure.
L3 The valve opens when the upstream pressure is more than 15 PSI.

L2 Automatic Closure

The engine bleed valve automatically closes:

- During the start sequence of the associated engine
  L3 It opens again when the engine start valve closes, and the upstream pressure is more than 15 PSI .
- L2 In the case of malfunctions in the associated engine bleed air system:
  - Bleed overpressure

    L3 The pressure downstream of the engine bleed valve exceeds:
    - ■ 58 PSI when the valve is electronically controlled, or
    - ■ 73 PSI when the valve is operated in pneumatic mode.
  - L2 Bleed overtemperature

    L3 The temperature downstream of the engine bleed valve exceeds:
    - ■ 257 °C during more than 55 s, or
    - ■ 270 °C during more than 15 s, or
    - ■ 287 °C during more than 5 s.
- L2 In the case of malfunctions in the onside Wing Ice Protection System (WIPS)
- In the case of a leak detection in the surrounding area
  L3 A leak is detected in the APU duct (engine 1 bleed valve only), or in the associated engine or wing bleed duct.
- L2 In the case of a smoke procedure
- In the case the crossbleed valve is failed in the open position
- In the case the XBLEED selector is set to OPEN, and the wing anti-ice is set to ON
- To protect the system from an engine-to-engine reverse flow, at low engine thrust settings, with the crossbleed valve in the open position.

L3 OVERPRESSURE VALVE

In addition, an overpressure valve protects the bleed system.
This valve automatically closes, in addition to the associated engine bleed valve, when the ENG FIRE pb-sw is pressed or when an overtemperature, an overpressure or a leak in the surrounding area is detected. The overpressure valve also closes in the case of a smoke procedure.
In the case of total loss of pressure regulation control, the overpressure valve automatically regulates the bleed pressure to 90 PSI when the bleed air pressure upstream the overpressure valve is above 90 PSI.

Ident.: DSC-36-10-20-10-00003044.0001001 / 15 APR 14

TEMPERATURE REGULATION

A precooler regulates the temperature of each engine bleed.
L3 The precooler is an air-to-air heat exchanger, mounted downstream of the engine bleed valve. It uses cooling air, that is bled from the engine fan. The transferred heat is subsequently returned to the engine core and vented overboard.
A fan air valve regulates the airflow. The fan air valve closes, when there is no bleed pressure.
L2 To obtain the selected temperature in the cabin zones, the precooler regulates bleed air temperature to approximately 200 °C.
However, depending on the demand, the bleed air temperature can be regulated down to 150 °C, provided that wing anti-ice is off.

APU BLEED AIR SUPPLY

Ident.: DSC-36-10-30-00003045.0001001 / 07 NOV 16
Applicable to: ALL

The APU also provides bleed air to the bleed system, via the APU bleed valve.
L3 This valve is not a pressure-regulating valve, since the APU runs at a constant speed.

L1 The APU can supply bleed air for air conditioning and pressurization:
- On ground,
- In flight:
  - Up to 25 000 ft (7 620 m) for single pack operation
  - Up to 22 500 ft (6 858 m) for dual pack operation.

The APU can supply bleed air to assist engine start:
- On ground,
- In flight, up to 25 000 ft (7 620 m).

For more information on the APU operational envelope, *Refer to LIM-APU Operational Envelope*.
L3 A non-return valve, located near the crossbleed duct, protects the APU when air is bled from another source.

L1 APU BLEED VALVE OPERATION

When the APU BLEED pb-sw is set to ON, provided that the APU is running, and that the aircraft is at or below 25 000 ft (7 620 m):
- The APU bleed valve opens
- The crossbleed valve opens (if the XBLEED selector is set to AUTO)
- Both engine bleed valves close.

In the case of an APU bleed leak, or if the APU FIRE pb-sw is pressed, the APU bleed valve automatically closes.

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HP GROUND AIR SUPPLY

Ident.: DSC-36-10-40-00003046.0001001 / 15 APR 14
Applicable to: ALL

There are two HP ground connectors. An HP ground source can be connected to each HP ground connector, to supply bleed air to the aircraft.

L2 These HP ground connectors are on the belly fairing.

L3 Each connector has a non-return valve, that protects the connector, when air is bled from another source.

L1 When any of the HP ground sources is connected, all systems can receive bleed air.

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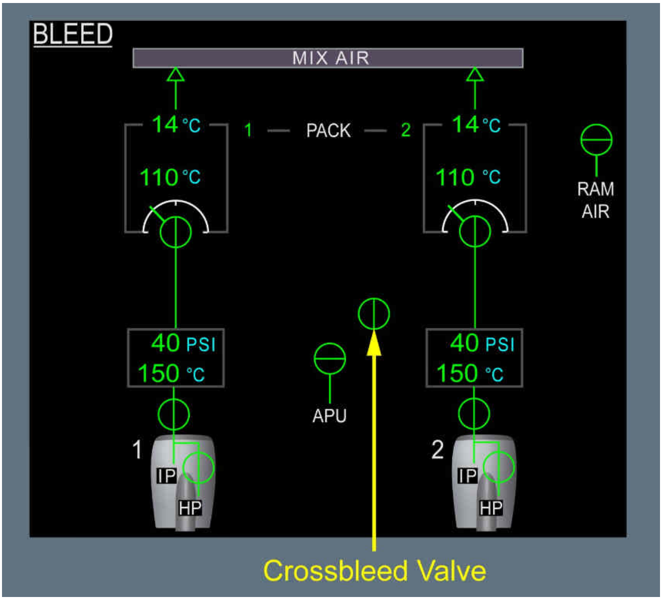
CROSSBLEED

Ident.: DSC-36-10-50-00003047.0001001 / 23 APR 14
Applicable to: ALL

Crossbleed Valve



A crossbleed duct interconnects the LH (engine 1) and the RH (engine 2) bleed air systems. The crossbleed valve located on this duct can isolate or interconnect the LH and RH bleed air systems. In normal operations, the XBLEED selector is set to AUTO, and the crossbleed valve operates automatically.

The crossbleed valve is normally closed. It automatically opens:
- At engine start
- On ground, when both engines and the APU are off
- On ground, when a ground source is used
- When the APU bleed valve is selected open
- In case any engine bleed air system is closed, or
- In case one pack is declared inoperative.

The crossbleed valve can be manually opened, if the XBLEED selector is set to OPEN.

In the case of a wing or APU bleed leak, the affected bleed duct is isolated, by maintaining the crossbleed valve closed. (For more information *Refer to DSC-36-10-60 Leak Detection*).

LEAK DETECTION

Applicable to: ALL

Ident.: DSC-36-10-60-10-00003048.0001001 / 15 APR 14

LEAK DETECTION

On ground and in flight, dual detection loops provide leak detection for the hot air bleed ducts of the:
- Engines
  L2 These ducts are located in the engines pylons.
- L1 Wings
- Wing anti-ice
- APU
- Fuel Tank Inerting System (FTIS)
- Pack bays
- Air conditioning hot-air system.

L2 The presence of hot air near the ducts indicates a leak in the bleed ducts.

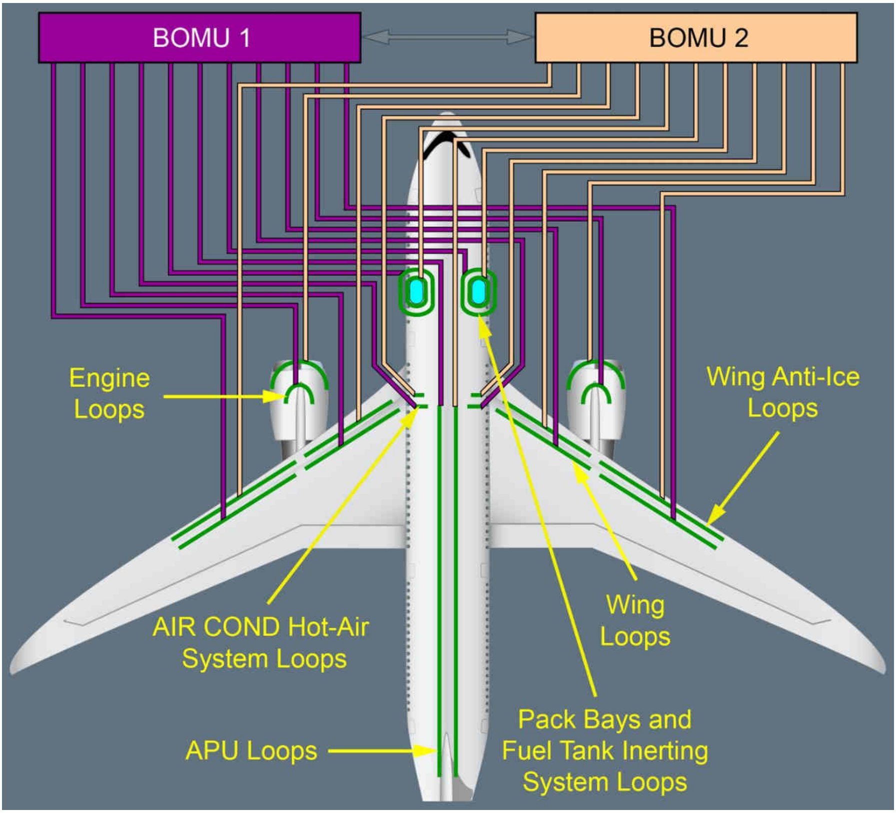
L3 The control of the OverHeat Detection System (OHDS) function is hosted in CPIOMs H43 and H44.
Two Bleed and Overheat Monitoring Units (BOMUs) perform the bleed leak detection.
Each single loop is connected to one BOMU.
Each BOMU monitors the hot air bleed leaks detected by its connected loops.

L2 The ECAM will trigger a leak alert, in case:
- Both loops detect an ambient overheat, or
- One loop detects an ambient overheat, and the other one is inoperative.

L3 An ambient overheat is detected, when the ambient temperature near the bleed ducts is above:
- 154 °C for the engine pylon ducts
- 124 °C for all other ducts.

L1 If a leak is detected, the affected bleed duct is automatically isolated.

Bleed Leak Detection


BOMU 1
BOMU 2
Engine Loops
Wing Anti-Ice Loops
AIR COND Hot-Air System Loops
Wing Loops
APU Loops
Pack Bays and Fuel Tank Inerting System Loops

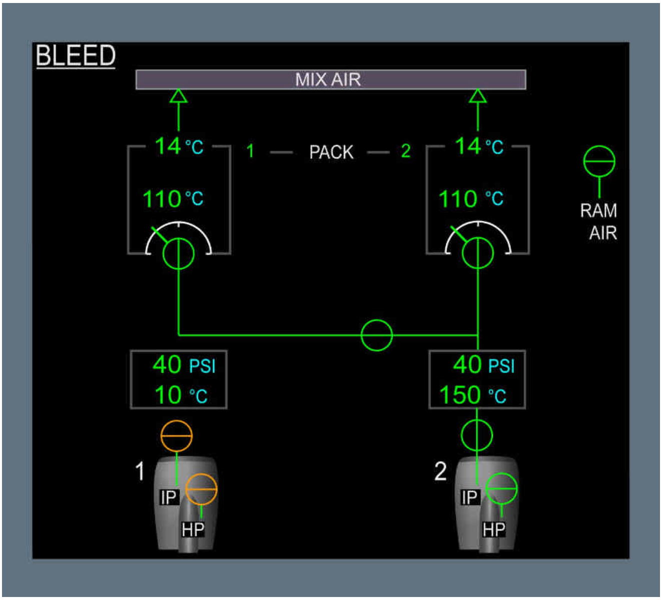
Ident.: DSC-36-10-60-10-00012057.0001001 / 23 APR 14

ENGINE BLEED LEAKS

When a leak is detected in an engine bleed duct, the corresponding engine bleed valve automatically closes.

L3 The corresponding engine bleed overpressure valve also automatically closes.

Engine 1 Bleed Leak



- **If a leak is detected in the engine 1 bleed duct, and the engine 1 bleed overpressure valve does not automatically close:**
  The APU bleed valve and the crossbleed valve automatically close.
- **If a leak is detected in the engine 2 bleed duct, and the engine 2 bleed overpressure valve does not automatically close:**
  The crossbleed valve automatically closes.

L2 For more information on the associated ECAM procedure: *Refer to PRO-ABN-AIR AIR ENG 1(2) BLEED LEAK*.

Ident.: DSC-36-10-60-10-00012059.0001001 / 23 APR 14

WING LEAKS

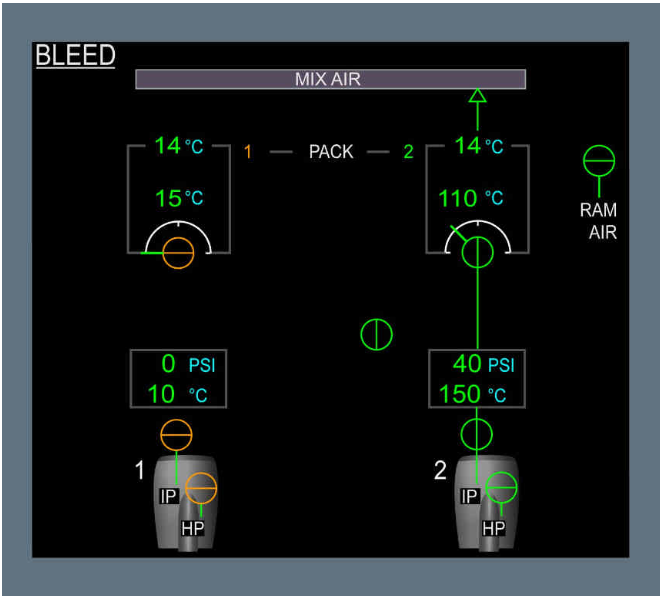
- **When a leak is detected in the left wing bleed duct:**

  The following valves automatically close:
  - The engine 1 bleed valve
  - The engine 1 bleed overpressure valve
  - The crossbleed valve
  - The APU bleed valve.

L3
L1

The APU bleed and the engine 1 bleed are no longer available.

Left Wing Leak



- **When a leak is detected in the right wing bleed duct:**

  The following valves automatically close:
  - The engine bleed 2 valve
  - L3 The engine 2 bleed overpressure valve
  - L1 The crossbleed valve.

  The engine 2 bleed is no longer available.

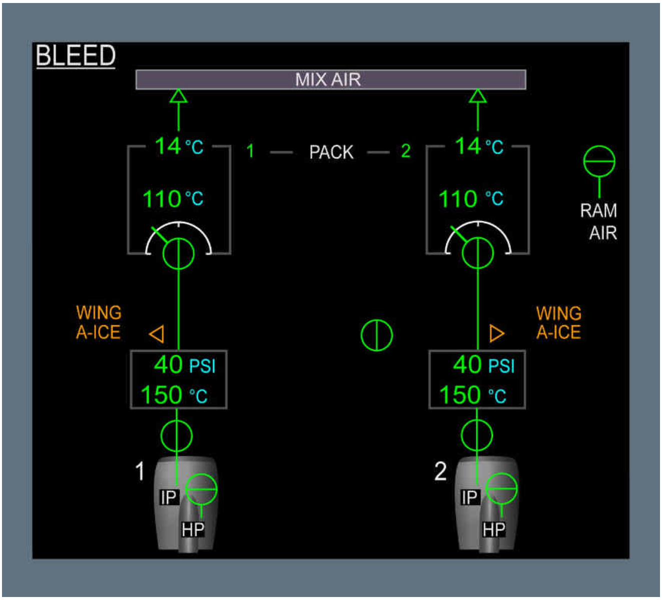
L2 For more information on the associated ECAM procedure: *Refer to PRO-ABN-AIR AIR L(R) WING LEAK*.

Ident.: DSC-36-10-60-10-00012061.0001001 / 23 APR 14

WING ANTI-ICE LEAKS

When a leak is detected in the left or right wing anti-ice bleed duct (downstream the wing anti-ice valve), both wing anti-ice valves automatically close. The wing anti-ice is no longer available.

Wing Anti-Ice Leak


BLEED
MIX AIR
14 °C
1
PACK
2
14 °C
110 °C
110 °C
RAM
AIR
WING
A-ICE
WING
A-ICE
40 PSI
150 °C
40 PSI
150 °C
1
2
IP
HP
IP
HP

L2 ■ **When a leak is detected on the left side, and if the associated wing anti-ice valve does not automatically close:**

The following valves automatically close:
- The engine 1 bleed valve
- L3 The engine 1 bleed overpressure valve
- L2 The APU bleed valve
- The crossbleed valve.

■ **When a leak is detected on the right side, and if the associated wing anti-ice valve does not automatically close:**

The following valves automatically close:
- The engine 2 bleed valve
- L3 The engine 2 bleed overpressure valve
- L2 The crossbleed valve.

For more information on the associated ECAM procedure: *Refer to PRO-ABN-AIR AIR L(R) WING A-ICE LEAK*.

Ident.: DSC-36-10-60-10-00003051.0001001 / 23 APR 14

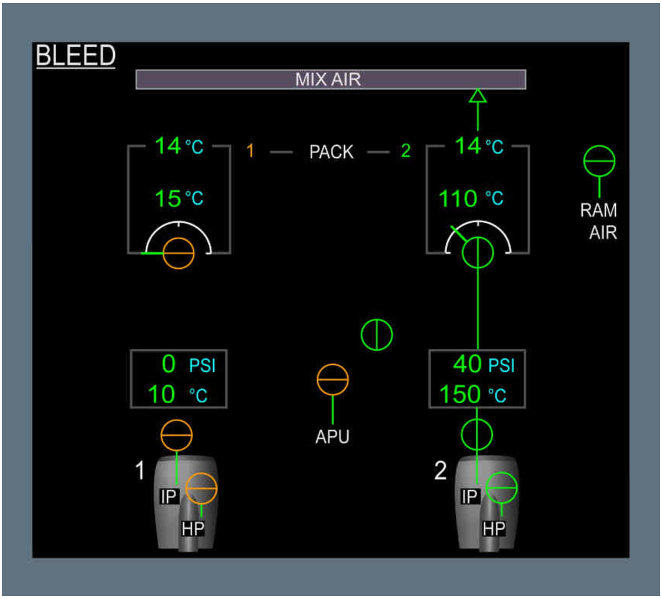
APU BLEED LEAKS

When a leak is detected in the APU bleed ducts, the following valves automatically close:

- The APU bleed valve
- The engine 1 bleed valve
- L3 The engine 1 bleed overpressure valve
- L1 The crossbleed valve.

The APU bleed and the engine 1 bleed are no longer available.

APU Bleed Leak



L2 For more information on the associated ECAM procedure: *Refer to PRO-ABN-AIR AIR APU BLEED LEAK*.

Ident.: DSC-36-10-60-10-00012062.0001001 / 23 APR 14

FUEL TANK INERTING LEAKS

When a leak is detected in the Conditioned Service Air System (CSAS), the CSAS on the affected side is automatically shut down. The FTIS is no longer available.

L2 ■ **When a leak is detected on the left side, and if the associated CSAS isolation valve does not automatically close:**

The following valves automatically close:
- The engine 1 bleed valve
- L3 The engine 1 bleed overpressure valve
- L2 The APU bleed valve
- The crossbleed valve.

■ **When a leak is detected on the right side, and if the associated CSAS isolation valve does not automatically close:**

The following valves automatically close:
- The engine 2 bleed valve
- L3 The engine 2 bleed overpressure valve
- L2 The crossbleed valve.

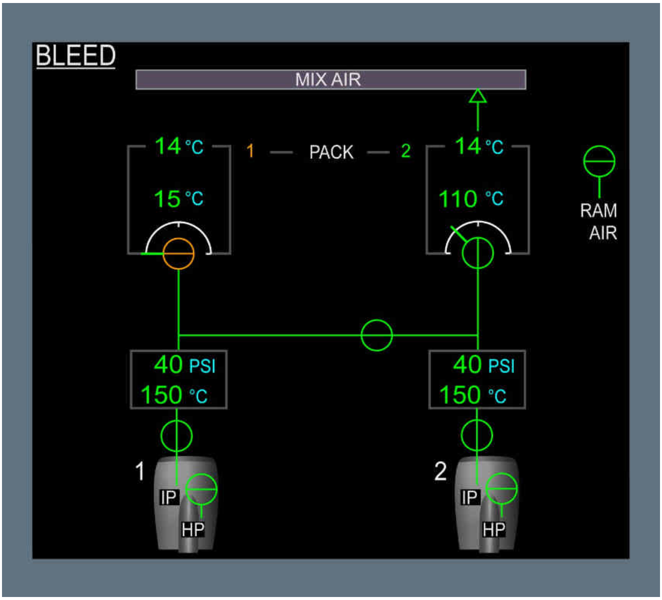
For more information on the associated ECAM procedure: *Refer to PRO-ABN-AIR AIR LEAK ON FUEL INERTING*.

Ident.: DSC-36-10-60-10-00003052.0001001 / 23 APR 14

PACK LEAKS

When a leak is detected in a pack bay area, the two pack valves of the affected pack automatically close and the CSAS on the affected side is automatically shut down. The FTIS is no longer available.

Bleed Leak on Pack 1



L2

- **When a leak is detected in the pack 1 bay area, and if one or both pack valves do not automatically close or if the CSAS does not automatically shut down:**

  The following valves automatically close:
  - The engine 1 bleed valve
  - L3 The engine 1 bleed overpressure valve
  - L2 The APU bleed valve
  - The crossbleed valve.

- **When a leak is detected in the pack 2 bay area, and if one or both pack valves do not automatically close or if the CSAS does not automatically shut down:**

  The following valves automatically close:
  - The engine 2 bleed valve
  - L3 The engine 2 bleed overpressure valve
  - L2 The crossbleed valve.

For more information on the associated ECAM procedure: *Refer to PRO-ABN-AIR AIR PACK 1(2) LEAK*.

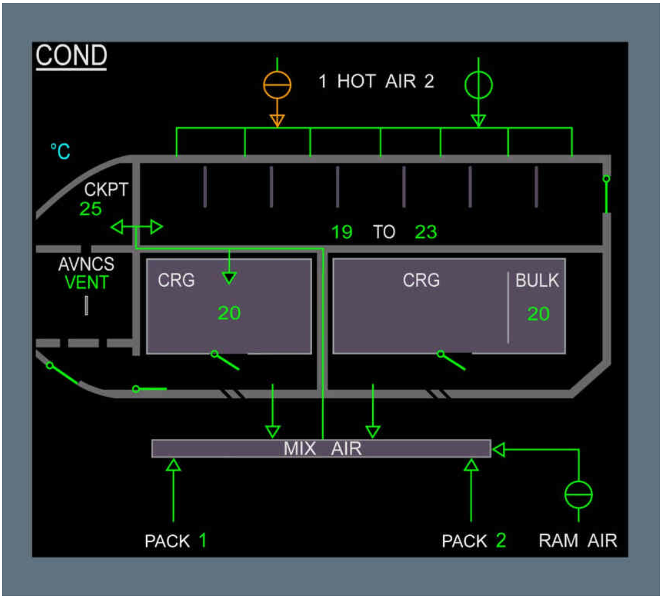
Ident.: DSC-36-10-60-10-00003053.0001001 / 23 APR 14

HOT-AIR LEAKS

When a leak is detected on one of the hot-air ducts of the air conditioning hot-air system, the corresponding hot-air valve automatically closes. The hot-air system on the affected side is no longer available.

L3 The trim air shutoff valve also automatically closes.

Hot Air 1 Bleed Leak



L2
- **If the hot-air valve does not automatically close:**
  Both pack valves of the associated pack automatically close.

L3
- **If the trim air shutoff valve does not automatically close:**
  The hot-air valve on the opposite side automatically closes.

L2 For more information on the associated ECAM procedure: *Refer to PRO-ABN-AIR AIR HOT AIR 1(2) LEAK*.

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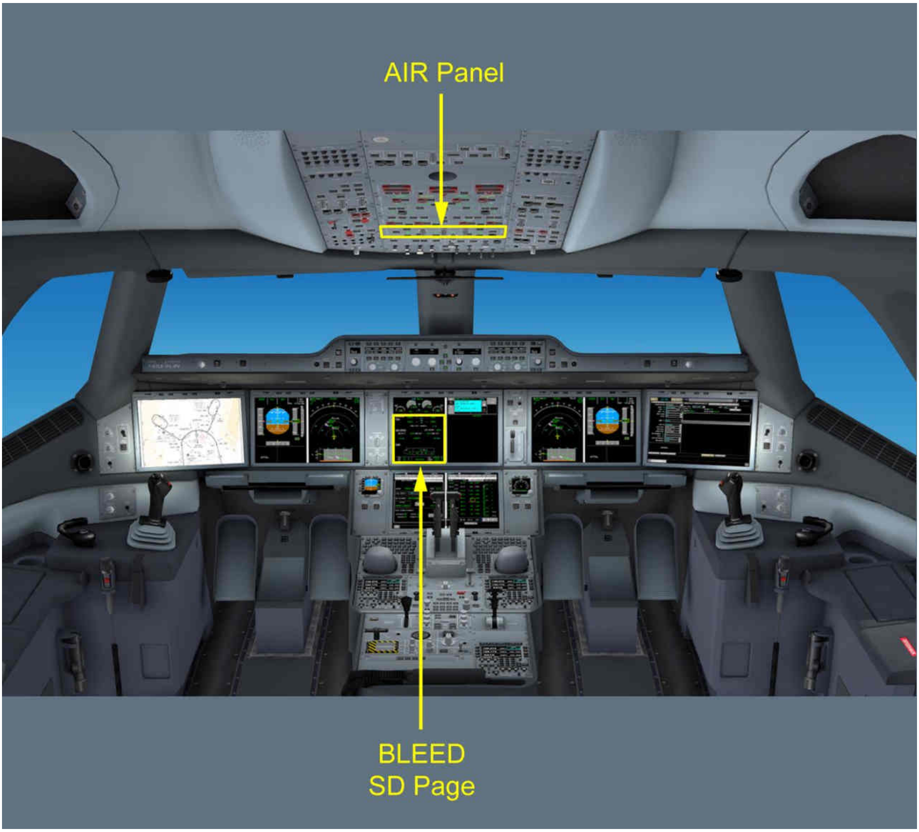
COCKPIT VIEW

Ident.: DSC-36-20-00003054.0001001 / 17 APR 14
Applicable to: ALL

Cockpit View

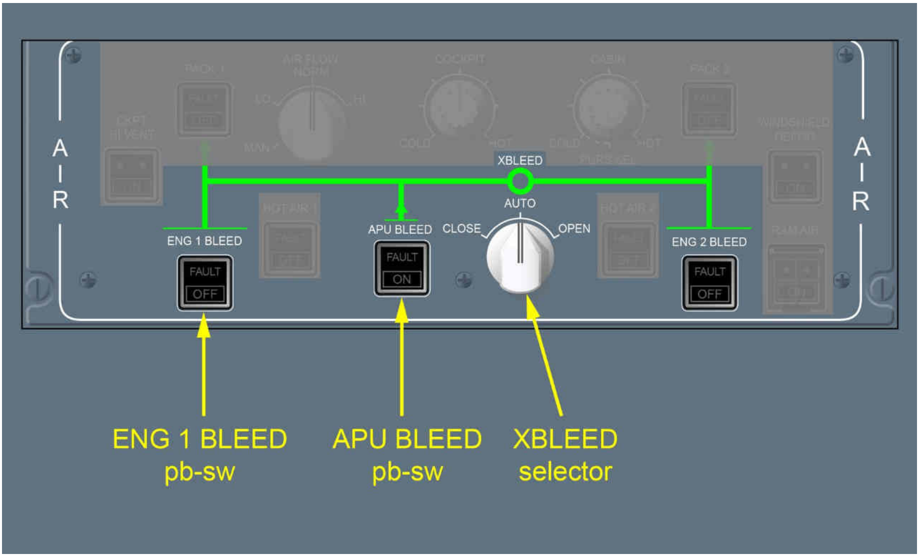


AIR PANEL

Applicable to: ALL

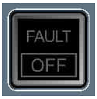
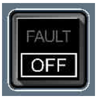
Ident.: DSC-36-20-10-00003055.0001001 / 15 APR 14

AIR Panel


A
I
R
ENG 1 BLEED
FAULT
OFF
APU BLEED
FAULT
ON
XBLEED
AUTO
CLOSE
OPEN
ENG 2 BLEED
FAULT
OFF
A
I
R
ENG 1 BLEED
pb-sw
APU BLEED
pb-sw
XBLEED
selector

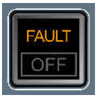
Ident.: DSC-36-20-10-00003057.0002001 / 06 SEP 17

ENG 1(2) BLEED PB-SW

	The engine bleed valve is automatically controlled.
	The engine bleed valve and the HP valve are closed. The associated engine bleed overpressure valve is also closed.

L13

L12



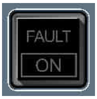
Comes on:
- When the engine bleed valve open position disagrees with the requested position, or
  Associated with one of the following ECAM alerts: AIR ENG 1(2) BLEED FAULT (*Refer to procedure*).
- When an overtemperature or an overpressure is detected, or the reverse flow protection is failed, or
  Associated with the following ECAM alert: AIR ENG 1(2) BLEED FAULT (*Refer to procedure*).
- When a leak is detected in the APU bleed duct (ENG 1 BLEED pb-sw only), or in the engine or wing bleed duct.

  Associated with one of the following ECAM alerts:
  - AIR APU BLEED LEAK (*Refer to procedure*), or
  - AIR ENG 1(2) BLEED LEAK (*Refer to procedure*), or
  - AIR L(R) WING LEAK (*Refer to procedure*).

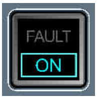
The FAULT light goes off, when the associated ENG 1(2) BLEED pb-sw is set to OFF, and the applicable failure disappears.

Ident.: DSC-36-20-10-00003058.0001001 / 09 MAR 16

APU BLEED PB-SW



The APU bleed valve is closed.



The APU bleed valve is open, provided that:
- The APU is running
- The aircraft altitude is below 25 000 ft (7 620 m)
- No leak is detected in the APU or left wing bleed duct.

L12

Comes on:

- When the APU is running and the APU bleed valve is failed in the closed position, or
  Associated with the following ECAM alert: AIR APU BLEED FAULT (*Refer to procedure*).
- When a leak is detected in the APU or left wing bleed duct.

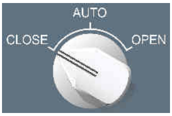
  Associated with one of the following ECAM alerts:
  - AIR APU BLEED LEAK (*Refer to procedure*), or
  - AIR L WING LEAK (*Refer to procedure*).

Ident.: DSC-36-20-10-00003059.0001001 / 19 SEP 14

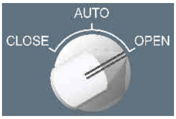
XBLEED SEL

AUTO
CLOSE
OPEN

The crossbleed valve is automatically controlled.



The crossbleed valve is closed.



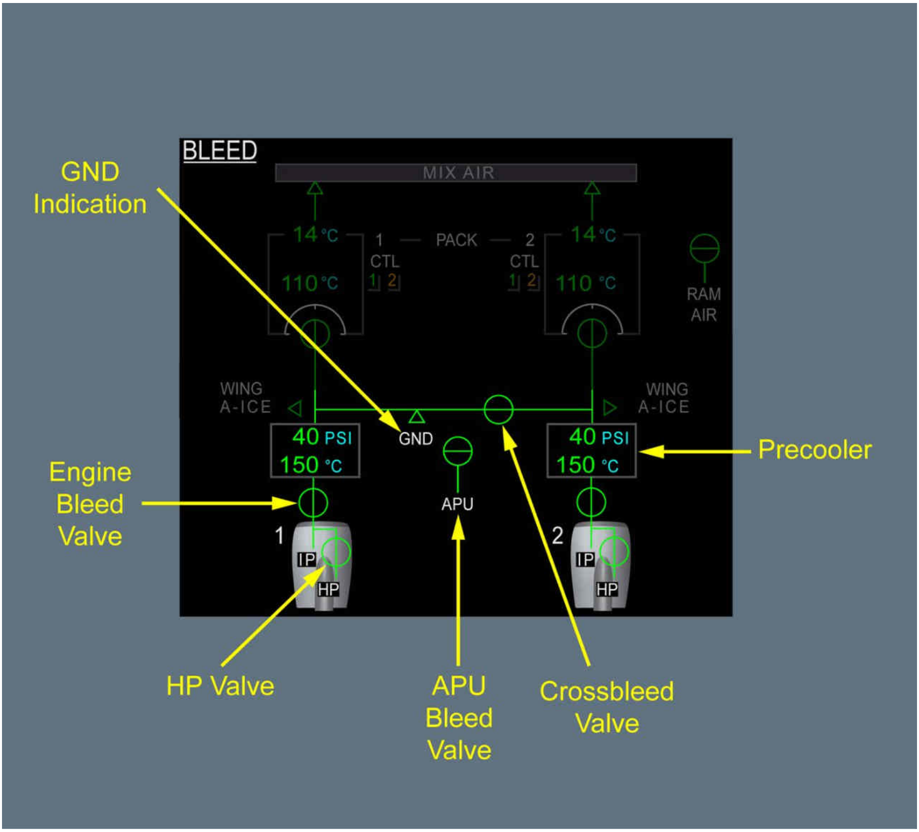
The crossbleed valve is open.

BLEED SD PAGE

Applicable to: ALL

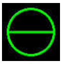
Ident.: DSC-36-20-20-00003056.0001001 / 15 APR 14

BLEED SD page

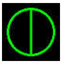

BLEED
MIX AIR
14 °C
1
PACK
2
CTL
1 2
14 °C
110 °C
CTL
1 2
110 °C
RAM AIR
WING A-ICE
WING A-ICE
GND
40 PSI
150 °C
40 PSI
150 °C
APU
1
IP
HP
2
IP
HP
GND Indication
Engine Bleed Valve
Precooler
HP Valve
APU Bleed Valve
Crossbleed Valve

Ident.: DSC-36-20-20-00003060.0001001 / 04 MAY 18

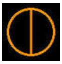
HP VALVE INDICATIONS



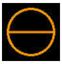
The HP valve is closed.



The HP valve is open.



The HP valve is abnormally open.

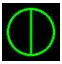


Comes on:

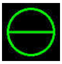
- When the HP valve is abnormally closed, or
- When the HP valve is closed, and the assigned engine is not running, or
- When the HP valve is closed, and the assigned ENG BLEED pb-sw is set to OFF.

Ident.: DSC-36-20-20-00003061.0001001 / 04 MAY 18

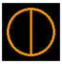
ENGINE BLEED VALVE INDICATIONS



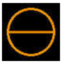
The engine bleed valve is open.



The engine bleed valve is closed.



The engine bleed valve is abnormally open.



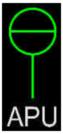
Comes on:

- When the engine bleed valve is abnormally closed, or
- When the engine bleed valve is closed, and the assigned engine is not running, or
- When the engine bleed valve is closed, and the assigned ENG BLEED pb-sw is set to OFF.

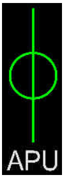
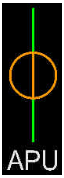
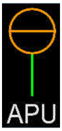
Ident.: DSC-36-20-20-00003062.0001001 / 04 MAY 18

APU BLEED VALVE INDICATIONS

Appears only if APU MASTER SW pb-sw is ON.

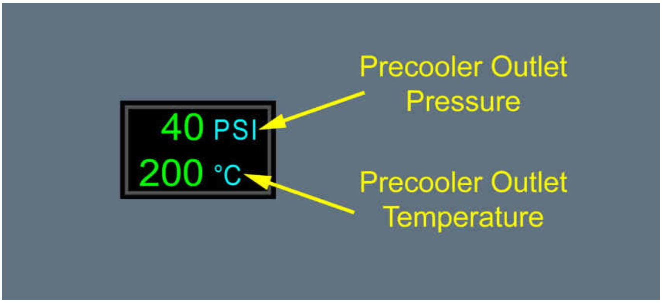


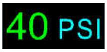
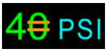
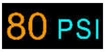
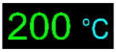
The APU bleed valve is closed.

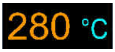
	The APU bleed valve is open.
	The APU bleed valve is abnormally open.
	The APU bleed valve is abnormally closed, and the APU BLEED pb-sw is ON.

Ident.: DSC-36-20-20-00003064.0001001 / 05 NOV 18

PRECOOLER INDICATIONS


40 PSI
200 °C
Precooler Outlet Pressure
Precooler Outlet Temperature

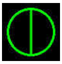
	The precooler outlet pressure is normal.
	The value accuracy of the precooler outlet pressure is degraded.
	The precooler outlet pressure is abnormal.
	The precooler outlet temperature is normal.



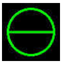
The precooler outlet temperature is abnormal.

Ident.: DSC-36-20-20-00003065.0001001 / 04 MAY 18

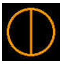
CROSSBLEED VALVE INDICATIONS



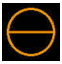
The crossbleed valve is closed.



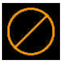
The crossbleed valve is open.



The crossbleed valve is abnormally closed.



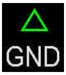
The crossbleed valve is abnormally open.



The crossbleed valve is in transition.

Ident.: DSC-36-20-20-00003066.0001001 / 15 APR 14

GND INDICATION



Indicates that an HP ground source is connected.

AIRCRAFT SYSTEMS

38 - WATER/WASTE

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DSC-38-10 System Description

Overview........ A
Potable Water System........ B
Waste Water System........ C
Toilet System........ D

DSC-38-20 Controls and Indicators

Controls and Indicators........ A

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OVERVIEW

Ident.: DSC-38-10-00013048.0001001 / 17 NOV 17
Applicable to: ALL

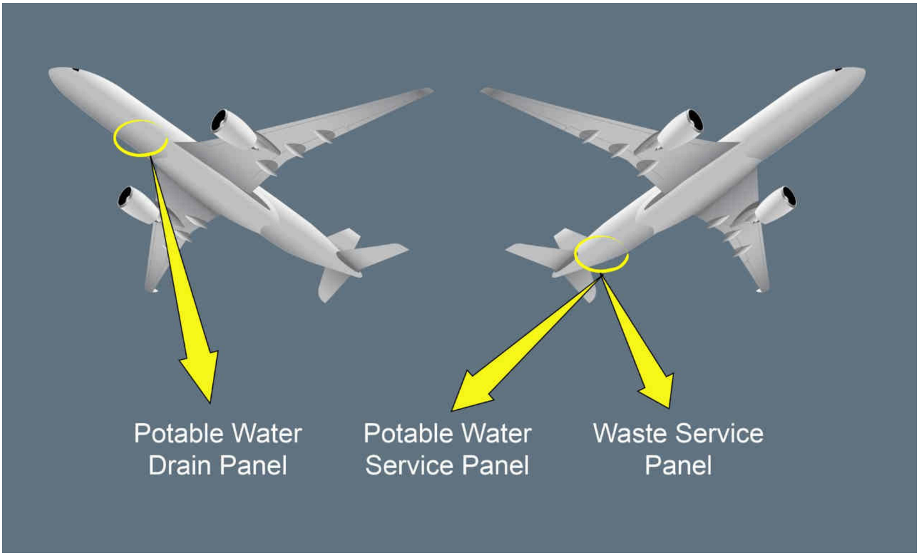
The potable water and waste system includes the three following subsystems:
- The potable water system that supplies potable water to the lavatories and galleys
- The waste water system that drains overboard the waste water from the lavatory washbasins and galley sinks
- The vacuum toilet system that drains and stores the waste of the galleys and toilets.

On the aircraft:
- The potable water is stored in two water tanks
- The toilet waste is stored in two storage tanks.

The cabin crew uses the Flight Attendant Panel (FAP) to control and monitor the water and waste system.

L3 *Refer to CCOM/06-60-40-40 WATER/WASTE Page*

Overview



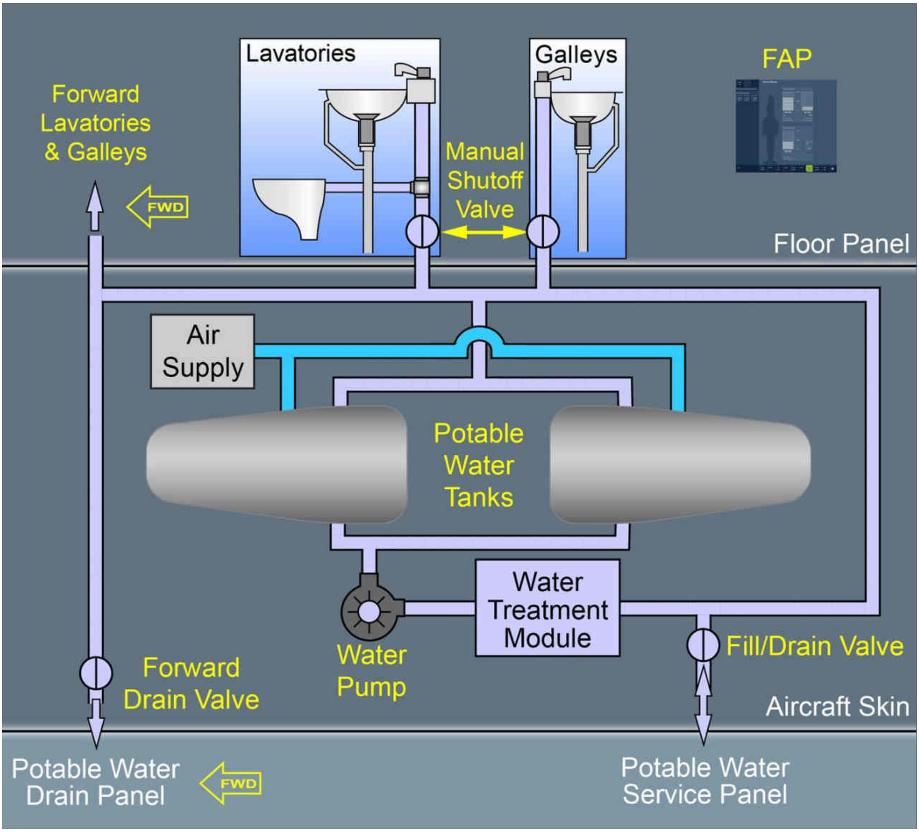
The ground crew supplies the aircraft with potable water and performs waste servicing via:
- The potable water service panel, in the aft lower fuselage
- The potable water drain panel, in the forward lower fuselage
- The waste service panel, in the aft lower fuselage.

POTABLE WATER SYSTEM

Ident.: DSC-38-10-00013049.0001001 / 24 APR 14
Applicable to: ALL

The potable water system supplies potable water from the water tanks to the lavatories and galleys.

Potable Water System


Lavatories
Galleys
FAP
Forward
Lavatories
& Galleys
FWD
Manual
Shutoff
Valve
Floor Panel
Air
Supply
Potable
Water
Tanks
Water
Treatment
Module
Water
Pump
Fill/Drain Valve
Forward
Drain Valve
Aircraft Skin
Potable Water
Drain Panel
FWD
Potable Water
Service Panel

L2 The ground crew can fill and drain the potable water system via the fill/drain valve, from the potable water service panel.
The filling mode enables the ground crew to fill the potable water tanks to a preselected value.

L3 The water quantity in the tanks can be preselected by:
- The cabin crew via the FAP
- The ground crew via the potable water indication panel, directly accessible via the potable water service panel.

L2 The draining mode enables full drainage of the potable water system, and is available on ground and only during water supply operations. Drainage is performed by the ground crew via the potable water drain panel and the potable water service panel.

L1 The cabin crew can manually control the potable water supply via shutoff valves. These manual shutoff valves can isolate the washbasin and toilet from the potable water system. These valves are behind an access door under the toilet bowl.
A freezing protection system provides electrical heating and thermal insulation to the potable water system.

L3 The potable water is stored in two potable water tanks. These tanks are in the aft section of the aircraft, near the pressure bulkhead. The ground crew fills the two water tanks at the same rate, and can drain them via gravity.

L2 Two redundant pressure sources enable water tank pressurization:
- The bleed air pressure or ground air pressure
- A potable water pump.

L3 Each of these two sources can provide sufficient pressure for the potable water supply.
On ground, the water pump controls tank pressurization when no bleed air is available. If the water pump fails during the flight, the bleed air is sufficient to pressurize the water tanks.
To prevent internal contamination of the potable water system, a water treatment module is installed onboard, between the fill/drain valve and the potable water tanks. The water treatment module maintains water quality during the filling and during flight, and operates continuously during flight.

WASTE WATER SYSTEM

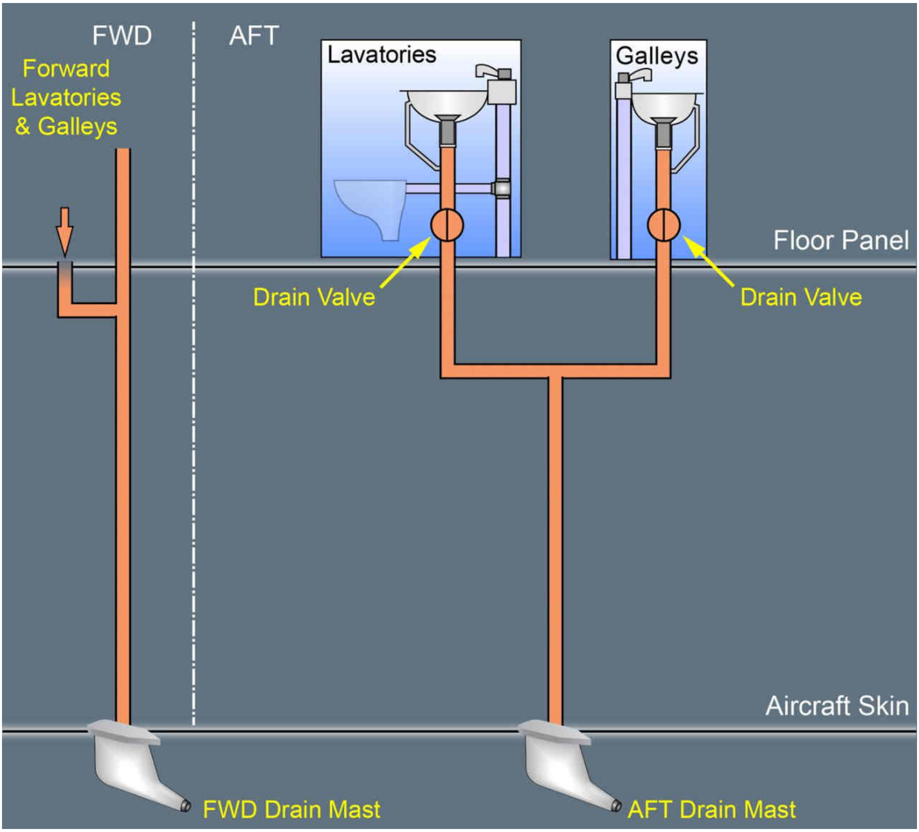
Ident.: DSC-38-10-00013184.0001001 / 24 APR 14
Applicable to: ALL

The waste water system drains the waste water from:
- The galley sinks
- The lavatory washbasins.

The waste water is discharged overboard via two heated drain masts.

L2 For more information on heated drain masts, *Refer to DSC-30-20-10 Water/Waste Anti-ice*

Waste Water System


FWD
AFT
Forward
Lavatories
& Galleys
Lavatories
Galleys
Floor Panel
Drain Valve
Drain Valve
Aircraft Skin
FWD Drain Mast
AFT Drain Mast

L3 The forward mast drains the waste water from the forward cabin. The aft mast drains the waste water from the aft cabin.

The overboard discharge of the waste water is performed via:
- Differential pressure, when the aircraft is airborne
- Gravity, when the aircraft is on ground.

Each lavatory and galley drain pipe has a drain valve that prevents cabin air from leaking via the drain mast.

TOILET SYSTEM

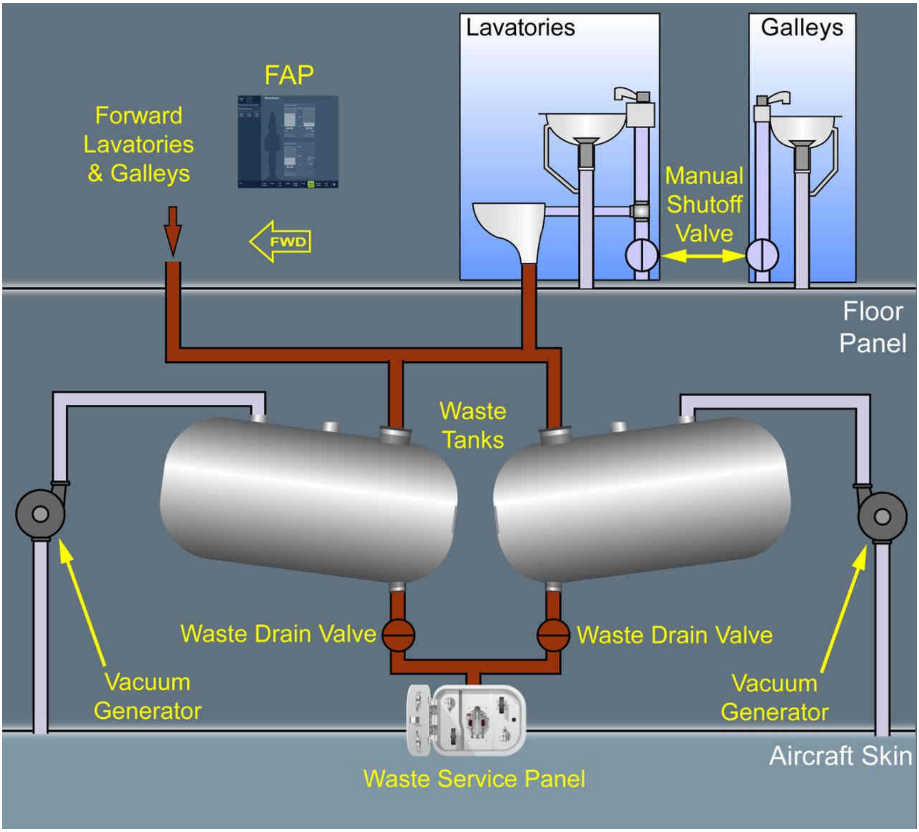
Ident.: DSC-38-10-00013185.0001001 / 04 DEC 14
Applicable to: ALL

The aircraft has a vacuum toilet system for the toilets and the waste storage tanks.

L3 The two waste storage tanks are in the pressurized area behind the bulk cargo compartment.

L1 The vacuum toilet system uses potable water to flush the toilets.

Toilet System


Lavatories
Galleys
FAP
Forward Lavatories & Galleys
FWD
Manual Shutoff Valve
Floor Panel
Waste Tanks
Waste Drain Valve
Waste Drain Valve
Vacuum Generator
Vacuum Generator
Aircraft Skin
Waste Service Panel

- In flight, differential pressure forces waste from the toilet into the waste storage tanks
- On ground and at a low flight altitude (below 16 000 ft), each waste storage tank has a vacuum generator that provides the necessary differential pressure.

The cabin crew can use the manual shutoff valve to isolate an inoperative toilet from the potable water supply.

L3 The ground crew performs the waste servicing of the waste storage tanks via the waste service panel.

CONTROLS AND INDICATORS

Ident.: DSC-38-20-00013454.0001001 / 24 APR 14
Applicable to: ALL

For more information about Controls and Indicators:

- *Refer to CCOM/06-60-30 Access to the WATER/WASTE Page on the FAP* or
- *Refer to CCOM/06-60-40-40 Water/Waste System - Control via the FAP*

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AIRCRAFT SYSTEMS

42 - AVIONICS NETWORK - IMA

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DSC-42-10 System Description

Overview........A
Avionics Networks........B
CPIOM........C
CRDC........D

DSC-42-20 Abnormal Operations

Single CRDC Failure........A
Single CPIOM Failure........B
Multiple CRDC/CPIOM Failures........C
Switch or Cable Failure That Affects One Network........D
Switch OR CABLE Failure That Affects One Network........E
Single or Multiple Switch or Cable Failures That Affect Both Networks........F
Multiple Switch or Cable Failures That Affect Both Networks........G

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OVERVIEW

Ident.: DSC-42-10-00003016.0002001 / 03 JAN 19
Applicable to: ET-AWO, ET-AWP, ET-AYA, ET-AYB

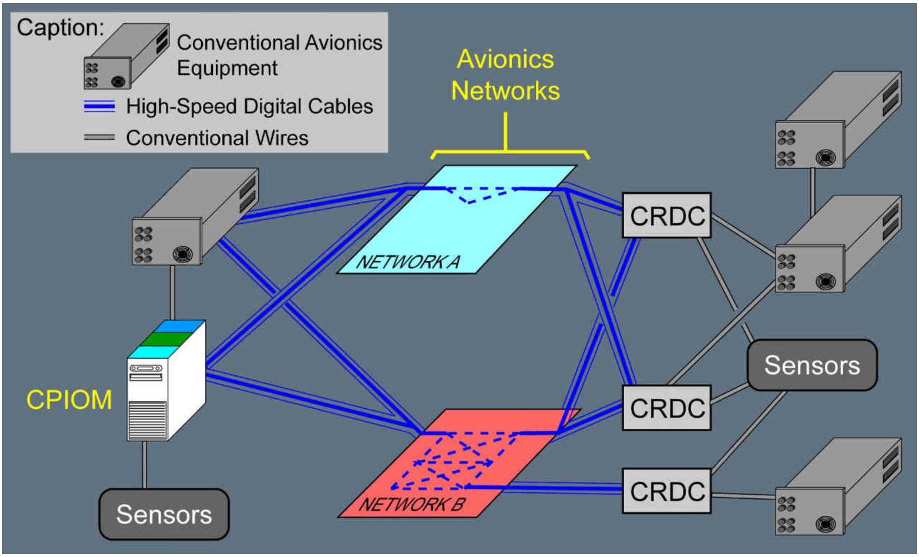
Most of the aircraft systems can communicate with each other via a high-speed digital network, referred to as avionics network, instead of via conventional wires.
For communication on the avionics network, most of the avionics systems use the concept of the Integrated Modular Avionics (IMA).
The principle of the IMA is to provide a same hardware shared by several avionics systems for computation and communication on the avionics network.

The IMA components, referred to as IMA modules, are:
- The Core Processing Input/Output Modules (CPIOMs)
- The Common Remote Data Concentrators (CRDCs).

Two types of avionics equipment monitor and control the aircraft systems:
- The conventional avionics equipment, with computers that are fully assigned to a specific aircraft system, or
- The CPIOMs that can host several functions dedicated to different aircraft systems.

The CRDCs are an interface between some conventional avionics equipment and the avionics networks.
The CPIOMs, the CRDCs, and some conventional avionics equipment are directly connected to the avionics networks.

Avionics Network Architecture


Caption:
Conventional Avionics Equipment
High-Speed Digital Cables
Conventional Wires
Avionics Networks
NETWORK A
NETWORK B
CRDC
CRDC
CRDC
CPIOM
Sensors
Sensors

OVERVIEW

Ident.: DSC-42-10-00003016.0001001 / 24 APR 14
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN

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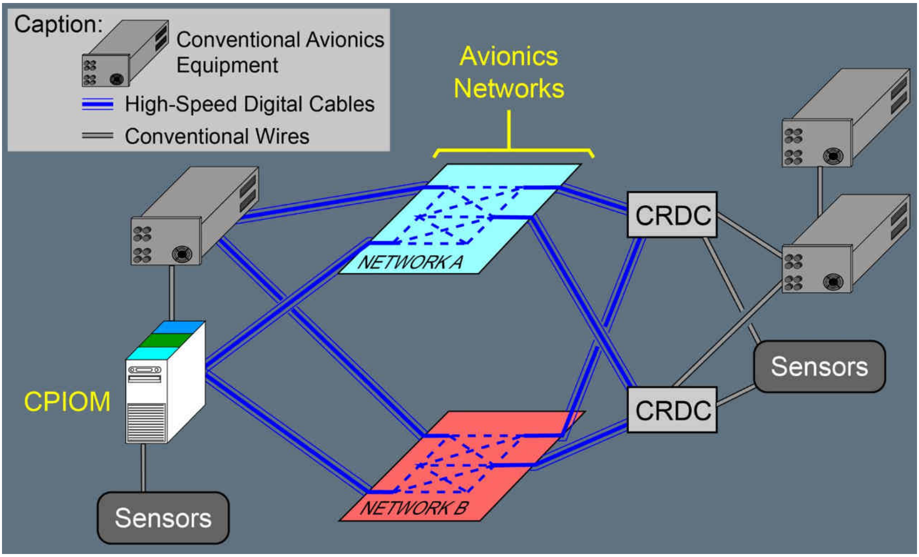

Caption:
Conventional Avionics Equipment
High-Speed Digital Cables
Conventional Wires
Avionics Networks
NETWORK A
NETWORK B
CRDC
CRDC
CPIOM
Sensors
Sensors

AVIONICS NETWORKS

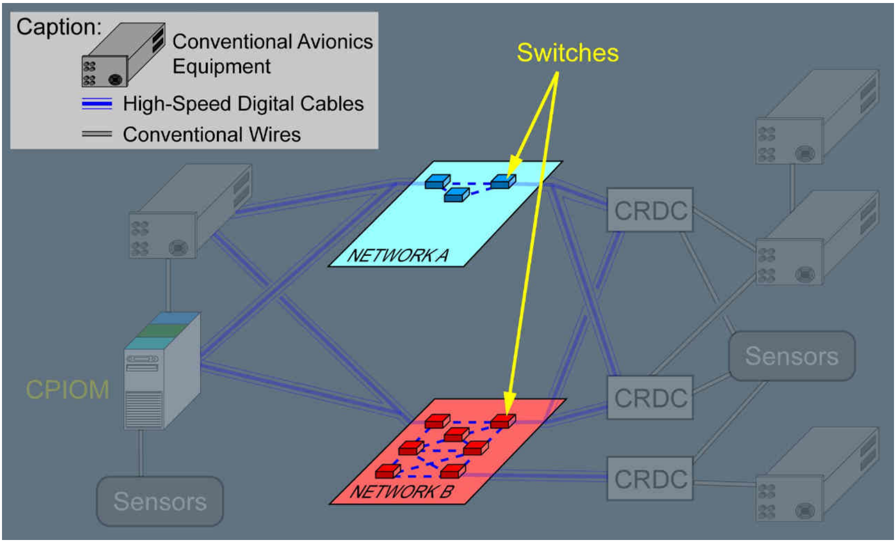
Ident.: DSC-42-10-10-00003017.0002001 / 03 JAN 19
Applicable to: ET-AWO, ET-AWP, ET-AYA, ET-AYB

AVIONICS NETWORKS

There are two independent avionics networks.
The avionics networks are referred to as Network A and Network B.
The avionics networks transmit the information that comes from the aircraft systems via several transit points, referred to as switches.
For redundancy and availability purposes, some aircraft systems are connected to both avionics networks.

L2 Note: *In addition, some aircraft systems can communicate with each other via conventional wiring (i.e. ARINC 429 data buses, analog signals), independently of the avionics networks. The backup wiring ensures that the communication remains available if both avionics networks fail. For more information on failures that affect both networks, Refer to DSC-42-20 Multiple Switch or Cable Failures That Affect Both Networks.*

Avionics Networks


Caption:
Conventional Avionics Equipment
High-Speed Digital Cables
Conventional Wires
Switches
NETWORK A
NETWORK B
CRDC
CRDC
CRDC
Sensors
Sensors
CPIOM

Ident.: DSC-42-10-10-00003017.0001001 / 24 APR 14
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN

AVIONICS NETWORKS

There are two independent, identical, and redundant avionics networks.
The avionics networks are referred to as Network A and Network B.
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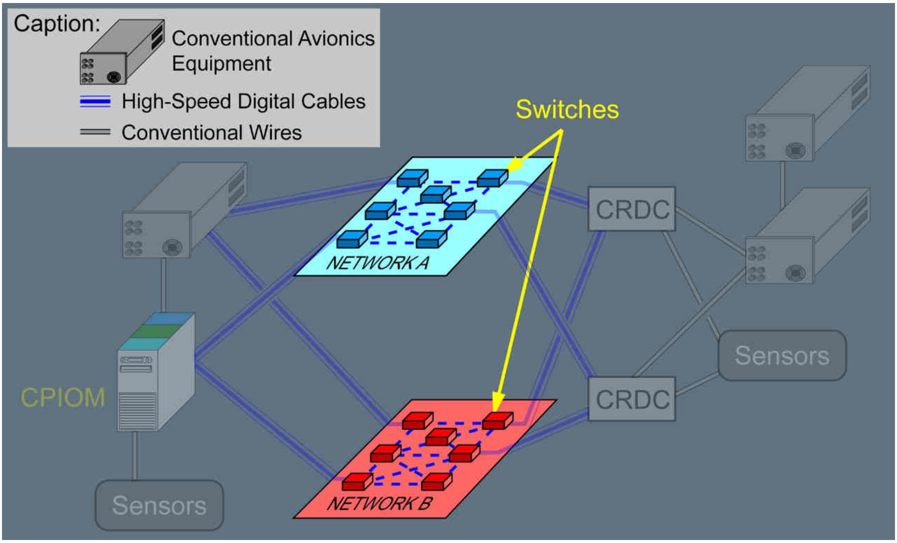
Avionics Networks


Caption:
Conventional Avionics Equipment
High-Speed Digital Cables
Conventional Wires
Switches
NETWORK A
NETWORK B
CRDC
CRDC
Sensors
Sensors
CPIOM

Ident.: DSC-42-10-10-00003020.0002001 / 03 JAN 19
Applicable to: ET-AWO, ET-AWP, ET-AYA, ET-AYB

SWITCHES

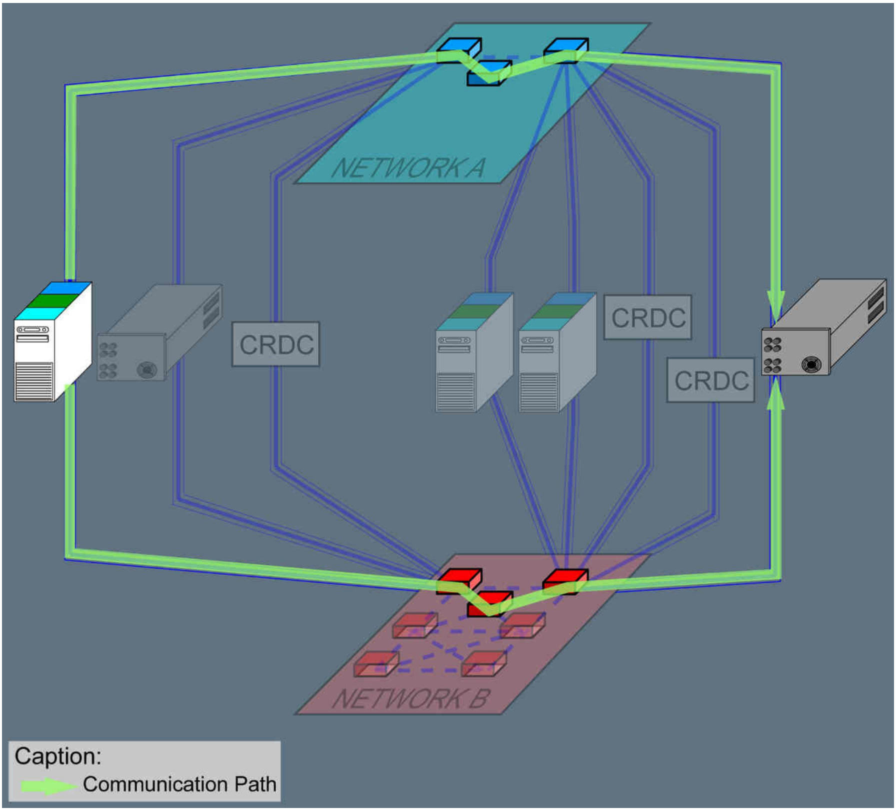
On each avionics network, the switches automatically manage the communication between the aircraft systems via high-speed digital cables. The switches:
- Connect the aircraft systems to the avionics network
- Route the information between the appropriate aircraft systems.

L3 On each network, the information that one aircraft system exchanges with another system follows a predefined path via one or several switches.

L2 The avionics network has three pairs of switches. For each pair, one switch is on Network A, the other on Network B. The other switches are only connected to Network B.

L3 The avionics network switches are in the avionics bay.

Switch Connection



Ident.: DSC-42-10-10-00003020.0001001 / 24 APR 14
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN

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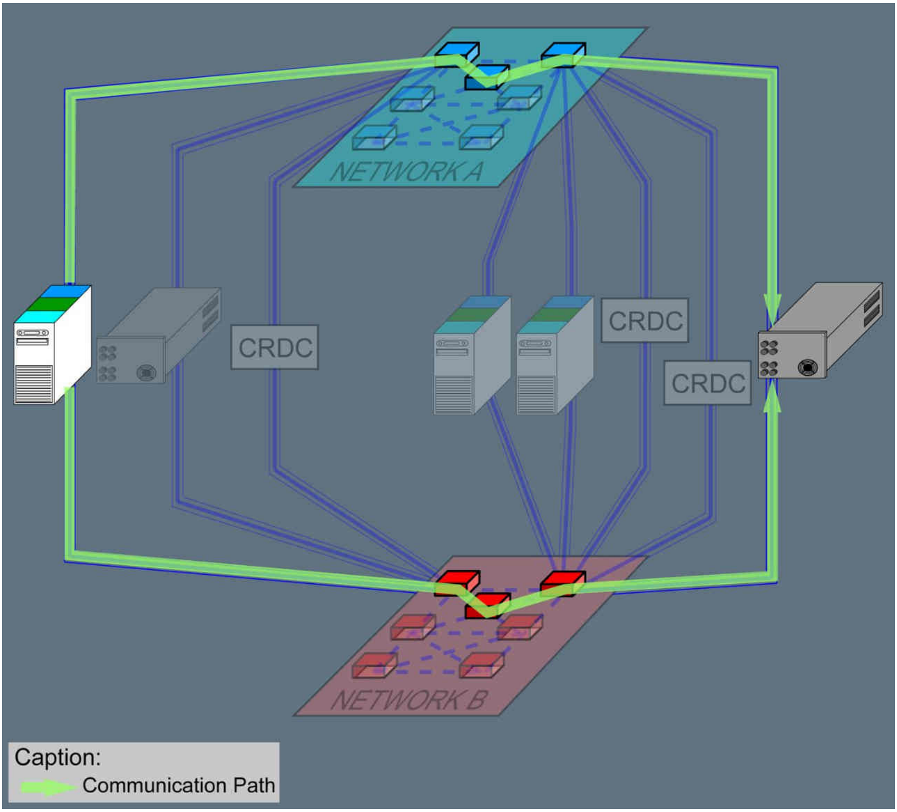
Switch Connection

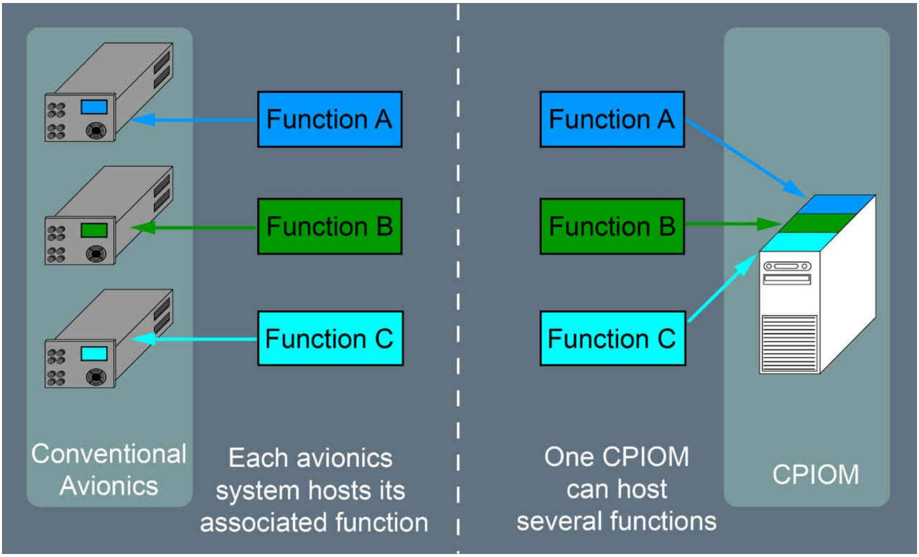


CPIOM

Ident.: DSC-42-10-20-00003019.0002001 / 03 JAN 19
Applicable to: ET-AWO, ET-AWP, ET-AYA, ET-AYB

A CPIOM is an IMA module that provides a same hardware shared by several avionics systems for computation and communication.
For computation, the CPIOM hosts several functions, in order to monitor and control some avionics systems. As a result, one CPIOM can replace several conventional avionics equipment.

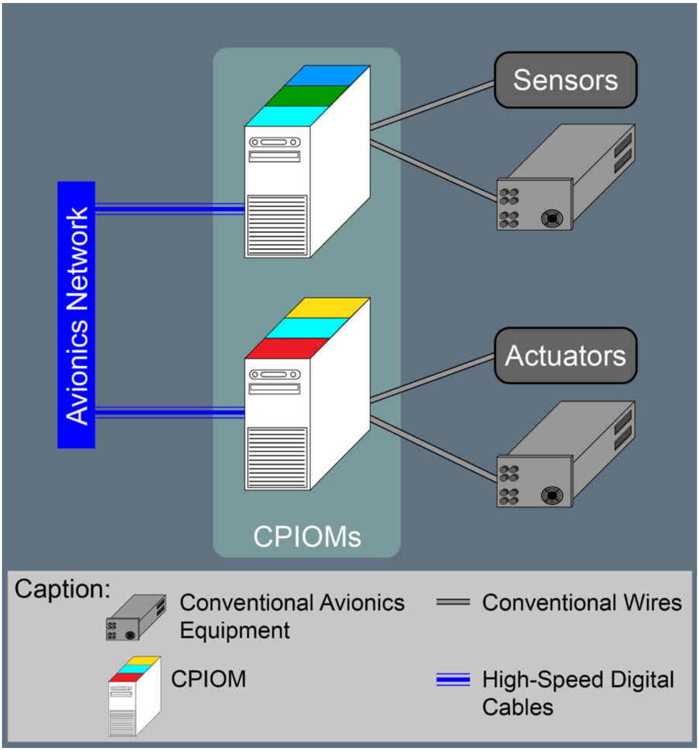
CPIOM


Function A
Function B
Function C
Conventional Avionics
Each avionics system hosts its associated function
Function A
Function B
Function C
One CPIOM can host several functions
CPIOM

L2 The CPIOM also transmits avionics data, referred to as Input/Output signals, in a format compatible either with:

- The avionics network, for communication with other avionics systems connected to the avionics network, or
- The conventional avionics equipment.

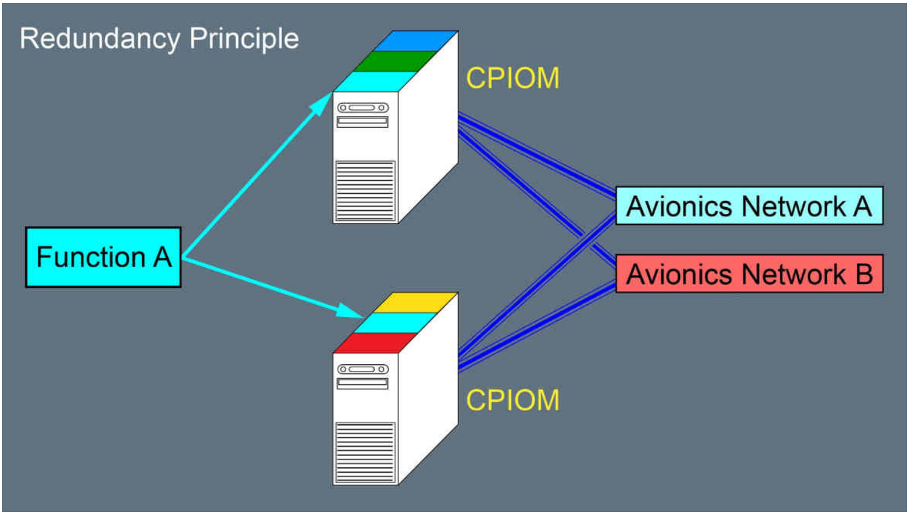
Input/Output Signals


Avionics Network
Sensors
Actuators
CPIOMs
Caption:
Conventional Avionics Equipment
Conventional Wires
CPIOM
High-Speed Digital Cables

L1 To ensure the redundancy of the aircraft system functions:

- Each CPIOM is connected either to both avionics network or the avionics Network B only
- Several CPIOMs can host the functions of a given avionics system.

Redundancy Principle


Redundancy Principle
CPIOM
Function A
Avionics Network A
Avionics Network B
CPIOM

L2 There are 7 groups of CPIOMs in the avionics bay.

Ident.: DSC-42-10-20-00003019.0001001 / 24 APR 14
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN

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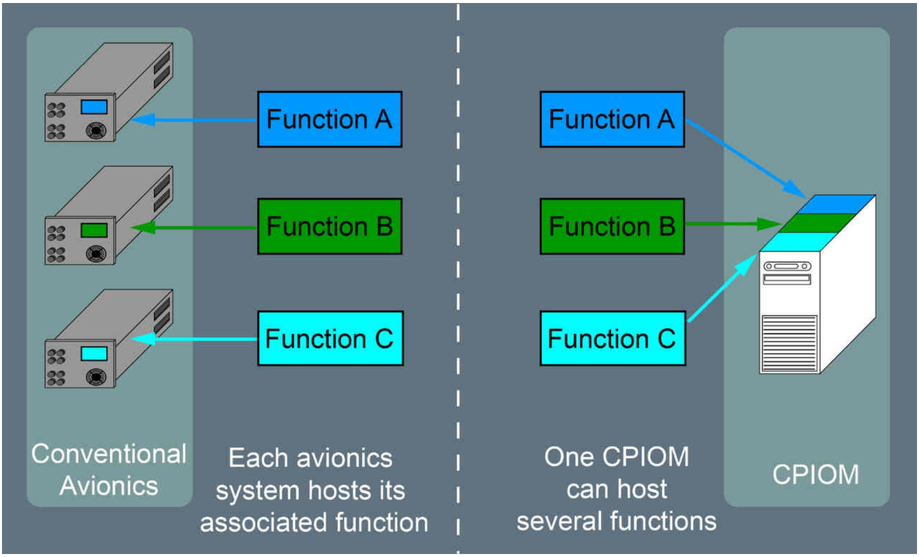
CPIOM


Function A
Function B
Function C
Conventional Avionics
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Function A
Function B
Function C
One CPIOM can host several functions
CPIOM

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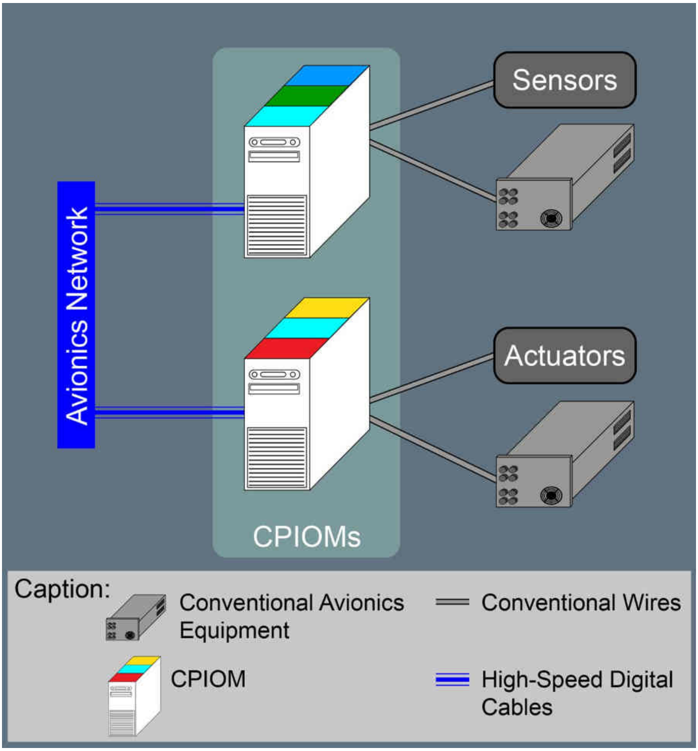
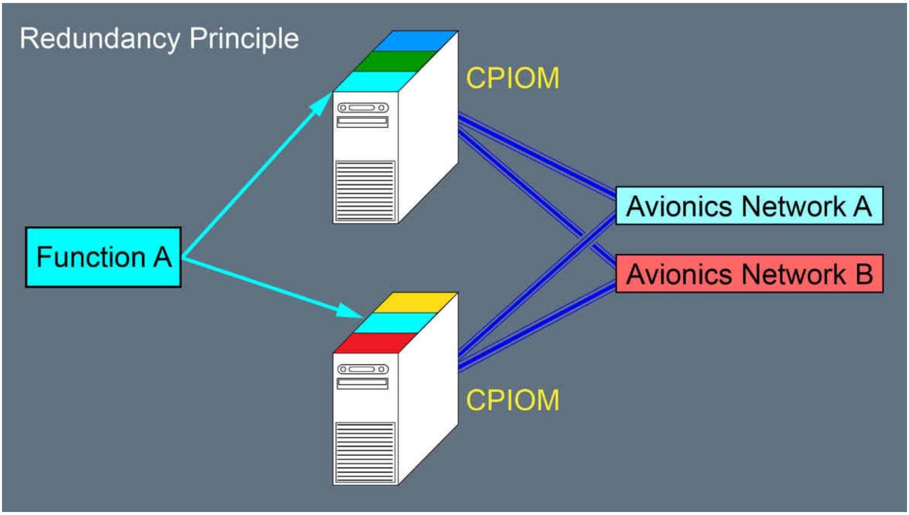
Input/Output Signals


Avionics Network
CPIOMs
Sensors
Actuators
Caption:
Conventional Avionics Equipment
CPIOM
Conventional Wires
High-Speed Digital Cables

L1 To ensure the redundancy of the aircraft system functions:

- Each CPIOM is connected to both avionics network
- Several CPIOMs can host the functions of a given avionics system.

Redundancy Principle


Redundancy Principle
CPIOM
Function A
Avionics Network A
Avionics Network B
CPIOM

L2 There are 7 groups of CPIOMs in the avionics bay.

Ident.: DSC-42-10-20-00013144.0001001 / 24 APR 14
Applicable to: ALL

L2 CPIOM GROUP J1

CPIOM group J1 has two CPIOMs in order to monitor and control both Flight Warning Systems (FWS).

L3 For more information, *Refer to DSC-31-CDS-60-10-20 FWS*.

CPIOM	J11	J12
System	FWS 1	FWS 2

Ident.: DSC-42-10-20-00013145.0001001 / 24 APR 14
Applicable to: ALL

L2 CPIOM GROUP J2

CPIOM group J2 has four CPIOMs in order to monitor and control:

- The Fire Protection System (FPS)
  L3 For more information, *Refer to DSC-26-20 Fire Protection System*
- L2 The Engine Interface Functions (EIFs)
  L3 For more information, *Refer to DSC-70-10-30-10 EIF*
- L2 The engine Anti-Ice Control Functions (AICFs) of the anti-ice control system.
  L3 Fore more information, *Refer to DSC-30-20-10 Engine Anti-ice*.

CPIOM	J21	J22	J23	J24
System	FPF 1	FPF 2	FPF 3	FPF 4
	EIF 1.1	EIF 2.2	EIF 1.2	EIF 2.1
	AICF 1	AICF 2	AICF 3	AICF 4

Ident.: DSC-42-10-20-00013146.0001001 / 24 APR 14
Applicable to: ALL

L2 CPIOM GROUP H3

CPIOM group H3 has four CPIOMs in order to monitor and control:

- The hydraulic system via the Hydraulic Monitoring and Control Application (HMCA)
  L3 For more information, *Refer to DSC-29-10 Hydraulic Monitoring and Control (HMC)*
- L2 The Doors and Slides Control System (DSCS)
  L3 For more information, *Refer to DSC-52-10 Doors and Slides Control System*
- L2 The Fuel system via the Fuel Quantity Management System (FQMS)
  L3 For more information, *Refer to DSC-28-10 Fuel Quantity and Management System (FQMS)*
- L2 The Inert Gas Generation System (IGGS)
  L3 For more information, *Refer to DSC-28-10 Fuel Tank Inerting System*
- L2 The fixed oxygen system for cockpit and cabin via the Oxygen System Control and Monitoring (OSCM) applications.
  L3 For more information, *Refer to DSC-35-10 Overview*.

CPIOM	H31	H32	H33	H34
System	HMCA Yellow 1	HMCA Yellow 2	HMCA Green 1	HMCA Green 2
	DSCS 1	DSCS 2	DSCS 3	DSCS 4
	FQMS Control System 1	FQMS Control System 2	FQMS Monitoring System 1	FQMS Monitoring System 2
	IGGS 1		OSCM 1	OSCM 2

Ident.: DSC-42-10-20-00013147.0001001 / 24 APR 14
Applicable to: ALL

CPIOM GROUP H4

CPIOM group H4 has four CPIOMs in order to monitor and control:

- The Air Conditioning System (ACS)
  For more information, *Refer to DSC-21-COND-10-10 Overview*
- The Ventilation Control System (VCS)
  For more information, *Refer to DSC-21-VENT-10-10 Overview*
- The Cabin Pressure Control System (CPCS)
  For more information, *Refer to DSC-21-PRESS-10 Overview*
- The Bleed Air System (BAS)
  For more information, *Refer to DSC-36-10-10 Overview*
- The OverHeat Detection System(OHDS)
  For more information, *Refer to DSC-36-10-60 Leak Detection*
- The Supplemental Cooling System (SCS)
  For more information, *Refer to DSC-21-COND-10-40 Supplemental Cooling System*
- The Wing Ice Protection System (WIPS).
  For more information, *Refer to DSC-30-20-10 Wing Anti-ice*.

CPIOM	H41	H42	H43	H44
System	ACS 1	ACS 2	BAS 1	BAS 2
	CPCS 1	CPCS 2	SCS 1	SCS 2
	VCS L1	VCS L2	WIPS 1	WIPS 2
			OHDS 1	OHDS 2

Ident.: DSC-42-10-20-00013148.0001001 / 24 APR 14
Applicable to: ALL

CPIOM GROUP J5

CPIOM group J5 has one CPIOM in order to monitor and control:

- The Avionics Communication Router (ACR) system
  For more information, *Refer to DSC-23-10-10 ACR*
- The Air Traffic Control (ATC) system.
  For more information, *Refer to DSC-46-ATC-10-10 Architecture*.

CPIOM	J51
System	ACR
	ATC

Ident.: DSC-42-10-20-00013149.0001001 / 24 APR 14
Applicable to: ALL

L2 CPIOM GROUP H6

CPIOM group H6 has four CPIOMs in order to monitor and control:

- The Brake Control System (BCS)
  L3 For more information, *Refer to DSC-32-20-10-20 Brakes Control System (Brakes CTL)*
- L2 The Landing Gear Extension and Retraction System (LGERS) controlled by Landing Gear Control and Indication System (LGCIS)
  L3 For more information, *Refer to DSC-32-10-10-20 L/G Control System (L/G CTL)*
- L2 The Wheel Steering Control System (WSCS) for the Nose Wheel Steering (NWS).
  L3 For more information, *Refer to DSC-32-30-10 Nose Wheel Steering (NWS)*
- L2 The Landing Gear Management System (LGMS).
  L3 For more information, *Refer to DSC-32-40-10 Overview*.

CPIOM	H61	H62	H63	H64
System	BCS Control System 1	BCS Control System 2	BCS Monitoring system 1	BCS Monitoring system 2
	LGERS 1	LGERS 2	LGERS 1	LGERS 2
	WSCS Monitoring System 1	WSCS Monitoring System 2	WSCS Control System 1	WSCS Control System 2
	LGMS 1	LGMS 2		

Ident.: DSC-42-10-20-00013150.0001001 / 24 APR 14
Applicable to: ALL

L2 CPIOM GROUP J7

CPIOM group J7 has two CPIOMs in order to monitor and control:

- The Flight Control Data Concentrator (FCDC)
  L3 For more information, *Refer to DSC-27-10-10 FCDC*
- L2 The Flight Control Unit (FCU) backup function
  L3 For more information, *Refer to DSC-22-INT FCU BKUP*
- L2 The Electrical Load Management Function (ELMF)
  L3 For more information, *Refer to DSC-24-10-60 Electrical Load and Network Management*
- L2 The Exterior Light Controller (ELCO).
  L3 For more information, *Refer to DSC-33-30-10 Overview*.

CPIOM	J71	J72
System	FCDC 1	FCDC 2
	FCU Backup 1	FCU Backup 2
	ELMF 1	ELMF 2
	ELCO 1	ELCO 2

CRDC

Ident.: DSC-42-10-00003018.0002001 / 03 JAN 19
Applicable to: ET-AWO, ET-AWP, ET-AYA, ET-AYB

The CRDC is a remote gateway and data concentrator module that interfaces the following aircraft systems to the avionics network:
- A wide range of sensors and/or actuators
- Conventional avionics equipment not compatible with the avionics network.

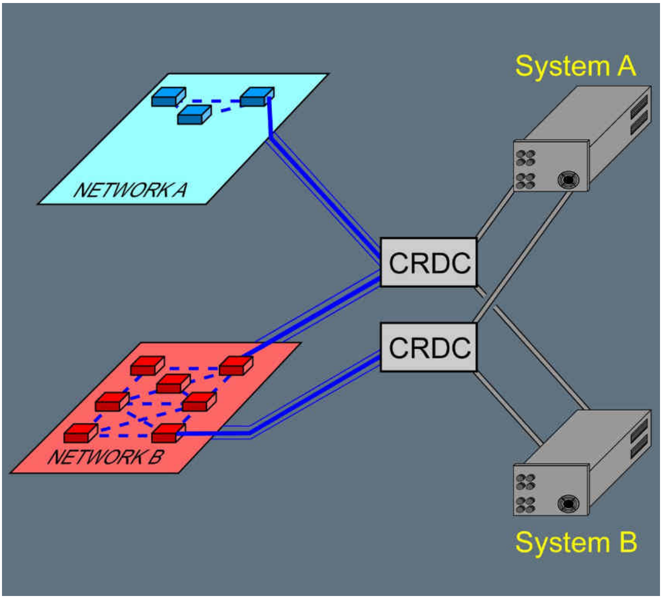
L3 The CRDC transforms data signals from a specific format (e.g. ARINC 429 data buses, analog signals) into digital format usable by the aircraft systems connected to the avionics networks, and vice versa.

L1 Most of the aircraft systems that use CRDCs are connected to two or more CRDCs, to ensure the redundancy of all functions of the aircraft systems.

L2 There are 29 CRDCs.

L1 The CRDCs are in the pressurized area of the aircraft, next to the relevant groups of sensors and actuators.

CRDC



CRDC

Ident.: DSC-42-10-00003018.0001001 / 24 APR 14
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN

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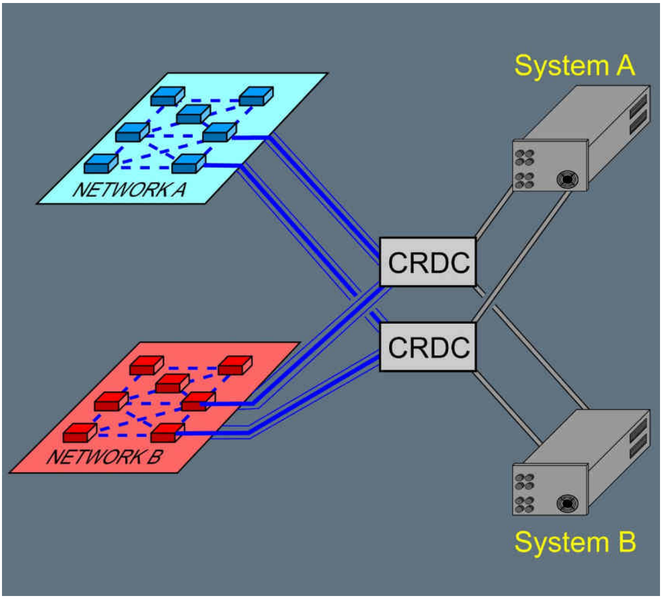
CRDC



SINGLE CRDC FAILURE

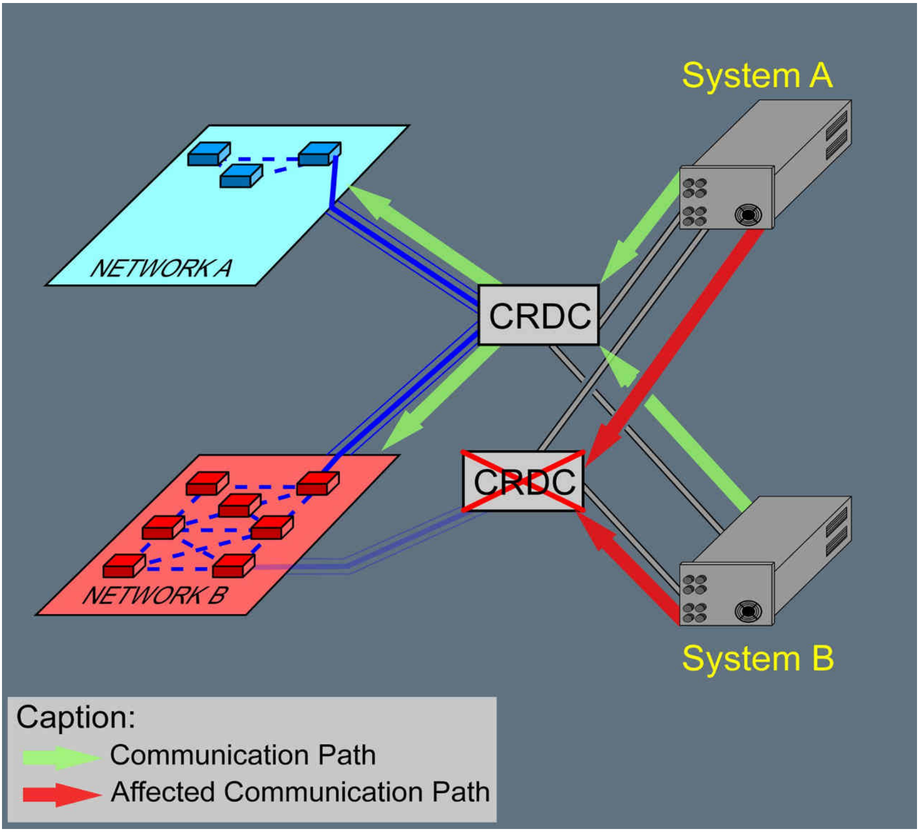
Ident.: DSC-42-20-00012697.0002001 / 03 JAN 19
Applicable to: ET-AWO, ET-AWP, ET-AYA, ET-AYB

Most of the aircraft systems use two or more CRDCs. In the case of a single CRDC failure, the remaining CRDCs will maintain communication on the avionics network. There is no operational effect.

L3 For dispatch purposes, the ECAM displays the IMA CRDC XXX dispatch message.

L2 However, a limited number of aircraft systems are only connected to a single CRDC. If this CRDC fails the ECAM displays the alerts of the affected aircraft systems, along with a DUE TO IMA MODULE FAULT subtitle in the second line of the ECAM alert.

Single CRDC Failure


System A
NETWORK A
CRDC
CRDC
NETWORK B
System B
Caption:
Communication Path
Affected Communication Path

SINGLE CRDC FAILURE

Ident.: DSC-42-20-00012697.0001001 / 24 APR 14

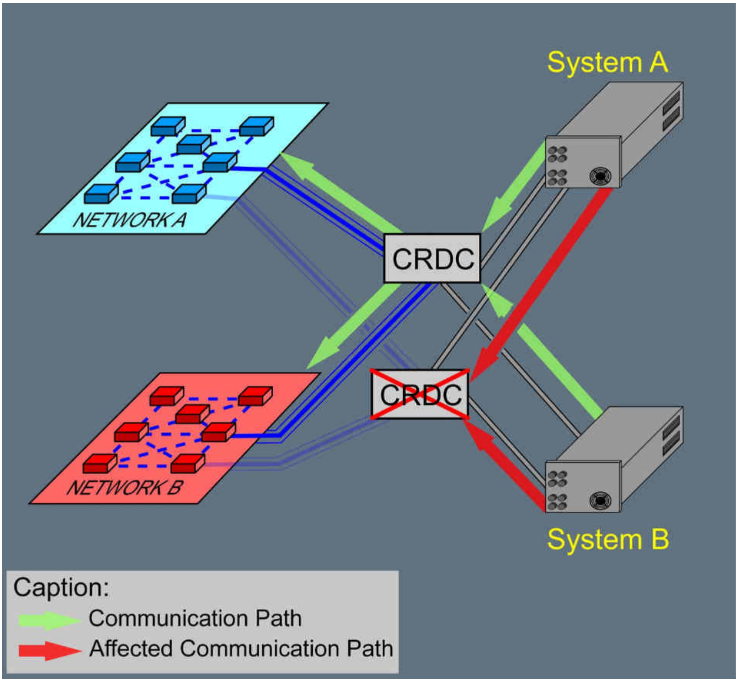
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN

Most of the aircraft systems use two or more CRDCs. In the case of a single CRDC failure, the remaining CRDCs will maintain communication on the avionics network. There is no operational effect.

L3 For dispatch purposes, the ECAM displays the IMA CRDC XXX dispatch message.

L2 However, a limited number of aircraft systems are only connected to a single CRDC. If this CRDC fails the ECAM displays the alerts of the affected aircraft systems, along with a DUE TO IMA MODULE FAULT subtitle in the second line of the ECAM alert.

Single CRDC Failure


System A
NETWORK A
CRDC
CRDC
NETWORK B
System B
Caption:
Communication Path
Affected Communication Path

SINGLE CPIOM FAILURE

Ident.: DSC-42-20-00003025.0001001 / 24 APR 14
Applicable to: ALL

In the case of a single CPIOM failure, the aircraft systems controlled and monitored by the failed CPIOM may be affected. In this case, the ECAM displays the alert of the applicable aircraft systems.

L2 Depending on the affected aircraft systems, the ECAM will display the following:
- The ECAM alert of the applicable aircraft system, along with a DUE TO IMA MODULE FAULT subtitle in the second line of the ECAM alert title

L3 - For dispatch purposes, the IMA CPIOM XXX dispatch message.

MULTIPLE CRDC/CPIOM FAILURES

Ident.: DSC-42-20-00012698.0002001 / 03 JAN 19
Applicable to: ET-AWO, ET-AWP, ET-AYA, ET-AYB

The following remote cases of multiple IMA module failures can occur:
- Failure of two or more CRDCs, or
- Failure of two or more CPIOMs, or
- Failure of one or more CRDCs and one or more CPIOMs.

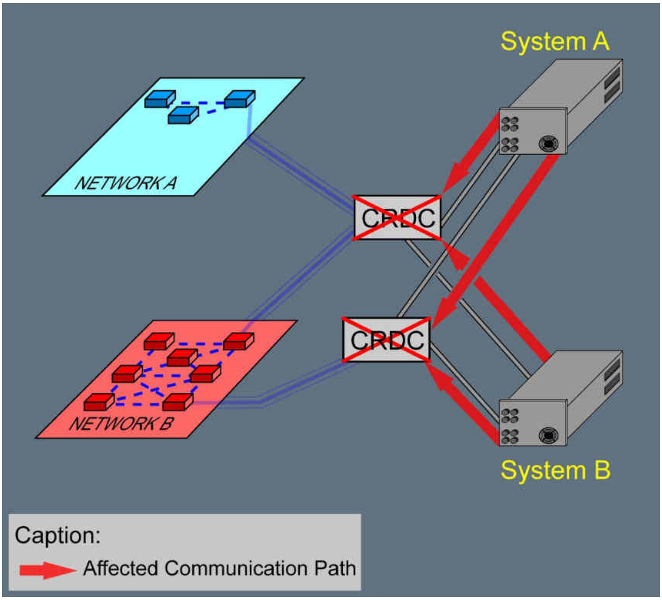
If all CPIOMs (and/or CRDCs) connected to an aircraft system fail, the communication between the aircraft system and the avionics networks is lost. The aircraft system that uses the failed IMA modules may be affected. In this case, the ECAM displays the alert of the applicable aircraft systems.

L2 Depending on the affected aircraft systems, the ECAM will display the following:
- IMA MODULE FAULT (*Refer to PRO-ABN-IMA IMA MODULE FAULT*) ECAM alert, before all other ECAM alerts of the aircraft systems concerned by the multiple IMA module failures
  L3 The IMA MODULE FAULT alert has the highest priority of the ECAM cautions (Level 2 and level 1). For more information, *Refer to DSC-31-CDS-60-10-10 Priority of Alerts*
- L2 The ECAM alerts of the applicable aircraft systems, along with a DUE TO IMA MODULE FAULT subtitle in the second line of each applicable ECAM alert title. The DUE TO IMA MODULE FAULT subtitle clearly informs the flight crew that a multiple IMA module failure is the root cause of the ECAM alert of the affected aircraft system.

L3 *Note:* *In the case of a single ECAM alert with the DUE TO IMA MODULE FAULT subtitle, the ECAM does not display the IMA MODULE FAULT ECAM alert.*

- For dispatch purposes, depending on the failed IMA modules, the ECAM can display the combination of the following dispatch messages:
  - The IMA MULTIPLE MODULES dispatch message (*Refer to MMEL/ME-DM-IMA IMA MULTIPLE MODULES*), when at least two or more failed CPIOMs (and/or CRDCs) of a given aircraft system lead to an ECAM caution with the DUE TO IMA MODULE FAULT subtitle
  - The IMA CPIOM XXX dispatch message, when a single failure of CPIOM leads to an ECAM caution with the DUE TO IMA MODULE FAULT subtitle
  - The IMA CRDC XXX dispatch message, when a single failure of CRDC leads to an ECAM caution with the DUE TO IMA MODULE FAULT subtitle.

Multiple CRDC Failures



MULTIPLE CRDC/CPIOM FAILURES

Ident.: DSC-42-20-00012698.0001001 / 24 APR 14
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN

The following remote cases of multiple IMA module failures can occur:
- Failure of two or more CRDCs, or
- Failure of two or more CPIOMs, or
- Failure of one or more CRDCs and one or more CPIOMs.

If all CPIOMs (and/or CRDCs) connected to an aircraft system fail, the communication between the aircraft system and the avionics networks is lost. The aircraft system that uses the failed IMA modules may be affected. In this case, the ECAM displays the alert of the applicable aircraft systems.

L2 Depending on the affected aircraft systems, the ECAM will display the following:

- IMA MODULE FAULT (*Refer to PRO-ABN-IMA IMA MODULE FAULT*) ECAM alert, before all other ECAM alerts of the aircraft systems concerned by the multiple IMA module failures

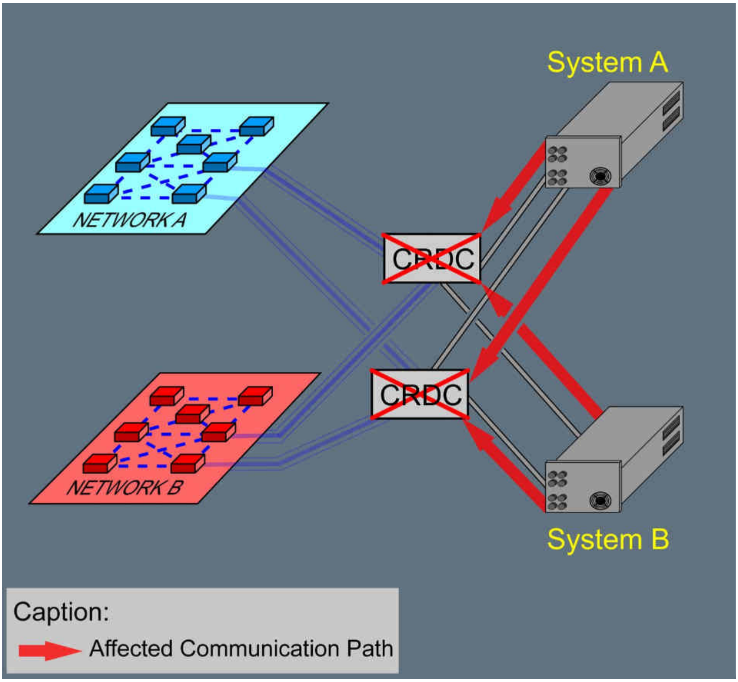
  L3 The IMA MODULE FAULT alert has the highest priority of the ECAM cautions (Level 2 and level 1). For more information, *Refer to DSC-31-CDS-60-10-10 Priority of Alerts*

- L2 The ECAM alerts of the applicable aircraft systems, along with a DUE TO IMA MODULE FAULT subtitle in the second line of each applicable ECAM alert title. The DUE TO IMA MODULE FAULT subtitle clearly informs the flight crew that a multiple IMA module failure is the root cause of the ECAM alert of the affected aircraft system.

L3 *Note: In the case of a single ECAM alert with the DUE TO IMA MODULE FAULT subtitle, the ECAM does not display the IMA MODULE FAULT ECAM alert.*

- For dispatch purposes, depending on the failed IMA modules, the ECAM can display the combination of the following dispatch messages:
  - The IMA MULTIPLE MODULES dispatch message (*Refer to MMEL/ME-DM-IMA IMA MULTIPLE MODULES*), when at least two or more failed CPIOMs (and/or CRDCs) of a given aircraft system lead to an ECAM caution with the DUE TO IMA MODULE FAULT subtitle
  - The IMA CPIOM XXX dispatch message, when a single failure of CPIOM leads to an ECAM caution with the DUE TO IMA MODULE FAULT subtitle
  - The IMA CRDC XXX dispatch message, when a single failure of CRDC leads to an ECAM caution with the DUE TO IMA MODULE FAULT subtitle.

Multiple CRDC Failures



SWITCH OR CABLE FAILURE THAT AFFECTS ONE NETWORK

Ident.: DSC-42-20-00003021.0002001 / 03 JAN 19
Applicable to: ET-AWO, ET-AWP, ET-AYA, ET-AYB

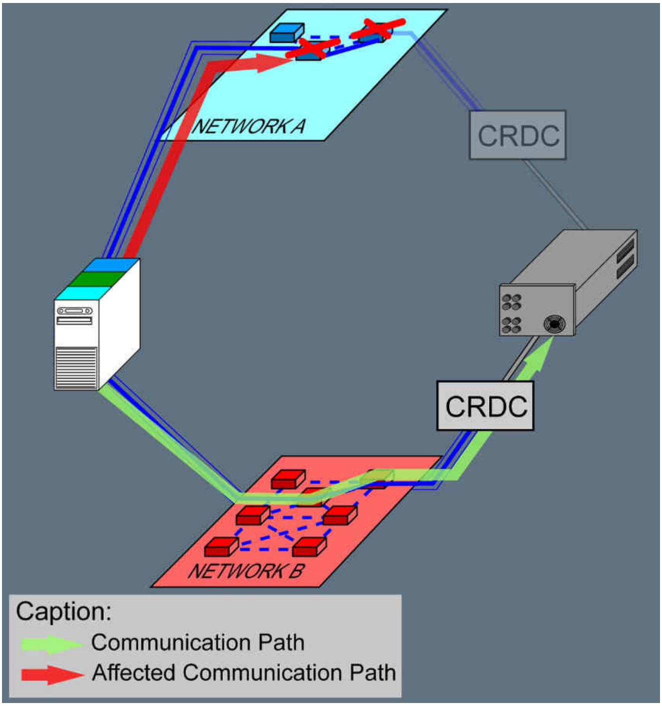
Three switches/cable are paired to ensure redundancy of the communication between aircraft systems on both avionics network. In the case of switch/cable failure of paired equipment, there is no operational effect. The other switch/cable of the pair on the other network maintains the communication between aircraft systems.

L3 For dispatch purposes, depending on the switch or cable failure, the ECAM displays one of the following dispatch messages:

- AVIONICS NETWORK SW OR CABLE (*Refer to MMEL/ME-DM-AVIONICS_N AVIONICS NETWORK SW OR CABLE*)
- AVIONICS NETWORK SINGLE CABLE (*Refer to MMEL/ME-DM-AVIONICS_N AVIONICS NETWORK SINGLE CABLE*)

- AVIONICS NETWORK SINGLE SW (*Refer to MMEL/ME-DM-AVIONICS_N AVIONICS NETWORK SINGLE SW*)
- AVIONICS NETWORK MULTIPLE SW/CABLE (*Refer to MMEL/ME-DM-AVIONICS_N AVIONICS NETWORK MULTIPLE SW/CABLE*).

Multiple Switch Failures That Affect One Network


NETWORK A
CRDC
CRDC
NETWORK B
Caption:
Communication Path
Affected Communication Path

SWITCH OR CABLE FAILURE THAT AFFECTS ONE NETWORK

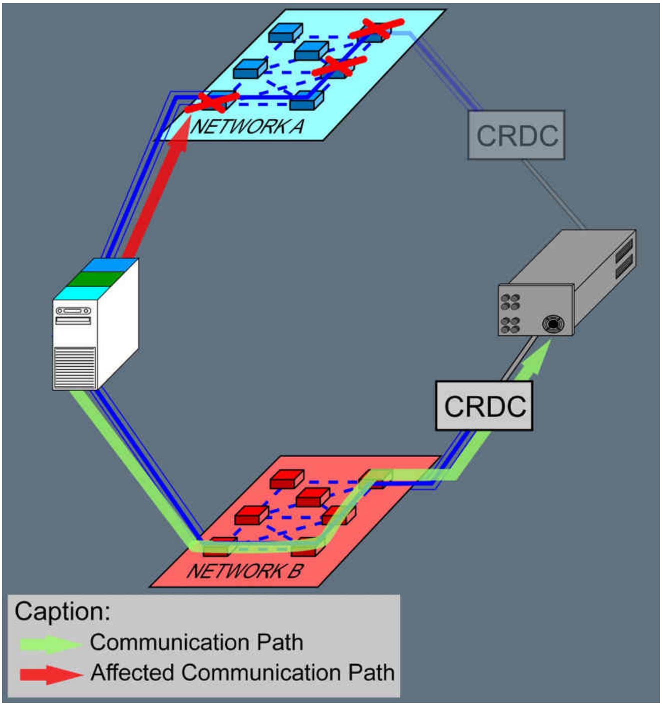
Ident.: DSC-42-20-00003021.0001001 / 24 APR 14
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN

In the case of a single or multiple switch/cable failures that only affect one avionics network, the other network maintains the communication between the aircraft systems. There is no operational effect.

L3 For dispatch purposes, depending on the switch or cable failure, the ECAM displays one of the following dispatch messages:

- AVIONICS NETWORK SW OR CABLE (*Refer to MMEL/ME-DM-AVIONICS_N AVIONICS NETWORK SW OR CABLE*)
- AVIONICS NETWORK SINGLE CABLE (*Refer to MMEL/ME-DM-AVIONICS_N AVIONICS NETWORK SINGLE CABLE*)
- AVIONICS NETWORK SINGLE SW (*Refer to MMEL/ME-DM-AVIONICS_N AVIONICS NETWORK SINGLE SW*)
- AVIONICS NETWORK MULTIPLE SW/CABLE (*Refer to MMEL/ME-DM-AVIONICS_N AVIONICS NETWORK MULTIPLE SW/CABLE*).

Multiple Switch Failures That Affect One Network


NETWORK A
CRDC
CRDC
NETWORK B
Caption:
Communication Path
Affected Communication Path

SINGLE OR MULTIPLE SWITCH OR CABLE FAILURES THAT AFFECT BOTH NETWORKS

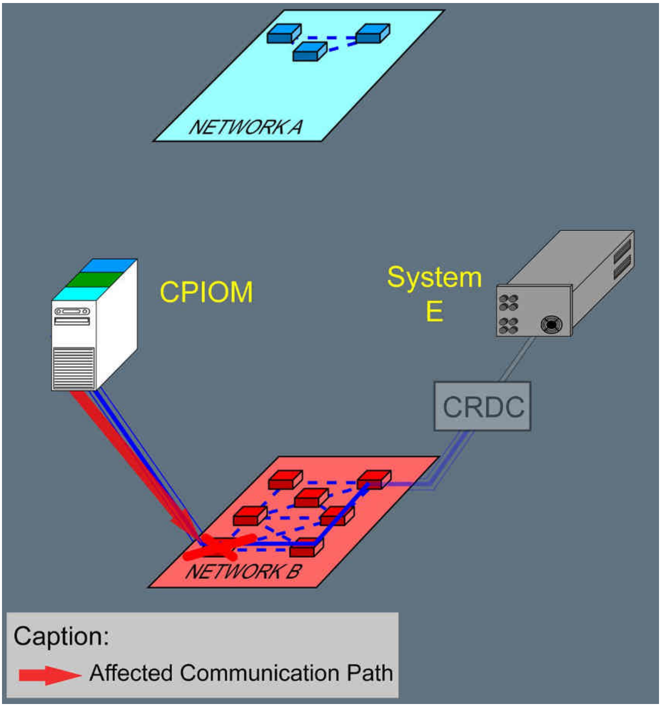
Ident.: DSC-42-20-00003022.0003001 / 03 JAN 19

Applicable to: ET-AWO, ET-AWP, ET-AYA, ET-AYB

In the case of single or multiple switch (and/or cable) failures that affect both avionics networks, the communication via the failed switches (and/or cables) is lost.
Depending on the failed switches (cables), if the communication between some aircraft systems is no longer possible on both networks, the ECAM displays the alerts of the applicable aircraft systems.

COMMUNICATION BETWEEN AIRCRAFT SYSTEMS IS LOST

Communication Between Aircraft Systems Is Lost



The communication between the CPIOM and the aircraft system E is no longer possible via the failed switches (and/or cables) on both networks. The communication between both aircraft systems is lost. The ECAM will display the alerts of the applicable aircraft systems.

L2 The ECAM displays the following:

- The AVIONICS NETWORK SWITCH/CABLE FAULT alert (*Refer to PRO-ABN-AVNCS AVIONICS NETWORK SWITCH/CABLE FAULT (NETWORK DEGRADED)*), before all other ECAM cautions of the aircraft systems concerned by the multiple switch (and/or cable) failures

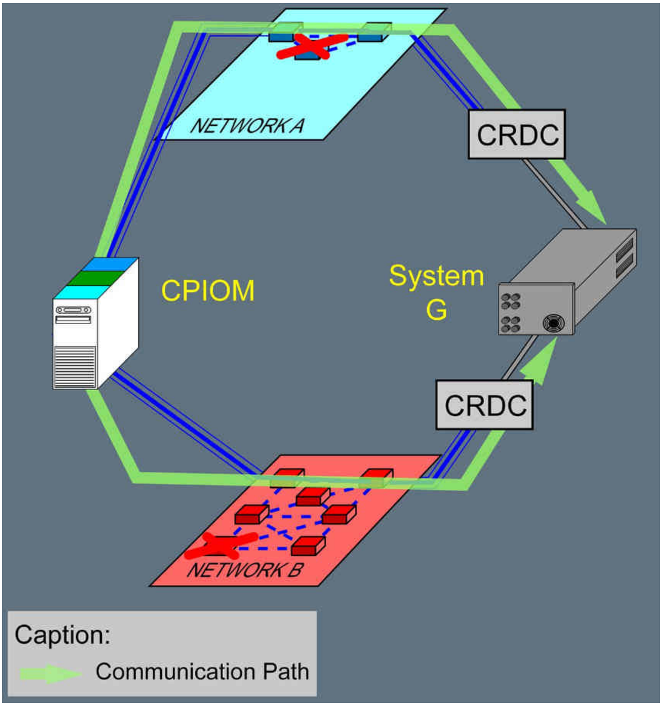
  L3 The AVIONICS NETWORK SWITCH/CABLE FAULT alert has the highest priority of the ECAM cautions (Level 2 and level 1). For more information, *Refer to PRO-ABN-AVNCS AVIONICS NETWORK SWITCH/CABLE FAULT (NETWORK DEGRADED)*

- L2 Depending on the affected aircraft systems, the ECAM alerts of the applicable aircraft systems.
- L3 For dispatch purposes, the AVIONICS NETWORK MULTIPLE SW/CABLE dispatch message (*Refer to MMEL/ME-DM-AVIONICS_N AVIONICS NETWORK MULTIPLE SW/CABLE*).

L1 *Note:* *Some essential aircraft systems (e.g. PRIMs, EEC, ADIRS, FWS, CDS, SFCC, CPCS, LGERS, BCS, MMR) can still communicate with each other via backup conventional wires (i.e. ARINC 429 data buses, analog signals).*

COMMUNICATION BETWEEN AIRCRAFT SYSTEMS IS NOT LOST

Communication Between Aircraft Systems Is Not Lost



The communication between the CPIOM and the aircraft system G remains available. The communication is not affected by the failed switches (and/or cables). There is no operational effect for these aircraft systems.

L2 However, the ECAM displays:

- The AVIONICS NETWORK SWITCH/CABLE FAULT alert (*Refer to PRO-ABN-AVNCS AVIONICS NETWORK SWITCH/CABLE FAULT (NETWORK DEGRADED)*) for crew awareness.

L3
- For dispatch purposes, the AVIONICS NETWORK MULTIPLE SW/CABLE dispatch message (*Refer to MMEL/ME-DM-AVIONICS_N AVIONICS NETWORK MULTIPLE SW/CABLE*).

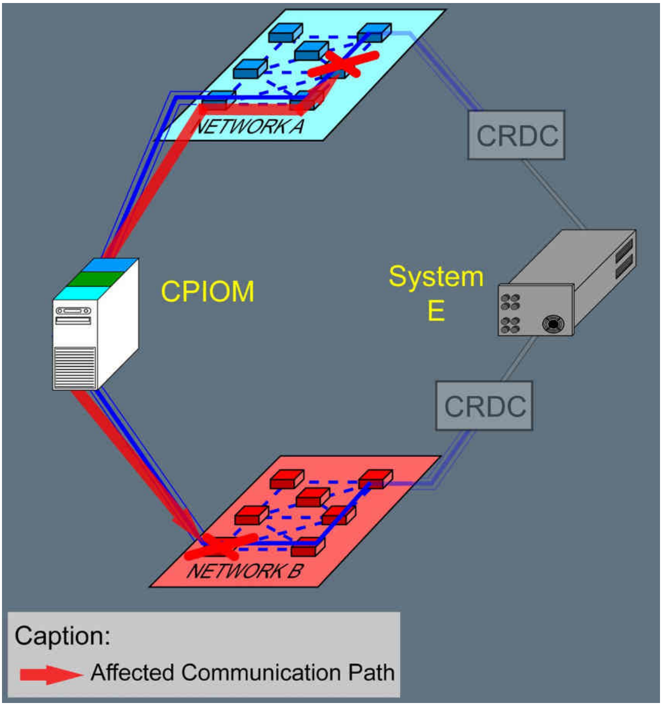
MULTIPLE SWITCH OR CABLE FAILURES THAT AFFECT BOTH NETWORKS

Ident.: DSC-42-20-00003022.0002001 / 03 JAN 19
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN

In the remote case of multiple switch (and/or cable) failures that affect both avionics networks, the communication via the failed switches (and/or cables) is lost.
Depending on the failed switches (cables), if the communication between some aircraft systems is no longer possible on both networks, the ECAM displays the alerts of the applicable aircraft systems.

COMMUNICATION BETWEEN AIRCRAFT SYSTEMS IS LOST

Communication Between Aircraft Systems Is Lost



The communication between the CPIOM and the aircraft system E is no longer possible via the failed switches (and/or cables) on both networks. The communication between both aircraft systems is lost. The ECAM will display the alerts of the applicable aircraft systems.

L2 The ECAM displays the following:

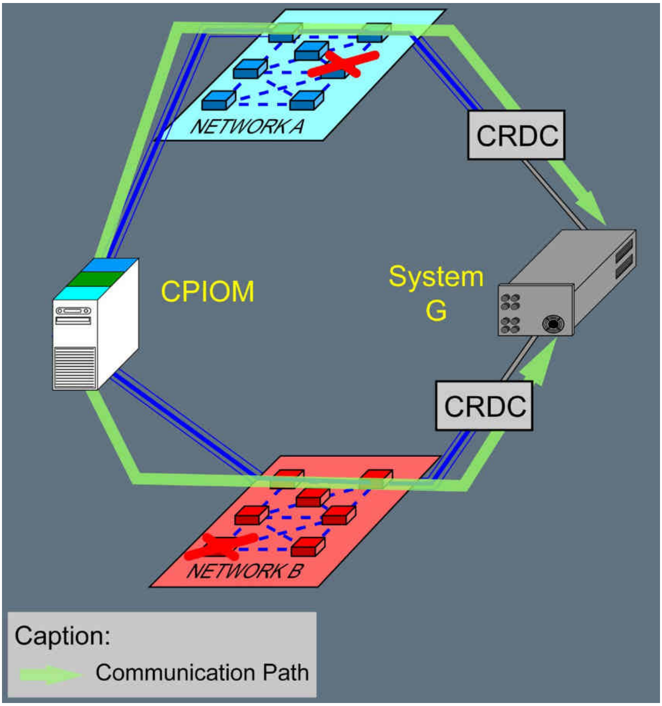
- The AVIONICS NETWORK SWITCH/CABLE FAULT alert (*Refer to PRO-ABN-AVNCS AVIONICS NETWORK SWITCH/CABLE FAULT (NETWORK DEGRADED)*), before all other ECAM cautions of the aircraft systems concerned by the multiple switch (and/or cable) failures

  L3 The AVIONICS NETWORK SWITCH/CABLE FAULT alert has the highest priority of the ECAM cautions (Level 2 and level 1). For more information, *Refer to DSC-31-CDS-60-10-10 Priority of Alerts*
- L2 Depending on the affected aircraft systems, the ECAM alerts of the applicable aircraft systems.
- L3 For dispatch purposes, the AVIONICS NETWORK MULTIPLE SW/CABLE dispatch message (*Refer to MMEL/ME-DM-AVIONICS_N AVIONICS NETWORK MULTIPLE SW/CABLE*).

L1 *Note:* *Some essential aircraft systems (e.g. PRIMs, EEC, ADIRS, FWS, CDS, SFCC, CPCS, LGERS, BCS, MMR) can still communicate with each other via backup conventional wires (i.e. ARINC 429 data buses, analog signals).*

COMMUNICATION BETWEEN AIRCRAFT SYSTEMS IS NOT LOST

Communication Between Aircraft Systems Is Not Lost



The communication between the CPIOM and the aircraft system G remains available. The communication is not affected by the failed switches (and/or cables). There is no operational effect for these aircraft systems.

L2 However, the ECAM displays:

- The AVIONICS NETWORK SWITCH/CABLE FAULT alert (*Refer to PRO-ABN-AVNCS AVIONICS NETWORK SWITCH/CABLE FAULT (NETWORK DEGRADED)*) for crew awareness.

L3 - For dispatch purposes, the AVIONICS NETWORK MULTIPLE SW/CABLE dispatch message (*Refer to MMEL/ME-DM-AVIONICS_N AVIONICS NETWORK MULTIPLE SW/CABLE*).

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AIRCRAFT SYSTEMS

44 - CABIN SYSTEMS

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DSC-44-10 System Description

DSC-44-10-10 Overview

Overview.......... A

DSC-44-10-20 Cabin Communication and Signs

General.......... A
Cabin Communication.......... B
Signs.......... C

DSC-44-10-30 In-Flight Entertainment and Cabin Connectivity

General.......... A
Passenger Entertainment.......... B
On-board Mobile Telephony System C
Passenger Wi-Fi .... D

DSC-44-10-40 Video Monitoring System

Video Monitoring System.......... A

DSC-44-20 Controls and Indicators

Audio Indicators.......... A
CABIN Panel.......... B
CAB SYS SMOKE Panel.......... C
CALLS Panel.......... D
ELEC Panel.......... E
EVAC Panel .... F
MEMO.......... G
SIGNS Panel.......... H
VIDEO SD Page.......... I

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Localization Title	Toc Index	ID	Reason
DSC-44-10-30 General	A	1	Revision of the abbreviation to be in accordance with the abbreviation list.
DSC-44-10-30 General	A	2	Revision of the abbreviation to be in accordance with the abbreviation list.
DSC-44-10-30 General	A	3	Revision of the abbreviation to be in accordance with the abbreviation list.
DSC-44-10-30 Passenger Wi-Fi ◁	D	4	Revision of the abbreviation to be in accordance with the abbreviation list.
DSC-44-20 MOBILE COM pb-sw ◁	B	1	Revision of the abbreviation to be in accordance with the abbreviation list.

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OVERVIEW

Ident.: DSC-44-10-10-00023073.0001001 / 07 JUL 16
Applicable to: ALL

This chapter describes cabin systems that have an interface in the cockpit:
- The cabin communication and signs (*Refer to DSC-44-10-20 General*)
- The In-Flight Entertainment (IFE) and cabin connectivity (*Refer to DSC-44-10-30 General*)
- The video monitoring system ◁ (*Refer to DSC-44-10-40 Video Monitoring System*).

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GENERAL

Ident.: DSC-44-10-20-00023459.0001001 / 06 SEP 17
Applicable to: ALL

The Cabin Intercommunication Data System (CIDS) is the main cabin management system that provides most of the cabin related functions to the flight crew, the cabin crew, and the passengers.

Particularly, the CIDS supports:
- The cabin communication
- The cabin signs.

L2 The CIDS also hosts the Smoke Detection Function (SDF), *Refer to DSC-26-20 Smoke Detection System*.

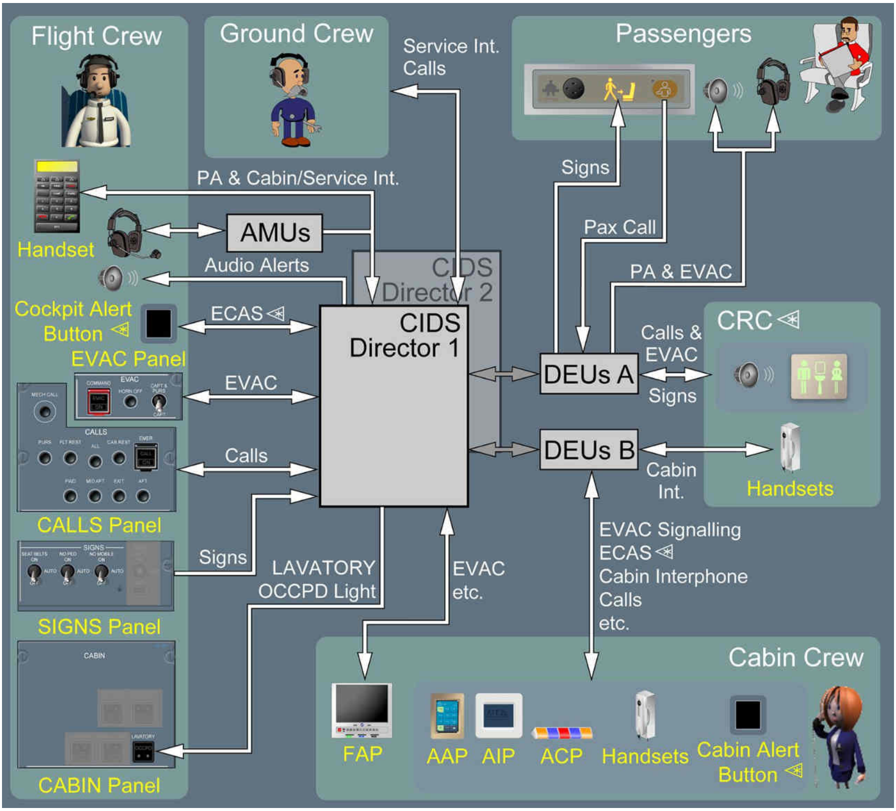
L1 ARCHITECTURE

The CIDS can be considered as a server with a network that enables the intercommunication of multiple interfaces like cockpit panels, handsets, Flight Attendant Panels (FAPs), etc.

L3 The main components of the CIDS are:
- Two identical CIDS directors that ensure the data transmission between the units interfaced with the CIDS
  Only one director is active at a time, while the other director is on standby and becomes active automatically in the case of a failure, or a reset.
- Decoder/Encoder Units (DEUs) A and B that adapt the format of the transmitted data to, or out of, the CIDS directors.
  DEUs A interface with all passenger functions, and crew rest compartments ◁ loudspeakers and signs. DEUs B interface with cabin crew functions, and crew rest compartments ◁ handsets.

For more information about the exhaustive list of components of the CIDS, *Refer to CCOM/04-10 Components of the CIDS in the Cabin*.

Architecture of the CIDS Cabin Communication and Signs


Flight Crew
Ground Crew
Service Int.
Calls
Passengers
PA & Cabin/Service Int.
Signs
Pax Call
AMUs
Handset
Audio Alerts
CIDS
Director 2
PA & EVAC
Cockpit Alert
Button
ECAS
CIDS
Director 1
CRC
Calls &
EVAC
EVAC Panel
EVAC
COMMAND
HORN OFF
CAPT & PURS
CAPT
MECH CALL
DEUs A
Signs
CALLS
PURS
FLT REST
ALL
CAB REST
EMER
CALL
FWD
MID APT
EXIT
AFT
Calls
DEUs B
Cabin
Int.
Handsets
CALLS Panel
SIGNS
SEAT BELTS
NO PED
NO MOBILE
ON
AUTO
Signs
LAVATORY
OCCPD Light
EVAC
etc.
EVAC Signalling
ECAS
Cabin Interphone
Calls
etc.
SIGNS Panel
CABIN
LAVATORY
OCCPD
Cabin Crew
CABIN Panel
FAP
AAP
AIP
ACP
Handsets
Cabin Alert
Button

CABIN COMMUNICATION

Ident.: DSC-44-10-20-00023462.0001001 / 07 NOV 16
Applicable to: ALL

The CIDS provides the following cabin communication functions:

- Passenger Address (PA)

L2 For more information, *Refer to DSC-23-10-20 Passenger Address*.

L1 - Cabin interphone

L2 For more information, *Refer to DSC-23-10-20 Cabin Interphone*.

L1 - Service interphone

L2 For more information, *Refer to DSC-23-10-20 Service Interphone*.

L1 - Calls

L2 For more information, *Refer to DSC-23-20 Calls Panel*.

L1 - Evacuation (EVAC) signaling ◁

L2 For more information, *Refer to DSC-23-20 EVAC Panel (if installed)*.

L1 - Emergency Crew Alerting System (ECAS) ◁

L2 For more information, See below.

L1 - Cabin ready indication.

L2 For more information, See below.

L1 ECAS ◁

The ECAS enables the flight crew or the cabin crew to alert respectively the cabin or the cockpit in the case of a threat, like a cockpit intrusion.
Depending on the aircraft customization, if the ECAS is activated, a combination of aural and/or visual alerts triggers in the cabin and the cockpit.
If the ECAS is activated from the cabin, the CVMS ◁ temporarily displays the affected cabin area on the VIDEO SD page.

L2 For more information about the CVMS ◁ , *Refer to DSC-31-CDS-110-10 Cabin Video Monitoring System*.

L1 CABIN READY INDICATION

The cabin-ready function enables the cabin crew to inform the flight crew that the cabin is ready for takeoff or landing.

When the cabin crew activates the cabin-ready signal, only one of the following occurs:
- The CABIN READY memo ◁ appears on the WD, or

  L2 For more information about the CABIN READY memo ◁ , *Refer to DSC-44-20 CABIN READY (if installed)*.

L1
- The CABIN : READY indication ◁ appears in:
  - The T.O and LDG memos
  - The Before Takeoff and Landing checklists.

SIGNS

Ident.: DSC-44-10-20-00023463.0001001 / 07 JUL 16
Applicable to: ALL

In addition to the manual control of cabin signs from the SIGNS panel, the CIDS provides automatic activation of the cabin signs based on the extension of the landing gear or the slats, for example.

The CIDS manages the activation of the following signs:
- FASTEN SEAT BELT
- RETURN TO SEAT
- NO SMOKING ◁

- NO PED ◁
- LAVATORY OCCPD light in the cockpit
- NO MOBILE ◁
- EXIT.

L2 For more information about the signs, *Refer to DSC-33-50-10 Overview*.

GENERAL

Ident.: DSC-44-10-30-00023464.0004001 / 03 JUL 20
Applicable to: ET-ATY, ET-AUA, ET-AUB

The In-Flight Entertainment (IFE) and the cabin connectivity provide the cabin occupants with various services that depend on the aircraft customization.

IN-FLIGHT ENTERTAINMENT

The IFE provides passengers with various entertainment services from audio and video content to real-time flight information.

L2 For more information about the IFE, *Refer to CCOM/08-10 General Information about the IFE System* .

IFE components are installed in a dedicated IFE bay, located behind the bulk cargo compartment.
When the IFEC pb-sw of the CAB SYS SMOKE panel is set to OFF, the IFE center stops.

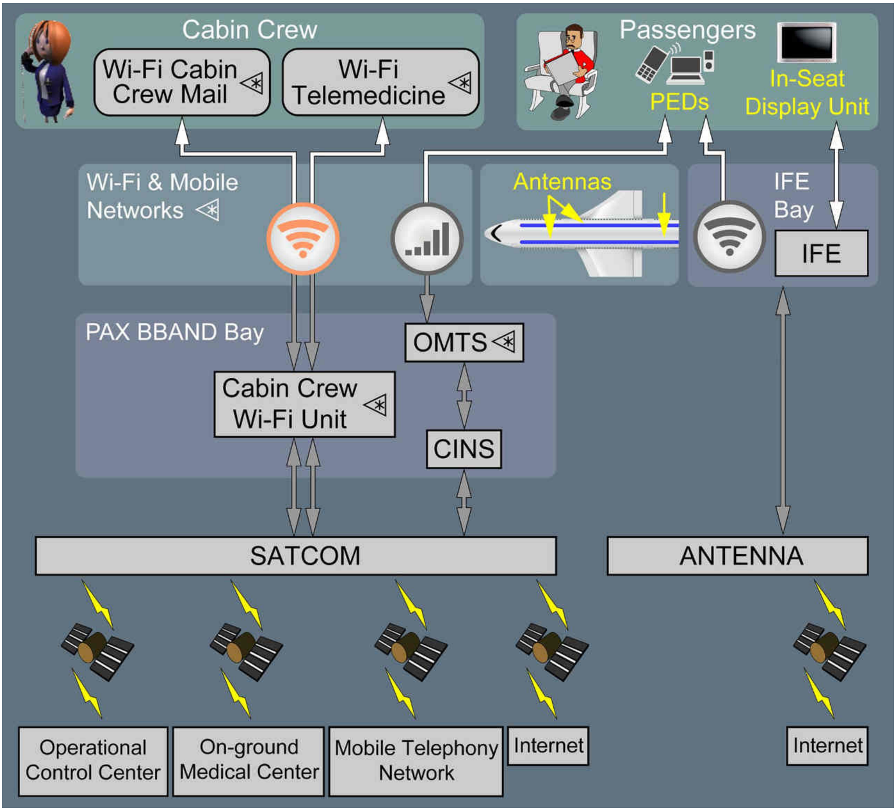
1 L1 CABIN CONNECTIVITY

The cabin connectivity provides the following services:

- For passengers:
  - Onboard telephony via the On-board Mobile Telephony System (OMTS) ◁ . This service is ensured via the CINS.
  - Access to the Internet from the in-seat display unit of the IFE, or from Personal Electronic Devices (PEDs) via a passenger Wi-Fi ◁ network.
- For cabin crew, access to a secured cabin crew Wi-Fi ◁ network that enables the connection of Telemedicine ◁ devices and provides wireless access to the cabin crew mail application ◁ .

L2 For more information about the cabin crew Wi-Fi ◁ , *Refer to CCOM/06-230-10 General Information about the Crew WiFi Application*.
For more information about the cabin crew mail application, *Refer to CCOM/06-220-10 General Information about the Cabin Crew Mail (CCMail) Application*.

The cabin connectivity uses the SATCOM and the KA-Band Antenna to interface with on-ground services .
The components that support the cabin connectivity (CINS, OMTS ◁ , and the cabin crew Wi-Fi ◁ unit) are installed in the PAX BBAND bay, located behind the bulk cargo compartment.
When the PAX BBAND pb-sw of the CAB SYS SMOKE panel is set to OFF, the OMTS ◁ and the cabin crew connectivity is no longer available.
The PAX internet services are hosted in the IFE.
When the IFEC pb-sw of the CAB SYS SMOKE panel is set to OFF, the PAX internet service is no longer available.


Cabin Crew
Wi-Fi Cabin Crew Mail
Wi-Fi Telemedicine
Passengers
PEDs
In-Seat Display Unit
Wi-Fi & Mobile Networks
Antennas
IFE Bay
IFE
PAX BBAND Bay
OMTS
Cabin Crew Wi-Fi Unit
CINS
SATCOM
ANTENNA
Operational Control Center
On-ground Medical Center
Mobile Telephony Network
Internet
Internet

GENERAL

Ident.: DSC-44-10-30-00023464.0002001 / 03 JUL 20
Applicable to: ET-ATQ, ET-ATR

The In-Flight Entertainment (IFE) and the cabin connectivity provide the cabin occupants with various services that depend on the aircraft customization.

IN-FLIGHT ENTERTAINMENT

The IFE provides passengers with various entertainment services from audio and video content to real-time flight information.

L3 The IFE interfaces with the Cabin Information Network Service (CINS) for entertainment services that require access to the Internet.

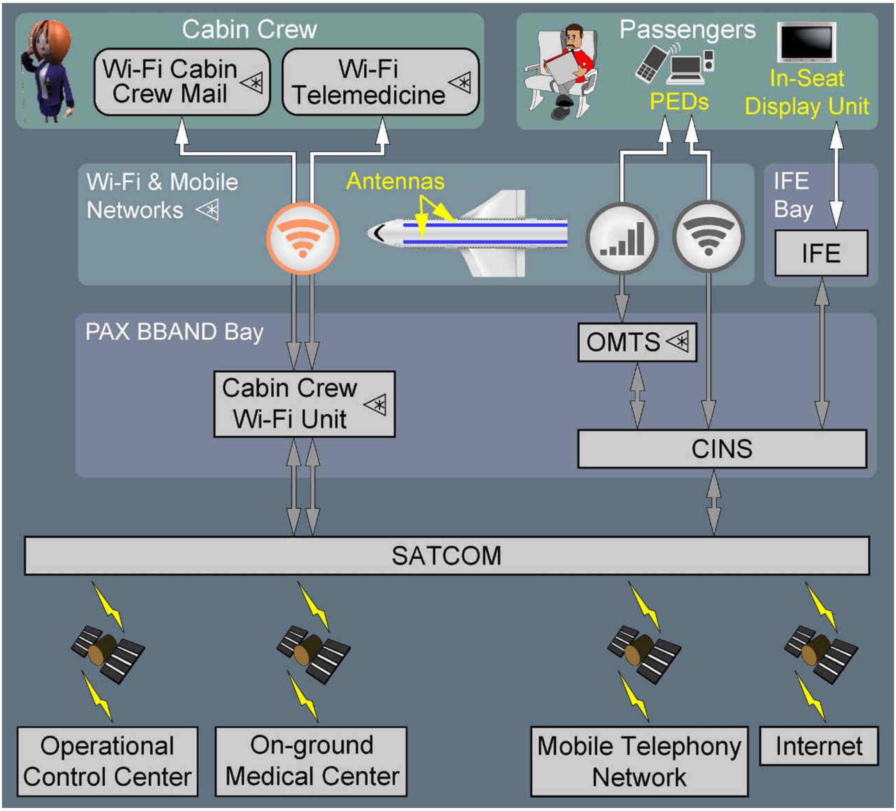
L2 For more information about the IFE, *Refer to CCOM/08-10 General Information about the IFE System* .
IFE components are installed in a dedicated IFE bay, located behind the bulk cargo compartment.
When the IFEC pb-sw of the CAB SYS SMOKE panel is set to OFF, the IFE center stops.

2 L1 CABIN CONNECTIVITY

The cabin connectivity provides the following services:
- For passengers, with the Cabin Information Network Service (CINS):
  - Onboard telephony via the On-board Mobile Telephony System (OMTS) ◁
  - Access to the Internet from the in-seat display unit of the IFE, or from Personal Electronic Devices (PEDs) via a passenger Wi-Fi ◁ network.
- For cabin crew, access to a secured cabin crew Wi-Fi ◁ network that enables the connection of Telemedicine ◁ devices and provides wireless access to the cabin crew mail application ◁ .

L2 For more information about the cabin crew Wi-Fi ◁ , *Refer to CCOM/06-230-10 General Information about the Crew WiFi Application*.
For more information about the cabin crew mail application, *Refer to CCOM/06-220-10 General Information about the Cabin Crew Mail (CCMail) Application*.

The cabin connectivity uses the SATCOM to interface with on-ground services.
The components that support the cabin connectivity (CINS, OMTS ◁ , and the cabin crew Wi-Fi ◁ unit) are installed in the PAX BBAND bay, located behind the bulk cargo compartment.
When the PAX BBAND pb-sw of the CAB SYS SMOKE panel is set to OFF, the cabin connectivity is no longer available.


Cabin Crew
Wi-Fi Cabin Crew Mail
Wi-Fi Telemedicine
Passengers
PEDs
In-Seat Display Unit
Wi-Fi & Mobile Networks
Antennas
IFE Bay
IFE
PAX BBAND Bay
OMTS
Cabin Crew Wi-Fi Unit
CINS
SATCOM
Operational Control Center
On-ground Medical Center
Mobile Telephony Network
Internet

Architecture of the Cabin Connectivity

GENERAL

Ident.: DSC-44-10-30-00023464.0001001 / 03 JUL 20

Applicable to: ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB

The In-Flight Entertainment Center (IFEC) provides the cabin occupants with various entertainment and cabin connectivity services that depend on the aircraft customization.

L2 The components of the IFEC are installed in the IFE bay, located behind the bulk cargo compartment.

When the IFEC pb-sw of the CAB SYS SMOKE panel is set to OFF, the IFE center stops.

L1 IN-FLIGHT ENTERTAINMENT

The IFE provides passengers with various entertainment services from audio and video content to real-time flight information.

L2 For more information about the IFE, *Refer to CCOM/08-10 General Information about the IFE System* .

3 L1 CABIN CONNECTIVITY

The cabin connectivity provides the passengers with:
- On-board telephony via an On-board Mobile Telephony System (OMTS) ◁
- Access to the Internet from Personal Electronic Devices (PEDs) via a passenger Wi-Fi ◁ network.

PASSENGER ENTERTAINMENT

Ident.: DSC-44-10-30-00023465.0001001 / 07 JUL 16
Applicable to: ALL

The IFE system is a highly customized system and can provide the passengers with various entertainment services. This chapter only describes IFE services that have an interface in the cockpit.

AIRCRAFT REAL-TIME FLIGHT INFORMATION

The IFE system provides the passengers with various services which may include:
- Moving maps
  The moving maps enable the passengers to see various map views and obtain real-time flight information like the time and distance to destination, the aircraft speed, etc.
- External views of the aircraft from the ETACS ◁ .
  The landscape camera ◁ , the belly TAC ◁ , and the vertical stabilizer TAC ◁ provide live video images to the IFE.

L2 For more information about the ETACS ◁ , *Refer to DSC-31-CDS-110-10 External and Taxiing Aid Camera System*.

L1 The flight crew can stop the transmission of live video images to the IFE via:
- The LANDSCAPE CAMERA pb-sw ◁ of the CABIN panel (*Refer to DSC-44-20 LANDSCAPE CAMERA pb-sw (if installed)*)
- Depending on the Operator customization, the PAX INFO pb-sw ◁ of the CABIN panel (*Refer to DSC-44-20 PAX INFO pb-sw (if installed)*).

PED POWER OUTLETS ◁

The passenger seats may be equipped with PED power outlets.

The flight crew can stop the electrical supply of all PED power outlets via:
- The PAX PERS ELEC SPLY pb-sw of the CABIN panel (*Refer to DSC-44-20 PAX PERS ELEC SPLY pb-sw (if installed)*)
- The PAX SYS pb-sw of the ELEC panel (*Refer to DSC-24-20 PAX SYS pb-sw*).

ON-BOARD MOBILE TELEPHONY SYSTEM ◁

Ident.: DSC-44-10-30-00023466.0001001 / 07 JUL 16
Applicable to: ALL

In flight, the OMTS enables the passengers to use their mobile phones to make phone calls and send messages.

The OMTS automatically activates when:
- The aircraft flies over a country where the use of mobile phones is authorized
- The aircraft flies above an altitude threshold.

L2 *Note:* *As per regulation, the OMTS must be inhibited below 3 000 m (9 842 ft) AGL to avoid interference with the ground mobile network. Depending on the aircraft customization, the altitude threshold for the availability of the OMTS may be more restrictive (e.g. 4 000 m (13 123 ft)).*

L1 The flight crew can stop all wireless emissions, which includes the OMTS, via:
- The MOBILE COM pb-sw of the CABIN panel (*Refer to DSC-44-20 MOBILE COM pb-sw (if installed)*)
- Depending on the airline customization, the PAX INFO pb-sw ◁ of the CABIN panel (*Refer to DSC-44-20 PAX INFO pb-sw (if installed)*).

L2 The cabin crew can independently activate or deactivate the functions of the OMTS (voice calls, messages, etc.) via the FAP.

L1 In the cabin, the NO MOBILE signs indicate the availability of the mobile telephony services to the passengers.

L2 For more information about the control of the NO MOBILE signs, *Refer to DSC-33-50-20 NO MOBILE sw*.

PASSENGER WI-FI ◁

Ident.: DSC-44-10-30-00023467.0001001 / 03 JUL 20
Applicable to: ALL

4 The passengers access the Internet via Wi-Fi from their PEDs.

The flight crew can stop all wireless emissions, which includes the Wi-Fi network, via:
- The MOBILE COM pb-sw of the CABIN panel (*Refer to DSC-44-20 MOBILE COM pb-sw (if installed)*)
- Depending on the airline customization, the PAX INFO pb-sw of the CABIN panel (*Refer to DSC-44-20 PAX INFO pb-sw (if installed)*).

L2 The cabin crew can independently activate or deactivate the cabin connectivity services via the FAP.
L1 In the cabin, the NO PED signs indicates to the passengers when they cannot use their PEDs.
L2 For more information about the control of the NO PED signs , *Refer to DSC-33-50-20 NO PED sw*.

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VIDEO MONITORING SYSTEM

Ident.: DSC-44-10-40-00023080.0001001 / 07 JUN 19
Applicable to: ALL

For more information about the architecture of the video monitoring system, *Refer to DSC-31-CDS-110-10 Overview*.

COCKPIT DOOR SURVEILLANCE SYSTEM

The CDSS includes cameras in the cockpit door area to provide live video images that enable the flight crew to identify persons who request entry in the cockpit.

L2 For more information about the CDSS, *Refer to DSC-31-CDS-110-10 Cockpit Door Surveillance System*.

L1 CABIN VIDEO MONITORING SYSTEM

The CVMS includes cameras in the cabin to provide live video images that enable the flight crew to monitor the cabin from the cockpit.

L2 For more information about the CVMS, *Refer to DSC-31-CDS-110-10 Cabin Video Monitoring System*.

L1 LOWER DECK SURVEILLANCE FUNCTION

The CVMS includes cameras in the cargo to provide live video images that enable the flight crew to monitor the cargo from the cockpit.

L2 For more information about the Lower Deck Surveillance Function, *Refer to DSC-31-CDS-110-10 Lower Deck Surveillance Function*.

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AUDIO INDICATORS

Ident.: DSC-44-20-00023619.0001001 / 07 NOV 16
Applicable to: ALL

CABIN CALL

Audio Indicator	Meaning
Normal Buzzer (Sound)	Cabin call For more information, *Refer to DSC-23-20 Internal Communication Transmission Keys and Reception Knobs*.

EMERGENCY CABIN CALL

Audio Indicator	Meaning
Emergency Buzzer (Sound)	Emergency cabin call For more information, *Refer to DSC-23-20 EMER Pb*.

EVAC HORN

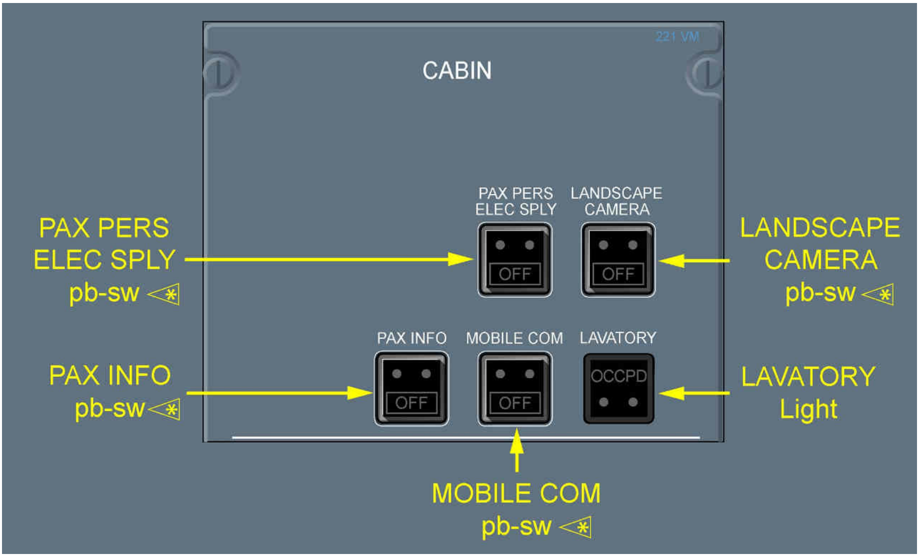
Audio Indicator	Meaning
Evac Horn	Evacuation order For more information, *Refer to DSC-23-20 AUDIO INDICATORS*.

CABIN PANEL

Applicable to: ALL

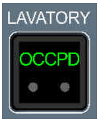
Ident.: DSC-44-20-10-00023058.0001001 / 07 JUL 16

CABIN Panel

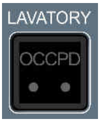

221 VM
CABIN
PAX PERS ELEC SPLY
LANDSCAPE CAMERA
OFF
OFF
PAX INFO
MOBILE COM
LAVATORY
OFF
OFF
OCCPD
PAX PERS ELEC SPLY pb-sw
LANDSCAPE CAMERA pb-sw
PAX INFO pb-sw
LAVATORY Light
MOBILE COM pb-sw

Ident.: DSC-44-20-10-00023072.0001001 / 07 JUL 16

LAVATORY OCCPD LIGHT


LAVATORY
OCCPD

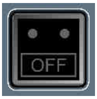
The lavatory near the forward right exit is occupied.


LAVATORY
OCCPD

The lavatory near the forward right exit is not occupied.

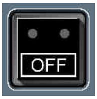
Ident.: DSC-44-20-10-00023071.0001001 / 07 JUL 16

LANDSCAPE CAMERA PB-SW ◁



The IFE system receives live video images from the landscape camera, the belly camera, and the vertical stabilizer camera.

L12



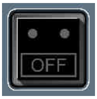
The IFE system does not receive live video images from the landscape camera, the belly camera, and the vertical stabilizer camera.

Note: *The cabin crew can also manage the display of live video images on the IFE.*

Ident.: DSC-44-20-10-00023070.0001001 / 03 JUL 20

1 MOBILE COM PB-SW ◁

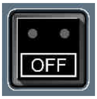
L12



The OMTS ◁ and the passenger Wi-Fi ◁ network are available.

Note: *When the aircraft flies over a country where the use of mobile phones is not authorized, or when the aircraft flies below the altitude threshold for the OMTS availability (e.g. 4 000 m (13 123 ft)), all of the following apply:*
- *The OMTS automatically shuts down*
- *When the NO MOBILE sw ◁ is set to AUTO, the NO MOBILE signs ◁ come on in the cabin*
- *The OFF light of the MOBILE COM pb-sw remains off.*

L12



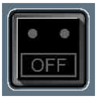
The OMTS ◁ and the passenger Wi-Fi ◁ network are no longer available.
Associated with the PAX MOBILE COM DISC memo.
When the NO MOBILE sw ◁ is set to AUTO, the NO MOBILE signs ◁ come on in the cabin.

Note: *The cabin crew can also independently deactivate the OMTS ◁ and the passenger Wi-Fi ◁ network.*

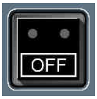
Note: *For maintenance and aircraft security purposes only. The flight crew should comply with the associated company instructions.*

Ident.: DSC-44-20-10-00023068.0001001 / 07 JUL 16

PAX INFO PB-SW ◁



The inhibition of IFE and cabin connectivity services is not active.



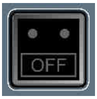
Depending on the Operator customization, the following IFE and cabin connectivity services may be inhibited:
- Aircraft real-time flight information, and/or
- OMTS ◁ , and/or
- Internet ◁ .

Note: *For maintenance and aircraft security purposes only. The flight crew should comply with the associated company instructions.*

Ident.: DSC-44-20-10-00023069.0001001 / 07 JUL 16

PAX PERS ELEC SPLY PB-SW ◁

L12

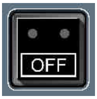


The PED power outlets are electrically supplied.

Note: *The PED power outlets are automatically turned off:*
- *In the case of a decompression, or*
- *When the slats are extended, via the PED power outlets inhibition at slats extension ◁ .*

In both cases, the OFF light remains off.

L12



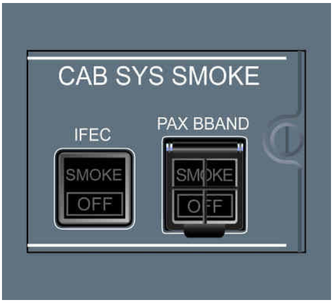
The PED power outlets are not electrically supplied.

Note: *The cabin crew can also turn off the PED power outlets via the PED POWER pb of the FAPs. For more information about the PED POWER pb of the FAP, Refer to CCOM/08-20-20-20-60 PED Power Key for the Passenger PED Power.*

CAB SYS SMOKE PANEL

Ident.: DSC-44-20-00023062.0001001 / 07 JUL 16
Applicable to: ALL

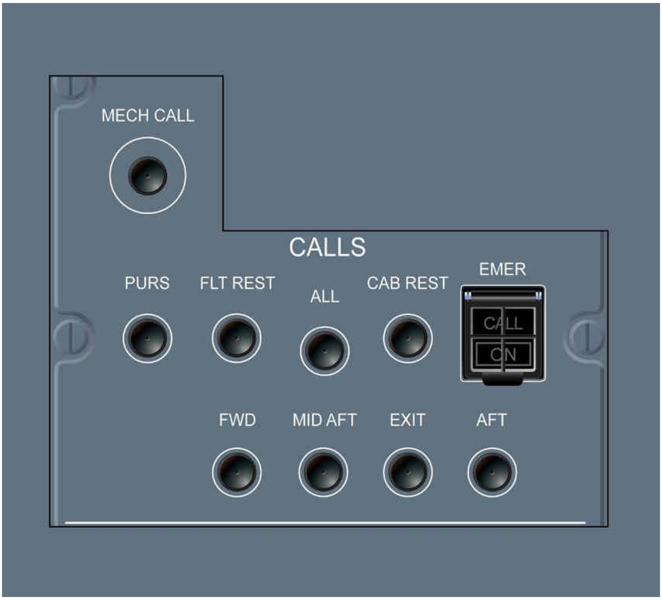
CAB SYS SMOKE Panel


CAB SYS SMOKE
IFEC
PAX BBAND
SMOKE
OFF
SMOKE
OFF

For more information about the CAB SYS SMOKE panel, *Refer to DSC-26-90-20 CAB SYS SMOKE Panel*.

CALLS PANEL

Ident.: DSC-44-20-00023059.0001001 / 07 JUL 16
Applicable to: ALL


MECH CALL
CALLS
PURS
FLT REST
ALL
CAB REST
EMER
CALL
ON
FWD
MID AFT
EXIT
AFT

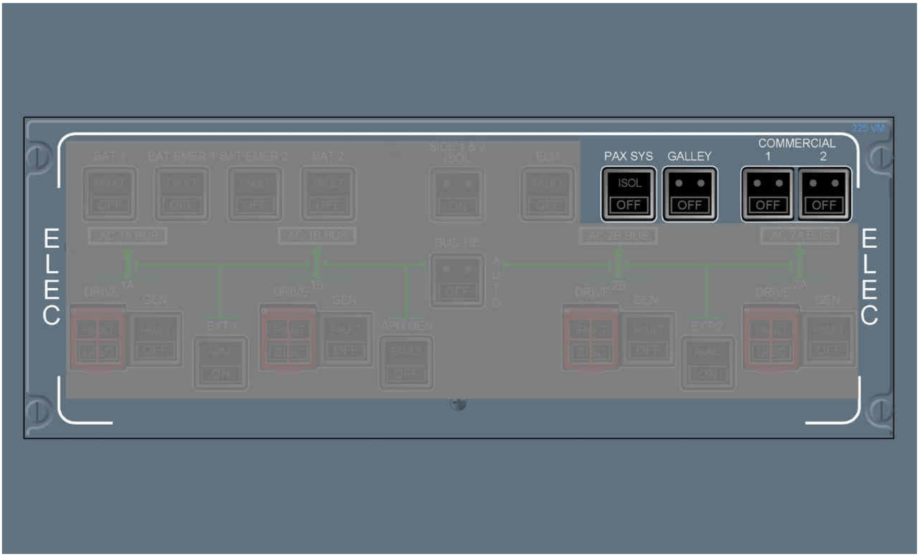
CALLS Panel

For more information about the CALLS panel, *Refer to DSC-23-20 Calls Panel*.

ELEC PANEL

Ident.: DSC-44-20-00023063.0001001 / 07 JUL 16
Applicable to: ALL

ELEC Panel

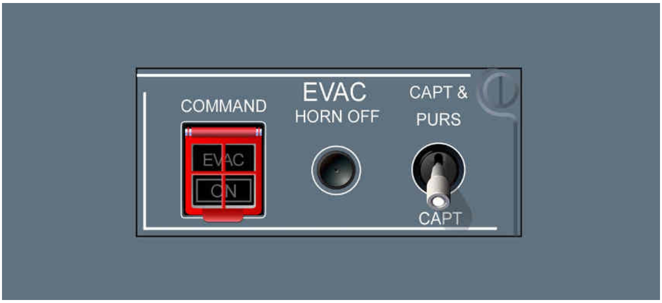

ELEC
PAX SYS
GALLEY
COMMERCIAL
1
2
ISOL
OFF
OFF
OFF
OFF
ELEC

For more information about the ELEC panel, *Refer to DSC-24-20 ELEC Panel*.

EVAC PANEL ◁

Ident.: DSC-44-20-00023060.0001001 / 07 NOV 16
Applicable to: ALL

EVAC Panel ◁



For more information about the EVAC panel ◁ , *Refer to DSC-23-20 EVAC Panel (if installed)*.

MEMO

Applicable to: ALL

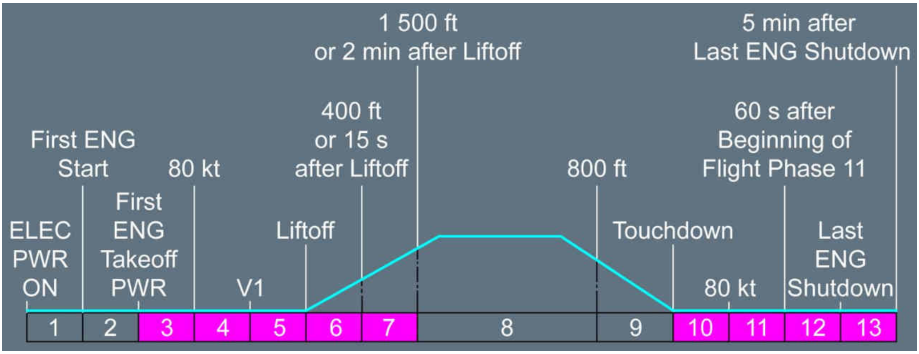
Ident.: DSC-44-20-30-00023091.0001001 / 07 JUL 16

L12

CABIN READY ◁	Indicates to the flight crew that the cabin is ready for takeoff or landing. Pulses for 10 s during the preflight phase (flight phases 1 and 2). Appears on the WD.

L2 Depending on the CIDS customization, disappears after 1 to 20 min.
Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

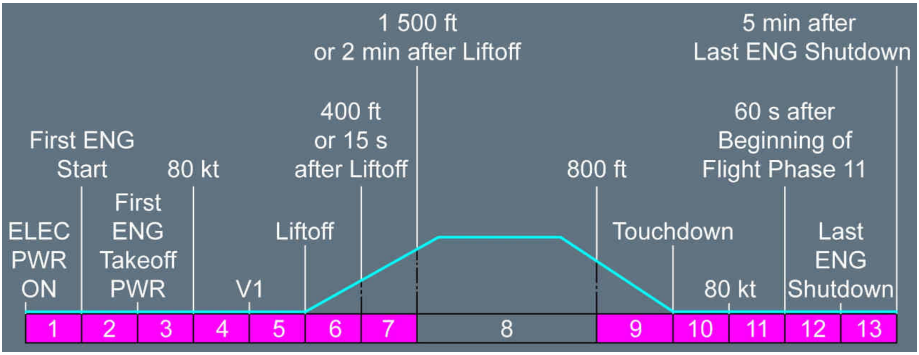
Ident.: DSC-44-20-30-00023065.0001001 / 07 JUL 16

L12

PAX MOBILE COM DISC	Appears when the flight crew sets the MOBILE COM pb-sw ⏿ to OFF. Appears on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

Ident.: DSC-44-20-30-00023064.0001001 / 07 JUL 16

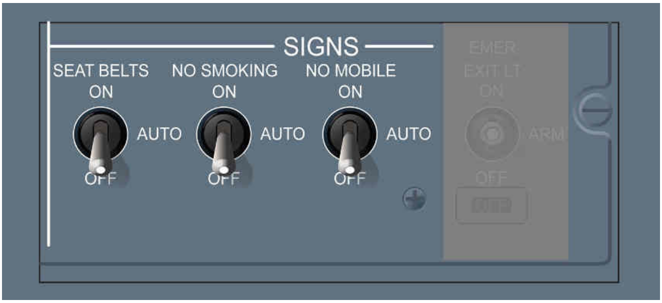
L12

VIDEO IN USE	May appear when the display of a pre-recorded airline video through the IFE is in progress (e.g. video PA announcement). The videos that trigger the display of this memo depend on the Operator customization. Appears on the WD.

SIGNS PANEL

Ident.: DSC-44-20-00023061.0001001 / 07 JUL 16
Applicable to: ALL

SIGNS Panel


SIGNS
SEAT BELTS
ON
AUTO
OFF
NO SMOKING
ON
AUTO
OFF
NO MOBILE
ON
AUTO
OFF
EMER
EXIT LT
ON
ARM
OFF
OFF

For more information about the SIGNS panel, *Refer to DSC-33-50-20 SIGNS Panel*.

VIDEO SD PAGE

Ident.: DSC-44-20-00023079.0001001 / 07 JUL 16
Applicable to: ALL

The VIDEO SD page can display live video images of the cabin via the following systems:
- The CDSS ◁
- The CVMS ◁ .

For more information about the VIDEO SD page, *Refer to DSC-31-CDS-110-20 VIDEO SD Page*.

AIRCRAFT SYSTEMS

46 - AIR TRAFFIC CONTROL DATALINK SYSTEM

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DSC-46-ATC-10 System Description

DSC-46-ATC-10-10 General

Overview........A
Architecture........B

DSC-46-ATC-10-20 Notification

Notification........A

DSC-46-ATC-10-30 Controller/Pilot Datalink Communication (CPDLC)

General........A
Connect........B
Max Uplink Delay........C
Request........D
Position Report........E
Modify........F
Other Reports........G
EMER........H

DSC-46-ATC-10-40 Message Record

Message Record........A

DSC-46-ATC-10-50 A623

General........A
Digital ATIS........B
Oceanic/Departure Request........C

DSC-46-ATC-10-60 Automatic Dependent Surveillance - Contract (ADS-C)

Automatic Dependent Surveillance - Contract (ADS-C)........A

DSC-46-ATC-10-70 Mailbox

General........A
Mailbox Capacity........B
Mailbox Colors........C

DSC-46-ATC-20 Controls and Indicators

DSC-46-ATC-20-10 Cockpit View

Cockpit View........A

DSC-46-ATC-20-70 ATC MSG pb

ATC MSG pb........A

DSC-46-ATC-20-90 Audio Indicators

Audio Indicators........A

Continued on the following page

Continued from the previous page

DSC-46-ATC-20-80 KCCU

KCCU........A

DSC-46-ATC-20-60 Mailbox

Mailbox........A

DSC-46-ATC-20-40 MFD - ATC COM Messages

ATC COM Messages Area........A

DSC-46-ATC-20-30 MFD - ATC COM Pages

DSC-46-ATC-20-30-10 Overview

Overview........A

DSC-46-ATC-20-30-20 CONNECT Page

CONNECT Page........A
CONNECT/MAX UPLINK DELAY Page........B

DSC-46-ATC-20-30-30 REQUEST Page

REQUEST Page........A

DSC-46-ATC-20-30-40 REPORT & MODIFY Page

REPORT & MODIFY Page........A
REPORT/AUTO & MANUAL POSITION Page........B
REPORT/OTHER REPORTS Page........C
REPORT/MODIFY Page........D

DSC-46-ATC-20-30-50 MSG RECORD Page

MSG RECORD Page........A
MSG RECORD/ALL MSG Page........B
MSG RECORD/MONITORED MSG Page........C

DSC-46-ATC-20-30-60 D-ATIS Page

D-ATIS Page........A

DSC-46-ATC-20-30-70 EMERGENCY Page

EMERGENCY Page........A

DSC-46-ATC-20-50 MFD - Data Entry Format

Data Entry Format........A

DSC-46-ATC-20-20 MFD - Overview

MFD Overview........A

Continued on the following page

Continued from the previous page

DSC-46-ATC-30 Abnormal Operations

Manual Time Setting....................A

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OVERVIEW

Ident.: DSC-46-ATC-10-10-00000436.0001001 / 08 NOV 18
Applicable to: ALL

The Air Traffic Control (ATC) Datalink system provides Communication, Navigation, and Surveillance for Air Traffic Management (CNS/ATM) services.
The ATC Datalink system has several applications that the flight crew uses to communicate with ATC centers. These applications enable air traffic controllers to follow the aircraft navigation, and enhance air traffic.

The ATC Datalink system provides:
- FANS A applications (FANS 1/A in ICAO designation) that use ACARS ground network, for operations in remote areas and in oceanic areas:
  - Notification
  - Controller/Pilot Data Link Communication (CPDLC)
  - Automatic Dependent Surveillance Contract (ADS-C).
- FANS B applications (ATN B1 in ICAO designation) that use ATN ground network, for operations in high-density continental areas:
  - Notification
  - CPDLC.
- ATS 623 applications (ACARS ATS in ICAO designation) that use ACARS ground network:
  - Departure Clearance (DCL)
  - Oceanic Clearance (OCL)
  - Digital ATIS (D-ATIS).

For the description of associated Performance-Based Communication and Surveillance (PBCS) concept and requirements, *Refer to PRO-SPO-PBCS General*.

COMMUNICATION AND NAVIGATION FOR AIR TRAFFIC MANAGEMENT

At the beginning of the flight, the flight crew sends a notification message to the ATC center, via the Notification application.

L2 For more information, *Refer to DSC-46-ATC-10-20 Notification*.

L1 An air traffic controller will then establish a connection between the aircraft and the ATC center. Then, the flight crew can exchange messages with the ATC center, via the mailbox. The messages that the flight crew sends to the ATC center can be built with preset frames and modified via the ATC COM page of the MFD.

Depending on the type of datalink exchange, one of the following applications supports the communication:
- Controller/Pilot DataLink Communication (CPDLC) application (*Refer to DSC-46-ATC-10-30 General*), or
- ARINC623 (A623) applications, for some specific types of requests (*Refer to DSC-46-ATC-10-50 General*).

The Message Record function records uplink (from-ground-to-air) and downlink (from-air-to-ground) messages that the flight crew and the air traffic controller exchange. The Message Record function also enables the flight crew to display any recorded messages.

L2 For more information, *Refer to DSC-46-ATC-10-40 Message Record*.

L1 NAVIGATION AND SURVEILLANCE FOR AIR TRAFFIC MANAGEMENT

The Automatic Dependent Surveillance (ADS) system sends aircraft position and aircraft navigation data to ATC centers and other aircraft.

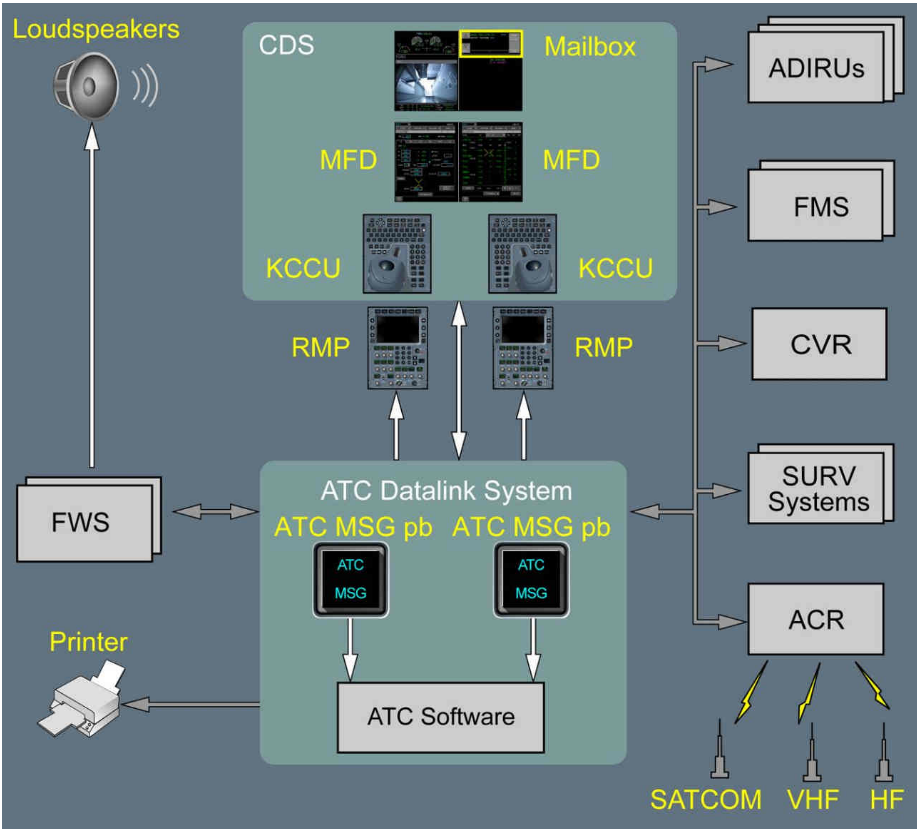
There are two different ADS applications:
- ADS-Contract (ADS-C)
  The ADS-C enables the flight crew to automatically send information, following an agreement with one or more ATC centers. The ADS-C can send information on a periodic basis, during a specific event (e.g. waypoint sequencing), or on demand.
- ADS-Broadcast (ADS-B)
  The ADS-B enables the broadcast of aircraft position and navigation data to other users (ATC centers or other aircraft) to enhance traffic awareness. The ATC Datalink system does not host the ADS-B.

ARCHITECTURE

Applicable to: ALL

Ident.: DSC-46-ATC-10-10-10-00000437.0001001 / 23 APR 14

Architecture of the ATC Datalink System


Loudspeakers
CDS
Mailbox
MFD
MFD
KCCU
KCCU
RMP
RMP
ADIRUs
FMS
CVR
SURV Systems
ACR
FWS
ATC Datalink System
ATC MSG pb
ATC MSG pb
ATC MSG
ATC MSG
ATC Software
Printer
SATCOM
VHF
HF

L3 CPIOM-J51 hosts the ATC Datalink system.

Ident.: DSC-46-ATC-10-10-10-00000438.0001001 / 23 APR 14

MULTIFUNCTION DISPLAY (MFD)

The MFD displays the ATC COM pages, where the flight crew can:
- Manage the ATC Datalink connections
- Request clearances

- Generate reports and modify downlink messages
- Consult and manage received messages
- Request and consult digital ATIS
- Generate emergency messages.

Ident.: DSC-46-ATC-10-10-10-00000439.0001001 / 23 APR 14

MAILBOX

The mailbox displays the messages that the flight crew and the air traffic controller exchange. The center upper display unit continuously displays the mailbox.

L2 *Note:* *ATIS messages appear on the MFD only.*

Ident.: DSC-46-ATC-10-10-10-00000440.0001001 / 23 APR 14

KEYBOARD AND CURSOR CONTROL UNIT (KCCU)

The two KCCUs enable the flight crew to interact with the ATC Datalink system (e.g. to type or select messages or requests).

Ident.: DSC-46-ATC-10-10-10-00000441.0001001 / 23 APR 14

PRINTER

The flight crew can print ATC messages from the MFD or the mailbox.

L12

Note: *Each time the flight crew prints a message, they must check that the printed message is identical to the message on the display unit.*
The reference information is the information that the display unit displays.

Ident.: DSC-46-ATC-10-10-10-00000442.0001001 / 23 APR 14

FMS

The ATC Datalink system interfaces with the three Flight Management Computers (FMCs).

The flight crew can:

- Directly load a route clearance or a route modification from the ATC to the secondary flight plan (SEC 3)
  L2 For more information, *Refer to DSC-22-FMS-10-40-60 Secondary Flight Plan Initialization*.
- L1 Generate a request message for a route clearance from the FMS secondary flight plan pages of the MFD
  L2 The flight crew can transfer the request message to the mailbox in order to send it.

L1 - Monitor a flight parameter in the FMS

L2 When the monitored parameter reaches a given value, the FMS displays a reminder to the flight crew (*Refer to DSC-46-ATC-20-70 ATC MSG pb*). Also, the ATC Datalink system prepares an answer in the mailbox. The flight crew can modify the message before it is transmitted to the ATC center. For more information, *Refer to DSC-46-ATC-10-30 Modify*.

L1 - Transmit the aircraft position and altitude information for ADS-C position reports and to answer uplink messages.

Ident.: DSC-46-ATC-10-10-10-00000443.0001001 / 23 APR 14

FWS

The FWS enables to:

- Activate the two ATC MSG pb, when the mailbox receives a message, or when a monitored parameter reaches a given value

L2 For more information, *Refer to DSC-46-ATC-20-70 ATC MSG pb*.

L1 - Trigger an audio indicator (ring), when the mailbox receives a message, or when a monitored condition is satisfied.

L2 For more information, *Refer to DSC-46-ATC-20-90 Audio Indicators*.

Ident.: DSC-46-ATC-10-10-10-00000444.0001001 / 07 JUL 16

AVIONICS COMMUNICATION ROUTER (ACR)

The ACR provides the aircraft with datalink communication. The ACR can use either satellite communication (SATCOM), or radio communication (VHF or HF) to operate.

L2 HF data mode ◁ is optional
For more information, *Refer to DSC-23-10-10 ACR*.

L1 For operations in remote and in oceanic areas (FANS A), the ATC Datalink system uses VHF, and SATCOM, as installed and in the order of priority that the aircraft operator defines.
For operations in high density continental areas (FANS B), the ATC Datalink system uses VHF only.

Ident.: DSC-46-ATC-10-10-10-00000446.0001001 / 23 APR 14

AIR DATA AND INERTIAL REFERENCE SYSTEM (ADIRS)

The ADIRS provides time and position data to the ATC Datalink system.

Ident.: DSC-46-ATC-10-10-10-00000447.0001001 / 09 MAR 16

SURVEILLANCE (SURV) SYSTEM

The ATC Datalink system interfaces with the SURV system and enables the flight crew to:

- Provide the ATC center with the TCAS status sent via the ADS applications
- Provide the ATC center with the SQUAWK code in answer to the CONFIRM SQUAWK uplink message
- Create ITP requests for aircraft equipped with ADS-B TRAFFIC ◁ .

Ident.: DSC-46-ATC-10-10-10-00000448.0001001 / 23 APR 14

COCKPIT VOICE RECORDER (CVR)

In addition to its voice recording function, the CVR records the data that the flight crew and the air traffic controller exchange.

Ident.: DSC-46-ATC-10-10-10-00000445.0001001 / 23 APR 14

RADIO MANAGEMENT PANEL (RMP)

Frequencies and telephone numbers that some messages contain, can be loaded into the RMP via the LOAD pb of the RMP.

NOTIFICATION

Ident.: DSC-46-ATC-10-20-00000449.0001001 / 04 DEC 14
Applicable to: ALL

The Notification application enables the flight crew to send a notification message to an ATC center. The ATC center is identified via its ICAO code.

L3 *Note: ATC centers initiate automatic notification when the aircraft flies from one ATC area to another.*

L1 In this notification message, the ATC Datalink system sends all necessary details to the ATC center (flight number, aircraft registration, etc.), in order to enable the ATC center to identify the aircraft, and establish a CPDLC connection between the aircraft and the ATC center.
As soon as an ATC center receives and accepts the notification message, this center is considered as notified.

Note: The notification message does not establish a CPDLC connection between the aircraft and the ATC center. However, the notification is a prerequisite to establish a connection with the ATC center.

The CONNECT page of the MFD:
- Enables the flight crew to enter the ICAO code of the ATC center they wish to notify
- Displays the ICAO code of the notified ATC center and the UTC time of notification, before the connection is established
- Displays the ICAO code of the connected ATC center.

L2 For more information, *Refer to DSC-46-ATC-20-30-20 CONNECT Page*.

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GENERAL

Ident.: DSC-46-ATC-10-30-00000451.0001001 / 23 APR 14
Applicable to: ALL

The CPDLC application enables the flight crew and the air traffic controller to communicate.

The CPDLC application supports the following functions:
- Connect (*Refer to DSC-46-ATC-10-30 Connect*)
- Max Uplink Delay (*Refer to DSC-46-ATC-10-30 Max Uplink Delay*)
- Request (*Refer to DSC-46-ATC-10-30 Request*)
- Position Report (*Refer to DSC-46-ATC-10-30 Position Report*)
- Modify Report (*Refer to DSC-46-ATC-10-30 Modify*)
- Other Reports (*Refer to DSC-46-ATC-10-30 Other Reports*)
- Emergency (*Refer to DSC-46-ATC-10-30 EMER*).

Note: *The air traffic controller initiates a CPDLC connection with the aircraft, after reception of the notification message from the flight crew.*

The flight crew and the air traffic controller use a set of predefined messages, also called frames, in order to build their messages. The flight crew and the air traffic controller can also send freetext messages.
The mailbox enables to receive uplink messages and send downlink messages.
L2 For more information about the mailbox, *Refer to DSC-46-ATC-10-70 General*.

L1 Note: *When the aircraft flies from one air traffic control area to another, the CPDLC ensures the automatic transfer of ATC centers.*

CONNECT

Ident.: DSC-46-ATC-10-30-00000452.0001001 / 23 APR 14
Applicable to: ALL

The notified ATC center can initiate a CPDLC connection with the aircraft. This ATC center is then considered as active. Only one ATC center can be active at a time.

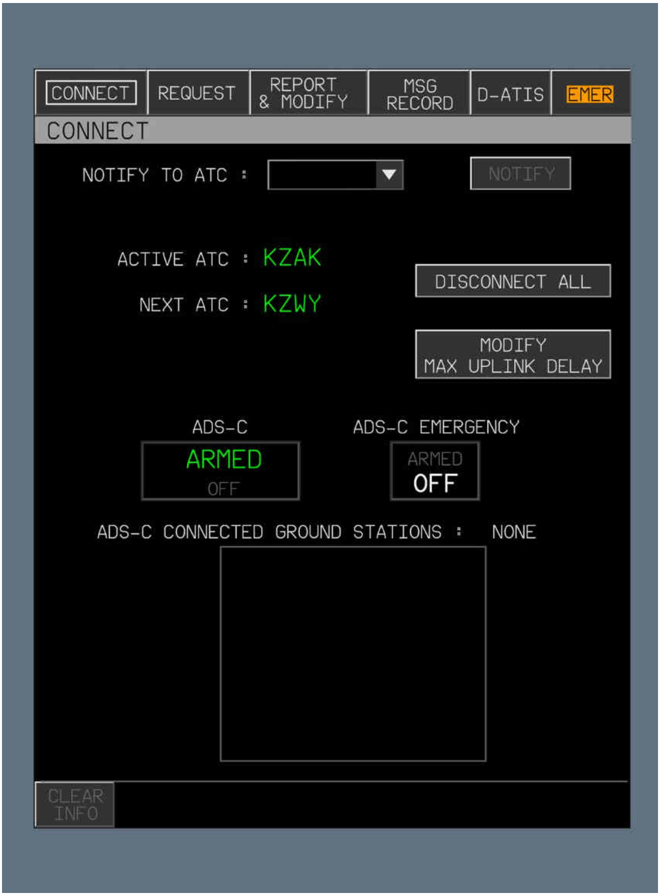
L2 Note: *With FANS B, any ATC center can initiate a CPDLC connection, even if the flight crew did not notify the ATC center.*

L1 During flight, the aircraft may move from one ATC area to another. In order to anticipate this change of ATC area, the next ATC center may initiate a passive connection with the aircraft. In this case, the next ATC center appears in the NEXT ATC field of the CONNECT page.
When the ATC area change occurs, the active ATC center ends its connection with the aircraft, and the next ATC center automatically becomes the active ATC center.

The CONNECT page of the MFD displays the ICAO codes of both the active and the next (if any) ATC centers. The flight crew can also manually disconnect the active and the next ATC centers via the CONNECT page.

L2 For more information, *Refer to DSC-46-ATC-20-30-20 CONNECT Page*.

CONNECT Page


CONNECT
REQUEST
REPORT & MODIFY
MSG RECORD
D-ATIS
EMER
CONNECT
NOTIFY TO ATC :
NOTIFY
DISCONNECT ALL
MODIFY MAX UPLINK DELAY
ADS-C
ARMED
OFF
ADS-C EMERGENCY
ARMED
OFF
CLEAR INFO

ACTIVE ATC : KZAK

NEXT ATC : KZWY

ADS-C CONNECTED GROUND STATIONS : NONE

MAX UPLINK DELAY

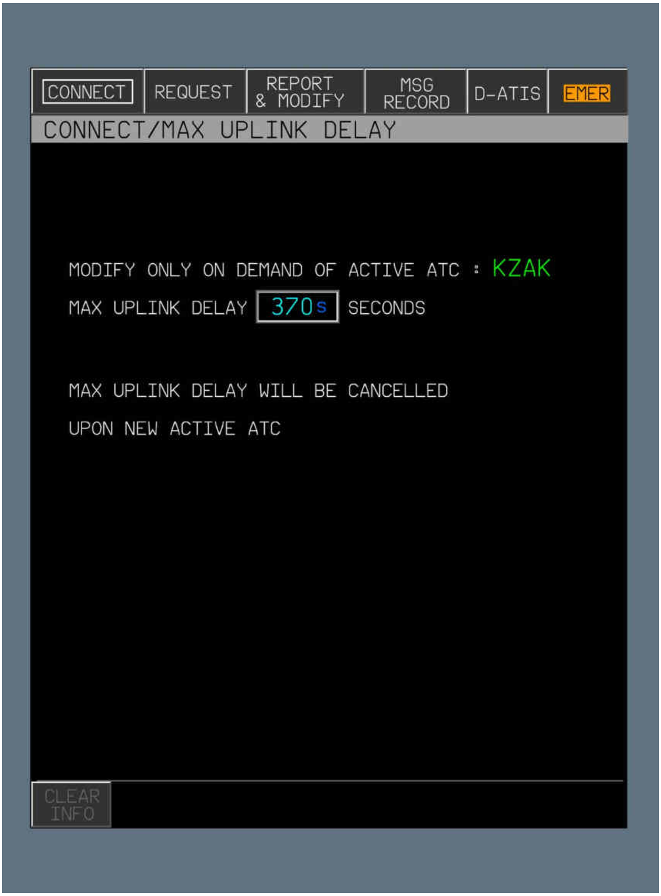
Ident.: DSC-46-ATC-10-30-00000453.0001001 / 06 NOV 14
Applicable to: ALL

The MAX UPLINK DELAY function enables the ATC Datalink system to reject (without notice to the flight crew) any CPDLC uplink message if the delay between ground emission and onboard reception exceeds the time specified in the MAX UPLINK DELAY field of the CONNECT page.
The air traffic controller defines the value of the MAX UPLINK DELAY. The ground system can automatically uplink the value of the delay in a specific freetext message.
On ATC request, the flight crew must modify the maximum uplink delay value via the CONNECT/MAX UPLINK DELAY page.

CAUTION	Do not enter any value in the MAX UPLINK DELAY entry field unless requested by the air traffic controller.

The flight crew can access the CONNECT/MAX UPLINK DELAY page via the CONNECT page.
L2 For more information, *Refer to DSC-46-ATC-20-30-20 CONNECT/MAX UPLINK DELAY Page*.

MAX UPLINK DELAY Page


CONNECT
REQUEST
REPORT & MODIFY
MSG RECORD
D-ATIS
EMER
CONNECT/MAX UPLINK DELAY
CLEAR INFO

MODIFY ONLY ON DEMAND OF ACTIVE ATC : KZAK

MAX UPLINK DELAY 370s SECONDS

MAX UPLINK DELAY WILL BE CANCELLED

UPON NEW ACTIVE ATC

REQUEST

Ident.: DSC-46-ATC-10-30-00000455.0001001 / 15 JUL 14
Applicable to: ALL

The flight crew prepares a request via the REQUEST page of the MFD.

In the REQUEST page, the flight crew can:
- Use predefined frames to create a message
- Delete a selected frame from a message

- Insert a reason in the message, with the use of a predefined frame or freetext, as required
- Transfer the created message to the mailbox, before sending it to the ATC center
- Cancel and delete a created message.

The message can contain up to 5 different frames. However, some combinations cannot be done. For example, a climb request and a descent request cannot be inserted in the same message.

L3 Some requests have only one frame:

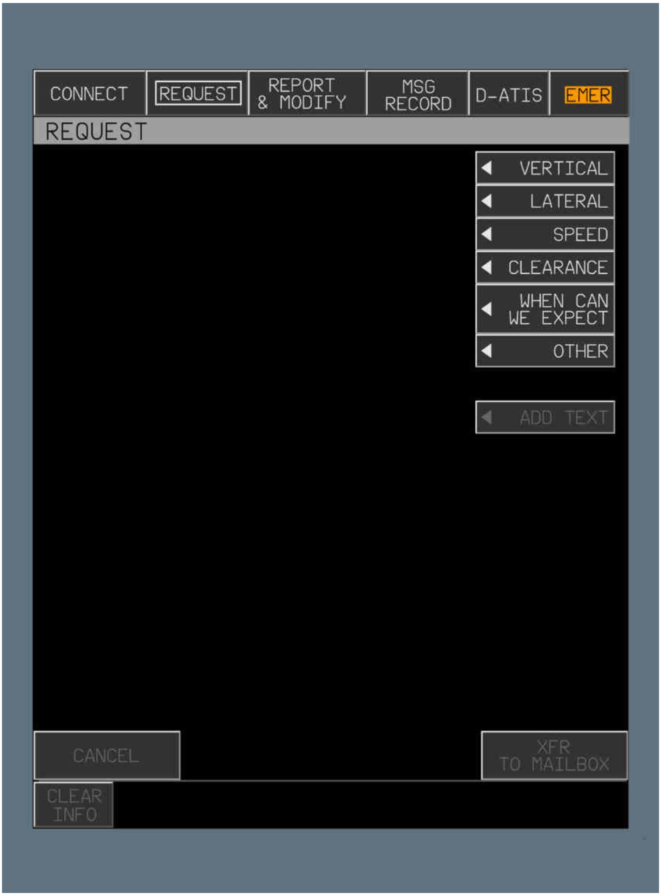
- Departure clearance
- Oceanic clearance.

Note: *When a departure clearance or an oceanic clearance frame is selected, and if other frames were previously selected, the former ones are lost.*

L1 Requests are part of the CPDLC application, except for departure and oceanic clearances that are part of the A623 application.

L2 For more information, *Refer to DSC-46-ATC-20-30-30 REQUEST Page*.

REQUEST Page


CONNECT
REQUEST
REPORT & MODIFY
MSG RECORD
D-ATIS
EMER
REQUEST
VERTICAL
LATERAL
SPEED
CLEARANCE
WHEN CAN WE EXPECT
OTHER
ADD TEXT
CANCEL
XFR TO MAILBOX
CLEAR INFO

POSITION REPORT

Ident.: DSC-46-ATC-10-30-00000457.0001001 / 23 APR 14
Applicable to: ALL

The POSITION REPORT function provides the ATC center with information about the aircraft position (past, present, and future position) and trends (climb, descent, heading, track, speed, etc.).

Position reports can be generated:

- Automatically, each time a waypoint is sequenced
  This function is active when the AUTO POSITION REPORT button in the REPORT/AUTO & MANUAL POSITION page of the MFD is set to ON.
- Automatically, following a request of the active ATC center (through a dedicated uplink message)
- Manually by the flight crew, with the REPORT/AUTO & MANUAL POSITION page of the MFD.

L2 Automatic position reports are available, when:

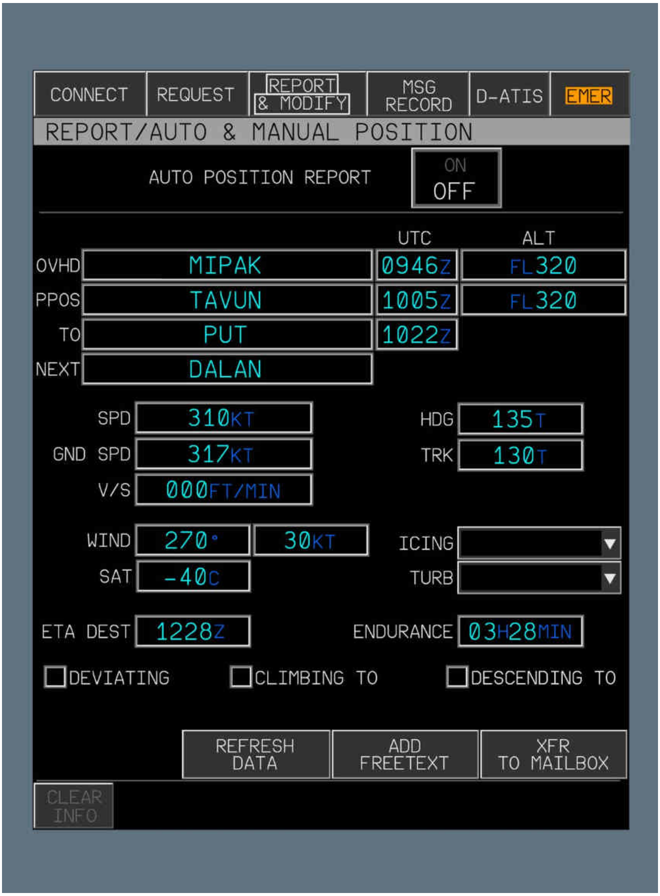
- There is an active ATC center
- The communication between the FMS and the ATC Datalink system is available.

L1 When a position report is automatically generated, it appears in the mailbox. The flight crew can either view and modify the report (on the MFD), or send the report to the ATC center.

L2 *Note:* *The POSITION REPORT function is not available with FANS B.*

For more information, *Refer to DSC-46-ATC-20-30-40 REPORT/AUTO & MANUAL POSITION Page*.

REPORT/AUTO & MANUAL POSITION Page


CONNECT
REQUEST
REPORT & MODIFY
MSG RECORD
D-ATIS
EMER
REPORT/AUTO & MANUAL POSITION
ON
REFRESH DATA
ADD FREETEXT
XFR TO MAILBOX
CLEAR INFO

AUTO POSITION REPORT: OFF

		UTC	ALT
OVHD	MIPAK	0946Z	FL320
PPOS	TAVUN	1005Z	FL320
TO	PUT	1022Z	
NEXT	DALAN		

SPD: 310KT
GND SPD: 317KT
V/S: 000FT/MIN
HDG: 135T
TRK: 130T
WIND: 270° 30KT
SAT: -40C
ICING: ▼
TURB: ▼
ETA DEST: 1228Z
ENDURANCE: 03H28MIN

☐ DEVIATING ☐ CLIMBING TO ☐ DESCENDING TO

MODIFY

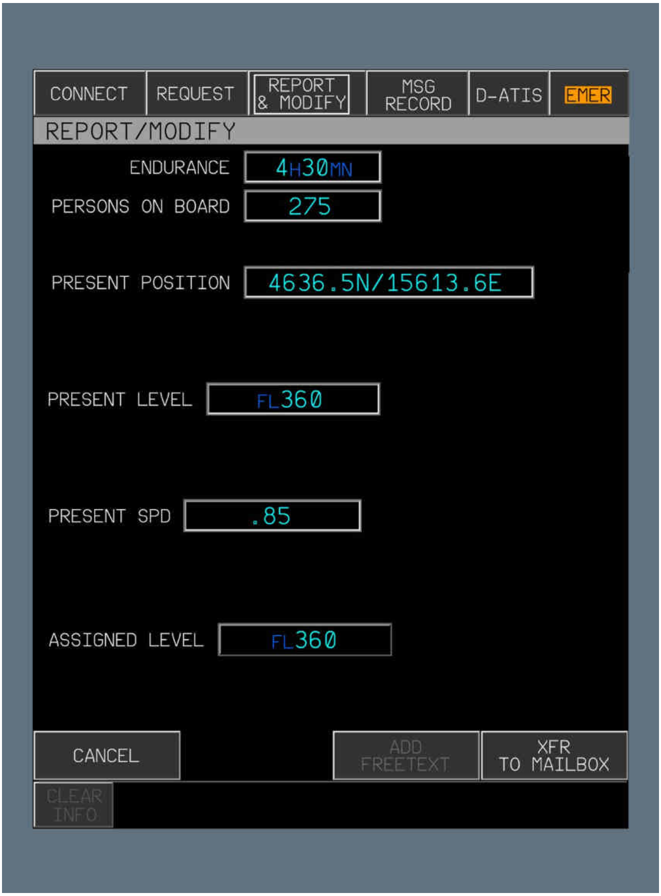
Ident.: DSC-46-ATC-10-30-00000459.0001001 / 23 APR 14
Applicable to: ALL

The MODIFY function enables the flight crew to modify automatic replies that the CPDLC generates, according to specific requests from the air traffic controller.

The CPDLC can generate automatic replies to:
- Confirm requests, or
- Report requests, or
- Open negotiation requests, or
- A combination of the above requests.

The flight crew can modify the reply on the MFD before they send it to the ATC center.
When the flight crew decides to modify a reply, the REPORT/MODIFY page of the MFD displays only the frames that the flight crew can modify.
L3 The flight crew can modify up to 5 frames at a given time.
L1 When the flight crew opens the REPORT/MODIFY page for the first time, all modifiable frames are automatically updated with data from the FMS, as applicable.
All fields are mandatory, except fields with a tick box. These fields are only mandatory when the tick box is ticked.
The flight crew can add a freetext message to the reply, provided that the maximum number of frames in the reply is not reached.
At the end of the modification, the flight crew must click on the XFR TO MAILBOX button in order to transfer the message to the mailbox.
L2 For more information, *Refer to DSC-46-ATC-20-30-40 REPORT/MODIFY Page*.

REPORT/MODIFY Page


CONNECT
REQUEST
REPORT & MODIFY
MSG RECORD
D-ATIS
EMER
REPORT/MODIFY
CANCEL
ADD FREETEXT
XFR TO MAILBOX
CLEAR INFO

ENDURANCE 4H30MN
PERSONS ON BOARD 275
PRESENT POSITION 4636.5N/15613.6E
PRESENT LEVEL FL360
PRESENT SPD .85
ASSIGNED LEVEL FL360

OTHER REPORTS

Ident.: DSC-46-ATC-10-30-00000461.0001001 / 06 NOV 14
Applicable to: ALL

The air traffic controller may ask the flight crew to report later in flight (e.g. when the aircraft reaches a given altitude, flies overhead a given waypoint, or when back on route).

The FMS Monitoring function allows the monitoring of specific parameters (e.g. a waypoint, or an altitude). This monitoring function allows the ATC Datalink system to automatically generate a downlink message (in the mailbox) when the monitored parameter satisfies the condition.

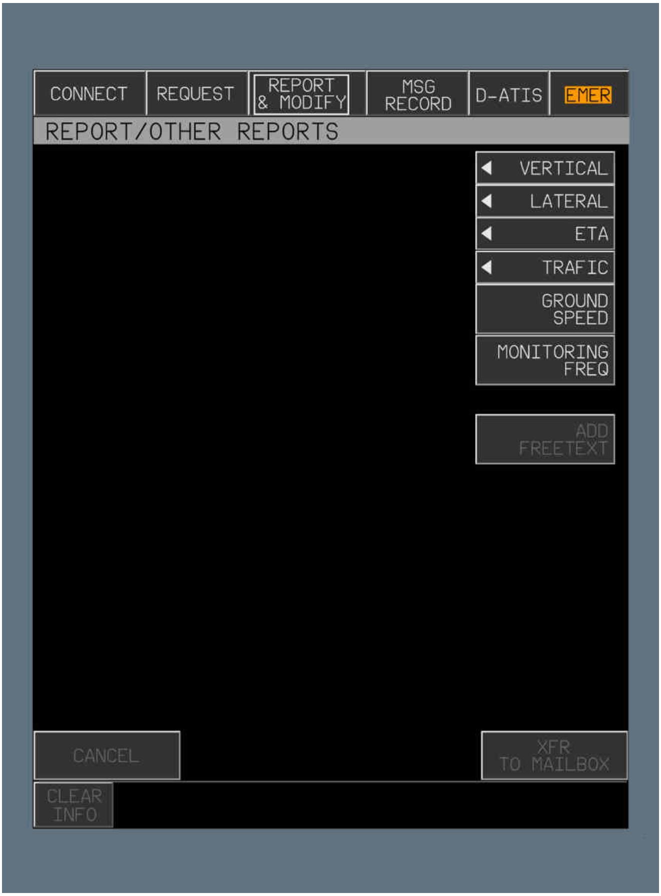
Note: The FMS cannot monitor the back-on-route situation.

However, the flight crew can also create their own report message in order to inform the ATC about the situation of the aircraft, with the use of the REPORT/OTHER REPORTS page of the MFD.

The REPORT/OTHER REPORTS page enables the flight crew to:
- Use predefined frames to create a report message
  The availability of the predefined frames depends on the active CPDLC connection.
- Add freetext to the report message
- Transfer the report message to the mailbox.

L2 For more information, *Refer to DSC-46-ATC-20-30-40 REPORT/OTHER REPORTS Page*.

REPORT/OTHER REPORTS Page


CONNECT
REQUEST
REPORT & MODIFY
MSG RECORD
D-ATIS
EMER
REPORT/OTHER REPORTS
VERTICAL
LATERAL
ETA
TRAFIC
GROUND SPEED
MONITORING FREQ
ADD FREETEXT
CANCEL
XFR TO MAILBOX
CLEAR INFO

EMER

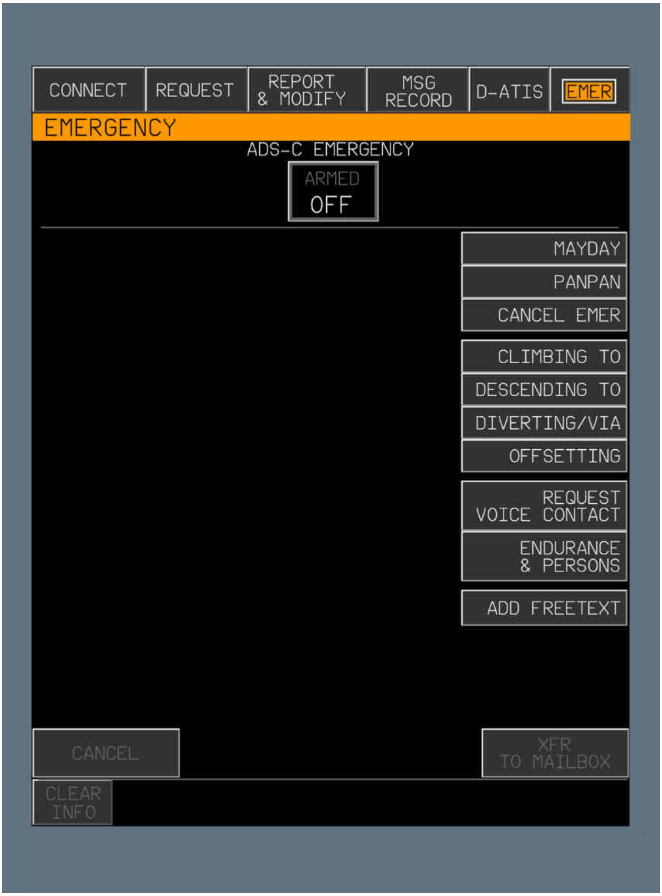
Ident.: DSC-46-ATC-10-30-00000463.0001001 / 23 APR 14
Applicable to: ALL

The EMERGENCY page enables the flight crew to activate the ADS-C Emergency and to create emergency messages.

Note: *The selection of the EMERGENCY page of the MFD does not activate the emergency situation. The flight crew must click the ADS-C EMERGENCY button or send a Mayday message to activate the emergency situation.*

L2 For more information, *Refer to DSC-46-ATC-20-30-70 EMERGENCY Page*.

EMERGENCY Page


CONNECT
REQUEST
REPORT & MODIFY
MSG RECORD
D-ATIS
EMER
EMERGENCY
ADS-C EMERGENCY
ARMED
OFF
MAYDAY
PANPAN
CANCEL EMER
CLIMBING TO
DESCENDING TO
DIVERTING/VIA
OFFSETTING
REQUEST VOICE CONTACT
ENDURANCE & PERSONS
ADD FREETEXT
CANCEL
XFR TO MAILBOX
CLEAR INFO

Intentionally left blank

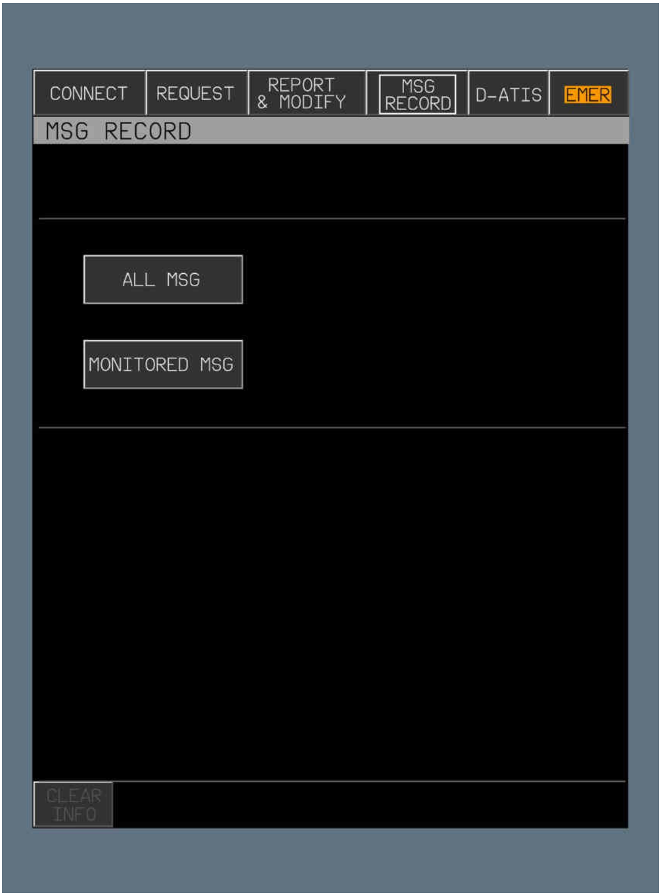
MESSAGE RECORD

Ident.: DSC-46-ATC-10-40-00000466.0001001 / 23 APR 14
Applicable to: ALL

The Message Record application stores messages exchanged between the aircraft and the ATC center. The Message Record application enables the flight crew to display the recorded messages at any time.
When the flight crew closes a message displayed in the mailbox, the message is stored and disappears from the mailbox.
The flight crew can access the stored messages via the MSG RECORD page of the MFD.

Note:
1. *The D-ATIS messages are stored and can be displayed on the D-ATIS/RECEIVED page (Refer to DSC-46-ATC-10-50 Digital ATIS).*
2. *The ADS-C reports are not stored.*
3. *The downlink messages that the flight crew did not send are not stored.*
4. *The flight crew can erase the recorded messages (Refer to DSC-46-ATC-20-30-50 ERASE ALL Button).*

MSG RECORD Page


CONNECT
REQUEST
REPORT & MODIFY
MSG RECORD
D-ATIS
EMER
MSG RECORD
ALL MSG
MONITORED MSG
CLEAR INFO

On the MSG RECORD page, the flight crew can choose to display:
- All the messages via the MSG RECORD/ALL MSG page, or
- Only the messages that the FMS monitors, via the MSG RECORD/MONITORED MSG page.

The Message Record application stores the messages in chronological order, and grouped by flight number.

L2 *Note:* 1. *When the number of stored messages reaches 99, the oldest message is deleted when a new message is stored.*
2. *If the auto-deletion function is activated, all stored messages are erased when the flight crew enters a new valid flight number on ground.*

For more information, *Refer to DSC-46-ATC-20-30-50 MSG RECORD Page*.

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GENERAL

Ident.: DSC-46-ATC-10-50-00000469.0001001 / 23 APR 14
Applicable to: ALL

The A623 application supports the following functions:
- Digital ATIS (*Refer to DSC-46-ATC-10-50 Digital ATIS*)
- Departure and Oceanic Clearance Requests (*Refer to DSC-46-ATC-10-50 Oceanic/Departure Request*).

Note: Contrary to the CPDLC application, A623 exchanges do not require previous notification.

DIGITAL ATIS

Ident.: DSC-46-ATC-10-50-00000470.0001001 / 08 NOV 16
Applicable to: ALL

The Digital Automatic Terminal Information Services (D-ATIS) enables the flight crew to request information about airports.

Note: D-ATIS is not available on all airports. Terminal charts usually indicate when this service is available.

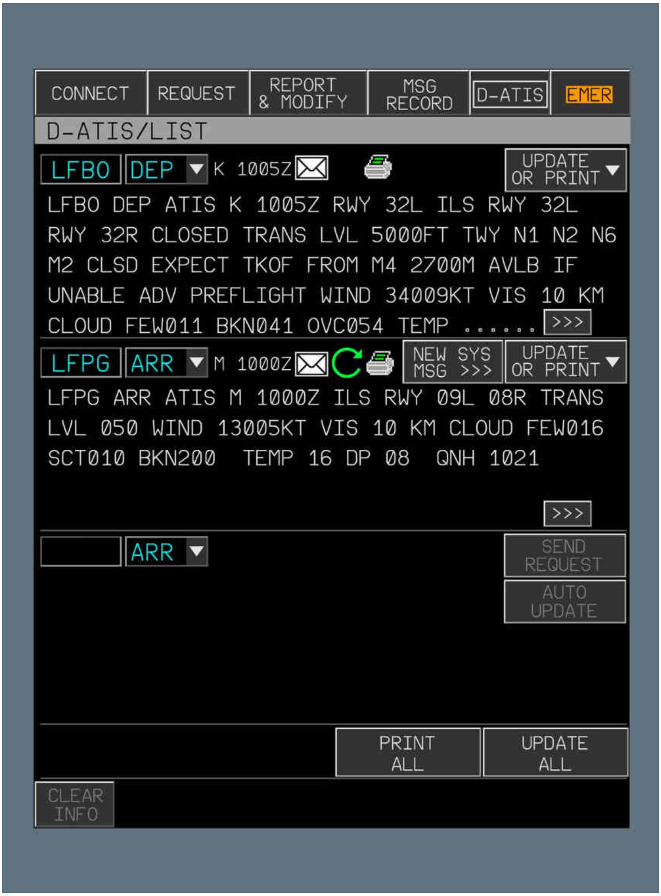
The flight crew can request information for departure, destination, and alternate airports via the D-ATIS/LIST page of the MFD.

The flight crew can receive ATIS reports:
- Manually, when they click on the SEND REQUEST button of the D-ATIS/LIST page
  The flight crew then clicks on the UPDATE button to manually update the ATIS information.
- Automatically, when they select the AUTO UPDATE option on the D-ATIS/LIST page.

  Note: The AUTO UPDATE function is not available for departure airport.

The flight crew can read ATIS messages on:
- The D-ATIS/LIST page (*Refer to DSC-46-ATC-20-30-60 D-ATIS/LIST Page*)
- The D-ATIS/RECEIVED page, for the two most recently received messages (*Refer to DSC-46-ATC-20-30-60 Message Area*)
- The printer.
  When the automatic print function is selected, the response is directly sent to the printer.

D-ATIS/LIST Page


CONNECT
REQUEST
REPORT & MODIFY
MSG RECORD
D-ATIS
EMER
D-ATIS/LIST
UPDATE OR PRINT
>>>
NEW SYS MSG >>>
UPDATE OR PRINT
>>>
SEND REQUEST
AUTO UPDATE
PRINT ALL
UPDATE ALL
CLEAR INFO

```
LFBO DEP K 1005Z
LFBO DEP ATIS K 1005Z RWY 32L ILS RWY 32L
RWY 32R CLOSED TRANS LVL 5000FT TWY N1 N2 N6
M2 CLSD EXPECT TKOF FROM M4 2700M AVLB IF
UNABLE ADV PREFLIGHT WIND 34009KT VIS 10 KM
CLOUD FEW011 BKN041 OVC054 TEMP ......

LFPG ARR M 1000Z
LFPG ARR ATIS M 1000Z ILS RWY 09L 08R TRANS
LVL 050 WIND 13005KT VIS 10 KM CLOUD FEW016
SCT010 BKN200  TEMP 16 DP 08  QNH 1021

ARR
```

L2 For more information, *Refer to DSC-46-ATC-20-30-60 D-ATIS/LIST Page*.

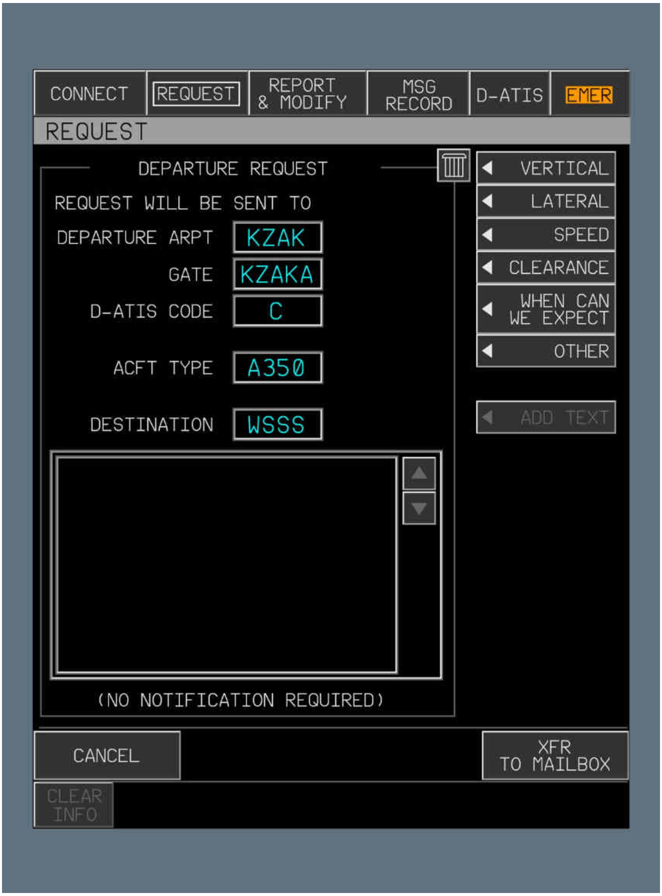
OCEANIC/DEPARTURE REQUEST

Ident.: DSC-46-ATC-10-50-00000471.0001001 / 23 APR 14
Applicable to: ALL

The Oceanic/Departure Clearance applications enable the flight crew to request and obtain an oceanic or a departure clearance.

The air traffic controller can also send an oceanic or a departure clearance without an initial request from the flight crew.

Departure Clearance


CONNECT
REQUEST
REPORT & MODIFY
MSG RECORD
D-ATIS
EMER
VERTICAL
LATERAL
SPEED
CLEARANCE
WHEN CAN WE EXPECT
OTHER
ADD TEXT
CANCEL
XFR TO MAILBOX
CLEAR INFO

REQUEST

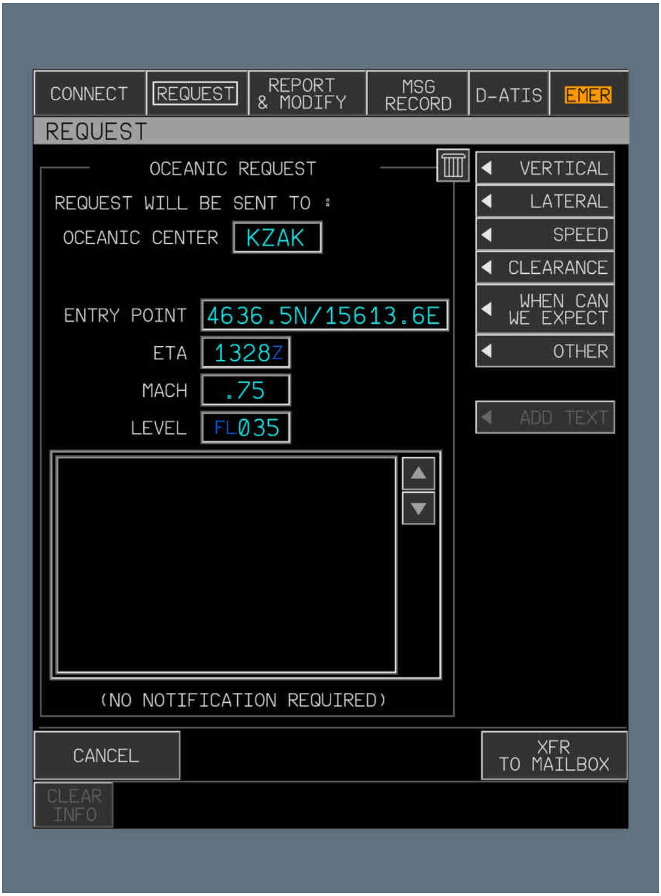
DEPARTURE REQUEST

REQUEST WILL BE SENT TO

DEPARTURE ARPT KZAK
GATE KZAKA
D-ATIS CODE C
ACFT TYPE A350
DESTINATION WSSS

(NO NOTIFICATION REQUIRED)

Oceanic Clearance


CONNECT
REQUEST
REPORT & MODIFY
MSG RECORD
D-ATIS
EMER
VERTICAL
LATERAL
SPEED
CLEARANCE
WHEN CAN WE EXPECT
OTHER
ADD TEXT
CANCEL
XFR TO MAILBOX
CLEAR INFO

REQUEST

OCEANIC REQUEST

REQUEST WILL BE SENT TO :

OCEANIC CENTER KZAK

ENTRY POINT 4636.5N/15613.6E

ETA 1328Z

MACH .75

LEVEL FL035

(NO NOTIFICATION REQUIRED)

L2 For more information, *Refer to DSC-46-ATC-20-30-30 REQUEST Page*.

AUTOMATIC DEPENDENT SURVEILLANCE - CONTRACT (ADS-C)

Ident.: DSC-46-ATC-10-60-00000475.0001001 / 06 NOV 14
Applicable to: ALL

The Automatic Dependent Surveillance - Contract (ADS-C) application provides information reports, without any flight crew action, to one or more ATC centers or AOC centers.
The reports include data like the aircraft position, speed, or the onboard equipment (e.g. TCAS, RNAV capability, RVSM capability).

There are three different types of reports:
- Periodical
- On ATC center request
- On event, through the monitoring of an aircraft parameter (e.g. waypoint sequencing).

The ATC or AOC center can only initiate the ADS-C connection, when the ADS-C status of the aircraft is either “ARMED” or “CONNECTED”.

When at least one ATC or AOC center is connected to the ADS-C:
- The CONNECT page of the MFD indicates the connection status of the ADS-C, and provides a list of all ADS-C connected centers
- The mailbox indicates the number of ADS-C connected centers on the default screen.

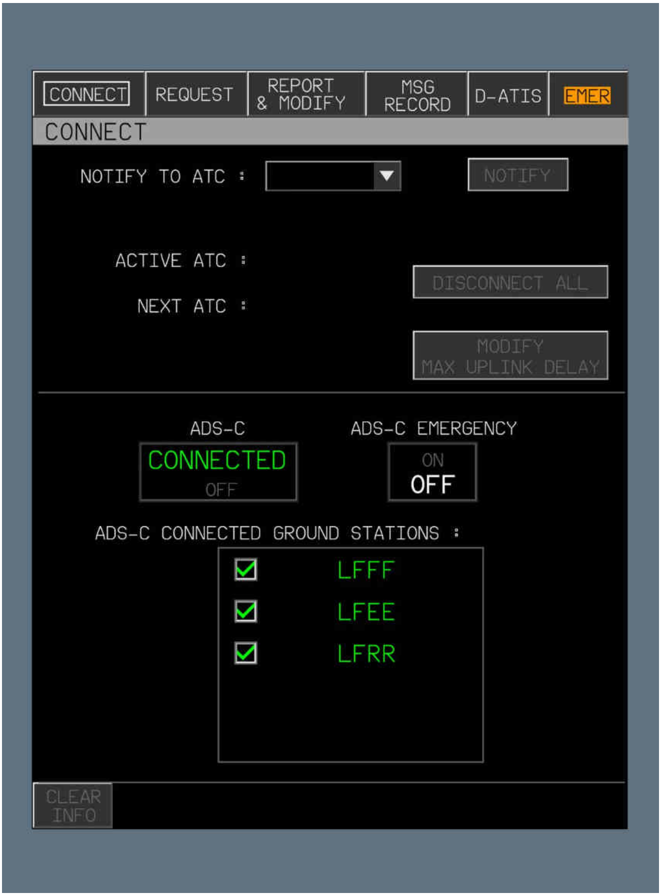
A maximum of 5 ATC or AOC centers can be connected to the aircraft at the same time. The flight crew can disconnect one or all ATC or AOC centers. A disconnected center is no longer displayed in the list.
The ADS-C also enables the flight crew to report an emergency situation to the connected ATC or AOC centers, via the EMERGENCY page of the MFD.

L2 For more information, *Refer to DSC-46-ATC-20-30-70 EMERGENCY Page*.

L1 *Note: The ADS-C application does not require any notification, and does not need an active ATC center before any ADS-C reporting.*

L2 For more information, *Refer to DSC-46-ATC-20-30-20 CONNECT Page*.

ADS-C Connected


CONNECT
REQUEST
REPORT & MODIFY
MSG RECORD
D-ATIS
EMER
CONNECT
NOTIFY TO ATC :
NOTIFY
ACTIVE ATC :
NEXT ATC :
DISCONNECT ALL
MODIFY MAX UPLINK DELAY
ON
OFF
CLEAR INFO

ADS-C: CONNECTED

ADS-C EMERGENCY: OFF

ADS-C CONNECTED GROUND STATIONS :
☑ LFFF
☑ LFEE
☑ LFRR

GENERAL

Applicable to: ALL

Ident.: DSC-46-ATC-10-70-10-00000478.0001001 / 04 DEC 14

The ATC mailbox is the dialog interface between the flight crew and the ATC center. Via the mailbox, the flight crew sends downlink messages and receives uplink messages.

There are 10 categories of uplink messages:
- Standard clearances
- Loadable clearances
- Deferred clearances
- A623 oceanic/departure clearances
- Information messages
- Report messages
- Confirm messages
- Negotiation messages
- Open negotiation messages
- No answer messages.

Note: *These categories include the associated answer processing.*
ATIS messages are only available on the D-ATIS page of the MFD (Refer to DSC-46-ATC-20-30-60 D-ATIS/LIST Page).

There are 5 categories of downlink messages:
- Request messages
- Position report messages
- Text messages
- Emergency messages
- Answer messages to ATC requests.

The mailbox can also display system messages. These messages provide information about the current status of the ATC Datalink System.

L2 For more information about these messages, *Refer to DSC-46-ATC-20-60 System Messages*.

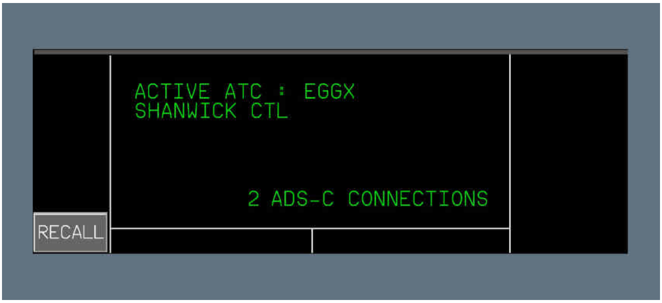
L1 In normal configuration, the mailbox is continuously displayed above the Warning Display on the center upper display unit.

Note: *If the mailbox is not displayed (for example, when a display unit fault occurs), the flight crew will not be informed of an incoming message.*
In this case, the flight crew can use the DISPLAY CYCLE pb to display the mailbox on another display unit, or revert to voice communication.

MAILBOX DISPLAY

When the mailbox does not display any message, a default screen appears and indicates:
- The name of the connected ATC center, when a datalink connection is active
- The name of the NEXT ATC center, if any
- The number of ADS-C active connections, when at least one ADS-C center is connected
- The ADS-C status, when the ADS-C is set to OFF
- The ADS-C EMERGENCY status, when the ADS-C EMERGENCY is activated
- The number of monitored messages, if any.

Mailbox Default Screen



ACTIVE ATC : EGGX
SHANWICK CTL

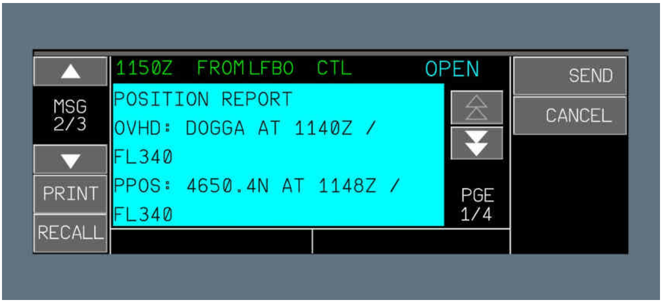
2 ADS-C CONNECTIONS

The messages are sorted in chronological order. However, urgent messages are displayed immediately.

Other messages are:
- Immediately displayed when there is no other message
- Displayed if the flight crew select them.

Note: *The air traffic controller assigns the level of urgency of the message.*

Sample Mailbox display



```
1150Z  FROM LFBO  CTL        OPEN
POSITION REPORT
OVHD: DOGGA AT 1140Z /
FL340
PPOS: 4650.4N AT 1148Z /
FL340
```

L2 For more information, *Refer to DSC-46-ATC-20-60 Mailbox*.

MAILBOX CAPACITY

Ident.: DSC-46-ATC-10-70-00000479.0001001 / 23 APR 14
Applicable to: ALL

The total capacity of the mailbox is 50 messages.

The mailbox capacity is divided as follows:
- 20 messages for CPDLC:
  - 5 uplink messages that are not answered
    If another message is received, it cannot be inserted in the mailbox, and an automatic downlink message will warn the ATC center that the message is removed because the mailbox maximum capacity is reached.
  - 5 created messages to be sent
    When this limit is reached, the flight crew is no longer able to transfer any new message they created from the MFD to the mailbox.
  - 10 messages not included in the above two categories (for example, messages that the flight crew has not yet closed)
    If an 11th message is added to the mailbox, the oldest one is closed and stored in the MSG RECORD page of the MFD.
- 20 messages for A623 with the same allocation as for CPDLC
- 10 system messages.

MAILBOX COLORS

Ident.: DSC-46-ATC-10-70-00000482.0001001 / 06 MAR 15
Applicable to: ALL

Uplink messages are displayed on a black background, and:

- When received, the message appears in white and the main parameters in blue
- When answered, the message becomes green
- When monitored, a parameter appears in magenta
  If the monitoring fails, this parameter becomes amber.
  When the value is attained, this parameter becomes green.
- If the loading of a clearance in SEC3 failed, the parameters appear in amber.

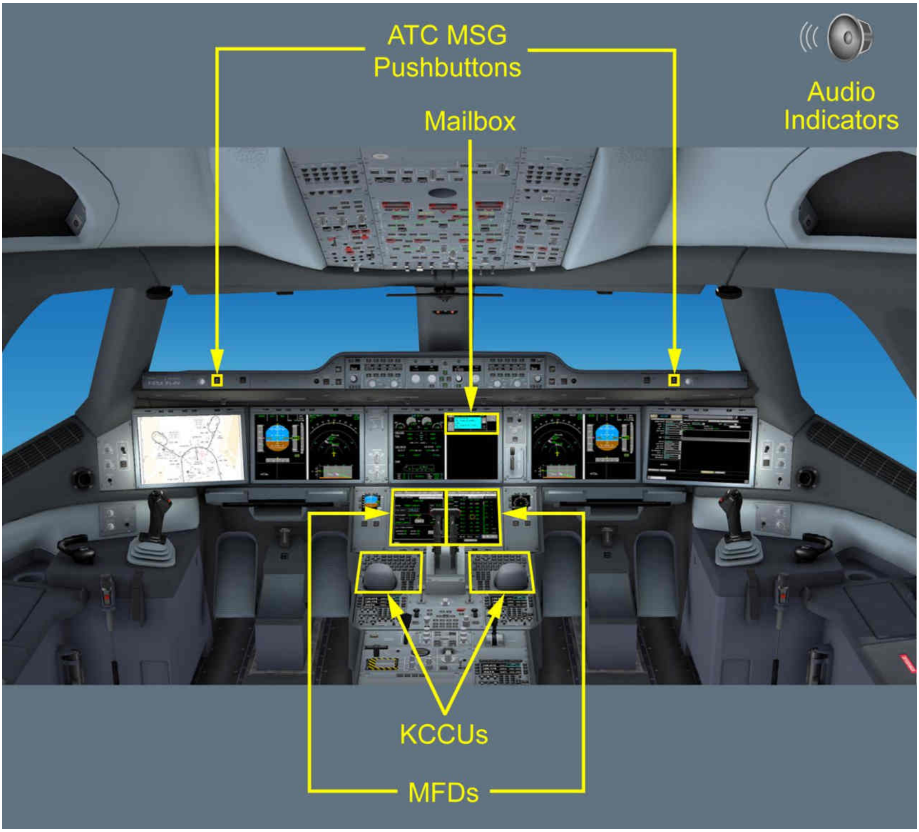
Downlink messages appear in black:

- On a blue background before they are sent
- On a green background while and after they are sent.

COCKPIT VIEW

Ident.: DSC-46-ATC-20-10-00000483.0001001 / 23 APR 14
Applicable to: ALL

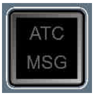
Cockpit View


ATC MSG
Pushbuttons
Mailbox
Audio
Indicators
KCCUs
MFDs

Intentionally left blank

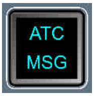
ATC MSG PB

Ident.: DSC-46-ATC-20-70-00000950.0001001 / 23 APR 14
Applicable to: ALL



No message from the ATC center was received.

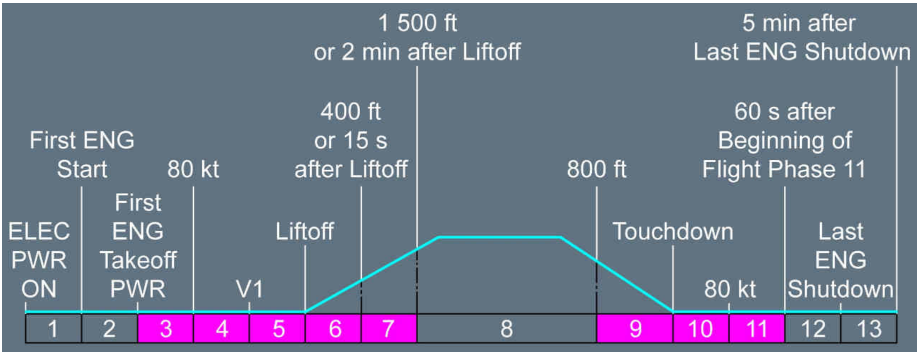
L12



Flashes when a message from the ATC center is received, or a reminder message is automatically displayed in the mailbox. The reminder message is linked to a deferred clearance or a report request (monitored conditions).
Also flashes in the case of a system message.
Associated with a RING audio indicator.
When the flight crew presses one of the two pushbuttons, the ATC MSG lights go off and the audio indicator is canceled.
For more information, *Refer to DSC-46-ATC-20-90 Audio Indicators*.

L2 The ATC MSG pb lighting and the aural alert are inhibited as follows:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
2
3
4
5
6
7
8
9
10
11
12
13

If the aircraft receives a message during the inhibition period, the ATC center is automatically warned of the uplink message rejection.

Intentionally left blank

AUDIO INDICATORS

Ident.: DSC-46-ATC-20-90-00018285.0001001 / 23 APR 14
Applicable to: ALL

Audio Indicators	Condition	Duration
Ring (Sound)	A message is received in the mailbox, or a monitored condition is satisfied.	Sounds: - Immediately and is repeated every 5 s in case of an urgent message (1), or - After 10 s and is repeated every 10 s in case of a normal message (1). Stops when the flight crew: - Presses one of the two ATC MSG pb, or - Uses the KCCU to manage the message in the mailbox (e.g. when the flight crew writes an answer or prints the message).

(1) *The air traffic controller can assign two levels of alerts depending on the urgency of the message.*

Intentionally left blank

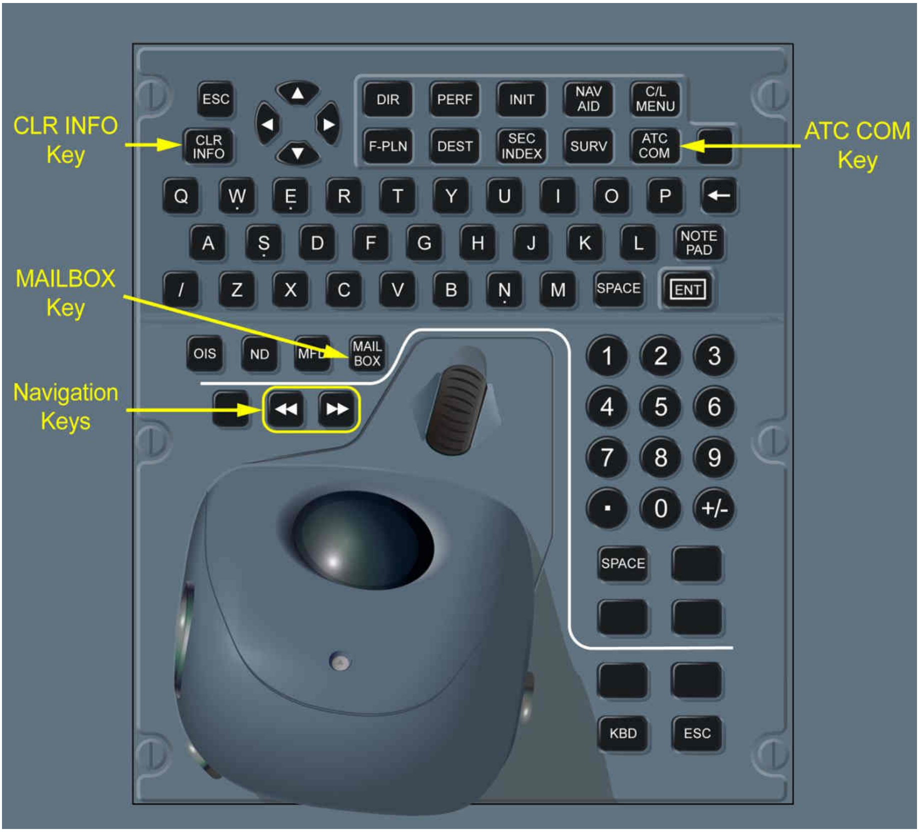
KCCU

Applicable to: ALL

Ident.: DSC-46-ATC-20-80-10-00000951.0001001 / 23 APR 14

There are two KCCUs on the center pedestal. There is one for the Captain and one for the First Officer.
For information about all KCCU controls, *Refer to DSC-31-CDS-100-20 Overview*.

KCCU


CLR INFO Key
ATC COM Key
MAILBOX Key
Navigation Keys
ESC
CLR INFO
DIR
PERF
INIT
NAV AID
C/L MENU
F-PLN
DEST
SEC INDEX
SURV
ATC COM
Q W E R T Y U I O P
A S D F G H J K L
NOTE PAD
/ Z X C V B N M
SPACE
ENT
OIS
ND
MFD
MAIL BOX
1 2 3 4 5 6 7 8 9 . 0 +/-
SPACE
KBD
ESC

Ident.: DSC-46-ATC-20-80-10-00000952.0001001 / 23 APR 14

ATC COM KEY

When pressed, moves the cursor to the ATC COM page of the MFD.

Ident.: DSC-46-ATC-20-80-10-00000954.0001001 / 23 APR 14

MAILBOX KEY

When pressed, the cursor moves to the mailbox (*Refer to DSC-46-ATC-20-60 Mailbox*).

Ident.: DSC-46-ATC-20-80-10-00000956.0001001 / 23 APR 14

CLR INFO KEY

When pressed, clears the message that is currently displayed in the ATC COM Message Area (*Refer to DSC-46-ATC-20-40 ATC COM Messages Area*).

Note: *The flight crew also uses this key to clear the FMS and SURV messages.*

Ident.: DSC-46-ATC-20-80-10-00000959.0001001 / 23 APR 14

NAVIGATION KEYS

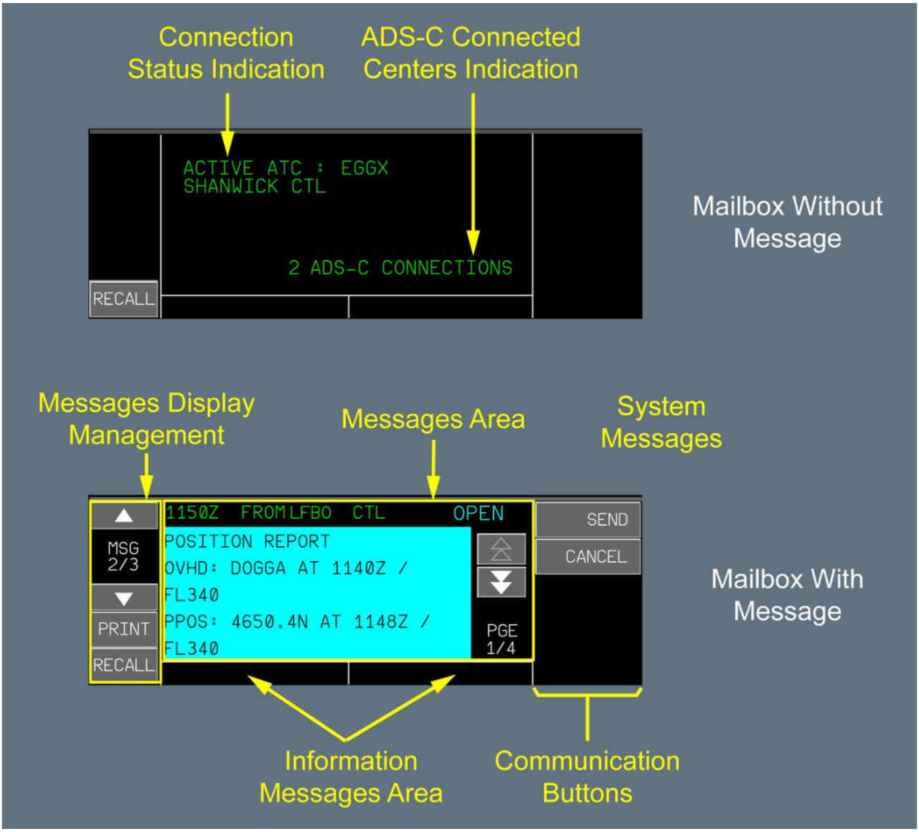
When pressed, moves the cursor to the display unit that is to the right, or to the left, of the currently-selected display unit (if applicable).

MAILBOX

Applicable to: ALL

Ident.: DSC-46-ATC-20-60-10-00000896.0001001 / 07 JUL 14

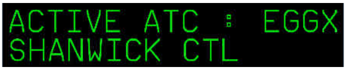
Mailbox


Connection Status Indication
ADS-C Connected Centers Indication
ACTIVE ATC : EGGX
SHANWICK CTL
2 ADS-C CONNECTIONS
RECALL
Mailbox Without Message
Messages Display Management
Messages Area
System Messages
1150Z FROM LFBO CTL OPEN
POSITION REPORT
OVHD: DOGGA AT 1140Z /
FL340
PPOS: 4650.4N AT 1148Z /
FL340
MSG 2/3
PRINT
RECALL
PGE 1/4
SEND
CANCEL
Mailbox With Message
Information Messages Area
Communication Buttons

Note: *If the ATC Datalink system is failed and the flight crew decides to display the mailbox with the selection of one of the KCCU keys (MAILBOX key or Navigation keys), the MAILBOX NOT AVAIL message appears for 5 seconds.*

Ident.: DSC-46-ATC-20-60-10-00000898.0001001 / 23 APR 14

CONNECTION STATUS INDICATION


ACTIVE ATC : EGGX
SHANWICK CTL

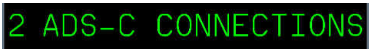
Indicates the ATC center connected with the aircraft.

Ident.: DSC-46-ATC-20-60-10-00000900.0001001 / 23 APR 14

ADS-C CONNECTED CENTERS INDICATION

ADS-C OFF

The ADS-C is OFF.


2 ADS-C CONNECTIONS

Indicates the number of ADS-C connected centers.

Note: The ADS-C status is not displayed on the mailbox when the ADS-C is ARMED.

Ident.: DSC-46-ATC-20-60-10-00000908.0001001 / 23 APR 14

TIME

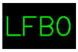
Indicates the UTC time at which:
- The ATC center sent the uplink message
- The flight crew sent the downlink message to the ATC center.

Note: If the time at which the ATC center sent the message is not available :
- *No time indication appears in the time area*
- *The RECEIVED AT XXXXZ indication appears at the end of the message, where XXXX is the time at which the uplink message is received.*

Following a clock failure, the time area is:
- *Empty if no time indication was previously available, or*
- *Completed with ----Z.*

Ident.: DSC-46-ATC-20-60-10-00000909.0001001 / 23 APR 14

DESTINATION/ORIGIN ATC CENTER

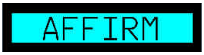

LFBO

Indicates the active ATC center that sent or received the message.

Ident.: DSC-46-ATC-20-60-10-00000915.0001001 / 04 DEC 14

MESSAGE STATUS

The status of a message corresponds to the type of response that the flight crew selected on the mailbox (except for the status OPEN, OPEN, and ABORT).


AFFIRM

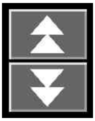
The flight crew clicked the AFFIRM button of the mailbox, in order to answer positively to the ATC uplink message.

NEGATIVE	The flight crew clicked the NEGATIVE button of the mailbox, in order to answer negatively to the ATC uplink message.
ROGER	The flight crew clicked the ROGER button of the mailbox, in order to inform the ATC center that they received and understood the uplink message.
STANDBY	The flight crew clicked the STANDBY button of the mailbox, in order to inform the ATC center that they need time to answer the uplink message.
UNABLE	The flight crew clicked the UNABLE button of the mailbox, in order to inform the ATC center that they cannot comply with the request.
WILCO	The flight crew clicked the WILCO button of the mailbox, in order to inform the ATC center that they understood the request and that they will comply with it.
ACK	The flight crew clicked the ACK button of the mailbox, in order to acknowledge a departure/oceanic clearance.
L12 REFUSE	The flight crew clicked the REFUSE button of the mailbox, in order to refuse a departure/oceanic clearance. The message CONTACT ATC BY VOICE - REFUSE NOT SUPPORTED - BY DATALINK appears in the information messages area of the mailbox, in order to inform the flight crew that they must use voice to refuse the clearance.
OPEN	Indicates that the received uplink message requires a response. The status OPEN remains until the flight crew answers the uplink message.
OPEN	Indicates that: - The flight crew did not answer the uplink message in due time, or - The flight crew sent a downlink or a response message, but no acknowledgment from the ground was received.
ABORT	Indicates that a disconnection occurred during a pending uplink or downlink message.

Note: *When the flight crew selects a response from the mailbox and clicks on the SEND button, the status appears in black on a green background.*
The status is empty for a downlink message sent to the ATC center or an uplink message which does not require any answer.

Ident.: DSC-46-ATC-20-60-10-00000918.0001001 / 23 APR 14

NEXT/PREVIOUS PAGE BUTTONS



When clicked, displays the next/previous page of the message when the message length is more than one page.

Note: *The flight crew can scroll through the multiple pages of a message with the scroll wheel of the KCCU.*

Ident.: DSC-46-ATC-20-60-10-00000920.0001001 / 23 APR 14

PAGE NUMBER INDICATION

Indicates the page number of the current displayed page of the message.
When the message contains only one page, no information appears.

Note: *An answer to an uplink message can only be sent after the flight crew displayed its last page.*

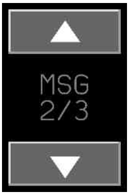
Ident.: DSC-46-ATC-20-60-10-00000925.0001001 / 23 APR 14

MESSAGE NUMBER INDICATION

Indicates the rank of the displayed message.
When there is only one message in the mailbox, no information appears.

Ident.: DSC-46-ATC-20-60-10-00000948.0001001 / 23 APR 14

NEXT/PREVIOUS MESSAGE BUTTONS



When clicked, displays the previous/next message.
When there is only one message in the mailbox, no button appears.

Ident.: DSC-46-ATC-20-60-10-00000897.0001001 / 23 APR 14

PRINT BUTTON

When clicked, prints the message that is currently displayed in the mailbox.

Ident.: DSC-46-ATC-20-60-10-00000949.0001001 / 23 APR 14

RECALL BUTTON

When clicked, recalls the message that the flight crew most recently removed from the mailbox with the CLOSE button.

Note: *A recall is only possible within 5 min after the closure of the message. After 5 min, on selection of the recall command, the following message is displayed: RECALL EMPTY, CONSULT MSG RECORD.*

Ident.: DSC-46-ATC-20-60-10-00000902.0001001 / 04 DEC 14

COMMUNICATION BUTTONS

Depending on the nature of the message, the system automatically displays the appropriate communication buttons. The possible communication buttons are detailed below.

WILCO BUTTON

When clicked, prepares a response message to comply with an ATC clearance.

ROGER BUTTON

When clicked, prepares a response message to confirm reception and understanding of an ATC information or report request.

AFFIRM BUTTON

When clicked, prepares a response message to send a positive answer to a negotiation message from the ATC center.
A negotiation message is a question of the type CAN YOU ACCEPT [altitude] AT [position, or time].

ACK BUTTON

When clicked, prepares a response message to accept a departure/oceanic clearance.

SEND BUTTON

When clicked, sends a downlink message. The message can be a system message (e.g. auto position report) or a response that the flight crew prepared via the other command buttons (WILCO, ROGER, STANDBY, etc.).
When a downlink message is in the mailbox but includes more than one page, the SEND button is not active until the flight crew displayed all pages (with the page up and page down buttons).

CLOSE BUTTON

When clicked, closes and removes from the mailbox a message that the flight crew sent to the ATC center, or a message from the ATC center that the flight crew answered. The closed message is stored and can be displayed via the MSG RECORD page of the MFD. This is not applicable when the answer is on standby.

Note: *Some messages are automatically closed 2 s after a successful downlink. For these messages, the CLOSE button is not available.*

STANDBY BUTTON

When clicked, prepares a response message to inform the ATC center that the flight crew needs to delay the answer.
With a FANS B connection, the flight crew has 100 s to answer a message from the ATC center. If the flight crew clicks the STANDBY button before the 100 s have elapsed, the countdown resets.

CANCEL BUTTON

When clicked:
- Removes a prepared downlink message from the mailbox and clears the MODIFY page of the MFD where the message was prepared, or
- Cancels a selected reply to an uplink message.

CANNOT BUTTON

When clicked, prepares a response message to send a negative answer to an open negotiation message from the ATC center.
An open negotiation message is a question of the type WHEN CAN YOU ACCEPT [altitude, speed, or offset].

REFUSE BUTTON

When clicked, prepares a response message to send a negative answer to a departure/oceanic clearance.

UNABLE BUTTON

When clicked, prepares a response message to reject an ATC clearance.

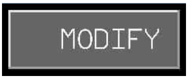
NEGATIVE BUTTON

When clicked, prepares a response message to send a negative answer to a negotiation message from the ATC center.
A negotiation message is a question of the type CAN YOU ACCEPT [altitude] AT [position, or time].

DUE TO BUTTON

When clicked, enables the flight crew to add a justification (due to aircraft performance, weather, ...) for a NEGATIVE or UNABLE response.

MODIFY BUTTON



When clicked, displays the MODIFY page on the MFD, to enable the flight crew to modify a preset message from the FMS. Also used to update the parameters that the FMS or SURV provides to the mailbox.

REFRESH BUTTON

When clicked, updates the downlink FMS data on the mailbox.

LOAD→SEC3 BUTTON

When clicked, loads a clearance received from the ATC center in the FMS.

Note: *When there is a flight plan in SEC 3, this flight plan will be deleted when the ATC flight plan is uploaded.*
To avoid the loss of a flight plan, the flight crew must copy the SEC 3 flight plan in SEC 1 or SEC 2 before uploading the ATC flight plan.

FREETEXT BUTTON

When clicked, enables the flight crew to add freetext to a NEGATIVE or UNABLE response.

Ident.: DSC-46-ATC-20-60-10-00000905.0001001 / 04 DEC 14

INFORMATION MESSAGES AREA

L12

Information displayed	Conditions for display	Conditions for display removal
ANSWER MSG	A file of uplink messages to be answered is full.	File no longer full.
ATC DLK FAULT	ATC communication function failed.	ATC communication function available.
ATC DLK NOT AVAIL	ATC communication function temporarily not available.	ATC communication function available.
ATCCOM FOR MODIF	Following a click on the MODIFY button.	Sending requested; modified text displayed in the mailbox.
CHECK CLRCE	Response lost for a positive reminder of a deferred clearance.	
FILE FULL	A file of 'not ready to be closed' downlink messages generated by the flight crew is full.	File no longer full.
FMS MONITORING	Monitoring in progress.	Monitoring result obtained or timed out.
LINK LOST	"Abnormal" loss of data link connection.	
LOAD NOT AVAIL	Loading not possible, even if the loading was in progress.	Other loading requested.
LOAD PARTIAL	Partial loading.	Other loading requested.
LOAD REJECTED	Loading failed due to the content of the data proposed.	Other loading requested.
LOADED IN SEC3	Successful loading.	Other loading requested.
LOADING	Loading requested and in progress.	Load result obtained or timed out.
MONIT CANCELLED	Monitoring canceled.	Other monitoring requested.
MONIT FAILED	Monitoring requested and failed.	Other monitoring requested or monitoring no longer required.
MONIT LOST	Loss of monitoring. May appear following a change of ATC center, if there is a change from FANS A to FANS B, and the new ATC center does not support a request for condition monitoring that the previous ATC center made.	Other monitoring requested or monitoring no longer required.
MONIT NOT AVAIL	Monitoring impossible because of system unavailability.	Other monitoring requested or monitoring no longer required.

Continued on the following page

Continued from the previous page

Information displayed	Conditions for display	Conditions for display removal
NO SYS DATA	An aircraft system data (e.g. FMS data) is not available.	Other data requested or XFR TO MAILBOX command.
OVERFLW CLOSED	A file of 'ready to be closed' messages is full and a new message of this category is stored in the file.	
PARTIAL SYS DATA	An aircraft system (e.g. FMS) data is not available for all requests.	Other data requested.
PRINT FAILED	Print requested from the mailbox and print failed.	New information that belongs to the same category asks for display, or 10 s after the print request.
PRINT NOT AVAIL	Print requested from the mailbox while printer not available.	New information that belongs to the same category asks for display, or 10 s after the print request.
PRINTING	Print requested from the mailbox and print in progress.	New information asks for display, or 10 s after the print request.
RECEIVED BY ATC	Message received by the ATC center.	
REJ BY ATC	Error message received following a request. The ATC center did not receive the initial message.	
REPLY WITHIN XXS	In some cases, a countdown of 30 s is activated and displayed. The flight crew has XX seconds to answer an incoming message.	Response timed out or response sent.
REPLY: TIME OUT	No answer to a request, and operational timer expired.	The message can only be closed and the flight crew must revert to voice communication.
SEND FAILED	Appears if: - The transmission of a reply to an uplink message or downlink message failed, or - A negative acknowledgement was received, or - No acknowledgement from the ground was received within 6 min with FANS A or 40 s with FANS B.	
SENDING	The flight crew clicked the SEND button.	Sending result obtained (positive or negative) or timed out.
SENT	Appears when: - An acknowledgement from the ground was received, or - The associated uplink message in response of a downlink message was received.	

Continued on the following page

Continued from the previous page

Information displayed	Conditions for display	Conditions for display removal
WAIT FOR SYS DATA	Data expected from an aircraft system (e.g. FMS) before sending a message.	Data request result obtained or timed out.
X MONITORED MSG	At least one message is monitored. X is replaced by the number of monitored messages.	No monitored message.

Ident.: DSC-46-ATC-20-60-10-00020429.0001001 / 23 APR 14

SYSTEM MESSAGES

For these messages, only the CLOSE button is available on the mailbox.

ATC DATALINK COM - NOT AVAIL	The communication functions of the ATC Datalink System are no longer available.
ATC DISCONNECTED: XXXXXXXX	The CPDLC connection is lost with the indicated ATC center. When the notification becomes available, the NOTIFICATION AVAIL message appears.
MSG RECORD LOST	Messages can no longer be recorded.
NOTIFICATION FAILED - WITH XXXXXXXX	The notification procedure failed with the indicated ATC center.
CONTACT ATC BY VOICE - DEPARTURE(OCEANIC) CLEARANCE NOT YET CONFIRMED BY ATC	Answer from the ATC center was not received in due time, following a departure(oceanic) clearance request. The flight crew must contact the ATC center by voice.
CONTACT ATC BY VOICE - DEPARTURE(OCEANIC) MESSAGE REJECTED - CLEARANCE FILE FULL	The maximum storage capacity of the mailbox is reached for A623 messages. The departure(oceanic) message from the ground is automatically rejected. The flight crew must contact the ATC center by voice.

ATC COM MESSAGES AREA

Applicable to: ALL

Ident.: DSC-46-ATC-20-40-10-00000641.0001001 / 23 APR 14

The ATC COM message area displays messages on two lines of 33 characters.
In order to clear a message, the flight crew must click on the CLEAR INFO button or press the CLR INFO key on the KCCU.

Ident.: DSC-46-ATC-20-40-10-00000644.0001001 / 23 APR 14

CANCEL AUTO UPDATE FIRST	Appears when the flight crew tries to modify the airport entry list or the ATIS type list, while an auto update contract is active (i.e. the request is ‘in progress’ state because no request to cancel the automatic update was sent to the ground).

Ident.: DSC-46-ATC-20-40-10-00009739.0001001 / 23 APR 14

COM DATALINK NOT AVAIL	Appears if the flight crew performs an action on the mailbox or ATC COM pages while there is no communication source available for datalink.

Ident.: DSC-46-ATC-20-40-10-00000643.0001001 / 23 APR 14

D-ATIS GROUND MSG	Appears when a non-predefined ATIS FSM message is received.

Ident.: DSC-46-ATC-20-40-10-00000635.0001001 / 23 APR 14

D-ATIS NO REPLY	Appears when the time-out (7.5 min) is reached and that no ATIS was received.

Ident.: DSC-46-ATC-20-40-10-00000655.0001001 / 23 APR 14

D-ATIS RECEIVED	Appears when a new ATIS message is received and the D-ATIS/RECEIVED page is displayed.

Ident.: DSC-46-ATC-20-40-10-00000632.0001001 / 23 APR 14

D-ATIS SEND FAIL	Appears when an ATIS request failed for one of the following reasons: - The sending of the ATIS request failed, or - The time-out (6 min) for acknowledgement is reached, or - A negative answer for the ATIS request is received.

Ident.: DSC-46-ATC-20-40-10-00000581.0001001 / 04 DEC 14

D-ATIS UPDATED - READ AGAIN	Appears when a new ATIS is received while the MFD displays the PREVIOUS or LAST tab of the D-ATIS/RECEIVED page.

Ident.: DSC-46-ATC-20-40-10-00000642.0001001 / 04 DEC 14

D-ATIS USED OFFSIDE	Appears when the MFD of a flight crewmember displays the D-ATIS/RECEIVED page, while the other flight crewmember modifies the AIRPORT entry field or the ATIS type list on the D-ATIS/LIST page of their MFD.

Ident.: DSC-46-ATC-20-40-10-00011292.0001001 / 23 APR 14

ENTER OR CHECK FLT NUMBER - IN FMS INIT PAGE	Appears when the flight crew requests a departure or oceanic clearance while the flight number is not available or not valid.

Ident.: DSC-46-ATC-20-40-10-00000646.0001001 / 23 APR 14

ENTRY OUT OF RANGE	Appears on the first line, if the value that the flight crew entered is outside the correct range.

The correct range, as defined below, appears on the second line:

Type of data	Out Of Range Messages
Altitude	
Beacon code	RNG: 0000 TO 7777
Distance	RNG: 1 TO 999.9 NM OR 1 TO 1024KM
Flight level	RNG: FL30 TO FL450
Frequency	
Ground speed	RNG: 100 TO 700 KT
Heading or track	RNG: 0 TO 360°
Latency	RNG: 1 TO 999 S
Mach	RNG: M.61 TO M.92
Offset	RNG: 1 TO 128 NM
Position	
Position or time	
Remaining fuel	RNG: 0H00MIN TO 23H59MIN
Remaining souls	RNG: 1 TO 1024
Speed	RNG: 100 TO 350 KT
Temperature	RNG: –80 TO 47 C
Time	RNG: 0000Z TO 2359Z
Vertical speed	RNG: –6000 TO 6000 FT/MIN
Weather Deviation	RNG: 1 TO 128 NM

Continued on the following page

Continued from the previous page

Type of data	Out Of Range Messages
Wind heading	RNG: 1 TO 360°
Wind speed	RNG: 0 TO 255 KT

Ident.: DSC-46-ATC-20-40-10-00000648.0001001 / 23 APR 14

FORMAT ERROR — Appears on the first line if a value that the flight crew entered is not valid.

The correct format, as defined below, appears on the second line:

Type of Data	Data Format Help Messages
Aircraft type	FORMAT: XXXX
Airport	FORMAT: AAAA
Altitude	FORMAT: FOR ALT XXXXXM OR FT
ATIS code	FORMAT: A
Beacon code	FORMAT: XXXX
Distance	FORMAT: XXX.XNM OR XXXXKM
Fix name	FORMAT: XXXXX
Flight level	FORMAT: FLXXX
Frequency	FORMAT: XXXXXX
Gate	FORMAT: XXXXX
Ground speed	FORMAT: XXXKT
Heading or track	FORMAT: XXX°
ICAO code	FORMAT: AAAAAAAA
ICAO function	FORMAT: AAA
Latency	FORMAT: SSS
Mach	FORMAT: .XX
Offset	FORMAT: XXX L OR R
Position	FORMAT: WPT OR LAT/LONG OR PBD
Position (A623)	FORMAT: WPT OR LAT/LONG
Position or time	FORMAT: POS XXXXX OR UTC HHMMZ
Procedure	FORMAT: XXXXXX
Remaining fuel	FORMAT: HHMM
Remaining souls	FORMAT: XXX
Speed	FORMAT: FOR CAS XXX FOR MACH .XX
Temperature	FORMAT: +/-XXC OR F
Time	FORMAT: HHMMZ
Vertical speed	FORMAT: +/-XXXXFT/MIN OR M/MIN
Weather deviation	FORMAT: XXX L OR R OR LR
Wind heading	FORMAT: XXX°
Wind speed	FORMAT: XXXKT OR KM/H

Ident.: DSC-46-ATC-20-40-10-00000649.0001001 / 04 DEC 14

IDENTICAL D-ATIS REQUEST	Appears when the flight crew enters the same airport code, and the same ATIS type in two different ATIS request areas.

Ident.: DSC-46-ATC-20-40-10-00000650.0001001 / 23 APR 14

LAST MSG ELEMENT	Appears when: - There are 5 frames on the REQUEST page, or - There is a DEPARTURE or OCEANIC frame on the REQUEST page, or - There are 5 frames on the OTHER REPORTS page, or - There are 5 frames on the EMERGENCY page.

Ident.: DSC-46-ATC-20-40-10-00000651.0001001 / 23 APR 14

MAILBOX FULL - SEND OR CANCEL SOME MSG	Appears when the flight crew clicks on any XFR TO MAILBOX button while the mailbox messages file is full.

Ident.: DSC-46-ATC-20-40-10-00000480.0001001 / 04 DEC 14

MSG ABORTED — ACTIVE ATC DISCONNECTED	Appears if there is a CPDLC connection loss that is not expected while the flight crew is processing a message for the ATC center.

Ident.: DSC-46-ATC-20-40-10-00009738.0001001 / 23 APR 14

L12

MSG ABORTED — NOT SUPPORTED BY CURRENT ATC	Appears when there is a change of ATC center while the flight crew prepares a message that the new ATC center cannot process. This occurs when there is a transition from FANS A to FANS B due to a change of ATC center.

Ident.: DSC-46-ATC-20-40-10-00000652.0001001 / 23 APR 14

MSG RECORD LOST	Appears when there is a storage problem while the MSG RECORD page is displayed.

Ident.: DSC-46-ATC-20-40-10-00000654.0001001 / 23 APR 14

MSG RECORD USED OFFSIDE	Appears when the MFD of a flight crewmember displays the MSG RECORD/LIST page, and the other flight cewmember clicks on the ERASE ALL button of the MSG RECORD/LIST page of their MFD.

Ident.: DSC-46-ATC-20-40-10-00000584.0001001 / 04 DEC 14

NEW D-ATIS GROUND MSG - READ AGAIN	Appears when a non-predefined ATIS FSM message is received while the MFD displays the D-ATIS/GND SYS MSG page.

Ident.: DSC-46-ATC-20-40-10-00000656.0001001 / 23 APR 14

NO SYS DATA	Appears when the flight crew clicks on the REFRESH DATA button, or the AUTO POSITION REPORT button of the AUTO & MANUAL POSITION page, while FMS and SURV data are not available.

Ident.: DSC-46-ATC-20-40-10-00000647.0001001 / 23 APR 14

NOTIFICATION NOT AVAIL - ACFT POSITION NOT AVAIL	Appears when the flight crew clicks on the NOTIFY button of the CONNECT page while the aircraft position is not available.

Ident.: DSC-46-ATC-20-40-10-00000645.0001001 / 23 APR 14

NOTIFICATION NOT AVAIL - CHECK FLT NBR IN FMS INIT PAGE	Appears when the flight crew clicks on any XFR TO MAILBOX button, or clicks on the NOTIFY button of the CONNECT page, while the flight number is not available or not valid.

Ident.: DSC-46-ATC-20-40-10-00000596.0001001 / 23 APR 14

NOTIFICATION NOT AVAIL - CHECK FROM/TO IN FMS INIT PAGE	Appears when the flight crew clicks on any XFR TO MAILBOX button, or clicks on the NOTIFY button of the CONNECT page, while the departure and destination airports are not available or not valid.

Ident.: DSC-46-ATC-20-40-10-00000583.0001001 / 23 APR 14

NOTIFICATION NOT AVAIL - WITH THIS ATC CENTER	Appears if the flight crew entered an ATC center which is neither designated as FANS B ATC center, nor a FANS A ATC center.

Ident.: DSC-46-ATC-20-40-10-00000658.0001001 / 04 DEC 14

PLEASE WAIT : UPDATE IN PROGRESS	Appears when the flight crew modifies the AIRPORT entry field or the ATIS type list of the D-ATIS/LIST page, and: - An ATIS request is in “waiting” state, or - An auto update request contract is active and a previous ATIS cancel auto update request was sent to the ground.

Ident.: DSC-46-ATC-20-40-10-00000659.0001001 / 23 APR 14

PRINTER NOT AVAIL	Appears when the flight crew clicks on the auto print button of the D-ATIS page while the printer is not available.

Ident.: DSC-46-ATC-20-40-10-00001326.0001001 / 23 APR 14

PRINTING	Appears when the ATC Datalink system prints any report or message.

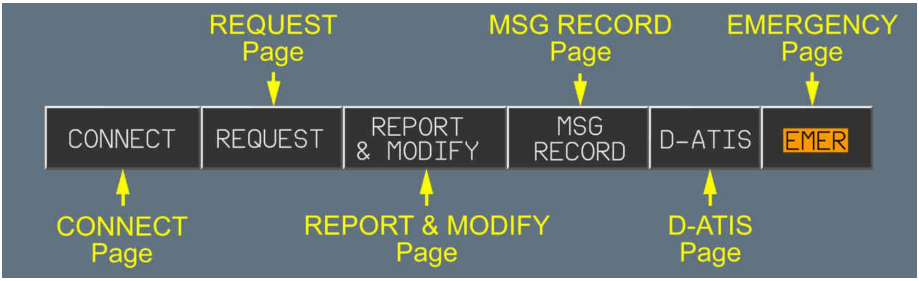
Ident.: DSC-46-ATC-20-40-10-00000660.0001001 / 23 APR 14

SENDING MAYDAY WILL SWITCH ADS-C TO EMERGENCY	Appears as soon as the flight crew clicks on the MAYDAY button of the EMERGENCY page.

Overview

OVERVIEW

Ident.: DSC-46-ATC-20-30-10-00000579.0001001 / 23 APR 14
Applicable to: ALL


REQUEST
Page
MSG RECORD
Page
EMERGENCY
Page
CONNECT
REQUEST
REPORT
& MODIFY
MSG
RECORD
D-ATIS
EMER
CONNECT
Page
REPORT & MODIFY
Page
D-ATIS
Page

MFD ATC COM Pages

Note: *If the flight crew uses the KCCU keys (ATC COM key or navigation keys) while the ATC Datalink system is failed, the ATC COM PAGE NOT AVAIL message appears in the middle of the page.*

Intentionally left blank

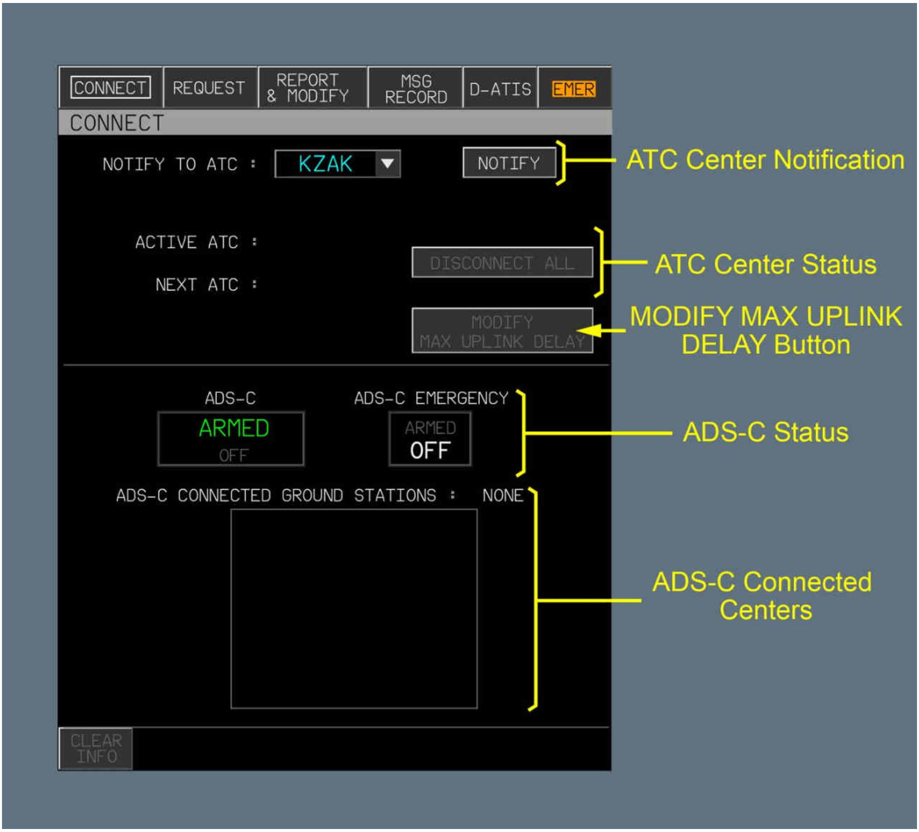
CONNECT Page

CONNECT PAGE

Applicable to: ALL

Ident.: DSC-46-ATC-20-30-20-10-00000580.0001001 / 06 NOV 14

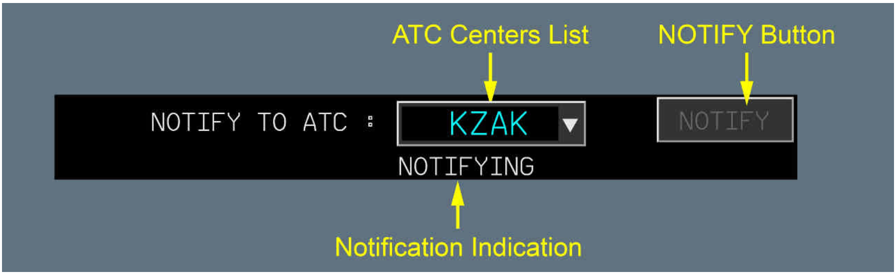
CONNECT Page


CONNECT
REQUEST
REPORT & MODIFY
MSG RECORD
D-ATIS
EMER
CONNECT
NOTIFY TO ATC :
KZAK
NOTIFY
ACTIVE ATC :
NEXT ATC :
DISCONNECT ALL
MODIFY MAX UPLINK DELAY
ADS-C
ARMED
OFF
ADS-C EMERGENCY
ARMED
OFF
ADS-C CONNECTED GROUND STATIONS : NONE
CLEAR INFO
ATC Center Notification
ATC Center Status
MODIFY MAX UPLINK DELAY Button
ADS-C Status
ADS-C Connected Centers

Ident.: DSC-46-ATC-20-30-20-10-00000582.0001001 / 23 APR 14

ATC CENTER NOTIFICATION

ATC Center Notification



ATC CENTERS LIST

L13

Indicates the ATC center to be notified, usually in an ICAO code. The flight crew can manually enter the ICAO code or choose the ATC center from the list.

Note: *When a CPDLC connection is active, the corresponding ATC center no longer appears in the list.*

NOTIFY BUTTON

When clicked, sends a notification to the ATC center entered in the ATC center list.

NOTIFICATION INDICATION

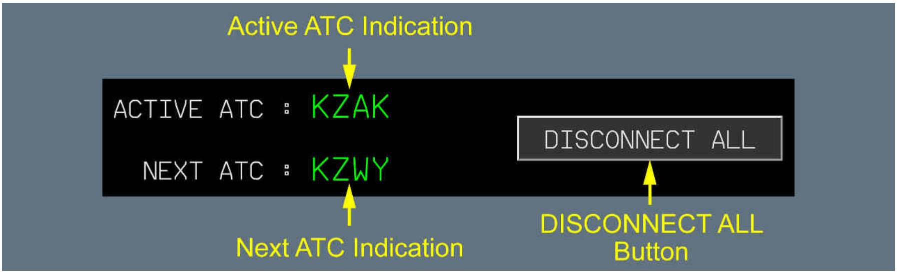
NOTIFYING	The flight crew sends a notification to the ATC center, and an answer is expected. The notification process is in progress.
NOTIFIED TO KZAK AT 1613Z	Indicates the ICAO code of the notified ATC center and the notification time. *Note:* *The notified center name and notification time disappear when the ATC center connects and becomes active.*
NOTIF UNAVAIL: CHECK FLT NBR	Appears when the flight crew clicks on the NOTIFY button, while the flight number is not available or not valid.

NOTIF UNAVAIL: CHECK FROM/TO	Appears when the flight crew clicks on the NOTIFY button, while the departure and destination airports are not available or not valid.
NOTIF UNAVAIL: ACFT POS UNAVAIL	Appears when the flight crew clicks on the NOTIFY button, while the aircraft position is not available.
NOTIF UNAVAIL: WITH THIS ATC	Appears if the flight crew entered an ATC center that is neither designated as a FANS B ATC center, nor a FANS A ATC center.
NOTIFICATION FAILED	The notification process failed.

Ident.: DSC-46-ATC-20-30-20-10-00000593.0001001 / 23 APR 14

ATC CENTER STATUS

ATC Center Status


Active ATC Indication
ACTIVE ATC : KZAK
NEXT ATC : KZWY
DISCONNECT ALL
Next ATC Indication
DISCONNECT ALL
Button

ACTIVE ATC INDICATION

Indicates the ICAO code of the active ATC center. This field is empty when there is no active ATC center.

NEXT ATC INDICATION

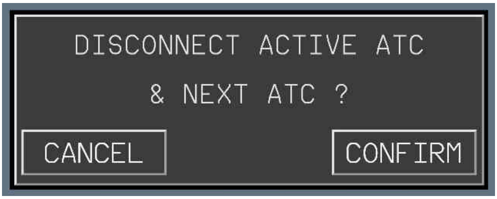
Indicates the ICAO code of the next ATC center. This field is empty when there is no next ATC center.

DISCONNECT ALL BUTTON

DISCONNECT ALL

When clicked, the active and the next ATC centers are disconnected.

A confirmation window appears before the disconnection becomes effective.

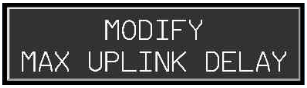

DISCONNECT ACTIVE ATC
& NEXT ATC ?
CANCEL
CONFIRM

When the disconnection is confirmed, both ACTIVE ATC and NEXT ATC fields are cleared.

Ident.: DSC-46-ATC-20-30-20-10-00000608.0001001 / 23 APR 14

MODIFY MAX UPLINK DELAY BUTTON

L12


MODIFY
MAX UPLINK DELAY

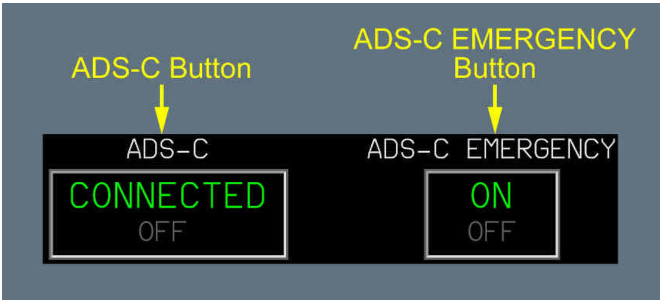
When clicked, displays the MAX UPLINK DELAY page.
For more information, *Refer to DSC-46-ATC-20-30-20 CONNECT/MAX UPLINK DELAY Page*.

Note: *This button is disabled when a FANS B connection is active.*

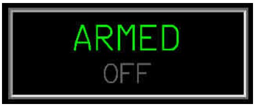
Ident.: DSC-46-ATC-20-30-20-10-00000594.0001001 / 23 APR 14

ADS-C STATUS

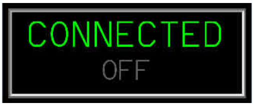
ADS-C Status


ADS-C Button
ADS-C EMERGENCY Button
ADS-C
CONNECTED
OFF
ADS-C EMERGENCY
ON
OFF

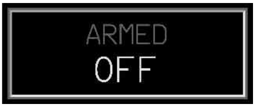
ADS-C BUTTON



Indicates that the ADS-C is armed and expects a connection from an ATC center.
This is the default state.
When clicked, the ADS-C goes OFF.



Indicates that the ADS-C is connected to at least one ATC center.
When clicked, the ADS-C goes OFF and all connected ATC centers are disconnected.

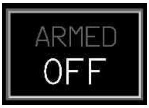


Indicates that the ADS-C is OFF. No ATC center can connect.
When clicked, the ADS-C arms.

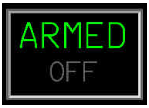
ADS-C EMERGENCY BUTTON

When no ATC center is connected, the ADS-C EMERGENCY button is OFF or ARMED.
When at least one ATC center is connected, the ADS-C EMERGENCY button is OFF or ON.

When no ATC center is connected

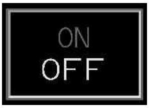


Indicates that the ADS-C Emergency is OFF.
This is the default state.
When clicked, the ADS-C Emergency status changes to ARMED. If the ADS-C was OFF, it automatically changes to ARMED.

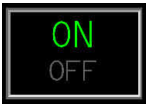


Indicates that the ADS-C Emergency is ARMED.
The status of the ADS-C Emergency automatically changes to ON as soon as there is an ADS-C connection to an ATC center.
When clicked, the ADS-C Emergency status changes to OFF.

When at least one ATC center is connected



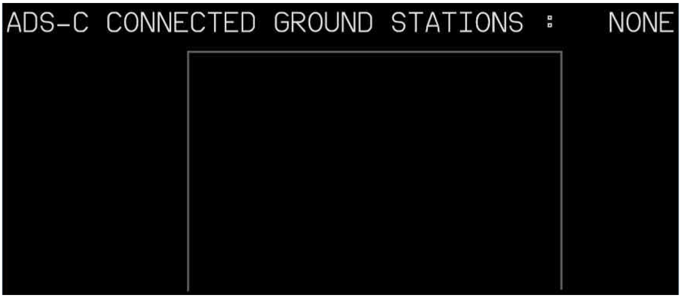
Indicates that the ADS-C Emergency is OFF.
This is the default state.
When clicked, the ADS-C Emergency status changes to ON.



Indicates that the ADS-C Emergency is ON.
When clicked, the ADS-C Emergency status changes to OFF.

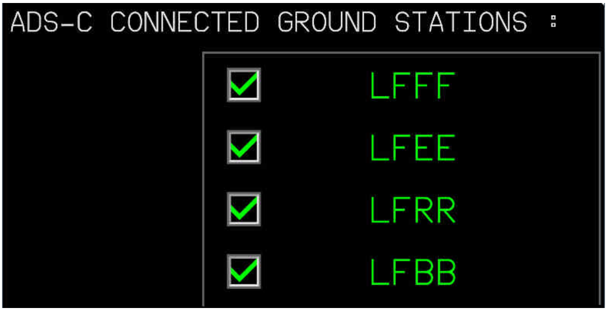
Ident.: DSC-46-ATC-20-30-20-10-00000595.0001001 / 23 APR 14

ADS-C CONNECTED CENTERS



ADS-C CONNECTED GROUND STATIONS : NONE

Indicates that no ATC center is connected for ADS-C reporting.



ADS-C CONNECTED GROUND STATIONS :

☑ LFFF
☑ LFEE
☑ LFRR
☑ LFBB

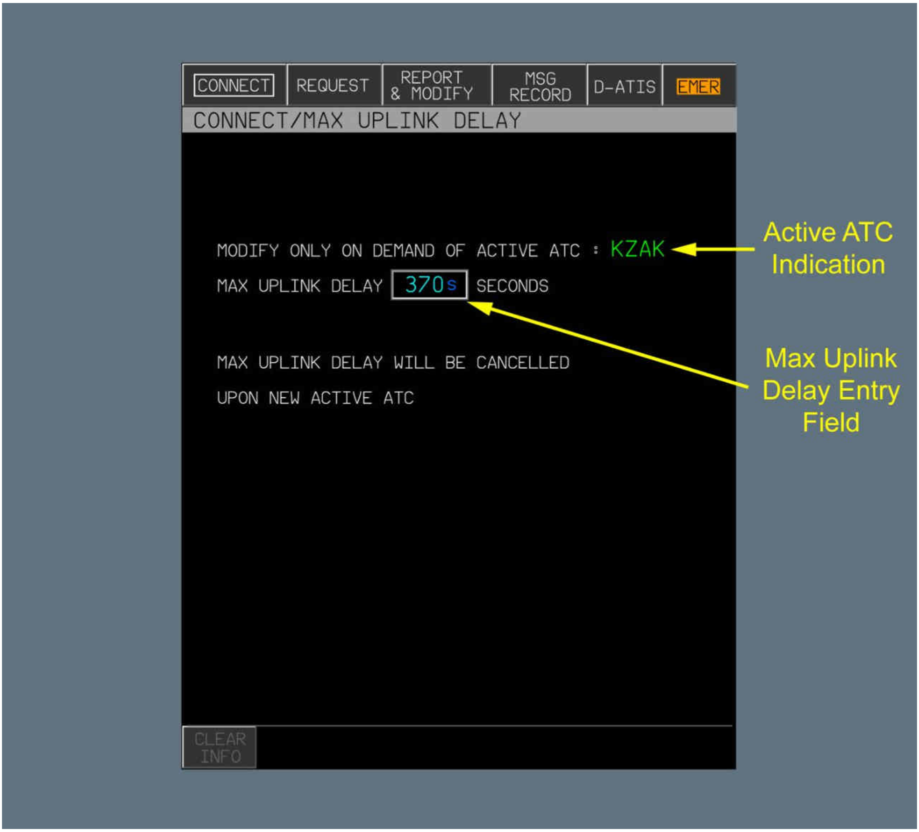
Displays the list of ATC center(s) connected for ADS-C reporting.
The centers are listed in chronological order and the most recently connected is at the top.
Each ATC center can be individually disconnected.

CONNECT/MAX UPLINK DELAY PAGE

Applicable to: ALL

Ident.: DSC-46-ATC-20-30-20-20-00000585.0001001 / 23 APR 14

CONNECT/MAX UPLINK DELAY Page


CONNECT
REQUEST
REPORT & MODIFY
MSG RECORD
D-ATIS
EMER
CLEAR INFO
Active ATC Indication
Max Uplink Delay Entry Field

CONNECT/MAX UPLINK DELAY

MODIFY ONLY ON DEMAND OF ACTIVE ATC : KZAK

MAX UPLINK DELAY 370s SECONDS

MAX UPLINK DELAY WILL BE CANCELLED

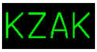
UPON NEW ACTIVE ATC

L2 *Note:*

1. *With FANS A, there is no default value for MAX UPLINK DELAY. The flight crew can set a value on ATC center request.*
2. *With FANS B, the MAX UPLINK DELAY value is fixed at 40 s and cannot be modified. The CONNECT/MAX UPLINK DELAY page is not accessible and the MODIFY MAX UPLINK DELAY button is disabled.*
3. *The MAX UPLINK DELAY value is reset when the current active ATC center connection ends or when a transfer occurs.*
4. *With FANS A, if no MAX UPLINK DELAY value is set, all uplink messages are displayed in the mailbox.*

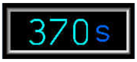
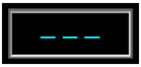
Ident.: DSC-46-ATC-20-30-20-20-00000599.0001001 / 23 APR 14

ACTIVE ATC INDICATION

 KZAK	Indicates the ICAO code of the active ATC center.
	Indicates that there is no active ATC center.

Ident.: DSC-46-ATC-20-30-20-20-00000598.0001001 / 23 APR 14

MAX UPLINK DELAY ENTRY FIELD

 370s	Indicates the value of the maximum uplink delay that the flight crew entered.
 - - -	Indicates that no maximum uplink delay is set.

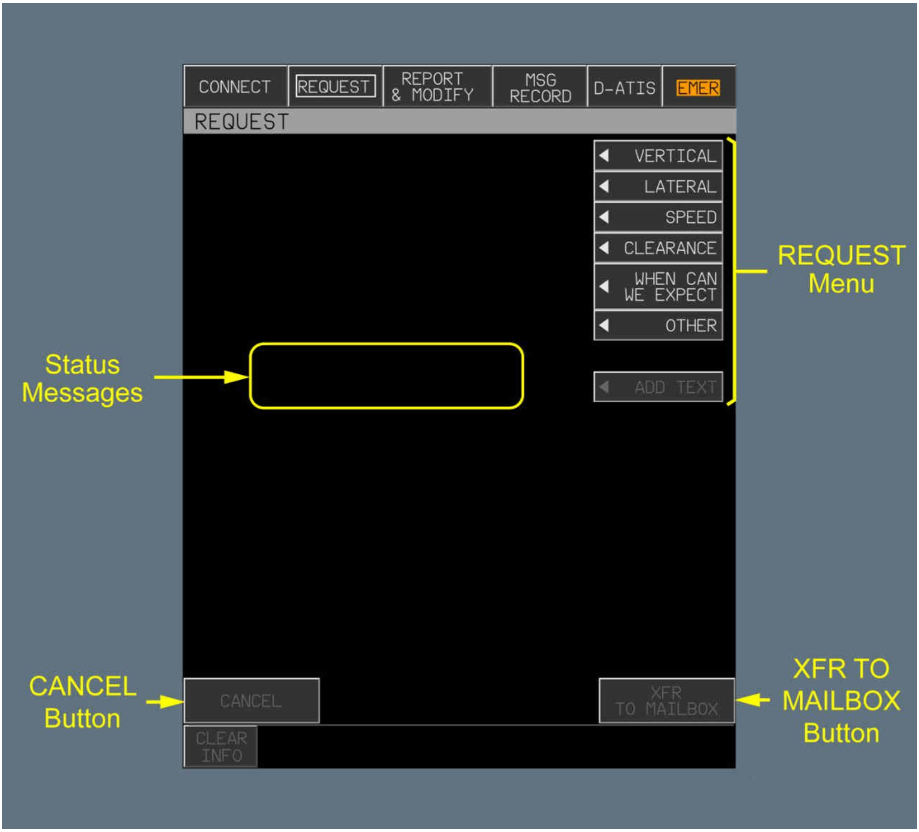
REQUEST Page

REQUEST PAGE

Applicable to: ALL

Ident.: DSC-46-ATC-20-30-30-10-00000586.0001001 / 06 NOV 14

REQUEST Page


CONNECT
REQUEST
REPORT & MODIFY
MSG RECORD
D-ATIS
EMER
REQUEST
VERTICAL
LATERAL
SPEED
CLEARANCE
WHEN CAN WE EXPECT
OTHER
ADD TEXT
REQUEST Menu
Status Messages
CANCEL Button
CANCEL
CLEAR INFO
XFR TO MAILBOX
XFR TO MAILBOX Button

In order to build a request message, the flight crew can use the predefined frames accessible via the REQUEST page. The empty fields contained in the frames indicate where the flight crew can enter complementary information. These fields must be filled in when they contain amber boxes.
The flight crew can use up to 5 frames in a request message.

Some frames combinations are not permitted.

L2 *Note:* *Depending on the type of connection, some request buttons may be disabled.*

No CPDLC connection and no A623 available	:	*Request messages are not available.*
A623 available	:	*Access to CLEARANCE/DEPARTURE and CLEARANCE/OCEANIC.*
Connected to an ATC center with FANS A	:	*All buttons are available:* - *VERTICAL/CLIMB TO* - *VERTICAL/DESCEND TO* - *VERTICAL/ALT/FL* - *VERTICAL/BLOCK ALT/FL* - *VERTICAL/CRUISE CLIMB* - *VERTICAL/ITP* - *LATERAL/DIRECT TO* - *LATERAL/OFFSET* - *LATERAL/WX DEVIATION* - *LATERAL/HEADING* - *LATERAL/TRACK* - *LATERAL/SID/STAR* - *LATERAL/TAILORED ARRIVAL* - *LATERAL/REROUTING* - *SPEED/SPEED* - *SPEED/SPEED RANGE* - *CLEARANCE/GENERIC* - *WHEN CAN WE EXPECT/HIGHER LEVEL* - *WHEN CAN WE EXPECT/LOWER LEVEL* - *WHEN CAN WE EXPECT/CLIMB TO* - *WHEN CAN WE EXPECT/DESCEND TO* - *WHEN CAN WE EXPECT/CRUISE CLIMB* - *WHEN CAN WE EXPECT/SPEED* - *WHEN CAN WE EXPECT/SPEED RANGE* - *WHEN CAN WE EXPECT/BACK ON ROUTE* - *OTHER/FREETEXT* - *OTHER/VOICE CONTACT* - *OTHER/OWN SEPARATION & VMC* - *OTHER/VMC DES* - *ADD TEXT/DUE TO WEATHER* - *ADD TEXT/DUE TO A/C PERFORMANCE* - *ADD TEXT/DUE TO TURBULENCE* - *ADD TEXT/DUE TO TECHNICAL*

- *ADD TEXT/DUE TO MEDICAL*
- *ADD TEXT/AT PILOTS DISCRETION*
- *ADD TEXT/FREETEXT.*

Connected to an ATC center with FANS B : *Only the following buttons are available:*
- *VERTICAL/CLIMB TO*
- *VERTICAL/DESCEND TO*
- *VERTICAL/ALT/FL*
- *VERTICAL/ITP*
- *LATERAL/DIRECT TO*
- *LATERAL/WX DEVIATION*
- *SPEED/SPEED*
- *OTHER/FREETEXT*
- *ADD TEXT/DUE TO WEATHER*
- *ADD TEXT/DUE TO A/C PERFORMANCE.*

Ident.: DSC-46-ATC-20-30-30-10-00019595.0001001 / 14 JUN 16

VERTICAL BUTTON

When the flight crew clicks on the VERTICAL button, they have access to the following frames:

- CLIMB TO
  The flight crew requests a climb to a higher altitude or flight level, at a specific position or time. The position or time information is optional.
  L2 CLIMB TO cannot be selected at the same time as DESCEND TO.
  The selection of a CLIMB TO after a DESCEND TO selection erases the previous selection.
- L1 DESCEND TO
  The flight crew requests a descent to a lower altitude or flight level, at a specific position or time. The position or time information is optional.
  L2 DESCEND TO cannot be selected at the same time as CLIMB TO.
  The selection of a DESCEND TO after a CLIMB TO selection erases the previous selection.
- L1 ALT/FL
  The flight crew requests a specific altitude or flight level.
- BLOCK ALT/FL
  The flight crew requests an altitude or a flight level within a specific range.
  L2 Both altitudes are required.

L1 - CRUISE CLIMB
The flight crew requests a cruise climb to a specific altitude or flight level.
- ITP [For aircraft equipped with ADS-B TRAFFIC ⊲].
When the flight crew clicks on the ITP button, the message PREPARE ITP REQUEST - IN SURV / TRAFFIC / ITP PAGE appears in the middle of the page. This is a reminder for the flight crew to use the SURV/TRAFFIC page of the MFD for an In Trail Procedure (ITP) request.

L2 This frame cannot be selected with other frames. When selected, the ITP frame appears and all other frames disappear. In addition, when the ITP frame is selected, and if the flight crew selects another frame, the ITP frame disappears.

Ident.: DSC-46-ATC-20-30-30-10-00019596.0001001 / 04 DEC 14

LATERAL BUTTON

When the flight crew clicks the LATERAL button, they have access to the following frames:
- DIRECT TO
The flight crew requests a direct route to a specific waypoint.
- OFFSET
The flight crew requests an offset from the initial route.

L2 The offset is defined with a distance and a direction. The offset starts at a specified point on the route. The definition of the starting point is optional.

L1 - WX DEVIATION
The flight crew requests an offset from the initial route due to weather conditions.

L2 The offset is defined with a distance and a direction.

L1 - HEADING
The flight crew requests a heading change.
- TRACK
The flight crew requests a track change.
- SID/STAR
The flight crew requests a Standard Instrument Departure (SID) procedure or a Standard Terminal Arrival Route (STAR) procedure, in accordance with the current flight phase.

L2 With the aircraft on ground, the request is made for an SID procedure.
With the aircraft in-flight, the request is made for a STAR procedure.

L1
- TAILORED ARRIVAL
  The flight crew requests a tailored arrival procedure.
- REROUTING.
  When the flight crew clicks on the REROUTING button, the message PREPARE NEW ROUTE IN SEC F-PLN - USE SEC INDEX FOR REQUEST appears in the middle of the page. This is a reminder for the flight crew to use the FMS for lateral rerouting.

L2
  For more information, *Refer to DSC-22-FMS-10-40-90 ATC F-PLN Clearance Request*.
  This frame cannot be selected with other frames. When selected, the REROUTING frame appears and all other frames disappear. In addition, when the REROUTING frame is selected, and if the flight crew selects another frame, the REROUTING frame disappears.

Ident.: DSC-46-ATC-20-30-30-10-00019597.0001001 / 23 APR 14

SPEED BUTTON

When the flight crew clicks the SPEED button, they have access to the following frames:
- SPEED
  The flight crew requests a specific speed.
- SPEED RANGE.
  The flight crew requests a speed within a specific range.

Ident.: DSC-46-ATC-20-30-30-10-00019598.0001001 / 23 APR 14

CLEARANCE BUTTON

When the flight crew clicks the CLEARANCE button, they have access to the following frames:

- DEPARTURE
  A request for a departure clearance is sent to the departure airport entered in the FMS or directly entered in the REQUEST page.
  L2 The message is sent via A623 to the departure airport.

  The following fields may be automatically completed, when the information becomes available:
  - Departure airport
  - Destination airport
  - Aircraft type
  - ATIS code.

  The flight crew may manually complete the following fields:
  - Gate
  - Relevant additional information (freetext).
- L1 OCEANIC
  A request for an oceanic clearance is sent to the oceanic ATC center that the flight crew entered.
  L2 The message is sent via A623 to the oceanic ATC center.

  The flight crew may manually complete the following fields:
  - Oceanic ATC center
  - Entry point
  - ETA
  - Mach
  - Level
  - Relevant additional information (freetext).
- L1 GENERIC.
  The flight crew sends a clearance request in textual format to the connected ATC center.
  L2 The message is sent via CPDLC to the connected ATC center. This message should only be used in specific areas.

Ident.: DSC-46-ATC-20-30-30-10-00019599.0001001 / 23 APR 14

WHEN CAN WE EXPECT BUTTON

When the flight crew clicks the WHEN CAN WE EXPECT button, they have access to the following frames:

- HIGHER LEVEL
  The flight crew prepares a request message for a higher flight level.
  L2 HIGHER LEVEL cannot be selected at the same time as LOWER LEVEL.
  The selection of a HIGHER LEVEL after a LOWER LEVEL selection erases the previous selection.
- L1 LOWER LEVEL
  The flight crew prepares a request message for a lower flight level.
  L2 LOWER LEVEL cannot be selected at the same time as HIGHER LEVEL.
  The selection of a LOWER LEVEL after a HIGHER LEVEL selection erases the previous selection.
- L1 CLIMB TO
  The flight crew prepares a request message to climb to a specific flight level.
  L2 CLIMB TO cannot be selected at the same time as DESCEND TO.
  The selection of a CLIMB TO after a DESCEND TO selection erases the previous selection.
- L1 DESCEND TO
  The flight crew prepares a request message to descend to a specific flight level.
  L2 DESCEND TO cannot be selected at the same time as CLIMB TO.
  The selection of a DESCEND TO after a CLIMB TO selection erases the previous selection.
- L1 CRUISE CLIMB
  The flight crew prepares a request message to cruise climb to a specific flight level.
- SPEED
  The flight crew prepares a request message for a specific speed.
- SPEED RANGE
  The flight crew prepares a request message for a speed within a specific range.
- BACK ON ROUTE.
  The flight crew prepares a request message to go back to the initial route.

Ident.: DSC-46-ATC-20-30-30-10-00019600.0001001 / 23 APR 14

OTHER BUTTON

When the flight crew clicks the OTHER button, they have access to the following frames:

- FREETEXT
- VOICE CONTACT
- OWN SEPARATION & VMC
- VMC DES.

Ident.: DSC-46-ATC-20-30-30-10-00019601.0001001 / 23 APR 14

ADD TEXT BUTTON

The flight crew can add reasons to a request, with the use of short predefined messages or freetext messages:

- DUE TO WEATHER
- DUE TO A/C PERFORMANCE
- DUE TO TURBULENCE
- DUE TO TECHNICAL
- DUE TO MEDICAL
- AT PILOTS DISCRETION
- FREETEXT.

Note: *The flight crew can only insert an ADD TEXT frame when another frame is already included in the request. A message cannot contain an ADD TEXT frame on its own.*

Ident.: DSC-46-ATC-20-30-30-10-00000601.0001001 / 23 APR 14

CANCEL BUTTON

When clicked, clears the REQUEST page, and the default ATC COM page appears.

Ident.: DSC-46-ATC-20-30-30-10-00000602.0001001 / 23 APR 14

XFR TO MAILBOX BUTTON

L12

XFR
TO MAILBOX

When clicked, transfers any valid request to the mailbox.
This is only possible when all the fields with amber boxes are correctly completed.
In order to send the message, the flight crew must click on the SEND button of the mailbox.

Ident.: DSC-46-ATC-20-30-30-10-00011311.0001001 / 23 APR 14

STATUS MESSAGES

The following message appears in the middle of the page.

REQUEST MSG NOT AVAIL - NO ACTIVE ATC - CHECK NOTIFICATION	There is no active ATC center.

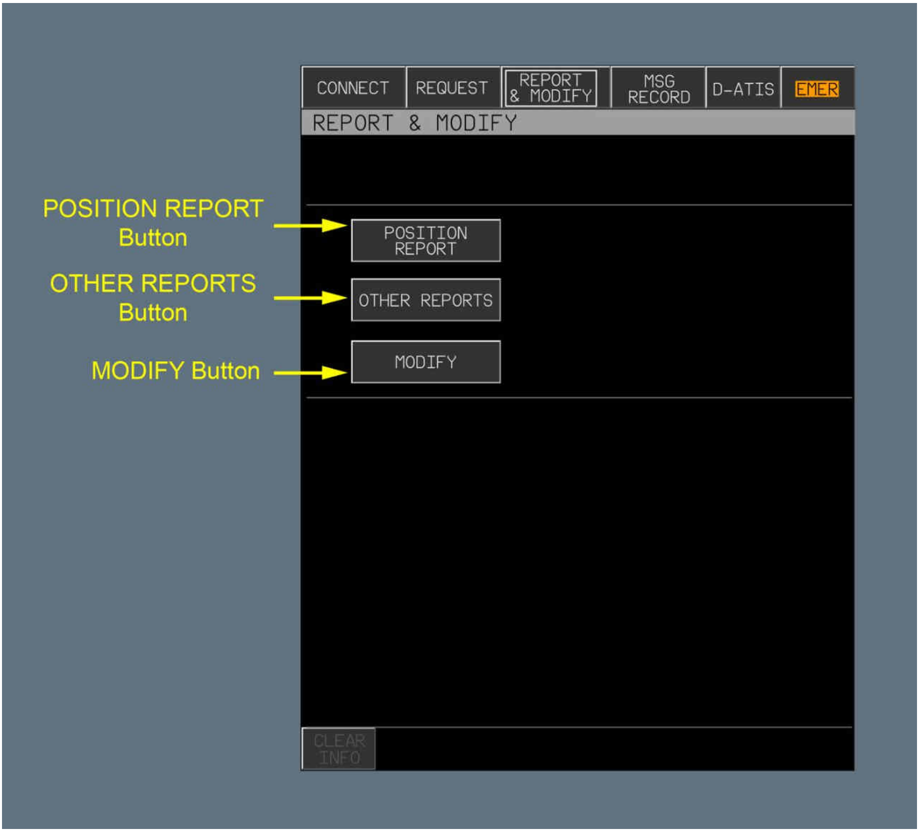
Intentionally left blank

REPORT & MODIFY Page

REPORT & MODIFY PAGE

Ident.: DSC-46-ATC-20-30-40-00018447.0001001 / 23 APR 14
Applicable to: ALL

REPORT & MODIFY Page

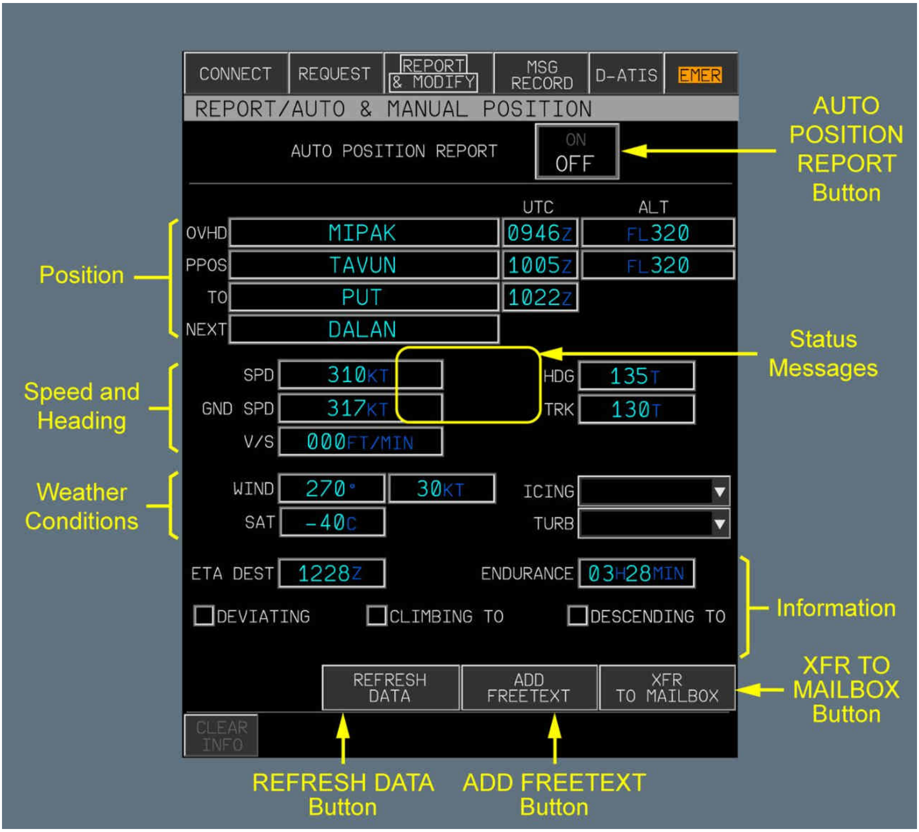

CONNECT
REQUEST
REPORT & MODIFY
MSG RECORD
D-ATIS
EMER
REPORT & MODIFY
POSITION REPORT Button
POSITION REPORT
OTHER REPORTS Button
OTHER REPORTS
MODIFY Button
MODIFY
CLEAR INFO

REPORT/AUTO & MANUAL POSITION PAGE

Applicable to: ALL

Ident.: DSC-46-ATC-20-30-40-10-00000587.0001001 / 23 APR 14

REPORT/AUTO & MANUAL POSITION Page


CONNECT
REQUEST
REPORT & MODIFY
MSG RECORD
D-ATIS
EMER
REPORT/AUTO & MANUAL POSITION
REFRESH DATA
ADD FREETEXT
XFR TO MAILBOX
CLEAR INFO
AUTO POSITION REPORT Button
Position
Speed and Heading
Weather Conditions
Status Messages
Information
XFR TO MAILBOX Button
REFRESH DATA Button
ADD FREETEXT Button

AUTO POSITION REPORT ON OFF

		UTC	ALT
OVHD	MIPAK	0946Z	FL320
PPOS	TAVUN	1005Z	FL320
TO	PUT	1022Z	
NEXT	DALAN		

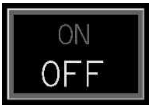
SPD 310KT
GND SPD 317KT
V/S 000FT/MIN
HDG 135T
TRK 130T
WIND 270° 30KT
SAT -40C
ICING ▼
TURB ▼
ETA DEST 1228Z
ENDURANCE 03H28MIN
☐ DEVIATING ☐ CLIMBING TO ☐ DESCENDING TO

When the flight crew displays the REPORT/AUTO & MANUAL POSITION page on the MFD , all fields, except three, are automatically filled with data from the FMS. The three exceptions are ICING, TURB, and ENDURANCE.

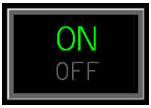
The flight crew can modify the fields that are automatically filled with data from the FMS.

Ident.: DSC-46-ATC-20-30-40-10-00000603.0001001 / 15 JUL 14

AUTO POSITION REPORT BUTTON



The AUTO POSITION REPORT is OFF.



The AUTO POSITION REPORT is ON.

Ident.: DSC-46-ATC-20-30-40-10-00000604.0001001 / 04 DEC 14

POSITION

- OVHD (Overhead)
  Indicates the last FMS-sequenced waypoint. The time and altitude overhead this waypoint are also provided.
  L2 A report can still be sent if these fields remain empty (if no data from the FMS or the flight crew).
- L1 PPOS (Present position)
  Indicates the current aircraft position. The time and altitude at this position are also provided.
  L2 When empty, these fields are replaced by amber boxes. If no data from the FMS is available, the flight crew must manually fill in the PPOS fields, in order to send a report.
- L1 TO (To waypoint)
  Indicates the waypoint to be sequenced in the FMS. The expected time overhead this waypoint is also provided.
  L2 A report can still be sent if these fields remain empty (if no data from the FMS or the flight crew).
- L1 NEXT.
  Indicates the waypoint to be sequenced in the FMS after the TO waypoint.
  L2 A report can still be sent if these fields remain empty (if no data from the FMS or the flight crew).

Ident.: DSC-46-ATC-20-30-40-10-00000605.0001001 / 04 DEC 14

SPEED AND HEADING

- SPD
  Indicates the airspeed of the aircraft.
  L2 A report can still be sent if this field remains empty (if no data from the FMS or the flight crew).
- L1 GND SPD
  Indicates the aircraft ground speed.
  L2 A report can still be sent if this field remains empty (if no data from the FMS or the flight crew).

L1 - V/S
Indicates the vertical speed of the aircraft.
L2 A report can still be sent if this field remains empty (if no data from the FMS or the flight crew).

L1 - HDG
Indicates the aircraft heading.
L2 A report can still be sent if this field remains empty (if no data from the FMS or the flight crew).

L1 - TRK
Indicates the aircraft track.
L2 A report can still be sent if this field remains empty (if no data from the FMS or the flight crew).

Ident.: DSC-46-ATC-20-30-40-10-00000606.0001001 / 04 DEC 14

WEATHER CONDITIONS

- WIND
Indicates the wind direction and speed.
L2 A report can still be sent if both fields remain empty (if no data from the FMS or the flight crew). One field cannot remain empty if the other one is filled in.

L1 - SAT
Indicates the Static Air Temperature (SAT).
L2 A report can still be sent if this field remains empty (if no data from the FMS or the flight crew).

L1 - ICING
This is a flight crew entry.

The flight crew selects an icing condition from the following list:
- " ": empty, no information available
- Trace
- Light
- Moderate
- Severe.

- TURB.
This is a flight crew entry.

The flight crew selects a turbulence condition from the following list:
- " ": empty, no information available
- Light
- Moderate
- Severe.

Ident.: DSC-46-ATC-20-30-40-10-00000607.0001001 / 04 DEC 14

INFORMATION

- ETA DEST
  Indicates the Estimated Time of Arrival.
  L2 A report can still be sent if this field remains empty (if no data from the FMS or the flight crew).
- L1 ENDURANCE
  Indicates the remaining flight time taking into account the long range cruise speed, and the remaining Fuel On Board (FOB). The endurance is indicated in hours and minutes.
  This is a flight crew entry.
- DEVIATING
  Indicates the aircraft offset with respect to the flight plan. In order to use the DEVIATING field, the flight crew must tick the associated box.
  L2 When the box is ticked, the associated DEVIATING field must be filled in.
- L1 CLIMBING TO/DESCENDING TO
  These two selections are exclusive. In order to use the CLIMBING TO or the DESCENDING TO field, the flight crew must tick the associated box.
  L2 When a box is ticked, the associated altitude or flight level field must be filled in.
  L1 The target altitude or flight level is entered on the FCU, and sent via the FMS.

Ident.: DSC-46-ATC-20-30-40-10-00000609.0001001 / 23 APR 14

REFRESH DATA BUTTON

REFRESH
DATA

When clicked, updates the data displayed on the REPORT/AUTO & MANUAL POSITION page.
All fields are completed with data from the FMS except the ICING, TURB, and ENDURANCE fields that are cleared. The freetext messages do not change.

Ident.: DSC-46-ATC-20-30-40-10-00000610.0001001 / 23 APR 14

ADD FREETEXT BUTTON / MODIFY FREETEXT BUTTON

ADD
FREETEXT

When clicked, the MFD page changes to FREETEXT.

On this page:
- The AUTO POSITION REPORT indication is not displayed
- The position report data appears in non-modifiable format
- Only the freetext frame can be modified
- There is a RETURN TO REPORT button that enables to go back to the basic page.

MODIFY
FREETEXT

Displayed instead of the ADD FREETEXT button, when the flight crew already edited the freetext frame.

Ident.: DSC-46-ATC-20-30-40-10-00000611.0001001 / 23 APR 14

XFR TO MAILBOX BUTTON

L12

XFR
TO MAILBOX

When clicked, transfers any valid report to the mailbox.
This is only possible when all the fields with amber boxes are correctly completed.
In order to send the message, the flight crew must click on the SEND button of the mailbox.

Ident.: DSC-46-ATC-20-30-40-10-00000657.0001001 / 04 DEC 14

STATUS MESSAGES

The following messages appear in the middle of the page.

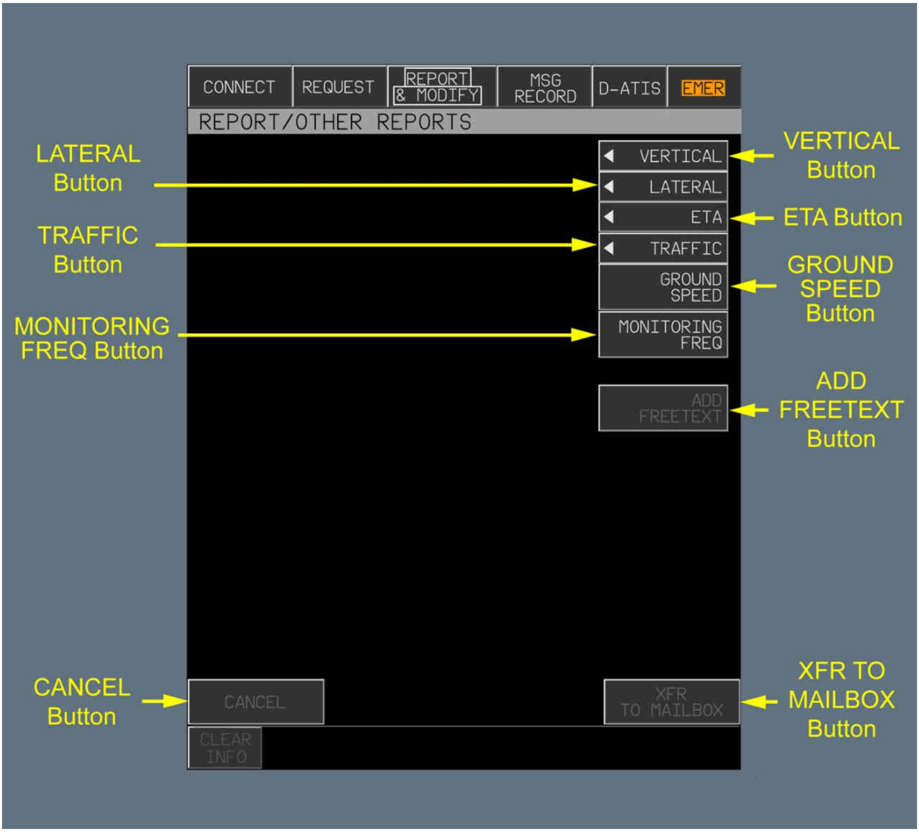
POS REPORT NOT AVAIL - NO ACTIVE ATC - CHECK NOTIFICATION	There is no active ATC center.
POS REPORT NOT AVAIL - WITH CURRENT ATC	No position report message can be sent to the active ATC center. Appears when a FANS B connection is active.

REPORT/OTHER REPORTS PAGE

Applicable to: ALL

Ident.: DSC-46-ATC-20-30-40-20-00018454.0001001 / 04 DEC 14

REPORT/OTHER REPORTS Page


CONNECT
REQUEST
REPORT & MODIFY
MSG RECORD
D-ATIS
EMER
REPORT/OTHER REPORTS
VERTICAL
LATERAL
ETA
TRAFFIC
GROUND SPEED
MONITORING FREQ
ADD FREETEXT
CANCEL
XFR TO MAILBOX
CLEAR INFO
LATERAL Button
TRAFFIC Button
MONITORING FREQ Button
CANCEL Button
VERTICAL Button
ETA Button
GROUND SPEED Button
ADD FREETEXT Button
XFR TO MAILBOX Button

Note: *Depending on the type of connection some report buttons may be disabled:*

- *No CPDLC: Report buttons are not available and the following message is displayed:*
  POS REPORT NOT AVAIL - NO ACTIVE ATC - CHECK NOTIFICATION
- *CPDLC with FANS B available: Only the MONITORING FREQ and the ADD FREETEXT buttons are available*
- *CPDLC with FANS A available: All buttons are available.*

Ident.: DSC-46-ATC-20-30-40-20-00018479.0001001 / 23 APR 14

VERTICAL BUTTON

- MAINTAINING LEVEL
  Indicates the current altitude or flight level of the aircraft.
- LEAVING LEVEL
  Indicates that the aircraft is leaving its current altitude or flight level.
- PREFERRED LEVEL
  Indicates the preferred altitude or flight level.
- REACHING BLOCK
  Indicates the altitude zone that the aircraft reached.
- TOP OF DESCENT.
  Indicates that the aircraft reached its top of descent.

Ident.: DSC-46-ATC-20-30-40-20-00018480.0001001 / 23 APR 14

LATERAL BUTTON

- BACK ON ROUTE
  Indicates that the aircraft returned to its initial route.
- PASSING POSITION.
  Indicates the current position of the aircraft.

Ident.: DSC-46-ATC-20-30-40-20-00018481.0001001 / 23 APR 14

ETA BUTTON

- ETA
  Indicates the Estimated Time of Arrival (ETA).
- REVISED ETA
  Indicates the updated ETA.
- TOP OF DESCENT.
  Indicates when the Top Of Descent (TOD) occurs.

Ident.: DSC-46-ATC-20-30-40-20-00018482.0001001 / 23 APR 14

TRAFFIC BUTTON

- SIGHTED
  Indicates that the flight crew saw the traffic.
- SIGHTED AND PASSED
  Indicates that the flight crew saw the traffic and considers that it is no longer a threat.
- NOT SIGHTED.
  Indicates that the flight crew has not seen the traffic.

Ident.: DSC-46-ATC-20-30-40-20-00018483.0001001 / 23 APR 14

GROUND SPEED BUTTON

Indicates the current ground speed.

Ident.: DSC-46-ATC-20-30-40-20-00018484.0001001 / 23 APR 14

MONITORING FREQ BUTTON

Indicates the active voice frequency and related ATC center.

Ident.: DSC-46-ATC-20-30-40-20-00018485.0001001 / 23 APR 14

ADD FREETEXT BUTTON

Enables the flight crew to add information in a freetext area displayed at the bottom of the page.

Ident.: DSC-46-ATC-20-30-40-20-00019632.0001001 / 23 APR 14

CANCEL BUTTON

When clicked, clears the REPORT/OTHER REPORTS page, and the default ATC COM page appears.

Ident.: DSC-46-ATC-20-30-40-20-00019633.0001001 / 23 APR 14

XFR TO MAILBOX BUTTON

L12

XFR
TO MAILBOX

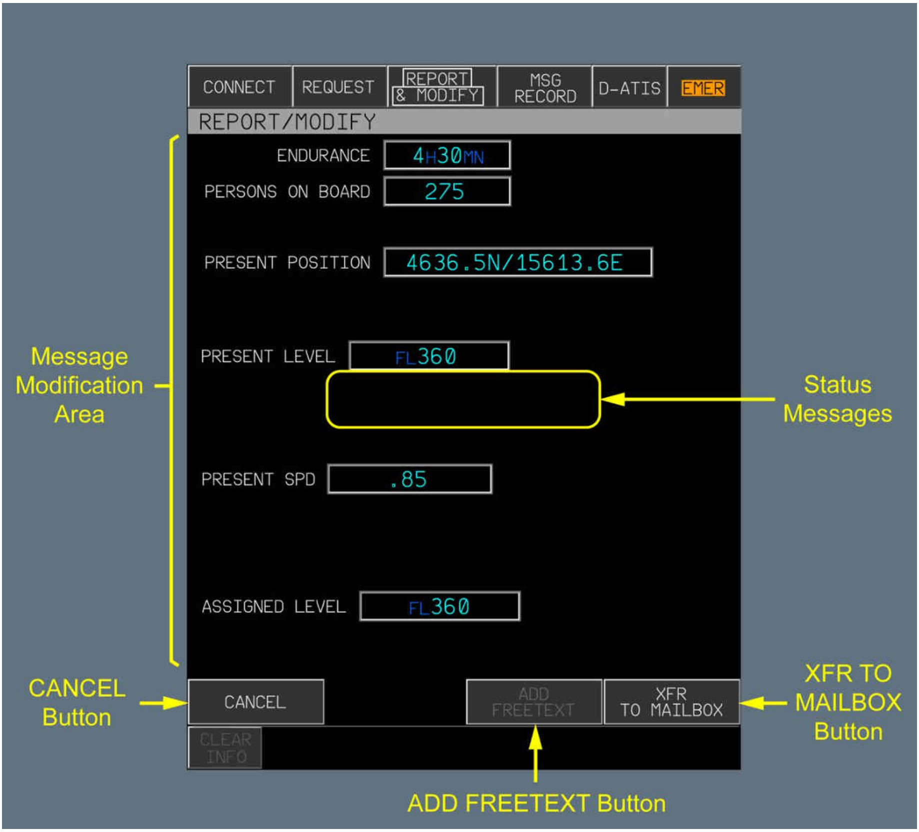
When clicked, transfers any valid report to the mailbox.
This is only possible when all the fields with amber boxes are correctly completed.
In order to send the message, the flight crew must click on the SEND button of the mailbox.

REPORT/MODIFY PAGE

Applicable to: ALL

Ident.: DSC-46-ATC-20-30-40-30-00000588.0001001 / 23 APR 14

REPORT/MODIFY Page


CONNECT
REQUEST
REPORT & MODIFY
MSG RECORD
D-ATIS
EMER
REPORT/MODIFY
CANCEL
ADD FREETEXT
XFR TO MAILBOX
CLEAR INFO
Message Modification Area
Status Messages
CANCEL Button
XFR TO MAILBOX Button
ADD FREETEXT Button

ENDURANCE 4H30MN

PERSONS ON BOARD 275

PRESENT POSITION 4636.5N/15613.6E

PRESENT LEVEL FL360

PRESENT SPD .85

ASSIGNED LEVEL FL360

Ident.: DSC-46-ATC-20-30-40-30-00000612.0001001 / 04 DEC 14

MESSAGE MODIFICATION AREA

Enables the flight crew to modify a downlink message that is displayed in the mailbox, before sending it to the ground.

MSG REJECTED IF NO REPLY WITHIN XXs	With a FANS B connection, indicates the remaining time to send the answer to the ATC center. Appears in a pop-up at the bottom of the page. The countdown starts at 30 s and decrements in steps of: - 5 s from 30 s to 10 s - 1 s below 10 s. *Note: This message is not displayed when there are 5 modifiable frames (to avoid hiding the last frame).*

Ident.: DSC-46-ATC-20-30-40-30-00000614.0001001 / 23 APR 14

ADD FREETEXT BUTTON

ADD
FREETEXT

Only available with FANS A.
When clicked, displays a freetext frame at the bottom of the page.

Ident.: DSC-46-ATC-20-30-40-30-00000613.0001001 / 23 APR 14

CANCEL BUTTON

When clicked, clears the REPORT/MODIFY page, and the default ATC COM page appears.

Ident.: DSC-46-ATC-20-30-40-30-00000615.0001001 / 23 APR 14

XFR TO MAILBOX BUTTON

L12

XFR
TO MAILBOX

When clicked, transfers any valid report to the mailbox.
This is only possible when all the fields with amber boxes are correctly completed.
In order to send the message, the flight crew must click on the SEND button of the mailbox.

Ident.: DSC-46-ATC-20-30-40-30-00011312.0001001 / 23 APR 14

STATUS MESSAGES

The following message appears in the middle of the page.

NO MODIFICATION IN PROGRESS - FROM MAILBOX	Appears when the flight crew clicks on the MODIFY button of the REPORT & MODIFY page of the MFD, and there is no message to modify from the mailbox.

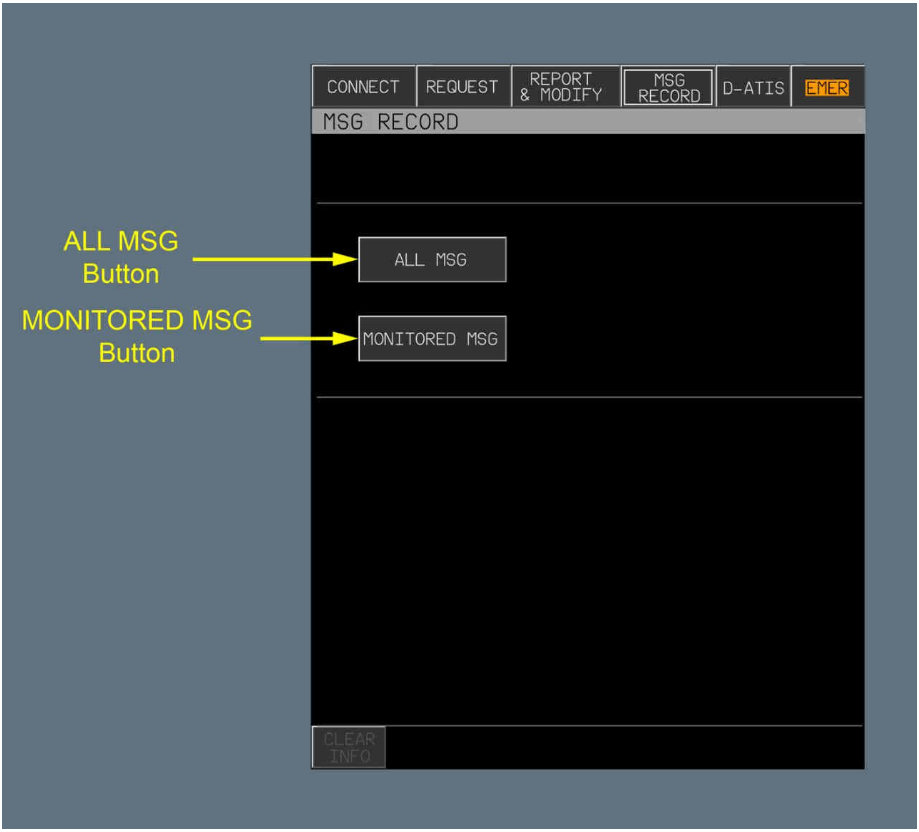
Intentionally left blank

MSG RECORD Page

MSG RECORD PAGE

Ident.: DSC-46-ATC-20-30-50-00018455.0001001 / 23 APR 14
Applicable to: ALL

MSG RECORD Page

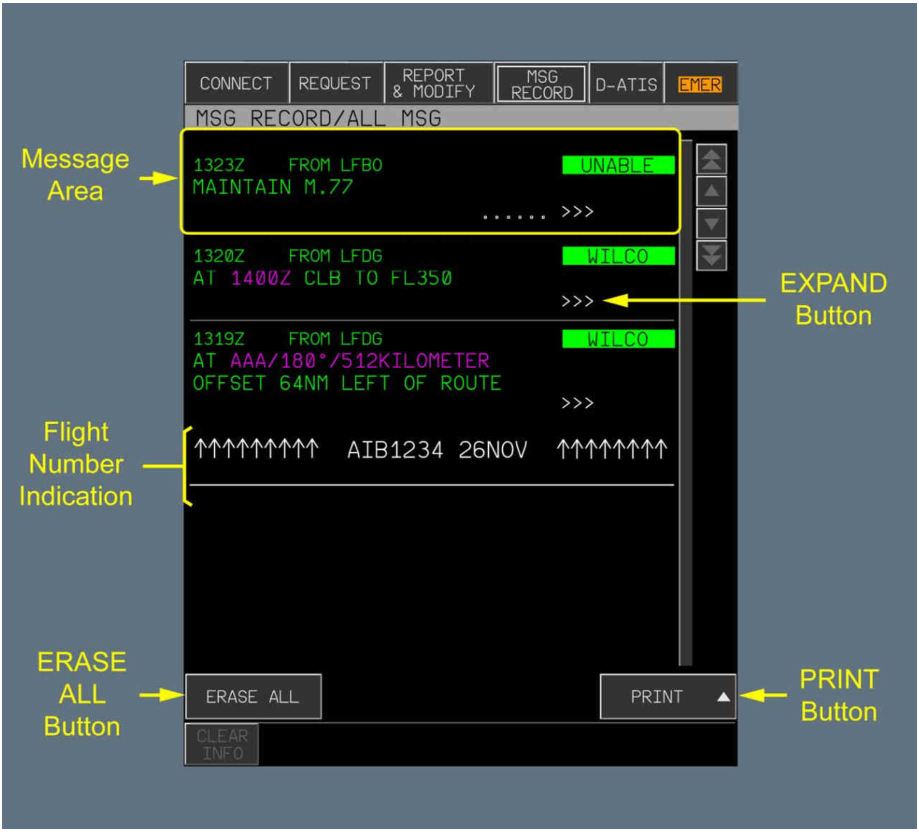

CONNECT
REQUEST
REPORT & MODIFY
MSG RECORD
D-ATIS
EMER
MSG RECORD
ALL MSG Button
ALL MSG
MONITORED MSG Button
MONITORED MSG
CLEAR INFO

MSG RECORD/ALL MSG PAGE

Applicable to: ALL

Ident.: DSC-46-ATC-20-30-50-10-00018460.0001001 / 23 APR 14

MSG RECORD/ALL MSG Page


CONNECT
REQUEST
REPORT & MODIFY
MSG RECORD
D-ATIS
EMER
MSG RECORD/ALL MSG
Message Area
EXPAND Button
Flight Number Indication
ERASE ALL Button
PRINT Button
ERASE ALL
PRINT
CLEAR INFO

```
1323Z    FROM LFBO                 UNABLE
MAINTAIN M.77
                            ...... >>>
1320Z    FROM LFDG                 WILCO
AT 1400Z CLB TO FL350
                                   >>>
1319Z    FROM LFDG                 WILCO
AT AAA/180°/512KILOMETER
OFFSET 64NM LEFT OF ROUTE
                                   >>>
↑↑↑↑↑↑↑↑↑  AIB1234 26NOV  ↑↑↑↑↑↑↑↑
```

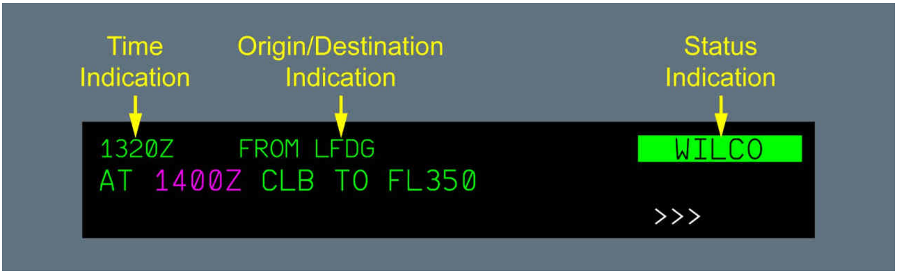
The MSG RECORD/ALL MSG page enables the flight crew to:
- Access all the messages previously exchanged with the ATC and the associated responses
- Print one or several recorded messages
- Erase all recorded messages.

Ident.: DSC-46-ATC-20-30-50-10-00018471.0001001 / 23 APR 14

MESSAGE AREA

Closed messages that ATC centers and the aircraft exchanged, are stored in this area. The most recent message is displayed at the top.
When no message is stored, NO STORED MSG appears in the middle of the page.

Message area



TIME INDICATION

Indicates the UTC time at which:
- The ATC center sent the uplink message
- The flight crew sent the downlink message to the ATC center.

ORIGIN/DESTINATION INDICATION

Indicates the active ATC center that sent/received the message.

STATUS INDICATION

The status of a stored message is the status that this message had, at the moment it was closed from the mailbox. In the MSG RECORD page, the status of a message appears in black on a green background (except for OPEN and ABORT).

L2 For more information about the different message status, *Refer to DSC-46-ATC-20-60 Message Status*.

Ident.: DSC-46-ATC-20-30-50-10-00018472.0001001 / 23 APR 14

ERASE ALL BUTTON

When clicked, and after confirmation, erases all recorded messages from the list.

Note: *If the flight crew clicks on this button while one of the recorded messages appears on the other MFD, no message is erased, and the MSG RECORD USED OFFSIDE message appears in the ATC COM message area.*

Ident.: DSC-46-ATC-20-30-50-10-00018473.0001001 / 04 DEC 14

PRINT BUTTON

When clicked, proposes three entries that enable the flight crew to print:
- The recorded messages of the current flight, or
- The recorded messages of the previous flight (if any), or
- One or all the recorded messages.

Ident.: DSC-46-ATC-20-30-50-10-00018474.0001001 / 23 APR 14

EXPAND BUTTON

When the flight crew clicks on any message, the MSG RECORD/ALL MSG/EXPAND page appears and the entire message is displayed. The PRINT button allows the flight crew to print the message.
To display the list again, the flight crew must click on the RETURN TO LIST button.

Ident.: DSC-46-ATC-20-30-50-10-00019617.0001001 / 23 APR 14

FLIGHT NUMBER INDICATION

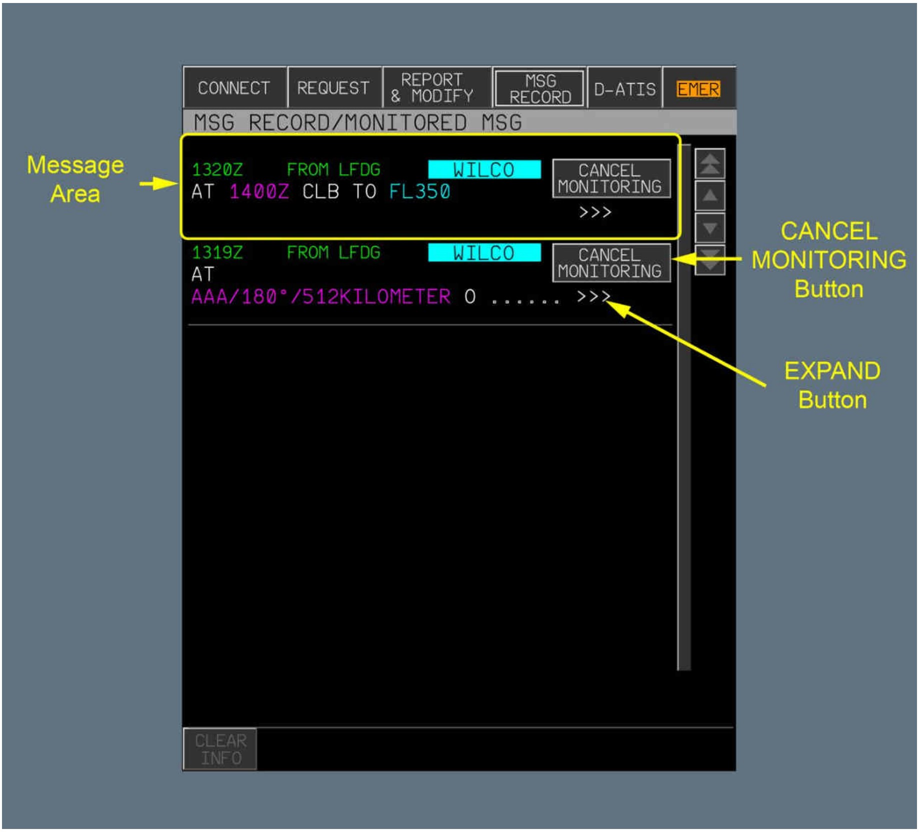
The flight number indication allows the flight crew to identify the messages from a previous flight.

MSG RECORD/MONITORED MSG PAGE

Applicable to: ALL

Ident.: DSC-46-ATC-20-30-50-20-00018475.0001001 / 23 APR 14

MSG RECORD/MONITORED MSG Page


CONNECT
REQUEST
REPORT & MODIFY
MSG RECORD
D-ATIS
EMER
MSG RECORD/MONITORED MSG
Message Area
CANCEL MONITORING
>>>
CANCEL MONITORING Button
EXPAND Button
CLEAR INFO

1320Z FROM LFDG WILCO
AT 1400Z CLB TO FL350

1319Z FROM LFDG WILCO
AT
AAA/180°/512KILOMETER 0 ...... >>>

The MSG RECORD/MONITORED MSG page enables the flight crew to:
- Access the messages that the FMS monitors
- Cancel the monitoring (and its associated reminder) related to a message.

A message is stored in the MSG RECORD/MONITORED MSG page when:
- The flight crew selects the ROGER button (in the case of a report request) or the WILCO button (in the case of a deferred clearance) of the mailbox
- The FMS can monitor the parameters.

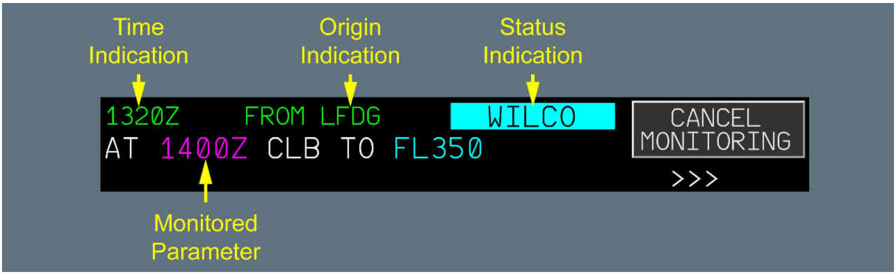
A monitored message is automatically removed from the MSG RECORD/MONITORED MSG page when:
- The associated reminder is displayed on the mailbox, or
- The monitoring is canceled, or
- The monitoring function is lost, not available, or failed.

Ident.: DSC-46-ATC-20-30-50-20-00018476.0001001 / 23 APR 14

MESSAGE AREA

The messages that the FMS monitors are stored in this area. The most recent message is displayed at the top. When no monitored message is stored, NO MONITORING IN PROGRESS appears in the middle of the page.

Message area



1320Z FROM LFDG
AT 1400Z CLB TO FL350

TIME INDICATION

Indicates the UTC time at which the ATC center sent the message.

ORIGIN INDICATION

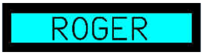
Indicates the active ATC center that sent the message.

MONITORED PARAMETER

Monitored parameters are displayed in magenta.

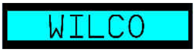
STATUS INDICATION

The status of a monitored message is either ROGER or WILCO depending on the type of uplink message received.



ROGER

Appears when the flight crew clicked on the ROGER button of the mailbox, following the receipt of a report request from the ATC center.

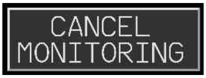


WILCO

Appears when the flight crew clicked on the WILCO button of the mailbox, following the receipt of a deferred clearance from the ATC center.

Ident.: DSC-46-ATC-20-30-50-20-00018477.0001001 / 23 APR 14

CANCEL MONITORING BUTTON



CANCEL MONITORING

When clicked, and after confirmation, cancels the monitoring of the message.

Ident.: DSC-46-ATC-20-30-50-20-00018478.0001001 / 23 APR 14

EXPAND BUTTON

Some messages displayed on the MSG RECORD/MONITORED MSG page may not be complete. When the flight crew clicks on any message, the MSG RECORD/MONITORED MSG/EXPAND page appears and the entire message is displayed.
To display the list again, the flight crew must click on the RETURN TO LIST button.

Intentionally left blank

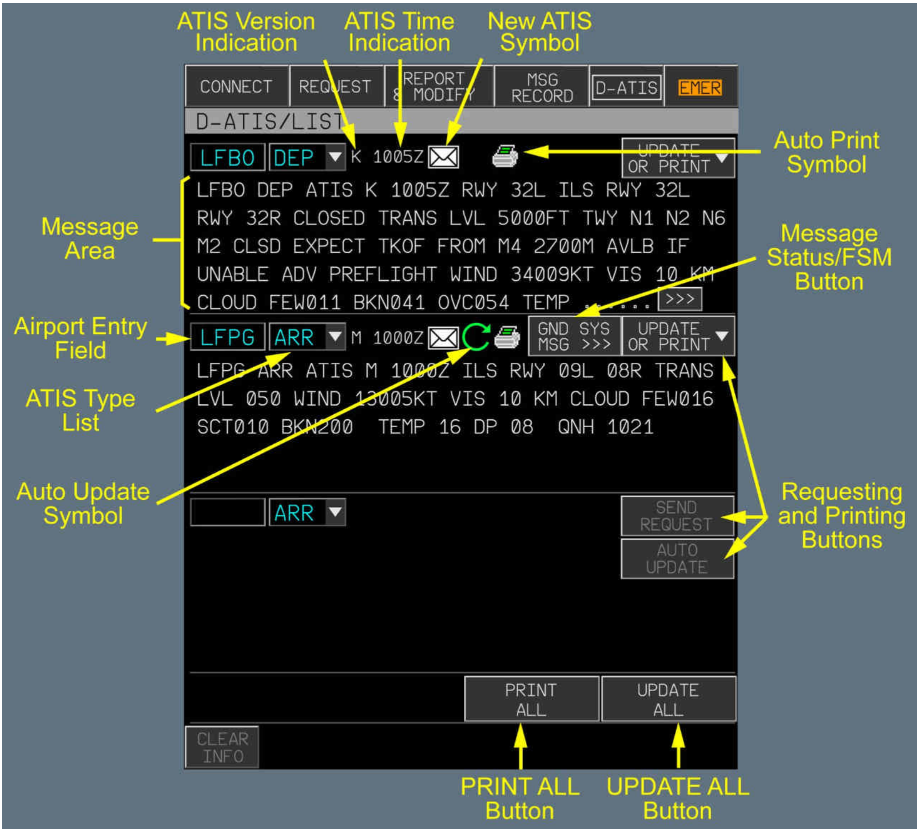
D-ATIS Page

D-ATIS PAGE

Applicable to: ALL

Ident.: DSC-46-ATC-20-30-60-10-00000591.0001001 / 04 DEC 14

D-ATIS/LIST Page


ATIS Version Indication
ATIS Time Indication
New ATIS Symbol
CONNECT
REQUEST
REPORT & MODIFY
MSG RECORD
D-ATIS
EMER
D-ATIS/LIST
Auto Print Symbol
UPDATE OR PRINT
Message Area
Message Status/FSM Button
>>>
Airport Entry Field
GND SYS MSG >>>
UPDATE OR PRINT
ATIS Type List
Auto Update Symbol
ARR
SEND REQUEST
AUTO UPDATE
Requesting and Printing Buttons
PRINT ALL
UPDATE ALL
CLEAR INFO
PRINT ALL Button
UPDATE ALL Button

LFBO DEP K 1005Z

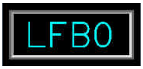
LFBO DEP ATIS K 1005Z RWY 32L ILS RWY 32L
RWY 32R CLOSED TRANS LVL 5000FT TWY N1 N2 N6
M2 CLSD EXPECT TKOF FROM M4 2700M AVLB IF
UNABLE ADV PREFLIGHT WIND 34009KT VIS 10 KM
CLOUD FEW011 BKN041 OVC054 TEMP ......

LFPG ARR M 1000Z

LFPG ARR ATIS M 1000Z ILS RWY 09L 08R TRANS
LVL 050 WIND 13005KT VIS 10 KM CLOUD FEW016
SCT010 BKN200 TEMP 16 DP 08 QNH 1021

Ident.: DSC-46-ATC-20-30-60-10-00000623.0001001 / 15 JUL 14

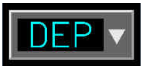
AIRPORT ENTRY FIELD


LFBO

Enables the flight crew to enter the ICAO code of the airport to which the request is sent.

Ident.: DSC-46-ATC-20-30-60-10-00000624.0001001 / 23 APR 14

ATIS TYPE LIST


DEP

For a given airport, enables the flight crew to select a departure ATIS (DEP) or an arrival ATIS (ARR).

Ident.: DSC-46-ATC-20-30-60-10-00000625.0001001 / 23 APR 14

ATIS VERSION INDICATION

Z	Indicates the ATIS version.
-	The ATIS version is not available.

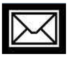
Ident.: DSC-46-ATC-20-30-60-10-00000626.0001001 / 23 APR 14

ATIS TIME INDICATION

1245Z	Indicates the time of the weather sequence of the ATIS message.
- - - -	The time of the weather sequence of the ATIS message is not available.

Ident.: DSC-46-ATC-20-30-60-10-00000627.0001001 / 04 DEC 14

NEW ATIS SYMBOL



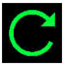
Indicates the reception of a new ATIS message.

The symbol disappears when:

- The flight crew selects the D-ATIS/LIST page of the MFD and the entire ATIS message fits on this page, or
- The flight crew selects the D-ATIS/RECEIVED page of the MFD, because the entire ATIS message does not fit on the D-ATIS/LIST page.

Ident.: DSC-46-ATC-20-30-60-10-00000628.0001001 / 23 APR 14

AUTO UPDATE SYMBOL

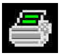


Indicates that the flight crew selected the auto update function from the UPDATE OR PRINT pop-up menu.
The ATIS message is automatically updated when a new ATIS version is available.

Note: *This function is not available for a departure ATIS.*

Ident.: DSC-46-ATC-20-30-60-10-00000629.0001001 / 23 APR 14

AUTO PRINT SYMBOL



Indicates that the flight crew selected the auto print function from the UPDATE OR PRINT pop-up menu.
The ATIS message is automatically printed when a new ATIS version is available.

Ident.: DSC-46-ATC-20-30-60-10-00000630.0001001 / 23 APR 14

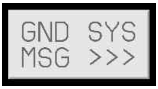
MESSAGE STATUS/FSM BUTTON

PREDEFINED MESSAGES

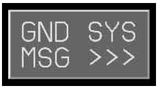
As soon as a predefined message is received, the associated indication appears on the Message Status/FSM (Flight System Message) button.

Indication Displayed	Meaning
SENDING	Appears when the flight crew clicks on: - The SEND REQUEST button, or - The AUTO UPDATE button, or - The UPDATE item of the UPDATE OR PRINT pop-up menu, or - The AUTO UPDATE item of the UPDATE OR PRINT pop-up menu.
SENT	Appears when the message is received on ground.
USE VOICE	Appears when: - The ATC center detects a problem in the ATIS request, or - D-ATIS is not available with the selected ATC center.
SEND FAILED	Appears if: - A negative acknowledgment is received, or - No acknowledgement from the ground is received within 6 min.
NO REPLY	Appears if the D-ATIS report is not received within 7.5 min.
NO AUTO UPDATE	Appears when the ATC center does not support automatic update contract. However, the ATC center will send a single ATIS message.
END OF UPDATE	Appears when: - The ATC center received a message indicating the end of the automatic update contract, and closes the automatic update process, or - The ATC center deleted the aircraft from its list of “aircraft under ATIS automatic update contract”.
ATIS X REJECTED	Appears when an ATIS is rejected.

NON PREDEFINED MESSAGES



Appears on the Message Status/FSM button, when a message that is not predefined is received.
When the flight crew clicks on the button, the D-ATIS/GROUND SYS MSG page appears on the MFD.
The flight crew must click on the RETURN TO LIST button to display the D-ATIS/LIST page again.



Appears on the Message Status/FSM button, when the flight crew viewed the message.

Ident.: DSC-46-ATC-20-30-60-10-00000631.0001001 / 23 APR 14

REQUESTING AND PRINTING BUTTONS

When either the AIRPORT entry field, or the ATIS TYPE list are updated, the SEND REQUEST and AUTO UPDATE buttons appear.
The UPDATE OR PRINT pop-up menu appears when an ATIS report is received.

SEND REQUEST BUTTON

SEND
REQUEST

When clicked, sends the ATIS request.

AUTO UPDATE BUTTON

AUTO
UPDATE

When clicked, sends the ATIS auto update request.

UPDATE OR PRINT POP-UP MENU

UPDATE
OR PRINT ▼

When clicked, displays a list including the following options:

UPDATE

When clicked, sends an ATIS update request.

AUTO UPDATE/CANCEL AUTO UPDATE

When clicked, selects or deselects the auto update function.

PRINT

When clicked, prints the last received ATIS message.

AUTO PRINT/CANCEL AUTO PRINT

When clicked, selects or deselects the auto print function.

Ident.: DSC-46-ATC-20-30-60-10-00000633.0001001 / 23 APR 14

MESSAGE AREA

The ATIS messages appear in this area.
When an ATIS message cannot be entirely displayed in the message area, white dots appear instead of the last 9 characters.

The >>> button enables the flight crew to display the entire ATIS message on the D-ATIS/RECEIVED page. When the flight crew clicks on the PREVIOUS tab of the D-ATIS/RECEIVED page, the previous ATIS is displayed.
In order to return to the D-ATIS/LIST page, the flight crew must click on the RETURN TO LIST button.

Ident.: DSC-46-ATC-20-30-60-10-00000634.0001001 / 23 APR 14

PRINT ALL BUTTON

When clicked, prints all the ATIS messages currently displayed.

Ident.: DSC-46-ATC-20-30-60-10-00000636.0001001 / 23 APR 14

UPDATE ALL BUTTON

When clicked, initiates an update request for all the ATIS messages, except those for which:
- An auto update contract is already active, or
- An update request is in 'waiting' state.

Note: *If communication is not available when the flight crew clicks on the UPDATE ALL button, nothing changes on the D-ATIS/LIST page and the COM DATALINK NOT AVAIL message appears in the ATC COM message area.*

Intentionally left blank

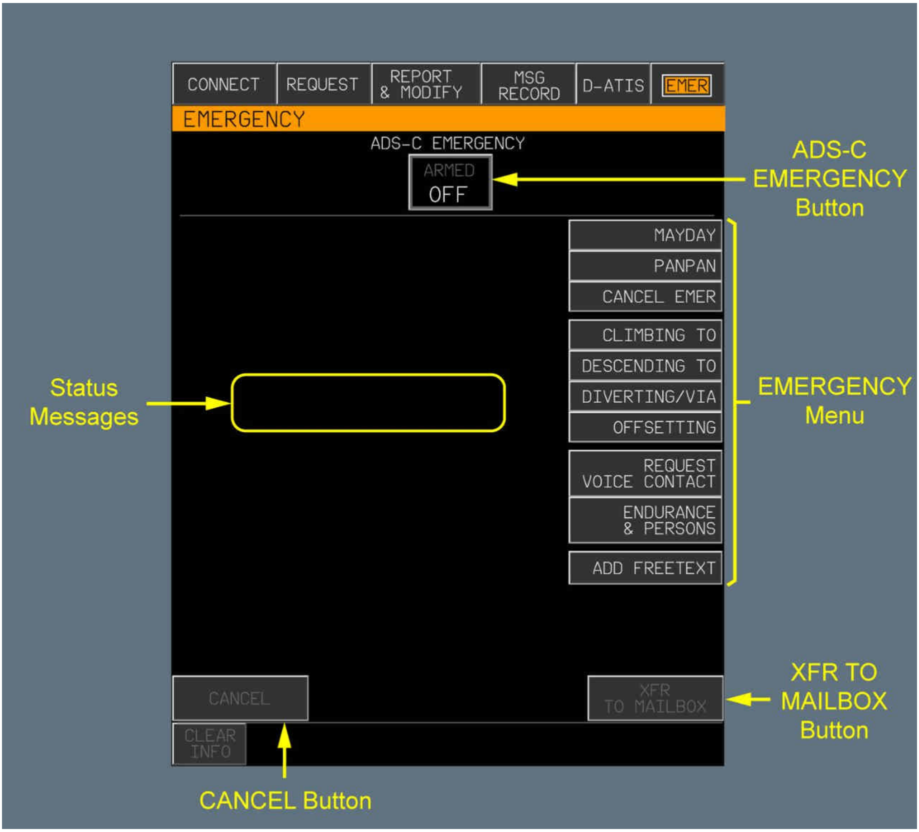
EMERGENCY Page

EMERGENCY PAGE

Applicable to: ALL

Ident.: DSC-46-ATC-20-30-70-10-00000592.0001001 / 23 APR 14

EMERGENCY Page


CONNECT
REQUEST
REPORT & MODIFY
MSG RECORD
D-ATIS
EMER
EMERGENCY
ADS-C EMERGENCY
ARMED
OFF
ADS-C EMERGENCY Button
MAYDAY
PANPAN
CANCEL EMER
CLIMBING TO
DESCENDING TO
DIVERTING/VIA
OFFSETTING
REQUEST VOICE CONTACT
ENDURANCE & PERSONS
ADD FREETEXT
EMERGENCY Menu
Status Messages
CANCEL
CLEAR INFO
XFR TO MAILBOX
XFR TO MAILBOX Button
CANCEL Button

In order to build an emergency message, the flight crew can use the predefined frames accessible via the EMERGENCY page. The empty fields contained in the frames indicate where the flight crew can enter complementary information. These fields must be filled in when they contain amber boxes. The flight crew can use up to 5 frames in an emergency message.

Some frames combinations are not permitted.

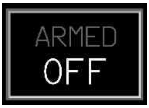
Note: *1. CPDLC emergency messages are only available with FANS A.*
2. The ADS-C Emergency is available with FANS A or B.

Ident.: DSC-46-ATC-20-30-70-10-00000637.0001001 / 23 APR 14

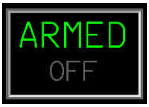
ADS-C EMERGENCY BUTTON

When no ATC center is connected, the ADS-C EMERGENCY button is OFF or ARMED.
When at least one ATC center is connected, the ADS-C EMERGENCY button is OFF or ON.

WHEN NO ATC CENTER IS CONNECTED

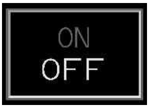


Indicates that the ADS-C Emergency is OFF.
This is the default state.
When clicked, the ADS-C Emergency status changes to ARMED. If the ADS-C was OFF, it automatically changes to ARMED.

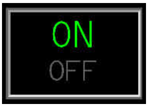


Indicates that the ADS-C Emergency is ARMED.
The status of the ADS-C Emergency automatically changes to ON as soon as there is an ADS-C connection to an ATC center.
When clicked, the ADS-C Emergency status changes to OFF.

WHEN AT LEAST ONE ATC CENTER IS CONNECTED



Indicates that the ADS-C Emergency is OFF.
This is the default state.
When clicked, the ADS-C Emergency status changes to ON.



Indicates that the ADS-C Emergency is ON.
When clicked, the ADS-C Emergency status changes to OFF.

Ident.: DSC-46-ATC-20-30-70-10-00019636.0001001 / 23 APR 14

MAYDAY BUTTON

When clicked, a downlink message is created on the EMERGENCY page of the MFD in order to indicate a critical failure on board.
The ADS-C Emergency automatically activates when the MAYDAY message is sent from the mailbox. The message SENDING MAYDAY WILL SWITCH - ADS-C TO EMERGENCY appears in the ATC COM message area.

Ident.: DSC-46-ATC-20-30-70-10-00019637.0001001 / 23 APR 14

PANPAN BUTTON

When clicked, a downlink message is created on the EMERGENCY page of the MFD in order to indicate a major failure on board.

Ident.: DSC-46-ATC-20-30-70-10-00019638.0001001 / 04 DEC 14

CANCEL EMER BUTTON

When clicked, a downlink message is created on the EMERGENCY page of the MFD. When sent from the mailbox, this message cancels the previous emergency message that the flight crew sent. At the same time, the ADS-C Emergency is deactivated.

Ident.: DSC-46-ATC-20-30-70-10-00019639.0001001 / 23 APR 14

CLIMBING TO BUTTON

When clicked, adds to the message the FCU-selected altitude or flight level for the climb.
The CLIMBING TO frame and the DESCENDING TO frame cannot be used in the same message.

Ident.: DSC-46-ATC-20-30-70-10-00019640.0001001 / 23 APR 14

DESCENDING TO BUTTON

When clicked, adds to the message the FCU-selected altitude or flight level for the descent.
The CLIMBING TO frame and the DESCENDING TO frame cannot be used in the same message.

Ident.: DSC-46-ATC-20-30-70-10-00019641.0001001 / 23 APR 14

DIVERTING/VIA BUTTON

When clicked, enables the flight crew to specify the route or the airport to which the aircraft diverts.

Ident.: DSC-46-ATC-20-30-70-10-00019642.0001001 / 23 APR 14

OFFSETTING BUTTON

When clicked, adds to the message the offset value from the flight plan.

Ident.: DSC-46-ATC-20-30-70-10-00019643.0001001 / 23 APR 14

REQUEST VOICE CONTACT BUTTON

When clicked, enables the flight crew to request a voice communication with the ATC center.
The entry field enables the flight crew to indicate the frequency they wish to use in order to contact the ATC center.
The default frequency is 121.5 MHz.

Ident.: DSC-46-ATC-20-30-70-10-00019644.0001001 / 23 APR 14

ENDURANCE & PERSONS BUTTON

When clicked, adds to the message the ENDURANCE and PERSONS ON BOARD entry fields.

The ENDURANCE entry field enables the flight crew to enter the maximum remaining flight time limited by the fuel autonomy.
The PERSONS ON BOARD entry field enables the flight crew to enter the number of people on board.

Ident.: DSC-46-ATC-20-30-70-10-00019645.0001001 / 23 APR 14

ADD FREETEXT BUTTON

When clicked, adds to the message a free text area.

Ident.: DSC-46-ATC-20-30-70-10-00000640.0001001 / 23 APR 14

CANCEL BUTTON

When clicked, clears the EMERGENCY page, and the default ATC COM page appears.

Ident.: DSC-46-ATC-20-30-70-10-00000639.0001001 / 23 APR 14

XFR TO MAILBOX BUTTON

L12

XFR
TO MAILBOX

When clicked, transfers any valid emergency message to the mailbox.
The transfer or a message is only possible when all the fields indicated by amber boxes are correctly completed.
In order to send the message, the flight crew must click the SEND button of the mailbox.

Ident.: DSC-46-ATC-20-30-70-10-00000622.0001001 / 15 JUL 14

STATUS MESSAGES

The following messages appear in the middle of the page.

EMER MSG NOT AVAIL - NO ACTIVE ATC - CHECK NOTIFICATION	There is no active ATC center.
EMER MSG NOT AVAIL - WITH CURRENT ATC - USE VOICE	No emergency message can be sent to the active ATC center. Appears when a FANS B connection is active.

DATA ENTRY FORMAT

Applicable to: ALL

Ident.: DSC-46-ATC-20-50-10-00000663.0001001 / 23 APR 14

This chapter lists the data that the flight crew can enter in the ATC COM pages of the MFD.

For each type of data, the table displays:
- The accepted format
- The accepted units
- The accepted range
- The page(s) where the flight crew enters the data.

The following characters are used to indicate the format:
- A: Letters
- B: Magnetic
- T: True reference
- N: Numeric (numbers)
- X: Alphanumeric (letters and numbers).

Note: *1. The units that the flight crew can enter are indicated in blue.*
2. Leading zeros can be omitted in fields that contain numerical data.

If the format entered is not valid, the FORMAT ERROR message appears in the ATC COM message area, followed by the associated correct format (*Refer to DSC-46-ATC-20-40 FORMAT ERROR*).
If the value entered is not valid, the ENTRY OUT OF RANGE message appears in the ATC COM message area, followed by the associated correct range (*Refer to DSC-46-ATC-20-40 ENTRY OUT OF RANGE*).

Ident.: DSC-46-ATC-20-50-10-00009740.0001001 / 23 APR 14

AIRCRAFT TYPE

Format	XXXX
Range	Four alphanumeric characters
Page	REQUEST (*Refer to page*).

Ident.: DSC-46-ATC-20-50-10-00000664.0001001 / 23 APR 14

AIRPORT

Format	XXXX
Range	Four alphanumeric characters
Page	D-ATIS/LIST (*Refer to page*)

Ident.: DSC-46-ATC-20-50-10-00000665.0001001 / 23 APR 14

ALT

L12

Format	FLNNN or NNN *Note: Leading zeros may be omitted.* NNNNNFT or NNNNN *Note: 1. Between 0 and 1000 feet, "FT" must be written.* *2. Leading zeros may be omitted.* NNNNNM *Note: Leading zeros may be omitted.*	
Units	FLNNN: Hundreds of Feet (MSL) NNNNNFT: Foot NNNNNM: Meter	
Range	FLNNN	
	Min: 30	*Max*: 450
	NNNNNFT	
	Min: 0	*Max*: 25 000
	NNNNNM	
	Min: 0	*Max*: 13 700
Resolution	FLNNN: 10 NNNNNFT: 100 NNNNNM: 100	
Page	POSITION REPORT (*Refer to page*)	

Ident.: DSC-46-ATC-20-50-10-00000666.0001001 / 23 APR 14

ALTITUDE

L12

Format	FLNNN or NNN *Note: Leading zeros may be omitted.* NNNNNFT or NNNNN *Note: 1. Between 0 and 1000 feet, "FT" must be written.* *2. Leading zeros may be omitted.* NNNNNM *Note: Leading zeros may be omitted.*
Units	FLNNN: Hundreds of Feet (MSL) NNNNNFT: Foot NNNNNM: Meter

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Range	FLNNN *Min*: 30 NNNNNFT *Min*: 0 NNNNNM *Min*: 0	 *Max*: 450 *Max*: 25 000 *Max*: 13 700
Resolution	FLNNN: 10 NNNNNFT: 100 NNNNNM: 100	
Page	REQUEST (*Refer to page*) MODIFY (*Refer to page*)	

Ident.: DSC-46-ATC-20-50-10-00000667.0001001 / 23 APR 14

ASSIGNED ALTITUDE

L12

Format	FLNNN or NNN *Note:* *Leading zeros may be omitted.* NNNNNFT or NNNNN *Note:* *1. Between 0 and 1000 feet, "FT" must be written.* *2. Leading zeros may be omitted.* NNNNNM *Note:* *Leading zeros may be omitted.*	
Units	FLNNN: Hundreds of Feet (MSL) NNNNNFT: Foot NNNNNM: Meter	
Range	FLNNN *Min*: 30 NNNNNFT *Min*: 0 NNNNNM *Min*: 0	 *Max*: 450 *Max*: 25 000 *Max*: 13 700
Resolution	FLNNN: 10 NNNNNFT: 100 NNNNNM: 100	
Page	MODIFY (*Refer to page*)	

Ident.: DSC-46-ATC-20-50-10-00000668.0001001 / 23 APR 14

ASSIGNED SPD

L12

Format	NNN, NNNKT, NNNKM/H, or NNNKM *Note:* *Leading zeros may be omitted.* M.NN or .NN *Note:* *The decimal point must be written, trailing zeros may be omitted.*
Units	NNN or NNNKT: Knot NNNKM/H or NNNKM: Km/h M.NN or .NN: Mach
Range	NNN or NNNKT: *Min*: 100 *Max*: 350 NNNKM/H or NNNKM: *Min*: 185 *Max*: 650 M.NN or .NN: *Min*: .61 *Max*: .92
Resolution	NNN or NNNKT: 1 NNNKM/H or NNNKM: 1 M.NN or .NN: 0.01
Page	MODIFY (*Refer to page*)

Ident.: DSC-46-ATC-20-50-10-00000669.0001001 / 23 APR 14

AT

L12

Format	1. XXXXX DDMM.MB/EEEMM.MC or BDDMM.M/CEEEMM.M XXXXX/NNN/NNN.N or KKK *Note:* *Leading zeros may be omitted.* 2. HHMM HHMMZ HHHMMM HHHMMMN HHHMMMIN
Units	1. DD: Latitude Degree EEE: Longitude Degree MM.M: Minute NNN: Bearing Degree NNN.N: Nautical Mile KKK: Kilometer 2. HH: Hour MM: Minute
Range	1. XXXXX: *Min*: 1 alphanumeric character *Max*: 5 alphanumeric characters DD: *Min*: 0 *Max*: 90 B: N or S EEE: *Min*: 0 *Max*: 180 C: E or W MM.M: *Min*: 0 *Max*: 59.9 NNN: *Min*: 0 *Max*: 360 NNN.N: *Min*: 0 *Max*: 999.9 KKK: *Min*: 1 *Max*: 1024 2. HH *Min*: 0 *Max*: 23 MM *Min*: 0 *Max*: 59

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Resolution	1. DD, EEE: 1 MM.M: 0.1 NNN: 1 NNN.N: 0.1 KKK: 1 2. HH: 1 MM: 1
Page	REQUEST (*Refer to page*) MODIFY (*Refer to page*)

Ident.: DSC-46-ATC-20-50-10-00000670.0001001 / 23 APR 14

ATC CENTER

Format	XXXXxxxx
Range	Maximum 8 letters
Page	CONNECT (*Refer to page*)

Ident.: DSC-46-ATC-20-50-10-00000671.0001001 / 23 APR 14

ATIS

Format	A
Range	One letter
Page	MODIFY (*Refer to page*)

Ident.: DSC-46-ATC-20-50-10-00000672.0001001 / 23 APR 14

ATIS CODE

Format	A
Range	One letter
Page	REQUEST (*Refer to page*)

Ident.: DSC-46-ATC-20-50-10-00000673.0001001 / 23 APR 14

BLOCK

L12

Format	FLNNN or NNN *Note:* *Leading zeros may be omitted.* NNNNNFT or NNNNN *Note:* *1. Between 0 and 1000 feet, "FT" must be written.* *2. Leading zeros may be omitted.* NNNNNM *Note:* *Leading zeros may be omitted.*
Units	FLNNN: Hundreds of Feet (MSL) NNNNNFT: Foot NNNNNM: Meter
Range	FLNNN *Min*: 30 *Max*: 450 NNNNNFT *Min*: 0 *Max*: 25 000 NNNNNM *Min*: 0 *Max*: 13 700
Resolution	FLNNN: 10 NNNNNFT: 100 NNNNNM: 100
Page	REQUEST (*Refer to page*)

Ident.: DSC-46-ATC-20-50-10-00000675.0001001 / 23 APR 14

CLB TO

L12

Format	FLNNN or NNN *Note:* *Leading zeros may be omitted.* NNNNNFT or NNNNN *Note:* *1. Between 0 and 1000 feet, "FT" must be written.* *2. Leading zeros may be omitted.* NNNNNM *Note:* *Leading zeros may be omitted.*
Units	FLNNN: Hundreds of Feet (MSL) NNNNNFT: Foot NNNNNM: Meter

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Range	FLNNN	
	Min: 30	*Max*: 450
	NNNNNFT	
	Min: 0	*Max*: 25 000
	NNNNNM	
	Min: 0	*Max*: 13 700
Resolution	FLNNN: 10 NNNNNFT: 100 NNNNNM: 100	
Page	REQUEST (*Refer to page*)	

Ident.: DSC-46-ATC-20-50-10-00000677.0001001 / 23 APR 14

CLIMBING TO

L12

Format	FLNNN or NNN *Note:* *Leading zeros may be omitted.* NNNNNFT or NNNNN *Note:* *1. Between 0 and 1000 feet, "FT" must be written.* *2. Leading zeros may be omitted.* NNNNNM *Note:* *Leading zeros may be omitted.*	
Units	FLNNN: Hundreds of Feet (MSL) NNNNNFT: Foot NNNNNM: Meter	
Range	FLNNN	
	Min: 30	*Max*: 450
	NNNNNFT	
	Min: 0	*Max*: 25 000
	NNNNNM	
	Min: 0	*Max*: 13 700
Resolution	FLNNN: 10 NNNNNFT: 100 NNNNNM: 100	
Page	POSITION REPORT (*Refer to page*) MODIFY (*Refer to page*) EMERGENCY (*Refer to page*)	

Ident.: DSC-46-ATC-20-50-10-00000678.0001001 / 23 APR 14

CRUISE CLB TO

L12

Format	FLNNN or NNN *Note:* *Leading zeros may be omitted.* NNNNNFT or NNNNN *Note:* *1. Between 0 and 1000 feet, "FT" must be written.* *2. Leading zeros may be omitted.* NNNNNM *Note:* *Leading zeros may be omitted.*
Units	FLNNN: Hundreds of Feet (MSL) NNNNNFT: Foot NNNNNM: Meter
Range	FLNNN *Min*: 30 *Max*: 450 NNNNNFT *Min*: 0 *Max*: 25 000 NNNNNM *Min*: 0 *Max*: 13 700
Resolution	FLNNN: 10 NNNNNFT: 100 NNNNNM: 100
Page	REQUEST (*Refer to page*)

Ident.: DSC-46-ATC-20-50-10-00000679.0001001 / 23 APR 14

DEPARTURE ARPT

Format	XXXX
Range	Four alphanumeric characters
Page	REQUEST (*Refer to page*)

Ident.: DSC-46-ATC-20-50-10-00000680.0001001 / 23 APR 14

DES TO

L12

Format	FLNNN or NNN *Note:* *Leading zeros may be omitted.* NNNNNFT or NNNNN *Note:* *1. Between 0 and 1000 feet, "FT" must be written.* *2. Leading zeros may be omitted.* NNNNNM *Note:* *Leading zeros may be omitted.*	
Units	FLNNN: Hundreds of Feet (MSL) NNNNNFT: Foot NNNNNM: Meter	
Range	FLNNN *Min*: 30 NNNNNFT *Min*: 0 NNNNNM *Min*: 0	 *Max*: 450 *Max*: 25 000 *Max*: 13 700
Resolution	FLNNN: 10 NNNNNFT: 100 NNNNNM: 100	
Page	POSITION REPORT (*Refer to page*) REQUEST (*Refer to page*)	

Ident.: DSC-46-ATC-20-50-10-00000681.0001001 / 23 APR 14

DESCENDING TO

L12

Format	FLNNN or NNN *Note: Leading zeros may be omitted.* NNNNNFT or NNNNN *Note: 1. Between 0 and 1000 feet, "FT" must be written.* *2. Leading zeros may be omitted.* NNNNNM *Note: Leading zeros may be omitted.*	
Units	FLNNN: Hundreds of Feet (MSL) NNNNNFT: Foot NNNNNM: Meter	
Range	FLNNN *Min*: 30 NNNNNFT *Min*: 0 NNNNNM *Min*: 0	 *Max*: 450 *Max*: 25 000 *Max*: 13 700
Resolution	FLNNN: 10 NNNNNFT: 100 NNNNNM: 100	
Page	MODIFY (*Refer to page*) EMERGENCY (*Refer to page*)	

Ident.: DSC-46-ATC-20-50-10-00000682.0001001 / 23 APR 14

DESTINATION

Format	XXXX
Range	Four alphanumeric characters
Page	REQUEST (*Refer to page*)

Ident.: DSC-46-ATC-20-50-10-00000683.0001001 / 23 APR 14

DEVIATING

L12

Format	NNND, DNNN, NNNNMD or DNNNNM NNNKMD or DNNNKM D: Offsetting Direction *Note:* *Leading zeros may be omitted.*
Units	NNN: Nautical Mile NNNKM: Kilometer
Range	D: L (Left), R (Right) or nothing NNN: *Min*: 1 *Max*: 128 NNNKM: *Min*: 1 *Max*: 256
Resolution	NNN: 1 NNNKM: 1
Page	POSITION REPORT (*Refer to page*) MODIFY (*Refer to page*)

Ident.: DSC-46-ATC-20-50-10-00000684.0001001 / 23 APR 14

DIR TO

L12

Format	XXXXX DDMM.MB/EEEMM.MC or BDDMM.M/CEEEMM.M XXXXX/NNN/NNN.N or KKK *Note:* *Leading zeros may be omitted.*
Units	DD: Latitude Degree EEE: Longitude Degree MM.M: Minute NNN: Bearing Degree NNN.N: Nautical Mile KKK: Kilometer

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Range	XXXXX:	
	Min: 1 alphanumeric character	*Max*: 5 alphanumeric characters
	DD:	
	Min: 0	*Max*: 90
	B: N or S	
	EEE:	
	Min: 0	*Max*: 180
	C: E or W	
	MM.M:	
	Min: 0	*Max*: 59.9
	NNN:	
	Min: 0	*Max*: 360
	NNN.N:	
	Min: 0	*Max*: 999.9
	KKK:	
	Min: 1	*Max*: 1024
Resolution	DD, EEE: 1 MM.M: 0.1 NNN: 1 NNN.N: 0.1 KKK: 1	
Page	REQUEST (*Refer to page*)	

Ident.: DSC-46-ATC-20-50-10-00000685.0001001 / 23 APR 14

DISTANCE

L12

Format	NNN.NNM or NNN.N NNNNKM *Note:* *Leading zeros may be omitted.*	
Units	NNN.NNM: Nautical Mile NNNNKM: Kilometer	
Range	NNN.NNM:	
	Min: 0	*Max*: 999.9
	NNNNKM:	
	Min: 1	*Max*: 1 024
Resolution	NNN.NNM: 0.1 NNNNKM: 1	
Page	MODIFY (*Refer to page*)	

Ident.: DSC-46-ATC-20-50-10-00000686.0001001 / 23 APR 14

DIVERTING TO / VIA

L12

Format	XXXXX *Note:* *If one editbox is filled in, the other one must also be filled in.*
Range	*Min*: 1 alphanumeric character *Max*: 5 alphanumeric characters
Page	EMERGENCY (*Refer to page*)

Ident.: DSC-46-ATC-20-50-10-00000687.0001001 / 23 APR 14

ENDURANCE

Format	HHMM HHHMMM HHHMMMN HHHMMMIN	
Units	HH: Hour MM: Minute	
Range	HH *Min*: 0 MM *Min*: 0	 *Max*: 23 *Max*: 59
Resolution	HH: 1 MM: 1	
Page	POSITION REPORT (*Refer to page*) EMERGENCY (*Refer to page*)	

Ident.: DSC-46-ATC-20-50-10-00000688.0001001 / 23 APR 14

ENSUING WPT

L12

Format	XXXXX DDMM.MB/EEEMM.MC or BDDMM.M/CEEEMM.M XXXXX/NNN/NNN.N or KKK *Note:* *Leading zeros may be omitted.*
Units	DD: Latitude Degree EEE: Longitude Degree MM.M: Minute NNN: Bearing Degree NNN.N: Nautical Mile KKK: Kilometer

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Range	XXXXX:	
	Min: 1 alphanumeric character	*Max*: 5 alphanumeric characters
	DD:	
	Min: 0	*Max*: 90
	B: N or S	
	EEE:	
	Min: 0	*Max*: 180
	C: E or W	
	MM.M:	
	Min: 0	*Max*: 59.9
	NNN:	
	Min: 0	*Max*: 360
	NNN.N:	
	Min: 0	*Max*: 999.9
	KKK:	
	Min: 1	*Max*: 1024
Resolution	DD, EEE: 1 MM.M: 0.1 NNN: 1 NNN.N: 0.1 KKK: 1	
Page	MODIFY (*Refer to page*)	

Ident.: DSC-46-ATC-20-50-10-00000689.0001001 / 23 APR 14

ENTRY POINT

L12

Format	XXXXX DDMM.MB/EEEMM.MC or BDDMM.M/CEEEMM.M XXXXX/NNN/NNN.N or KKK *Note: Leading zeros may be omitted.*
Units	DD: Latitude Degree EEE: Longitude Degree MM.M: Minute NNN: Bearing Degree NNN.N: Nautical Mile KKK: Kilometer

Continued on the following page

Continued from the previous page

Range	XXXXX:	
	Min: 1 alphanumeric character	*Max*: 5 alphanumeric characters
	DD:	
	Min: 0	*Max*: 90
	B: N or S	
	EEE:	
	Min: 0	*Max*: 180
	C: E or W	
	MM.M:	
	Min: 0	*Max*: 59.9
	NNN:	
	Min: 0	*Max*: 360
	NNN.N:	
	Min: 0	*Max*: 999.9
	KKK:	
	Min: 1	*Max*: 1024
Resolution	DD, EEE: 1 MM.M: 0.1 NNN: 1 NNN.N: 0.1 KKK: 1	
Page	REQUEST (*Refer to page*)	

Ident.: DSC-46-ATC-20-50-10-00000690.0001001 / 23 APR 14

ETA

Format	HHMM HHMMZ HHHMMM HHHMMMN HHHMMMIN	
Units	HH: Hour MM: Minute	
Range	HH	
	Min: 0	*Max*: 23
	MM	
	Min: 0	*Max*: 59
Resolution	HH: 1 MM: 1	
Page	REQUEST (*Refer to page*)	

Ident.: DSC-46-ATC-20-50-10-00000691.0001001 / 23 APR 14

ETA DEST

Format	HHMM HHMMZ HHHMMM HHHMMMN HHHMMMIN
Units	HH: Hour MM: Minute
Range	HH *Min*: 0 *Max*: 23 MM *Min*: 0 *Max*: 59
Resolution	HH: 1 MM: 1
Page	POSITION REPORT (*Refer to page*)

Ident.: DSC-46-ATC-20-50-10-00000692.0001001 / 23 APR 14

FREETEXT

Format	Any character that belongs to [A..Z], [0..9], [ ], [/], [+], [-], [.]
Range	Maximum of 96 characters
Page	REQUEST (*Refer to page*) POSITION REPORT (*Refer to page*) MODIFY (*Refer to page*) OTHER REPORTS (*Refer to page*) EMERGENCY (*Refer to page*)

Ident.: DSC-46-ATC-20-50-10-00000693.0001001 / 23 APR 14

GATE

Format	xxxxX
Range	Maximum 5 characters
Page	REQUEST (*Refer to page*)

Ident.: DSC-46-ATC-20-50-10-00000694.0001001 / 23 APR 14

GND SPD

L12

Format	NNN or NNNKT *Note:* *Leading zeros may be omitted.*
Units	NNN: Knot

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Range	NNN: *Min*: 100 *Max*: 700
Resolution	NNN: 10
Page	POSITION REPORT (*Refer to page*)

Ident.: DSC-46-ATC-20-50-10-00000695.0001001 / 23 APR 14

GROUND TRACK

L12

Format	NNN NNNT *Note:* *Leading zeros may be omitted.*
Units	NNN: Magnetic Degree NNNT: True Degree
Range	NNN *Min*: 1 *Max*: 360 *Note:* *360 is displayed as 0.* NNNT *Min*: 1 *Max*: 360 *Note:* *360T is displayed as 0T.*
Resolution	NNN, NNNT: 1
Page	REQUEST (*Refer to page*)

Ident.: DSC-46-ATC-20-50-10-00000696.0001001 / 23 APR 14

HDG

L12

Format	NNN NNNT *Note:* *Leading zeros may be omitted.*
Units	NNN: Magnetic Degree NNNT: True Degree

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Range	NNN *Min*: 1 *Max*: 360 *Note:* *360 is displayed as 0.* NNNT *Min*: 1 *Max*: 360 *Note:* *360T is displayed as 0T.*
Resolution	NNN, NNNT: 1
Page	REQUEST (*Refer to page*) POSITION REPORT (*Refer to page*)

Ident.: DSC-46-ATC-20-50-10-00000698.0001001 / 23 APR 14

ICING

Format	X
Range	< >, means that no information about icing conditions is available. TRACE LIGHT MODERATE SEVERE
Page	POSITION REPORT (*Refer to page*)

Ident.: DSC-46-ATC-20-50-10-00000699.0001001 / 23 APR 14

LEAVING

L12

Format	FLNNN or NNN NNNNNFT or NNNNN *Note:* *Between 0 and 1000 feet, "FT" must be written.* NNNNNM
Units	FLNNN: Hundreds of Feet (MSL) NNNNNFT: Foot NNNNNM: Meter
Range	FLNNN *Min*: 30 *Max*: 450 NNNNNFT *Min*: 0 *Max*: 25 000 NNNNNM *Min*: 0 *Max*: 13 700

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Resolution	FLNNN: 10 NNNNNFT: 100 NNNNNM: 100
Page	MODIFY (*Refer to page*) OTHER REPORTS (*Refer to page*)

Ident.: DSC-46-ATC-20-50-10-00000700.0001001 / 23 APR 14

LEVEL

L12

Format	FLNNN or NNN *Note: This format is the only one used in the REQUEST page.* NNNNNFT or NNNNN *Note: Between 0 and 1000 feet, "FT" must be written.* NNNNNM	
Units	FLNNN: Hundreds of Feet (MSL) NNNNNFT: Foot NNNNNM: Meter	
Range	FLNNN *Min*: 30 NNNNNFT *Min*: 0 NNNNNM *Min*: 0	 *Max*: 450 *Max*: 25 000 *Max*: 13 700
Resolution	FLNNN: 10 NNNNNFT: 100 NNNNNM: 100	
Page	REQUEST (*Refer to page*) MODIFY (*Refer to page*) OTHER REPORTS (*Refer to page*)	

Ident.: DSC-46-ATC-20-50-10-00000701.0001001 / 23 APR 14

MACH

L12

Format	M.NN or .NN *Note: The decimal point must be written, trailing zeros may be omitted.*	
Units	M.NN: Mach	
Range	M.NN: *Min*: .61	 *Max*: .92

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Resolution	M.NN: 0.01
Page	REQUEST (*Refer to page*)

Ident.: DSC-46-ATC-20-50-10-00000702.0001001 / 04 DEC 14

MAX UPLINK DELAY

Format	NNN or NNNS	
Units	NNN: Second	
Range	NNN: *Min*: 1	 *Max*: 999
Resolution	NNN: 1	
Page	CONNECT/MAX UPLINK DELAY (*Refer to page*)	

Ident.: DSC-46-ATC-20-50-10-00000703.0001001 / 23 APR 14

NEXT

L12

Format	XXXXX DDMM.MB/EEEMM.MC or BDDMM.M/CEEEMM.M XXXXX/NNN/NNN.N or KKK *Note:* *Leading zeros may be omitted.*	
Units	DD: Latitude Degree EEE: Longitude Degree MM.M: Minute NNN: Bearing Degree NNN.N: Nautical Mile KKK: Kilometer	
Range	XXXXX: *Min*: 1 alphanumeric character DD: *Min*: 0 B: N or S EEE: *Min*: 0 C: E or W MM.M: *Min*: 0 NNN: *Min*: 0 NNN.N: *Min*: 0 KKK: *Min*: 1	 *Max*: 5 alphanumeric characters *Max*: 90 *Max*: 180 *Max*: 59.9 *Max*: 360 *Max*: 999.9 *Max*: 1024

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Resolution	DD, EEE: 1 MM.M: 0.1 NNN: 1 NNN.N: 0.1 KKK: 1
Page	POSITION REPORT (*Refer to page*)

Ident.: DSC-46-ATC-20-50-10-00000704.0001001 / 23 APR 14

NEXT WPT

L12

Format	XXXXX DDMM.MB/EEEMM.MC or BDDMM.M/CEEEMM.M XXXXX/NNN/NNN.N or KKK *Note:* *Leading zeros may be omitted.*	
Units	DD: Latitude Degree EEE: Longitude Degree MM.M: Minute NNN: Bearing Degree NNN.N: Nautical Mile KKK: Kilometer	
Range	XXXXX:	
	Min: 1 alphanumeric character	*Max*: 5 alphanumeric characters
	DD:	
	Min: 0	*Max*: 90
	B: N or S	
	EEE:	
	Min: 0	*Max*: 180
	C: E or W	
	MM.M:	
	Min: 0	*Max*: 59.9
	NNN:	
	Min: 0	*Max*: 360
	NNN.N:	
	Min: 0	*Max*: 999.9
	KKK:	
	Min: 1	*Max*: 1024
Resolution	DD, EEE: 1 MM.M: 0.1 NNN: 1 NNN.N: 0.1 KKK: 1	
Page	MODIFY (*Refer to page*)	

Ident.: DSC-46-ATC-20-50-10-00000705.0001001 / 23 APR 14

NEXT WPT ETA

Format	HHMM HHMMZ HHHMMM HHHMMMN HHHMMMIN
Units	HH: Hour MM: Minute
Range	HH *Min*: 0 *Max*: 23 MM *Min*: 0 *Max*: 59
Resolution	HH: 1 MM: 1
Page	MODIFY (*Refer to page*)

Ident.: DSC-46-ATC-20-50-10-00000706.0001001 / 23 APR 14

OCEANIC CENTER

Format	XXXX
Range	Maximum 4 letters
Page	REQUEST (*Refer to page*)

Ident.: DSC-46-ATC-20-50-10-00000708.0001001 / 23 APR 14

OFFSET

L12

Format	NNND, DNNN, NNNNMD or DNNNNM NNNKMD or DNNNKM D: Offsetting Direction *Note:* *Leading zeros may be omitted.*
Units	NNN: Nautical Mile NNNKM: Kilometer
Range	D: L (Left), R (Right), LR (Left or Right), L OR R (Left or Right), or nothing NNN: *Min*: 1 *Max*: 128 NNNKM: *Min*: 1 *Max*: 256

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Continued from the previous page

Resolution	NNN: 1 NNNKM: 1
Page	REQUEST (*Refer to page*) MODIFY (*Refer to page*)

Ident.: DSC-46-ATC-20-50-10-00000709.0001001 / 23 APR 14

OFFSETTING

L12

Format	NNND, DNNN, NNNNMD or DNNNNM NNNKMD or DNNNKM D: Offsetting Direction *Note:* *Leading zeros may be omitted.*	
Units	NNN: Nautical Mile NNNKM: Kilometer	
Range	D: L (Left), R (Right) or nothing NNN: *Min*: 1 NNNKM: *Min*: 1	 *Max*: 128 *Max*: 256
Resolution	NNN: 1 NNNKM: 1	
Page	EMERGENCY (*Refer to page*)	

Ident.: DSC-46-ATC-20-50-10-00000710.0001001 / 04 DEC 14

OVHD

L12

Format	XXXXX DDMM.MB/EEEMM.MC or BDDMM.M/CEEEMM.M XXXXX/NNN/NNN.N or KKK *Note:* *Leading zeros may be omitted.*
Units	DD: Latitude Degree EEE: Longitude Degree MM.M: Minute NNN: Bearing Degree NNN.N: Nautical Mile KKK: Kilometer

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Range	XXXXX:	
	Min: 1 alphanumeric character	*Max*: 5 alphanumeric characters
	DD:	
	Min: 0	*Max*: 90
	B: N or S	
	EEE:	
	Min: 0	*Max*: 180
	C: E or W	
	MM.M:	
	Min: 0	*Max*: 59.9
	NNN:	
	Min: 0	*Max*: 360
	NNN.N:	
	Min: 0	*Max*: 999.9
	KKK:	
	Min: 1	*Max*: 1024
Resolution	DD, EEE: 1 MM.M: 0.1 NNN: 1 NNN.N: 0.1 KKK: 1	
Page	POSITION REPORT (*Refer to page*)	

Ident.: DSC-46-ATC-20-50-10-00000711.0001001 / 23 APR 14

PASSING

L12

Format	XXXXX DDMM.MB/EEEMM.MC or BDDMM.M/CEEEMM.M XXXXX/NNN/NNN.N or KKK *Note:* *Leading zeros may be omitted.*
Units	DD: Latitude Degree EEE: Longitude Degree MM.M: Minute NNN: Bearing Degree NNN.N: Nautical Mile KKK: Kilometer

Continued on the following page

Continued from the previous page

Range	XXXXX:	
	Min: 1 alphanumeric character	*Max*: 5 alphanumeric characters
	DD:	
	Min: 0	*Max*: 90
	B: N or S	
	EEE:	
	Min: 0	*Max*: 180
	C: E or W	
	MM.M:	
	Min: 0	*Max*: 59.9
	NNN:	
	Min: 0	*Max*: 360
	NNN.N:	
	Min: 0	*Max*: 999.9
	KKK:	
	Min: 1	*Max*: 1024
Resolution	DD, EEE: 1 MM.M: 0.1 NNN: 1 NNN.N: 0.1 KKK: 1	
Page	MODIFY (*Refer to page*) OTHER REPORTS (*Refer to page*)	

Ident.: DSC-46-ATC-20-50-10-00000712.0001001 / 23 APR 14

POSITION

L12

Format	XXXXX DDMM.MB/EEEMM.MC or BDDMM.M/CEEEMM.M XXXXX/NNN/NNN.N or KKK *Note:* *Leading zeros may be omitted.*
Units	DD: Latitude Degree EEE: Longitude Degree MM.M: Minute NNN: Bearing Degree NNN.N: Nautical Mile KKK: Kilometer

Continued on the following page

Continued from the previous page

Range	XXXXX:	
	Min: 1 alphanumeric character	*Max*: 5 alphanumeric characters
	DD:	
	Min: 0	*Max*: 90
	B: N or S	
	EEE:	
	Min: 0	*Max*: 180
	C: E or W	
	MM.M:	
	Min: 0	*Max*: 59.9
	NNN:	
	Min: 0	*Max*: 360
	NNN.N:	
	Min: 0	*Max*: 999.9
	KKK:	
	Min: 1	*Max*: 1024
Resolution	DD, EEE: 1 MM.M: 0.1 NNN: 1 NNN.N: 0.1 KKK: 1	
Page	MODIFY (*Refer to page*)	

Ident.: DSC-46-ATC-20-50-10-00000713.0001001 / 23 APR 14

PPOS

L12

Format	XXXXX DDMM.MB/EEEMM.MC or BDDMM.M/CEEEMM.M XXXXX/NNN/NNN.N or KKK *Note: Leading zeros may be omitted.*
Units	DD: Latitude Degree EEE: Longitude Degree MM.M: Minute NNN: Bearing Degree NNN.N: Nautical Mile KKK: Kilometer

Continued on the following page

Continued from the previous page

Range	XXXXX: *Min*: 1 alphanumeric character DD: *Min*: 0 B: N or S EEE: *Min*: 0 C: E or W MM.M: *Min*: 0 NNN: *Min*: 0 NNN.N: *Min*: 0 KKK: *Min*: 1	 *Max*: 5 alphanumeric characters *Max*: 90 *Max*: 180 *Max*: 59.9 *Max*: 360 *Max*: 999.9 *Max*: 1024
Resolution	DD, EEE: 1 MM.M: 0.1 NNN: 1 NNN.N: 0.1 KKK: 1	
Page	POSITION REPORT (*Refer to page*)	

Ident.: DSC-46-ATC-20-50-10-00000714.0001001 / 23 APR 14

PRESENT ALTITUDE

L12

Format	FLNNN or NNN *Note: Leading zeros may be omitted.* NNNNNFT or NNNNN *Note: 1. Between 0 and 1000 feet, "FT" must be written.* *2. Leading zeros may be omitted.* NNNNNM *Note: Leading zeros may be omitted.*
Units	FLNNN: Hundreds of Feet (MSL) NNNNNFT: Foot NNNNNM: Meter

Continued on the following page

Continued from the previous page

Range	FLNNN	
	Min: 30	*Max*: 450
	NNNNNFT	
	Min: 0	*Max*: 25 000
	NNNNNM	
	Min: 0	*Max*: 13 700
Resolution	FLNNN: 10 NNNNNFT: 100 NNNNNM: 100	
Page	MODIFY (*Refer to page*)	

Ident.: DSC-46-ATC-20-50-10-00000715.0001001 / 23 APR 14

PRESENT GROUND TRK

L12

Format	NNN NNNT *Note: Leading zeros may be omitted.*	
Units	NNN: Magnetic Degree NNNT: True Degree	
Range	NNN	
	Min: 1	*Max*: 360
	Note: 360 is displayed as 0.	
	NNNT	
	Min: 1	*Max*: 360
	Note: 360T is displayed as 0T.	
Resolution	NNN, NNNT: 1	
Page	MODIFY (*Refer to page*)	

Ident.: DSC-46-ATC-20-50-10-00000716.0001001 / 23 APR 14

PRESENT HDG

L12

Format	NNN NNNT *Note: Leading zeros may be omitted.*
Units	NNN: Magnetic Degree NNNT: True Degree

Continued on the following page

Continued from the previous page

Range	NNN *Min*: 1 *Max*: 360 *Note:* *360 is displayed as 0.* NNNT *Min*: 1 *Max*: 360 *Note:* *360T is displayed as 0T.*
Resolution	NNN, NNNT: 1
Page	MODIFY (*Refer to page*)

Ident.: DSC-46-ATC-20-50-10-00000717.0001001 / 23 APR 14

PRESENT POSITION

L12

Format	XXXXX DDMM.MB/EEEMM.MC or BDDMM.M/CEEEMM.M XXXXX/NNN/NNN.N or KKK *Note:* *Leading zeros may be omitted.*
Units	DD: Latitude Degree EEE: Longitude Degree MM.M: Minute NNN: Bearing Degree NNN.N: Nautical Mile KKK: Kilometer
Range	XXXXX: *Min*: 1 alphanumeric character *Max*: 5 alphanumeric characters DD: *Min*: 0 *Max*: 90 B: N or S EEE: *Min*: 0 *Max*: 180 C: E or W MM.M: *Min*: 0 *Max*: 59.9 NNN: *Min*: 0 *Max*: 360 NNN.N: *Min*: 0 *Max*: 999.9 KKK: *Min*: 1 *Max*: 1024

Continued on the following page

Continued from the previous page

Resolution	DD, EEE: 1 MM.M: 0.1 NNN: 1 NNN.N: 0.1 KKK: 1
Page	MODIFY (*Refer to page*)

Ident.: DSC-46-ATC-20-50-10-00000718.0001001 / 23 APR 14

PRESENT SPD

L12

Format	NNN, NNNKT, NNNKM/H, or NNNKM *Note: Leading zeros may be omitted.* M.NN or .NN *Note: The decimal point must be written, trailing zeros may be omitted.*	
Units	NNN or NNNKT: Knot NNNKM/H or NNNKM: Km/h M.NN or .NN: Mach	
Range	NNN or NNNKT:	
	Min: 100	*Max*: 350
	NNNKM/H or NNNKM:	
	Min: 185	*Max*: 650
	M.NN or .NN:	
	Min: .61	*Max*: .92
Resolution	NNN or NNNKT: 1 NNNKM/H or NNNKM: 1 M.NN or .NN: 0.01	
Page	MODIFY (*Refer to page*)	

Ident.: DSC-46-ATC-20-50-10-00000719.0001001 / 23 APR 14

REACHING

L12

Format	FLNNN or NNN *Note:* *Leading zeros may be omitted.* NNNNNFT or NNNNN *Note:* *1. Between 0 and 1000 feet, "FT" must be written.* *2. Leading zeros may be omitted.* NNNNNM *Note:* *Leading zeros may be omitted.*
Units	FLNNN: Hundreds of Feet (MSL) NNNNNFT: Foot NNNNNM: Meter
Range	FLNNN *Min*: 30 *Max*: 450 NNNNNFT *Min*: 0 *Max*: 25 000 NNNNNM *Min*: 0 *Max*: 13 700
Resolution	FLNNN: 10 NNNNNFT: 100 NNNNNM: 100
Page	MODIFY (*Refer to page*) OTHER REPORTS (*Refer to page*)

Ident.: DSC-46-ATC-20-50-10-00000720.0001001 / 23 APR 14

REACHING BLOCK

L12

Format	FLNNN or NNN *Note:* *Leading zeros may be omitted.* NNNNNFT or NNNNN *Note:* *1. Between 0 and 1000 feet, "FT" must be written.* *2. Leading zeros may be omitted.* NNNNNM *Note:* *Leading zeros may be omitted.*
Units	FLNNN: Hundreds of Feet (MSL) NNNNNFT: Foot NNNNNM: Meter
Range	FLNNN *Min*: 30 *Max*: 450 NNNNNFT *Min*: 0 *Max*: 25 000 NNNNNM *Min*: 0 *Max*: 13 700
Resolution	FLNNN: 10 NNNNNFT: 100 NNNNNM: 100
Page	MODIFY (*Refer to page*) OTHER REPORTS (*Refer to page*)

Ident.: DSC-46-ATC-20-50-10-00000721.0001001 / 23 APR 14

REMAINING FUEL

Format	HHMM HHHMMM HHHMMMN HHHMMMIN
Units	HH: Hour MM: Minute
Range	HH *Min*: 0 *Max*: 23 MM *Min*: 0 *Max*: 59
Resolution	HH: 1 MM: 1
Page	MODIFY page (*Refer to page*)

Ident.: DSC-46-ATC-20-50-10-00000722.0001001 / 23 APR 14

REPORTED WPT

L12

Format	1. XXXXX DDMM.MB/EEEMM.MC or BDDMM.M/CEEEMM.M XXXXX/NNN/NNN.N or KKK *Note:* *Leading zeros may be omitted.* 2. HHMM HHMMZ HHHMMM HHHMMMN HHHMMMIN
Units	1. DD: Latitude Degree EEE: Longitude Degree MM.M: Minute NNN: Bearing Degree NNN.N: Nautical Mile KKK: Kilometer 2. HH: Hour MM: Minute
Range	1. XXXXX: *Min*: 1 alphanumeric character *Max*: 5 alphanumeric characters DD: *Min*: 0 *Max*: 90 B: N or S EEE: *Min*: 0 *Max*: 180 C: E or W MM.M: *Min*: 0 *Max*: 59.9 NNN: *Min*: 0 *Max*: 360 NNN.N: *Min*: 0 *Max*: 999.9 KKK: *Min*: 1 *Max*: 1024 2. HH *Min*: 0 *Max*: 23 MM *Min*: 0 *Max*: 59

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Resolution	1. DD, EEE: 1 MM.M: 0.1 NNN: 1 NNN.N: 0.1 KKK: 1 2. HH: 1 MM: 1
Page	MODIFY (*Refer to page*)

Ident.: DSC-46-ATC-20-50-10-00000723.0001001 / 23 APR 14

SAT

L12

Format	±NN or ±NNC ±NNNF *Note:* 1. *"-" may be entered as M.* 2. *If no sign is entered, "+" is taken by default.*	
Units	±NNC: Degree Celsius ±NNNF: Degree Fahrenheit	
Range	±NNC: *Min*: - 80 ±NNNF: *Min*: - 105	 *Max*: + 47 *Max*: + 150
Resolution	±NNC: 1 ±NNNF: 1	
Page	POSITION REPORT (*Refer to page*)	

Ident.: DSC-46-ATC-20-50-10-00000724.0001001 / 23 APR 14

SID/STAR

Format	XXXXXX	
Range	*Min*: 1 alphanumeric character	*Max*: 6 alphanumeric characters
Page	REQUEST (*Refer to page*)	

Ident.: DSC-46-ATC-20-50-10-00000725.0001001 / 23 APR 14

SOULS ON BOARD

L12

Format	NNNN *Note:* *Leading zeros may be omitted.*	
Range	*Min*: 1	*Max*: 1 024
Page	MODIFY (*Refer to page*) EMERGENCY (*Refer to page*)	

Ident.: DSC-46-ATC-20-50-10-00000726.0001001 / 23 APR 14

SPD

L12

Format	NNN, NNNKT, NNNKM/H, or NNNKM *Note:* *Leading zeros may be omitted.* M.NN or .NN *Note:* *The decimal point must be written, trailing zeros may be omitted.*	
Units	NNN or NNNKT: Knot NNNKM/H or NNNKM: Km/h M.NN or .NN: Mach	
Range	NNN or NNNKT:	
	Min: 100	*Max*: 350
	NNNKM/H or NNNKM:	
	Min: 185	*Max*: 650
	M.NN or .NN:	
	Min: .61	*Max*: .92
Resolution	NNN or NNNKT: 1 NNNKM/H or NNNKM: 1 M.NN or .NN: 0.01	
Page	REQUEST (*Refer to page*) POSITION REPORT (*Refer to page*)	

Ident.: DSC-46-ATC-20-50-10-00000727.0001001 / 23 APR 14

SPEED

L12

Format	NNN, NNNKT, NNNKM/H, or NNNKM *Note:* *Leading zeros may be omitted.* M.NN or .NN *Note:* *The decimal point must be written, trailing zeros may be omitted.*	
Units	NNN or NNNKT: Knot NNNKM/H or NNNKM: Km/h M.NN or .NN: Mach	
Range	NNN or NNNKT:	
	Min: 100	*Max*: 350
	NNNKM/H or NNNKM:	
	Min: 185	*Max*: 650
	M.NN or .NN:	
	Min: .61	*Max*: .92
Resolution	NNN or NNNKT: 1 NNNKM/H or NNNKM: 1 M.NN or .NN: 0.01	
Page	REQUEST (*Refer to page*) MODIFY (*Refer to page*)	

Ident.: DSC-46-ATC-20-50-10-00000728.0001001 / 23 APR 14

SQUAWKING

Format	NNNN	
Range	Each N:	
	Min: 0	*Max*: 7
Page	MODIFY (*Refer to page*)	

Ident.: DSC-46-ATC-20-50-10-00000729.0001001 / 23 APR 14

TO

L12

Format	1. FLNNN or NNN *Note: Leading zeros may be omitted.* NNNNNFT or NNNNN *Note: 1. Between 0 and 1000 feet, "FT" must be written.* *2. Leading zeros may be omitted.* NNNNNM *Note: Leading zeros may be omitted.* 2. XXXXX DDMM.MB/EEEMM.MC or BDDMM.M/CEEEMM.M *Note: Leading zeros may be omitted.*
Units	1. FLNNN: Hundreds of Feet (MSL) NNNNNFT: Foot NNNNNM: Meter 2. DD: Latitude Degree EEE: Longitude Degree MM.M: Minute
Range	1. FLNNN *Min*: 30 *Max*: 450 NNNNNFT *Min*: 0 *Max*: 25 000 NNNNNM *Min*: 0 *Max*: 13 700 2. XXXXX: *Min*: 1 alphanumeric character *Max*: 5 alphanumeric characters DD: *Min*: 0 *Max*: 90 B: N or S EEE: *Min*: 0 *Max*: 180 C: E or W MM.M: *Min*: 0 *Max*: 59.9

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Resolution	1. FLNNN: 10 NNNNNFT: 100 NNNNNM: 100 2. DD, EEE: 1 MM.M: 0.1
Page	REQUEST (*Refer to page*) POSITION REPORT (*Refer to page*) MODIFY (*Refer to page*) OTHER REPORTS (*Refer to page*)

Ident.: DSC-46-ATC-20-50-10-00000730.0001001 / 23 APR 14

TRK

L12

Format	NNN NNNT *Note:* *Leading zeros may be omitted.*
Units	NNN: Magnetic Degree NNNT: True Degree
Range	NNN *Min*: 1 *Max*: 360 *Note:* *360 is displayed as 0.* NNNT *Min*: 1 *Max*: 360 *Note:* *360T is displayed as 0T.*
Resolution	NNN, NNNT: 1
Page	POSITION REPORT (*Refer to page*)

Ident.: DSC-46-ATC-20-50-10-00000731.0001001 / 23 APR 14

TURB

Format	X
Range	< >, that means no information is available about turbulence conditions LIGHT MODERATE SEVERE
Page	POSITION REPORT (*Refer to page*)

Ident.: DSC-46-ATC-20-50-10-00000732.0001001 / 23 APR 14

UTC

Format	HHMM HHMMZ HHHMMM HHHMMMN HHHMMMIN	
Units	HH: Hour MM: Minute	
Range	HH *Min*: 0 MM *Min*: 0	 *Max*: 23 *Max*: 59
Resolution	HH: 1 MM: 1	
Page	POSITION REPORT (*Refer to page*)	

Ident.: DSC-46-ATC-20-50-10-00000733.0001001 / 23 APR 14

V/S

L12

Format	±NNNN, ±NNNNFT, ±NNNNFT/MIN, or ±NNNNFTM ±NNNNM, ±NNNNM/MIN, or ±NNNNMM *Note:* 1. *"-" may be entered as M.* 2. *If no sign is input, "+" is taken by default.*	
Units	NNNN: Feet per Minute NNNNM: Meter per Minute	
Range	NNNN: *Min*: 0 NNNNM: *Min*: 0	 *Max*: 6 000 *Max*: 2 000
Resolution	NNNN: 100 NNNNM: 10	
Page	POSITION REPORT (*Refer to page*)	

Ident.: DSC-46-ATC-20-50-10-00000734.0001001 / 23 APR 14

VOICE CONTACT

L12

Format	NNNNN (HF) *Note: Leading zeros may be omitted.* NNNNNNNNNNNN *Note: SATCHANNEL corresponds to a 12 digits telephone number.* NNN.NNN (VHF)
Units	NNNNN (HF): KiloHertz NNN.NNN (VHF): MegaHertz
Range	NNNNN (HF) *Min*: 2 850 *Max*: 28 000 NNNNNNNNNNNN: 12 numbers NNN.NNN (VHF) *Min*: 117 *Max*: 138
Resolution	NNNNN (HF): 1 NNN.NNN (VHF): 0.001
Page	REQUEST (*Refer to page*) EMERGENCY (*Refer to page*)

Ident.: DSC-46-ATC-20-50-10-00000735.0001001 / 23 APR 14

WIND

L12

Format	DDD/NNNKT DDD°/NNNKT DDD/NNN DDD°/NNN DDD/NNNKM DDD°/NNNKM DDD/NNNKM/H DDD°/NNNKM/H *Note: Leading zeros may be omitted.*
Units	DDD and DDD°: Degree NNNKT and NNN: Knot NNNKM and NNNKM/H: Kilometer per Hour

Continued on the following page

Continued from the previous page

Range	DDD	
	Min: 1	*Max*: 360
	NNNKT and NNN	
	Min: 0	*Max*: 255
	NNNKM and NNNKM/H	
	Min: 0	*Max*: 511
Resolution	DDD: 1 NNN: 1	
Page	POSITION REPORT (*Refer to page*)	

Ident.: DSC-46-ATC-20-50-10-00000736.0001001 / 23 APR 14

WX DEV

L12

Format	NNND, DNNN, NNNNMD or DNNNNM NNNKMD or DNNNKM D: Offsetting Direction *Note:* *Leading zeros may be omitted.*	
Units	NNN: Nautical Mile NNNKM: Kilometer	
Range	D:	
	L (Left), R (Right), LR (Left or Right), L OR R (Left or Right), or nothing	
	NNN:	
	Min: 1	*Max*: 128
	NNNKM:	
	Min: 1	*Max*: 256
Resolution	NNN: 1 NNNKM: 1	
Page	REQUEST (*Refer to page*)	

MFD OVERVIEW

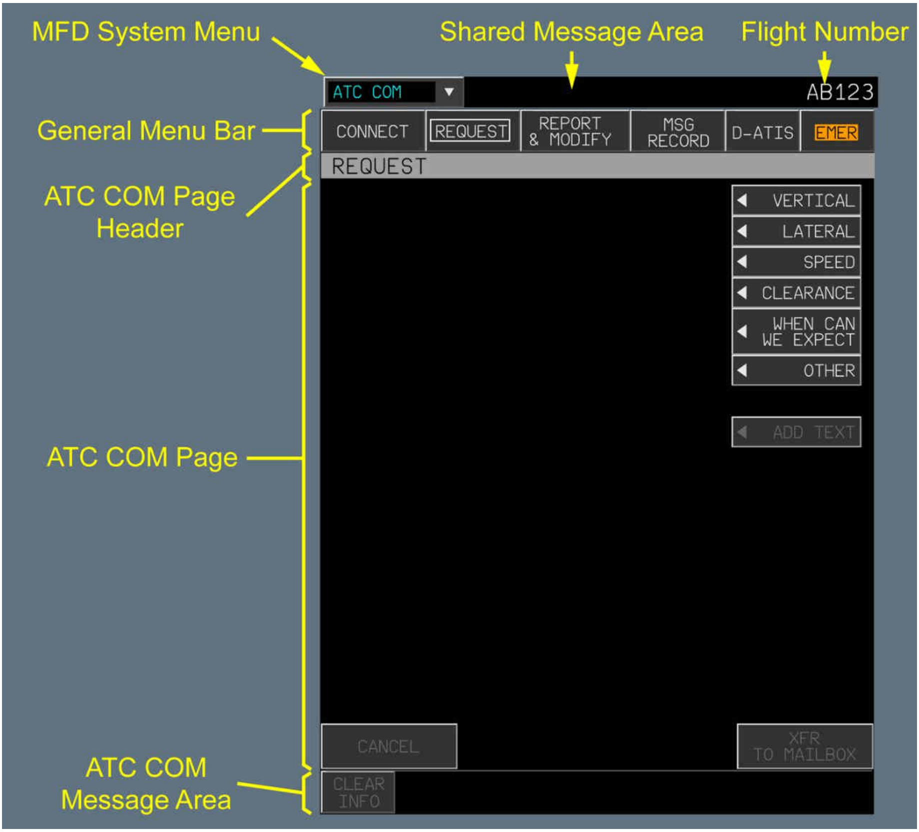
Applicable to: ALL

Ident.: DSC-46-ATC-20-20-10-00000573.0001001 / 23 APR 14

The flight crew can access the default ATC COM page via:
- The ATC COM key on the KCCU, or
- The MFD system menu.

L2 For more information, *Refer to DSC-31-CDS-70-10 MFD*.

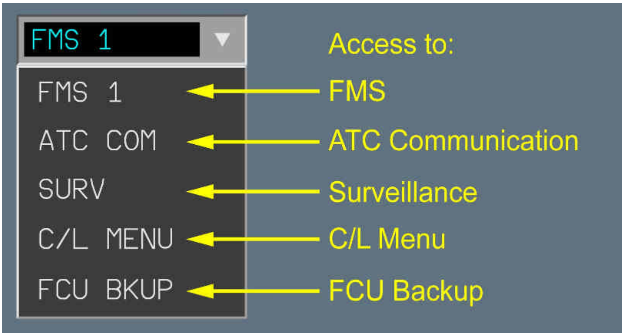
ATC COM Page


MFD System Menu
Shared Message Area
Flight Number
ATC COM
AB123
General Menu Bar
CONNECT
REQUEST
REPORT & MODIFY
MSG RECORD
D-ATIS
EMER
ATC COM Page Header
REQUEST
VERTICAL
LATERAL
SPEED
CLEARANCE
WHEN CAN WE EXPECT
OTHER
ADD TEXT
ATC COM Page
CANCEL
XFR TO MAILBOX
ATC COM Message Area
CLEAR INFO

Ident.: DSC-46-ATC-20-20-10-00000574.0001001 / 23 APR 14

MFD SYSTEM MENU

MFD System Menu



In order to access the ATC COM pages, the flight crew selects the ATC COM identifier in the MFD system menu.

Ident.: DSC-46-ATC-20-20-10-00000575.0001001 / 23 APR 14

SHARED MESSAGE AREA

The shared message area displays messages in order to inform the flight crew about an event that is related to the FMS or ATC communication.
The shared message area displays the following messages:

D-ATIS RECEIVED	Indicates that a new ATIS report is received. Only appears if the MFD displays a page that is not an ATC COM page. Disappears when the flight crew accesses an ATC COM page.
D-ATIS GROUND MSG	Indicates that an ATIS FSM message is received. Only appears if the MFD displays a page that is not an ATC COM page. Disappears when the flight crew accesses an ATC COM page.
D-ATIS NO REPLY	Appears when the time-out (7.5 min) is reached and that no ATIS was received. Only appears if the MFD displays a page that is not an ATC COM page. Disappears when the flight crew accesses an ATC COM page.

D-ATIS SEND FAIL	Appears when an ATIS request failed for one of the following reasons: - The sending of the ATIS request failed, or - The time-out (6 min) for acknowledgement is reached, or - A negative answer for the ATIS request is received. Only appears if the MFD displays a page that is not an ATC COM page. Disappears when the flight crew accesses an ATC COM page.
CHECK FMS MESSAGE	Indicates that the FMS triggered an amber FMS message. Only appears if the MFD displays a page that is not an FMS page. Disappears when the flight crew accesses an FMS page.
L12 IND	Indicates that both FMS operate in INDEPENDENT mode. For information about the INDEPENDENT mode, *Refer to DSC-22-FMS-40 INDEPENDENT Mode*.

L2 *Note: The shared message area displays only one message at a time. However, the IND message can appear in addition to another message.*

Ident.: DSC-46-ATC-20-20-10-00000577.0001001 / 04 DEC 14

GENERAL MENU BAR

The general menu bar provides the flight crew with access to the main ATC COM pages.
The main ATC COM pages are divided into 6 groups, that correspond to the 6 menus of the general menu bar: CONNECT, REQUEST, REPORT & MODIFY, MSG RECORD, D-ATIS and EMER.

Note: A box around the menu name indicates that the displayed page belongs to this menu.

Ident.: DSC-46-ATC-20-20-10-00000578.0001001 / 04 DEC 14

ATC COM PAGE HEADER

The ATC COM page header indicates the title of the ATC COM page currently displayed.
A slash in the page title indicates the level of the page hierarchy, for example: REPORT/AUTO & MANUAL POSITION.

Ident.: DSC-46-ATC-20-20-10-00018576.0001001 / 23 APR 14

FLIGHT NUMBER

Refer to DSC-22-FMS-20-20-20 INIT Page.

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MANUAL TIME SETTING

Ident.: DSC-46-ATC-30-00000965.0001001 / 07 NOV 16
Applicable to: ALL

The ADIRS normally provides the time information for all aircraft systems, based on GPS data. In the case of a loss of GPS , the ADIRS will keep the last GPS time data and compute an internal time.

● **If the flight crew sets the ACFT TIME REF option on the POSITION/TIME FMS page to MANUAL:**

- The ATC Datalink system will inhibit the use of the CPDLC, including departure and oceanic clearance applications
- The ADS-C application will continue to operate but in degraded mode

L2 The ADS-C application is degraded due to the downgraded accuracy of the position data.

L1
- The D-ATIS application will continue to operate.

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AIRCRAFT SYSTEMS

46 - ONBOARD INFORMATION SYSTEM

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DSC-46-OIS-10 System Description

DSC-46-OIS-10-10 Overview

Overview..A

DSC-46-OIS-10-20 Architecture

Architecture..A

DSC-46-OIS-10-30 Applications on EFB Side

MISSION..A
DOCUMENTATION..B
PERFORMANCE..C
UTILITIES..D

DSC-46-OIS-10-40 Applications on AVNCS Side

COMPANY COM..A

DSC-46-OIS-20 Controls and Indicators

DSC-46-OIS-20-10 Cockpit View

Cockpit View..A

DSC-46-OIS-20-20 Audio Indicators

Audio Indicators..A

DSC-46-OIS-20-30 COM GND CONNECTION pb-sw

COM GND CONNECTION pb-sw..A

DSC-46-OIS-20-50 KCCU

KCCU Controls for the OIS..A

DSC-46-OIS-20-60 Laptop Package

Laptop Package..A

DSC-46-OIS-20-70 MEMO

MEMO..A

DSC-46-OIS-20-80 OIS

DSC-46-OIS-20-80-09 General

General..A

DSC-46-OIS-20-80-10 Overview

Overview..A

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DSC-46-OIS-20-80-20 OIS MENU

OIS MENU........A

DSC-46-OIS-20-80-30 OIS MENU BACKUP

OIS MENU BACKUP........A

DSC-46-OIS-20-80-40 AVNCS - COMPANY COM

AVNCS - COMPANY COM........A

DSC-46-OIS-20-80-50 EFB - FLT OPS MENU

EFB - FLT OPS MENU........A

DSC-46-OIS-20-80-60 EFB - FLT OPS STS

EFB - FLT OPS STS........A

DSC-46-OIS-20-80-70 EFB - OPS LIBRARY

OPS LIBRARY........A

DSC-46-OIS-20-80-80 EFB - FLT FOLDER

EFB - FLT FOLDER........A

DSC-46-OIS-20-80-90 EFB - T.O PERF

T.O PERF........A

DSC-46-OIS-20-80-100 EFB - IN-FLT PERF

IN-FLT PERF........A

DSC-46-OIS-20-80-110 EFB - LDG PERF

LDG PERF........A

DSC-46-OIS-20-80-120 EFB - LOADSHEET

LOADSHEET........A

DSC-46-OIS-20-80-130 EFB - LOAD BOX

LOAD BOX........A

DSC-46-OIS-20-80-140 EFB - EXPORT BOX

EXPORT BOX........A

DSC-46-OIS-20-80-150 OIS Messages

OIS Messages........A

DSC-46-OIS-20-90 OIS Controls on Main Instrument Panel

OIS Controls on Main Instrument Panel........A

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DSC-46-OIS-20-100 OIS Keyboards

OIS Keyboards....A

DSC-46-OIS-20-110 OIS Panel on Overhead Panel

OIS Panel on Overhead Panel....A

DSC-46-OIS-20-120 Printer

Printer....A

DSC-46-OIS-30 How To

How To Exit From The Maintenance Applications....A
How To Insert an ECAM Alert in a Performance Application....B
How To Start the EFB Device....C
How To Start or Switch Off the Spare EFB (EFB3)....D
How To Strap the Laptop on the Lateral Console....E
How To Strap a Tablet on the Lateral Console....F

DSC-46-OIS-35 Abnormal Operations

OIS APPLICATIONS Temporary Loss After ENG 2 Shutdown....A

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Localization Title	Toc Index	ID	Reason
DSC-46-OIS-20-80-60 CLEAR/CLOSE FLIGHT Button	A	1	Update of the name of the button to cover both Flysmart L6.x and L7.x versions. The name of the button is CLOSE FLIGHT on Flysmart L6.x, but becomes CLEAR FLIGHT from Flysmart L7.x version.
DSC-46-OIS-20-80-60 CLEAR/CLOSE FLIGHT Button	A	2	Documentation update: Deletion of text.
			Update of the CLEAR/CLOSE FLIGHT BUTTON purpose to be consistent with latest implementation on Flysmart L7.x version. Removal of the part related to the MEL/CDL items reset as items selected during previous flight will be kept.
DSC-46-OIS-20-80-90 CDL Items	A	1	Update of the description of the CDL ITEMS panel to clarify that "missing items" or "missing meters" of the item can be manually selected in T.O PERF application.
DSC-46-OIS-20-80-100 CDL Items	A	1	Update of the description of the CDL ITEMS panel to clarify that "missing items" or "missing meters" of the item can be manually selected in IN-FLT PERF application.
DSC-46-OIS-20-80-110 CDL Items	A	1	Update of the description of the CDL ITEMS panel to clarify that "missing items" or "missing meters" of the item can be manually selected in LDG PERF application.
DSC-46-OIS-35 OIS APPLICATIONS Temporary Loss After ENG 2 Shutdown	A	1	Documentation update: Addition of "OIS APPLICATIONS Temporary Loss After ENG 2 Shutdown" documentary unit

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OVERVIEW

Ident.: DSC-46-OIS-10-10-00013369.0001001 / 02 MAY 14
Applicable to: ALL

The Onboard Information System (OIS) provides software applications for flight operations, maintenance, and cabin activities.

The flight crew uses the OIS to access the following tools and information:
- The aircraft performance applications
- The navigation charts
- The mission management information
- The aircraft operating manuals
- The Operator's documentation
- The company communication application

The OIS has two sides:
- The Avionics (AVNCS) side, that contains the avionics and maintenance applications
- The Electronic Flight Bag (EFB) side, that contains the flight operations applications.

The Control and Display System (CDS) displays the OIS information.

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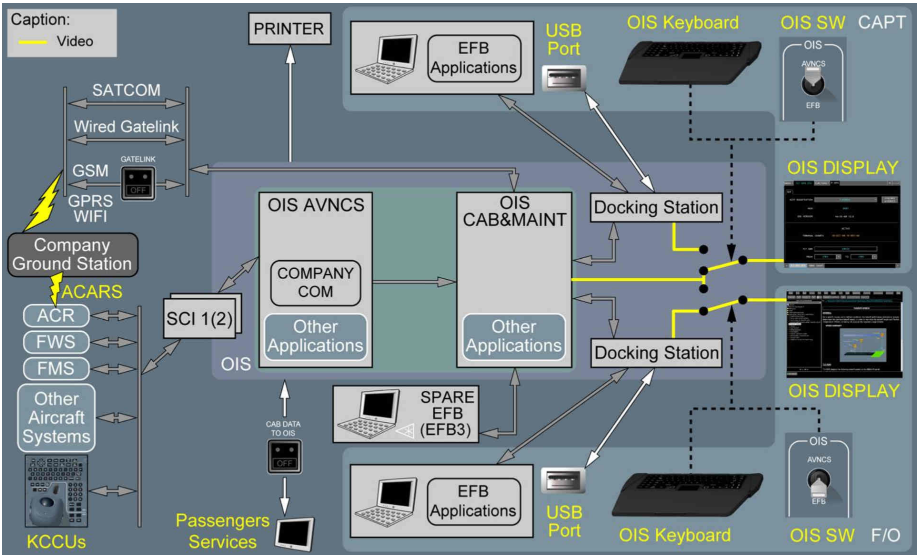
ARCHITECTURE

Applicable to: ALL

Ident.: DSC-46-OIS-10-20-01-00001025.0001001 / 02 MAY 14

Architecture


Caption:
Video
PRINTER
EFB Applications
USB Port
OIS Keyboard
OIS SW
CAPT
OIS
AVNCS
EFB
SATCOM
Wired Gatelink
GATELINK
GSM
OFF
GPRS
WIFI
Company Ground Station
ACARS
ACR
FWS
FMS
Other Aircraft Systems
KCCUs
SCI 1(2)
OIS AVNCS
COMPANY COM
Other Applications
OIS
OIS CAB&MAINT
Other Applications
Docking Station
OIS DISPLAY
Docking Station
OIS DISPLAY
CAB DATA TO OIS
OFF
SPARE EFB (EFB3)
Passengers Services
EFB Applications
USB Port
OIS Keyboard
OIS
AVNCS
EFB
OIS SW
F/O

Ident.: DSC-46-OIS-10-20-01-00001029.0001001 / 02 MAY 14

AVNCS SIDE

Each flight crewmember can use the OIS sw or the OIS keyboard to display the AVNCS side.

COMPANY COM

The AVNCS side hosts the airline operational communication (COMPANY COM).

L2

OIS AVNCS SERVER

The OIS AVNCS server hosts the flight and maintenance applications that are connected to the aircraft avionics systems (e.g the COMPANY COM application)

OIS CAB & MAINT SERVER

The OIS CAB & MAINT server:
- Hosts the flight, maintenance and cabin applications
- Ensures the connections with the EFBs

- Ensures the connection with the printer
- Is connected to the external communication means (gatelink, SATCOM, GSM, GPRS)
- Provides the CDS with video signal.

The OIS CAB & MAINT server receives avionics data via the OIS AVNCS server.
For data security reasons, the OIS CAB & MAINT server cannot send data to the OIS AVNCS server, except for notifications and display.

Ident.: DSC-46-OIS-10-20-01-00001031.0001001 / 02 MAY 14

EFB SIDE

Each flight crewmember can use the OIS sw or the OIS keyboard to display the EFB side.
The EFB side is the content of the laptop that is plugged on the onside docking station.

LAPTOP DOCKING STATION

There are two laptop docking stations:
- One laptop docking station for the Captain (CAPT)
- One laptop docking station for the First Officer (F/O).

Each laptop docking station hosts one laptop and performs the interface between the laptop and the aircraft.

The main functions of the laptop docking station are:
- To dock and stow the laptop
- To power the laptop
- To interface the laptop with the OIS.

L2 For more information about the laptop docking station, *Refer to DSC-46-OIS-20-60 Overview*.

Ident.: DSC-46-OIS-10-20-01-00020538.0001001 / 09 MAR 16

EFB

Each EFB hosts the following flight crew applications:
- Documentation : OPS LIBRARY
  L2 (For more information about the application, *Refer to DSC-46-OIS-10-30 OPS LIBRARY*)
- L1 Performance :
  - T.O PERF
    L2 (For more information about the application, *Refer to DSC-46-OIS-10-30 T.O PERF*)
  - L1 LDG PERF
    L2 (For more information about the application, *Refer to DSC-46-OIS-10-30 LDG PERF*)
  - L1 IN-FLT PERF
    L2 (For more information about the application, *Refer to DSC-46-OIS-10-30 IN-FLT PERF*)
  - L1 LOADSHEET
    L2 (For more information about the application, *Refer to DSC-46-OIS-10-30 LOADSHEET*)

L1
- Mission :
  - The FLT FOLDER

    L2 (For more information about the application, *Refer to DSC-46-OIS-10-30 FLT FOLDER*)
  - L1 Navigation charts
- Utilities :
  - FLT OPS STS

    L2 (For more information about the application, *Refer to DSC-46-OIS-10-30 FLT OPS STS*)
  - L1 LOAD BOX

    L2 (For more information about the application, *Refer to DSC-46-OIS-10-30 LOAD BOX / EXPORT BOX*)
  - L1 EXPORT BOX

    L2 (For more information about the application, *Refer to DSC-46-OIS-10-30 LOAD BOX / EXPORT BOX*)

L1 *Note:* *Operators can install other applications.*

L2 CAPT, F/O and spare EFB (EFB3) ◁ are synchronised.
Each EFB exchanges aircraft avionics data with the OIS CAB & MAINT server.
For data security reasons, the EFBs cannot send data to the OIS AVNCS server.

Ident.: DSC-46-OIS-10-20-01-00019859.0001001 / 02 MAY 14

SPARE EFB (EFB3) ◁

The spare EFB is an optional laptop that is automatically updated, and that can be used as a backup.

L2 The spare EFB, is synchronized for data installation via the LOADBOX only. The spare EFB is not synchronized for FLT FOLDER, FLT OPS STS and Charts.

L1 For more information about the spare EFB, *Refer to DSC-46-OIS-20-60 Overview*.

Ident.: DSC-46-OIS-10-20-01-00019861.0001001 / 02 MAY 14

COMMUNICATION

The OIS can exchange data with the ground. These data can be messages, mission data (loadsheet, EFF), database update, operational manuals update, or software updates.

L2 The following communication means can be used:
- SATCOM, for wireless exchanges in flight or on ground, via satellite
- Gatelink, for wireless exchanges on ground, via WIFI network, if the airport is equipped
- Wired gatelink, for wired exchanges on ground, in an hangar for example
- GSM, GPRS, for exchanges on ground, via mobile phones network.
- ACARS, for wireless exchanges, in flight or on ground. ACARS is used by the COMPANY COM application
- USB ports can also be used to exchange data.

Ident.: DSC-46-OIS-10-20-01-00019862.0001001 / 02 MAY 14

PRINTER

The flight crew can use the printer to print ATC or company messages, flight plan data, flight plan reports etc.

L2 The OIS manages the print function, and the print requests from FMS and ATC.

Ident.: DSC-46-OIS-10-20-01-00019863.0001001 / 02 MAY 14

L2 SECURED COMMUNICATION INTERFACE (SCI)

There are two SCIs (one is active, the other one works as a back-up).
The active SCI enables the communication between the OIS and the aircraft avionics systems.
The loss of both SCIs is one of the triggering conditions of the ECAM alert : COM OIS/AVNCS DATA XFR FAULT (*Refer to procedure*).

MISSION

Applicable to: ALL

Ident.: DSC-46-OIS-10-30-10-00001047.0001001 / 02 MAY 14

FLT FOLDER

ELECTRONIC FLIGHT FOLDER

An Electronic Flight Folder (EFF) is organized via a tree structure of folders and documents.
Operators can customize the structure and the content.
The airline operations center prepares an EFF on ground.

The flight crew can load an EFF on the aircraft via:
- The USB ports
- The air-ground communication tools.

After the flight, the flight crew can send EFF's back to the airline operations center.

FLT FOLDER APPLICATION

The FLT FOLDER application enables the flight crew to perform the following actions:
- Display the EFFs
- Store information from other EFB applications
- Centralize all the mission-related information
- Monitor and log the progress of the flight
- Send the documents to a ground archiving system.

L2 For more information about the application, *Refer to DSC-46-OIS-20-80-80 FLT FOLDER*.

Ident.: DSC-46-OIS-10-30-10-00001045.0001001 / 02 MAY 14

NAVIGATION CHARTS

The navigation charts application enable the flight crew to display en route and terminal charts.

EN ROUTE

The en route charts can be either:
- A digital copy of the paper chart, or
- An interactive chart, that offers a customizable level of detail. The interactive chart provides more information about the objects in the chart and displays the aircraft position.

TERML CHART

The TERML CHART application provides the flight crew with airport charts, and contains:
- General airport information
- Maps of the taxiway, and parking facilities
- Departure, arrival, and approach procedures.

The flight crew can make a selection of airports from the application database, to enable quick access to the preselected airports.
The departure and destination airports appear in the selection if they are entered in the FLT OPS STS page.

DOCUMENTATION

Applicable to: ALL

Ident.: DSC-46-OIS-10-30-20-00001041.0001001 / 03 SEP 14

The flight crew can use the OPS LIBRARY application to display:
- The Flight Crew Operating Manual (FCOM)
- The Flight Crew Techniques Manual (FCTM)
- The Cabin Crew Operating Manual (CCOM)
- The Minimum Equipment List (MEL)
- The Configuration Deviation List (CDL)
- The Weight and Balance Manual (WBM)
- The Airplane Flight Manual (AFM).

In accordance with the airline needs, the Operator can remove, add or modify the manuals.
The OPS LIBRARY application includes a Quick Access tab that enables the flight crew to easily access some procedures or documentation. The Operator can customize the links that are available in the Quick Access tab.

Note: *The OPS LIBRARY can display PDF files. The flight crew must not attempt to print individual pages of the PDF file onboard the aircraft, in order to avoid printing the entire file.*

L2 For more information about the application, *Refer to DSC-46-OIS-20-80-70 OPS LIBRARY*.

PERFORMANCE

Applicable to: ALL

Ident.: DSC-46-OIS-10-30-30-00001043.0001001 / 02 MAY 14

T.O PERF

The flight crew enters airfield, aircraft and environmental data to enable the application to compute takeoff performance data.

L2 For more information about the application, *Refer to DSC-46-OIS-20-80-90 T.O PERF*.

Ident.: DSC-46-OIS-10-30-30-00016284.0001001 / 02 MAY 14

LOADSHEET

The LOADSHEET application computes aircraft weight and balance data.

L2 For more information about the application, *Refer to DSC-46-OIS-20-80-120 LOADSHEET*.

Ident.: DSC-46-OIS-10-30-30-00016285.0001001 / 02 MAY 14

LDG PERF

The flight crew enters airfield, aircraft and environmental data to enable the application to compute landing performance data.

L2 For more information about the application, *Refer to DSC-46-OIS-20-80-110 LDG PERF*.

Ident.: DSC-46-OIS-10-30-30-00016286.0001001 / 02 MAY 14

IN-FLT PERF

The flight crew enters airfield, aircraft and environmental data to enable the application to compute in-flight performance data.

L2 For more information about the application, *Refer to DSC-46-OIS-20-80-100 IN-FLT PERF*.

UTILITIES

Applicable to: ALL

Ident.: DSC-46-OIS-10-30-40-00016094.0001001 / 02 MAY 14

FLT OPS STS

The flight crew must insert aircraft and flight information in order to initialize the FLT OPS STS page.

The flight crew can enter the following parameters:
- The aircraft type
- The aircraft registration number
- The flight number
- The departure airport
- The destination airport
- The weight variant.

The other applications initialize in accordance with the parameters from the FLT OPS STS page. If the flight number, the departure airport and the destination airport are entered in the FMS, the flight crew can use the SYNCHRO AVIONICS button to reuse them in the FLT OPS STS page.

L2 For more information about the application, *Refer to DSC-46-OIS-20-80-60 FLT OPS STS*.

Ident.: DSC-46-OIS-10-30-40-00001039.0001001 / 02 MAY 14

LOAD BOX / EXPORT BOX

The flight crew uses the LOAD BOX and the EXPORT BOX to transfer data to and from the EFBs.
The LOAD BOX transfers data into the EFB.
The EXPORT BOX transfers data out of the EFB.
The data can be EFFs, performance data, updates of manuals, etc.
The data transfer between the aircraft and the ground can be achieved either via a physical device, such as a USB key, or via a wireless connection, such as GATELINK or SATCOM.

L2 For more information about the application, *Refer to DSC-46-OIS-20-80-140 EXPORT BOX*.

L1 LOAD BOX

When a data loading is started, it applies on all the connected laptops.
When a data is available on a USB key, the associated line appears only in the LOAD BOX of the laptop that is connected to the USB key.
When a data is available on GATELINK, the associated line appears in the LOAD BOX of all the laptops in the cockpit.

L2 For more information about the application, *Refer to DSC-46-OIS-20-80-130 LOAD BOX*.

COMPANY COM

Ident.: DSC-46-OIS-10-40-00001055.0001001 / 02 MAY 14

Applicable to: ALL

The flight crew and the airline ground stations use the COMPANY COM application to exchange information.
The COMPANY COM application transmits messages via the ACARS.

Operators can use the COMPANY COM application to manage flight operations such as:
- Schedule
- Route
- Diversion
- Ramp service requests
- Weather report
- Delays report
- Flight parameters report.

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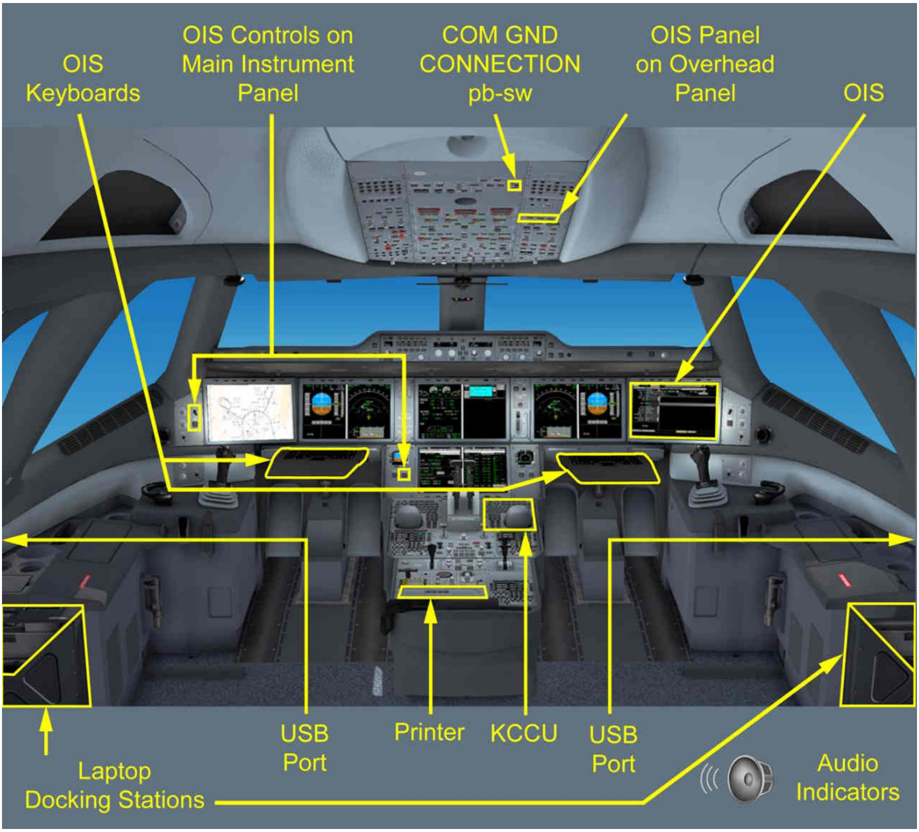
COCKPIT VIEW

Ident.: DSC-46-OIS-20-10-00013397.0001001 / 02 MAY 14
Applicable to: ALL

Cockpit View


OIS Keyboards
OIS Controls on Main Instrument Panel
COM GND CONNECTION pb-sw
OIS Panel on Overhead Panel
OIS
USB Port
Printer
KCCU
USB Port
Laptop Docking Stations
Audio Indicators

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AUDIO INDICATORS

Ident.: DSC-46-OIS-20-20-00015883.0001001 / 26 MAY 14
Applicable to: ALL

Audio Indicator	Condition or Cause	Duration
Call Company (Sound and Synthetic Voice)	The flight crew receives an AOC message	Sounds one time
Company Alert (Sound and Synthetic Voice)	The flight crew receives an AOC message with a high priority	Sounds one time
Company Message (Sound and Synthetic Voice)	The flight crew receives an AOC message with a medium priority	Sounds one time
EFB Message (Sound and Synthetic voice)	The flight crew receives an EFB message. The operator may inhibit the audio indicator.	Sounds one time

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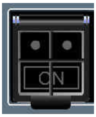
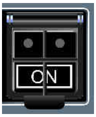
COM GND CONNECTION PB-SW

Ident.: DSC-46-OIS-20-30-00018286.0001001 / 02 MAY 14
Applicable to: ALL

The COM GND CONNECTION pb-sw is a guarded pushbutton switch that is used for maintenance purpose only.



The maintenance personnel cannot connect a portable maintenance access terminal to the OIS.



The maintenance personnel pressed the COM GND CONNECTION pb-sw. For maintenance purpose on ground, the maintenance personnel can connect a portable maintenance access terminal to the OIS.

Note: *For maintenance and security purpose only. the flight crew should comply with the associated company instructions.*

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KCCU CONTROLS FOR THE OIS

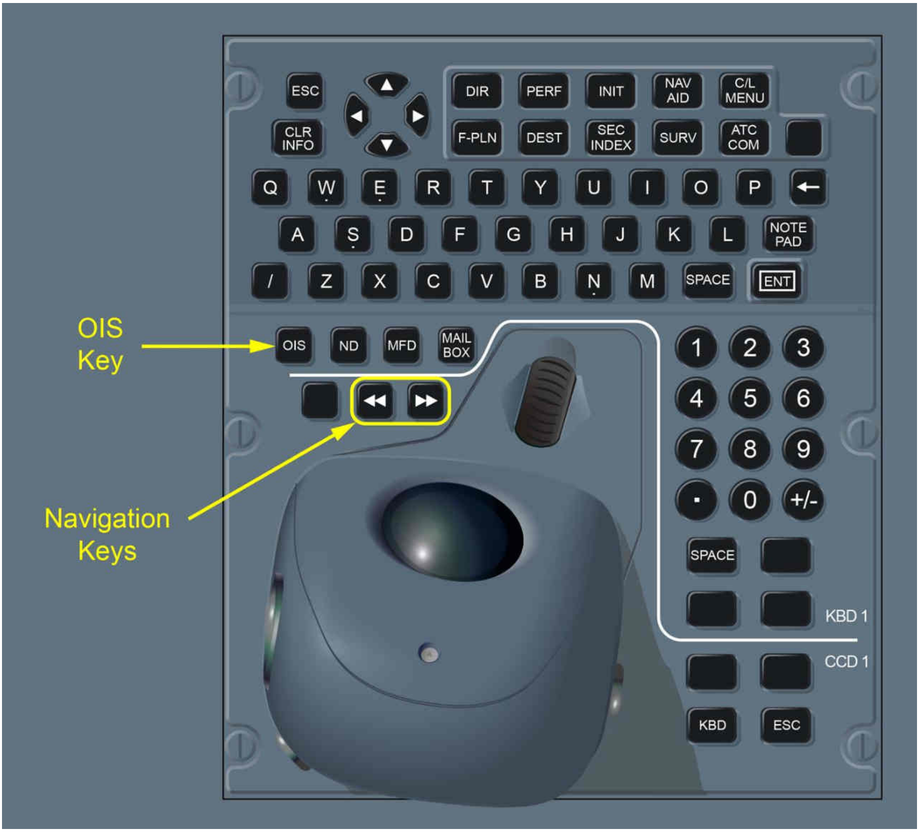
Applicable to: ALL

Ident.: DSC-46-OIS-20-50-10-00015902.0001001 / 02 MAY 14

There are two Keyboard and Cursor Control Units (KCCUs) on the pedestal:
- One KCCU for the Captain (CAPT)
- One KCCU for the First Officer (F/O).

The flight crew can use the KCCU to enter and modify data on the OIS

KCCU Controls for the OIS


ESC
CLR INFO
DIR
PERF
INIT
NAV AID
C/L MENU
F-PLN
DEST
SEC INDEX
SURV
ATC COM
Q W E R T Y U I O P
A S D F G H J K L
NOTE PAD
/ Z X C V B N M
SPACE
ENT
OIS Key
OIS
ND
MFD
MAIL BOX
Navigation Keys
1 2 3 4 5 6 7 8 9 . 0 +/-
SPACE
KBD 1
CCD 1
KBD
ESC

Note: This description applies to the KCCU controls that the flight crew uses for the OIS. For more information about the KCCU, Refer to KCCU Overview..

Ident.: DSC-46-OIS-20-50-10-00015904.0001001 / 02 MAY 14

OIS CURSOR ALLOCATION KEY

When pressed, moves the cursor to the onside OIS display.
If the OIS is not displayed, the OIS appears.

Ident.: DSC-46-OIS-20-50-10-00015905.0001001 / 02 MAY 14

NAVIGATION KEYS

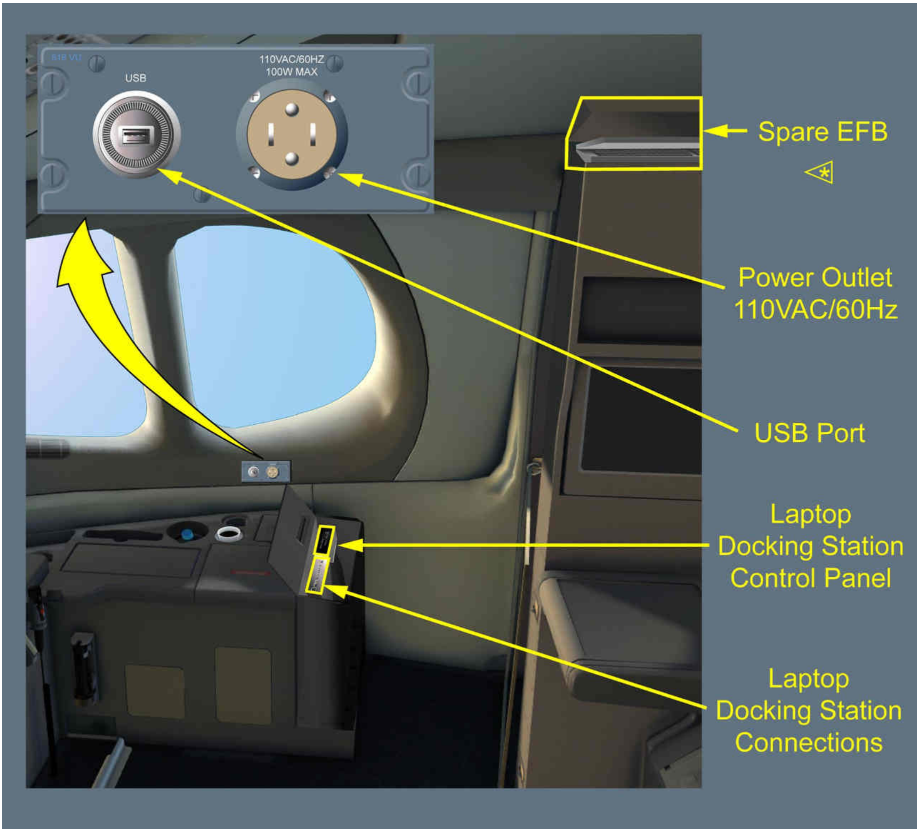
Moves the cursor to the next display unit with an interactive format that is to the right, or to the left, of the one that is currently selected.

LAPTOP PACKAGE

Applicable to: ALL

Ident.: DSC-46-OIS-20-60-10-00015916.0001001 / 23 OCT 17

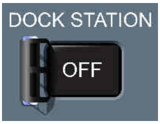
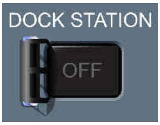
Overview


USB
110VAC/60HZ
100W MAX
Spare EFB
Power Outlet 110VAC/60Hz
USB Port
Laptop Docking Station Control Panel
Laptop Docking Station Connections

Ident.: DSC-46-OIS-20-60-10-00015896.0001001 / 02 MAY 14

DOCK STATION PB

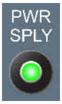
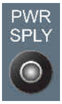
The DOCK STATION pb is a guarded pushbutton.

 	The laptop docking station is OFF. When pressed, the laptop docking station turns on. *Note:* *However, the laptop will stay ON or OFF*
 	The laptop docking station is ON. When pressed, the laptop docking station turns off. *Note:* *However, the laptop will stay ON or OFF*

L2 *Note:* *At aircraft power-up, the DOCK STATION pb will be in the same state as before aircraft shut down.*
When the laptop docking station is OFF, the laptop is disconnected from electrical power, avionics, OIS keyboard and display units.

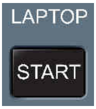
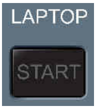
Ident.: DSC-46-OIS-20-60-10-00015897.0001001 / 02 MAY 14

PWR SPLY LIGHT

 	The laptop docking station supplies electrical power to the laptop.
 	The laptop docking station does not supply electrical power to the laptop.

Ident.: DSC-46-OIS-20-60-10-00015898.0001001 / 02 MAY 14

LAPTOP PB

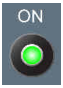
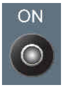
 	The laptop is connected to the docking station, and is not running. When pressed, starts the laptop.
 	The laptop is running, or is not connected, or the docking station is off. When pressed, no effect.

L2 For more information, *Refer to DSC-46-OIS-30 How To Start the EFB Device*

L3 *Note: The LAPTOP START function is available if the laptop and the laptop docking station are paired. In order to pair one laptop with one laptop docking station, the flight crew must turn on the laptop, then plug it into the laptop docking station. This procedure is required only for the first connection between a laptop and a laptop docking station.*

Ident.: DSC-46-OIS-20-60-10-00015899.0001001 / 02 MAY 14

ON LIGHT

	The laptop is ON, and operational.
	The laptop is OFF, or not plugged.

Ident.: DSC-46-OIS-20-60-10-00018314.0001001 / 02 MAY 14

OUTPUT USB PORT

The flight crew can use the output USB port to load, or to export data to a USB key.

Ident.: DSC-46-OIS-20-60-10-00018315.0001001 / 02 MAY 14

VIDEO PORT

The flight crew can connect the laptop to one video port (DVI or VGA).
The system administrator defines the port to be used.

Ident.: DSC-46-OIS-20-60-10-00018316.0001001 / 02 MAY 14

INPUT USB PORT

The input USB port provides connection between the laptop and the OIS Keyboard and the KCCU. The input USB port can also provide video connection between the laptop and the CDS. If the video over USB function is not active, the flight crew can use one video port in order to connect the laptop and the CDS.

Ident.: DSC-46-OIS-20-60-10-00018317.0001001 / 02 MAY 14

ETHERNET PORT

The ethernet port provides a connection between the laptop and the aircraft avionics.

Ident.: DSC-46-OIS-20-60-10-00018318.0001001 / 02 MAY 14

POWER SUPPLY

The power supply provides electric power to the battery of the laptop.

Ident.: DSC-46-OIS-20-60-10-00015911.0001001 / 02 MAY 14

USB PORT

There is one USB port on each lateral console:
- One for the Captain (CAPT)
- One for the First Officer (F/O).

Each USB port is connected to the onside laptop docking station.
The flight crew can use the USB ports to load, or to export data.

Ident.: DSC-46-OIS-20-60-10-00022512.0001001 / 23 OCT 17

POWER OUTLET

The flight crew can use the power outlet (110 VAC / 60 Hz) to plug a Portable Electronic Device (PED).

Ident.: DSC-46-OIS-20-60-10-00015812.0001001 / 02 OCT 14

SPARE EFB (EFB3) ◁

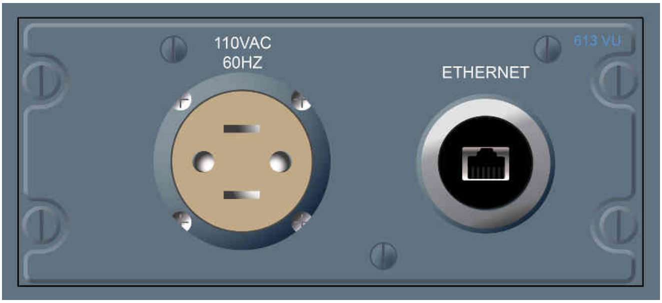
The spare EFB is stowed above the coat stowage.
The flight crew can power-up, or shut down the spare EFB via a shortcut available in the FLT OPS MENU.

L2 For more information about the FLT OPS MENU,*Refer to DSC-46-OIS-20-80-50 FLT OPS MENU Overview*

L1 The flight crew cannot use the spare EFB as long as it is stowed.
In the case of CAPT and F/O laptop failure, the flight crew can strap the spare EFB on the lateral console, and use it as standalone until the maintenance has checked the docking station.

The spare EFB is connected to the power supply and aircraft network via:
- One electrical power plug that charges the battery of the laptop.
- One ethernet plug that enables to update the EFB, when the EFB is on.

Spare EFB Panel



MEMO

Applicable to: ALL

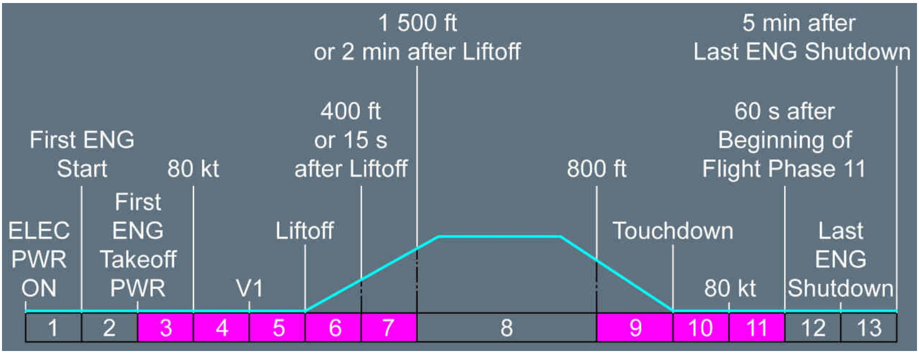
Ident.: DSC-46-OIS-20-70-10-00015878.0001001 / 03 DEC 15

L12

EFB MSG	The EFB received a message. Appears on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

Note: *In flight phase 8 (cruise), the MEMO will appear only above 10 000 ft.*

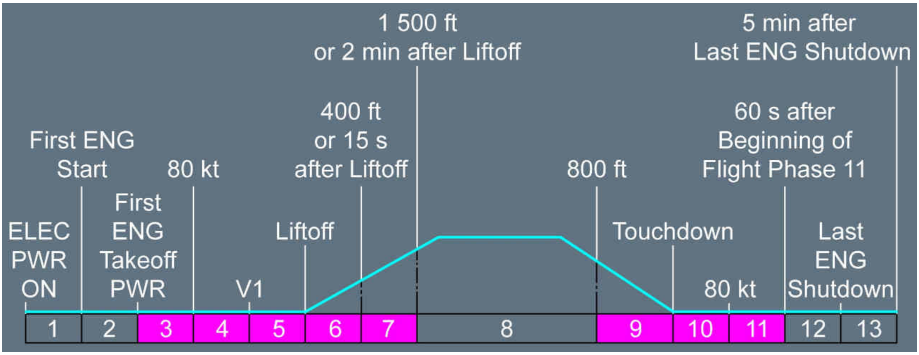
Ident.: DSC-46-OIS-20-70-10-00001323.0001001 / 02 MAY 14

L12

COMPANY MSG	The flight crew receives a company message. Appears on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

Note: *In flight phase 8 (cruise), the MEMO will appear only above 10 000 ft.*

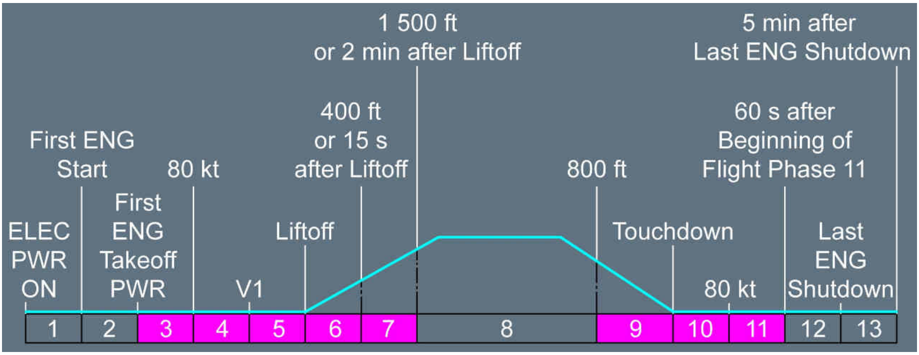
Ident.: DSC-46-OIS-20-70-10-00001327.0001001 / 02 MAY 14

L12

COMPANY MSG : PRNTR	The flight crew receives a company message that will be automatically printed. Appears on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

Note: *In flight phase 8 (cruise), the MEMO will appear only above 10 000 ft.*

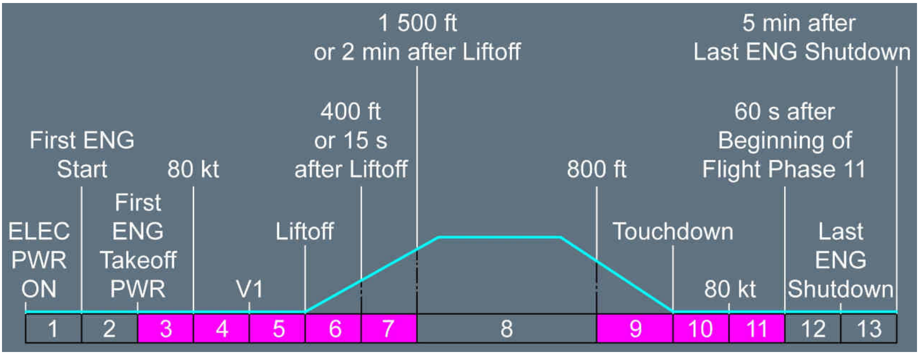
Ident.: DSC-46-OIS-20-70-10-00001328.0001001 / 02 MAY 14

L12

COMPANY ALERT	The flight crew receives a high priority message from the company. Flashes for 180 s, then remains steady. Appears on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

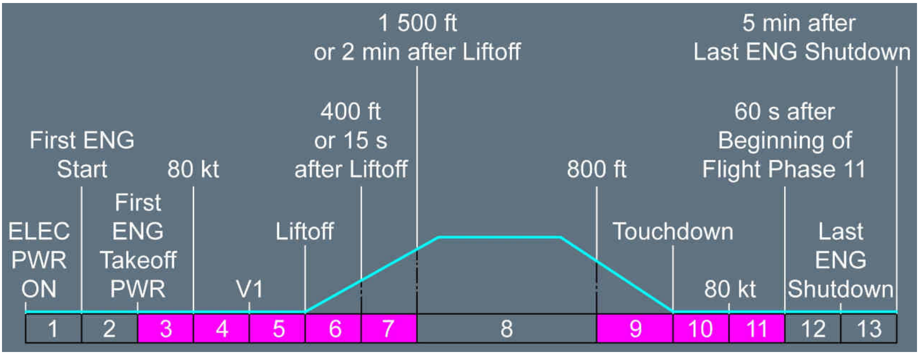
Ident.: DSC-46-OIS-20-70-10-00001330.0001001 / 02 MAY 14

L12

COMPANY ALERT: PRNTR	The flight crew receives a high priority message from the company. The message will be automatically printed. Flashes for 180 s, then remains steady. Appears on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

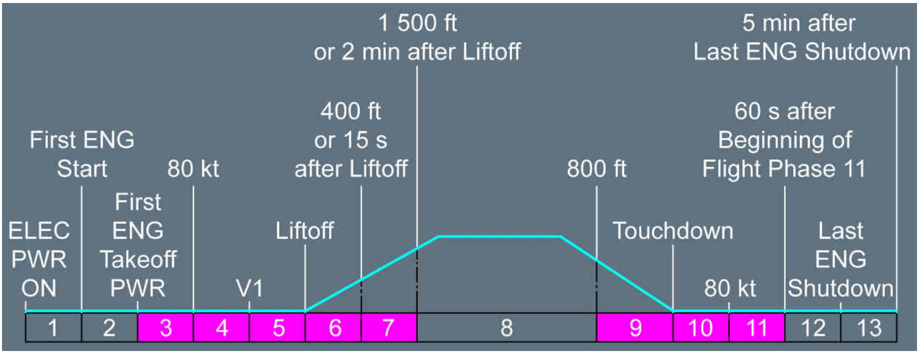
Ident.: DSC-46-OIS-20-70-10-00001332.0001001 / 02 MAY 14

L12

CALL COMPANY	The flight crew receives a message from the company. The flight crew should contact the company. Appears on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

Note: *In flight phase 8 (cruise), the MEMO will appear only above 10 000 ft.*

General

GENERAL

Applicable to: ALL

Ident.: DSC-46-OIS-20-80-09-10-00023918.0001001 / 24 MAY 17

Illustrations in this chapter show typical layouts that may vary in accordance with the system administrator settings.
In the following descriptions, the virtual keyboard is considered active.
The LOADSHEET application is described in REDUCED entry mode only.

Ident.: DSC-46-OIS-20-80-09-10-00018669.0001001 / 02 MAY 14

OIS MENU

OIS MENU (*Refer to page*)
OIS MENU BACKUP (*Refer to page*)

AVNCS

COMPANY COM (*Refer to page*)

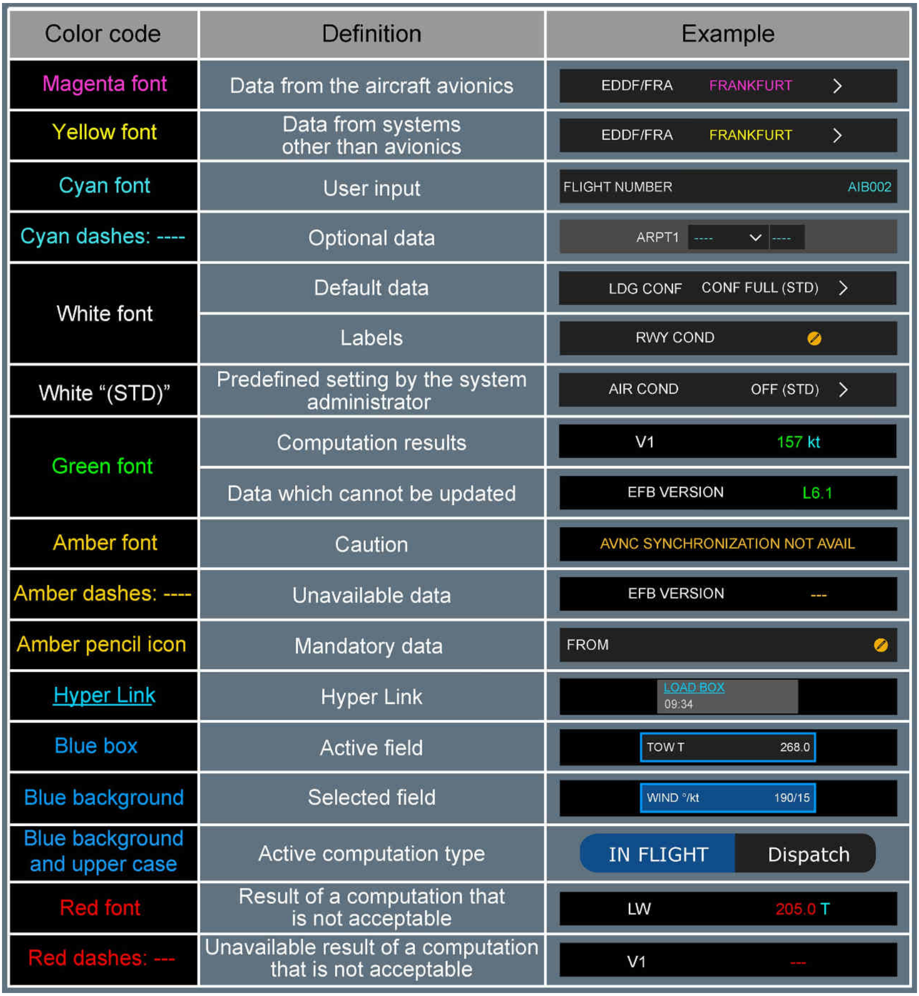
EFB

FLT OPS MENU (*Refer to page*)
FLT OPS STS (*Refer to page*)
OPS LIBRARY (*Refer to page*)
FLT FOLDER (*Refer to page*)
T.O PERF (*Refer to page*)
IN-FLT PERF (*Refer to page*)
LDG PERF (*Refer to page*)
LOADSHEET (*Refer to page*)
LOAD BOX (*Refer to page*)
EXPORT BOX (*Refer to page*)

Ident.: DSC-46-OIS-20-80-09-10-00017602.0001001 / 24 MAY 17

The EFB applications use the following color code:

Color Code



Color code	Definition	Example
Magenta font	Data from the aircraft avionics	EDDF/FRA FRANKFURT >
Yellow font	Data from systems other than avionics	EDDF/FRA FRANKFURT >
Cyan font	User input	FLIGHT NUMBER AIB002
Cyan dashes: ----	Optional data	ARPT1 ---- ⌄ ----
White font	Default data	LDG CONF CONF FULL (STD) >
	Labels	RWY COND ✎
White “(STD)”	Predefined setting by the system administrator	AIR COND OFF (STD) >
Green font	Computation results	V1 157 kt
	Data which cannot be updated	EFB VERSION L6.1
Amber font	Caution	AVNC SYNCHRONIZATION NOT AVAIL
Amber dashes: ----	Unavailable data	EFB VERSION ---
Amber pencil icon	Mandatory data	FROM ✎
Hyper Link	Hyper Link	LOAD BOX 09:34
Blue box	Active field	TOW T 268.0
Blue background	Selected field	WIND °/kt 190/15
Blue background and upper case	Active computation type	IN FLIGHT Dispatch
Red font	Result of a computation that is not acceptable	LW 205.0 T
Red dashes: ---	Unavailable result of a computation that is not acceptable	V1 ---

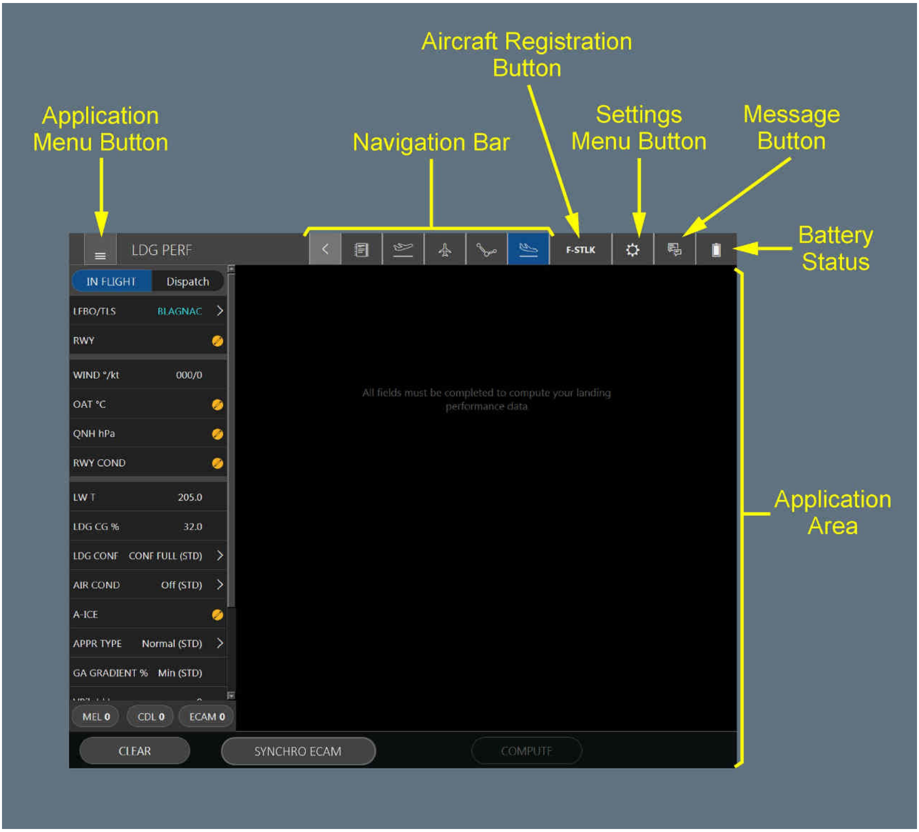
Overview

OVERVIEW

Applicable to: ALL

Ident.: DSC-46-OIS-20-80-10-10-00016156.0001001 / 24 MAY 17

Overview


Aircraft Registration
Button
Application
Menu Button
Navigation Bar
Settings
Menu Button
Message
Button
Battery
Status
Application
Area
LDG PERF
F-STLK
IN FLIGHT
Dispatch
MEL 0
CDL 0
ECAM 0
CLEAR
SYNCHRO ECAM
COMPUTE

LFBO/TLS BLAGNAC
RWY
WIND °/kt 000/0
OAT °C
QNH hPa
RWY COND
LW T 205.0
LDG CG % 32.0
LDG CONF CONF FULL (STD)
AIR COND Off (STD)
A-ICE
APPR TYPE Normal (STD)
GA GRADIENT % Min (STD)

All fields must be completed to compute your landing performance data

Ident.: DSC-46-OIS-20-80-10-10-00016158.0001001 / 24 MAY 17

APPLICATION AREA

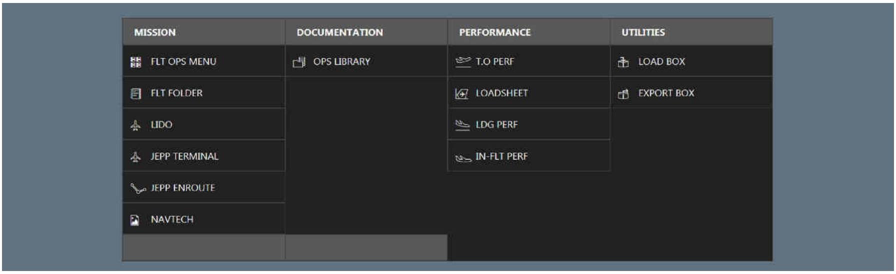
The application area displays the interface of the selected application.

For the list of OIS applications, *Refer to DSC-46-OIS-20-80-09 OIS Applications Index*.
The application area can also display OIS messages.
L2 For more information about the OIS messages, *Refer to DSC-46-OIS-20-80-150 OIS Messages*.

Ident.: DSC-46-OIS-20-80-10-10-00023738.0001001 / 24 MAY 17

APPLICATION MENU BUTTON

When pressed, displays the application menu as illustrated below.
The flight crew can use the application menu to start any EFB application.

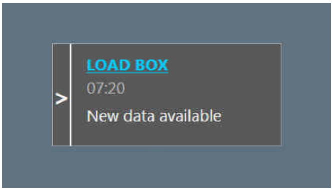

MISSION
FLT OPS MENU
FLT FOLDER
LIDO
JEPP TERMINAL
JEPP ENROUTE
NAVTECH
DOCUMENTATION
OPS LIBRARY
PERFORMANCE
T.O PERF
LOADSHEET
LDG PERF
IN-FLT PERF
UTILITIES
LOAD BOX
EXPORT BOX

Note: The application menu is only available on the EFB side.

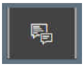
Ident.: DSC-46-OIS-20-80-10-10-00023739.0001001 / 08 JUL 19

MESSAGE BUTTON

When pressed, displays the message list. The message list contains notification messages from OIS applications.
When a notification is received, the associated message temporarily appears in a pop-up window (as illustrated below). When the flight crew presses the pop-up window, the notification is marked as read.


LOAD BOX
07:20
New data available

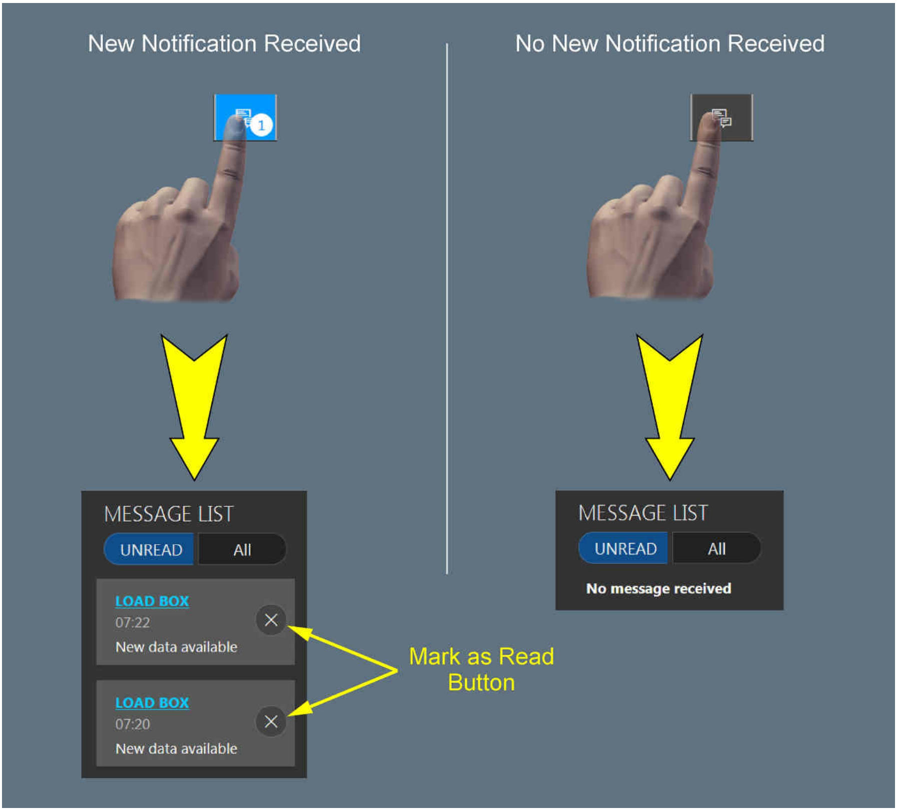
The message button indicates the number of new notifications received, and provides access to the message list:



No new notification is available.
When pressed, opens the message list.

L12

One new notification is available.
Temporarily pulses, then remains steady.
When pressed, opens the message list.



MESSAGE LIST
UNREAD | All

LOAD BOX
07:22
New data available

LOAD BOX
07:20
New data available

MESSAGE LIST
UNREAD | All
No message received

Note: *The flight crew can perform the same actions via the KCCU and/or the OIS keyboard.*

MARK AS READ BUTTON

When pressed, marks the message as read, and the message disappears from the UNREAD message list. The message remains available in the ALL message list.

Note: *When the flight crew presses the message, the message is marked as read and the message list closes.*

Ident.: DSC-46-OIS-20-80-10-10-00023743.0001001 / 24 MAY 17

BATTERY STATUS

On the EFB side, if the laptop is on battery, the battery status of the laptop is displayed.
L2 When the battery charge is below 10 %, a pop-up appears.

Ident.: DSC-46-OIS-20-80-10-10-00016159.0001001 / 24 MAY 17

NAVIGATION BAR

The flight crew can use the navigation bar to display an application.
Only the running applications from the EFB side appear in the navigation bar.
The size of the screen limits the number of buttons available. If some buttons cannot be displayed, the flight crew can press the navigation arrows in order to display additional buttons.
If an application is not running, there is no corresponding button in the navigation bar. The flight crew can use the MENU list or the FLT OPS MENU to start an application.

Ident.: DSC-46-OIS-20-80-10-10-00023740.0001001 / 24 MAY 17

AIRCRAFT REGISTRATION BUTTON

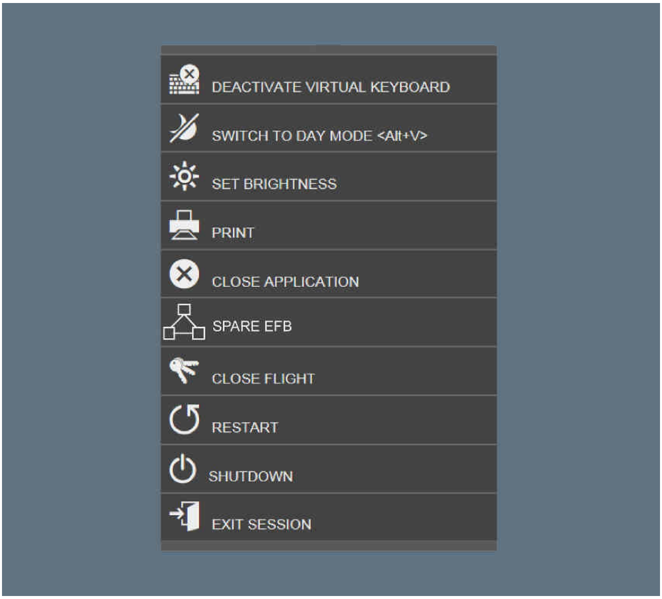
Displays the aircraft registration as defined on the FLT OPS STS page.
When pressed, displays the FLT OPS STS page.

Note: *If the aircraft registration is not provided on the FLT OPS STS page, the label of the aircraft registration button changes to FLT OPS STS.*

Ident.: DSC-46-OIS-20-80-10-10-00023741.0001001 / 24 MAY 17

SETTINGS MENU BUTTON

When pressed, displays the settings menu.
A typical layout is illustrated below.



DEACTIVATE VIRTUAL KEYBOARD
SWITCH TO DAY MODE <Alt+V>
SET BRIGHTNESS
PRINT
CLOSE APPLICATION
SPARE EFB
CLOSE FLIGHT
RESTART
SHUTDOWN
EXIT SESSION

Intentionally left blank

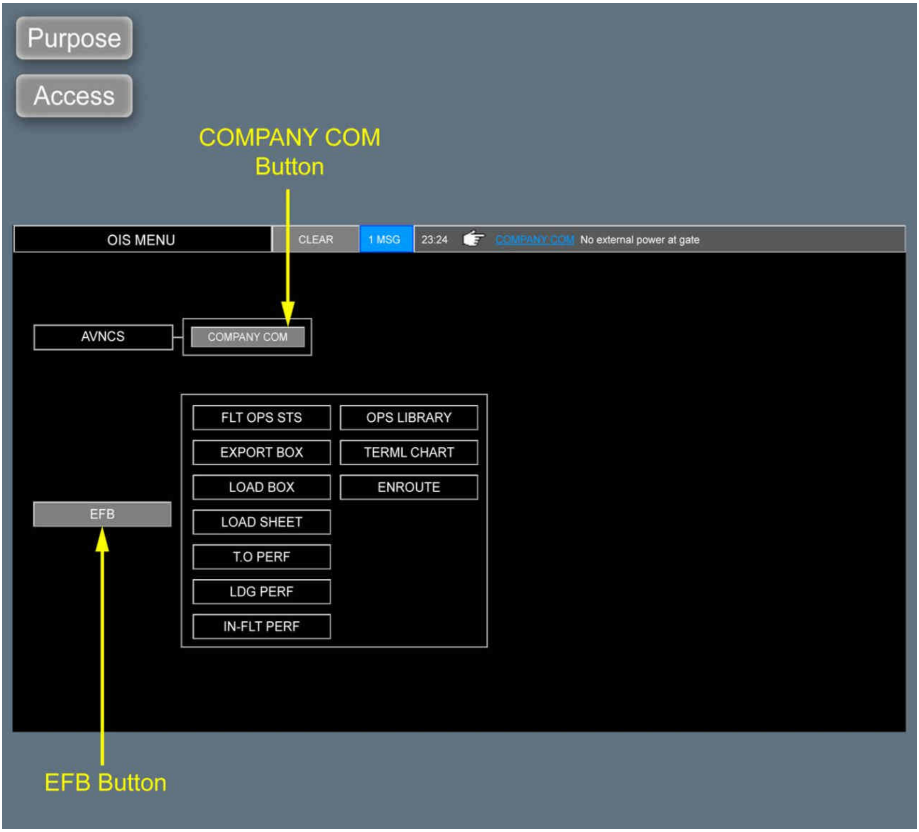
OIS MENU

OIS MENU

Applicable to: ALL

Ident.: DSC-46-OIS-20-80-20-10-00013351.0002001 / 02 MAY 14

OIS MENU Overview


Purpose
Access
COMPANY COM Button
OIS MENU
CLEAR
1 MSG
23:24
COMPANY COM
AVNCS
COMPANY COM
FLT OPS STS
OPS LIBRARY
EXPORT BOX
TERML CHART
LOAD BOX
ENROUTE
LOAD SHEET
T.O PERF
LDG PERF
IN-FLT PERF
EFB
EFB Button

No external power at gate

Ident.: DSC-46-OIS-20-80-20-10-00016253.0001001 / 02 MAY 14

PURPOSE

The flight crew uses the OIS MENU to start or display an application.

Ident.: DSC-46-OIS-20-80-20-10-00016254.0001001 / 02 MAY 14

ACCESS

The flight crew can access the OIS MENU via the OIS MENU Key of the OIS keyboard.

L2 For more information about the OIS keyboard, *Refer to DSC-46-OIS-20-100 OIS Menu Key*.

Ident.: DSC-46-OIS-20-80-20-10-00018803.0001001 / 02 MAY 14

COMPANY COM BUTTON

When clicked, displays the COMPANY COM application on the OIS.

L2 For more information about the COMPANY COM applications, *Refer to DSC-46-OIS-20-80-40 COMPANY COM Functions*.

Ident.: DSC-46-OIS-20-80-20-10-00018805.0001001 / 02 MAY 14

EFB BUTTON

When clicked, displays the application that the flight crew opened last on the EFB side.

L2 For the list of OIS applications, *Refer to DSC-46-OIS-20-80-09 OIS Applications Index*.

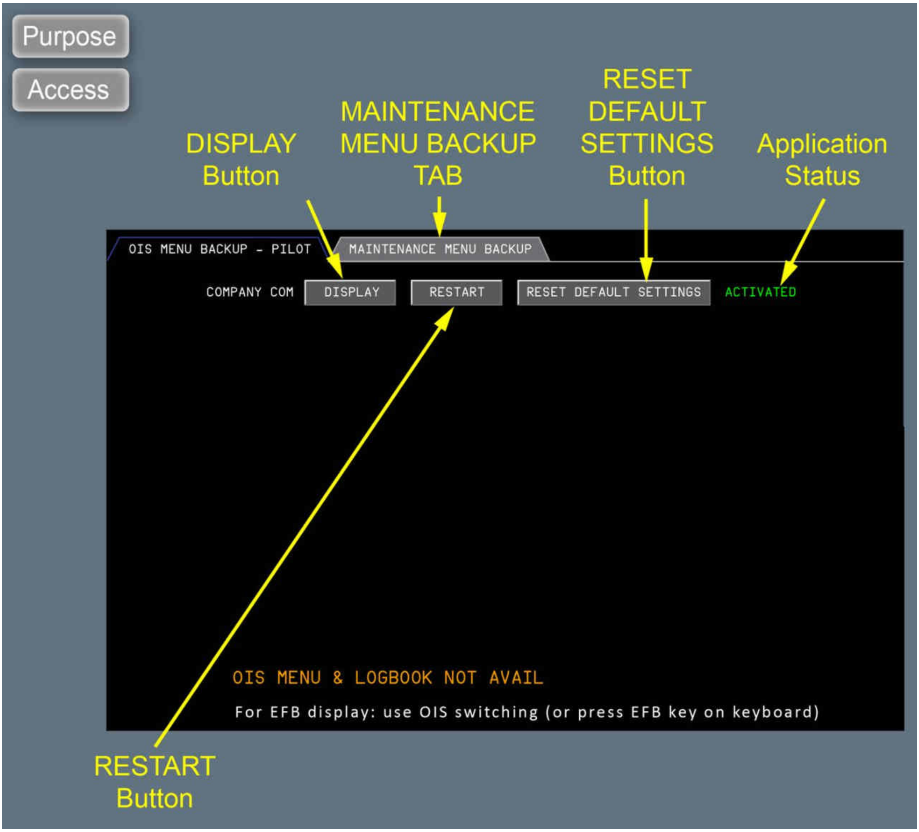
OIS MENU BACKUP

OIS MENU BACKUP

Applicable to: ALL

Ident.: DSC-46-OIS-20-80-30-10-00017642.0001001 / 02 MAY 14

OIS MENU BACKUP Overview


Purpose
Access
DISPLAY Button
MAINTENANCE MENU BACKUP TAB
RESET DEFAULT SETTINGS Button
Application Status
OIS MENU BACKUP - PILOT
MAINTENANCE MENU BACKUP
COMPANY COM
DISPLAY
RESTART
RESET DEFAULT SETTINGS
ACTIVATED
RESTART Button

OIS MENU & LOGBOOK NOT AVAIL

For EFB display: use OIS switching (or press EFB key on keyboard)

Ident.: DSC-46-OIS-20-80-30-10-00017643.0001001 / 02 MAY 14

PURPOSE

The OIS MENU BACKUP enables the flight crew to display the COMPANY COM application in the case of a failure of the OIS MENU.

Ident.: DSC-46-OIS-20-80-30-10-00017644.0001001 / 02 APR 15

ACCESS

The flight crew can access the OIS MENU BACKUP by pressing SHIFT + OIS MENU on the OIS keyboard.
The OIS MENU BACKUP can also be displayed automatically, if the OIS MENU is failed or is not started.

Ident.: DSC-46-OIS-20-80-30-10-00017645.0001001 / 02 MAY 14

DISPLAY BUTTON

When pressed, the corresponding application is displayed full screen.

Ident.: DSC-46-OIS-20-80-30-10-00017646.0001001 / 02 MAY 14

RESTART BUTTON

When pressed, the corresponding application restarts. The flight crew shall not use this function, as the entered data will be lost.

Ident.: DSC-46-OIS-20-80-30-10-00017647.0001001 / 02 MAY 14

RESET DEFAULT SETTINGS BUTTON

When pressed, reset the default settings of the corresponding application. The flight crew shall not use this function, as the inputs from the flight crew will be lost.

Ident.: DSC-46-OIS-20-80-30-10-00017648.0001001 / 02 MAY 14

APPLICATION STATUS

Indicates the status of the application.

The status can be one of the following :
- ACTIVATED
- DEACTIVATED
- NO STATUS
- FAILED
- NOT INSTALLED

Ident.: DSC-46-OIS-20-80-30-10-00017649.0001001 / 02 MAY 14

MAINTENANCE MENU BACKUP TAB

When pressed, opens the tab that contains the list of maintenance applications. The flight crew shall not use the maintenance applications.

Intentionally left blank

AVNCS - COMPANY COM

AVNCS - COMPANY COM

Applicable to: ALL

Ident.: DSC-46-OIS-20-80-40-10-00001303.0001001 / 02 APR 15

COMPANY COM FUNCTIONS

The COMPANY COM application performs the following functions :
- The message management function
- The Out-Off-On-In (OOOI) function.

MESSAGE MANAGEMENT FUNCTION

The COMPANY COM application either warns or advises the flight crew that a company message is received, depending on the message priority.

L2 The Operator can customize ECAM MEMOs and aural alerts, that are associated with the company message.

L1 The COMPANY COM automatically:
- Print specific types of company messages
- Send specific types of company messages
- Delete all messages from the mailbox at the end of each flight
- Store all messages in the appropriate directory (sent, inbox, or outbox)
- Perform additional functions, as applicable, depending on customization.

The COMPANY COM enables the flight crew to manually:
- Print messages
- Edit messages
- Zoom in the messages
- Store messages, as applicable, depending on customization
- Send free-text messages to specific company ground stations.

Note: *In the case of loss of transmission via the ACARS, the status of downlink messages may be erroneous, and uplink messages may not appear in the mailbox.*

OUT-OFF-ON-IN (OOOI) FUNCTION

The COMPANY COM application computes and sends automatic reports (OOOI reports) to the airline ground station.

The OOOI provides the Operator with details about:
- The aircraft status
- The flight status

- The flight progress
- The flight delay.

The COMPANY COM automatically sends the report at a predefined time during the flight (e.g. when the doors are closed, when the parking brake is off, when the landing gear is up (down), etc.). The Operator can customize the triggering conditions of the reports.
The flight crew can display the messages via the COMPANY COM application.

INTERFACE WITH AVIONICS

In association with the avionics domain, the COMPANY COM application:
- Exchanges information with the FWS via the Secure Communication Interface (SCI), in order to trigger the ECAM MEMOs and aural alerts when a message is received.
- Can automatically insert data from the avionics parameters into the messages
- Receives defined parameters (i.e. company identifier, flight number, etc) from the avionics.

Ident.: DSC-46-OIS-20-80-40-10-00001302.0001001 / 24 MAY 17

COMPANY COM APPLICATION

The COMPANY COM application has:
- The associated software
- A database, that can be:
  - A basic database, with the basic Airline Operational Communication (AOC) functions, or
  - A customized database.

Due to the fact that the operator can customize the COMPANY COM application, this chapter only provides a general description of the application, without description of the interface.

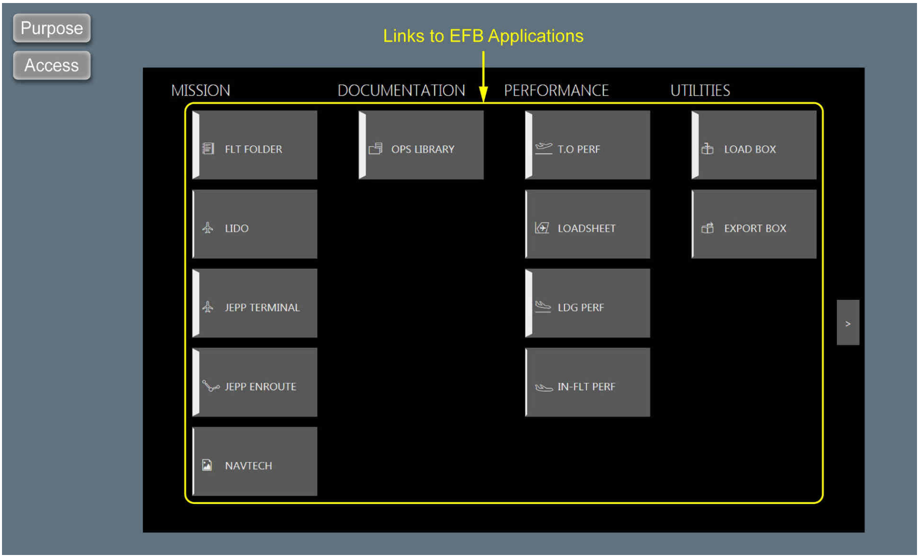
EFB - FLT OPS MENU

EFB - FLT OPS MENU

Applicable to: ALL

Ident.: DSC-46-OIS-20-80-50-10-00016273.0001001 / 24 MAY 17

FLT OPS MENU Overview


Purpose
Access
Links to EFB Applications
MISSION
DOCUMENTATION
PERFORMANCE
UTILITIES
FLT FOLDER
OPS LIBRARY
T.O PERF
LOAD BOX
LIDO
LOADSHEET
EXPORT BOX
JEPP TERMINAL
LDG PERF
>
JEPP ENROUTE
IN-FLT PERF
NAVTECH

Ident.: DSC-46-OIS-20-80-50-10-00016277.0001001 / 02 MAY 14

PURPOSE

The FLT OPS MENU provides the flight crew with a direct access to the EFB applications.

Ident.: DSC-46-OIS-20-80-50-10-00016278.0001001 / 24 MAY 17

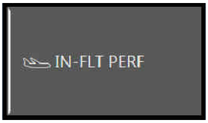
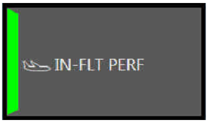
ACCESS

The flight crew can access the FLT OPS MENU via the FLT OPS MENU button of the application menu.

Ident.: DSC-46-OIS-20-80-50-10-00018808.0001001 / 24 MAY 17

LINKS TO EFB APPLICATIONS

The flight crew can press any button in order to display the associated EFB application.

	The associated application is not running. When pressed, starts the associated application and the edge of the button becomes green.
	The associated application is already running. When pressed, opens the associated application.

L2 For more information about the EFB application list, *Refer to DSC-46-OIS-20-80-09 OIS Applications Index*.

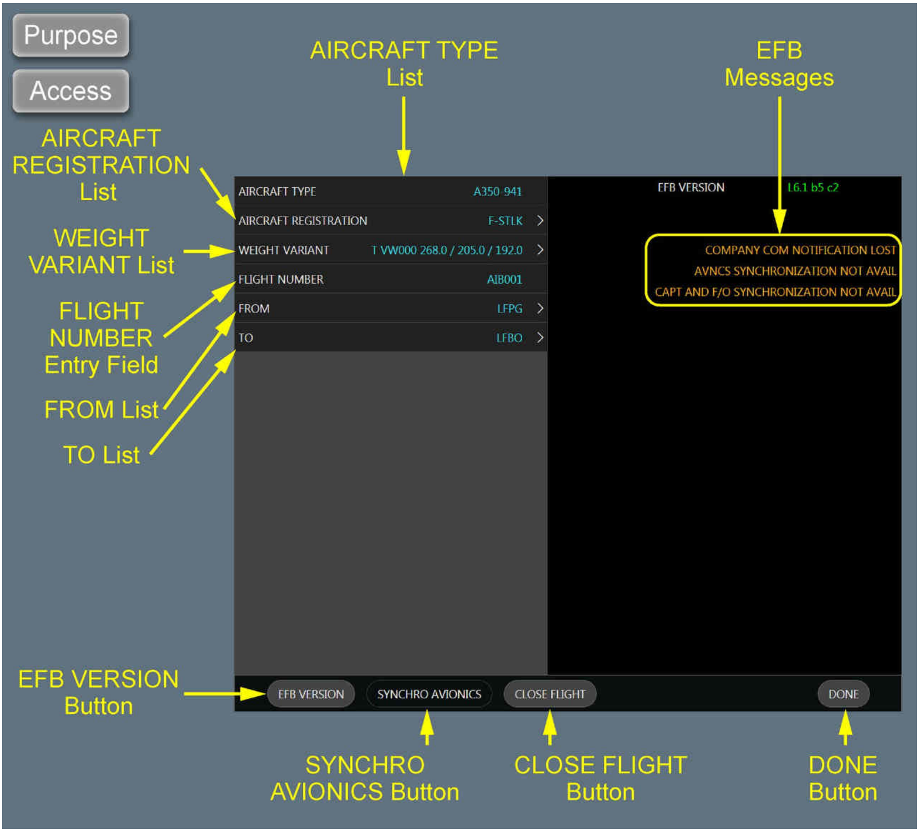
EFB - FLT OPS STS

EFB - FLT OPS STS

Applicable to: ALL

Ident.: DSC-46-OIS-20-80-60-10-00015494.0001001 / 24 MAY 17

FLT OPS STS Overview


Purpose
Access
AIRCRAFT TYPE List
EFB Messages
AIRCRAFT REGISTRATION List
WEIGHT VARIANT List
FLIGHT NUMBER Entry Field
FROM List
TO List
EFB VERSION Button
EFB VERSION
SYNCHRO AVIONICS
CLOSE FLIGHT
DONE
SYNCHRO AVIONICS Button
CLOSE FLIGHT Button
DONE Button

AIRCRAFT TYPE	A350-941
AIRCRAFT REGISTRATION	F-STLK >
WEIGHT VARIANT	T VW000 268.0 / 205.0 / 192.0 >
FLIGHT NUMBER	AIB001
FROM	LFPG >
TO	LFBO >

EFB VERSION L6.1 b5 c2

COMPANY COM NOTIFICATION LOST
AVNCS SYNCHRONIZATION NOT AVAIL
CAPT AND F/O SYNCHRONIZATION NOT AVAIL

Ident.: DSC-46-OIS-20-80-60-10-00018295.0001001 / 02 MAY 14

PURPOSE

The FLT OPS STS initializes some inputs for the other EFB applications, and provides the flight crew with a status of the EFB currently in use (error messages and EFB version).
The flight crew can synchronize the inputs with the aircraft avionics (FMS) or manually enter the inputs.

Ident.: DSC-46-OIS-20-80-60-10-00018296.0001001 / 24 MAY 17

ACCESS

The flight crew can access the FLT OPS STS via:

- The aircraft registration button, or
- The OIS MENU.

Ident.: DSC-46-OIS-20-80-60-10-00015037.0001001 / 24 MAY 17

AIRCRAFT TYPE LIST

The flight crew selects the appropriate aircraft type within the list.

Note: *The system administrator defines the list.*

Ident.: DSC-46-OIS-20-80-60-10-00015038.0001001 / 24 MAY 17

AIRCRAFT REGISTRATION LIST

The flight crew selects the appropriate aircraft in the list.

Note: *The system administrator defines the list.*

Ident.: DSC-46-OIS-20-80-60-10-00023533.0001001 / 24 MAY 17

WEIGHT VARIANT LIST

The flight crew selects the applicable weight variant in the list.

Ident.: DSC-46-OIS-20-80-60-10-00018297.0001001 / 02 MAY 14

SYNCHRO AVIONICS BUTTON

The flight crew can use the SYNCHRO AVIONICS button in order to copy the inputs from the FMS to the FLT OPS STS.

Ident.: DSC-46-OIS-20-80-60-10-00015040.0001001 / 24 MAY 17

FLIGHT NUMBER ENTRY FIELD

The flight crew can enter the flight number. If the flight number is available in the database, the departure (FROM) and arrival (TO) fields are automatically filled.

Note: *The system administrator defines the list of flight numbers and associated characteristics.*

Note: *The flight number must not contain any space (e.g. AIB123 instead of AIB 123).*

Ident.: DSC-46-OIS-20-80-60-10-00015041.0001001 / 02 MAY 14

FROM LIST

The flight crew enters the ICAO code of the departure airport.
The code can be entered via the keyboard, or selected within the drop-down list
The code is automatically filled if the flight crew previously entered the flight number.

Ident.: DSC-46-OIS-20-80-60-10-00015042.0001001 / 02 MAY 14

TO LIST

The flight crew enters the ICAO code of the departure airport.
The code can be entered via the keyboard, or selected within the drop-down list
The code is automatically filled if the flight crew previously entered the flight number.

Ident.: DSC-46-OIS-20-80-60-10-00015036.0001001 / 24 MAY 17

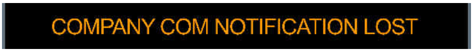
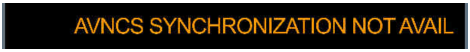
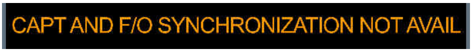
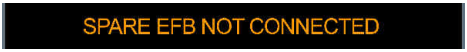
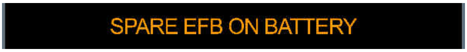
EFB VERSION BUTTON

The system administrator uses the EFB VERSION button to display the configuration of the applications.

Ident.: DSC-46-OIS-20-80-60-10-00016336.0002001 / 24 MAY 17

EFB MESSAGES

The FLT OPS STS page can display the following messages:

 COMPANY COM NOTIFICATION LOST	The notification area cannot display COMPANY COM notifications.
 AVNCS SYNCHRONIZATION NOT AVAIL	The synchronization between the EFB and the avionics is not available.
 CAPT AND F/O SYNCHRONIZATION NOT AVAIL	The synchronization between the CAPT EFB and the F/O EFB is not available.
 SPARE EFB NOT CONNECTED	The spare EFB (EFB3) is not connected to the avionics network, or the spare EFB (EFB3) is OFF.
 SPARE EFB ON BATTERY	The spare EFB (EFB3) is not electrically powered.

Ident.: DSC-46-OIS-20-80-60-10-00023256.0001001 / 03 JUL 20

1

2 ## CLEAR/CLOSE FLIGHT BUTTON

The purpose of the CLEAR/CLOSE FLIGHT button is to reset all EFB applications at the end of the flight.

When the flight crew presses the CLEAR/CLOSE FLIGHT button, all of the following occur:
- A reset of the avionics synchronization
- An export of all items in the EXPORT BOX via all available means (USB key and/or ground connection).

Ident.: DSC-46-OIS-20-80-60-10-00023534.0001001 / 24 MAY 17

DONE BUTTON

When pressed, exits the FLT OPS STS page and displays:
- The LOAD BOX, if no other application was previously accessed, or
- The previously accessed application.

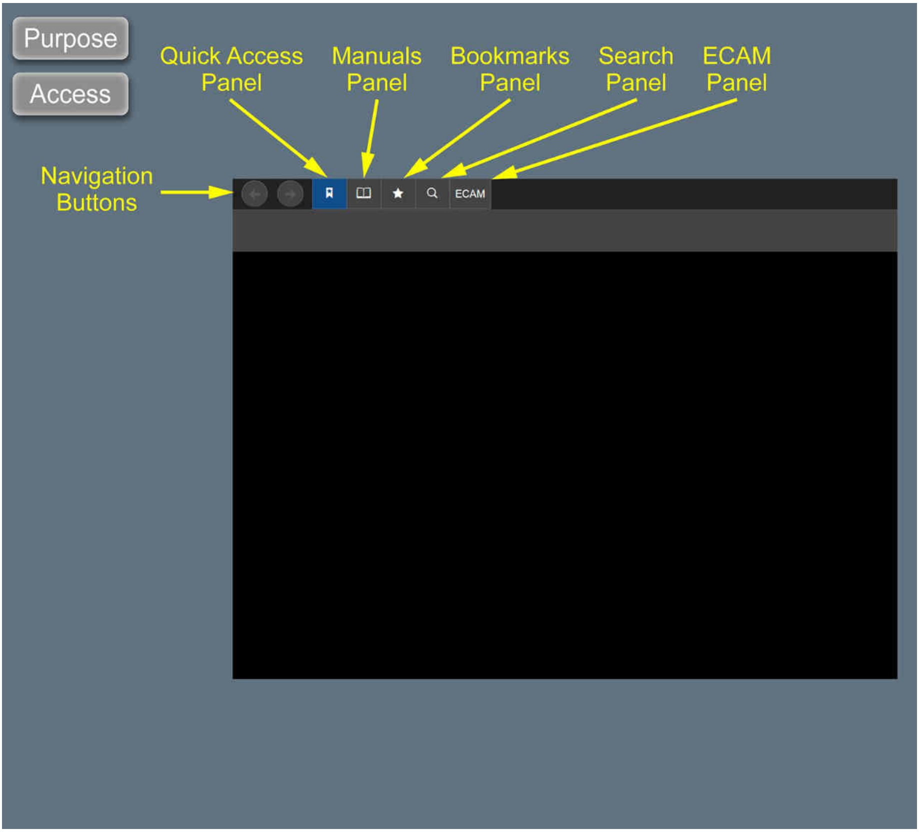
EFB - OPS LIBRARY

OPS LIBRARY

Applicable to: ALL

Ident.: DSC-46-OIS-20-80-70-10-00018880.0001001 / 24 MAY 17

OPS LIBRARY Overview


Purpose
Access
Quick Access Panel
Manuals Panel
Bookmarks Panel
Search Panel
ECAM Panel
Navigation Buttons
ECAM

Ident.: DSC-46-OIS-20-80-70-10-00015114.0001001 / 24 MAY 17

PURPOSE

The OPS LIBRARY Browser (OLB) is an application available on the EFB side that enables the flight crew to access:
- The Flight Crew Operating Manual (FCOM)
- The Flight Crew Techniques Manual (FCTM)
- The Cabin Crew Operating Manual (CCOM)
- The Minimum Equipment List (MEL)
- The Configuration Deviation List (CDL)
- The Weight and Balance Manual (WBM)
- The Airplane Flight Manual (AFM).

In accordance with the Operator policy or as requested by National Authorities, the airline can remove or modify any of these manuals, or add a manual.

Ident.: DSC-46-OIS-20-80-70-10-00015115.0001001 / 24 MAY 17

ACCESS

The flight crew can access the OPS LIBRARY page via the OPS LIBRARY button of:
- The application menu, or
- The FLT OPS MENU, or
- The navigation bar, if the application is already running, or
- The OIS MENU.

Ident.: DSC-46-OIS-20-80-70-10-00016869.0001001 / 24 MAY 17

NAVIGATION BUTTONS

The flight crew can browse the navigation history:

→	When pressed, moves to the next page.
←	When pressed, moves to the previous page.

Ident.: DSC-46-OIS-20-80-70-10-00018883.0001001 / 24 MAY 17

PURPOSE OF QUICK ACCESS

The flight crew can use the quick access panel in order to display predefined chapters.
The quick access panel gives shortcuts to the chapters that need to be quickly or frequently displayed. The system administrator defines the content of the quick access panel.

Ident.: DSC-46-OIS-20-80-70-10-00018884.0001001 / 24 MAY 17

QUICK ACCESS LINKS

The flight crew can press any link in order to quickly display the corresponding chapter.

Ident.: DSC-46-OIS-20-80-70-10-00018885.0001001 / 24 MAY 17

PURPOSE OF MANUALS

The flight crew can use the manuals panel in order to display the documentation. Several manuals can be available in the manuals panel.

Ident.: DSC-46-OIS-20-80-70-10-00015154.0001001 / 24 MAY 17

SETTINGS

When pressed, displays a drop-down list where the flight crew can select the display of complementary information (document reference, revision marks, crew resource management, abbreviations, font size, and help menu).

Ident.: DSC-46-OIS-20-80-70-10-00015155.0001001 / 02 MAY 14

LAYERS BUTTONS

The flight crew can select the appropriate level of information to display.

L2 For more information on the information layers definition, *Refer to GEN FCOM Use and Organization - Information Layers*.

L1 The text in each layer appears on a different colored background.
When the flight crew selects a layer of information, it remains selected during the consultation of several documentary units.

L2 When the layer 2 is selected, the information from layer 1 and layer 2 are displayed.
When the layer 3 is selected, the information from layer 1, layer 2 and layer 3 are displayed.

L1 When the flight crew selects a layer of information that is not available, the highest available layer of information appears. However, the button that the flight crew uses to select the layer remains selected, but is disabled.

Ident.: DSC-46-OIS-20-80-70-10-00015156.0001001 / 24 MAY 17

BOOKMARK STAR

When pressed, the star becomes yellow and creates a bookmark in the bookmarks panel.
When pressed again, the star is grayed over and the bookmark is removed from the bookmarks panel.

Ident.: DSC-46-OIS-20-80-70-10-00015131.0001001 / 24 MAY 17

NAVIGATION BUTTONS

The navigation buttons enable the flight crew to browse the navigation tree.

❯	When pressed, moves to the next documentary unit.
❮	When pressed, moves to the previous documentary unit.

Ident.: DSC-46-OIS-20-80-70-10-00015129.0001001 / 24 MAY 17

PATH AREA

The path area contains the list of parent folder related to the currently selected item (folder or documentary unit).
The flight crew can press any item to open a drop-down list. This drop-down list contains the brothers of the selected item. The flight crew can use this function to quickly move into the structure of the manual.

Ident.: DSC-46-OIS-20-80-70-10-00015140.0001001 / 24 MAY 17

CONTENT AREA

The content area displays the content of documentary units.
Each documentary unit can contain text, illustrations, tables, links, sounds, video.
The end of each technical content is clearly identified by the indication \\END.

Ident.: DSC-46-OIS-20-80-70-10-00018886.0001001 / 24 MAY 17

PURPOSE OF SEARCH

The flight crew can use the search panel in order to search some information in the documentation.

Ident.: DSC-46-OIS-20-80-70-10-00016885.0001001 / 24 MAY 17

SEARCH MODE LIST

The flight crew can select the type of search. The flight crew can also choose to search only in one manual.
When the flight crew modifies the search mode, the search entry field is cleared.

Ident.: DSC-46-OIS-20-80-70-10-00016886.0001001 / 02 MAY 14

SEARCH ENTRY FIELD

The flight crew can enter the information to search.

Ident.: DSC-46-OIS-20-80-70-10-00016887.0001001 / 24 MAY 17

CLEAR SEARCH BUTTON

When pressed, clears the search entry field.

If the search results are displayed, when pressed, clears the search entry field and the search results.

Ident.: DSC-46-OIS-20-80-70-10-00023535.0001001 / 24 MAY 17

CLEAR RESULTS BUTTON

When pressed, clears the search results and the search entry field.

Ident.: DSC-46-OIS-20-80-70-10-00016888.0001001 / 24 MAY 17

CONDITIONS LIST

If the flight crew enters several words into the search entry field, the flight crew can select the search method.

Ident.: DSC-46-OIS-20-80-70-10-00019771.0001001 / 24 MAY 17

RESULTS PATH AREA

The results path area contains the list of parent folders where the searched information was found. At each folder level, the number of documentary units that contain the searched information is indicated between brackets.
The flight crew can press any item of the results path area to open a drop-down list. This drop-down list contains the brothers of the selected item. The flight crew can use this function to quickly move from one search result to another.

Ident.: DSC-46-OIS-20-80-70-10-00019772.0001001 / 24 MAY 17

LIST OF RESULTS

Lists the documentary units that contain the searched information.
Each result displays the title of the documentary unit, a short extract of the documentary unit where the search information appears, and the path to the documentary unit.
When the flight crew presses a search result in the list, the full documentary unit is displayed in the manuals panel with the search results highlighted in yellow.
To return to the list of search results, the flight crew must press the search panel symbol.

Ident.: DSC-46-OIS-20-80-70-10-00018894.0001001 / 24 MAY 17

PURPOSE OF BOOKMARKS

The flight crew can use bookmarks in the documentation. The flight crew uses the bookmarks panel to manage the bookmarks.

Ident.: DSC-46-OIS-20-80-70-10-00016899.0001001 / 24 MAY 17

BOOKMARKS AREA

The bookmarks area displays the list of bookmarked items.

There are two main sections:
- The system administrator manages bookmarks in the AIRLINE section
- The flight crew manages bookmarks in the PILOT section.

When the flight crew presses a bookmark, the corresponding documentary unit is displayed in the manuals panel.

Ident.: DSC-46-OIS-20-80-70-10-00016901.0001001 / 24 MAY 17

RENAME BUTTON

When pressed, the flight crew can rename the selected bookmark.
The rename button is only available from the edit menu.

Ident.: DSC-46-OIS-20-80-70-10-00016902.0001001 / 24 MAY 17

MOVE TO BUTTON

When pressed, a window that contains the tree of bookmark folders appears. The flight crew can select the folder where to move the selected bookmark. The Move To button is available when a bookmark is selected.
The Move To button is only available from the edit menu.

Ident.: DSC-46-OIS-20-80-70-10-00016903.0001001 / 24 MAY 17

DELETE BUTTON

When pressed, deletes the selected bookmark or folder.
The delete button is only available from the edit menu, and when a bookmark or an empty folder is selected.

Ident.: DSC-46-OIS-20-80-70-10-00016904.0001001 / 24 MAY 17

CREATE FOLDER BUTTON

When pressed, creates a new folder as a child of the current folder.
The create folder button is only available from the edit menu.

Ident.: DSC-46-OIS-20-80-70-10-00016906.0001001 / 24 MAY 17

CLEAR BUTTON

When pressed, deletes all the folders and the bookmarks of the PILOT section.
The clear button is only available from the edit menu, and when the PILOT section is selected.

Ident.: DSC-46-OIS-20-80-70-10-00016916.0001001 / 24 MAY 17

EXPORT BUTTON

When pressed, transfers the bookmarks to the EXPORT BOX. The file that is created can then be imported into another laptop.

The export button is only available when the edit menu is not active.

Ident.: DSC-46-OIS-20-80-70-10-00023536.0001001 / 24 MAY 17

IMPORT BUTTON

The flight crew can press the Import button in order to import bookmarks from the LOAD BOX.

Ident.: DSC-46-OIS-20-80-70-10-00018895.0001001 / 24 MAY 17

PURPOSE OF ECAM

The flight crew can use the ECAM panel in order to display the active ECAM alerts and dispatch messages. The flight crew can also display the documentation associated with the ECAM alerts and dispatch messages.

Ident.: DSC-46-OIS-20-80-70-10-00016884.0001001 / 02 MAY 14

ACTIVE ECAM ALERTS & DISPATCH MESSAGES

Indicates the list of active ECAM alerts and dispatch messages.
The history of alerts and dispatch messages is not available.

Ident.: DSC-46-OIS-20-80-70-10-00016908.0001001 / 24 MAY 17

LINK TO FCOM PROCEDURE

When pressed, opens the FCOM procedure associated with the active ECAM alert.

Ident.: DSC-46-OIS-20-80-70-10-00016910.0001001 / 24 MAY 17

LINK TO MEL DISPATCH MESSAGE

When pressed, opens the description of the active dispatch message.

Ident.: DSC-46-OIS-20-80-70-10-00016911.0001001 / 24 MAY 17

LINK TO LIB SEARCH

When pressed, starts a search in all the available manuals.
If the hyperlink is related to an ECAM alert, the search is related to the fault code of the ECAM alert.
If the hyperlink is related to a dispatch message, the search is related to the fault code of the dispatch message.
If the hyperlink is related to an ECAM alert associated with a dispatch message, the search is a OR condition between the fault code of the ECAM alert and the fault code of the dispatch message.

Ident.: DSC-46-OIS-20-80-70-10-00016912.0001001 / 24 MAY 17

SYNCHRO ECAM BUTTON

When pressed, updates the list of active ECAM alerts and dispatch messages.

L2 The list is updated when the panel is displayed (e.g when moving from another panel to the ECAM panel, or moving from another application to the OPS LIBRARY).

L1 The SYNCHRO ECAM button is not available in the case of loss of synchronization with the aircraft avionics.

Ident.: DSC-46-OIS-20-80-70-10-00016907.0001001 / 02 MAY 14

SYNCHRONIZATION LOST MESSAGE

Indicates that the synchronization between OPS LIBRARY and the aircraft avionics is lost. The list of active ECAM alerts and dispatch messages cannot update.

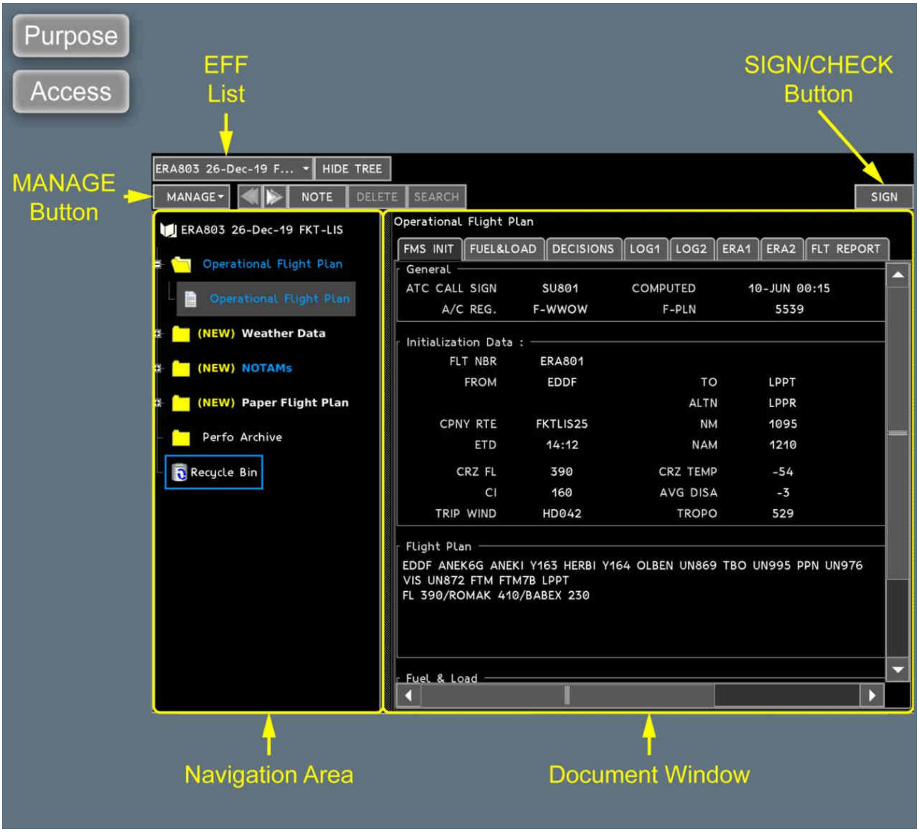
EFB - FLT FOLDER

EFB - FLT FOLDER

Applicable to: ALL

Ident.: DSC-46-OIS-20-80-80-10-00018299.0001001 / 03 DEC 15

FLT FOLDER Overview


Purpose
Access
EFF List
SIGN/CHECK Button
MANAGE Button
ERA803 26-Dec-19 F...
HIDE TREE
MANAGE
NOTE
DELETE
SEARCH
SIGN
ERA803 26-Dec-19 FKT-LIS
Operational Flight Plan
Operational Flight Plan
(NEW) Weather Data
(NEW) NOTAMs
(NEW) Paper Flight Plan
Perfo Archive
Recycle Bin
FMS INIT
FUEL&LOAD
DECISIONS
LOG1
LOG2
ERA1
ERA2
FLT REPORT
Navigation Area
Document Window

Operational Flight Plan

General

ATC CALL SIGN	SU801	COMPUTED	10-JUN 00:15
A/C REG.	F-WWOW	F-PLN	5539

Initialization Data :

FLT NBR	ERA801		
FROM	EDDF	TO	LPPT
		ALTN	LPPR
CPNY RTE	FKTLIS25	NM	1095
ETD	14:12	NAM	1210
CRZ FL	390	CRZ TEMP	-54
CI	160	AVG DISA	-3
TRIP WIND	HD042	TROPO	529

Flight Plan

EDDF ANEK6G ANEKI Y163 HERBI Y164 OLBEN UN869 TBO UN995 PPN UN976
VIS UN872 FTM FTM7B LPPT
FL 390/ROMAK 410/BABEX 230

Fuel & Load

Ident.: DSC-46-OIS-20-80-80-10-00018300.0001001 / 02 MAY 14

PURPOSE

The flight crew can use the FLT FOLDER in order to:
- Display the EFFs
- Store information from other EFB applications
- Centralize all the mission-related information
- Monitor and log the progress of the flight
- Send the documents to a ground archiving system.

Ident.: DSC-46-OIS-20-80-80-10-00018301.0001001 / 02 MAY 14

ACCESS

The flight crew can access the FLT FOLDER via:
- The FLT FOLDER selection in the EFB list
- The FLT FOLDER button in the FLT OPS MENU
- The FLT FOLDER button in the navigation area if the application is already open.

Ident.: DSC-46-OIS-20-80-80-10-00018302.0001001 / 02 MAY 14

EFF LIST

The flight crew uses the EFF list in order to select the EFF to display and to set as current.

Ident.: DSC-46-OIS-20-80-80-10-00018303.0001001 / 02 MAY 14

MANAGE BUTTON

The MANAGE button provides the flight crew with functions dedicated to the use of the FLT FOLDER application (e.g: create a new document).

Ident.: DSC-46-OIS-20-80-80-10-00018304.0001001 / 02 MAY 14

SIGN/CHECK BUTTON

The flight crew uses the SIGN/CHECK button in order to electronically sign or check a document.
It is also possible to UNSIGN or UNCHECK a document.

Ident.: DSC-46-OIS-20-80-80-10-00018305.0001001 / 02 MAY 14

NAVIGATION AREA

The flight crew uses the navigation tree to access an EFF.
When starting the application, the navigation tree displays the current EFF. If no current EFF was selected, it will display the first EFF of the EFF list.

CONTENT

The operator can customize the structure of the EFFs.

However, all EFFs contain the following:

- A root folder, which provides the identifier of the EFF, composed of:
  - The flight number
  - The date of flight
  - The departure airport
  - The Destination airport.
- Subfolders, that contain subfolders and/or documents
- Different types of documents:
  - Text documents

    L3 TXT, RTF, PDF, HTML, XML.
  - L1 Graphical documents.

    L3 JPEG, PNG, SVG, GIF.

L1

COLOR CODING FOR DOCUMENTS

Sign Constraint

Authorities and/or the operator's policy may require the flight crew to sign specific documents in an EFF.
When the flight crewmember signs the document, the document name in the navigation tree turns from blue to green.

Check Constraint

The operator's policy may require the flight crew to check specific documents in an EFF.
When the flight crew checks the document, the document name in the navigation tree turns from blue to green.

No Constraint

Documents that do not require a signature or a check appear in white in the navigation tree.

Summary

Color	Indicates
BLUE	Documents that must be signed or checked.
GREEN	Documents that have been flagged as signed or checked.
WHITE	Documents that do not require a signature or a check.

COLOR CODING FOR SUBFOLDERS

The same color code as for document is applied to subfolder names in the navigation tree.

Color	Indicates
BLUE	Subfolders containing one or more documents that must be signed or checked.
GREEN	Subfolders in which all the required actions ('Sign' or 'Check') have been performed.
WHITE	Subfolders with no document that must be signed or checked.

(NEW) INDICATOR

The **(NEW)** indicator before a document name indicates that:
- The document is new
- The flight crew has not read the document.

When the flight crew has read the document, the **(NEW)** indicator is no longer displayed.
If a subfolder contains documents preceded by the **(NEW)** indicator, the **(NEW)** indicator also appears before the subfolder name in the navigation tree. The indicator disappears as soon as the flight crew has read all these documents.

Ident.: DSC-46-OIS-20-80-80-10-00018306.0001001 / 02 MAY 14

DOCUMENT WINDOW

When the flight crew selects a subfolder in the navigation area, the document window displays the list of subfolders and documents inside the selected subfolder.
When the flight crew selects a document in the navigation area, the document window displays the selected document.

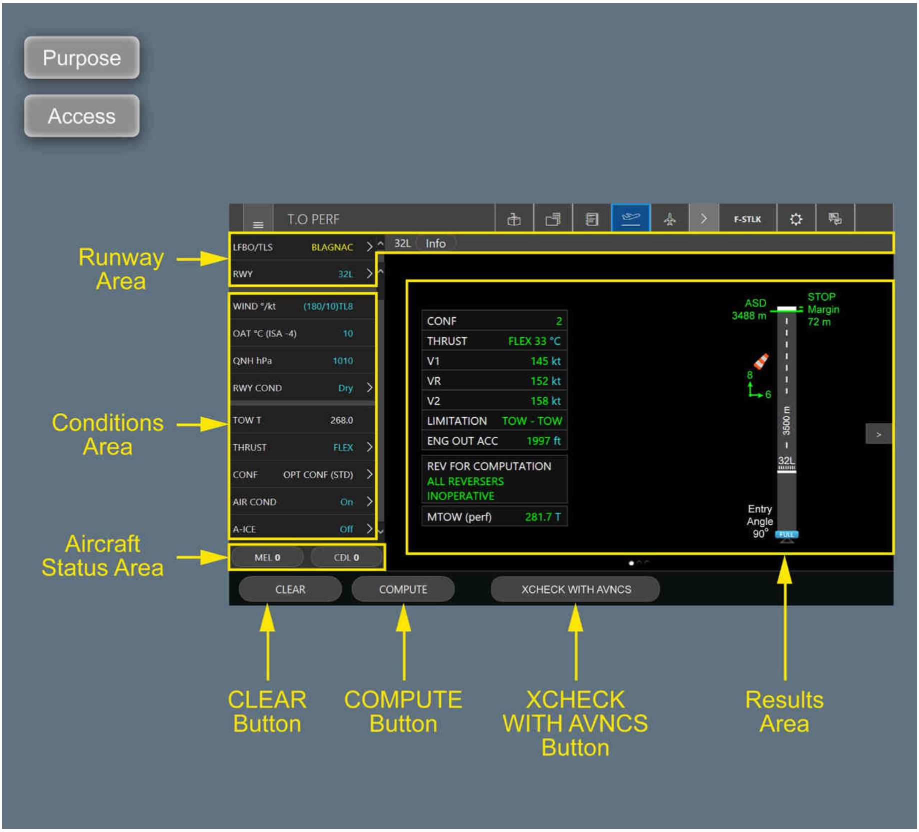
EFB - T.O PERF

T.O PERF

Applicable to: ALL

Ident.: DSC-46-OIS-20-80-90-10-00013380.0002001 / 17 NOV 17

T.O PERF Overview


Purpose
Access
T.O PERF
F-STLK
Runway Area
Conditions Area
Aircraft Status Area
CLEAR Button
COMPUTE Button
XCHECK WITH AVNCS Button
Results Area
CLEAR
COMPUTE
XCHECK WITH AVNCS
32L Info
ASD 3488 m
STOP Margin 72 m
8
6
3500 m
32L
Entry Angle 90°
FULL

LFBO/TLS	BLAGNAC
RWY	32L
WIND °/kt	(180/10)TL8
OAT °C (ISA -4)	10
QNH hPa	1010
RWY COND	Dry
TOW T	268.0
THRUST	FLEX
CONF	OPT CONF (STD)
AIR COND	On
A-ICE	Off
MEL 0	CDL 0

CONF	2
THRUST	FLEX 33 °C
V1	145 kt
VR	152 kt
V2	158 kt
LIMITATION	TOW - TOW
ENG OUT ACC	1997 ft

REV FOR COMPUTATION
ALL REVERSERS
INOPERATIVE

MTOW (perf)	281.7 T

Ident.: DSC-46-OIS-20-80-90-10-00013398.0001001 / 24 MAY 17

PURPOSE

T.O PERF provides optimized takeoff performance calculation for a given airport.

Inputs are divided into three parts:
- Airport and runway
- Conditions
- Aircraft status.

Note: The system administrator customize all parameters relative to units, fleet, and airports.

Ident.: DSC-46-OIS-20-80-90-10-00013399.0001001 / 24 MAY 17

ACCESS

The flight crew can access the T.O PERF application via the T.O PERF button of:
- The application menu, or
- The FLT OPS MENU, or
- The navigation bar, if the application is already running, or
- The OIS MENU.

Ident.: DSC-46-OIS-20-80-90-10-00013432.0001001 / 24 MAY 17

COMPUTE BUTTON

When pressed, displays the performance computation results in the result area.
The COMPUTE button can be pressed only if the application does not detect any error or missing parameter.

Ident.: DSC-46-OIS-20-80-90-10-00013888.0001001 / 24 MAY 17

XCHECK WITH AVNCS BUTTON

The XCHECK WITH AVNCS function enables the flight crew to crosscheck the FMS takeoff performance entries with the OIS takeoff performance results.

List of crosschecked parameters	Source from AVIONICS	Source from T.O PERF Application
V1	FMS : ACTIVE/PERF Page	Results area
V2		
VR		
FLAPS		
TOW	GW on ECAM Permanent Data	
AIR COND	FMS : ACTIVE/PERF Page	Conditions area
ANTI ICE		
Thrust (TOGA, FLEX or DERATED)		Results area
Derated Thrust Level		
FLEX Temperature		
QNH	FCU	Conditions area

Ident.: DSC-46-OIS-20-80-90-10-00013392.0001001 / 24 MAY 17

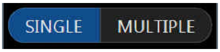
PURPOSE OF RUNWAY PANEL

The flight crew uses the runway panel to select the takeoff runway used for the computation.

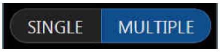
Ident.: DSC-46-OIS-20-80-90-10-00013650.0001001 / 24 MAY 17

RUNWAY LIST

The flight crew can select one or multiple takeoff runway(s) of the selected airport.
When selected, the runway picture is updated.



Only one runway can be selected.



Multiple runways can be selected.

Ident.: DSC-46-OIS-20-80-90-10-00013409.0001001 / 24 MAY 17

AIRPORT LIST

The flight crew can use the airport list to compute the aircraft performance for any airport available in the list.

L2 The system administrator defines the airport list.

L1 If the flight crew selects an airport different from the FLT OPS STS page, all input data are reset to the standard values or cleared after confirmation of the airport change.

Ident.: DSC-46-OIS-20-80-90-10-00013638.0001001 / 06 NOV 14

RUNWAY CHARACTERISTICS AREA

Runway characteristics are:
- Elevation (ELEVN)
- Slope
- Takeoff Run Available (TORA)
- Takeoff Distance Available (TODA)
- Accelerate Stop Distance Available (ASDA)
- Number of obstacles
- Runway entry angle
- T.O shift.

L2 The system administrator can deactivate the T.O shift field.

Ident.: DSC-46-OIS-20-80-90-10-00013719.0001001 / 24 MAY 17

RUNWAY LENGTH REDUCTION AREA

The flight crew can enter the runway length reduction from the RWY start, or the RWY end.

The runway length that is displayed on the runway characteristics area and the runway picture is reduced according to the entered value.
The takeoff shift (T.O SHIFT) that is displayed on the runway characteristics area and the runway picture is increased according to the entered value, if the runway length has been decreased from the runway entry point (RWY START).

L2 The takeoff shift is a reduction of the takeoff distance (TORA, TODA, ASDA) due to a takeoff from an intersection.

L1 The runway panel displays the label "MODIFIED" to indicate that the flight crew has modified the runway length.

L2 If the flight crew reduces the runway length from the RWY end, the length of the clearway and the stopway are automatically set to 0.

Ident.: DSC-46-OIS-20-80-90-10-00013722.0001001 / 24 MAY 17

ADDITIONAL OBSTACLE AREA

The flight crew can add one more obstacle for the selected runway.
The flight crew uses the FROM RWY START or the FROM RWY END entry fields to enter the obstacle longitudinal position.

L2 The value entered in the FROM RWY START entry field must be higher than or equal to the runway TORA.
The additional obstacle is considered on the runway extended centerline (no lateral distance).

L1 The flight crew uses the HEIGHT entry field to enter the obstacle height.
The runway panel displays the label "MODIFIED" to indicate that the flight crew added an obstacle.

Ident.: DSC-46-OIS-20-80-90-10-00013724.0001001 / 24 MAY 17

MODIFY ENTRY ANGLE LIST

The flight crew can modify the runway entry angle via the ENTRY ANGLE list.
The runway entry angle displayed on the runway characteristics area and the runway picture is updated according to the selected value.

Ident.: DSC-46-OIS-20-80-90-10-00018976.0001001 / 24 MAY 17

OBSTACLES TABLE

The obstacles table contains information about the obstacles applicable to the selected runway.

The following obstacles data is displayed:
- Distance from the runway entry point (start of runway area or intermediate taxi crossing intersection)
- Lateral distance from the runway centerline
- Height.

When the flight crew manually adds an obstacle, the associated data is displayed in blue, in the obstacles table.

Ident.: DSC-46-OIS-20-80-90-10-00013389.0002001 / 24 MAY 17

PURPOSE OF CONDITIONS AREA

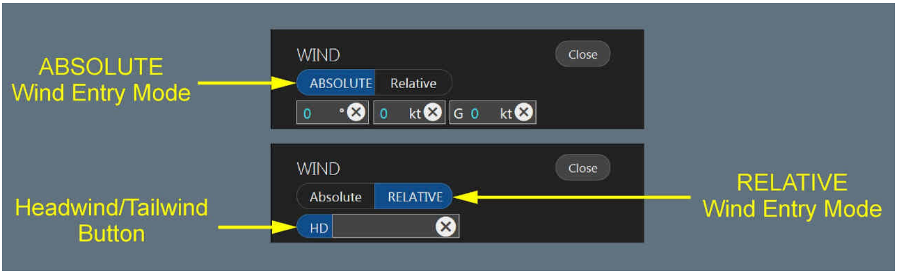
The flight crew uses the conditions area to insert the:
- Wind
- Outside Air Temperature (OAT)
- QNH
- Runway conditions
- Takeoff Weight (TOW)
- Thrust
- Aircraft configuration
- Air conditioning setting
- Anti-ice setting.

Ident.: DSC-46-OIS-20-80-90-10-00013400.0001001 / 24 MAY 17

WIND ENTRY FIELD

Indicates the wind value for performance computation.

The flight crew can select:
- ABSOLUTE, in order to define the wind with a direction/speed/gust combination, or
- RELATIVE, in order to define the wind with a longitudinal speed component only (headwind or tailwind).

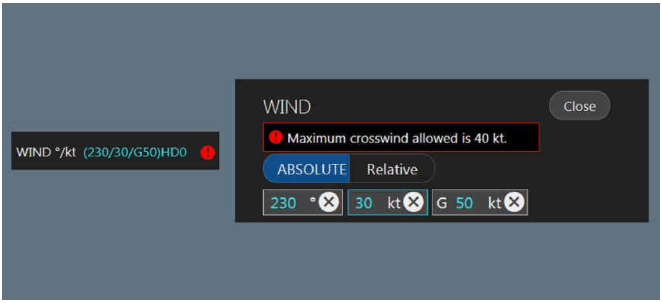

ABSOLUTE
Wind Entry Mode
WIND
Close
ABSOLUTE
Relative
0 °
0 kt
G 0 kt
WIND
Close
Absolute
RELATIVE
HD
RELATIVE
Wind Entry Mode
Headwind/Tailwind
Button

The application displays a wind sock on the side of the runway picture. For more information on the runway picture, *Refer to DSC-46-OIS-20-80-90 Runway Picture*.

Note: *The computation of the crosswind component takes into account the gust value (used to check the maximum crosswind limitation). The computation of the longitudinal wind component takes into account the steady wind speed only.*

The application crosschecks the crosswind and tailwind components with the limitations of the aircraft, and in accordance with the selected runway condition.

Depending on the administrator setting, if the entered wind exceeds the crosswind or tailwind limitation, the following occurs:
- The flight crew cannot run the computation, or
- The flight crew can run the computation, after confirmation by a pop-up message.



WIND °/kt (230/30/G50)HD0

Maximum crosswind allowed is 40 kt.

230 ° | 30 kt | G 50 kt

L2 For more information about the crosswind limitation, *Refer to LIM-AG-OPS Maximum Crosswind for Takeoff and Landing*, and *Refer to LIM-AG-OPS Maximum Tailwind for Landing*.

Ident.: DSC-46-OIS-20-80-90-10-00013401.0001001 / 24 MAY 17

OAT ENTRY FIELD

Indicates the Outside Air Temperature (OAT) at the airport.
The flight crew manually enters the temperature.
If the flight crew entered the QNH via the QNH entry field, the temperature deviation from the International Standard Atmosphere (ISA) is automatically computed and displayed.

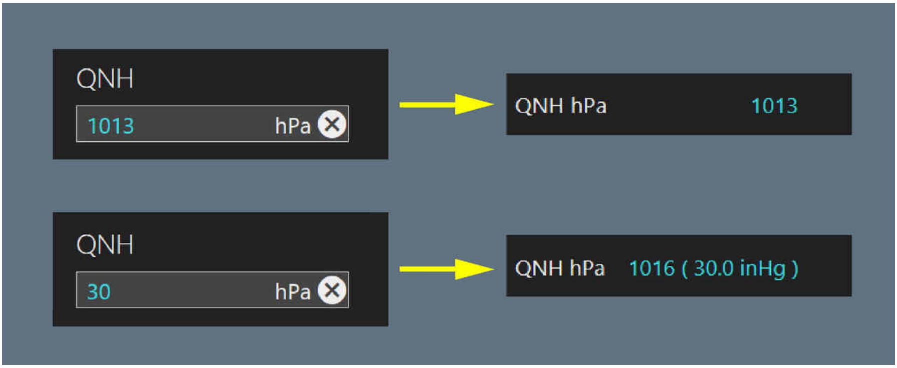
Note: *The OAT range depends on the selected runway condition.*

Ident.: DSC-46-OIS-20-80-90-10-00013402.0001001 / 24 MAY 17

QNH ENTRY FIELD

Indicates the sea level atmospheric pressure.
The flight crew enters the value of the QNH. The application automatically detects the unit (hPa or inHg).

QNH Format



Ident.: DSC-46-OIS-20-80-90-10-00013403.0001001 / 02 MAY 14

RWY COND LIST

Indicates the runway surface condition.
The runway surface condition affects takeoff performance and must be taken into account for MTOW(perf) calculation.

Ident.: DSC-46-OIS-20-80-90-10-00013404.0001001 / 02 MAY 14

A-ICE LIST

Indicates the anti-ice setting for takeoff.

Ident.: DSC-46-OIS-20-80-90-10-00013405.0001001 / 24 MAY 17

TOW ENTRY FIELD

Indicates the Takeoff Weight (TOW) of the aircraft.

The flight crew can manually:
- Enter the desired TOW value, or
- Use the shortcut “*” to obtain the structural TOW.

It is possible to enter a weight that is higher than the certified MTOW. The results will be displayed for the entered weight, regardless of the MTOW.

COMMUNICATION FROM LOADSHEET TO T.O PERF

The T.O PERF application can get back the TOW value from the results of the LOADSHEET application. In this case, the TOW value is displayed in yellow in the conditions area.

Ident.: DSC-46-OIS-20-80-90-10-00013406.0001001 / 02 MAY 14

CONF LIST

Indicates the aircraft flap setting selected for the computation.

When OPT CONF is selected, the computation returns the takeoff configuration that maximizes:
- The MTOW(perf) if the takeoff is limited by the performance, or
- The flexible temperature if a flexible takeoff is possible.

L2 For more information about takeoff configurations,*Refer to DSC-27-20-20 Configurations*

Ident.: DSC-46-OIS-20-80-90-10-00013407.0001001 / 24 MAY 17

AIR COND LIST

Indicates the air conditioning setting.

Ident.: DSC-46-OIS-20-80-90-10-00013408.0001001 / 03 JAN 19

THRUST LIST

Indicates the thrust option for takeoff.

The flight crew selects the thrust option from the THRUST option list:
- Maximum takeoff thrust (TOGA)
- Flexible thrust (FLEX)
- Derated level
- Optimum thrust.

The use of a specific option depends on the outside conditions.

L2 For more information about thrust options:
- TOGA: *Refer to PER-TOF-20-10 TOGA Thrust*
- FLEX: *Refer to PER-TOF-20-20-20 Flexible Takeoff Limitations*
- Derated: *Refer to PER-TOF-20-20-30 Derated Takeoff Limitations*.

L1

CAUTION	In the case of a MEL item that forbids the use of FLEX or derated takeoff thrust, FLEX and derate level thrust options are still available in T.O PERF, even though it is forbidden by the procedure. In this case, the flight crew must select TOGA thrust option.

Ident.: DSC-46-OIS-20-80-90-10-00013559.0001001 / 24 MAY 17

PURPOSE OF AIRCRAFT STATUS AREA

The aircraft status enables the selection and display of MEL items and CDL items that affect the takeoff performance.
The T.O PERF application receives the list of MEL and CDL items that the flight crew selected in the OPS LIBRARY application.
The flight crew can also manually add or remove MEL and CDL items.

Ident.: DSC-46-OIS-20-80-90-10-00014777.0001001 / 02 MAY 14

AIRCRAFT STATUS PANEL

The Aircraft Status Panel displays the MEL and CDL items. The status is retrieved from the aircraft avionics, and the flight crew can manually insert additional MEL and CDL items.

L2 The flight crew can keep the cursor over the aircraft status panel in order to increase the size of the window.

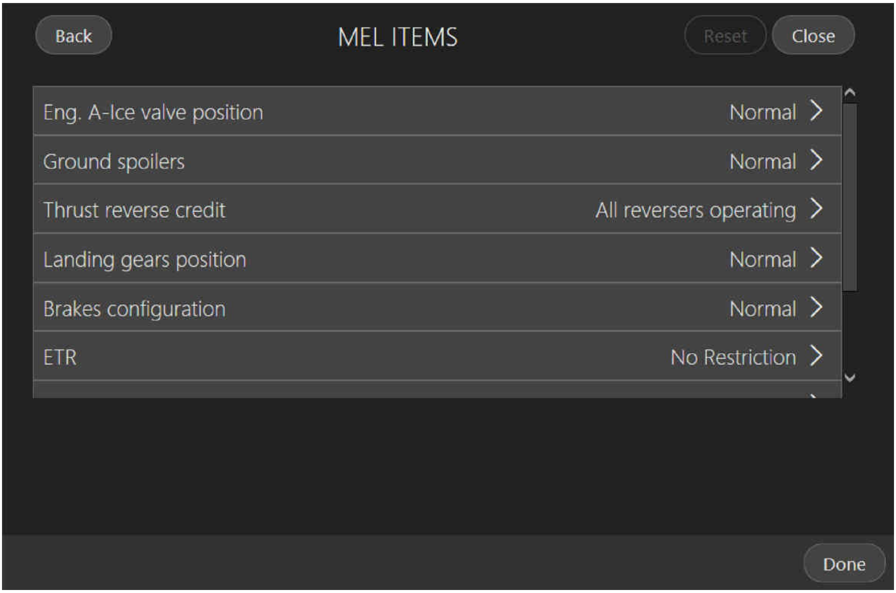
L1 If the aircraft is dispatched without any MEL or CDL item that affects takeoff performance, "NORMAL" appears.

Ident.: DSC-46-OIS-20-80-90-10-00013419.0001001 / 24 MAY 17

MEL ITEMS

Indicates the number of active MEL items that the application takes into account for performance computation.
The OPS LIBRARY application sends the list of ticked MEL items to the T.O PERF application.
The flight crew can also manually insert the inoperative systems of the aircraft that cause performance penalties via the MEL ITEMS panel.
When pressed, displays the MEL ITEMS panel where the flight crew can manually select inoperative systems that affect the takeoff performance.

MEL ITEMS Panel



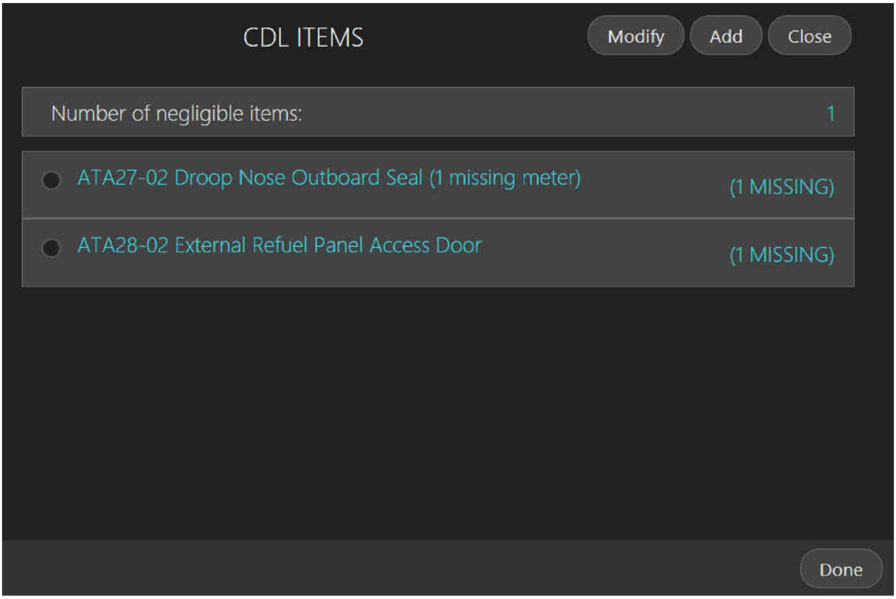
Eng. A-Ice valve position	Normal
Ground spoilers	Normal
Thrust reverse credit	All reversers operating
Landing gears position	Normal
Brakes configuration	Normal
ETR	No Restriction

Ident.: DSC-46-OIS-20-80-90-10-00013417.0001001 / 03 JUL 20

1 CDL ITEMS

Indicates the number of active CDL items and negligible items that the application takes into account for performance computation.
The flight crew can also manually insert the missing structural parts of the aircraft that cause performance penalties via the CDL ITEMS panel.
When pressed, it displays the CDL ITEMS panel where the flight crew can manually select missing items or missing meters that affect takeoff performance.

L2 Negligible items are missing structural parts that have a negligible impact on performance when not combined with others. The application takes into account the number of negligible items in order to apply the appropriate performance penalty.



Number of negligible items: 1

● ATA27-02 Droop Nose Outboard Seal (1 missing meter) (1 MISSING)

● ATA28-02 External Refuel Panel Access Door (1 MISSING)

Ident.: DSC-46-OIS-20-80-90-10-00013831.0001001 / 24 MAY 17

PURPOSE OF RESULTS AREA

The results area displays the performance computation outputs.
The system administrator can customize the list of outputs.

Two functions are available:
- In case of single runway computation, one result is available
- In case of multiple runway computation, one result per selected runway is available.

Ident.: DSC-46-OIS-20-80-90-10-00013867.0001001 / 24 MAY 17

MTOW(PERF)

The MTOW(perf) field of the results area indicates the maximum takeoff weight limited by performance.
The MTOW(perf) value may exceed the certified MTOW value. However, the real takeoff weight must not exceed MTOW.
If TOW is higher than MTOW(perf), the results are red and dashed.
L2 For more information about MTOW, *Refer to LIM-AG-WGHT Weight Limitations*.

Ident.: DSC-46-OIS-20-80-90-10-00013883.0001001 / 24 MAY 17

STOP MARGIN

The stop margin is the difference between the available runway length and the computed ASD.

Ident.: DSC-46-OIS-20-80-90-10-00013877.0001001 / 02 MAY 14

LIMITATION

Takeoff limitations are regulatory requirements to limit takeoff performance.
The takeoff limitations are identified in the RESULTS area via limitation codes.
Usually, the best takeoff performance is obtained at the intersection of two limitation curves. For this reason, the limitation codes are indicated by two codes.
The two codes are identical if the takeoff performance is only determined by one limitation.
The following table indicates the various codes that can appear:

Code	Description
TOW	Maximum computation weight, or maximum structural weight.
RWY0	All-engine Takeoff Distance (TOD0)
	or All-engine Takeoff Run (TOR0)
	or All-engine Accelerate Stop Distance (ASD0)
RWY1	One- engine Inoperative Takeoff Distance (TOD1)
	or One-engine Inoperative Takeoff Run (TOR1)
	or One-engine Inoperative Accelerate Stop Distance (ASD1)
VMCG	V1 limited by certified minimum control speed on ground
TIRE	VLOF limited by maximum tire speed
BRK	V1 limited by maximum brake energy
VMCA	V2 limited by certified minimum control speed in the air
1SEG	First segment climb gradient
2 SEG	Second segment climb gradient
3 SEG	Acceleration (third) segment
FTO	Final takeoff climb gradient
OBS	Obstacle clearance
VMU	Minimum unstick speed

Customized codes may differ from the above listed.

Ident.: DSC-46-OIS-20-80-90-10-00013881.0001001 / 24 MAY 17

TAKEOFF SPEEDS

T.O PERF displays the following takeoff speeds on the RESULTS area:
- V1, the decision speed
- VR, the rotation speed
- V2, the minimum takeoff climb speed.

L2 For more information on V1, *Refer to DSC-22-27-10-20 V1*.

For more information on VR, *Refer to DSC-22-27-10-20 VR*.
For more information on V2, *Refer to DSC-22-27-10-20 V2*.

L1 The following two display modes of V1 are possible, depending the system administrator settings.

SINGLE V1

T.O PERF displays only one V1 value that can correspond to:
- V1 min, or
- V1 max, or
- V1 mean.

V1 RANGE

T.O PERF displays a range of possible V1 values, from V1 min to V1 max. The flight crew can select the V1 value to be used for takeoff within the [V1 min ; V1 max] range, via "-"/"+" buttons.

Ident.: DSC-46-OIS-20-80-90-10-00013882.0001001 / 24 MAY 17

FLAPS/SLATS CONFIGURATION

The CONF field on the results area displays the selected or optimized configuration.
The optimization process selects the configuration that provides the maximum performance limited takeoff weight (or the maximum TFLEX). If the weight is the same for several configurations, the configuration that provides the lowest takeoff speeds is selected.

Ident.: DSC-46-OIS-20-80-90-10-00013885.0001001 / 24 MAY 17

THRUST

Depending on the thrust option selected by the flight crew in the conditions area, the thrust label displayed in the results area may be:
- The selected thrust option, if TOGA or a derate level is selected
- An optimum derate level, FLEX or TOGA, if OPTIMUM THRUST is selected
- An adapted thrust to the actual takeoff weight, if FLEX is selected.

L2 For more information about thrust options:
- TOGA: *Refer to PER-TOF-20-10 TOGA Thrust*
- FLEX: *Refer to PER-TOF-20-20-20 Flexible Takeoff Definition*
- Derated: *Refer to PER-TOF-20-20-30 Derated Takeoff Definition*.

Ident.: DSC-46-OIS-20-80-90-10-00013886.0001001 / 24 MAY 17

ENG OUT ACC

The ENG OUT ACC field in the results area displays the computed engine-out acceleration altitude value.

T.O PERF application calculates the minimum and maximum acceleration heights:
- Minimum ENG OUT ACC height: The highest of the minimum regulatory value (400 ft) and the obstacle clearance
- Maximum ENG OUT ACC height: The maximum height determined by the 10 min takeoff thrust limitation to reach the en-route configuration.

The system administrator defines a Standard ENG OUT ACC height.

The displayed ENG OUT ACC altitude is selected as follows:
- If the Standard ENG OUT ACC height is between min and max ENG OUT ACC height, then the result displayed in T.O PERF is the Standard ENG OUT ACC altitude
- If the Standard ENG OUT ACC height is below min ENG OUT ACC height, then the result displayed in T.O PERF is min ENG OUT ACC altitude
- If the Standard ENG OUT ACC height is above max ENG OUT ACC height, then the result displayed in T.O PERF is max ENG OUT ACC altitude.

Ident.: DSC-46-OIS-20-80-90-10-00023686.0001001 / 24 MAY 17

REV FOR COMPUTATION

The REV FOR COMPUTATION field displays the thrust reverser status for the T.O PERF computation:
- For dry runways, there is no reverse thrust credit
- For wet and contaminated runways, the thrust reverser status is defined by the system administrator.

Ident.: DSC-46-OIS-20-80-90-10-00023727.0001001 / 24 MAY 17

RESULTS AREA - PERF T.O PAGE

Displays the outputs as they should be entered in the MFD - PERF T.O page.

L2 For more information on the MFD - PERF T.O page, *Refer to DSC-22-FMS-20-20-20 PERF Page*.

Ident.: DSC-46-OIS-20-80-90-10-00023728.0001001 / 24 MAY 17

DETAILED RESULTS

Displays the list of detailed results.

Note: The system administrator defines the list.

Ident.: DSC-46-OIS-20-80-90-10-00013727.0001001 / 24 MAY 17

CLEAR BUTTON

When pressed, resets the inputs of the T.O PERF application to the default values.

Ident.: DSC-46-OIS-20-80-90-10-00023683.0001001 / 24 MAY 17

CLOSE BUTTON

When pressed, cancels and closes the entries and returns to the T.O PERF application.

Ident.: DSC-46-OIS-20-80-90-10-00023684.0001001 / 24 MAY 17

RESTORE BUTTON

When pressed, restores the initial values of the fields that the flight crew modified and returns to the previous view.

Ident.: DSC-46-OIS-20-80-90-10-00023685.0001001 / 24 MAY 17

DONE BUTTON

When pressed, validates the entry.

Ident.: DSC-46-OIS-20-80-90-10-00024021.0001001 / 24 MAY 17

RUNWAY PICTURE

The runway picture corresponds to the selected runway, with the associated Takeoff Runway Available (TORA) on the runway centerline.

L2 The dark grey area corresponds to the TORA that includes user modifications. The unusable parts of the runway are displayed in light grey. If applicable, the displaced threshold is displayed.

L1 After computation of the takeoff performance, the following results are displayed on the runway picture:

- The Acceleration Stop Distance (ASD), *Refer to ASD*
- The Stop Margin, *Refer to Stop Margin*

Ident.: DSC-46-OIS-20-80-90-10-00024022.0001001 / 24 MAY 17

ASD

The ASD corresponds to the accelerate stop distance calculated according to the forecasted conditions.

Ident.: DSC-46-OIS-20-80-90-10-00024023.0001001 / 24 MAY 17

WIND SOCK

The wind sock indicates the wind direction relative to the runway.

L2 If the flight crew entered the wind as a direction and speed combination, both the crosswind and longitudinal wind components are displayed. If the flight crew only entered the longitudinal wind component, the crosswind component cannot be computed.

Ident.: DSC-46-OIS-20-80-90-10-00024024.0001001 / 24 MAY 17

ENTRY ANGLE

The entry angle value is displayed on the runway picture.

Ident.: DSC-46-OIS-20-80-90-10-00024025.0001001 / 24 MAY 17

BLUE BAR

A blue bar indicates the brake release point.

FULL	The brake release point is the runway start.
MOD	The brake release point is the modified ("FROM RUNWAY START" is different from zero) when the brake release point is the runway start or the taxiway entry.
-M10	The brake release point is the taxiway entry. The last four digits of the taxiway entry are written on the blue bar (e.g. Computation from taxiway -M10 entry).

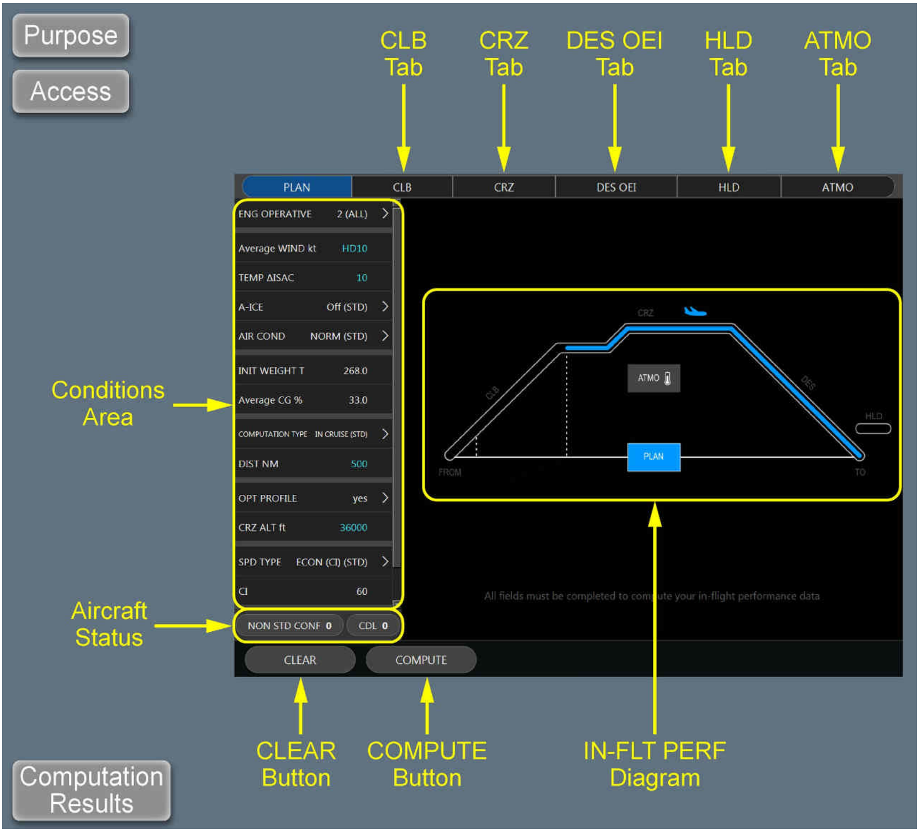
EFB - IN-FLT PERF

IN-FLT PERF

Applicable to: ALL

Ident.: DSC-46-OIS-20-80-100-10-00013823.0001001 / 24 MAY 17

IN-FLT PERF Overview


Purpose
Access
CLB Tab
CRZ Tab
DES OEI Tab
HLD Tab
ATMO Tab
PLAN
CLB
CRZ
DES OEI
HLD
ATMO
Conditions Area
Aircraft Status
CRZ
CLB
DES
ATMO
HLD
PLAN
FROM
TO
CLEAR
COMPUTE
CLEAR Button
COMPUTE Button
IN-FLT PERF Diagram
Computation Results

ENG OPERATIVE 2 (ALL)
Average WIND kt HD10
TEMP ΔISAC 10
A-ICE Off (STD)
AIR COND NORM (STD)
INIT WEIGHT T 268.0
Average CG % 33.0
COMPUTATION TYPE IN CRUISE (STD)
DIST NM 500
OPT PROFILE yes
CRZ ALT ft 36000
SPD TYPE ECON (CI) (STD)
CI 60
NON STD CONF 0
CDL 0

All fields must be completed to compute your in-flight performance data

Ident.: DSC-46-OIS-20-80-100-10-00013819.0001001 / 24 MAY 17

PURPOSE

The IN-FLT PERF application provides optimized in-flight performance calculation for different phases of the flight.

Note: *The system administrator can customize all parameters relative to units, Operator fleet, and airport data.*

The IN-FLT PERF application includes six different tabs:
- Flight planning (PLAN)
- Climb (CLB)
- Cruise (CRZ)
- Descent with engine inoperative (DES OEI)
- Hold (HLD)
- Atmosphere (ATMO).

Note: *There is no communication between the LOADSHEET application and the IN-FLT PERF application.*

Ident.: DSC-46-OIS-20-80-100-10-00013821.0001001 / 24 MAY 17

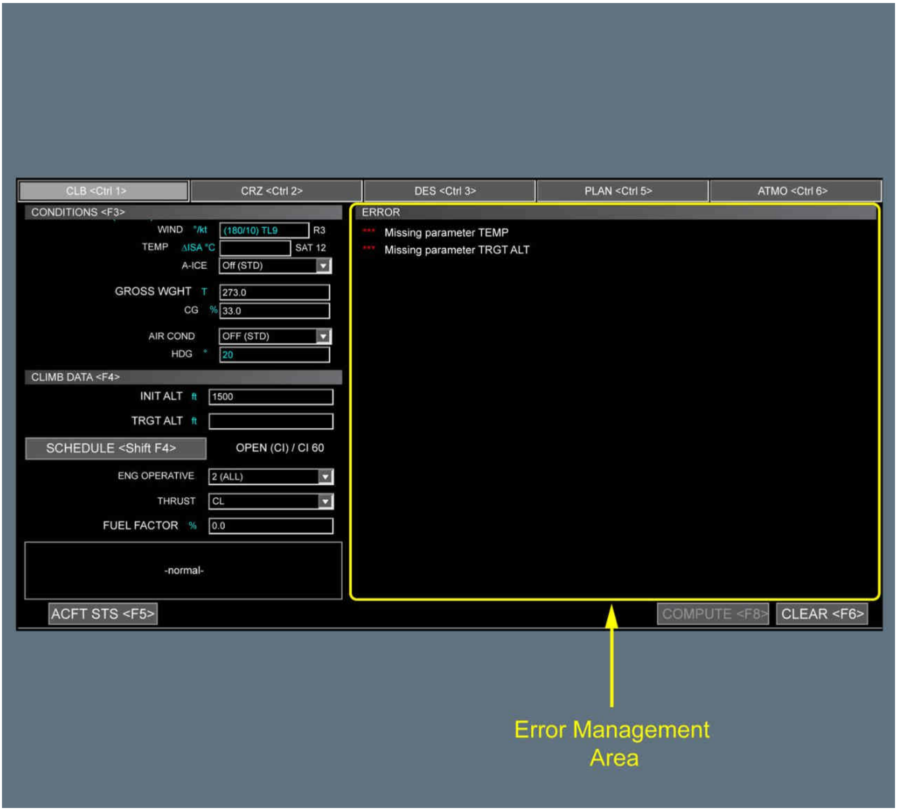
ACCESS

The flight crew can access the IN-FLT PERF application via the IN-FLT PERF button of:
- The application menu, or
- The FLT OPS MENU, or
- The navigation bar, if the application is already running, or
- The OIS menu.

Ident.: DSC-46-OIS-20-80-100-10-00013830.0001001 / 02 MAY 14

ERROR MANAGEMENT AREA

Indicates the missing parameters or the out of range values.
The Error Management Area is displayed on top of the RESULTS area.


CLB <Ctrl 1>
CRZ <Ctrl 2>
DES <Ctrl 3>
PLAN <Ctrl 5>
ATMO <Ctrl 6>
CONDITIONS <F3>
CLIMB DATA <F4>
SCHEDULE <Shift F4>
ERROR
ACFT STS <F5>
COMPUTE <F8>
CLEAR <F6>
Error Management
Area

WIND °/kt (180/10) TL9 R3
TEMP ΔISA °C SAT 12
A-ICE Off (STD)
GROSS WGHT T 273.0
CG % 33.0
AIR COND OFF (STD)
HDG ° 20
INIT ALT ft 1500
TRGT ALT ft
OPEN (CI) / CI 60
ENG OPERATIVE 2 (ALL)
THRUST CL
FUEL FACTOR % 0.0
-normal-

*** Missing parameter TEMP
*** Missing parameter TRGT ALT

Ident.: DSC-46-OIS-20-80-100-10-00013825.0001001 / 24 MAY 17

COMPUTE BUTTON

When pressed, displays the performance computation results in the RESULTS area.

Ident.: DSC-46-OIS-20-80-100-10-00013828.0001001 / 24 MAY 17

CLEAR BUTTON

When pressed, resets the inputs of the IN-FLT PERF application to the default values.

Ident.: DSC-46-OIS-20-80-100-10-00023920.0001001 / 24 MAY 17

MODIFY BUTTON

When pressed, enables the modification of the parameters of the conditions area and the aircraft status.

Ident.: DSC-46-OIS-20-80-100-10-00013829.0001001 / 02 MAY 14

IN-FLT PERF MESSAGES AREA

The IN-FLT PERF messages area can indicate :
- Help messages, or
- Valid range, format and units for the inputs.

Ident.: DSC-46-OIS-20-80-100-10-00023919.0001001 / 24 MAY 17

IN-FLT PERF DIAGRAM

Highlights in blue the flight phase that corresponds to the IN-FLT PERF tab currently selected.

Ident.: DSC-46-OIS-20-80-100-10-00013427.0001001 / 24 MAY 17

PURPOSE OF CONDITIONS

The flight crew uses the conditions area to:
- Enter the weather
- Select the number of operative engines
- Select the loading characteristics of the aircraft
- Define the in-flight performance strategy.

Ident.: DSC-46-OIS-20-80-100-10-00018344.0001001 / 24 MAY 17

WIND ENTRY FIELD

Indicates the wind for performance computation.

The flight crew can define the wind value with:
- A direction/speed combination, or
- A longitudinal component.

If the flight crew defines the wind with a direction/speed combination, the longitudinal wind component is automatically calculated when the HDG entry field is filled in.

Ident.: DSC-46-OIS-20-80-100-10-00018345.0001001 / 24 MAY 17

TEMP ENTRY FIELD

Indicates the ISA deviation.

The flight crew can enter the temperature as:
- An ISA deviation, or
- A Static Air Temperature (SAT) at the initial altitude, that is automatically converted into an ISA deviation.

L2 When the flight crew enters an ISA deviation, the application computes and displays the equivalent SAT at initial altitude.

Ident.: DSC-46-OIS-20-80-100-10-00018346.0001001 / 02 MAY 14

A-ICE LIST

Indicates the anti-ice setting.
L2 For more information on ice protection, *Refer to Ice Protection*.

Ident.: DSC-46-OIS-20-80-100-10-00018347.0001001 / 24 MAY 17

GROSS WEIGHT ENTRY FIELD

Indicates the gross weight for performance computation.
The flight crew must enter the real gross weight of the aircraft at the beginning of the selected flight phase.

Ident.: DSC-46-OIS-20-80-100-10-00020789.0001001 / 24 MAY 17

INIT WEIGHT ENTRY FIELD

Indicates the weight of the aircraft taken into account for performance computation.

IN PLAN MODE

The flight crew must enter the weight of the aircraft according to the computation type:
- FLIGHT PLAN: The flight crew enters the aircraft weight at engine start
- IN CRUISE: The flight crew enters the current aircraft weight
- ALTERNATE: The flight crew enters the aircraft weight at go-around.

For more information about the computation type, *Refer to DSC-46-OIS-20-80-100 COMPUTATION TYPE List [PLAN]*.

Ident.: DSC-46-OIS-20-80-100-10-00018348.0001001 / 24 MAY 17

CG ENTRY FIELD

Indicates the Center of Gravity (CG) position for performance computation.
The flight crew must enter the CG of the aircraft at the beginning of the selected flight phase.

Ident.: DSC-46-OIS-20-80-100-10-00020790.0001001 / 24 MAY 17

AVERAGE CG ENTRY FIELD

Indicates the average CG position for the flight.

The flight crew must enter an average position of the CG for the flight.

Ident.: DSC-46-OIS-20-80-100-10-00018350.0001001 / 06 NOV 14

AIR COND LIST

Indicates the air conditioning setting, with FWD cargo cooling off.

L2 When the FWD cargo cooling is active, the flight crew applies the following equivalences.

ENG OPERATIVE	AIR FLOW Selector	FWD Cargo Cooling	IN-FLT PERF AIR COND setting
2	LO	ON	NORM
	NORM		HI
	HI		HI
1	LO	ON	LO
	NORM		NORM
	HI		HI

Ident.: DSC-46-OIS-20-80-100-10-00018351.0001001 / 24 MAY 17

HDG ENTRY FIELD

Indicates the heading of the aircraft during the selected flight phase.
The HDG entry field only appears when the flight crew enters the wind as a direction/speed combination.
The flight crew must enter the heading and the wind direction in the same reference (magnetic or true).

Ident.: DSC-46-OIS-20-80-100-10-00013923.0001001 / 02 MAY 14

PURPOSE OF THE CLIMB DATA

The flight crew uses the CLIMB DATA area to enter the climb profile and the engines status.

Ident.: DSC-46-OIS-20-80-100-10-00013925.0001001 / 24 MAY 17

INIT ALT ENTRY FIELD [CLB]

Indicates the initial altitude of the climb.

L2 The initial altitude defines the altitude at which the computation of the initial climb or step climb begins.

Ident.: DSC-46-OIS-20-80-100-10-00013926.0001001 / 24 MAY 17

TRGT ALT ENTRY FIELD [CLB]

Indicates the altitude target of the climb.

L2 The target altitude defines the altitude at which the computation stops.
If the target altitude is above the computed climb ceiling, the computation stops at the climb ceiling.

Ident.: DSC-46-OIS-20-80-100-10-00013959.0001001 / 24 MAY 17

FUEL FACTOR ENTRY FIELD

Indicates the fuel factor.
The fuel factor is defined as a percentage of increase or decrease of the fuel flow. The system administrator defines the fuel factor in order to adjust the in-flight performance of each aircraft.
The flight crew may only modify the fuel factor if the fuel factor is not up to date. The flight crew may only increase the fuel factor.
In the case of a fuel consumption increase associated to a MEL item, a CDL item, or an in-flight failure, the flight crew must not use the FUEL FACTOR field and must use the FUEL PENALTY FACTOR via the NON STD CONF button of the ACFT STS area (*Refer to DSC-46-OIS-20-80-100 Aircraft Status Panel*).

Ident.: DSC-46-OIS-20-80-100-10-00013957.0001001 / 24 MAY 17

ENG OPERATIVE LIST

Indicates the number of operative engines.
If the flight crew selects one engine operative, the THRUST list/indication is automatically set to MCT.

Ident.: DSC-46-OIS-20-80-100-10-00013958.0001001 / 24 MAY 17

THRUST LIST

Indicates the thrust setting for the climb.

The flight crew can select one of the following thrust setting:
- Derated climb (AUTO DERATE), or
- Climb thrust (CL), or
- Maximum Continuous Thrust (MCT).

If the flight crew selects one engine operative from the ENG OPERATIVE list, the thrust setting is automatically set to MCT and cannot be modified.

L2 For more information about thrust settings:
- CL: *Refer to PER-IFT-20-10-20 Maximum Climb Thrust*
- Derate: *Refer to PER-IFT-20-10-20 Auto-Derated Climb Thrust*.

Ident.: DSC-46-OIS-20-80-100-10-00023882.0001001 / 24 MAY 17

CLB TYPE LIST AND ASSOCIATED PARAMETERS

Indicates the type of climb for performance computation.

The flight crew can select one of the following climb strategies:
- OPEN (CI), associated with a Cost Index (CI) and a speed limitation, or
- SELECTED SPEEDS, associated with a Mach or speed value and a speed limitation, or
- GREEN DOT SPD.

If the flight crew selects one engine inoperative from the ENG OPERATIVE list, the CLB TYPE is automatically set to GREEN DOT SPD and cannot be modified.

Ident.: DSC-46-OIS-20-80-100-10-00014998.0001001 / 24 MAY 17

RESULTS AREA [CLB]

The RESULTS area displays a graph with the flight profile.

Every 5 000 ft is indicated:
- The fuel burnt
- The standard altitude
- The CAS and Mach
- The rate of climb
- The N1 setting.

The Recommended Maximum (REC MAX) altitude, and the FMS PERF factor are also indicated.
L2 The IN-FLT PERF application takes into account the FMS PERF factor for accurate performance computation. The flight crew can crosscheck the FMS PERF factor on the DATA/STATUS page of the MFD.
For more information about the FMS PERF factor, *Refer to DSC-22-FMS-10-50-70 PERF Factor and IDLE Factor*.

Ident.: DSC-46-OIS-20-80-100-10-00018353.0001001 / 02 MAY 14

PURPOSE OF CRUISE DATA

The flight crew uses the CRUISE DATA area to define the cruise strategy, and the engines status.

Ident.: DSC-46-OIS-20-80-100-10-00018354.0001001 / 24 MAY 17

SPD TYPE LIST AND ASSOCIATED PARAMETER [CRZ/PLAN]

Indicates the type of cruise.

The flight crew selects the cruise type from the SPD TYPE list:
- ECON (CI), associated with a Cost Index (CI), or
  L2 For more information about the CI, *Refer to PER-IFT-20-20-10 Economic Mach Number (ECON Mach)*.
- L1 Fixed Speed, associated with a Mach or speed value, or

- Long Range Cruise (LRC) speed, or

L2 For more information about LRC, *Refer to PER-IFT-20-20-10 Long Range Cruise Speed (LRC)*.

L1 - Turbulence Speed (PLAN mode only), associated with a Mach value.

Ident.: DSC-46-OIS-20-80-100-10-00018357.0001001 / 24 MAY 17

THRUST INDICATION

Indicates the thrust lever position for the selected flight phase.

Note: *The thrust depends on the number of operative engines.*

Ident.: DSC-46-OIS-20-80-100-10-00018359.0001001 / 24 MAY 17

BUFFET MARGIN INDICATION

For all engine operations, the buffet margin is 1.3 g. If the flight crew selects the Turbulence computation, the buffet margin is increased to 1.4 g.
The buffet margin is used to determine the buffet ceiling.

Ident.: DSC-46-OIS-20-80-100-10-00018360.0001001 / 02 MAY 14

PURPOSE OF ALT RULE [CRZ]

The ALT RULE area enables the flight crew to define the cruise altitude, and the altitude rule (ICAO EVEN, ICAO ODD, RVSM EVEN, etc). This altitude rule is used to propose appropriate step climb altitudes and specific range equivalence altitudes in the RESULTS Area.

Ident.: DSC-46-OIS-20-80-100-10-00023903.0001001 / 24 MAY 17

CRZ ALT ENTRY FIELD

Indicates the cruise level for the performance computation.

Ident.: DSC-46-OIS-20-80-100-10-00018355.0001001 / 24 MAY 17

RESULTS AREA [CRZ]

The RESULTS area displays the performance computation results for the cruise in one or several of the following tables.

FUEL TABLE

Displays the following parameters:
- The all-engine fuel flow
- The fuel flow per engine
- The N1 setting
- The FMS PERF factor.

L2 The IN-FLT PERF application takes into account the FMS PERF factor for accurate performance computation. The flight crew can crosscheck the FMS PERF factor on the DATA/STATUS page of the MFD.
For more information about the FMS PERF factor, *Refer to DSC-22-FMS-10-50-70 PERF Factor and IDLE Factor*.

L1 **ALT TABLE**

Displays the REC MAX and optimum altitudes, together with the associated Mach.

SPEED TABLE

Displays the Mach and CAS for the selected cruise altitude and conditions, in accordance with the selected type of cruise.

Ident.: DSC-46-OIS-20-80-100-10-00013826.0001001 / 02 MAY 14

PURPOSE OF DESCENT DATA

The flight crew uses the DESCENT DATA area to enter the descent profile and the engines status.

Ident.: DSC-46-OIS-20-80-100-10-00013827.0001001 / 24 MAY 17

DES TYPE LIST

Indicates the type of descent.

The flight crew can select:
- OBSTACLE, for a descent with obstacle constraints, or
- EO STANDARD, for a descent without obstacle constraints.

Ident.: DSC-46-OIS-20-80-100-10-00013894.0001001 / 02 MAY 14

INIT ALT ENTRY FIELD [DES]

Indicates the initial altitude of the descent.
L2 The initial altitude defines the altitude at which the computation of a descent or step descent begins.

Ident.: DSC-46-OIS-20-80-100-10-00023923.0001001 / 24 MAY 17

SPD TYPE LIST AND ASSOCIATED PARAMETER [DES]

Indicates the speed type for the descent.

The flight crew selects the speed type from the SPD TYPE list:
- Green Dot, or
- Fixed Speed, associated with a Mach or speed value.

Ident.: DSC-46-OIS-20-80-100-10-00013895.0001001 / 02 MAY 14

TRGT ALT ENTRY FIELD [DES]

Indicate the target altitude of the descent.
L2 The target altitude defines the altitude at which the computation should stop.
For obstacle computation, the computation stops at the level off altitude.

Ident.: DSC-46-OIS-20-80-100-10-00013896.0001001 / 24 MAY 17

SPD BRK LIST

The flight crew can select one of the following speed brakes position for the descent:
- Fully retracted, or
- Fully extended.

Ident.: DSC-46-OIS-20-80-100-10-00013897.0001001 / 24 MAY 17

RESULTS AREA [DES]

The RESULTS area displays a graph with the flight profile.

Every 5 000 ft is indicated:
- The fuel burnt
- The descent gradient
- The N1 setting.

The EO LRC ceiling, and FMS performance factor are also indicated.
L2 The IN-FLT PERF application takes into account the FMS PERF factor for accurate performance computation. The flight crew can crosscheck the FMS PERF factor on the DATA/STATUS page of the MFD.
For more information about the FMS PERF factor, *Refer to DSC-22-FMS-10-50-70 PERF Factor and IDLE Factor*.

Ident.: DSC-46-OIS-20-80-100-10-00013898.0001001 / 02 MAY 14

PURPOSE OF HOLDING DATA

The flight crew uses the HOLDING DATA area to enter the holding strategy, the computation type, and the engine status.

Ident.: DSC-46-OIS-20-80-100-10-00013899.0001001 / 02 MAY 14

ALT ENTRY FIELD

Indicates the altitude of the holding pattern.

Ident.: DSC-46-OIS-20-80-100-10-00013911.0001001 / 24 MAY 17

COMPUTATION TYPE INDICATION [HLD]

The computation type is set to FUEL and cannot be modified.

The FUEL computation type enables the computation of the required fuel for a given holding time.

Ident.: DSC-46-OIS-20-80-100-10-00023955.0001001 / 24 MAY 17

HOLDING TIME ENTRY FIELD

Indicates the holding time that the application takes into account to compute the corresponding fuel consumption.
The flight crew must enter the holding time in minutes.

Ident.: DSC-46-OIS-20-80-100-10-00013912.0001001 / 24 MAY 17

SPD TYPE [HLD]

The flight crew can select one of the following speeds:

- GD Speed, or
L2 For more information about green dot speed,*Refer to DSC-22-27-10-20 GREEN DOT*.
- L1 S Speed.

Note: The system administrator can add a speed increment for holding at green dot. The flight crew can not change the speed increment.

Ident.: DSC-46-OIS-20-80-100-10-00013921.0001001 / 24 MAY 17

RESULTS AREA [HLD]

The RESULTS area displays the performance computation results for the hold in two tables.

FUEL TABLE

Displays the following parameters:

- The fuel burnt during the hold
- The average fuel flow
- The fuel flow per engine
- The N1 setting
- The FMS PERF factor.

L2 The IN-FLT PERF application takes into account the FMS PERF factor for accurate performance computation. The flight crew can crosscheck the FMS PERF factor on the DATA/STATUS page of the MFD.
For more information about the FMS PERF factor, *Refer to DSC-22-FMS-10-50-70 PERF Factor and IDLE Factor*.

L1 WEIGHT TABLE

Displays the aircraft gross weight at the end of the hold.

Ident.: DSC-46-OIS-20-80-100-10-00013922.0001001 / 24 MAY 17

AVERAGE WIND ENTRY FIELD

Indicates the average wind during the desired flight phase for the performance computation.

The flight crew can define the wind with:
- A direction/speed combination, or
- A headwind (HD), or tailwind (TL) component.

L2 If the flight crew defines the wind direction, the application automatically displays the crosswind component as:
- R, if the wind comes from the right, or
- L, if the wind comes from the left.

Ident.: DSC-46-OIS-20-80-100-10-00014991.0001001 / 02 MAY 14

PURPOSE OF FLIGHT DATA

The flight crew uses the FLIGHT DATA area to enter the computation type, the cruise strategy, and the engine status.

Ident.: DSC-46-OIS-20-80-100-10-00014993.0001001 / 24 MAY 17

COMPUTATION TYPE LIST [PLAN]

Indicates the computation type.

The flight crew can select:
- FLIGHT PLAN, for a computation from a departure airport to a destination airport, or
- IN CRUISE, for a computation from the aircraft current position to a destination airport, or
- ALTERNATE, for a computation from a destination airport to an alternate airport.

Ident.: DSC-46-OIS-20-80-100-10-00015391.0001001 / 24 MAY 17

DIST ENTRY FIELD

Indicates the ground distance used for the flight plan computation.
The flight crew enters the ground distance based on the computation type.

IN CRUISE

For the IN CRUISE computation, the flight crew enters the ground distance from the aircraft current position to:
- The destination airport, or
- A diversion airport, or
- The alternate airport.

L2 The application takes into account the remaining cruise, the descent and the approach at the desired airport.

L1 **FLIGHT PLAN**

For the FLIGHT PLAN computation, the flight crew enters the ground distance from the departure airport to the destination airport.

L2 The application takes into account the takeoff, the climb, the cruise, the descent, and the approach at the destination airport.

L1 **ALTERNATE**

For the ALTERNATE computation, the flight crew enters the ground distance from the destination airport to the alternate airport.

L2 The application takes into account the go-around at destination, the climb, the cruise, the descent, and the approach at the alternate airport.

Ident.: DSC-46-OIS-20-80-100-10-00014996.0001001 / 24 MAY 17

OPT PROFILE LIST

Indicates the cruise profile that the application takes into account for performance computation.

When pressed, enables the flight crew to select:
- Yes, for a cruise with step climbs to optimum altitudes, or
- No, for a cruise at a constant level.

Ident.: DSC-46-OIS-20-80-100-10-00015384.0001001 / 24 MAY 17

RESULTS AREA [PLAN]

The RESULTS area displays a graph with the flight profile.

The graph displays key points depending on the COMPUTATION TYPE (TOC, TOD, etc.). At each key point is indicated:
- The distance covered
- The elapsed time
- The fuel burnt
- The altitude.

The total fuel burnt, the total elapsed time, the total air distance, and the FMS PERF factor are also indicated.

L2 The IN-FLT PERF application takes into account the FMS PERF factor for accurate performance computation. The flight crew can crosscheck the FMS PERF factor on the DATA/STATUS page of the MFD.
For more information about the FMS PERF factor, *Refer to DSC-22-FMS-10-50-70 PERF Factor and IDLE Factor*.

Ident.: DSC-46-OIS-20-80-100-10-00015385.0001001 / 02 MAY 14

PURPOSE OF SPECIFIC DATA

The flight crew uses the SPECIFIC DATA area to enter the computation type and the altitude data.

Ident.: DSC-46-OIS-20-80-100-10-00015386.0001001 / 24 MAY 17

COMPUTATION TYPE LIST [ATMO]

Indicates the computation type.

The flight crew can select:
- SPEED, to obtain speed conversions, the true altitude, and atmosphere information, or
- ALT, to obtain altitude corrections.

Ident.: DSC-46-OIS-20-80-100-10-00015387.0001001 / 24 MAY 17

SPD TYPE LIST AND ASSOCIATED PARAMETER [ATMO]

Indicates the type of speed.

The flight crew selects the speed type from the SPD TYPE list:
- MACH, associated with a Mach value, or
- IAS, associated with a speed value, or
- CI, associated with a Cost Index (CI), or

  L2 For more information about the CI,*Refer to PER-IFT-20-20-10 Economic Mach Number (ECON Mach)*.
- L1 Long Range Cruise (LRC) speed.

  L2 For more information about LRC,*Refer to PER-IFT-20-20-10 Long Range Cruise Speed (LRC)*.

Ident.: DSC-46-OIS-20-80-100-10-00023906.0001001 / 24 MAY 17

ALT TYPE LIST AND ASSOCIATED PARAMETERS

Indicates the type of altitude correction.

The flight crew can select:
- TRUE ALT in order to determine the true altitude of the aircraft during cruise, or
- LO ALT TEMP CORR in order to determine the altitude correction for an approach due to low temperatures.

TRUE ALT

When the flight crew selects TRUE ALT from the ALT TYPE list, the following entry fields appear below the ALT TYPE list:
- INDICATED ALT
- ARPT ELEVN.

The INDICATED ALT entry field enables the flight crew to enter the altitude as indicated by the altimeter.
The ARPT ELEVN entry field enables the flight crew to enter the terrain elevation.

LO ALT TEMP CORR

When the flight crew selects LO ALT TEMP CORR from the ALT TYPE list, the following entry fields automatically appear below the ALT TYPE list:

- HGT AAL
- ARPT ELEVN
- ARPT TEMP.

The HGT AAL entry field enables the flight crew to enter the height above the airport level.
The ARPT ELEVN and ARPT TEMP entry fields enable the flight crew to respectively enter the elevation and the temperature of the airport where the approach is conducted.

Ident.: DSC-46-OIS-20-80-100-10-00014997.0001001 / 02 MAY 14

INDICATED ALT ENTRY FIELD

Indicates the altitude displayed on the flight instruments.

Ident.: DSC-46-OIS-20-80-100-10-00015389.0001001 / 24 MAY 17

ARPT ELEVN ENTRY FIELD

The flight crew must enter the terrain elevation.

Ident.: DSC-46-OIS-20-80-100-10-00015390.0001001 / 24 MAY 17

RESULTS AREA [ATMO]

The RESULTS area displays the performance computation outputs in accordance with the COMPUTATION TYPE.

ALT COMPUTATION TYPE

If the flight crew selected TRUE ALT from the ALT TYPE list, the RESULTS area displays the following atmospheric data at the altitude entered in the INDICATED ALT entry field:

- True altitude
- Pressure
- Density ratio
- Speed of sound
- SAT.

If the flight crew selected LO ALT TEMP CORR from the ALT TYPE list, the RESULTS area displays the corrected height above the airport level.

SPEED COMPUTATION TYPE

The RESULTS area displays the performance computation outputs in two tables.

CONVERSIONS Table

Displays the following parameters:
- IAS
- Mach
- TAS
- GS
- True altitude.

ISA INFORMATION Table

Displays the following atmospheric data at the altitude entered in the INDICATED ALT entry field:
- Pressure
- Density ratio
- Speed of sound
- SAT
- TAT.

The FMS PERF factor is also indicated.
L2 The IN-FLT PERF application takes into account the FMS PERF factor for accurate performance computation. The flight crew can crosscheck the FMS PERF factor on the DATA/STATUS page of the MFD.
For more information about the FMS PERF factor, *Refer to DSC-22-FMS-10-50-70 PERF Factor and IDLE Factor*.

Ident.: DSC-46-OIS-20-80-100-10-00018363.0001001 / 02 MAY 14

MORE BUTTON

When clicked, displays the RESULTS MORE Page
The RESULTS MORE Page displays additional performance data. This data can be displayed on a table, or graphically.

RESULTS TABLE

The RESULTS table provides detailed information for the next points of the flight phase (e.g. for higher altitudes in climb, for lower weights in cruise, etc).

RESULTS GRAPH

The RESULTS graph enables the flight crew to display the evolution of one data plotted against another. The flight crew can use the crosshair to read specific values on the graph.

Note: The crosshair appears when the cursor is on the graph.

WITH TAKEOFF TICK-BOX

For climb computation only, the flight crew can validate the With Takeoff tick-box.
If the flight crew validates the With Takeoff tick-box, time and distance values are modified to take into account the takeoff.

Ident.: DSC-46-OIS-20-80-100-10-00020813.0001001 / 02 MAY 14

PURPOSE OF AIRCRAFT STATUS

The ACFT STS area enables the selection and display of CDL and NON STD CONF items, that have an impact on performance.
The current aircraft status must be considered during flight preparation.

Ident.: DSC-46-OIS-20-80-100-10-00020812.0001001 / 02 MAY 14

AIRCRAFT STATUS PANEL

The Aircraft Status Panel displays the CDL and the NON STD CONF items. The status is retrieved from the aircraft avionics, and the flight crew can manually insert additional items.
L2 The flight crew can keep the cursor over the aircraft status panel in order to increase the size of the window.
L1 If the aircraft status is not affected, "-normal-" appears.

Ident.: DSC-46-OIS-20-80-100-10-00015009.0001001 / 03 JUL 20

1 CDL ITEMS

Indicates the number of CDL items and negligible items that the application takes into account for performance computation.
When pressed, it enables the flight crew to manually select CDL items (missing items or missing meters) and enter the number of negligible items.

Note: CDL items that the flight crew selected via the OPS LIBRARY application are not transferred to the IN-FLT PERF application.

The increase of fuel consumption associated to a CDL item is automatically taken into account, provided that the CDL item is properly selected.
L2 If a CDL item with a fuel consumption increase cannot be selected but is provided in the AFM, the fuel consumption increase provided in the AFM must be entered in the FUEL PENALTY FACTOR field of the NON STD CONF items (*Refer to DSC-46-OIS-20-80-100 NON STD CONF Items Panel*).
Negligible items are missing structural parts that have a negligible impact on performance when not combined with others. The application takes into account the number of negligible items in order to apply the appropriate performance penalty.

Ident.: DSC-46-OIS-20-80-100-10-00015011.0001001 / 24 MAY 17

NON STD CONF ITEMS

Indicates the number of non standard configuration items that the application takes into account for performance computation.

When pressed, enables the flight crew to:
- Select non standard configuration items
- Enter a fuel penalty factor.

Note: The non standard configuration items are not retrieved from the aircraft avionics.

FUEL PENALTY FACTOR

The fuel penalty factor is defined as a percentage of increase of the fuel flow. The flight crew should consider the use of the fuel factor if one or more system failures affect fuel consumption.

L2 For more information about the system failures that affect fuel consumption, and the associated fuel penalty factor, *Refer to PER-IFT-FP Fuel Penalty Tables - Fuel Consumption Increased*.

L1 The flight crew should enter the same fuel penalty factor in the IN-FLT PERF application and in the FMS.

L2 For more information about the fuel penalty factor in the FMS, *Refer to DSC-22-FMS-10-50-70 FUEL PENALTY Factor*.

Ident.: DSC-46-OIS-20-80-100-10-00018573.0001001 / 02 MAY 14

OK BUTTON

When clicked, validates and displays the selected MEL, CDL, NON STD CONF items and ECAM alert in the Aircraft Status Panel.

Intentionally left blank

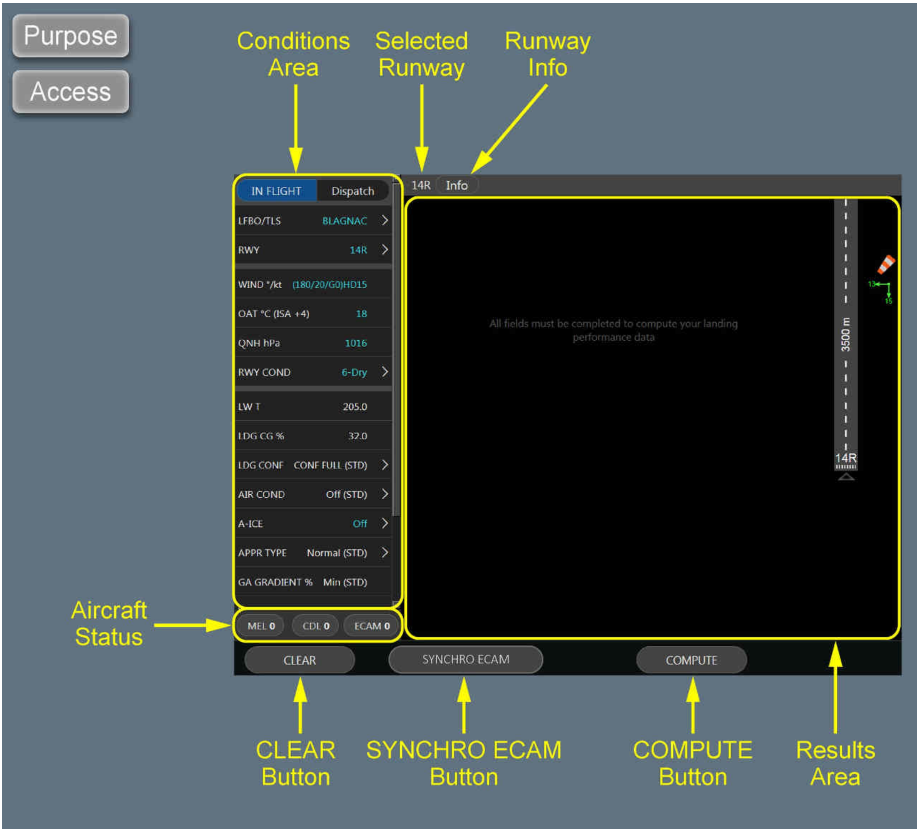
EFB - LDG PERF

LDG PERF

Applicable to: ALL

Ident.: DSC-46-OIS-20-80-110-10-00013805.0001001 / 24 MAY 17

LDG PERF Overview


Purpose
Access
Conditions Area
Selected Runway
Runway Info
Aircraft Status
CLEAR Button
SYNCHRO ECAM Button
COMPUTE Button
Results Area
IN FLIGHT
Dispatch
14R
Info
3500 m
14R
CLEAR
SYNCHRO ECAM
COMPUTE

LFBO/TLS BLAGNAC
RWY 14R
WIND °/kt (180/20/G0)HD15
OAT °C (ISA +4) 18
QNH hPa 1016
RWY COND 6-Dry
LW T 205.0
LDG CG % 32.0
LDG CONF CONF FULL (STD)
AIR COND Off (STD)
A-ICE Off
APPR TYPE Normal (STD)
GA GRADIENT % Min (STD)
MEL 0
CDL 0
ECAM 0

All fields must be completed to compute your landing performance data

Ident.: DSC-46-OIS-20-80-110-10-00013929.0001001 / 24 MAY 17

PURPOSE

The LDG PERF application provides optimized landing performance calculations for an airport.

The flight crew uses the LDG PERF application in:
- DISPATCH computation type, to determine the maximum landing weight limited by the performance (MLW(perf))
- IN FLIGHT computation type, to check landing performance during flight.

Note: The system administrator can customize all parameters related to units, fleet, and airport.

Ident.: DSC-46-OIS-20-80-110-10-00013930.0001001 / 24 MAY 17

ACCESS

The flight crew can access the LDG PERF application via the LDG PERF button of:
- The application menu, or
- The FLT OPS MENU, or
- The navigation bar, if the application is already running, or
- The OIS MENU.

Ident.: DSC-46-OIS-20-80-110-10-00014007.0001001 / 24 MAY 17

COMPUTE BUTTON

When pressed, displays the performance computation results in the results area.

Ident.: DSC-46-OIS-20-80-110-10-00014008.0001001 / 24 MAY 17

CLEAR BUTTON

When pressed, resets the inputs of the LDG PERF application to the default values.

Ident.: DSC-46-OIS-20-80-110-10-00023611.0001001 / 24 MAY 17

SYNCHRO ECAM BUTTON

When pressed, updates the list of active ECAM alerts received from the FWS.
The SYNCHRO ECAM button is only available in IN FLIGHT computation type.

Ident.: DSC-46-OIS-20-80-110-10-00013948.0001001 / 24 MAY 17

AIRPORT LIST

The flight crew can use the airport list to compute the aircraft performance for any airport available in the list.

L2 The system administrator defines the airport list.

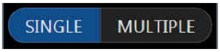
L1 If the flight crew selects an airport different from the FLT OPS STS page, all input data are reset to standard values or cleared, after confirmation of the airport change.

Ident.: DSC-46-OIS-20-80-110-10-00013952.0001001 / 24 MAY 17

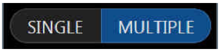
RUNWAY LIST

The flight crew can select one or multiple runway(s) of the selected airport.

When selected, the runway picture is updated.



Only one runway can be selected.



Multiple runways can be selected.

Ident.: DSC-46-OIS-20-80-110-10-00014001.0001001 / 24 MAY 17

RUNWAY CHARACTERISTICS AREA

Runway characteristics are:
- Elevation (ELEVN)
- Slope
- Length
- Altitude for go-around gradient calculation (GA GRADIENT AT).

The runway information is also displayed when the flight crew presses the runway picture (*Refer to Runway Picture*).

Ident.: DSC-46-OIS-20-80-110-10-00023612.0001001 / 24 MAY 17

MODIFY RWY BUTTON

The flight crew can press the Modify RWY button in order to modify runway characteristics.

Ident.: DSC-46-OIS-20-80-110-10-00023613.0001001 / 24 MAY 17

DONE BUTTON

When pressed, validates the entries.

Ident.: DSC-46-OIS-20-80-110-10-00023614.0001001 / 24 MAY 17

CLOSE BUTTON

When pressed, cancels the entries and returns to the LDG PERF application.

Ident.: DSC-46-OIS-20-80-110-10-00013932.0001001 / 24 MAY 17

PURPOSE OF CONDITIONS

The flight crew uses the conditions area to:
- Select an airport and one or several runways for landing performance calculation
  L2 The default airport is the destination airport from the FLT OPS STS page.
- L1 Enter the weather and runway conditions
- Select the aircraft configuration and approach type for the computation of the landing performance.

Ident.: DSC-46-OIS-20-80-110-10-00013940.0001001 / 24 MAY 17

COMPUTATION TYPE

The flight crew uses the LDG PERF application in:
- DISPATCH computation type, to determine the maximum landing weight limited by the performance (MLW(perf))
- IN FLIGHT computation type, to check landing performance during flight.

DISPATCH

To calculate the MLW(perf), the flight crew enters the forecasted conditions at destination. The aircraft status can include MEL and CDL items.

IN FLIGHT

To calculate the landing data, the flight crew enters the forecasted conditions and aircraft weight. The aircraft status can include MEL items, CDL items, and ECAM alerts.

Overweight Landing

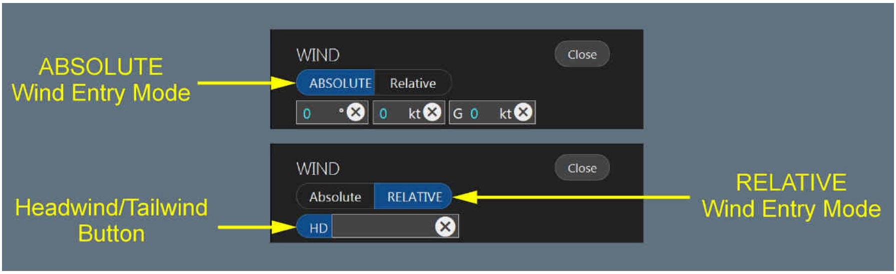
The overweight landing calculation is only available in IN FLIGHT computation type.

Ident.: DSC-46-OIS-20-80-110-10-00013934.0001001 / 24 MAY 17

WIND ENTRY FIELD

Indicates the wind for performance computation.

The flight crew can select:
- ABSOLUTE, in order to define the wind with a direction/speed/gust combination, or
- RELATIVE, in order to define the wind with a longitudinal speed component only (headwind or tailwind).

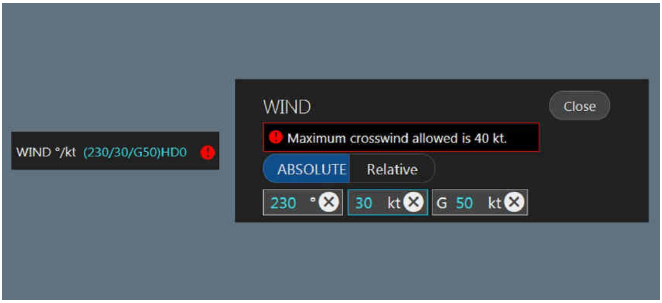


The application displays a wind sock on the side of the runway picture (*Refer to Runway Picture*). The application crosschecks the crosswind and tailwind components with the limitations of the aircraft, and in accordance with the selected runway condition.

L2 *Note:* *The computation of the crosswind component takes into account the gust value (used to check the maximum crosswind limitation). The computation of the longitudinal wind component takes into account the steady wind speed only.*

L1 Depending on the system administrator setting, if the entered wind exceeds the crosswind limitation, the following occurs:

- The flight crew cannot run the computation, or
- The flight crew can run the computation, after confirmation by a pop-up message.



WIND °/kt (230/30/G50)HD0

WIND

Maximum crosswind allowed is 40 kt.

ABSOLUTE Relative

230 ° | 30 kt | G 50 kt

L2 For more information about the crosswind limitation, *Refer to LIM-AG-OPS Maximum Crosswind for Takeoff and Landing*, and *Refer to LIM-AG-OPS Maximum Tailwind for Landing*.

Ident.: DSC-46-OIS-20-80-110-10-00013935.0001001 / 24 MAY 17

OAT ENTRY FIELD

Indicates the Outside Air Temperature (OAT) at the airport.
The flight crew manually enters the temperature.
If the flight crew entered the QNH via the QNH entry field, the temperature deviation from the International Standard Atmosphere (ISA) is automatically computed and displayed.

Note: *In DISPATCH computation type, the OAT range depends on the selected runway condition.*

Ident.: DSC-46-OIS-20-80-110-10-00013936.0001001 / 24 MAY 17

QNH ENTRY FIELD

Indicates the sea level atmospheric pressure.
The flight crew enters the QNH. The application automatically detects the unit (hPa or inHg).

Ident.: DSC-46-OIS-20-80-110-10-00013937.0001001 / 24 MAY 17

RWY COND LIST

Indicates the runway condition.

In DISPATCH computation type, the flight crew selects the runway surface condition.
In IN FLIGHT computation type, the flight crew selects the landing performance level.
L2 For more information about the runway condition/braking action, *Refer to PER-LDG-30 Runway Condition Assessment Matrix for Landing*.

Ident.: DSC-46-OIS-20-80-110-10-00013938.0001001 / 24 MAY 17

A-ICE LIST

Indicates the anti-ice setting for landing.

The flight crew can select one of the following settings from the A-ICE list:
- Off
- Engine only
- Engine & Wing
- Ice Accretion (IN FLIGHT computation type only).

Note: *The Ice Accretion selection includes the performance degradation due to the Engine & Wing anti-ice selection.*

Ident.: DSC-46-OIS-20-80-110-10-00013939.0001001 / 24 MAY 17

LW ENTRY FIELD

Indicates the estimated landing weight (LW).

The flight crew can manually:
- Enter the estimated LW, or
- Use the shortcut “*” to get the Maximum Landing Weight (MLW).

With the IN FLIGHT computation type only, the flight crew can enter an estimated landing weight that exceeds the MLW. In this case, a pop-up window asks the flight crew to confirm that they plan to attempt an overweight landing.

With the DISPATCH computation type, the estimated LW must not exceed:
- The MLW
- The performance-limited MLW (MLW(perf)).

L2 For more information about the MLW, *Refer to LIM-AG-WGHT Weight Limitations*.

Ident.: DSC-46-OIS-20-80-110-10-00014789.0001001 / 24 MAY 17

LDG CG ENTRY FIELD

Indicates the estimated Center of Gravity (CG) of the aircraft at landing.
When the flight crew uses the LOADSHEET application to determine the weight and balance data, the LDG PERF application automatically receives the landing CG. In this case, the landing CG is displayed in yellow.

The flight crew can also manually enter the landing CG.

Ident.: DSC-46-OIS-20-80-110-10-00013949.0001001 / 02 MAY 14

LDG CONF LIST

The flight crew selects the aircraft configuration for landing.

When the flight crew selects AUTO CONF, the application computes the landing performance for:
- Landing in CONF FULL (go-around in CONF 3)
- Landing in CONF 3 (go-around in CONF 2).

If both a go-around in CONF 3 and a go-around in CONF 2 comply with the go-around gradient constraint, the application displays the results for a landing in CONF FULL.
If a go-around in CONF 3 does not comply with the go-around gradient constraint, the application displays the results for a landing in CONF 3.

Ident.: DSC-46-OIS-20-80-110-10-00013950.0001001 / 24 MAY 17

AIR COND LIST

Indicates the air conditioning setting.

Ident.: DSC-46-OIS-20-80-110-10-00013951.0001001 / 24 MAY 17

APPR TYPE LIST

The flight crew selects one of the following approach types:
- Normal for a CAT I approach
- CAT II for a CAT II or CAT III approach.

When the flight crew selects CAT II, a pop-up window informs the flight crew that autoland is automatically selected in the LDG TECHNIQUE list.

Ident.: DSC-46-OIS-20-80-110-10-00013953.0001001 / 24 MAY 17

GA GRADIENT ENTRY FIELD

The flight crew enters:
- The shortcut "MIN" to get the minimum regulatory go-around gradient value, or
- The value of the required go-around gradient.

Ident.: DSC-46-OIS-20-80-110-10-00013954.0001001 / 24 MAY 17

VPILOT ENTRY FIELD

The flight crew can enter a speed increment in order to increase the approach speed.

Ident.: DSC-46-OIS-20-80-110-10-00013955.0001001 / 24 MAY 17

LDG TECHNIQUE LIST

The flight crew selects one of the following settings from the LDG TECHNIQUE list:
- MAN-A/THR off
- MAN-A/THR on
- Autoland.

When autoland is selected, the flight crew can modify the glide slope angle.

Ident.: DSC-46-OIS-20-80-110-10-00013956.0001001 / 24 MAY 17

BRK MODE LIST

Indicates the braking mode.
The braking mode input is only available in IN FLIGHT computation type.

Note: *BTV can achieve the same braking performance as manual braking. When BTV is used, the flight crew selects Manual, in order to compute the maximum braking performance.*

Ident.: DSC-46-OIS-20-80-110-10-00020884.0001001 / 24 MAY 17

REV LIST

The flight crew indicates the use of thrust reversers during landing with the selection of one of the following settings from the REV list:
- Yes
- No.

The thrust reversers input is only available in IN FLIGHT computation type.

Ident.: DSC-46-OIS-20-80-110-10-00014790.0001001 / 24 MAY 17

PURPOSE OF AIRCRAFT STATUS

The aircraft status displays the number of MEL items, CDL items, and active ECAM alerts (IN FLIGHT computation type only) that affect the landing performance.
The LDG PERF application receives the list of MEL and CDL items that the flight crew selected in the OPS LIBRARY application, and automatically receives active ECAM alerts from the FWS.
The flight crew can also manually add or remove MEL and CDL items, or ECAM alerts.

Ident.: DSC-46-OIS-20-80-110-10-00014794.0001001 / 24 MAY 17

MEL ITEMS

Indicates the number of active MEL items that the application takes into account for performance computation.
The OPS LIBRARY application sends the list of selected MEL items to the LDG PERF application.

When pressed:
- Displays the list of active MEL items that the application takes into account for performance computation
- Enables the flight crew to manually select MEL items that affect the landing performance.

Ident.: DSC-46-OIS-20-80-110-10-00014795.0001001 / 03 JUL 20

1 CDL ITEMS

Indicates the number of active CDL items and negligible items that the application takes into account for performance computation.
The OPS LIBRARY application sends the list of selected CDL items to the LDG PERF application.

When pressed:
- Displays the list of active CDL items and negligible items that the application takes into account for performance computation
- Enables the flight crew to manually select CDL items (missing items or missing meters) and enter the number of negligible items.

L2 Negligible items are missing structural parts that have a negligible impact on performance, when not combined with others. The application takes into account the number of negligible items in order to apply the appropriate performance penalty.

Ident.: DSC-46-OIS-20-80-110-10-00014796.0001001 / 24 MAY 17

ECAM ALERTS

Indicates the number of active ECAM alerts that the application takes into account for performance computation.
The LDG PERF application automatically receives the list of active ECAM alerts from the FWS.

When pressed:
- Displays the list of active ECAM alerts that the application takes into account for performance computation
- Enables the flight crew to manually select ECAM alerts that affect the landing performance.

Note: *The ECAM alerts are available in IN FLIGHT mode only.*

Ident.: DSC-46-OIS-20-80-110-10-00014798.0001001 / 24 MAY 17

PURPOSE OF RESULTS

The results area displays the performance computation outputs.
The system administrator can customize the list of outputs.

Two functions are available:
- In case of single runway computation, one result is available
- In case of multiple runway computation, one result per selected runway is available.

Ident.: DSC-46-OIS-20-80-110-10-00020839.0001001 / 24 MAY 17

SELECTED RUNWAY

The displayed performance results are applicable to the selected runway, recalled above the results area.

Ident.: DSC-46-OIS-20-80-110-10-00023617.0001001 / 24 MAY 17

RUNWAY PICTURE

The runway picture corresponds to the selected runway, with the associated Landing Distance Available (LDA) on the runway centerline.

L2 The dark grey area corresponds to the LDA that includes user modifications.
The unusable parts of the runway are displayed in light grey.
If applicable, the displaced threshold is displayed.

L1 After computation of the landing performance, the following results are displayed on the runway picture:
- The Landing Distance (LD), *Refer to LD*
- The Factored Landing Distance (F-LD), *Refer to F-LD*
- The Stop Margin, *Refer to Stop Margin*.

Ident.: DSC-46-OIS-20-80-110-10-00023618.0001001 / 24 MAY 17

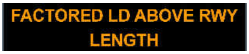
WIND SOCK

The wind sock indicates the wind direction relative to the runway.

L2 If the flight crew entered the wind as a direction and speed combination, both the crosswind and longitudinal wind components are displayed. If the flight crew only entered the longitudinal wind component, the crosswind component cannot be computed.

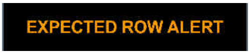
Ident.: DSC-46-OIS-20-80-110-10-00021231.0001001 / 24 MAY 17

MESSAGE


FACTORED LD ABOVE RWY LENGTH

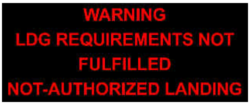
Indicates that the LD is less than the LDA, and the F-LD is more than the LDA.

L12



EXPECTED ROW ALERT

Indicates that the ROW LDG DIST is more than the LDA.
For more information about the ROW landing distance crosscheck at dispatch, *Refer to PER-LDG-40 ROW Landing Distance Crosscheck*.
For more information about the ROW landing distance crosscheck in flight, *Refer to PER-LDG-50 ROW Landing Distance Crosscheck*.



WARNING
LDG REQUIREMENTS NOT FULFILLED
NOT-AUTHORIZED LANDING

Indicates that at least one of the certified landing requirements is not satisfied.

Ident.: DSC-46-OIS-20-80-110-10-00014802.0001001 / 24 MAY 17

MLW(PERF)

The maximum performance-limited landing weight (MLW(perf)) is the maximum weight that complies with all regulatory requirements at landing.

CAUTION	The MLW(perf) may be above the MLW, but the aircraft must not be dispatched with an estimated landing weight at destination above the MLW.

Ident.: DSC-46-OIS-20-80-110-10-00014803.0001001 / 24 MAY 17

FLAPS

Appears when an active ECAM alert affects the landing performance and enables the selection of the landing configuration.

L2 In this case, the LDG CONF list is no longer available in the conditions area (*Refer to LDG CONF List*).

L1 If the active ECAM alert requires a specific flaps configuration, the selection of the landing configuration is no longer possible and the required flaps lever position is displayed.

Ident.: DSC-46-OIS-20-80-110-10-00014804.0001001 / 02 MAY 14

LIMITATION CODE

Several regulatory requirements can limit the landing performance. The limitation codes identify the requirements that limit the landing performance.
The following table indicates the various codes used for the landing limitations.

Code	Description
WGT	Weight limited by the LW
LDA	Weight limited by the landing distance
ACG	Weight limited by the approach climb gradient

Continued on the following page

Continued from the previous page

Code	Description
LCG	Weight limited by landing climb gradient
TIRE	Weight limited by tire speed
BRK	Weight limited by brake energy

Ident.: DSC-46-OIS-20-80-110-10-00014805.0001001 / 24 MAY 17

DISPATCH LD

The Dispatch LD indicates the landing distance that the flight crew should consider for dispatch.
The Dispatch LD is the maximum between the F-LD and the Required Landing Distance (RLD).
The RLD is the actual landing distance multiplied by the regulatory factor. The regulatory factor depends on the runway condition.

Note: *The RLD is available in DISPATCH computation type only.*

Ident.: DSC-46-OIS-20-80-110-10-00014837.0001001 / 24 MAY 17

LD

The LD corresponds to the landing distance calculated according to the forecasted conditions.

Ident.: DSC-46-OIS-20-80-110-10-00014808.0001001 / 24 MAY 17

FACTOR/INCREMENT

The FACTOR/INCREMENT is the coefficient used to compute the F-LD.

Note: *The FACTOR/INCREMENT is only displayed if the F-LD exceeds the LDA.*

Ident.: DSC-46-OIS-20-80-110-10-00014809.0001001 / 24 MAY 17

F-LD

The Factored LD (F-LD) is the reference for in-flight landing distance assessment.
The F-LD is the LD multiplied by the FACTOR/INCREMENT.

Ident.: DSC-46-OIS-20-80-110-10-00014807.0001001 / 24 MAY 17

EO GA GRADIENT

The EO GA GRADIENT is the Engine-Out Go-Around (EO GA) climb gradient.
The EO GA GRADIENT must be more than or equal to the minimum climb gradient entered in the GA GRADIENT entry field of the conditions area (*Refer to GA GRADIENT Entry Field*).

Ident.: DSC-46-OIS-20-80-110-10-00023649.0001001 / 24 MAY 17

EO GA SPEED

Indicates the Engine-Out Go-Around (EO GA) speed.

Ident.: DSC-46-OIS-20-80-110-10-00023650.0001001 / 24 MAY 17

LDG CONF

Displays the landing configuration used for the landing performance calculation: CONF 3 or CONF FULL.

If the flight crew selected AUTOCONF from the LDG CONF list:
- The application performs performance calculation for both flaps settings
- If landing is possible in both configurations, only the CONF FULL results are displayed.

Ident.: DSC-46-OIS-20-80-110-10-00014810.0001001 / 24 MAY 17

STOP MARGIN

The stop margin is the difference between the LDA and the computed landing distance.

Ident.: DSC-46-OIS-20-80-110-10-00014811.0001001 / 24 MAY 17

VAPP

VAPP is the aircraft approach speed considered for the landing performance computation, 50 ft above the runway surface.

L2 For more information about VAPP, *Refer to DSC-22-27-10-20 VAPP*.

L1 WITHOUT ANY ACTIVE ECAM ALERT

VAPP is the sum of VLS, APPR COR, and ΔV Pilot.
APPR COR is the highest value of ΔV Wind, ΔV A/THR, and ΔV Ice Accretion.

WITH AN ACTIVE ECAM ALERT

VAPP is the sum of VREF, ΔVREF, APPR COR, and ΔV Pilot.
APPR COR is the highest value of ΔV Wind, ΔV A/THR, and ΔV Ice Accretion.

Ident.: DSC-46-OIS-20-80-110-10-00023721.0001001 / 24 MAY 17

DETAILED RESULTS

Displays the list of detailed results.

Note: *The system administrator defines the list.*

Intentionally left blank

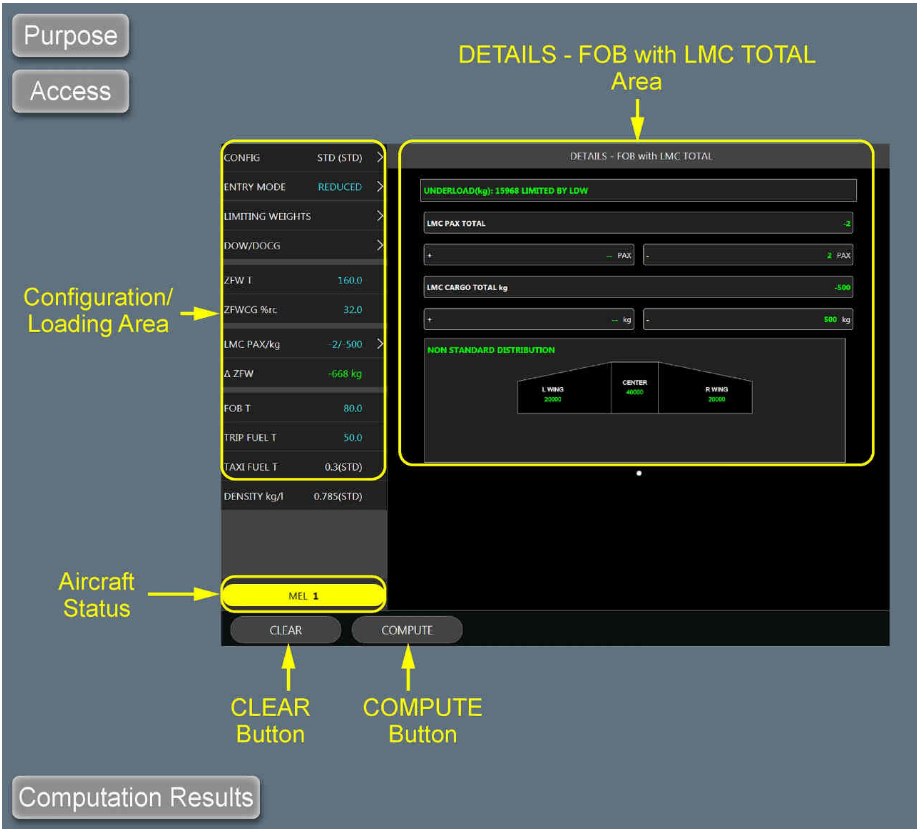
EFB - LOADSHEET

LOADSHEET

Applicable to: ALL

Ident.: DSC-46-OIS-20-80-120-10-00018323.0001001 / 24 MAY 17

LOADSHEET Overview


Purpose
Access
DETAILS - FOB with LMC TOTAL Area
Configuration/ Loading Area
Aircraft Status
CLEAR Button
COMPUTE Button
Computation Results
MEL 1
CLEAR
COMPUTE

CONFIG	STD (STD)
ENTRY MODE	REDUCED
LIMITING WEIGHTS	
DOW/DOCG	
ZFW T	160.0
ZFWCG %rc	32.0
LMC PAX/kg	-2/-500
Δ ZFW	-668 kg
FOB T	80.0
TRIP FUEL T	50.0
TAXI FUEL T	0.3(STD)
DENSITY kg/l	0.785(STD)

DETAILS - FOB with LMC TOTAL

UNDERLOAD(kg): 15968 LIMITED BY LDW

LMC PAX TOTAL -2

+ -- PAX
- 2 PAX

LMC CARGO TOTAL kg -500

+ -- kg
- 500 kg

NON STANDARD DISTRIBUTION

L WING 20000
CENTER 40000
R WING 20000

Ident.: DSC-46-OIS-20-80-120-10-00018335.0001001 / 02 MAY 14

PURPOSE

The flight crew uses the LOADSHEET application to compute aircraft weights and corresponding CG positions before dispatch.

Ident.: DSC-46-OIS-20-80-120-10-00018336.0001001 / 24 MAY 17

ACCESS

The flight crew can access the LOADSHEET via the LOADSHEET button of:
- The application menu, or
- The FLT OPS MENU, or
- The navigation area, if the application is already running, or
- The OIS MENU.

Ident.: DSC-46-OIS-20-80-120-10-00018325.0001001 / 24 MAY 17

CONFIGURATION/LOADING AREA

The flight crew uses this area in order to define the loading configuration, the payload, and fuel data.

Ident.: DSC-46-OIS-20-80-120-10-00018327.0001001 / 24 MAY 17

AIRCRAFT STATUS

Indicates the number of active MEL items that affect the loading capabilities of the aircraft.
The LOADSHEET application receives the list of MEL items that the flight crew ticked in the OPS LIBRARY application. The flight crew can also press the MEL items button to manually select MEL items.

Ident.: DSC-46-OIS-20-80-120-10-00018328.0001001 / 24 MAY 17

DETAILS - FOB WITH LMC TOTAL TAB

Displays information about the payload and the distribution of fuel in the fuel tanks.

Ident.: DSC-46-OIS-20-80-120-10-00018329.0001001 / 24 MAY 17

RESULTS AREA

The RESULTS area displays the loadsheet with the associated weight and CG values.
The LOADSHEET application can transmit some results to other applications (e.g transmit the LW and LDG CG to the LDG PERF application).

Ident.: DSC-46-OIS-20-80-120-10-00018330.0001001 / 24 MAY 17

COMPUTE BUTTON

When pressed, displays the loading computation results in the RESULTS area.

Ident.: DSC-46-OIS-20-80-120-10-00018331.0001001 / 24 MAY 17

EXPORT BUTTON

The flight crew can press the Export button in order to generate a loadsheet report.
The flight crew can either print the report, or transfer the report to the EXPORT BOX.

Ident.: DSC-46-OIS-20-80-120-10-00023537.0001001 / 24 MAY 17

MODIFY BUTTON

When pressed, enables the modification of the settings of the configuration/loading area.

Ident.: DSC-46-OIS-20-80-120-10-00018332.0001001 / 24 MAY 17

CLEAR BUTTON

When pressed, clears the data, or resets the default value of the data.

Intentionally left blank

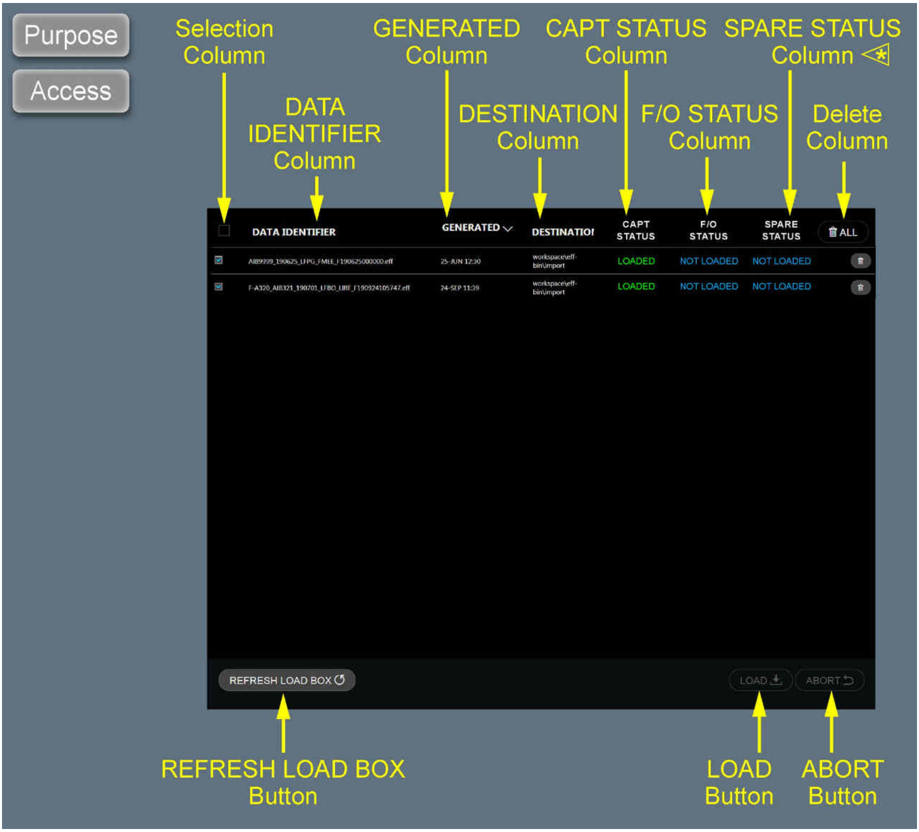
EFB - LOAD BOX

LOAD BOX

Applicable to: ALL

Ident.: DSC-46-OIS-20-80-130-10-00016851.0001001 / 24 MAY 17

LOAD BOX Overview


Purpose
Access
Selection Column
GENERATED Column
CAPT STATUS Column
SPARE STATUS Column
DATA IDENTIFIER Column
DESTINATION Column
F/O STATUS Column
Delete Column
REFRESH LOAD BOX
LOAD
ABORT
REFRESH LOAD BOX Button
LOAD Button
ABORT Button

☐	DATA IDENTIFIER	GENERATED	DESTINATIOI	CAPT STATUS	F/O STATUS	SPARE STATUS	ALL
☑	AIB9399_190625_LFPG_FMEE_F190625000000.eff	25-JUN 12:30	workspace\eff-bin\import	LOADED	NOT LOADED	NOT LOADED	
☑	F-A320_AIB321_190701_LFBO_LIRF_F190924105747.eff	24-SEP 11:39	workspace\eff-bin\import	LOADED	NOT LOADED	NOT LOADED	

Ident.: DSC-46-OIS-20-80-130-10-00016852.0001001 / 24 MAY 17

PURPOSE

The flight crew uses the LOAD BOX to transfer the following elements to the EFBs:
- Electronic Flight Folder (EFF)
- EFB data load for FlySmart update.

Ident.: DSC-46-OIS-20-80-130-10-00016853.0001001 / 24 MAY 17

ACCESS

The flight crew can access the LOAD BOX via the LOAD BOX button of:
- The application menu, or
- The FLT OPS MENU, or
- The navigation area, if the application is already running, or
- The OIS MENU.

Ident.: DSC-46-OIS-20-80-130-10-00016854.0001001 / 24 MAY 17

SELECTION COLUMN

The flight crew can tick a box to select or deselect a row.
The flight crew can tick the column header box in order to select or deselect all the rows at the same time.
When a set of rows is selected, the flight crew can press the LOAD button.
L2 All the data that are not loaded are automatically ticked.

Ident.: DSC-46-OIS-20-80-130-10-00016855.0001001 / 24 MAY 17

DATA IDENTIFIER COLUMN

Indicates the name of the data.

Ident.: DSC-46-OIS-20-80-130-10-00016856.0001001 / 02 MAY 14

GENERATED COLUMN

Indicates the creation date of the data.

Ident.: DSC-46-OIS-20-80-130-10-00016858.0001001 / 02 MAY 14

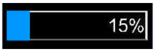
DESTINATION COLUMN

Indicates the application that will use the data.

Ident.: DSC-46-OIS-20-80-130-10-00016857.0001001 / 02 MAY 14

CAPT STATUS COLUMN

Provides status information about the loading of data to the Captain's laptop.

LOADED	The data is loaded.
 15%	The loading of data is in progress.
NOT LOADED	The data is not loaded.
FAULT	The loading of data failed.
X	The data-loading status is not known.

Ident.: DSC-46-OIS-20-80-130-10-00016859.0001001 / 24 MAY 17

F/O STATUS COLUMN

Provides status information about the loading of data to the First Officer's laptop.

L2 For more information about the status, *Refer to status.*

Ident.: DSC-46-OIS-20-80-130-10-00016860.0001001 / 09 MAR 16

SPARE STATUS COLUMN ◁

Provides status information about the loading of data to the spare EFB (EFB3) ◁ .

L2 For more information about the status, *Refer to status.*

Ident.: DSC-46-OIS-20-80-130-10-00016861.0001001 / 24 MAY 17

DELETE COLUMN

The flight crew can press the icon of the column header in order to delete all the rows.
The flight crew can press the icon at the end of each row in order to delete the associated row.

Ident.: DSC-46-OIS-20-80-130-10-00016862.0001001 / 02 MAY 14

REFRESH LOAD BOX BUTTON

When pressed, updates the list of available data.

Ident.: DSC-46-OIS-20-80-130-10-00016863.0001001 / 02 MAY 14

LOAD BUTTON

When pressed, starts to load the selected data.

L2 The button may be inoperative if a loading is in progress.

Ident.: DSC-46-OIS-20-80-130-10-00016864.0001001 / 02 MAY 14

ABORT BUTTON

When pressed, stops the data-loading of the selected data.

L3 It is possible to abort only from the laptop that started the data-loading.

Intentionally left blank

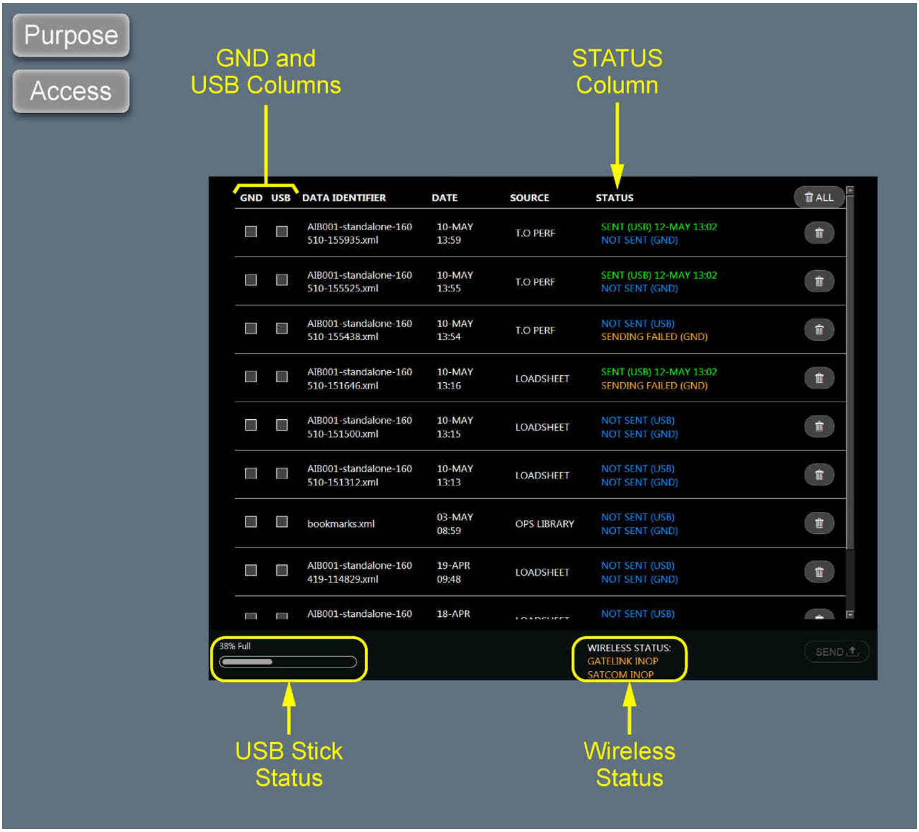
EFB - EXPORT BOX

EXPORT BOX

Applicable to: ALL

Ident.: DSC-46-OIS-20-80-140-10-00016918.0001001 / 24 MAY 17

EXPORT BOX Overview



GND	USB	DATA IDENTIFIER	DATE	SOURCE	STATUS
☐	☐	AIB001-standalone-160 510-155935.xml	10-MAY 13:59	T.O PERF	SENT (USB) 12-MAY 13:02 NOT SENT (GND)
☐	☐	AIB001-standalone-160 510-155525.xml	10-MAY 13:55	T.O PERF	SENT (USB) 12-MAY 13:02 NOT SENT (GND)
☐	☐	AIB001-standalone-160 510-155438.xml	10-MAY 13:54	T.O PERF	NOT SENT (USB) SENDING FAILED (GND)
☐	☐	AIB001-standalone-160 510-151646.xml	10-MAY 13:16	LOADSHEET	SENT (USB) 12-MAY 13:02 SENDING FAILED (GND)
☐	☐	AIB001-standalone-160 510-151500.xml	10-MAY 13:15	LOADSHEET	NOT SENT (USB) NOT SENT (GND)
☐	☐	AIB001-standalone-160 510-151312.xml	10-MAY 13:13	LOADSHEET	NOT SENT (USB) NOT SENT (GND)
☐	☐	bookmarks.xml	03-MAY 08:59	OPS LIBRARY	NOT SENT (USB) NOT SENT (GND)
☐	☐	AIB001-standalone-160 419-114829.xml	19-APR 09:48	LOADSHEET	NOT SENT (USB) NOT SENT (GND)
☐	☐	AIB001-standalone-160	18-APR		NOT SENT (USB)

38% Full

WIRELESS STATUS:
GATELINK INOP
SATCOM INOP

Ident.: DSC-46-OIS-20-80-140-10-00023672.0001001 / 24 MAY 17

PURPOSE

The flight crew uses the EXPORT BOX to transfer the following elements to external storage devices (e.g. USB stick):

- Takeoff performance results
- Landing performance results
- Loadsheet
- EFF.

Ident.: DSC-46-OIS-20-80-140-10-00023673.0001001 / 24 MAY 17

ACCESS

The flight crew can access the EXPORT BOX via the EXPORT BOX button of:

- The application menu, or
- The FLT OPS MENU, or
- The navigation bar, if the application is already running, or
- The OIS MENU.

Ident.: DSC-46-OIS-20-80-140-10-00016922.0001001 / 24 MAY 17

USB STICK STATUS

When a USB stick is plugged, indicates the storage capacity of the USB stick.
The grey part indicates the data already stored.
The blue part indicates the additional data, selected via the USB column.

Ident.: DSC-46-OIS-20-80-140-10-00016921.0001001 / 24 MAY 17

WIRELESS STATUS

GATELINK AVAIL	The GATELINK is available.
GATELINK NOT AVAIL	The GATELINK is not available.
GATELINK INOP	The GATELINK is inoperative because of system customization.
SATCOM AVAIL	The SATCOM is available.
SATCOM NOT AVAIL	The SATCOM is not available.
SATCOM INOP	The SATCOM is inoperative because of system customization.

Ident.: DSC-46-OIS-20-80-140-10-00016920.0001001 / 02 MAY 14

STATUS COLUMN

Provides one of the following status information about the export of data.

NOT SENT	The data is not sent.
SENDING...	The sending of data is in progress.

SENT	The data is send.
SENDING FAILED	The sending of data failed.
SENDING POSTPONED...	The data is ready to be sent via wireless. The wireless is currently not available. When the wireless will be recovered, the data will be automatically sent.

Ident.: DSC-46-OIS-20-80-140-10-00016919.0001001 / 02 MAY 14

GND AND USB COLUMNS

The flight crew uses the GND and USB columns in order to select the destination of the export.
GND is used to export data via Gatelink or SATCOM.
USB is used to export data to the USB Key that is plugged on the onside laptop.
The flight crew can select one or two destinations for one data.

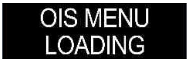
Intentionally left blank

OIS Messages

OIS MESSAGES

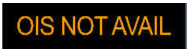
Ident.: DSC-46-OIS-20-80-150-00016337.0002001 / 07 JUL 16
Applicable to: ALL

The OIS can display the following full screen error messages:


OIS MENU
LOADING

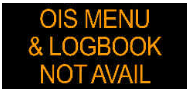
The OIS MENU is loading.

L12

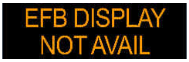

OIS NOT AVAIL

The OIS is not available.

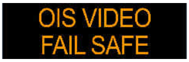
The message is associated with one of the following ECAM alerts:.
- OIS CAPT(F/O) OIS DISPLAY FAULT (*Refer to procedure*), or
- OIS CAPT + F/O OIS DISPLAY FAULT (*Refer to procedure*).


OIS MENU
& LOGBOOK
NOT AVAIL

The OIS MENU is not available.

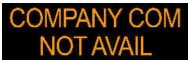

EFB DISPLAY
NOT AVAIL

The EFB DISPLAY is not available.


OIS VIDEO
FAIL SAFE

The OIS CAB & MAINT server cannot display video signal.

L12


COMPANY COM
NOT AVAIL

The COMPANY COM application is not available.
The message is associated with the ECAM alert: COM COMPANY COM FAULT (*Refer to procedure*).

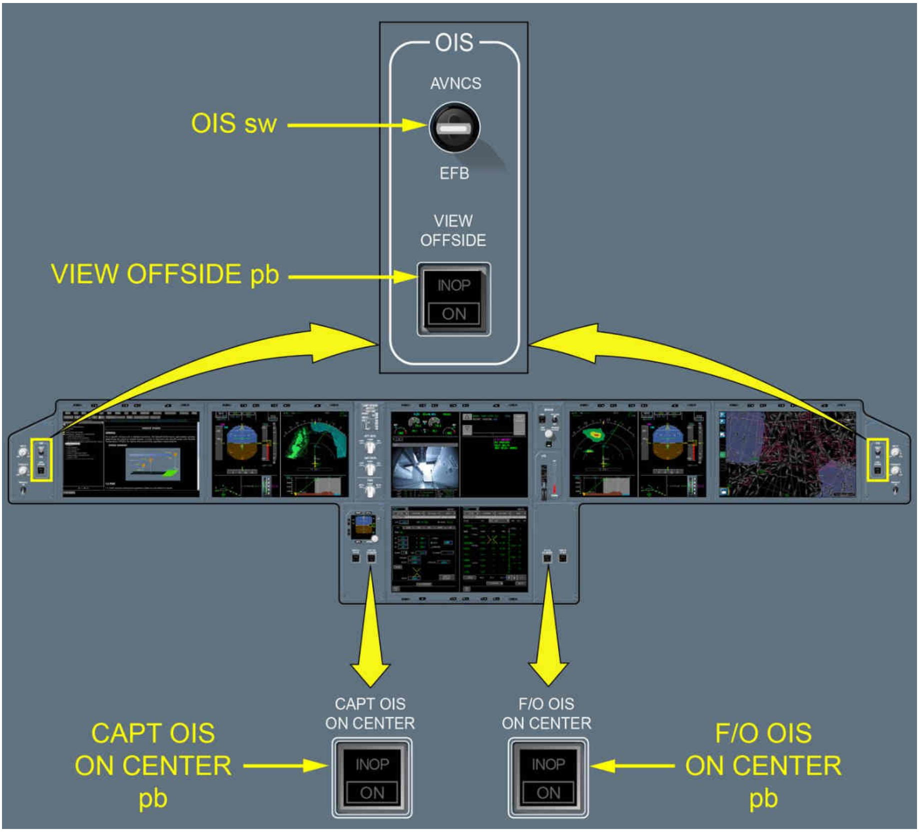
Intentionally left blank

OIS CONTROLS ON MAIN INSTRUMENT PANEL

Applicable to: ALL

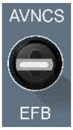
Ident.: DSC-46-OIS-20-90-10-00016035.0001001 / 20 JUN 14

OIS Controls on Main Instrument Panel

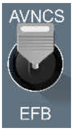

OIS
AVNCS
OIS sw
EFB
VIEW
OFFSIDE
VIEW OFFSIDE pb
INOP
ON
CAPT OIS
ON CENTER
CAPT OIS
ON CENTER
pb
INOP
ON
F/O OIS
ON CENTER
INOP
ON
F/O OIS
ON CENTER
pb

Ident.: DSC-46-OIS-20-90-10-00015808.0001001 / 02 MAY 14

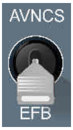
OIS SW



The OIS sw is in the neutral position.
When pushed up, displays the application that the flight crew opened last on the AVNCS side.
When pushed down, displays the application that the flight crew opened last on the EFB side.



Displays the application that the flight crew opened last on the AVNCS side.
When released, the OIS sw is on the neutral position.

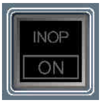


Displays the applications that the flight crew opened last on the EFB side.
When released, the OIS sw is on the neutral position.

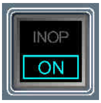
L2 The flight crew can also use the EFB key, or the AVNCS key of the OIS keyboard.*Refer to DSC-46-OIS-20-100 AVNCS Key*

Ident.: DSC-46-OIS-20-90-10-00015810.0001001 / 02 MAY 14

CAPT(F/O) OIS ON CENTER PB

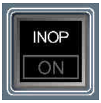


The CAPT(F/O) OIS is displayed on the CAPT(F/O) outer DU.



The CAPT(F/O) OIS is displayed on the center lower DU.

L12



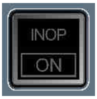
The CAPT(F/O) OIS cannot be displayed on the center lower DU.

The OIS ON CENTER function is not available because:
- The ECAM is displayed on the center lower DU, or
- The center lower DU is failed, or
- The outer and inner DUs are failed on both CAPT and F/O side.

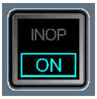
L2 For more information about display reconfiguration, *Refer to DSC-31-CDS-30-30 Normal Operations*

Ident.: DSC-46-OIS-20-90-10-00015809.0001001 / 02 MAY 14

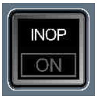
CAPT (F/O) VIEW OFFSIDE PB



The CAPT(F/O) OIS displays the CAPT(F/O) OIS on the onside DU.



The onside outer DU displays the offside OIS.

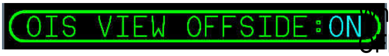


The OIS VIEW OFFSIDE pb is not available because:
- The other flight crewmember sets the OIS VIEW OFFSIDE to ON, or
- The other flight crewmember selects the CAPT(F/O) OIS ON CENTER to ON, or
- The function is not available due to an automatic display reconfiguration on the outer DU.

L2 For more information about display reconfiguration, *Refer to DSC-31-CDS-30-30 Normal Operations*.

L1 OIS VIEW OFFSIDE : ON

L12



OIS VIEW OFFSIDE:ON

en displayed on a DU, indicates that the VIEW FSIDE function is activated.
The OIS VIEW OFFSIDE : ON label is displayed on top of the onside OIS. The offside OIS does not display the label.

Note: *The flight crewmember cannot control the offside OIS.*

Intentionally left blank

OIS KEYBOARDS

Applicable to: ALL

Ident.: DSC-46-OIS-20-100-10-00016024.0001001 / 02 MAY 14

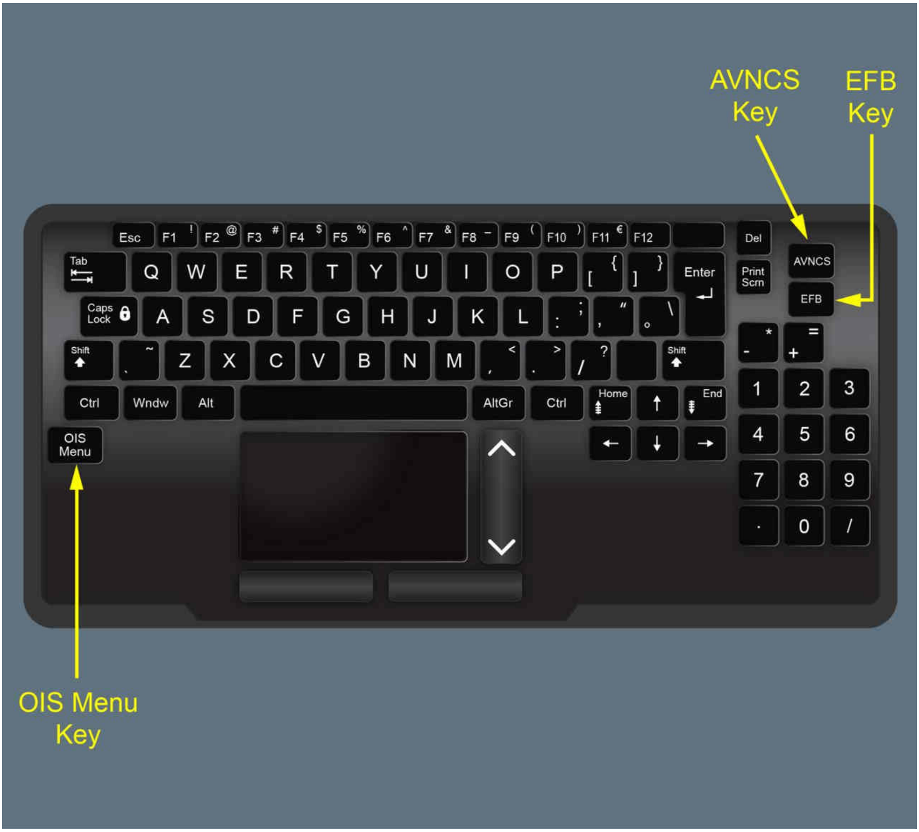
There are two OIS keyboards on the sliding tables:

- One for the Captain
- One for the First Officer.

The flight crew can use the OIS keyboards to:

- Display the EFB or the AVNCS sides
- Display the OIS MENU
- Enter and modify data on the OIS
- Control the OIS pointer.

OIS Keyboard


AVNCS Key
EFB Key
OIS Menu Key
AVNCS
EFB
OIS Menu

Ident.: DSC-46-OIS-20-100-10-00016025.0001001 / 02 MAY 14

OIS MENU KEY

L12

When pressed, displays the OIS MENU.
For more information about the OIS MENU, *Refer to DSC-46-OIS-20-80-20 OIS MENU Overview*.

Ident.: DSC-46-OIS-20-100-10-00016027.0001001 / 02 MAY 14

AVNCS KEY

When pressed, displays the application that the flight crew opened last on the AVNCS side.

L2 Note: *The flight crew can also use the OIS switch. Refer to OIS sw*

Ident.: DSC-46-OIS-20-100-10-00016026.0001001 / 02 MAY 14

EFB KEY

When pressed, displays the application that the flight crew opened last on the EFB side.

L2 Note: *The flight crew can also use the OIS switch. Refer to OIS sw*

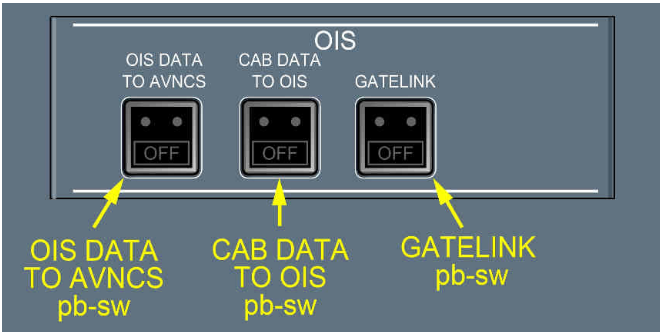
Intentionally left blank

OIS PANEL ON OVERHEAD PANEL

Applicable to: ALL

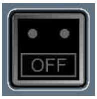
Ident.: DSC-46-OIS-20-110-10-00015892.0001001 / 02 MAY 14

OIS Panel on Overhead Panel

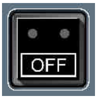

OIS
OIS DATA TO AVNCS
CAB DATA TO OIS
GATELINK
OFF
OFF
OFF
OIS DATA TO AVNCS pb-sw
CAB DATA TO OIS pb-sw
GATELINK pb-sw

Ident.: DSC-46-OIS-20-110-10-00015805.0001001 / 02 MAY 14

OIS DATA TO AVNCS PB-SW



The OIS CAB & MAINT server is connected to the OIS AVNCS server.

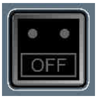


The OIS CAB & MAINT server is disconnected from the OIS AVNCS server.

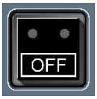
Note: *For maintenance and aircraft security purpose only. The flight crew should comply with the associated company instructions.*

Ident.: DSC-46-OIS-20-110-10-00015806.0001001 / 02 MAY 14

CAB DATA TO OIS PB-SW



The passenger services are connected to the OIS.

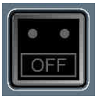


The passenger services are disconnected from the OIS.

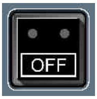
Note: *For maintenance and aircraft security purpose only. The flight crew should comply with the associated company instructions.*

Ident.: DSC-46-OIS-20-110-10-00015807.0001001 / 02 MAY 14

GATELINK PB-SW



The Wireless Airport Communication System (WACS) is ON.



The Wireless Airport Communication System (WACS) is OFF.

Note: *The SATCOM and wired connections remain available.*

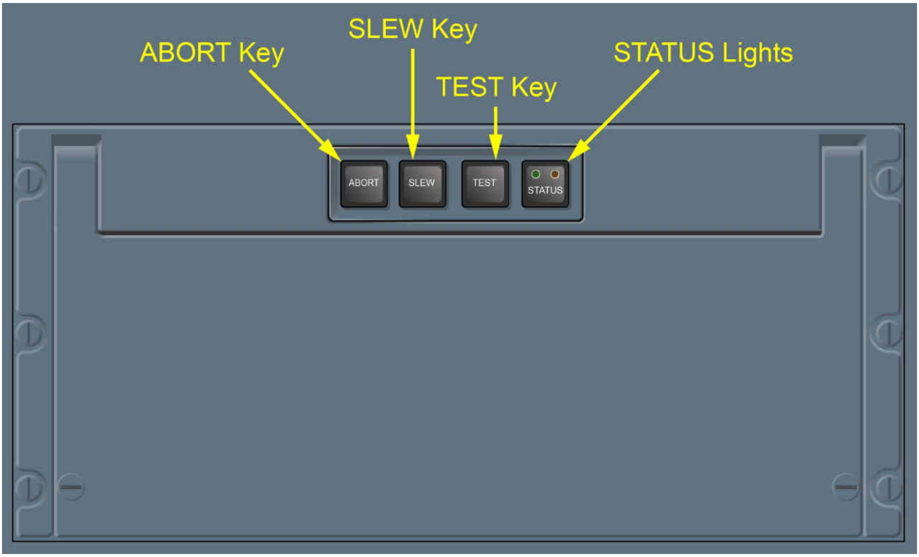
Note: *For maintenance and aircraft security purpose only. The flight crew should comply with the associated company instructions.*

PRINTER

Applicable to: ALL

Ident.: DSC-46-OIS-20-120-10-00016029.0001001 / 02 MAY 14

Printer


ABORT Key
SLEW Key
TEST Key
STATUS Lights
ABORT
SLEW
TEST
STATUS

Ident.: DSC-46-OIS-20-120-10-00016031.0001001 / 02 MAY 14

ABORT KEY

When pressed for more than 3 seconds, cancels the printing.

Ident.: DSC-46-OIS-20-120-10-00016032.0001001 / 02 MAY 14

SLEW KEY

When pressed, the paper comes out of the printer.

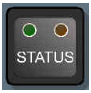
Ident.: DSC-46-OIS-20-120-10-00016033.0001001 / 02 MAY 14

TEST KEY

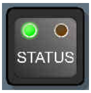
When pressed, launches a print test.

Ident.: DSC-46-OIS-20-120-10-00016034.0001001 / 02 MAY 14

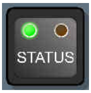
STATUS LIGHTS



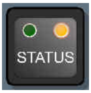
Indicates that the printer is OFF.



Indicates that the printer is ON.



The green light flashes to indicate that the printer receives and processes data .



Indicates that the printer is failed.

HOW TO EXIT FROM THE MAINTENANCE APPLICATIONS

Ident.: DSC-46-OIS-30-00018287.0001001 / 02 MAY 14
Applicable to: ALL

The OIS hosts both flight crew applications and maintenance applications.
In order to switch from the maintenance applications to the flight crew applications, the flight crew can press the OIS Menu key on the OIS Keyboard.*Refer to DSC-46-OIS-20-100 OIS Menu Key*

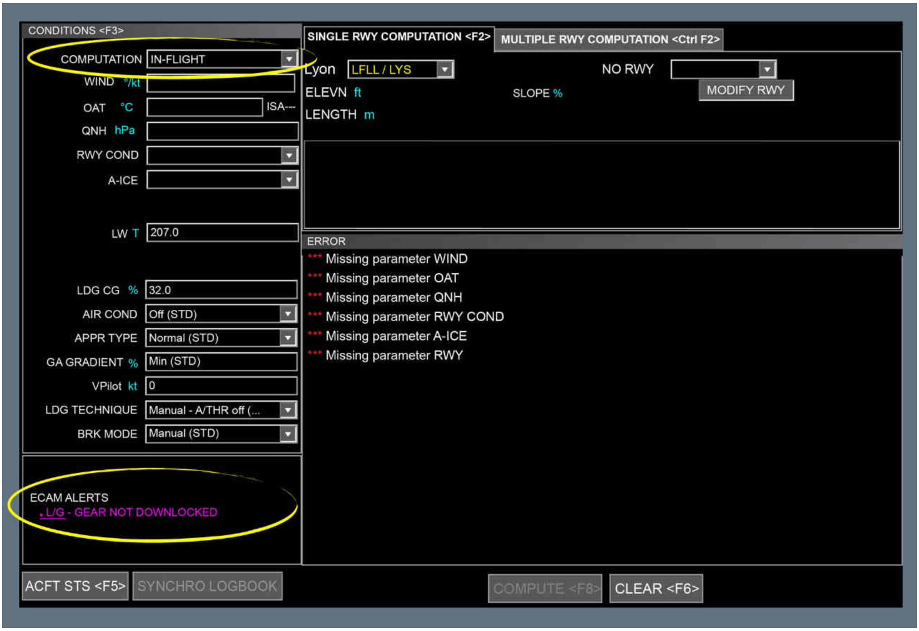
HOW TO INSERT AN ECAM ALERT IN A PERFORMANCE APPLICATION

Ident.: DSC-46-OIS-30-00018079.0001001 / 01 JUL 14
Applicable to: ALL

If the laptop is connected with the aircraft avionics, the active ECAM alerts are automatically displayed in the aircraft status of the LDG PERF application.
The flight crew can also manually enter ECAM alerts via the ACFT STS button.
The flight crew must make sure that the ECAM alerts that are inserted in the application, and the active alerts on the ECAM are the same.

Note: *The insertion of ECAM alerts in LDG PERF application is available only if the computation mode is "IN-FLIGHT"*

Insert an ECAM Alert in Performance Application



COMPUTATION IN-FLIGHT
WIND °/kt
OAT °C ISA---
QNH hPa
RWY COND
A-ICE
LW T 207.0
LDG CG % 32.0
AIR COND Off (STD)
APPR TYPE Normal (STD)
GA GRADIENT % Min (STD)
VPilot kt 0
LDG TECHNIQUE Manual - A/THR off (...
BRK MODE Manual (STD)

Lyon LFLL / LYS
NO RWY
ELEVN ft
SLOPE %
LENGTH m

ERROR
*** Missing parameter WIND
*** Missing parameter OAT
*** Missing parameter QNH
*** Missing parameter RWY COND
*** Missing parameter A-ICE
*** Missing parameter RWY

ECAM ALERTS
. L/G - GEAR NOT DOWNLOCKED

HOW TO START THE EFB DEVICE

Ident.: DSC-46-OIS-30-00016267.0001001 / 07 AUG 19
Applicable to: ALL

IF THE EFB DEVICE IS A/C ATTACHED

The EFB device is permanently connected to the aircraft, and remains in the laptop docking station.

- **If the Laptop Docking Station is OFF**

  Each flight crew member must:
  1. Start the docking station: Press the DOCK STATION pb
  2. Start the EFB device: Press the LAPTOP pb.

- **If the Laptop Docking Station is ON:**
  Each flight crew member must press the LAPTOP pb.

IF THE EFB DEVICE IS PILOT ATTACHED

Each flight crew member brings an EFB device onboard, and must perform the following actions in sequence:

1. Check that the docking station is OFF
2. Check that the EFB device is OFF
3. Plug-in the connection cables
4. Start the EFB device: Press the LAPTOP pb
5. Stow the EFB device and the cables into the Laptop Docking Station
6. Start the docking station: Press the DOCK STATION pb.

Note: *This sequence ensures that the EFB device and the docking station are correctly paired.*

HOW TO START OR SWITCH OFF THE SPARE EFB (EFB3) ◁

Ident.: DSC-46-OIS-30-00016334.0001001 / 09 MAR 16
Applicable to: ALL

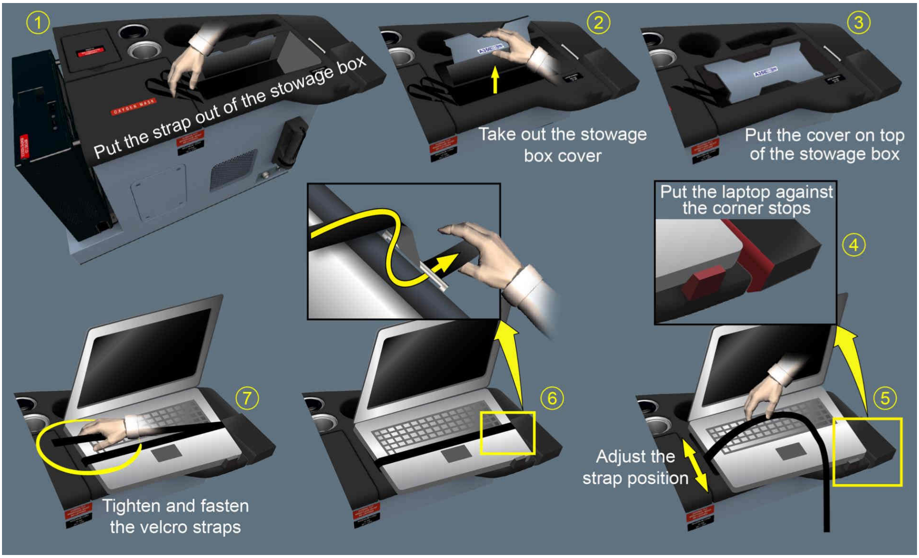
In order to start or switch off the spare EFB ◁ , the flight crew must use a software button available in the FLT OPS MENU.

L2 For more information about the FLT OPS MENU, *Refer to DSC-46-OIS-20-80-50 FLT OPS MENU Overview*.

HOW TO STRAP THE LAPTOP ON THE LATERAL CONSOLE

Ident.: DSC-46-OIS-30-00017232.0001001 / 03 DEC 15
Applicable to: ALL

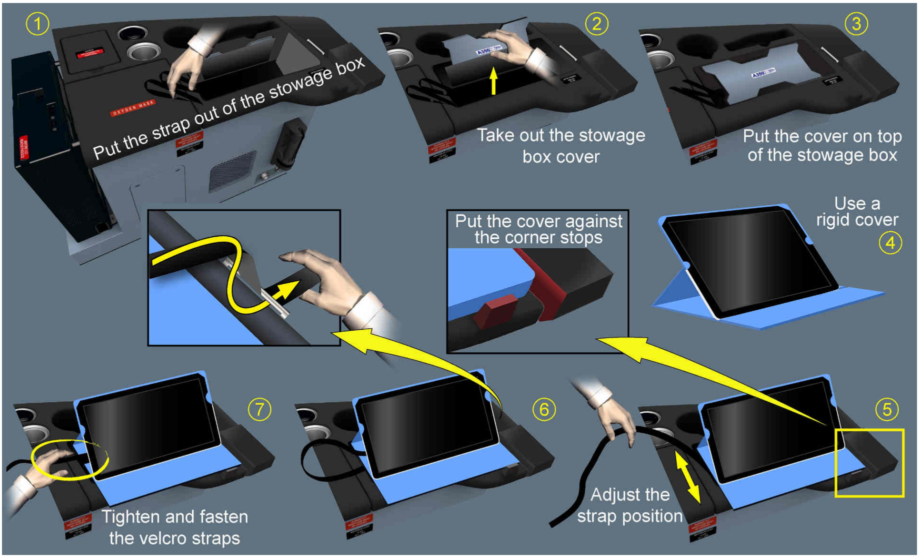
How to Strap the Laptop on the Lateral Console


①
Put the strap out of the stowage box
②
Take out the stowage box cover
③
Put the cover on top of the stowage box
④
Put the laptop against the corner stops
⑤
Adjust the strap position
⑥
⑦
Tighten and fasten the velcro straps

HOW TO STRAP A TABLET ON THE LATERAL CONSOLE

Ident.: DSC-46-OIS-30-00023340.0001001 / 09 MAR 16
Applicable to: ALL

Note: *A tablet with a keyboard attached to the tablet must be considered as a laptop (Refer to DSC-46-OIS-30 How To Strap the Laptop on the Lateral Console).*


①
Put the strap out of the stowage box
②
Take out the stowage box cover
③
Put the cover on top of the stowage box
Use a rigid cover
④
Put the cover against the corner stops
⑤
Adjust the strap position
⑥
⑦
Tighten and fasten the velcro straps

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OIS APPLICATIONS TEMPORARY LOSS AFTER ENG 2 SHUTDOWN

1 Ident.: DSC-46-OIS-35-00025510.0001001 / 07 JUL 20
Applicable to: ALL

The OSFC hosts the Maintenance, Cabin, Communication applications and some Basic Services.
Power transient while engine 2 is shutdown may cause automatic reset of the OSFC.
This may occur during an ECAM procedure, or during one engine taxi operation with APU off.
During the OSFC reset, the following effects may occur:

- EXPECT EFB DISPLAY LOSS ON OIS DURING 3 MIN
  The OIS CAPT+F/O OIS DISPLAY FAULT ECAM alert appears. If EFB applications are required during the 3 min, unstow the EFB laptop.
- EXPECT COMPANY COM LOSS DURING 9 MIN
- EXPECT OSFC APPLICATION/FUNCTIONS LOSS DURING 9 MIN
- EXPECT CABIN CONNECTIVITY LOSS DURING 9 MIN
  Cabin connectivity includes cabin crew Wi-Fi ◁ , passenger Wi-Fi ◁ , internet ◁ .

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AIRCRAFT SYSTEMS

49 - AUXILIARY POWER UNIT

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DSC-49-10 System Description

General....A
Architecture....B

DSC-49-20 Controls and Indicators

Cockpit View....A
APU ECON MODE Panel....B
APU Panel....C
APU SD Page....D
External Refuel Panel....E
Maintenance Nose Gear Panel....F
MEMO....G

DSC-49-30 Normal Operations

Normal Operations....A

DSC-49-40 Abnormal Operations

Abnormal Operations....A

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GENERAL

Ident.: DSC-49-10-00001390.0001001 / 07 APR 20
Applicable to: ALL

The Auxiliary Power Unit (APU) can provide:

- On ground:
  - Bleed air for engine start, and for air conditioning
  - Electrical power.

  Note: *An APU ECON MODE provides reduced bleed air performance for air conditioning.*

- During takeoff: bleed air for air conditioning (e.g. when optimum aircraft performance is required).
- In flight:
  - Bleed air to assist engine start, up to an altitude of 25 000 ft
  - Bleed air as a backup for pressurization and air conditioning, up to an altitude of 25 000 ft

    Note: *Dual pack operation is possible up to an altitude of 22 500 ft*

  - A backup for electrical power within the aircraft environmental envelope.

L3 During ground operations, the APU fuel consumption is about:

- 230 kg/h (505 lb/h) with packs ON and APU GEN ON, or
- 180 kg/h (395 lb/h) with APU GEN ON.

At FL100, the APU fuel consumption is about:

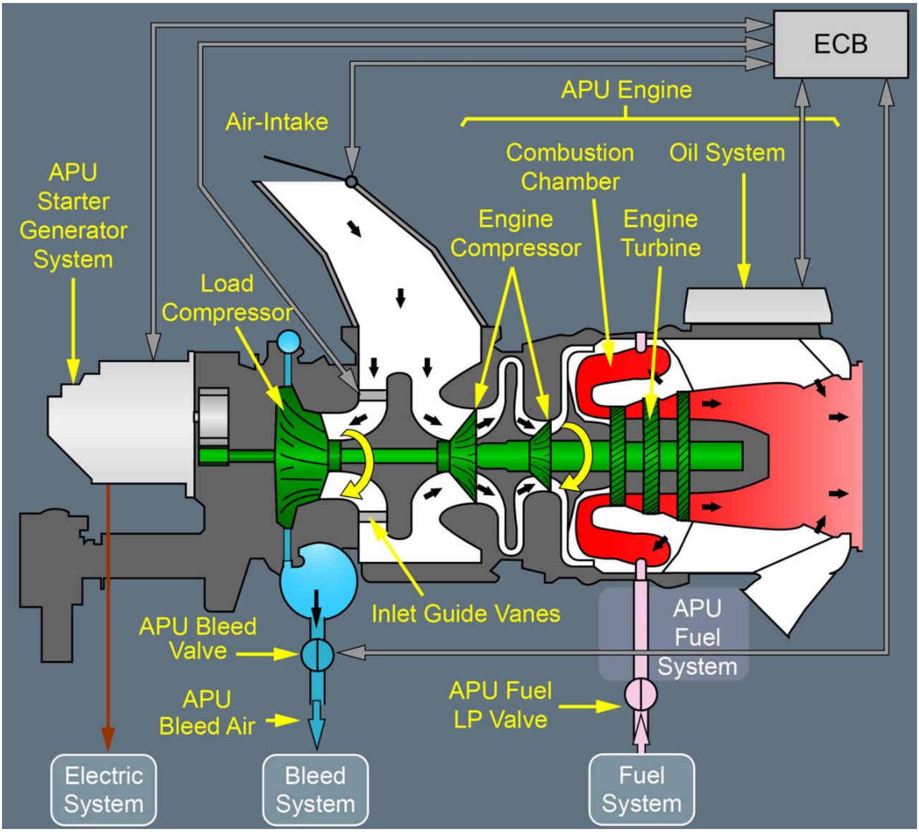
- 170 kg/h (375 lb/h) with APU BLEED ON and APU GEN ON.

ARCHITECTURE

Applicable to: ALL

Ident.: DSC-49-10-10-00001391.0001001 / 29 APR 14

Architecture


ECB
APU Engine
Air-Intake
Combustion Chamber
Oil System
APU Starter Generator System
Engine Compressor
Engine Turbine
Load Compressor
Inlet Guide Vanes
APU Bleed Valve
APU Fuel System
APU Bleed Air
APU Fuel LP Valve
Electric System
Bleed System
Fuel System

Ident.: DSC-49-10-10-00001392.0001001 / 29 APR 14

APU ENGINE

The APU has one rotor.

The rotor provides power for bleed air and electrical generation.

L3 The rotor is made of a turbine that drives the load compressor. The air compressed by the load compressor is delivered to the bleed air system.

The rotor is connected to a shaft that drives the Starter Generator (SG) in generator mode.

Ident.: DSC-49-10-10-00001393.0001001 / 29 APR 14

APU STARTER GENERATOR SYSTEM

The APU Starter Generator System (SGS) is a dual function system that can start the APU and supply electrical power (230 V AC).

L3 The APU Starter Generator System (SGS) has a Starter Generator (SG), a Starter Power Unit (SPU) and a Starter Generator Control Unit (SGCU).

L1 The SGS starts the APU, when the air-intake flap is fully open, and the START pb is set to ON.

L2 The APU can either start on:
- Two 28 V DC batteries.
  The SPU converts the DC supply to start the APU.
- The 230 V AC supply.
  The SGCU converts the AC supply to start the APU.

L1 When the APU is running, it drives the SGS that provides power at a constant frequency of 400 Hz.

Ident.: DSC-49-10-10-00001394.0001001 / 29 APR 14

L2 ELECTRONIC CONTROL BOX (ECB)

The ECB monitors and controls the operation of the APU, and displays the applicable information on the ECAM.

The ECB:
- Sequences and monitors the APU start
  L3 *Refer to DSC-49-30 APU Manual Start*
- L2 Monitors the operating parameters of the APU
  Such parameters include N and Exhaust Gas Temperature (EGT)
  L3 Other parameters include speed management, speed limitation, temperature limitation, independent overspeed protection, and inlet guide vane control
- L2 Monitors bleed air.
  L3 The ECB controls the APU bleed valve and the air intake flap position
- L2 Sequences the manual or automatic shutdown
  L3 For more information, *Refer to DSC-49-30 APU Shutdown*
  For more information, *Refer to DSC-49-40 APU Automatic Shutdown*
- L2 Controls the emergency shutdown.
  L3 For more information, *Refer to DSC-49-40 APU Emergency Shutdown*

Ident.: DSC-49-10-10-00001395.0001001 / 29 APR 14

AIR-INTAKE

The external air flows into the APU via an air-intake flap. The flap automatically closes, when the APU is not in operation or in the case of an emergency.

L2 The ECB automatically and electrically controls the opening and closure of the flap.

Ident.: DSC-49-10-10-00001396.0001001 / 29 APR 14

L3 INLET GUIDE VANES (IGV)

The IGVs control the bleed airflow, based on aircraft demand.
They regulate the flow of air that enters and exits the load compressor.
The ECB controls the IGVs.

Ident.: DSC-49-10-10-00001399.0001001 / 29 APR 14

APU BLEED AIR

The APU can provide bleed air to the bleed air system, via the APU bleed valve (*Refer to DSC-36-20 APU Bleed Valve Indications*).

L3 Based on aircraft demand, the position of the IGVs controls the airflow to the bleed air system.

L2 The ECB controls the APU bleed air.

Ident.: DSC-49-10-10-00001400.0001001 / 04 DEC 14

L2 OIL SYSTEM

The APU has an oil system that lubricates and cools the APU components.
The ECB monitors the oil system (i.e. oil quantity, oil pressure and oil filter).

OIL QUANTITY

The oil tank has an oil level sensor that detects a low level of oil.
If the oil quantity reaches the low level when the aircraft is on ground, and the APU is off, the APU SD page immediately displays the OIL LEVEL LO advisory. In normal conditions, the APU can continue to operate for at least 20 h.
However if the oil quantity reaches the low level when the aircraft is in flight, or when the APU is on, the OIL LEVEL LO advisory will appear only when the aircraft is on ground, and the APU is off. As a result, the remaining operating time may be less than 20 h.
If the oil quantity continues to decrease to the critical oil level, the APU automatically shuts down and the ECAM triggers the APU AUTO SHUTDOWN alert (*Refer to procedure*).

Ident.: DSC-49-10-10-00001401.0001001 / 29 APR 14

L2 FUEL SYSTEM

The fuel system supplies the APU with the appropriate quantity of fuel. (*Refer to DSC-28-10 APU Feed*).

The APU fuel feedline has two fuel shutoff valves, the APU isolation valve and the APU LP valve.
The fuel shutoff valves automatically close when the APU is not in operation, or in the case of an emergency.
The ECB controls the fuel flow.

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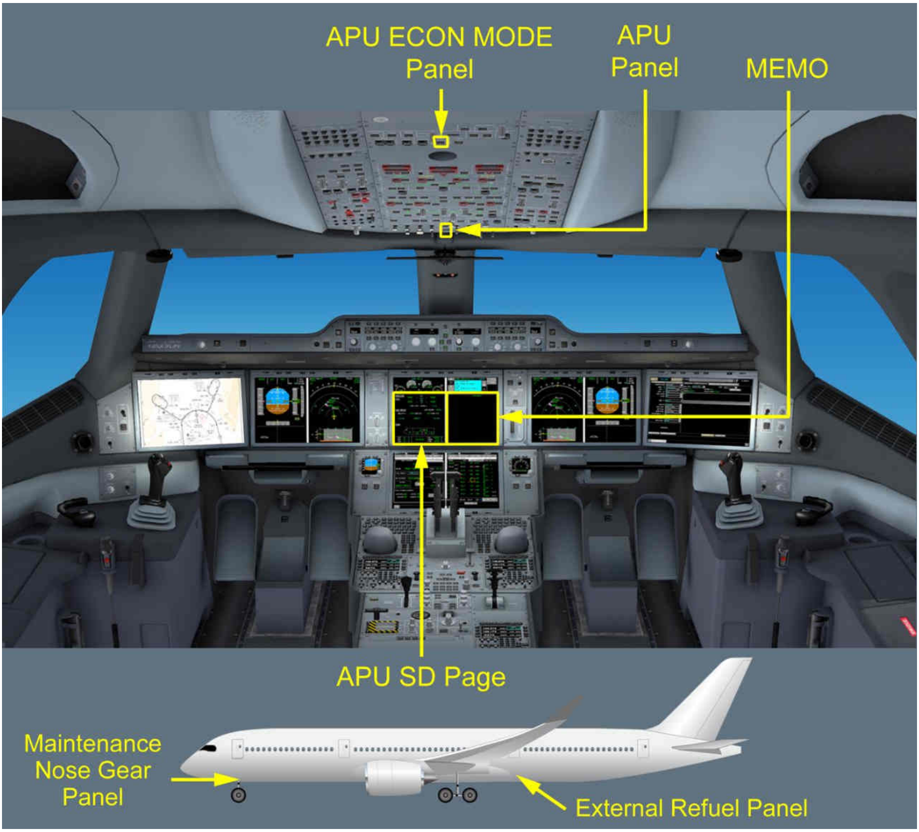
COCKPIT VIEW

Ident.: DSC-49-20-00001402.0001001 / 29 APR 14
Applicable to: ALL

Cockpit View

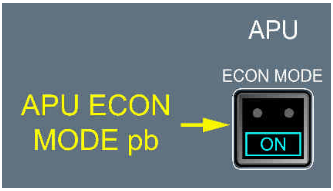

APU ECON MODE Panel
APU Panel
MEMO
APU SD Page
Maintenance Nose Gear Panel
External Refuel Panel

APU ECON MODE PANEL

Applicable to: ALL

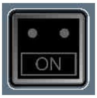
Ident.: DSC-49-20-10-00011788.0001001 / 29 APR 14

APU ECON MODE Panel



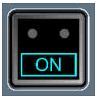
Ident.: DSC-49-20-10-00011789.0001001 / 29 APR 14

APU ECON MODE PB



The APU ECON MODE is off.
When pressed, the APU operates in an economic mode.

L12



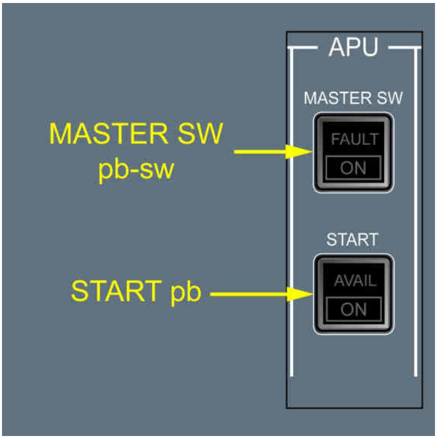
The APU ECON MODE is in operation.
The APU bleed air is limited to provide minimum cabin air ventilation. There is no control of the temperature in the cabin and in the cockpit.

APU PANEL

Applicable to: ALL

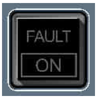
Ident.: DSC-49-20-20-00001403.0001001 / 29 APR 14

APU Panel

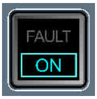

APU
MASTER SW
FAULT
ON
START
AVAIL
ON
MASTER SW pb-sw
START pb

Ident.: DSC-49-20-20-00001408.0001001 / 29 APR 14

MASTER SW PB-SW

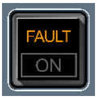


The APU is off.
When pressed, initiates the APU operation. The air-intake flap and the APU fuel valves open.



The APU is in operation.
When pressed, the APU shutdown sequence begins.

L12

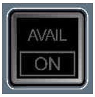


- The APU is failed, or
- An automatic shutdown has occurred, or
- An emergency shutdown has occurred.

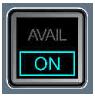
Associated with one of the following ECAM alerts:
- APU FAULT (*Refer to procedure*), or
- APU AUTO SHUTDOWN (*Refer to procedure*), or
- APU EMER SHUTDOWN (*Refer to procedure*).

Ident.: DSC-49-20-20-00001409.0001001 / 29 APR 14

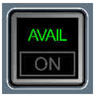
START PB



The APU is off.
When pressed, starts the APU.



The APU start sequence is in progress.
When the APU reaches the appropriate speed, the ON light goes off and the AVAIL light comes on.



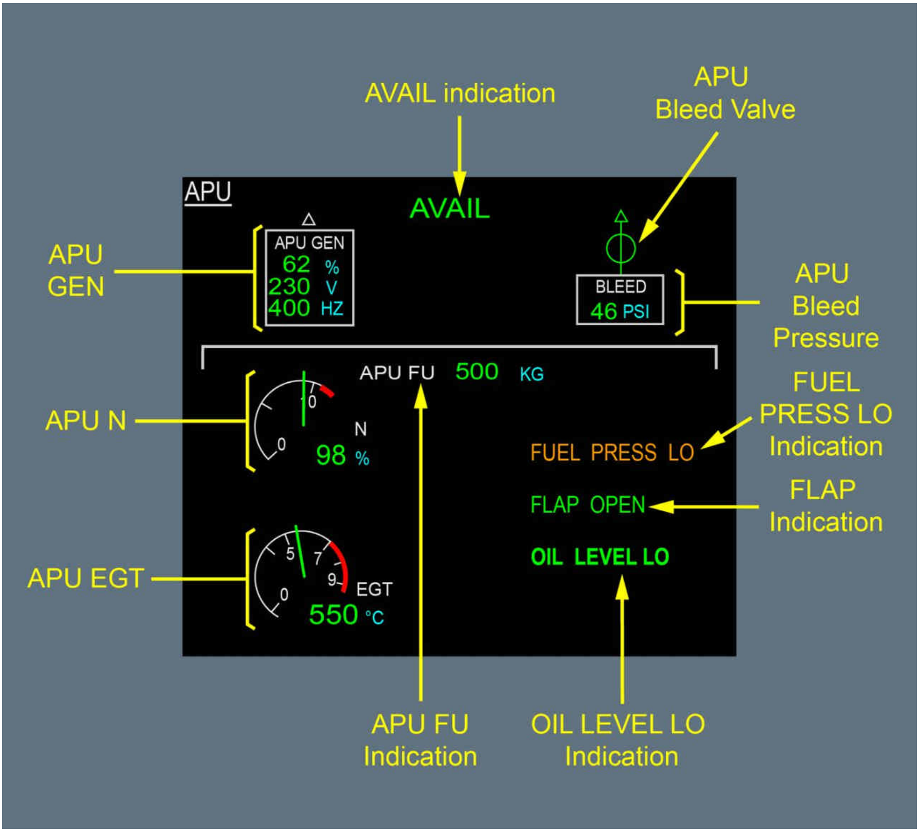
The APU is started, and can provide electrical power and bleed air.

APU SD PAGE

Applicable to: ALL

Ident.: DSC-49-20-30-00001406.0001001 / 29 APR 14

APU SD Page


AVAIL indication
APU
Bleed Valve
APU
APU
GEN
AVAIL
APU GEN
62 %
230 V
400 HZ
BLEED
46 PSI
APU
Bleed
Pressure
APU FU 500 KG
FUEL
PRESS LO
Indication
APU N
0
N
0
98 %
FUEL PRESS LO
FLAP OPEN
FLAP
Indication
OIL LEVEL LO
APU EGT
5
7
9
0
EGT
550 °C
APU FU
Indication
OIL LEVEL LO
Indication

Ident.: DSC-49-20-30-00001928.0001001 / 27 MAY 14

AVAIL INDICATION

L12

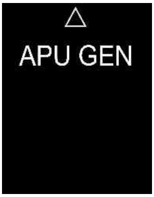
AVAIL	The APU is running, and can supply bleed air and electrical power. This indication appears, when N is above approximately 95 %.

Ident.: DSC-49-20-30-00001929.0001001 / 03 DEC 15

APU GEN

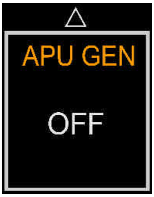
The APU generator indications on the APU SD page differ, when the APU generator is:
- On standby, or
- Off, or
- In operation.

APU GEN ON STANDBY



The APU generator is on standby: The APU is off.

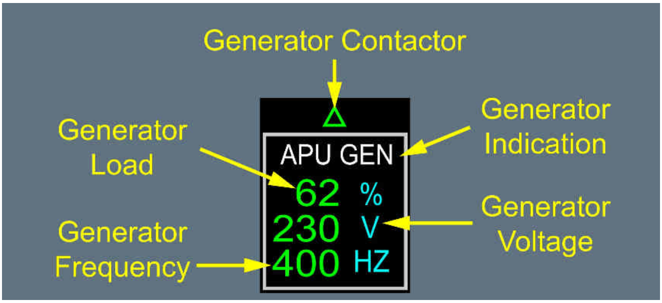
APU GEN SET TO OFF



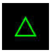
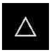
The APU MASTER sw is set to ON, or the APU autostart is operative.
The generator contactor is not connected to the electrical network.

APU GEN IN OPERATION

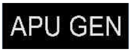
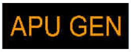
APU GEN In Operation


Generator Contactor
Generator Load
Generator Indication
Generator Voltage
Generator Frequency
△
APU GEN
62 %
230 V
400 HZ

Generator Contactor

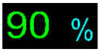
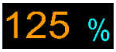
	The APU generator supplies electrical power to the electrical network.
	The APU generator is not connected to the electrical network.

Generator Indication

	Normal operation.
	The APU generator is failed.

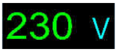
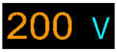
Generator Load

L12

	The APU generator load is normal. The load is normal, when it is less than 120 %.
L12	
	There is an overload on the APU generator. The load is above 120 % for more than 5 min or above 160 % for more than 5 s.

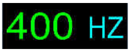
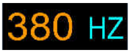
Generator Voltage

L12

	The APU generator voltage is normal. The voltage is normal between 230 V and 240 V.
	The APU generator voltage is abnormal.

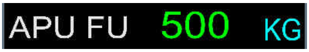
Generator Frequency

L12

	The APU generator frequency is normal. The frequency is between 385 Hz and 418 Hz.
	The APU generator frequency is abnormal.

Ident.: DSC-49-20-30-00001930.0001001 / 29 APR 14

APU FU INDICATION

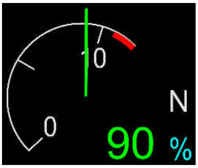


The quantity of fuel, used by the APU, since the last reset.

This value resets at:
- The first engine-start, and
- The last engine-shutdown.

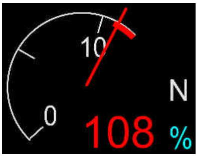
Ident.: DSC-49-20-30-00001931.0001001 / 27 MAY 14

APU N



The APU N rotation speed is normal.

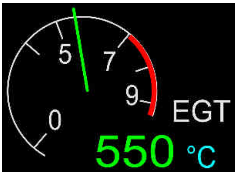
L12



APU N rotation speed is equal to, or more than, the APU N red limit.
The APU N red limit is the lower border of the red arc.
The red limit starts at 106 %.
An automatic shutdown sequence begins.
Associated with the following ECAM alert: APU AUTO SHUTDOWN (*Refer to procedure*).

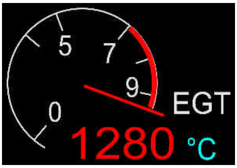
Ident.: DSC-49-20-30-00001933.0001001 / 27 MAY 14

APU EGT



The APU EGT is normal.

L123



The APU EGT is at, or more than, the APU EGT red limit. The APU EGT red limit is the lower border of the red arc. If the A/C is on ground, an automatic shutdown sequence begins.
The ECB computes the APU EGT red limit. This limit can vary from 680 °C up to 1 260 °C (during APU start), depending on several external parameters (e.g. ambient temperature, pressure).

Associated with one of the following ECAM alerts:
- APU AUTO SHUTDOWN (*Refer to procedure*)(if the A/C is on ground), or
- APU FAULT (*Refer to procedure*)(if the A/C is in flight).

Ident.: DSC-49-20-30-00001934.0001001 / 29 APR 14

OIL LEVEL LO INDICATION

L12

OIL LEVEL LO

lses, and indicates a low quantity of APU oil.
is indication only appears on ground.
When this indication appears, the APU SD page automatically appears.
For more information about oil low level detection, *Refer to DSC-49-10 Oil System*.

Ident.: DSC-49-20-30-00001935.0001001 / 29 APR 14

FLAP INDICATION

FLAP MOVING

he air-intake flap moves to the open, or to the closed position.

FLAP OPEN

The air-intake flap is fully open.

L12

FLAP CLOSED

The air-intake flap is closed.
This indication is only displayed during 10 s, when the flap is closed, then the flap indication disappears.

Ident.: DSC-49-20-30-00001936.0001001 / 29 APR 14

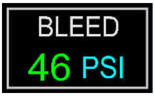
FUEL PRESS LO INDICATION

FUEL PRESS LO

PU fuel pressure is low.

Ident.: DSC-49-20-30-00001937.0001001 / 29 APR 14

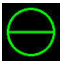
APU BLEED PRESSURE



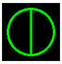
Indicates the current pressure of APU bleed air.

Ident.: DSC-49-20-30-00001938.0001001 / 29 APR 14

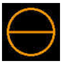
APU BLEED VALVE



The APU bleed valve is closed.

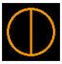


The APU bleed valve is open.



The APU bleed valve is abnormally closed if:
- The APU bleed valve is closed, and
- The Bleed Air System (BAS) requests APU bleed air.

Note: *(The request for APU bleed air can be automatic, or manual via the APU BLEED pb-sw).*



The APU bleed valve is abnormally open:
- If the APU bleed valve is not closed, and the BAS does not request APU bleed air, or
- If the APU bleed valve is not fully open, and the BAS requests APU bleed air.

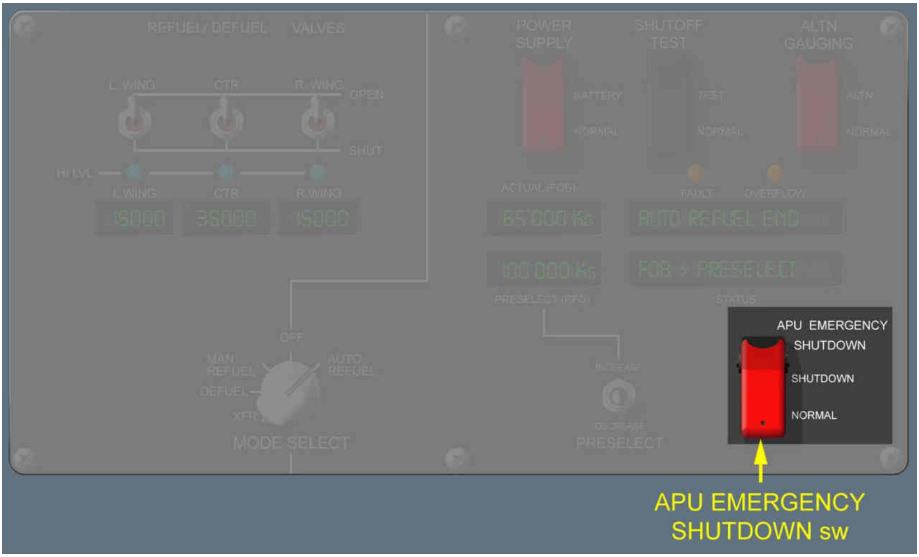
Note: *(The request for APU bleed air can be automatic, or manual via the APU BLEED pb-sw).*

EXTERNAL REFUEL PANEL

Applicable to: ALL

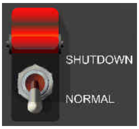
Ident.: DSC-49-20-40-00001405.0001001 / 29 APR 14

External Refuel Panel


REFUEL / DEFUEL VALVES
L WING
CTR
R WING
OPEN
SHUT
HI LVL
15000
35000
15000
POWER SUPPLY
BATTERY
NORMAL
SHUTOFF TEST
TEST
NORMAL
ALTN GAUGING
ALTN
NORMAL
ACTUAL (FOB)
FAULT
OVERFLOW
65 000 KG
AUTO REFUEL END
100 000 KG
FOB > PRESELECT
PRESELECT (PFQ)
STATUS
OFF
MAN REFUEL
AUTO REFUEL
DEFUEL
XFR
MODE SELECT
INCREASE
DECREASE
PRESELECT
APU EMERGENCY SHUTDOWN
SHUTDOWN
NORMAL
APU EMERGENCY SHUTDOWN sw

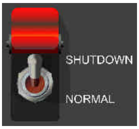
Ident.: DSC-49-20-40-00001927.0001001 / 29 APR 14

APU EMERGENCY SHUTDOWN SW


SHUTDOWN
NORMAL

Normal position.

L12


SHUTDOWN
NORMAL

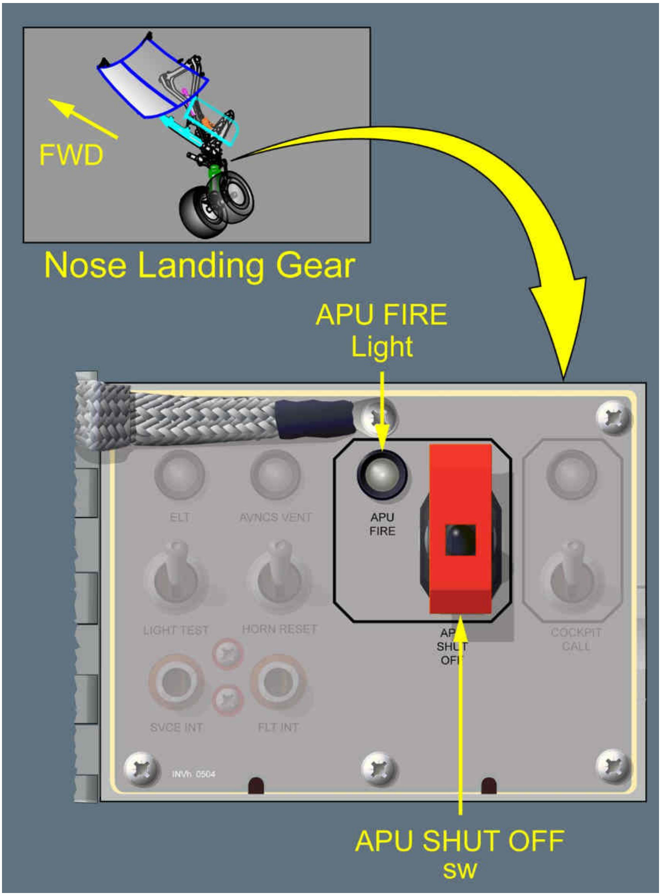
The APU shuts down, with an emergency shutdown
For more information, *Refer to DSC-49-40 APU Emergency Shutdown*.

MAINTENANCE NOSE GEAR PANEL

Applicable to: ALL

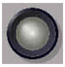
Ident.: DSC-49-20-50-00001404.0001001 / 29 APR 14

Maintenance Nose Gear Panel

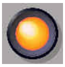

FWD
Nose Landing Gear
APU FIRE
Light
ELT
AVNCS VENT
APU
FIRE
LIGHT TEST
HORN RESET
COCKPIT
CALL
SVCE INT
FLT INT
APU SHUT OFF
SW

Ident.: DSC-49-20-50-00001507.0001001 / 29 APR 14

APU FIRE LIGHT



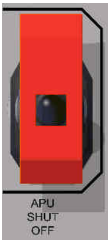
Normal position. No fire is detected.



Fire is detected in the APU compartment. In addition of the light, an external horn comes on.
The APU automatically shuts down, the APU fuel valves close, and the APU fire extinguisher automatically discharges the agent 10 s after this warning appears.
The light and the horn remain on, until the fire is extinguished.

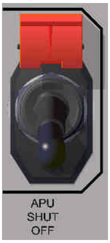
Ident.: DSC-49-20-50-00001508.0001001 / 29 APR 14

APU SHUT OFF SW



Normal position.

L12



The ground crew has opened the guard.

When pushed down and released:
- Initiates an APU emergency shutdown
- Stops the external horn in the case of an APU FIRE alert.

For more information about APU emergency shutdown sequence,*Refer to DSC-49-40 APU Emergency Shutdown* .

MEMO

Applicable to: ALL

Ident.: DSC-49-20-60-00001407.0001001 / 27 MAY 14

L12

APU AVAIL	The APU is running, and can supply bleed air and electrical power. The APU N is more than approximately 95 %.

Ident.: DSC-49-20-60-00019884.0001001 / 29 APR 14

APU BLEED	The APU supplies bleed air to the Bleed Air System (BAS).

NORMAL OPERATIONS

Applicable to: ALL

Ident.: DSC-49-30-10-00001939.0001001 / 29 APR 14

L2 The ECB monitors APU start and shutdown.

Ident.: DSC-49-30-10-00001940.0001001 / 27 MAY 14

APU START

When the MASTER SW pb-sw is pressed:
- The ON light of the MASTER SW pb-sw comes on
- The APU SD page appears
- The air-intake flap opens
- The FLAP MOVING indication, then the FLAP OPEN indication appears on the APU SD page.

When the START pb is pressed:
- The ON light of the START pb comes on
- The APU start sequence begins
- When the APU runs with the appropriate computed speed:
  - The ON light goes off and the AVAIL light comes on, on the START pb
  - The APU AVAIL memo appears on the WD and on the APU SD page

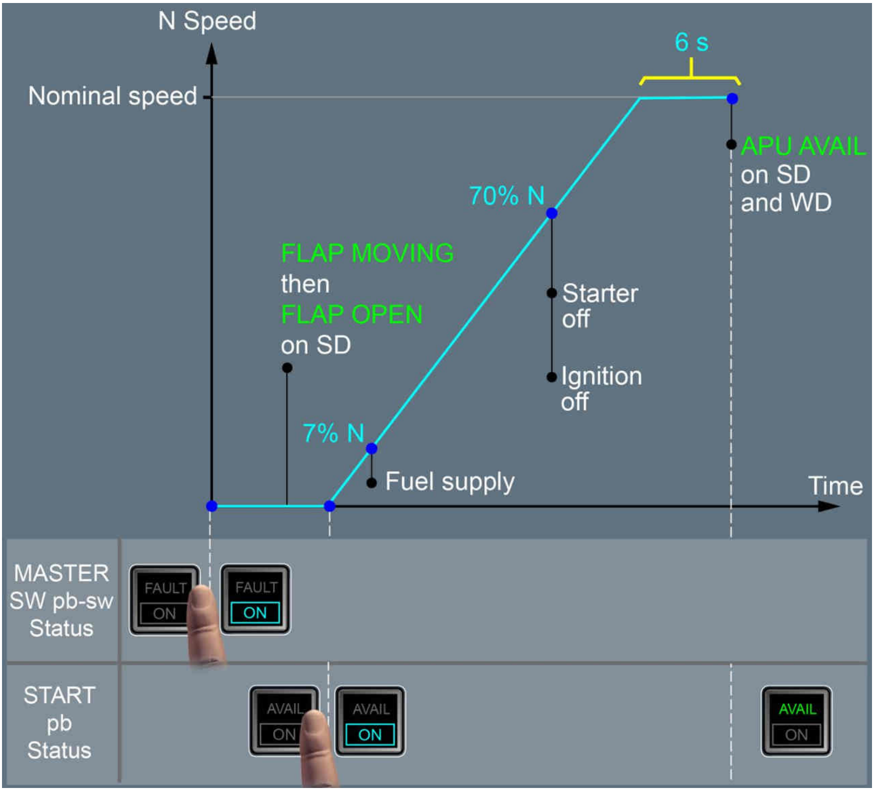
L3 The ECB computes the best rotor speed to enable bleed and electrical supply, between 93 % and 102 %.

L1 *Note: The MASTER SW pb-sw remains ON.*

L3

DETAILED APU START SEQUENCE

Detailed APU Start Sequence


N Speed
6 s
Nominal speed
APU AVAIL
on SD
and WD
70% N
FLAP MOVING
then
FLAP OPEN
on SD
Starter
off
Ignition
off
7% N
Fuel supply
Time
MASTER
SW pb-sw
Status
FAULT
ON
FAULT
ON
START
pb
Status
AVAIL
ON
AVAIL
ON
AVAIL
ON

APU START SEQUENCE: ABORT OR INHIBIT CONDITIONS

Abort/Inhibit Condition	Description	Start Abort/Inhibit	On Ground	In Flight	Confirmation Time
Air-intake flap	Air-intake flap fails to open	Inhibit	Yes	Yes	5 s
No ignition	No ignition within 23 s of fuel on. Ignition is based on a temperature rise of 37.7 °C.	Abort	Yes	Yes	23 s
No rotation	N is less than 7 %	Abort	Yes	Yes	30 s

Continued on the following page

Continued from the previous page

Abort/Inhibit Condition	Description	Start Abort/Inhibit	On Ground	In Flight	Confirmation Time
No acceleration	N is more than 7 % and the rotation acceleration is less than 0.3 %/s for more than 30 s.	Abort	Yes	Yes	30 s
EGT not available	EGT indication is not available.	Inhibit/Abort	Yes	Yes	0.1 s
EGT abnormal temperature	EGT is more than 680 °C.	Abort	Yes	No	2 s

Ident.: DSC-49-30-10-00013466.0001001 / 03 JAN 20

AUTOMATIC APU START AND BLEED SUPPLY

In the case of an all engine failure in flight, the APU automatically starts and supplies bleed air in order to assist engine relight.

L2 The APU automatically starts if:
- The A/C is in flight
- An all engines failure is detected
  L3 In order to wait for the RAT extension, the automatic APU start is initiated 10 s after the detection of the all engines failure.
- L2 The Mach number is more than 0.12
- Both Main L(R) TK fuel pumps are not at low pressure
- There is no APU inhibition start.

L1 When the APU automatically starts, all of the following occurs:
- The ON light of the START pb comes on
- The APU start sequence begins
- When the APU runs with the appropriate computed speed, both of the following occur:
  - On the START pb, the ON light goes off and the AVAIL light comes on
  - The APU AVAIL memo appears on the WD and on the APU SD page.

Note: *If the MASTER SW pb-sw is not pressed, it remains off.*

Following an automatic start, the APU bleed valve opens and the APU supplies bleed air to the bleed air system when:
- The APU is AVAIL
- The flight crew sets one of the engine master lever to the START position
- The aircraft altitude is below 25 000 ft.

Ident.: DSC-49-30-10-00001941.0001001 / 29 APR 14

APU SHUTDOWN

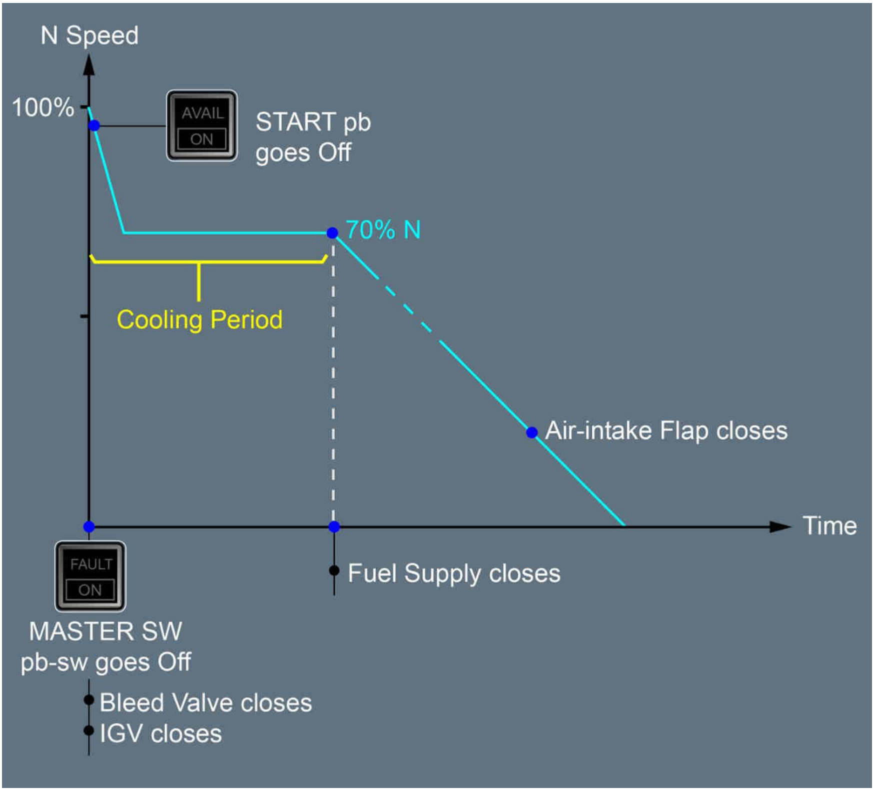
When the APU is available, and the MASTER SW pb-sw is pressed:

- The ON light of the MASTER SW pb-sw goes off
- The APU bleed valve closes (if open)
- L3 The inlet guide vanes close
- L1 The AVAIL light of the START pb goes off
- N decreases down to 70 % to cool down the APU engine, if necessary

  L3 An 85 s cooling period enables the APU to run with a minimum load, in order to reduce the temperature of the APU engine.
- L1 Fuel supply to the APU stops at the end of the shutdown period
- The air-intake flap closes
- The APU stops.

L3 DETAILED APU SHUTDOWN SEQUENCE

Detailed APU Shutdown Sequence



The complete shutdown sequence can last up to 2 min and 30 s until the flap is closed.

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ABNORMAL OPERATIONS

Applicable to: ALL

Ident.: DSC-49-40-10-00001942.0002001 / 12 DEC 16

APU AUTOMATIC SHUTDOWN

In the case of an APU failure or misbehavior, the APU may automatically shut down, without a cooling period, in order to avoid subsequent damage.
After more than three consecutive APU start attempts, the flight crew should wait 60 min before a new start attempt.

L2 The failures are associated with one of the following ECAM alert:
- APU AUTO SHUTDOWN (*Refer to procedure*),
- APU FAULT (*Refer to procedure*).

L3

Shutdown Conditions	Associated ECAM Alert On Ground	Associated ECAM Alert In Flight
N overspeed: N is more than approx. 106 %	APU AUTO SHUTDOWN	APU AUTO SHUTDOWN
ECB failure		
Loss of N overspeed protection		
Bleed air reverse flow		
APU oil filter clogged		APU FAULT
Inlet overheat		
Generator oil high temperature		
EGT Limit Exceeded: EGT is more than approx. 700 °C		
APU oil low pressure		
No DC power		
N underspeed: N is less than approx. 60 %, or more than 60 % with low acceleration.		
SGCU overheat (after several start attempts)		
APU oil high temperature		

Ident.: DSC-49-40-10-00001943.0001001 / 06 NOV 14

APU EMERGENCY SHUTDOWN

An immediate APU emergency shutdown, without a cooling period, can occur when one of the following occurs:
- The APU FIRE pb of the overhead panel is pressed
- The APU EMERGENCY SHUTDOWN sw of the external refuel panel (ERP) is pressed
- The APU SHUT OFF sw of the Maintenance Nose Gear panel is pressed

L2 Associated with the following ECAM alert: APU EMER SHUTDOWN (*Refer to procedure*).

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AIRCRAFT SYSTEMS

52 - DOORS

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DSC-52-10 Overview

Overview.. A
Architecture.. B

DSC-52-20 Avionics Bay Access Doors and Hatch

DSC-52-20-10 System Description

Overview.. A
FWD Avionics Bay.. B
Aft Avionics Bay.. C

DSC-52-20-20 Controls and Indicators

Cockpit View.. A
DOOR/OXYGEN SD page.. B

DSC-52-30 Cabin Doors

DSC-52-30-10 System Description

Passenger Doors.. A
Escape Slides.. B

DSC-52-30-20 Controls and Indicators

Cockpit View.. A
DOOR/OXYGEN SD Page.. B
Exterior of the Aircraft.. C
Interior of the Aircraft.. D

DSC-52-30-30 How to

Inside the Aircraft - How to Operate Passenger Doors.. A

DSC-52-30-40 Temporary Abnormal Behavior

Erroneous Activation of the CABIN PRESSURE WARNING Lights Without Real Residual Differential Pressure....A

DSC-52-40 Cockpit Doors

DSC-52-40-10 System Description

Overview.. A
Cockpit Door.. B
Cockpit Door Surveillance System C
Privacy Door (If Installed)..D

Continued on the following page

Continued from the previous page

DSC-52-40-20 Controls and Indicators

Cockpit View........A
Audio Indicators........B
CKPT DOOR CTLR Panel........C
CKPT DOOR LCKG SYS pb-sw........D
CKPT DOOR Panel........E
Cockpit Door Keypad........F
ECP........G
Privacy Door Keypad (If Installed)........H
VIDEO SD page........I

DSC-52-40-30 How to

How to Operate the Cockpit Door........A
How to Operate the Privacy Door ◁ ....B

DSC-52-50 Cockpit Escape Hatch

DSC-52-50-10 System Description

Cockpit Escape Hatch........A

DSC-52-50-20 Controls and Indicators

Cockpit View........A
Cockpit Escape Hatch........B
DOOR/OXYGEN SD page........C

DSC-52-50-30 How to

How to Open the Cockpit Escape Hatch........A

DSC-52-60 Cargo Doors

DSC-52-60-10 System Description

Overview........A
Forward (FWD) and Aft cargo doors........B
Bulk Cargo Door........C

DSC-52-60-20 Controls and Indicators

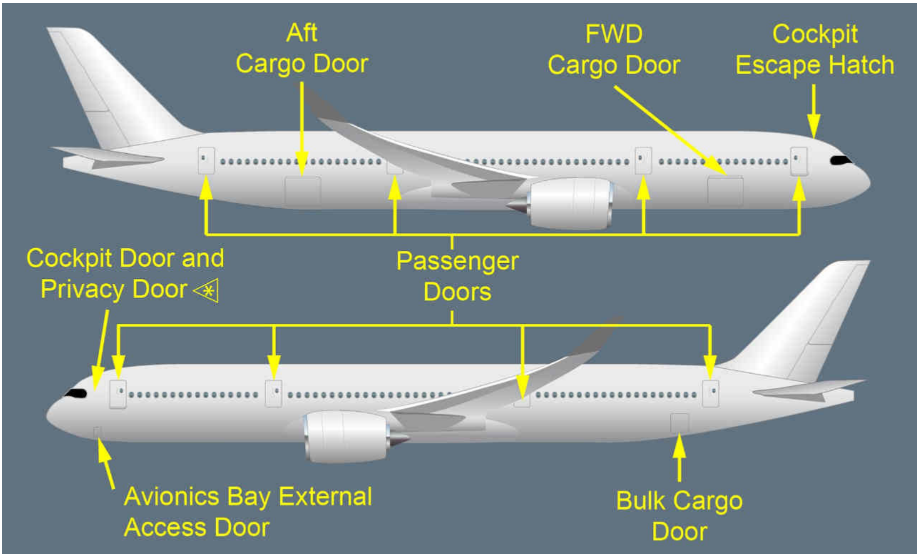
Cockpit View........A
DOOR/OXYGEN SD Page........B
FWD and Aft Cargo Doors........C

OVERVIEW

Ident.: DSC-52-10-00001948.0002001 / 09 MAR 16
Applicable to: ALL

The aircraft has:

- In the cabin:
  8 passenger doors.
  The crewmembers manually control the cabin doors.
- In the cockpit:
  - One cockpit door
  - One cockpit escape hatch
  - One privacy door ◁ .
- In the cargo compartments:
  Three cargo compartment doors.
- In the avionics bays:
  - One external door for access from outside the aircraft
  - Two internal doors for access from the cargo compartments
  - One hatch for access from the cockpit.


Aft Cargo Door
FWD Cargo Door
Cockpit Escape Hatch
Cockpit Door and Privacy Door ◁
Passenger Doors
Avionics Bay External Access Door
Bulk Cargo Door

ARCHITECTURE

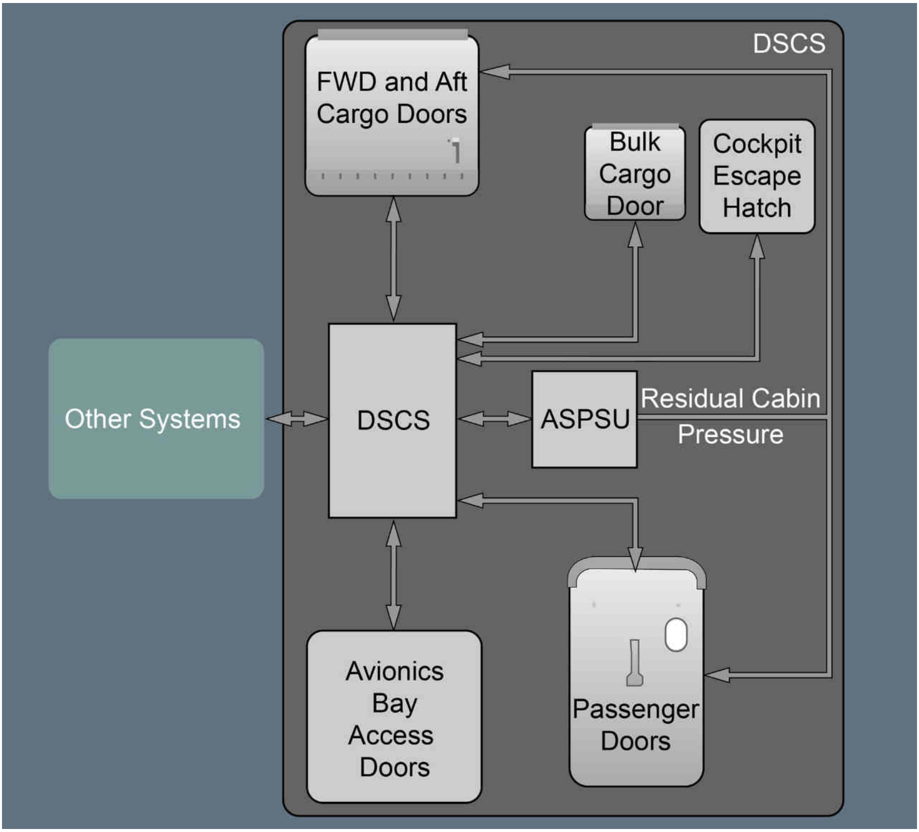
Applicable to: ALL

Ident.: DSC-52-10-GARCH-00002534.0001001 / 27 FEB 17

The Doors and Slides Control System (DSCS) monitors:

- The passenger doors and associated slides (*Refer to DSC-52-30-10 Passenger Doors*)
- The cargo doors (*Refer to DSC-52-60-10 Overview*)
- The external and internal access doors to the avionics bays (*Refer to DSC-52-20-10 Overview*)
- The cockpit escape hatch (*Refer to DSC-52-50-10 Cockpit Escape Hatch*).

Architecture


DSCS
FWD and Aft Cargo Doors
Bulk Cargo Door
Cockpit Escape Hatch
Other Systems
DSCS
ASPSU
Residual Cabin Pressure
Avionics Bay Access Doors
Passenger Doors

Ident.: DSC-52-10-GARCH-00002535.0001001 / 24 APR 14

L2 DOORS AND SLIDES CONTROL SYSTEM

L3 The Doors and Slides Control System (DSCS) has:

- Four DSCS applications hosted in CPIOMs H31, H32, H33 and H34
- Several CRDCs.

L2 The main functions of the DSCS are to:

- Monitor and display on the DOOR/OXYGEN SD page the status of:
  - The passenger doors
  - The escape slides
  - The cargo doors
  - The cockpit escape hatch
  - The external access door to the forward avionics bay.
- Monitor the status of the two internal access doors to the forward and aft avionics bays.
- Control the automatic operations of forward and aft cargo doors.
- Manage:
  - The residual cabin pressure indication
  - The inhibition of cabin and cargo pressurization if one or more passenger or cargo doors are not locked.

Ident.: DSC-52-10-GARCH-00002536.0001001 / 24 APR 14

L2 AUTONOMOUS STANDBY POWER SUPPLY UNIT

The Autonomous Standby Power Supply Unit (ASPSU) detects and indicates the residual cabin pressure.
In the case of an electrical power loss, the ASPSU provides electrical power for the residual cabin pressure indication for 45 min.

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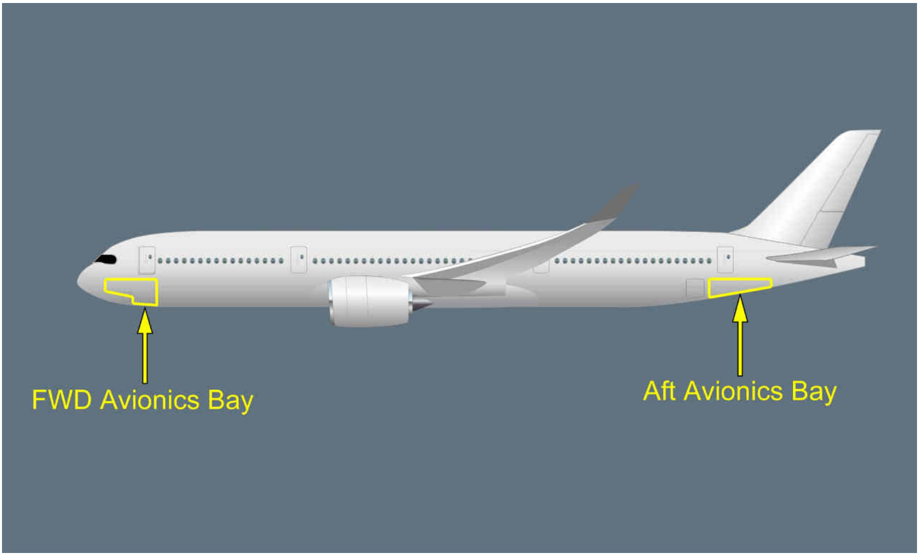
OVERVIEW

Ident.: DSC-52-20-10-00002576.0001001 / 24 APR 14
Applicable to: ALL

The aircraft has two avionics bays:
- The FWD avionics bay
- The Aft avionics bay.

Overview



FWD AVIONICS BAY

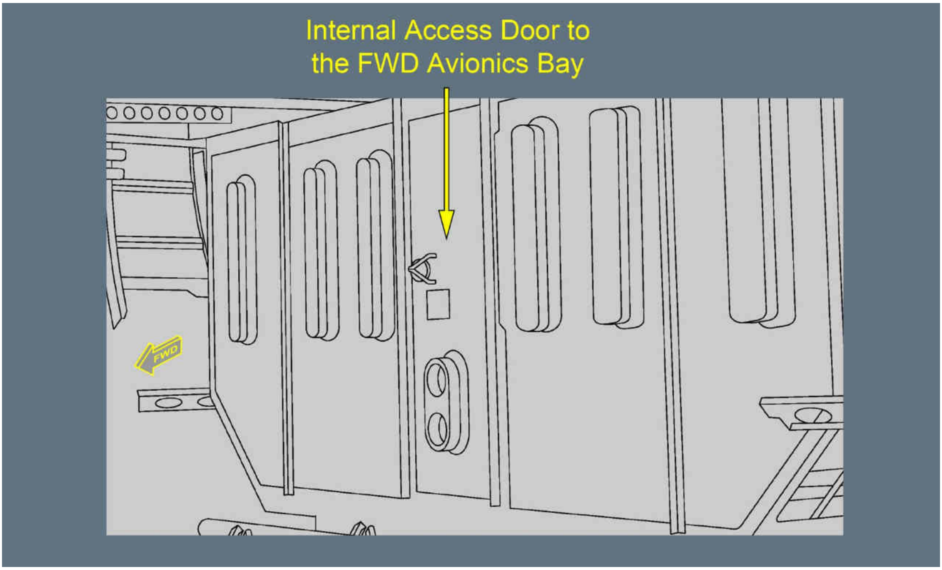
Ident.: DSC-52-20-10-00002577.0001001 / 24 APR 14

Applicable to: ALL

It is possible to access the FWD avionics bay from:

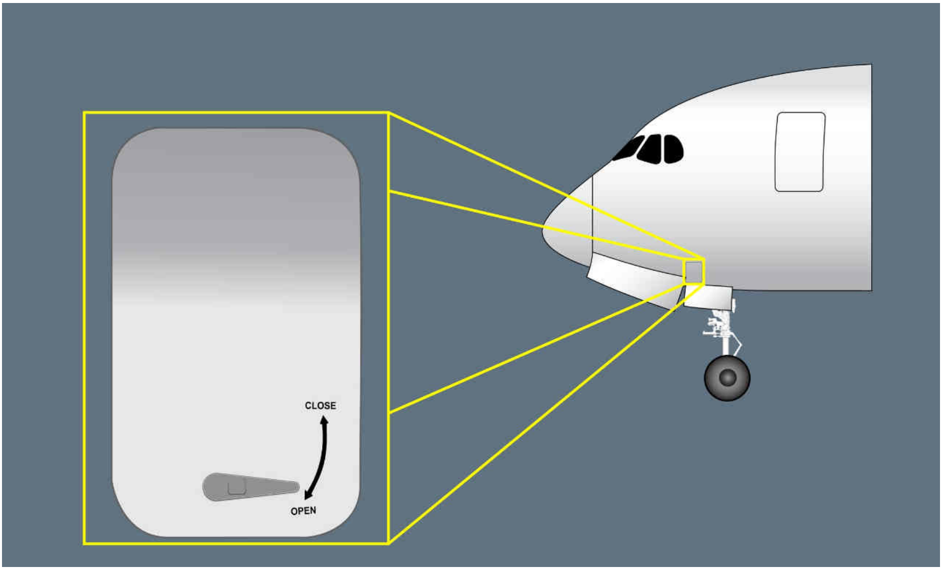
- The forward cargo compartment through one internal access door

Internal Access Door to the FWD Avionics Bay



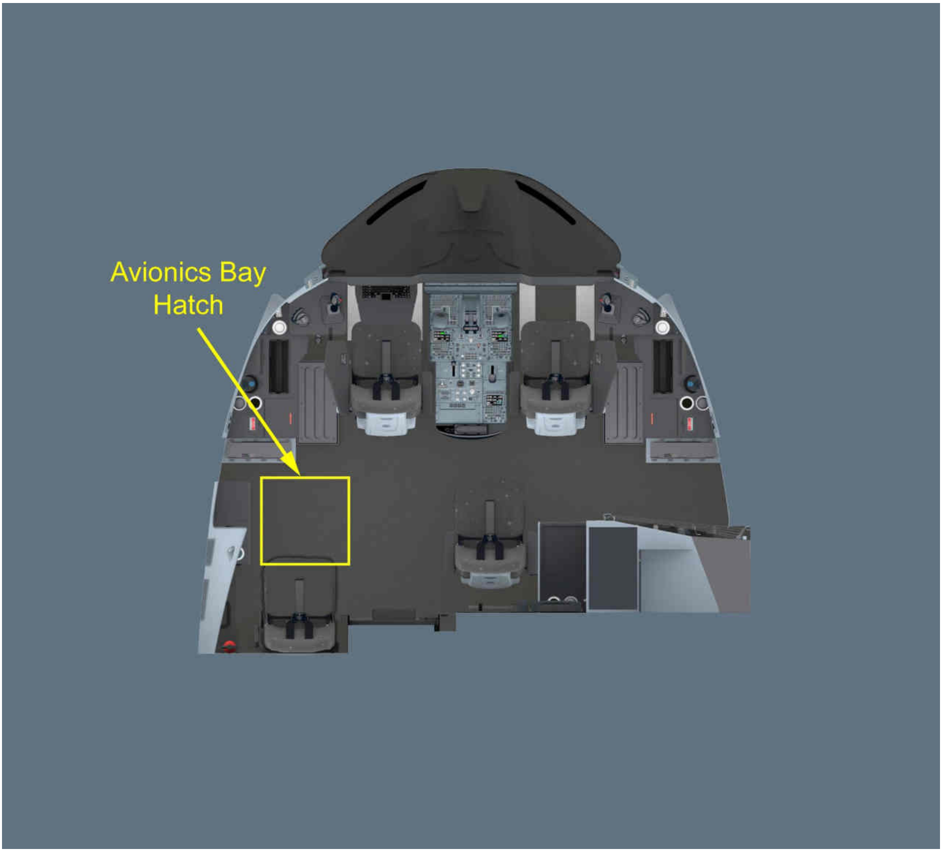
- Outside the aircraft, via an inward-opening external access door.
  This door can be manually operated from either the interior or the exterior of the aircraft.

External Access Door to the FWD Avionics Bay



- The cockpit, through a hatch on the floor.
  A ladder is available in the avionics bay for access from the cockpit.

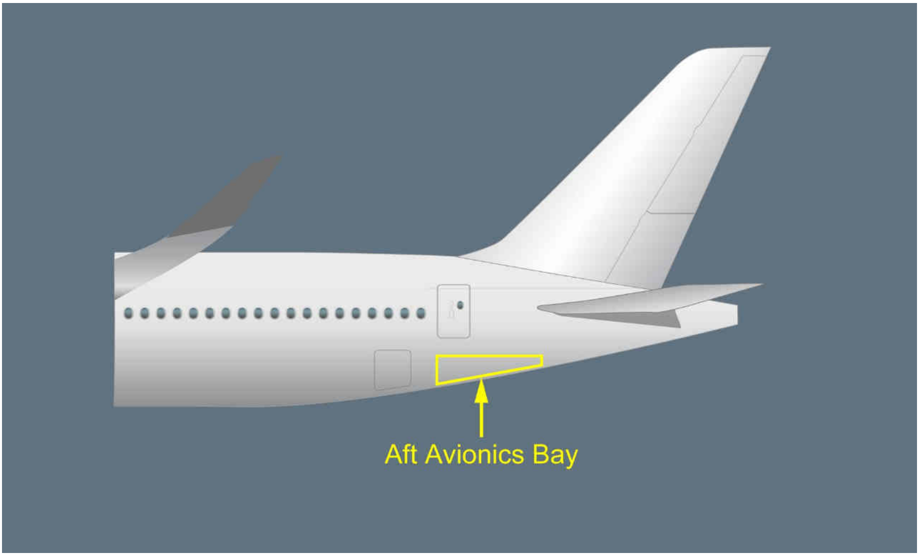
Cockpit Hatch to the FWD Avionics Bay



AFT AVIONICS BAY

Ident.: DSC-52-20-10-00002579.0001001 / 24 APR 14
Applicable to: ALL

The aft avionics bay is accessible from the bulk cargo compartment through one internal access door.


Aft Avionics Bay

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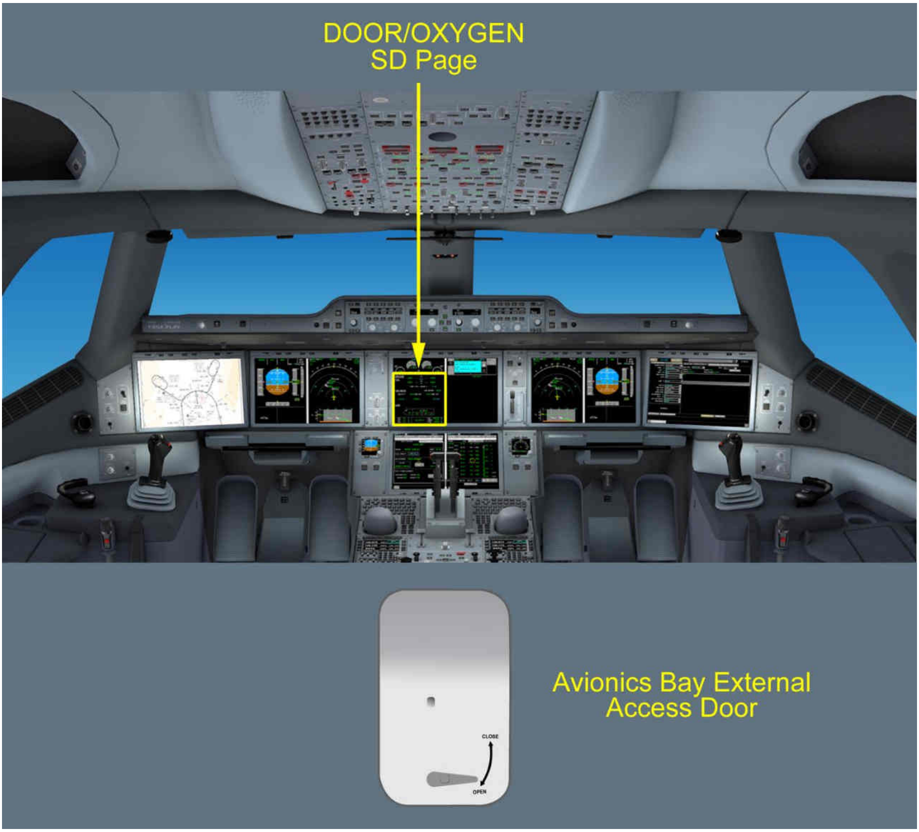
COCKPIT VIEW

Ident.: DSC-52-20-20-00014128.0001001 / 24 APR 14
Applicable to: ALL

Cockpit View

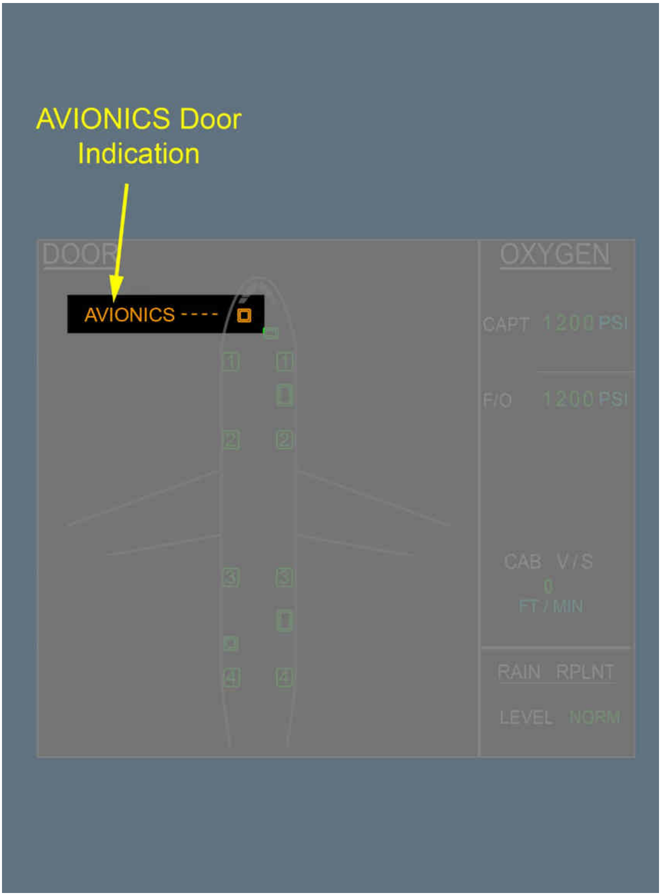

DOOR/OXYGEN
SD Page
Avionics Bay External
Access Door
CLOSE
OPEN

DOOR/OXYGEN SD PAGE

Applicable to: ALL

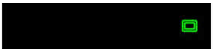
Ident.: DSC-52-20-20-10-00002581.0001001 / 04 MAY 18

DOOR/OXYGEN SD page - External Access Door to the FWD Avionics Bay


AVIONICS Door Indication
DOOR
AVIONICS ----
1
1
2
2
3
3
4
4
OXYGEN
CAPT 1200 PSI
F/O 1200 PSI
CAB V/S
0
FT / MIN
RAIN RPLNT
LEVEL NORM

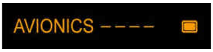
Ident.: DSC-52-20-20-10-00002582.0001001 / 08 JUL 19

AVIONICS DOOR INDICATION



The door is closed.

L12



The door is not closed.
Associated with the following ECAM alert: DOOR AVNCS NOT CLOSED (*Refer to procedure*)

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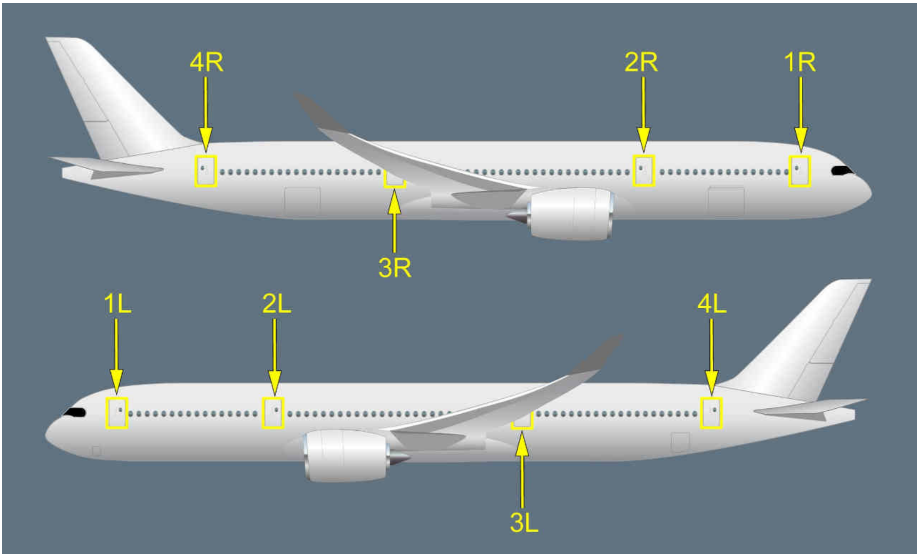
PASSENGER DOORS

Ident.: DSC-52-30-10-00002539.0001001 / 24 APR 14
Applicable to: ALL

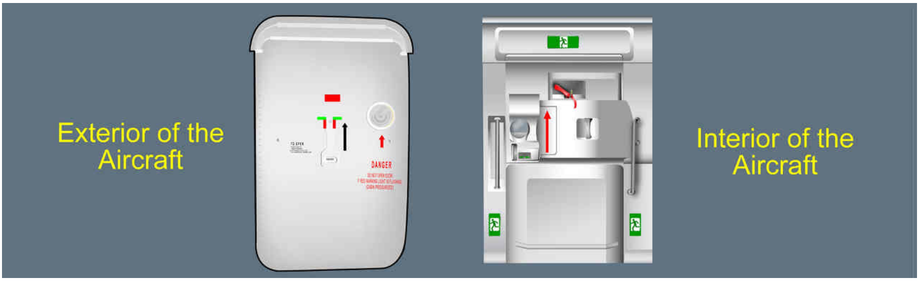
The aircraft has 8 passenger doors.

Door Arrangement



The doors open forward. The opening/locking of the door is performed mechanically by moving the door handle.

L3 The dimensions of the doors are :
- Doors 1, 2 and 4:
  - Width = 1.262 m,
  - Height = 2.164 m
- Door 3:
  - Width = 1.262 m
  - Height = 2.113 m.



ESCAPE SLIDES

Ident.: DSC-52-30-10-00024149.0001001 / 24 SEP 19
Applicable to: ALL

Each pair of doors is associated with a maximum number of passengers as follows:

Exit	Passenger exit pair rating
Type A+ (dual-lane slide)	120
Type A (dual-lane slide)	110
Type C (single-lane slide)	55

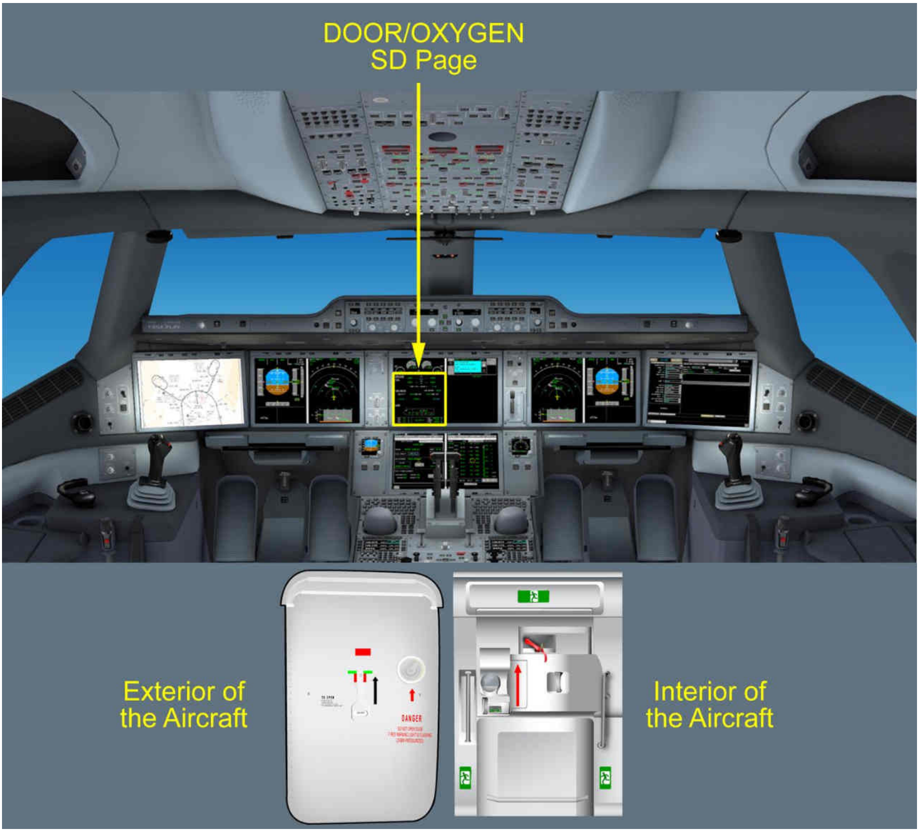
Depending on the aircraft configuration, each pair of door can be defined as follows:

Doors	Type A+	Type A	Type C
1L/1R	YES	YES	YES
2L/2R	YES	YES	YES
3L/3R	YES	YES	YES
4L/4R	YES	YES	NO

COCKPIT VIEW

Ident.: DSC-52-30-20-00002543.0001001 / 24 APR 14
Applicable to: ALL

Cockpit View

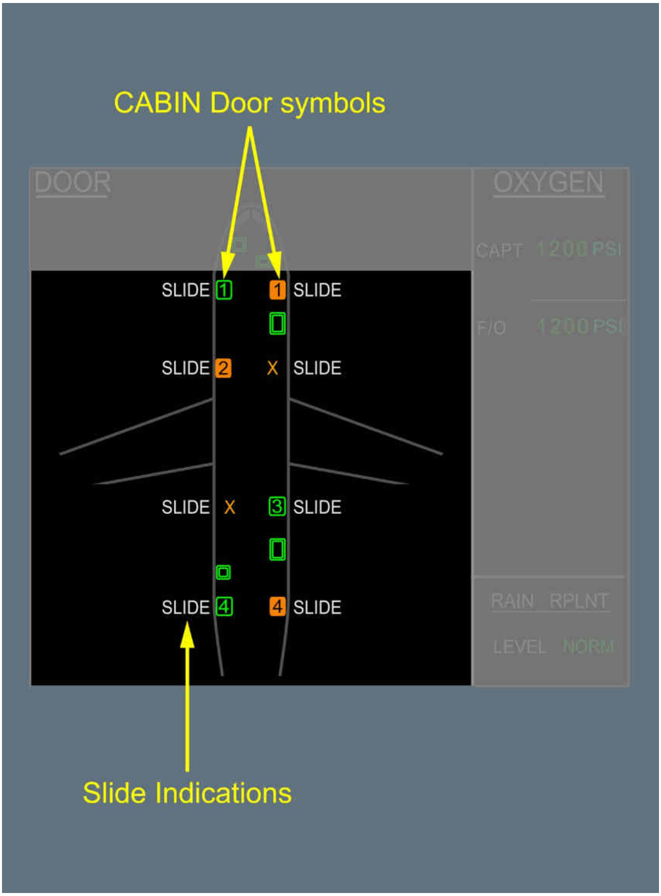

DOOR/OXYGEN
SD Page
Exterior of
the Aircraft
Interior of
the Aircraft
DANGER

DOOR/OXYGEN SD PAGE

Applicable to: ALL

Ident.: DSC-52-30-20-30-00002546.0001001 / 24 APR 14

DOOR/OXYGEN SD page - Cabin Door


CABIN Door symbols
DOOR
OXYGEN
CAPT 1200 PSI
F/O 1200 PSI
SLIDE 1
1 SLIDE
SLIDE 2
X SLIDE
SLIDE X
3 SLIDE
SLIDE 4
4 SLIDE
RAIN RPLNT
LEVEL NORM
Slide Indications

Ident.: DSC-52-30-20-30-00002561.0001001 / 04 MAY 18

CABIN DOOR SYMBOL

1	The door is closed and locked.

L12

1	The door is not locked. Associated with the following ECAM alert: DOOR 1(2)(3)(4)L(R) NOT CLOSED (*Refer to procedure*)

Ident.: DSC-52-30-20-30-00002563.0001001 / 04 MAY 18

SLIDE INDICATION

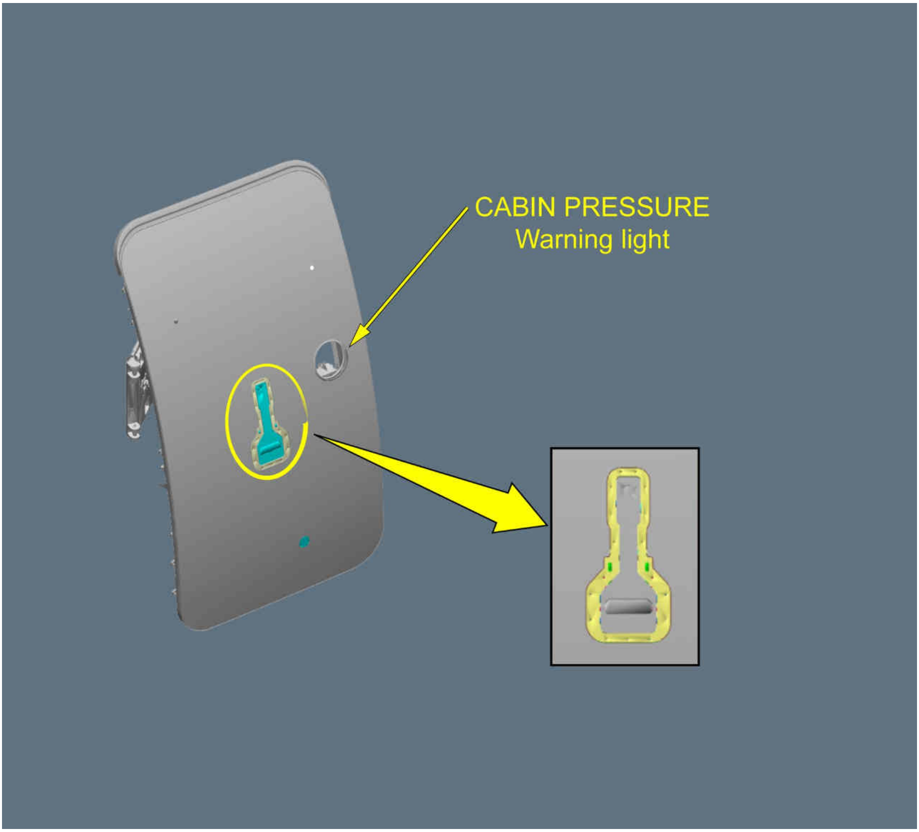
SLIDE	The slide is armed. When there is no display, the slide is disarmed.

EXTERIOR OF THE AIRCRAFT

Applicable to: ALL

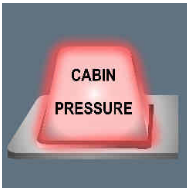
Ident.: DSC-52-30-20-20-00002545.0001001 / 24 APR 14

General


CABIN PRESSURE
Warning light

Ident.: DSC-52-30-20-20-00013723.0001001 / 28 APR 17

CABIN PRESSURE WARNING LIGHT



Flashes red, when:
- The aircraft is on ground
- The related slide is disarmed
- The differential cabin pressure is above 0.036 PSI
- Both engines are OFF.

Associated with an aural alert if the door control handle is lifted up.

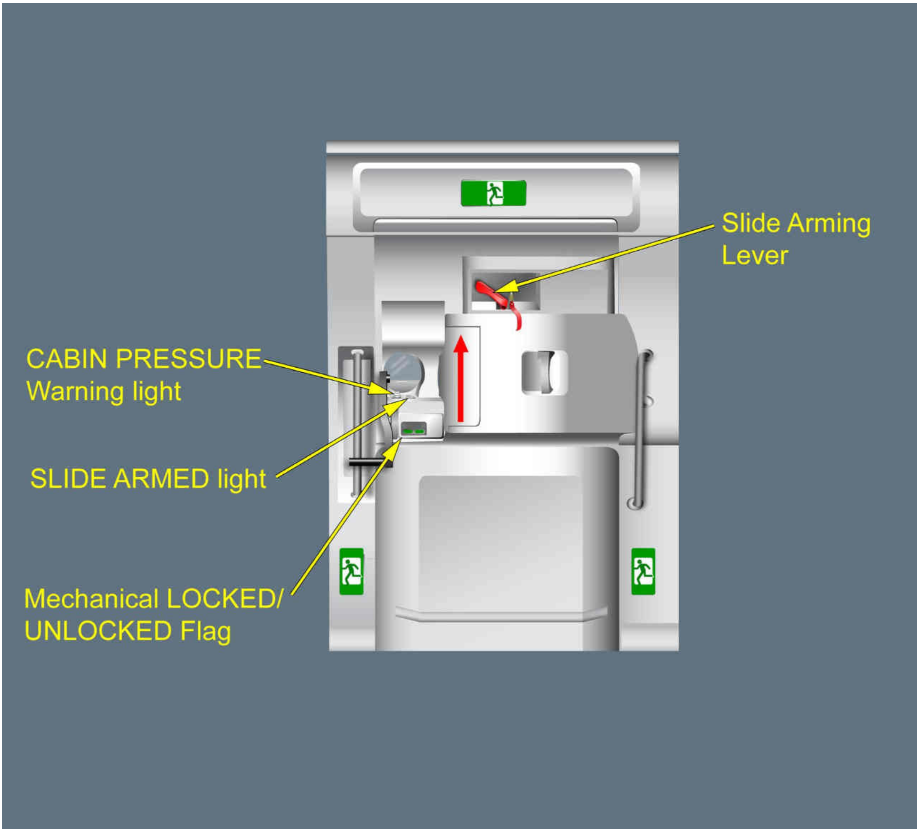
WARNING	Do not open the door if the CABIN PRESSURE light is flashing on the door window (cabin pressurized).

INTERIOR OF THE AIRCRAFT

Applicable to: ALL

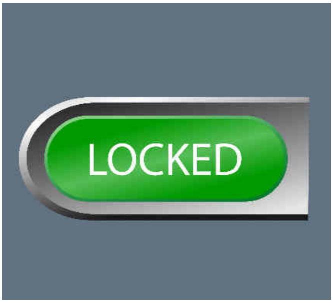
Ident.: DSC-52-30-20-10-00013668.0001001 / 24 APR 14

General

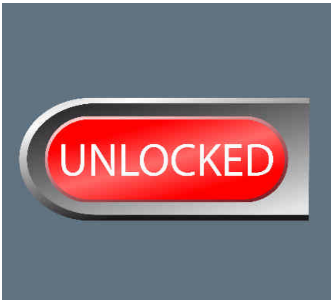

Slide Arming Lever
CABIN PRESSURE Warning light
SLIDE ARMED light
Mechanical LOCKED/ UNLOCKED Flag

Ident.: DSC-52-30-20-10-00002554.0001001 / 24 APR 14

MECHANICAL LOCKED/UNLOCKED FLAG



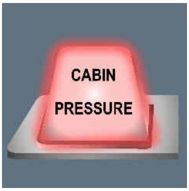
The door is locked.
The door control handle is in the lowest position.



The door is unlocked.
The door control handle is not in the lowest position.

Ident.: DSC-52-30-20-10-00002555.0001001 / 28 APR 17

CABIN PRESSURE WARNING LIGHT



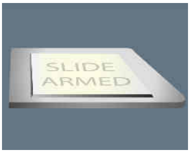
Flashes red, when:
- The aircraft is on ground
- The related slide is disarmed
- The differential cabin pressure is above 0.036 PSI
- Both engines are OFF.

Associated with an aural alert if the door control handle is lifted up.

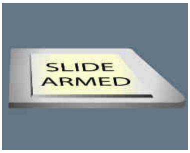
WARNING	Do not open the door if the CABIN PRESSURE light is flashing on the door window (cabin pressurized).

Ident.: DSC-52-30-20-10-00002556.0001001 / 24 APR 14

SLIDE ARMED LIGHT


SLIDE
ARMED

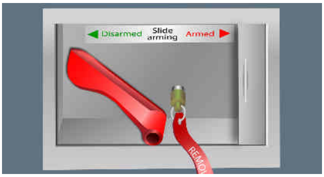
The slide arming lever is set to the Disarmed position.


SLIDE
ARMED

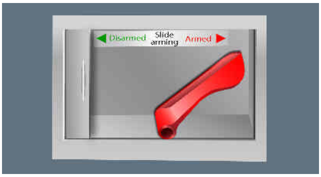
The slide arming lever is set to the Armed position, and someone opens the door.

Ident.: DSC-52-30-20-10-00002557.0001001 / 24 APR 14

SLIDE ARMING LEVER


Disarmed
Slide arming
Armed

Disarms the slide.

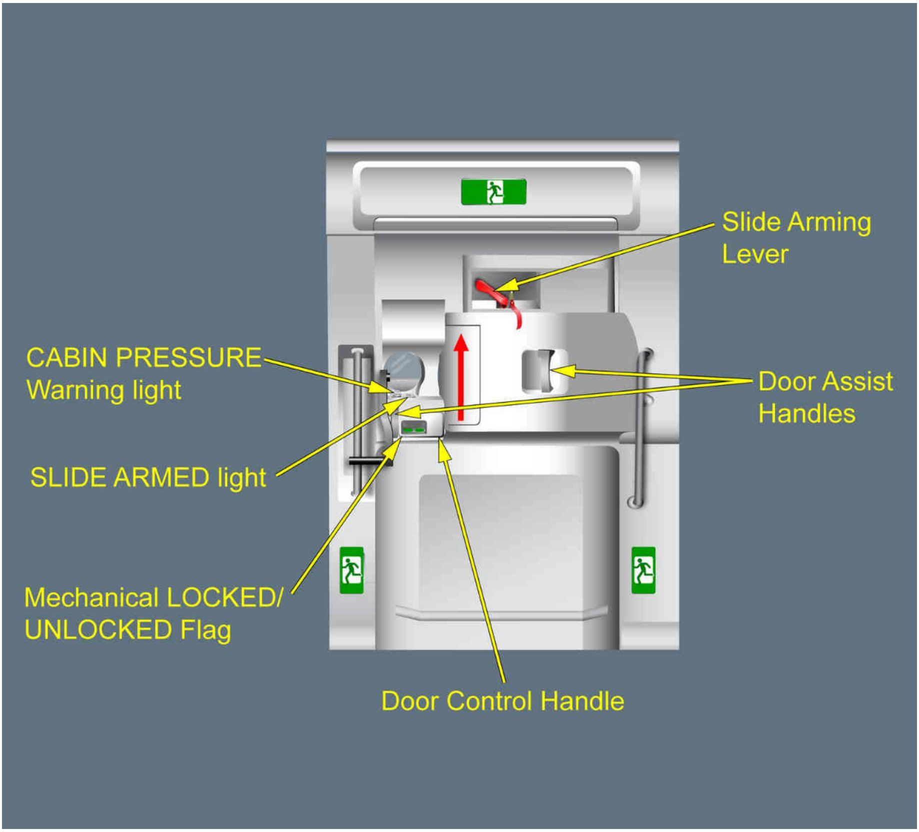

Disarmed
Slide arming
Armed

Arms the slide.

INSIDE THE AIRCRAFT - HOW TO OPERATE PASSENGER DOORS

Ident.: DSC-52-30-30-00002564.0001001 / 24 APR 14
Applicable to: ALL

Passenger Door - Inside


Slide Arming Lever
CABIN PRESSURE Warning light
Door Assist Handles
SLIDE ARMED light
Mechanical LOCKED/ UNLOCKED Flag
Door Control Handle

For the detailed operational procedures for door opening and closing, *Refer to CCOM/09-10-40-10-10 How to Open a Cabin Door/Exit from the Inside* and *Refer to CCOM/09-10-40-10-10 How to Close a Cabin Door/Exit from the Inside*.

WARNING	Do not open the door if the CABIN PRESSURE light is flashing on the door window (cabin pressurized).

HOW TO OPEN THE DOOR

In normal operation (i.e. no emergency evacuation), disarm the escape slide.
Lift the door control handle fully up to unlock the door.
Grasp one of the door assist handles and manually move the door in the forward direction until the door is latched in the fully open position.

HOW TO CLOSE THE DOOR

Grasp one of the door assist handles and manually move the door in the aft direction, and stop the movement when facing the door frame.
When the door is facing the door frame, pull the door inwards the door frame.
Lower the door control handle to lock the door.

ERRONEOUS ACTIVATION OF THE CABIN PRESSURE WARNING LIGHTS WITHOUT REAL RESIDUAL DIFFERENTIAL PRESSURE

Ident.: DSC-52-30-40-00024739.0001001 / 04 MAY 18
Applicable to: ALL

DESCRIPTION

At touchdown, as per design, the Cabin Pressure Control System (CPCS) automatically commands the opening of the Outflow Valves (OFVs) to reduce the differential pressure to a safe level, even with both packs in operation.
However, the sensors used to detect residual differential pressure for the CABIN PRESSURE WARNING lights have a defect and may temporarily send an erroneous message to the Doors and Slides Control System (DSCS), in charge of the activation of these lights.
This erroneous message may result in an erroneous activation of the CABIN PRESSURE WARNING lights on the cabin and cargo doors. Based on current event reports, this erroneous activation of the CABIN PRESSURE WARNING lights can last up to 30 min.

HOW TO CONFIRM THE ABSENCE OF RESIDUAL DIFFERENTIAL PRESSURE

Before cabin(cargo) door opening, if the CABIN PRESSURE WARNING lights flash, the flight crew must check that:

- There is no CAB PRESS EXCESS RESIDUAL DIFF PRESS ECAM alert triggered, and
- On the CAB PRESS SD page:
  - The DELTA P indication is 0 PSI, and
  - Both OFVs are indicated fully open.

If all the above conditions are confirmed, the flight crew can order the cabin(ground) crew to open the cabin(cargo) doors regardless of the CABIN PRESSURE WARNING lights status.
After opening the cabin(cargo) doors, if the CABIN PRESSURE WARNING lights no longer flash, there is no need to make a technical logbook entry.
However, if the CABIN PRESSURE WARNING lights keep flashing after door opening, a technical logbook entry is necessary, as a DSCS failure may be the cause for the issue.

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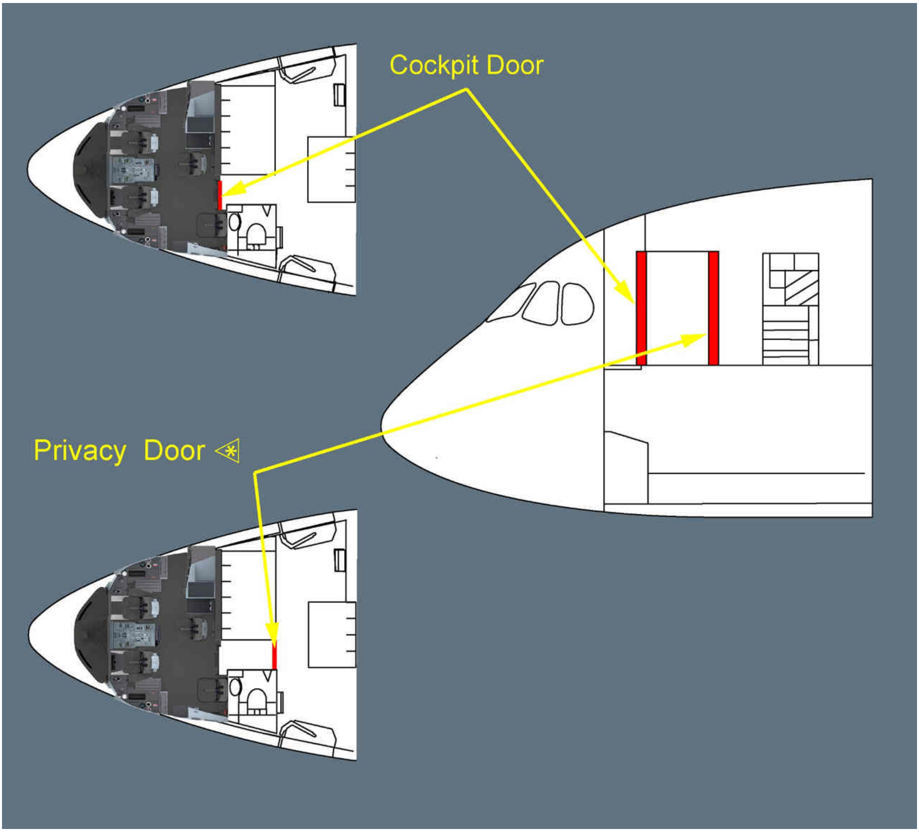
OVERVIEW

Ident.: DSC-52-40-10-00001949.0002001 / 09 MAR 16

Applicable to: ALL



COCKPIT DOOR

Applicable to: ALL

Ident.: DSC-52-40-10-GCOCK-00001950.0001001 / 09 MAR 16

The cockpit door separates the cockpit from the cabin.

The cockpit door opens toward the cockpit.

The cockpit door automatically locks, as soon as it closes, when the Cockpit Door Locking System (CDLS) is powered.

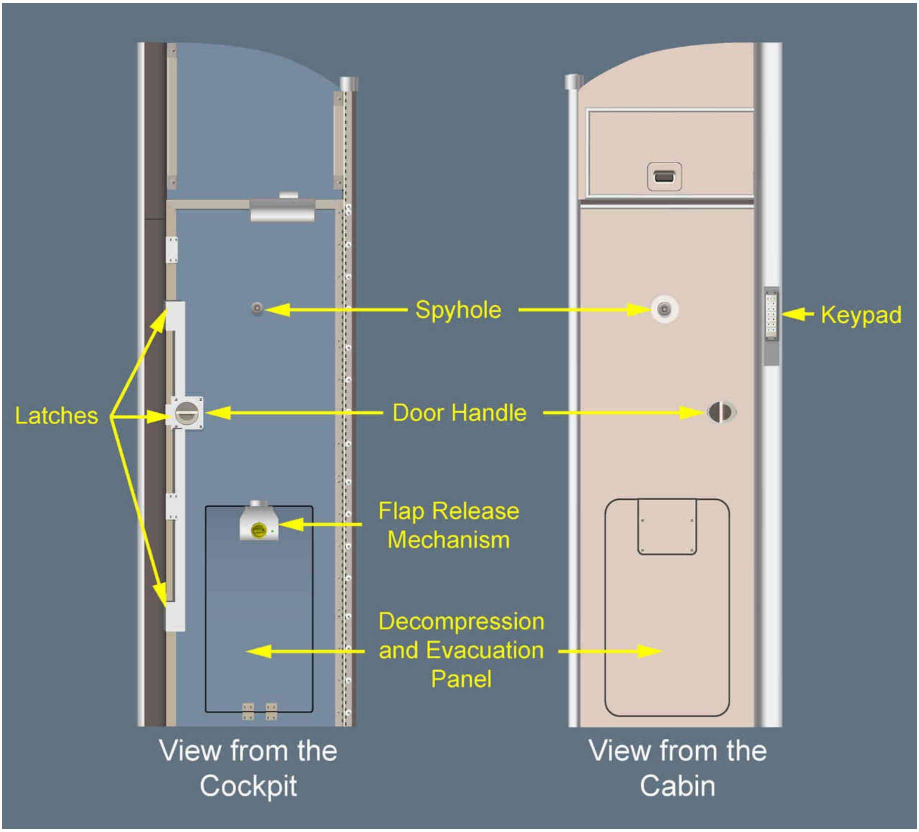
L2 The CDLS electrically locks and unlocks the cockpit door.

L1 If the CDLS fails, the door unlocks but remains closed.
The flight crew uses the CKPT DOOR sw to either open the cockpit door, or to refuse access to the cockpit.

L2 For more information on the CKPT DOOR sw, *Refer to DSC-52-40-20 CKPT DOOR sw*.

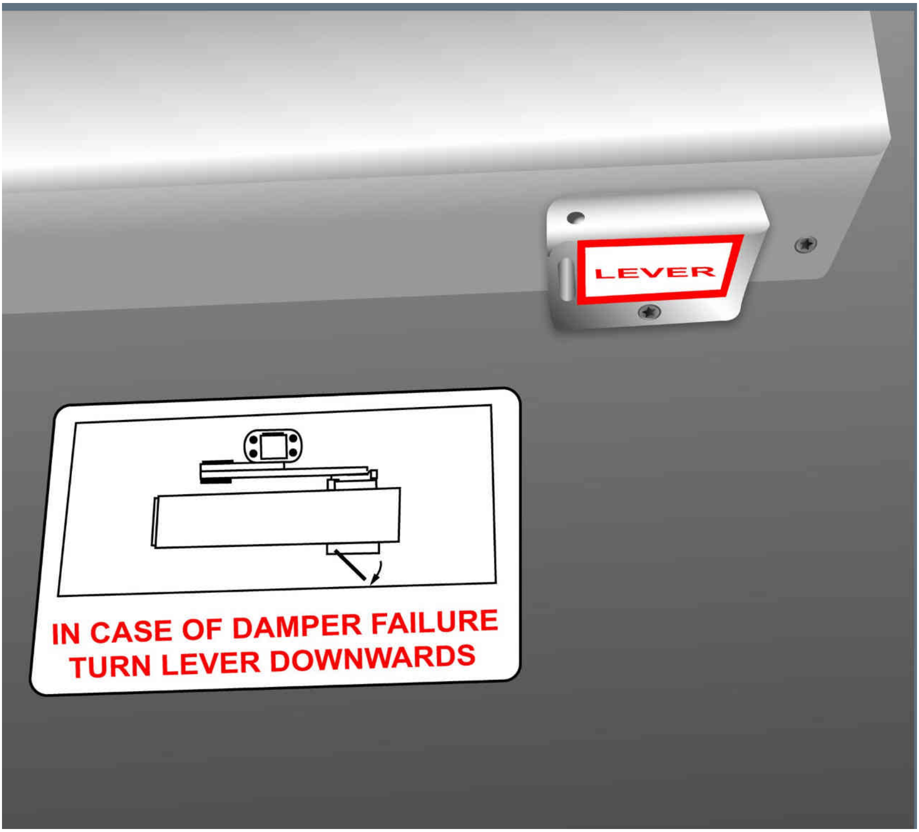
L1 At any time, the flight crew can use the door handle to manually open the cockpit door from the cockpit.

Cockpit Door Description


Spyhole
Keypad
Latches
Door Handle
Flap Release Mechanism
Decompression and Evacuation Panel
View from the Cockpit
View from the Cabin

L2 The cockpit door has a damper that slows down the door when the door is opened or closed. In the case of a damper blockage, the flight crew has to pull the lever to disengage the noise damper in order to close the door.

Noise Damper


LEVER
IN CASE OF DAMPER FAILURE
TURN LEVER DOWNWARDS

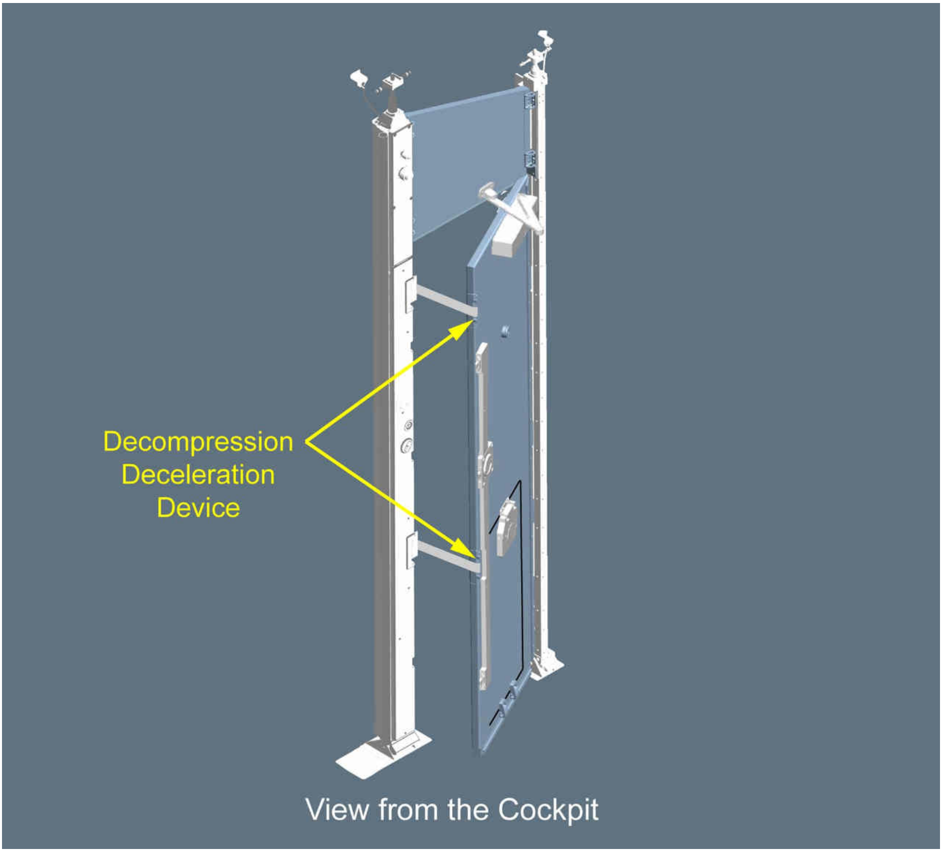
Ident.: DSC-52-40-10-GCOCK-00001953.0001001 / 24 APR 14

PROTECTION AGAINST DECOMPRESSION

In the case of a rapid decompression in the cockpit:

- Two pressure sensors on the CKPT DOOR CTLR panel detect the rapid drop of pressure.
  L2 For more information on the CKPT DOOR CTLR panel, *Refer to DSC-52-40-20 CKPT DOOR CTLR Panel*.
- L1 The cockpit door automatically opens.
  L3 The cockpit door automatically opens when the pressure drops by more than 10 PSI/s.
  L1 Two Decompression Deceleration Devices (DDDs) slow down the opening of the cockpit door. After decompression, the flight crew must pull the buckle away from the hook in order to exit the cockpit.

Decompression Deceleration Device



CAUTION	When the cockpit door is violently or rapidly opened, the DDDs can be triggered. Do not touch the DDDs, in order to prevent damage to these devices.

In the case of a rapid decompression in the cabin, the decompression and evacuation panel automatically opens toward the cabin.

L3 The decompression and evacuation panel automatically opens when the differential pressure between the cabin and the cockpit is above 0.58 PSI.

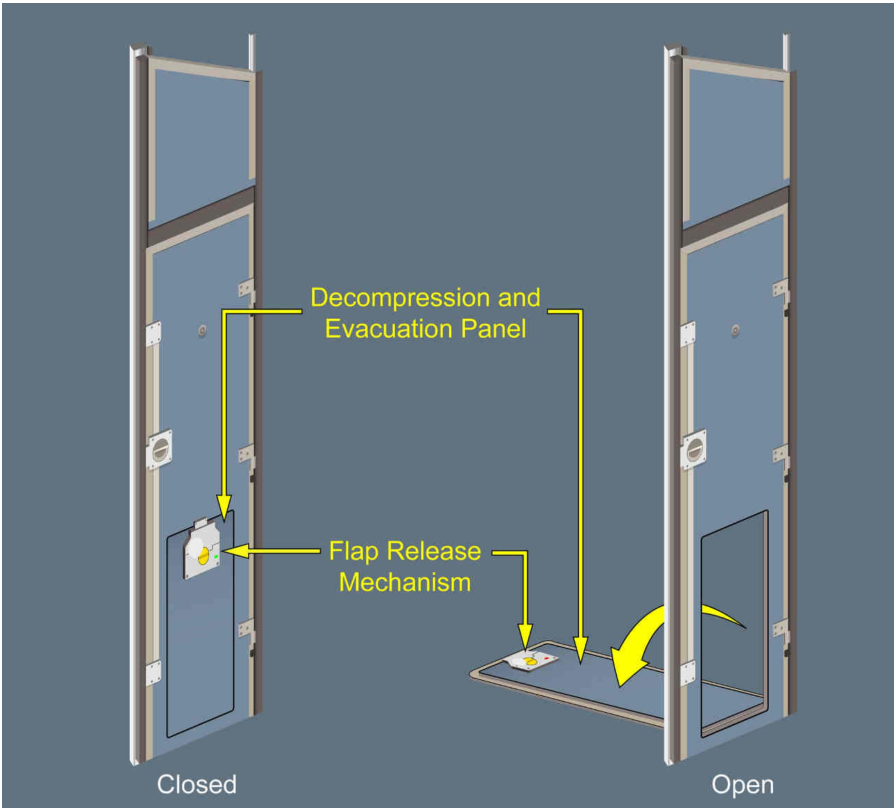
Ident.: DSC-52-40-10-GCOCK-00001954.0001001 / 09 MAR 16

DECOMPRESSION AND EVACUATION PANEL

The flight crew can evacuate the cockpit through the decompression and evacuation panel, when necessary.

The flight crew can manually operate the flap release mechanism in order to open the decompression and evacuation panel when:
- The cockpit door is jammed in the closed position
- An emergency situation occurs.

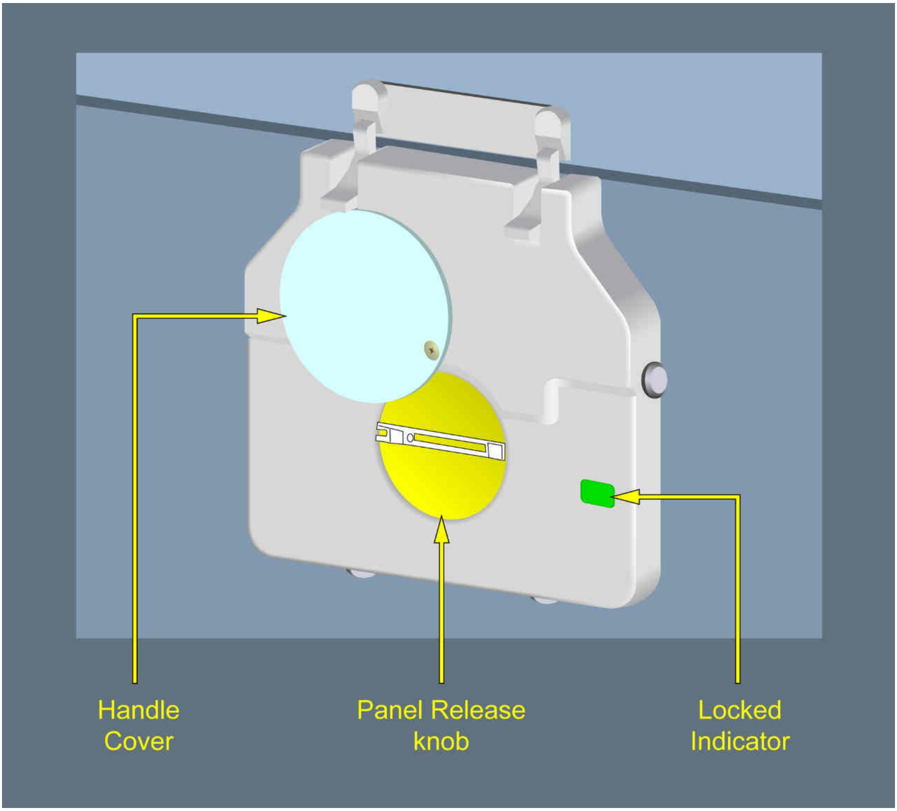
Decompression and Evacuation Panel


Decompression and Evacuation Panel
Flap Release Mechanism
Closed
Open

In order to open the decompression and evacuation panel the flight crew has to:

- Rotate the handle cover in order to access the panel release knob
- Push, then turn clockwise the panel release handle in order to unlock the decompression and evacuation panel
- Kick the decompression and evacuation panel toward the cabin.

Decompression and evacuation panel release mechanism



COCKPIT DOOR SURVEILLANCE SYSTEM ◁

Ident.: DSC-52-40-10-00011290.0001001 / 09 MAR 16
Applicable to: ALL

The Cockpit Door Surveillance System ◁ enables the flight crew to identify who is requesting entry to the cockpit, before authorizing (or not) their access.
For a detailed description, *Refer to DSC-31-CDS-110-10 Cockpit Door Surveillance System*.

PRIVACY DOOR (IF INSTALLED)

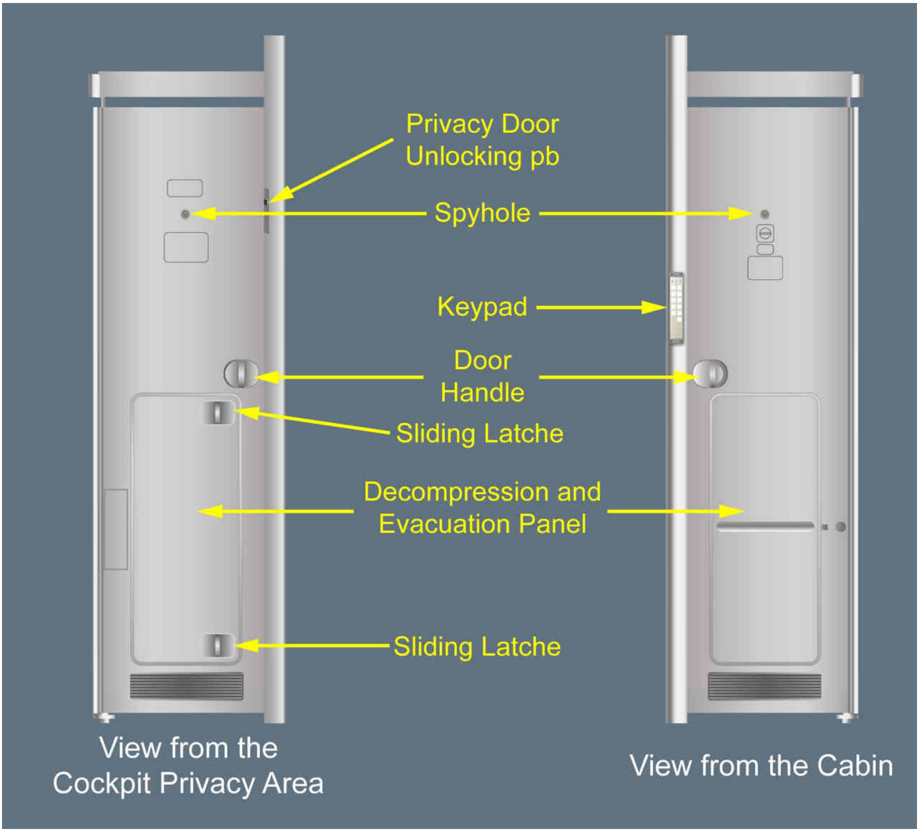
Applicable to: ALL

Ident.: DSC-52-40-10-GPRIV-00001952.0001001 / 09 MAR 16

The privacy door separates the cockpit privacy area from the cabin.
The privacy door opens toward the cockpit.
The privacy door automatically locks, as soon as it closes, when the Privacy Door Locking System (PDLS) is powered.
The crewmember unlocks the door to access the cockpit privacy area via a keypad.

Note: *The privacy door in closed and locked position does not provide the same security level as the cockpit door.*

Privacy Door ◁


Privacy Door
Unlocking pb
Spyhole
Keypad
Door
Handle
Sliding Latche
Decompression and
Evacuation Panel
Sliding Latche
View from the
Cockpit Privacy Area
View from the Cabin

Ident.: DSC-52-40-10-GPRIV-00001955.0001001 / 09 MAR 16

PROTECTION AGAINST DECOMPRESSION OF THE PRIVACY DOOR ◁

In the case of a rapid decompression in the cockpit, a release mechanism enables the privacy door to open automatically.

L3 The privacy door automatically opens when the differential pressure between the cabin and the cockpit is above 0.58 PSI.

L1 In the case of a rapid decompression in the cabin, the decompression and evacuation panel automatically opens toward the cabin.

L3 The decompression and evacuation panel automatically opens when the differential pressure between the cabin and the cockpit is above 0.58 PSI.

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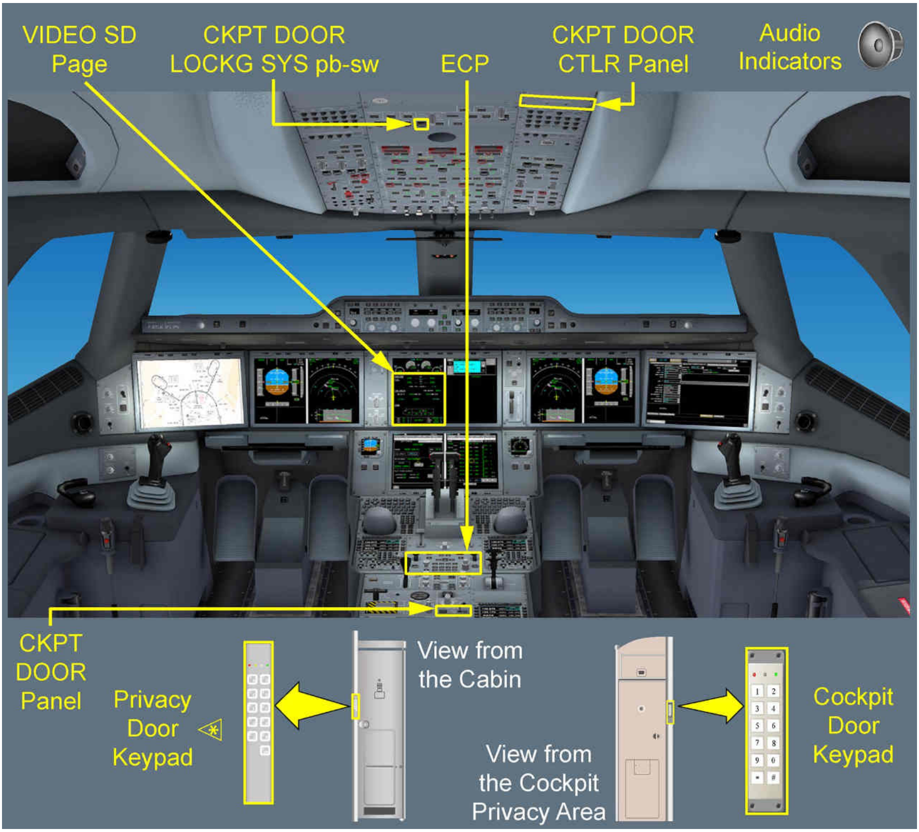
COCKPIT VIEW

Ident.: DSC-52-40-20-00001956.0002001 / 09 MAR 16
Applicable to: ALL

Cockpit View


VIDEO SD Page
CKPT DOOR LOCKG SYS pb-sw
ECP
CKPT DOOR CTLR Panel
Audio Indicators
CKPT DOOR Panel
Privacy Door Keypad
View from the Cabin
View from the Cockpit Privacy Area
Cockpit Door Keypad
1
2
3
4
5
6
7
8
9
0
*
#

AUDIO INDICATORS

Ident.: DSC-52-40-20-00014821.0001001 / 24 APR 14
Applicable to: ALL

L12

Audio Indicator	Condition or Cause	Duration (1)
Door Please (Sound and Synthetic Voice)	Routine access request to the cockpit.	Sounds one time.
Emergency Cockpit Door (Sound)	Emergency access request to the cockpit. Associated with the following ECAM alert: DOOR CKPT DOOR EMER OPENING IN PROGRESS (*Refer to procedure*)	Sounds until the flight crew locks or unlocks the door.

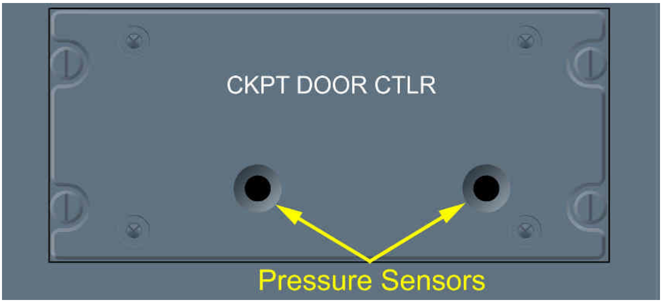
(1) *All audio indicators are canceled if the flight crew presses the EMER CANC pb on the ECP.*

CKPT DOOR CTLR PANEL

Applicable to: ALL

Ident.: DSC-52-40-20-GCKPP-00001959.0001001 / 24 APR 14

CKPT DOOR CTLR Panel



Ident.: DSC-52-40-20-GCKPP-00001968.0001001 / 24 APR 14

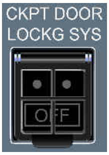
PRESSURE SENSORS

Two redundant pressure sensors enable the detection of a rapid decompression in the cockpit. When a defined pressure drop is detected, the pressure sensors enable the simultaneous opening of all the electrical latches of the cockpit door.

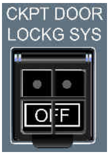
CKPT DOOR LCKG SYS PB-SW

Ident.: DSC-52-40-20-00001957.0001001 / 05 MAY 14
Applicable to: ALL

Maintenance personnel use this pushbutton-switch to unlock the cockpit door in order to ease ground operations (e.g. servicing, cleaning, maintenance, etc).


CKPT DOOR
LOCKG SYS
OFF

The cockpit door is locked.

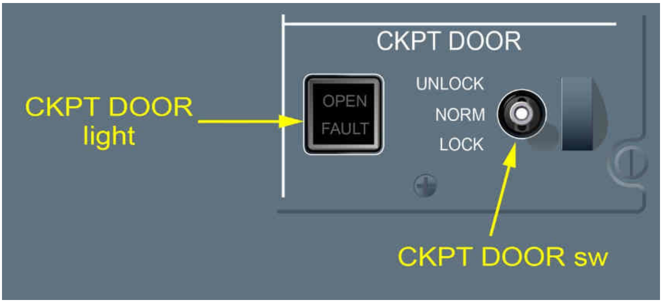

CKPT DOOR
LOCKG SYS
OFF

The cockpit door is unlocked, and the door is free to open from the cockpit or from the cabin.

CKPT DOOR PANEL

Applicable to: ALL

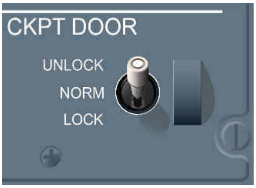
Ident.: DSC-52-40-20-GCKPD-00001958.0001001 / 24 APR 14


CKPT DOOR
light
CKPT DOOR
OPEN
FAULT
UNLOCK
NORM
LOCK
CKPT DOOR sw

CKPT DOOR Panel

Ident.: DSC-52-40-20-GCKPD-00001965.0001001 / 24 APR 14

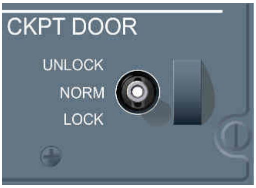
CKPT DOOR SW



Unlocks the door, as long as the flight crew maintains the UNLOCK position.

Note: *When the flight crew releases the switch, it goes back to the NORM position.*

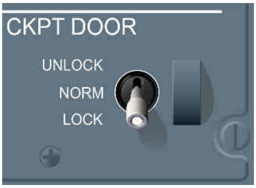
L12



The door is locked. If a crew member enters a routine access code on the keypad, the door remains locked.

Note: *If a crewmember enters the emergency access code on the keypad, the door automatically unlocks for 5 s, after a defined period of time. The Operator defines this period of time.*

L12

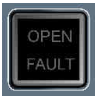


Locks the door, and inhibits the keypad and the buzzer for a defined period of time.
The Operator defines this period of time (between 5 min and 20 min).

Note: *When the flight crew releases the switch, it goes back to the NORM position.*

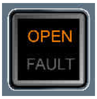
Ident.: DSC-52-40-20-GCKPD-00001966.0001001 / 24 APR 14

CKPT DOOR LIGHT



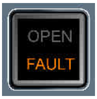
The cockpit door is locked.

L12

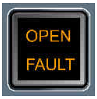


Steady: The door is unlocked or opened.
Flashing: A crew member enters an emergency access code on the keypad.
Associated with the following ECAM alert: DOOR CKPT DOOR EMER OPENING IN PROGRESS (*Refer to procedure*)

L12



Steady: Two or three electrical latches are failed.
Associated with the following ECAM alert: DOOR CKPT DOOR LOCK FAULT (*Refer to procedure*)



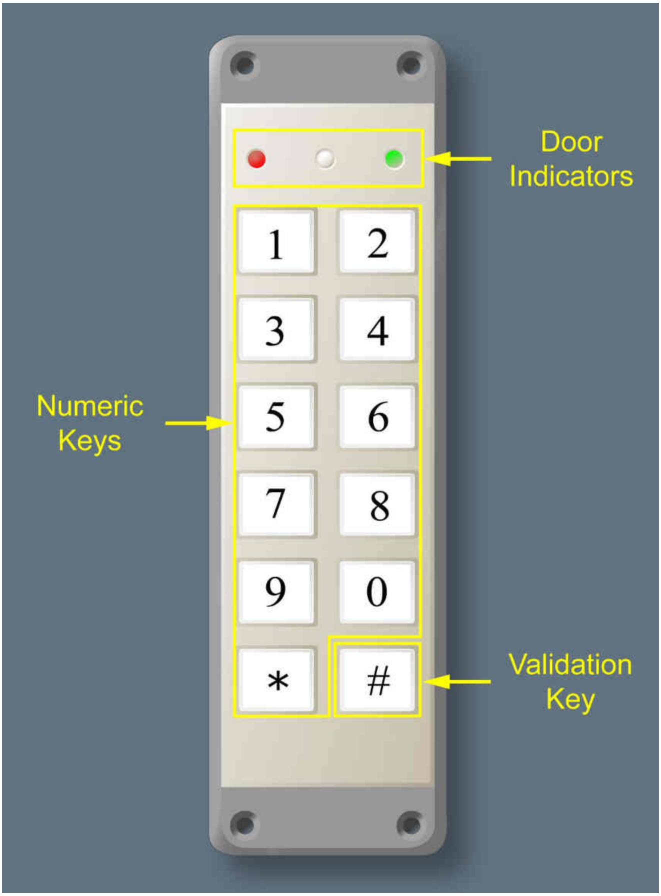
OPEN light steady and FAULT light flashing.
The CKPT DOOR LCKG SYS pb-sw is set to OFF on the maintenance overhead panel and the door is free to open from the cockpit or from the cabin.

COCKPIT DOOR KEYPAD

Applicable to: ALL

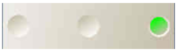
Ident.: DSC-52-40-20-GCOCK-00001962.0001001 / 24 APR 14

Cockpit Door Keypad


Door
Indicators
1
2
3
4
Numeric
Keys
5
6
7
8
9
0
*
#
Validation
Key

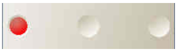
Ident.: DSC-52-40-20-GCOCK-00002519.0001001 / 24 APR 14

DOOR INDICATORS

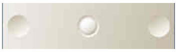


Steady: The door is not locked and can be opened. The CKPT DOOR sw is set to UNLOCK or the cockpit door is automatically unlocked for 5 s after an emergency access request without answer from the flight crew.
Flashing: A crewmember enters an emergency access code on the keypad.

L12



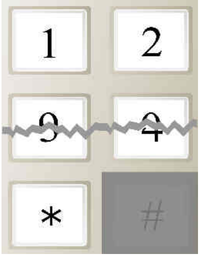
The CKPT DOOR sw is set to LOCK.
The door is locked, and cannot be opened for several minutes.
The keypad is inhibited.
The Operator defines the locking period of time (between 5 min and 20 min).



Any key is pressed.

Ident.: DSC-52-40-20-GCOCK-00002520.0001001 / 24 APR 14

NUMERIC KEYS



Enables the entry of a code.

Ident.: DSC-52-40-20-GCOCK-00002521.0001001 / 24 APR 14

VALIDATION KEY

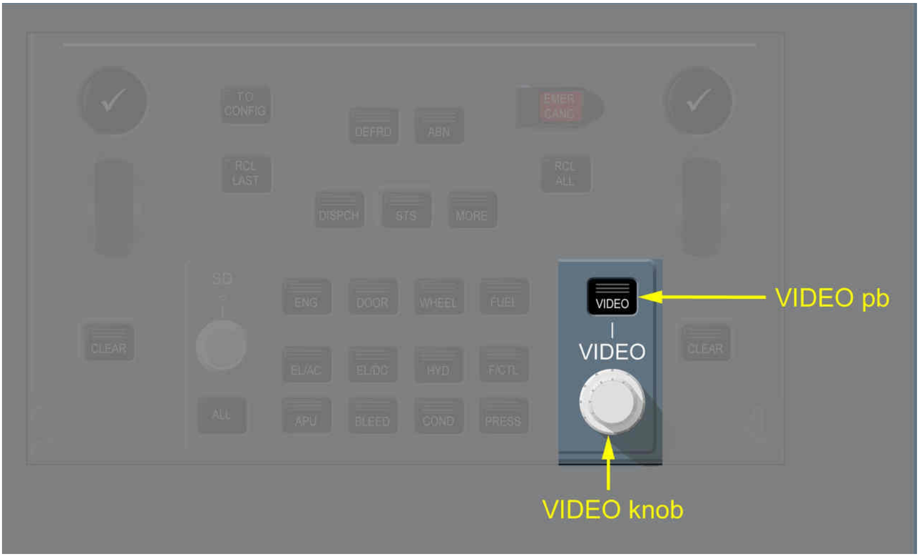
Validates a code.

ECP

Applicable to: ALL

Ident.: DSC-52-40-20-GECAM-00001960.0001001 / 24 APR 14

ECP


TO CONFIG
EMER CANC
DEFRD
ABN
RCL LAST
RCL ALL
DISPCH
STS
MORE
SD
ENG
DOOR
WHEEL
FUEL
CLEAR
EL/AC
EL/DC
HYD
F/CTL
ALL
APU
BLEED
COND
PRESS
VIDEO
VIDEO
VIDEO pb
CLEAR
VIDEO knob

Ident.: DSC-52-40-20-GECAM-00002517.0001001 / 24 APR 14

VIDEO PB

The VIDEO pb enables to display the VIDEO SD page.

L2 For more information, *Refer to DSC-31-CDS-110-20 Video pb*.

Ident.: DSC-52-40-20-GECAM-00002518.0001001 / 24 APR 14

VIDEO KNOB

The VIDEO knob enables:
- To display the cockpit door video on the VIDEO SD page, and
- To select the video cameras, as applicable.

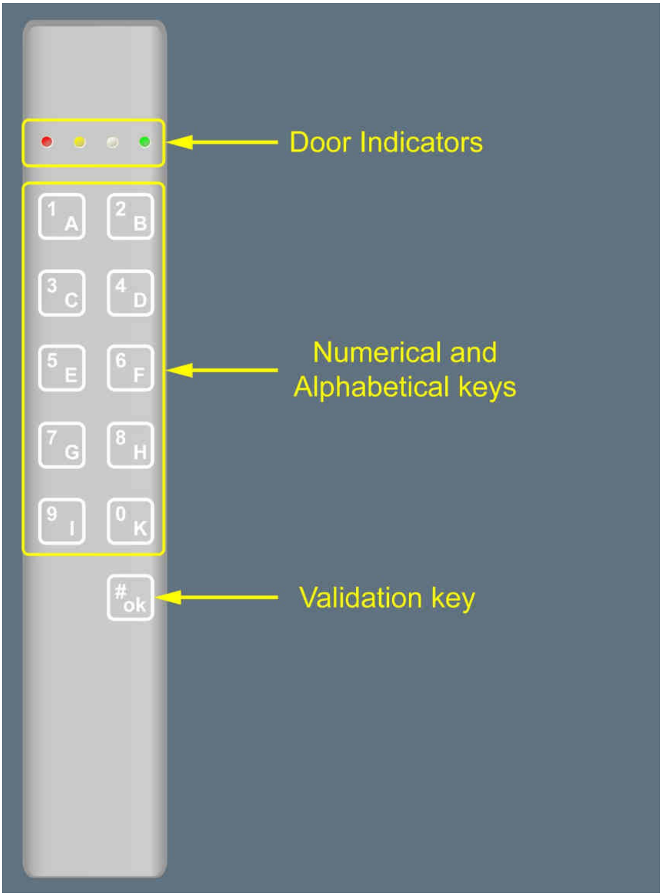
L2 For more information, *Refer to DSC-31-CDS-110-20 Video Knob*.

PRIVACY DOOR KEYPAD (IF INSTALLED)

Applicable to: ALL

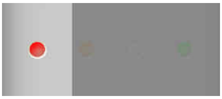
Ident.: DSC-52-40-20-GPRIV-00013255.0001001 / 09 MAR 16

Privacy Door Keypad

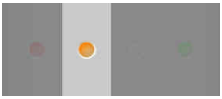

Door Indicators
1 A
2 B
3 C
4 D
5 E
6 F
7 G
8 H
9 I
0 K
Numerical and Alphabetical keys
# ok
Validation key

Ident.: DSC-52-40-20-GPRIV-00013256.0001001 / 09 MAR 16

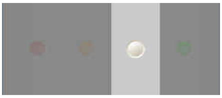
DOOR INDICATORS OF THE PRIVACY DOOR



Steady: The door is closed and locked
Flashing: The code is incorrectly entered.

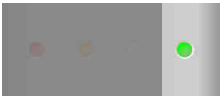


Steady: The locking system is failed.
Flashing slowly: The door locking actuator is failed.
Flashing rapidly: The privacy door unlocking pb is failed.



Comes on white briefly when any key is pressed.

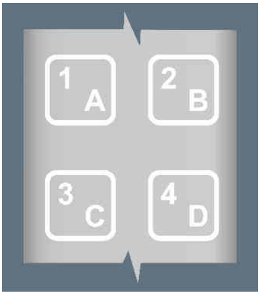
L12



Steady: The code is successfully entered and the door is unlocked.
The door automatically unlocks for 5 s .
This time period can be changed by the operator.

Ident.: DSC-52-40-20-GPRIV-00013260.0001001 / 09 MAR 16

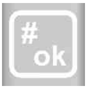
NUMERICAL AND ALPHABETICAL KEYS OF THE PRIVACY DOOR



Enables the entry of a code.

Ident.: DSC-52-40-20-GPRIV-00013261.0001001 / 09 MAR 16

VALIDATION KEY OF THE PRIVACY DOOR



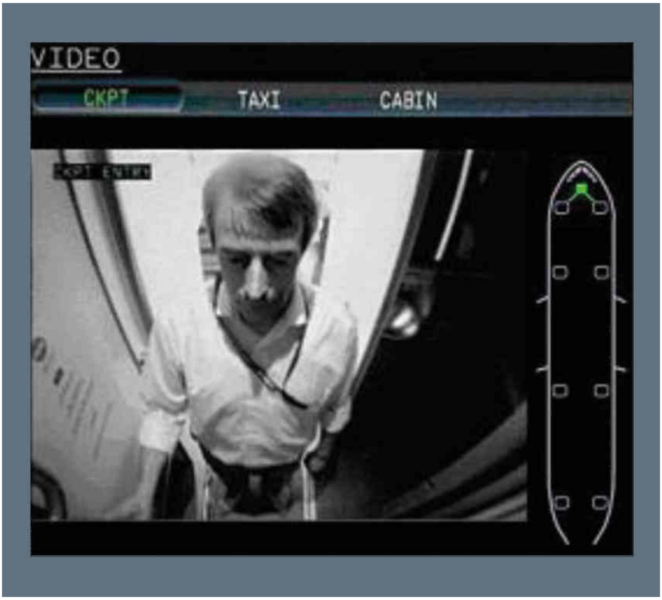
Validates a code.

VIDEO SD PAGE

Ident.: DSC-52-40-20-00001961.0001001 / 24 APR 14
Applicable to: ALL

The VIDEO SD page provides the flight crew with live video images of the cockpit door entrance area.

Video SD page



L2 For more information, *Refer to DSC-31-CDS-110-20 VIDEO SD Page*.

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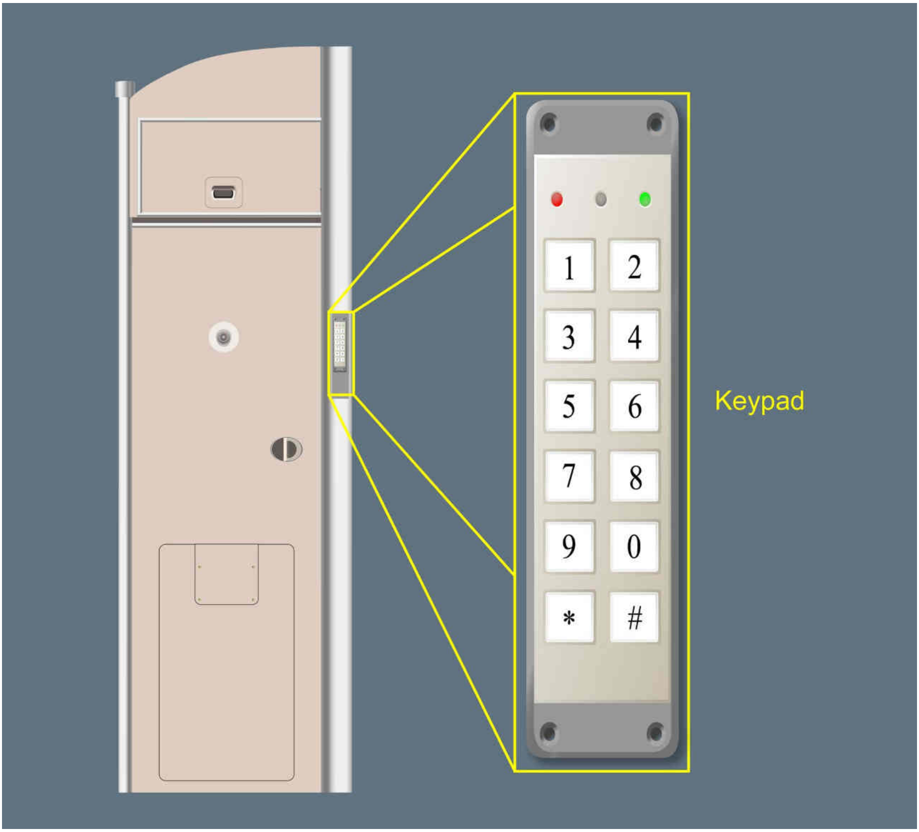
HOW TO OPERATE THE COCKPIT DOOR

Ident.: DSC-52-40-30-00002529.0001001 / 24 APR 14
Applicable to: ALL

The cabin crew uses the keypad to request access to the cockpit.



ROUTINE ACCESS (I.E. NORMAL ACCESS) REQUEST

To request access to the cockpit, enter the code, and validate it with the “#” key, on the keypad

L2 *The Operator defines this code (between 0 and 7 digits).*

L1 *A buzzer sounds in the cockpit for 2 s with a “DOOR PLEASE” audio indicator.*

Door Please (Sound and Synthetic Voice)

After identification of the person that requests access, unlock the door with the CKPT DOOR sw.

If the flight crew refuses access by setting the CKPT DOOR sw to LOCK, the keypad and the buzzer are inhibited for a defined period of time.
If the flight crew does not respond, the door remains locked.

EMERGENCY ACCESS REQUEST

To request emergency access to the cockpit, enter the emergency code, and validate it with the “#” key on the keypad.

L2 *The Operator defines this emergency code.*

L1 *A buzzer sounds in the cockpit until the flight crew unlocks, or locks the door by using the CKPT DOOR sw.*

Emergency Cockpit Door (Sound)

The DOOR CKPT DOOR EMER OPENING IN PROGRESS alert is also triggered (*Refer to procedure*).
After identification of the person that requests access, unlock the door with the CKPT DOOR sw.

If the flight crew refuses access by setting the CKPT DOOR sw to LOCK, the keypad and the buzzer are inhibited for a defined period of time.
If the flight crew does not respond, the door automatically unlocks for 5 s after a defined period of time.

EVACUATION THROUGH THE DECOMPRESSION AND EVACUATION PANEL

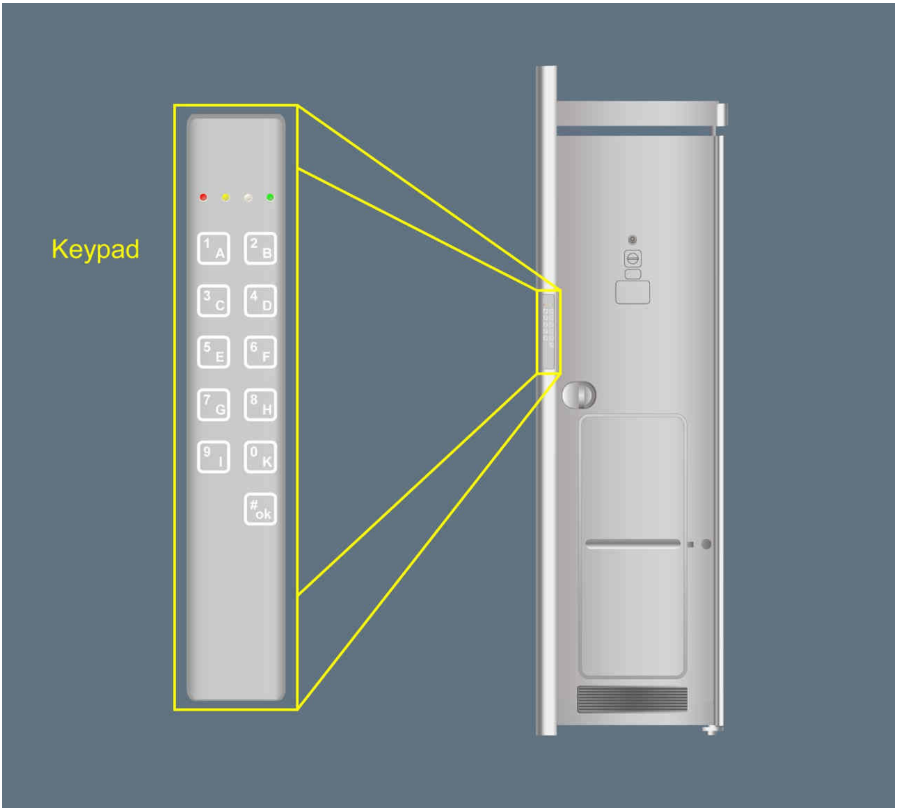
Rotate the handle cover to access the panel release knob.
Press then turn the panel release knob in order to unlock the decompression and evacuation panel.
Kick the decompression and evacuation panel toward the cabin.
Evacuate the cockpit on hands and knees.

HOW TO OPERATE THE PRIVACY DOOR ◁

Ident.: DSC-52-40-30-00013799.0001001 / 09 MAR 16
Applicable to: ALL

ACCESS TO THE PRIVACY AREA ◁ FROM THE CABIN SIDE

The crewmember uses the keypad to access to the cockpit privacy area.



To access the cockpit privacy area, type a code, and validate it with the "# OK" key on the keypad.

L2 *The Operator defines this code (minimum 5 digits).*

L1 When the door is unlocked, push the door toward the cockpit privacy area.

ACCESS FROM THE COCKPIT PRIVACY AREA

It is not necessary to enter an access code in order to unlock and open the door from the cockpit privacy area side.

To access the cabin:
- Press the Privacy Door Unlocking pb then pull the door toward the cockpit, or
- Slide the door handle to the left then pull the door toward the cockpit.

EMERGENCY ACCESS TO THE PRIVACY AREA ◁ FROM THE CABIN SIDE

Remove the cover plate from the door handle and operate the hook to mechanically open the door.

L2 For more information, *Refer to CCOM/16-02-80-40 PDLS override from the cabin side*.

L1 EMERGENCY ACCESS FROM THE COCKPIT PRIVACY AREA ◁

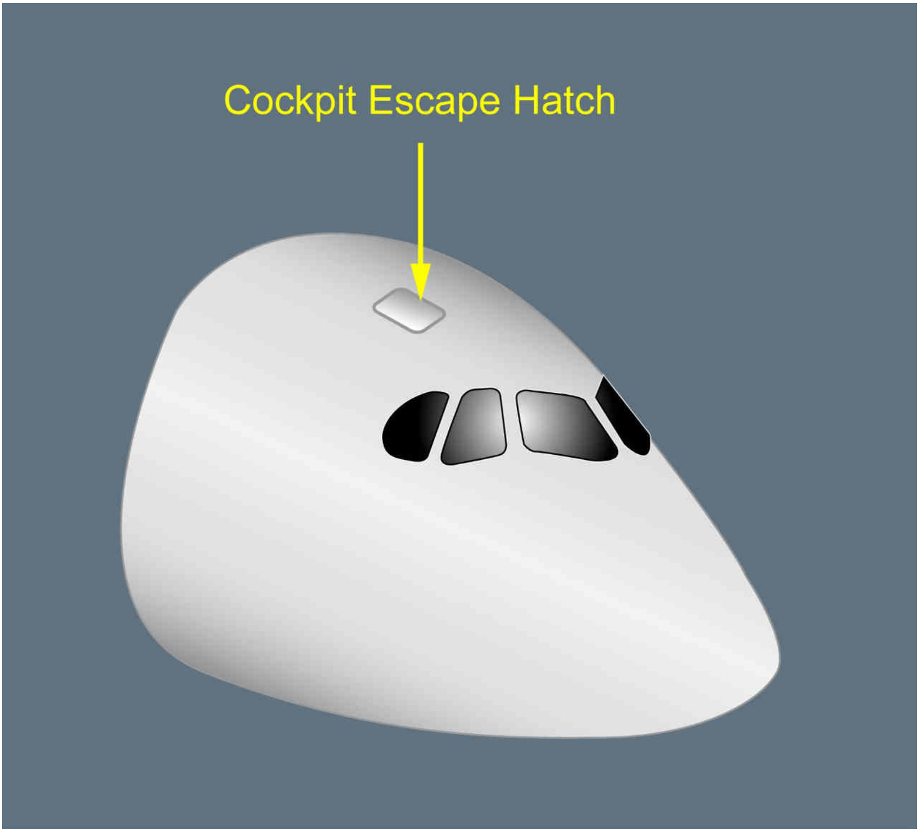
Release the two sliding latches on the decompression and evacuation panel in order to unlock the decompression and evacuation panel.
Kick the decompression and evacuation panel toward the cabin.
Evacuate the cockpit on hands and knees.

COCKPIT ESCAPE HATCH

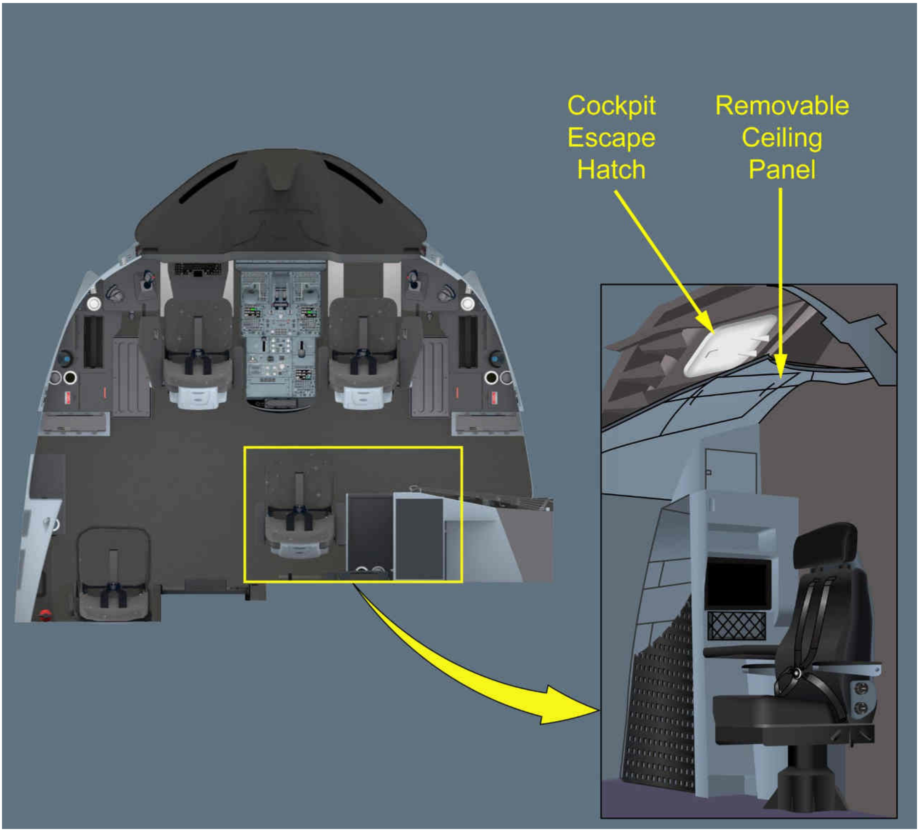
Ident.: DSC-52-50-10-00013190.0001001 / 02 MAY 17
Applicable to: ALL

There is a cockpit escape hatch in the cockpit behind a removable ceiling panel.
The cockpit escape hatch is above the third occupant seat.
The hatch opens inward and can be operated from the inside and from the outside.

View from outside



View from Inside


Cockpit
Escape
Hatch
Removable
Ceiling
Panel

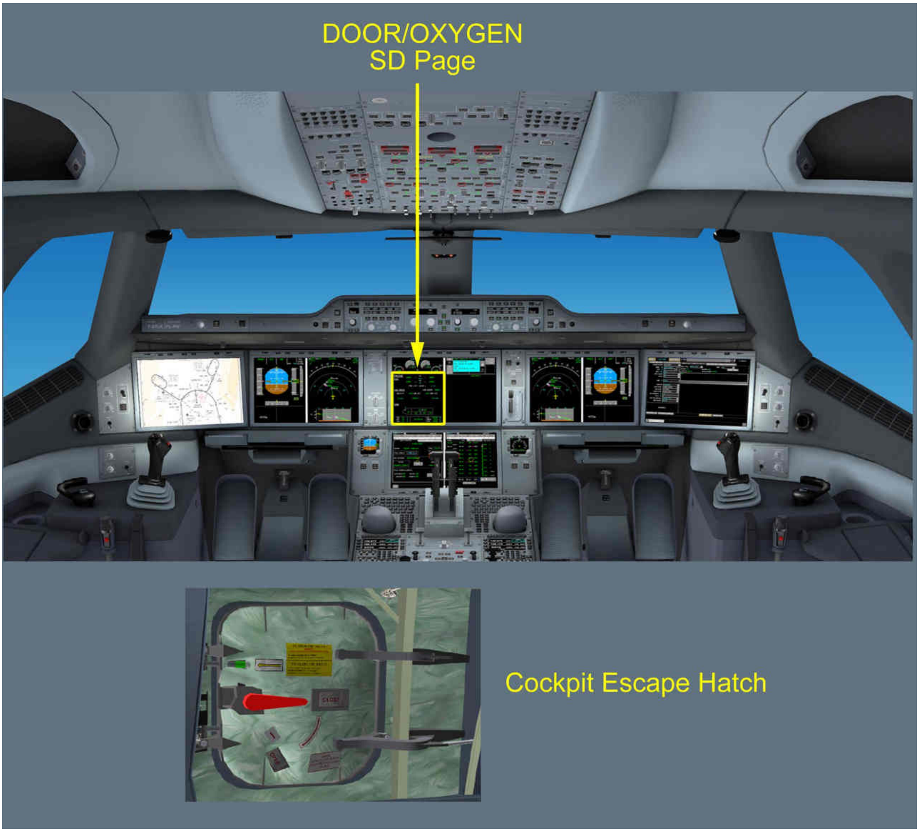
Note: *A knotted rope is stowed next to the hatch to evacuate the aircraft.*

COCKPIT VIEW

Ident.: DSC-52-50-20-00002580.0001001 / 02 MAY 17

Applicable to: ALL

Cockpit View

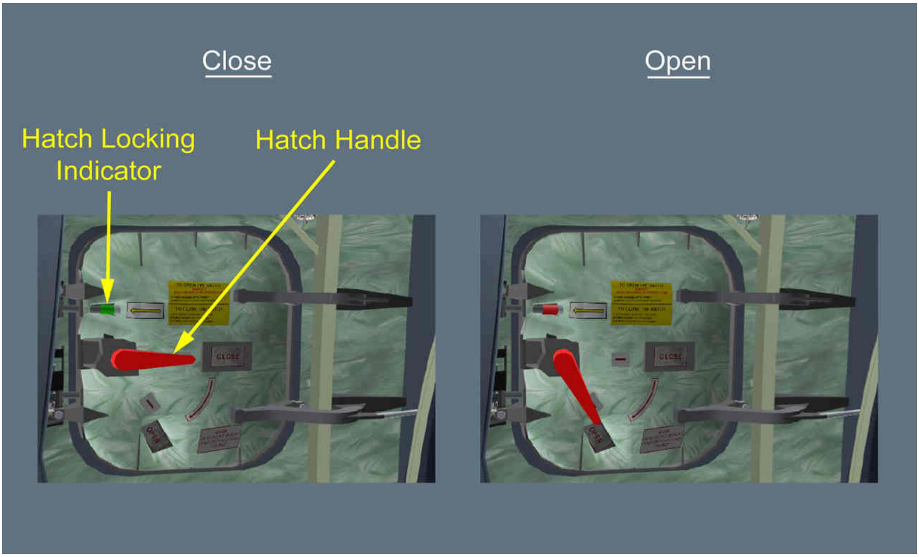

DOOR/OXYGEN
SD Page
Cockpit Escape Hatch

COCKPIT ESCAPE HATCH

Applicable to: ALL

Ident.: DSC-52-50-20-20-00013193.0001001 / 02 MAY 17

Cockpit Escape Hatch



Ident.: DSC-52-50-20-20-00013736.0001001 / 02 MAY 17

HATCH HANDLE

The hatch handle has a CLOSE and OPEN position.

CLOSE	The hatch is closed.
OPEN	The hatch is open.

Ident.: DSC-52-50-20-20-00013194.0001001 / 02 MAY 17

HATCH LOCKING INDICATOR

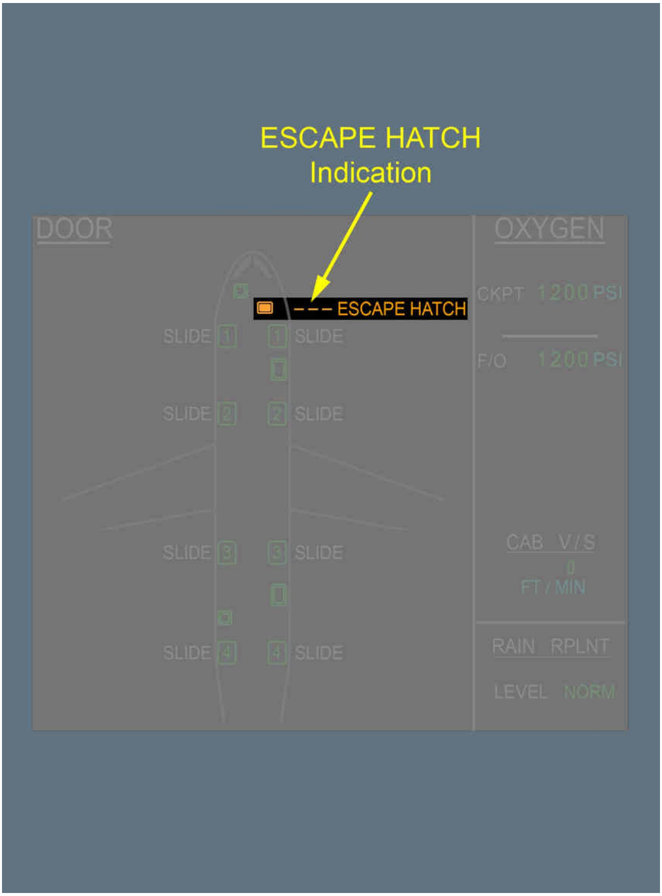
🟩	The hatch handle is in the CLOSE position.
🟥	The hatch handle is in the OPEN position.

DOOR/OXYGEN SD PAGE

Applicable to: ALL

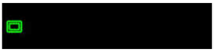
Ident.: DSC-52-50-20-30-00013731.0001001 / 02 MAY 17

DOOR/OXYGEN SD page - Cockpit Escape Hatch


ESCAPE HATCH
Indication
DOOR
OXYGEN
--- ESCAPE HATCH
SLIDE 1
1 SLIDE
SLIDE 2
2 SLIDE
SLIDE 3
3 SLIDE
SLIDE 4
4 SLIDE
CKPT 1200 PSI
F/O 1200 PSI
CAB V/S
0
FT / MIN
RAIN RPLNT
LEVEL NORM

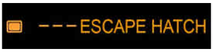
Ident.: DSC-52-50-20-30-00013753.0001001 / 08 JUL 19

ESCAPE HATCH INDICATION



The escape hatch is closed.

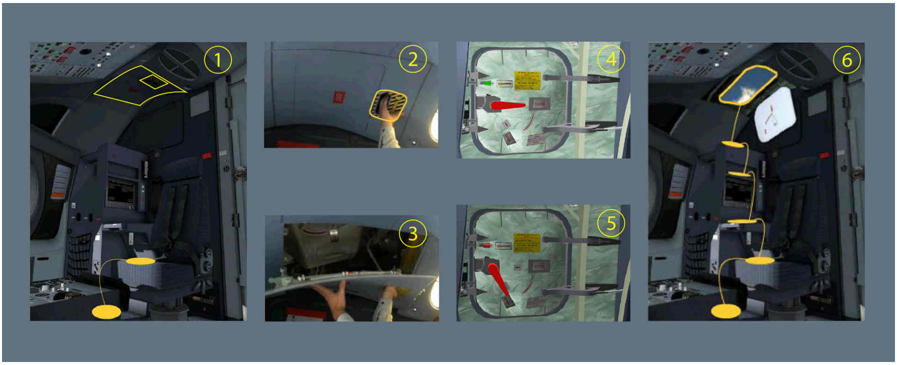
L12



The escape hatch is not closed.
Associated with the following ECAM alert DOOR ESCAPE HATCH NOT CLOSED (*Refer to procedure*)

HOW TO OPEN THE COCKPIT ESCAPE HATCH

Ident.: DSC-52-50-30-00023936.0001001 / 02 MAY 17
Applicable to: ALL



Step 1: Climb on the third occupant seat.
Step 2: Press the release handle of the removable ceiling panel.
Step 3: Hold the fall of the removable ceiling panel when it opens.

Note: *Once the ceiling panel is removed, a knotted rope is accessible next to the escape hatch.*

Step 4: Turn the handle to the OPEN position.
Step 5: The escape hatch opens inward the cockpit.
Step 6: The cockpit evacuation is possible with the knotted rope.

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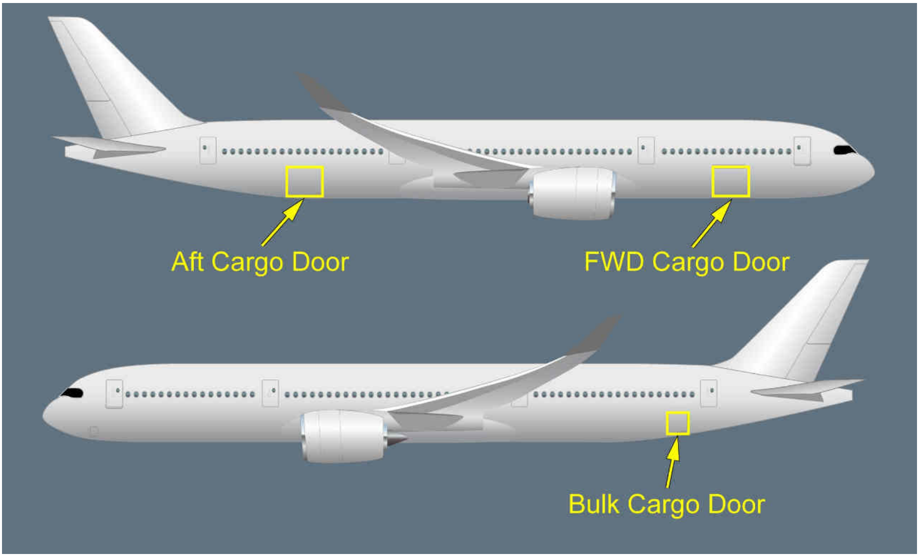
OVERVIEW

Ident.: DSC-52-60-10-00002566.0001001 / 24 APR 14
Applicable to: ALL

The aircraft has three cargo doors:
- One forward (FWD) cargo door
- One aft cargo door
- One bulk cargo door.

The forward and aft cargo doors are on the right hand side of the aircraft.
The bulk cargo door is on the left hand side of the aircraft.

Cargo Doors



FORWARD (FWD) AND AFT CARGO DOORS

Ident.: DSC-52-60-10-00002567.0001001 / 24 APR 14
Applicable to: ALL

The forward (FWD) and aft cargo doors provide access to the forward and aft cargo compartments, respectively.
Both the forward and aft cargo doors open outward and upward. They are mechanically locked, and hydraulically operated by the yellow hydraulic system.

The ground crew can manually lock and unlock the cargo doors with the door handle, from outside the aircraft.
The ground crew can use the NORMAL OPERATION sw to open and close the cargo doors via the hydraulic actuator. The NORMAL OPERATION sw is on the cargo door operation panel on the right side of each door (outside the aircraft).

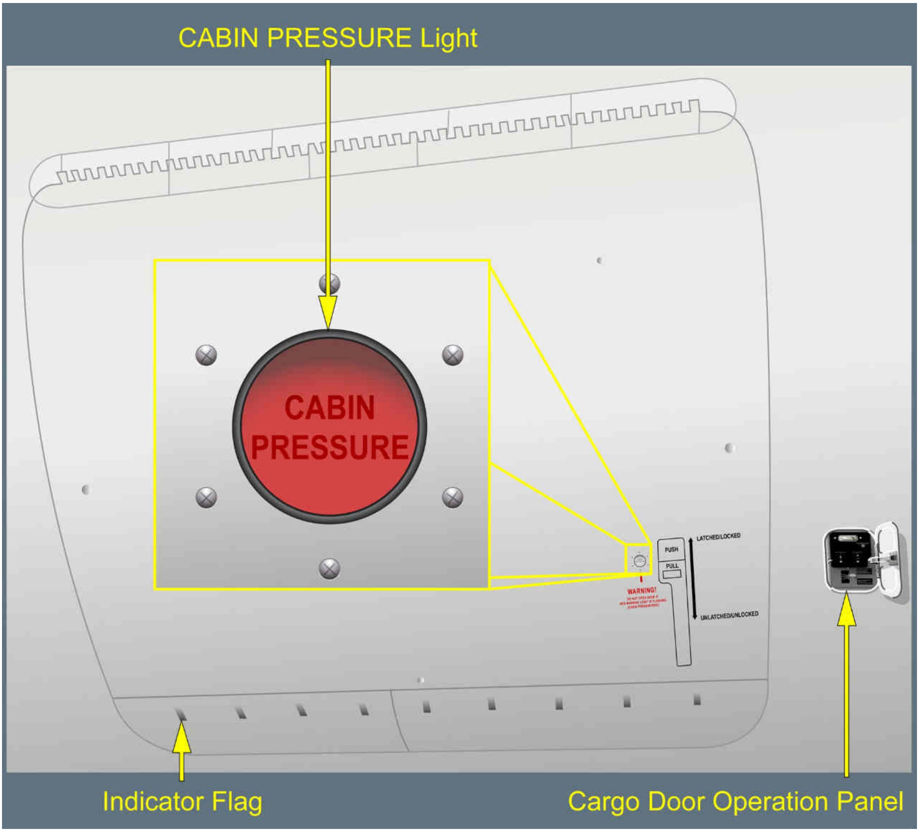
In the case of an electrical or hydraulic pump failure, the ground crew can hydraulically open or close the cargo doors with:
- A lever for manual override on the cargo door operation panel
- A hand pump on the hydraulic maintenance panel.

When the door is fully open, and locked in the open position, a “FULLY OPEN AND ARRESTED” indicator on the cargo door operation panel comes on.

The cargo door operation is only possible when:
- The aircraft is on ground
- The engines are not running.

In the other cases, the cargo door operation is inhibited.
L3 When the cargo door operation is inhibited, the hydraulic actuator is isolated from the hydraulic system by an isolation valve. In this case, there is no power to open the door.

Cargo Door

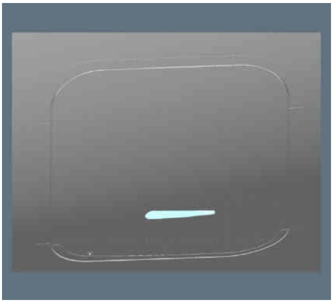

CABIN PRESSURE Light
CABIN PRESSURE
LATCHED/LOCKED
PUSH
PULL
WARNING!
UNLATCHED/UNLOCKED
Indicator Flag
Cargo Door Operation Panel

L1 One indicator flag on the lower left hand side of the door indicates the locked / unlocked status of the door.

BULK CARGO DOOR

Ident.: DSC-52-60-10-00002568.0001001 / 24 APR 14
Applicable to: ALL

The ground crew can access the bulk cargo compartment from the bulk cargo door.
The bulk cargo door opens inward and upward.
The ground crew can manually open or close the bulk cargo door with one of the door handles that are in the interior and on the exterior of the aircraft.

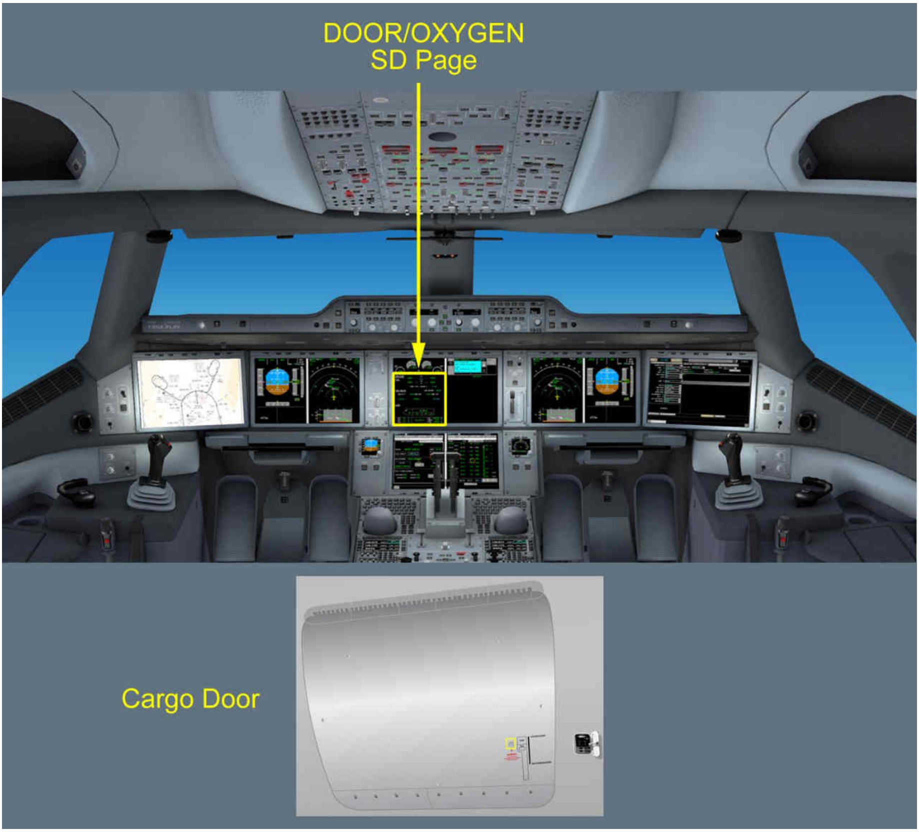


COCKPIT VIEW

Ident.: DSC-52-60-20-00002569.0001001 / 24 APR 14

Applicable to: ALL

Cockpit View

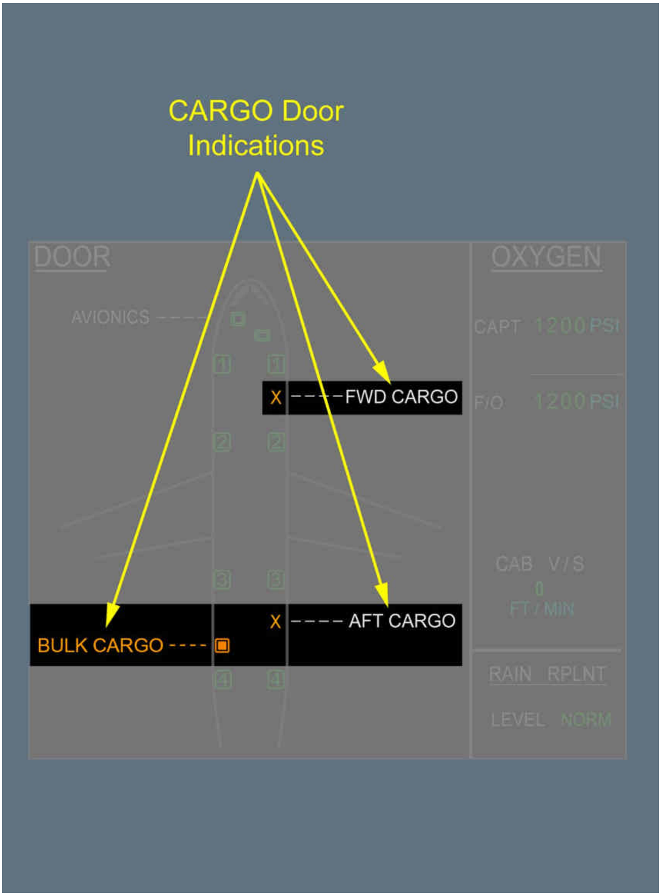

DOOR/OXYGEN
SD Page
Cargo Door

DOOR/OXYGEN SD PAGE

Applicable to: ALL

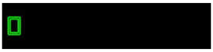
Ident.: DSC-52-60-20-20-00002570.0001001 / 04 MAY 18

DOOR/OXYGEN SD page - Cargo Door

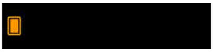

CARGO Door
Indications
DOOR
AVIONICS
1
1
X
FWD CARGO
2
2
3
3
X
AFT CARGO
BULK CARGO
4
4
OXYGEN
CAPT 1200 PSI
F/O 1200 PSI
CAB V/S
0
FT / MIN
RAIN RPLNT
LEVEL NORM

Ident.: DSC-52-60-20-20-00002572.0001001 / 08 JUL 19

CARGO DOOR INDICATION

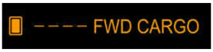


The door is closed and locked.



The door is not locked and the engines are not running.

L12



The door is not locked and at least one engine is running.

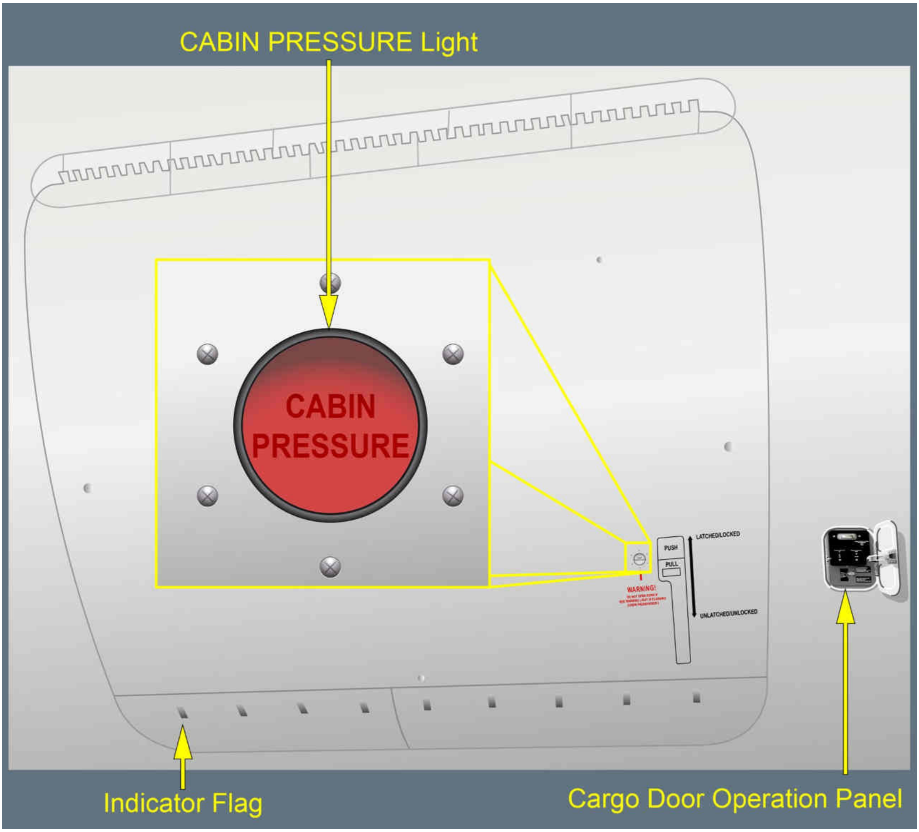
Associated with one of the following ECAM alerts:
- DOOR AFT(FWD) CARGO NOT CLOSED (*Refer to procedure*)
- CONFIG DOOR AFT(FWD) CARGO NOT CLOSED (*Refer to procedure*)
- DOOR BULK CARGO NOT CLOSED (*Refer to procedure*)

FWD AND AFT CARGO DOORS

Applicable to: ALL

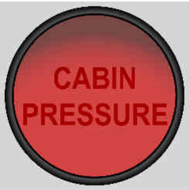
Ident.: DSC-52-60-20-10-00013669.0001001 / 24 APR 14

General


CABIN PRESSURE Light
CABIN
PRESSURE
LATCHED/LOCKED
PUSH
PULL
WARNING!
UNLATCHED/UNLOCKED
Indicator Flag
Cargo Door Operation Panel

Ident.: DSC-52-60-20-10-00002571.0001001 / 24 APR 14

CABIN PRESSURE LIGHT



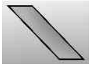
Flashes red, when:

- The aircraft is on ground
- The differential cabin pressure is above 0.036 PSI.

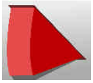
WARNING	Do not open the door, if the CABIN PRESSURE light flashes (cabin pressurized).

Ident.: DSC-52-60-20-10-00002574.0001001 / 24 APR 14

INDICATOR FLAG



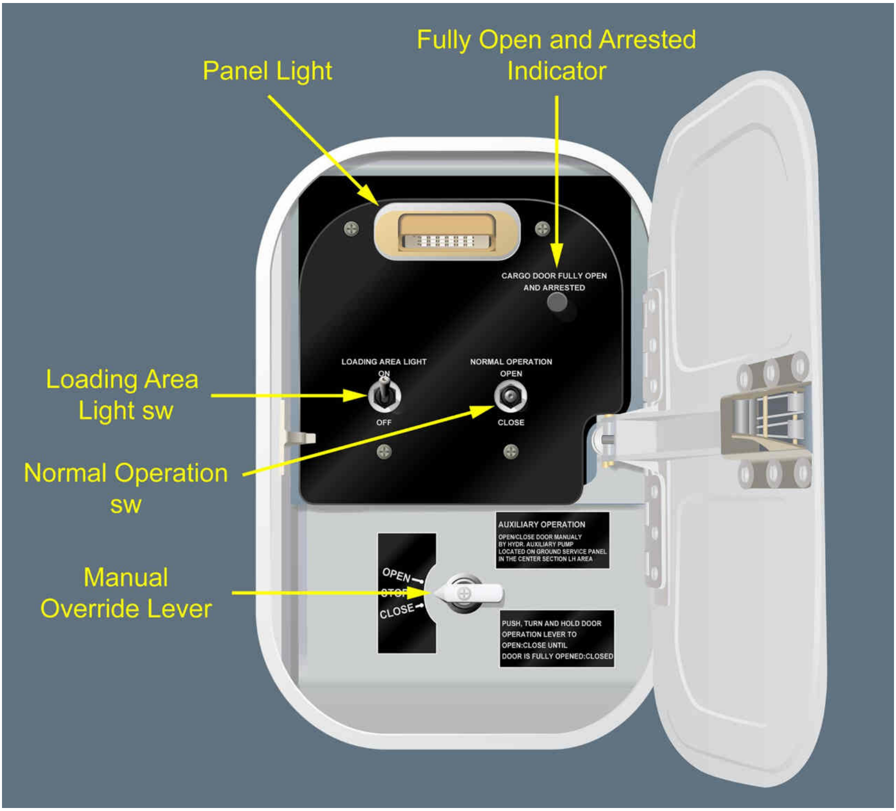
The door is closed and locked.



The door is unlocked.

Ident.: DSC-52-60-20-10-00002575.0001001 / 24 APR 14

L3 CARGO DOOR OPERATION PANEL


Panel Light
Fully Open and Arrested Indicator
CARGO DOOR FULLY OPEN AND ARRESTED
LOADING AREA LIGHT
ON
OFF
NORMAL OPERATION
OPEN
CLOSE
Loading Area Light sw
Normal Operation sw
AUXILIARY OPERATION
OPEN/CLOSE DOOR MANUALY
BY HYDR. AUXILIARY PUMP
LOCATED ON GROUND SERVICE PANEL
IN THE CENTER SECTION LH AREA
OPEN
STOP
CLOSE
Manual Override Lever
PUSH, TURN AND HOLD DOOR
OPERATION LEVER TO
OPEN:CLOSE UNTIL
DOOR IS FULLY OPENED:CLOSED

AIRCRAFT SYSTEMS

56 - COCKPIT WINDOWS

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DSC-56-10 System Description

Overview.. A
Cockpit Windshields and Windows.. B

Intentionally left blank

Localization Title	Toc Index	ID	Reason
DSC-56-10 Cockpit Windshields and Windows	B	1	Documentation update: Deletion of information.
			Update of description and illustration to provide specific names for each of the two internal layers which were previously referred as "internal layers".
			Correction of a typo on the illustration. No technical change.

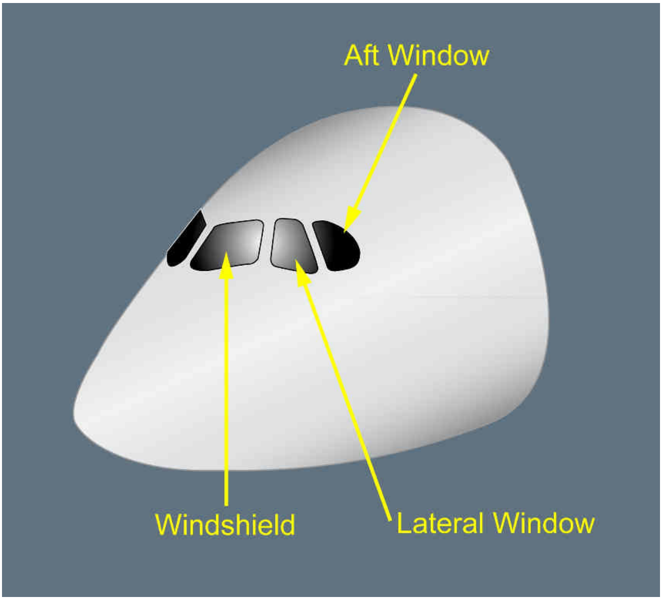
Intentionally left blank

OVERVIEW

Ident.: DSC-56-10-00013357.0001001 / 07 NOV 16
Applicable to: ALL

The cockpit of the aircraft has:
- Two windshields
- Two fixed lateral windows
- Two fixed aft windows.

Cockpit Windows Overview



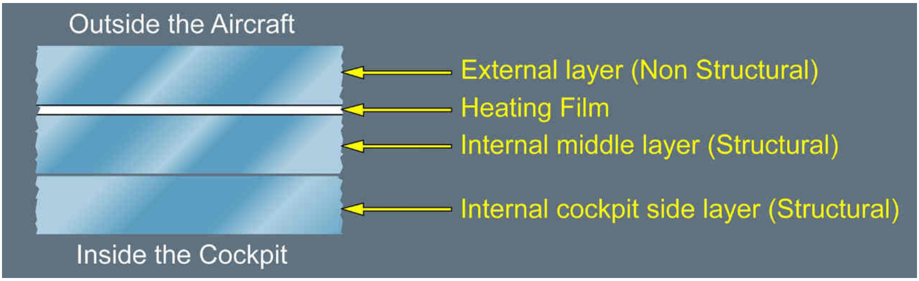
COCKPIT WINDSHIELDS AND WINDOWS

Ident.: DSC-56-10-00002998.0002001 / 03 JUL 20
Applicable to: ALL

1 Each windshield and each window has two internal layers, and one external layer. The external layer is not a structural layer. The two internal layers are structural layers. There is a heating film between the non-structural external layer and the structural internal layers (Internal middle layer and internal cockpit side layer).

Below is a horizontal section of a windshield or a window:

Horizontal Section of a Windshield or a Window

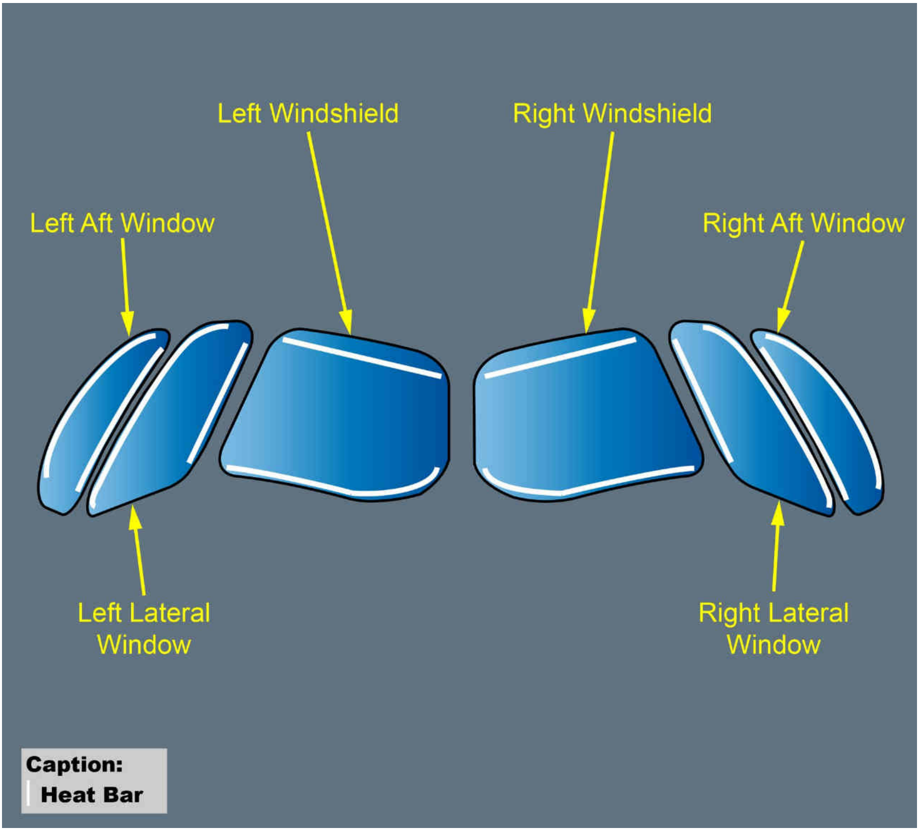

Outside the Aircraft
External layer (Non Structural)
Heating Film
Internal middle layer (Structural)
Internal cockpit side layer (Structural)
Inside the Cockpit

The heating film ensures:
- Defogging of the lateral and aft windows
- Defogging and deicing of the windshields.

L2 For more information, *Refer to DSC-30-20-10 Cockpit Window Heating*.

L1 Two heat bars power supply each heating film.

The illustration below indicates the position of the heat bars.


Left Windshield
Right Windshield
Left Aft Window
Right Aft Window
Left Lateral Window
Right Lateral Window
Caption:
Heat Bar

When a windshield or a window is cracked, the flight crew must apply the MISC CKPT WINDOW CRACKED procedure (*Refer to procedure*).
This procedure is available via the ABN pb on the ECP.

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AIRCRAFT SYSTEMS

70 - ENGINES

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DSC-70-10 System Description

DSC-70-10-10 Overview

Overview........A

DSC-70-10-20 Engine

Engine........A

DSC-70-10-30 FADEC

DSC-70-10-30-10 General

Overview........A
Architecture........B

DSC-70-10-30-20 Engine Protection

Engine Protection........A

DSC-70-10-30-30 Power Management

Thrust Control........A
Engine Power Settings........B
Idle Settings........C

DSC-70-10-40 Fuel System

Fuel System........A

DSC-70-10-50 Oil System

Oil System........A

DSC-70-10-60 Air System

Air System........A

DSC-70-10-70 Thrust Reverser System

DSC-70-10-70-10 General

Overview........A

DSC-70-10-70-20 Protection of the Thrust Reverser System

Protection of the Thrust Reverser System........A

DSC-70-10-70-30 Deployment and Stowage

Thrust Reverser Deployment........A
Thrust Reversers Stowage........B

DSC-70-10-80 Ignition and Start Systems

DSC-70-10-80-10 General

General........A

Continued on the following page

Continued from the previous page

DSC-70-10-80-20 Ignition System

Ignition System...A
Ignition for Engine Start...B
Continuous Ignition...C
Windmilling Quick Relight Function...D

DSC-70-10-80-30 Start System

Start System...A
Automatic Start...B
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DSC-70-20 Controls and Indicators

Cockpit View...A
AUDIO INDICATORS...B
ENG FADEC GND PWR Panel...C
ENG MAN START Panel...D
ENG SD Page...E
ENG START Selector and ENG MASTER Levers...F
Engine Display...G
Memo...H
Thrust Levers...I

DSC-70-30 Normal Operations

Sequence of the Automatic Start...A
Engine Shutdown...B

DSC-70-40 Abnormal Operations

Start Abort During Automatic Start...A

Localization Title	Toc Index	ID	Reason
DSC-70-10-30-20 Burst Duct - Engine Zones Temperature monitoring	A	1	Correction of the list of valves automatically closed: addition of the engine bleed valves.
DSC-70-10-60 Air System	A	1	Correction of the wording.
DSC-70-10-80-20 Continuous Ignition	C	1	Removal of the information on quick relight initiation. This information is moved to the Aircraft Systems/Engines/System Description/Ignition and Start Systems/Ignition System/Windmilling Quick Relight Function section. Documentation update: Deletion of information.
DSC-70-10-80-20 Windmilling Quick Relight Function	D	2	Documentation update: Addition of "Windmilling Quick Relight Function" documentary unit

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OVERVIEW

Ident.: DSC-70-10-10-00015301.0001001 / 14 JUN 16
Applicable to: ALL

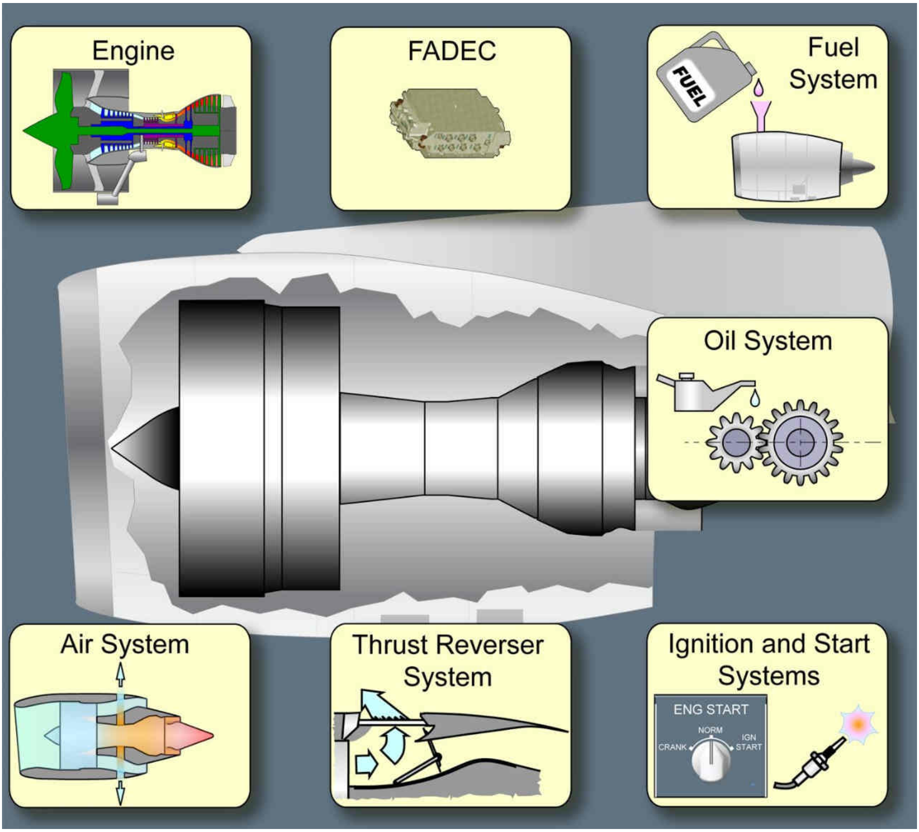
The aircraft has two Rolls-Royce Trent XWB-84 engines that supply power to the aircraft.

L2 The Trent XWB-84 engine has the following two types of fan:
- Fan Mark I,
- Fan Mark II.

The performances of both engine types are similar, so engine intermix between Fan Mark I and Fan Mark II is possible.
Each engine provides up to 84 000 lb takeoff thrust at ISA sea-level conditions.

L1 Both engines are turbofan engines that have:
- A high bypass ratio
- A Full Authority Digital Engine Control (FADEC)
- A fuel system
- An oil system
- An air system
- A thrust reverser system
- An ignition system and a start system.

Overview


Engine
FADEC
Fuel System
FUEL
Oil System
Air System
Thrust Reverser System
Ignition and Start Systems
ENG START
NORM
CRANK
IGN START

ENGINE

Applicable to: ALL

Ident.: DSC-70-10-20-10-00014197.0001001 / 06 NOV 14

The engine has:

- Three compressor turbine assemblies:
  - The Low Pressure (LP) compressor turbine assembly
  - The Intermediate Pressure (IP) compressor turbine assembly
  - The High Pressure (HP) compressor turbine assembly

L2 Each turbine operates its associated compressor via a shaft.

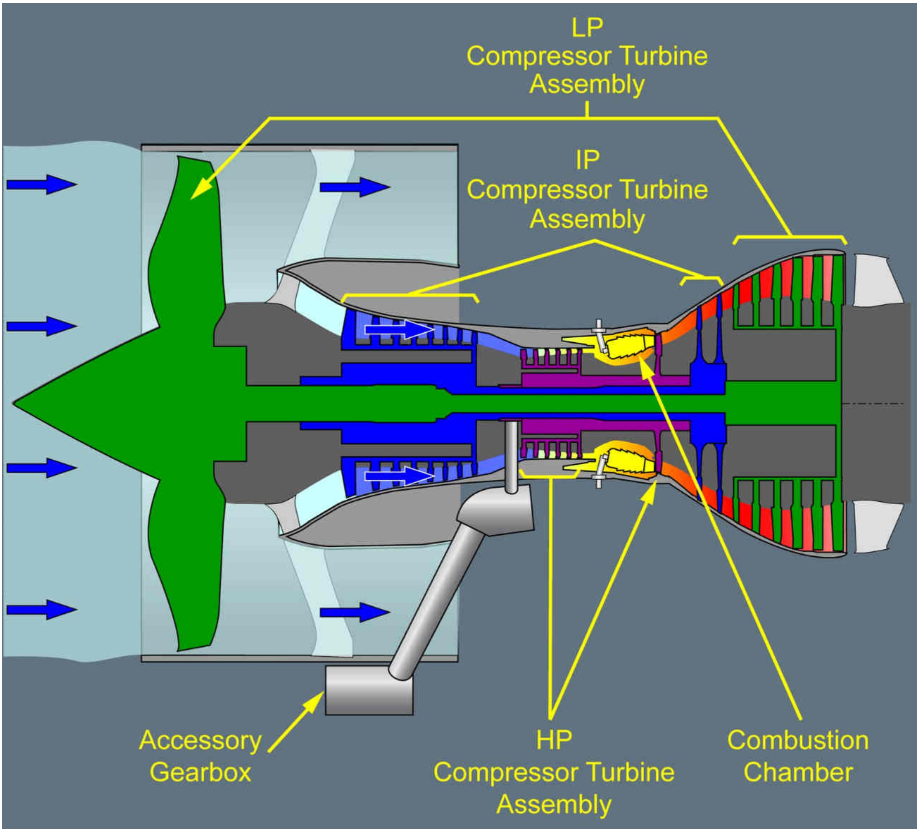
L3 The LP and the IP compressors turn clockwise, and the HP compressor turns counterclockwise.

L1
- One accessory gearbox
- One combustion chamber.

The engine operates as follows:

1. The LP compressor, referred to as the fan, compresses the air
2. Then, the air is divided into two flows:
   - Most of the air flows out of the core engine, and provides most of the engine thrust
   - The remaining air enters the core engine
3. The IP and the HP compressors compress the air that enters the core engine
4. The fuel is added to and mixed with the compressed air of the core engine. The mixture is ignited in the combustion chamber
5. The gas that results from combustion drives the HP, the IP, and the LP turbines.

Engine


LP
Compressor Turbine
Assembly
IP
Compressor Turbine
Assembly
Accessory
Gearbox
HP
Compressor Turbine
Assembly
Combustion
Chamber

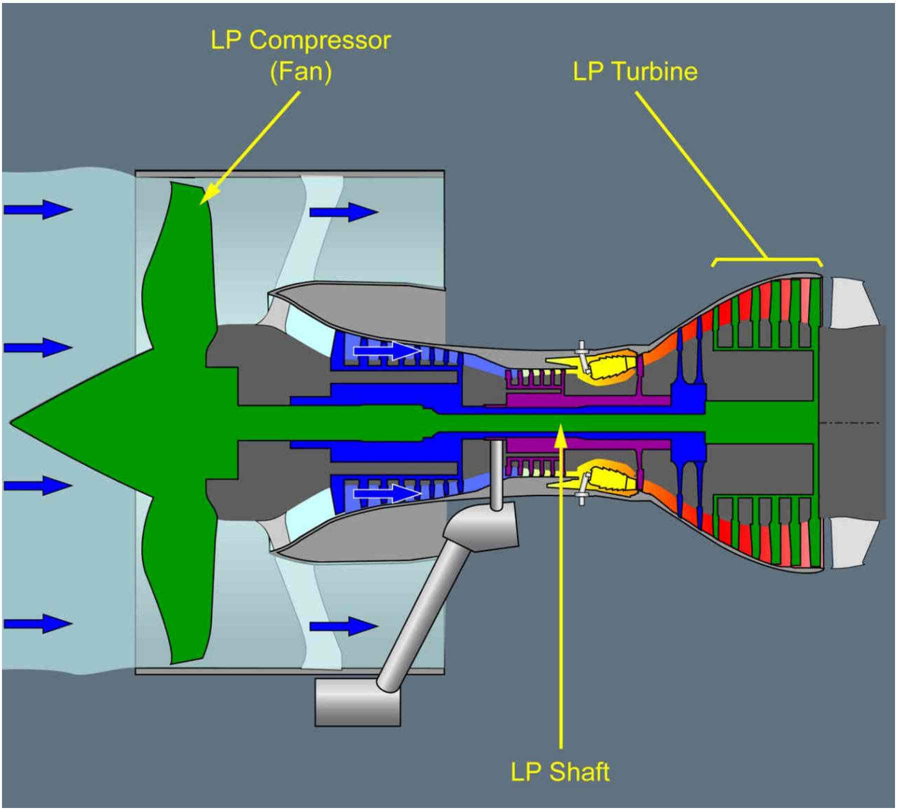
Ident.: DSC-70-10-20-10-00014198.0001001 / 23 APR 14

LP COMPRESSOR TURBINE ASSEMBLY

The LP compressor turbine assembly has:
- One LP compressor, referred to as the fan
- L2 - One LP shaft
- L1 - One LP turbine.

L2 The LP shaft connects the fan to the LP turbine.

LP Compressor Turbine Assembly



L3 The LP compressor (fan) has a single stage, and the LP turbine has 6 stages.

L1 The rotation speed of the fan provides the N1 engine parameter. The N1 engine parameter appears on the Engine Display (ED).

L2 The N1 engine parameter is the current rotation speed of the fan displayed in percentage.

L1 The FADEC uses the N1 engine parameter to:
- Control and monitor the engine
- Compute the applicable engine thrust.

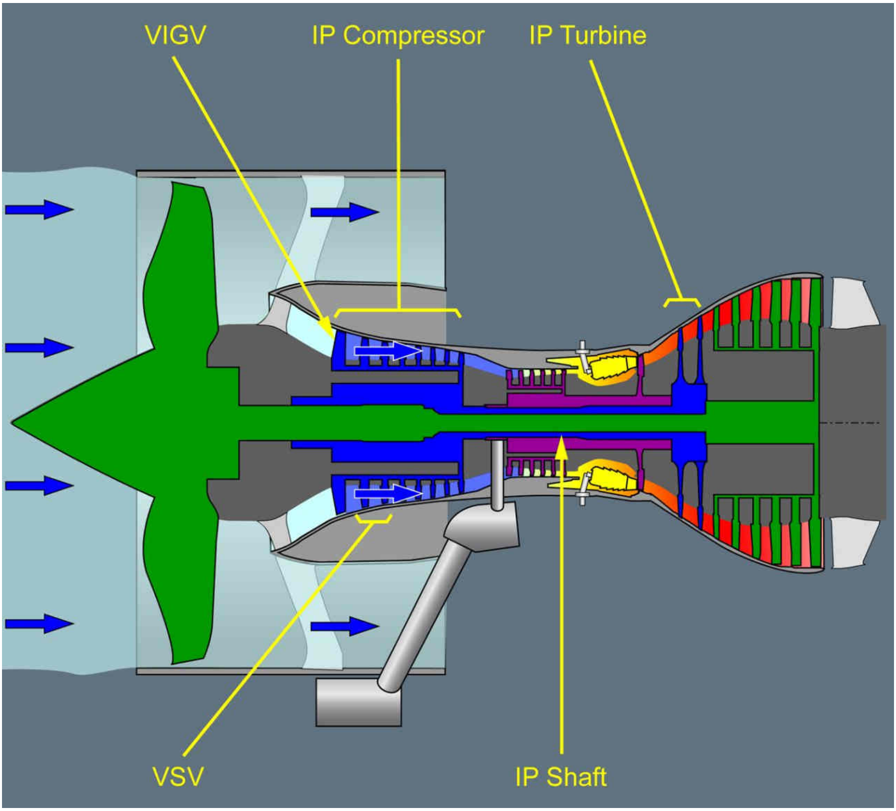
Ident.: DSC-70-10-20-10-00014199.0001001 / 23 APR 14

IP COMPRESSOR TURBINE ASSEMBLY

The IP compressor turbine assembly has:
- One IP compressor
- L2 One IP shaft
- L1 One IP turbine.

L2 The IP shaft connects the IP compressor to the IP turbine.

IP Compressor Turbine Assembly



L3 The IP compressor has 8 stages, and the IP turbine has 2 stages.
To optimize and protect the operation of the engine at all power settings and in all flight conditions, the Variable Inlet Guide Vanes (VIGVs) and the Variable Stator Vanes (VSVs) regulate the

quantity of air that flows through the IP compressor. For more information about the VIGVs and the VSVs, *Refer to DSC-70-10-30-20 Stall*.

L1 The rotation speed of the IP rotor provides the N2 engine parameter. The N2 engine parameter appears on the ENG SD page.

L2 The N2 engine parameter is the current rotation speed of the IP rotor displayed in percentage.

L3 The FADEC uses the N2 engine parameter for engine control and monitoring.

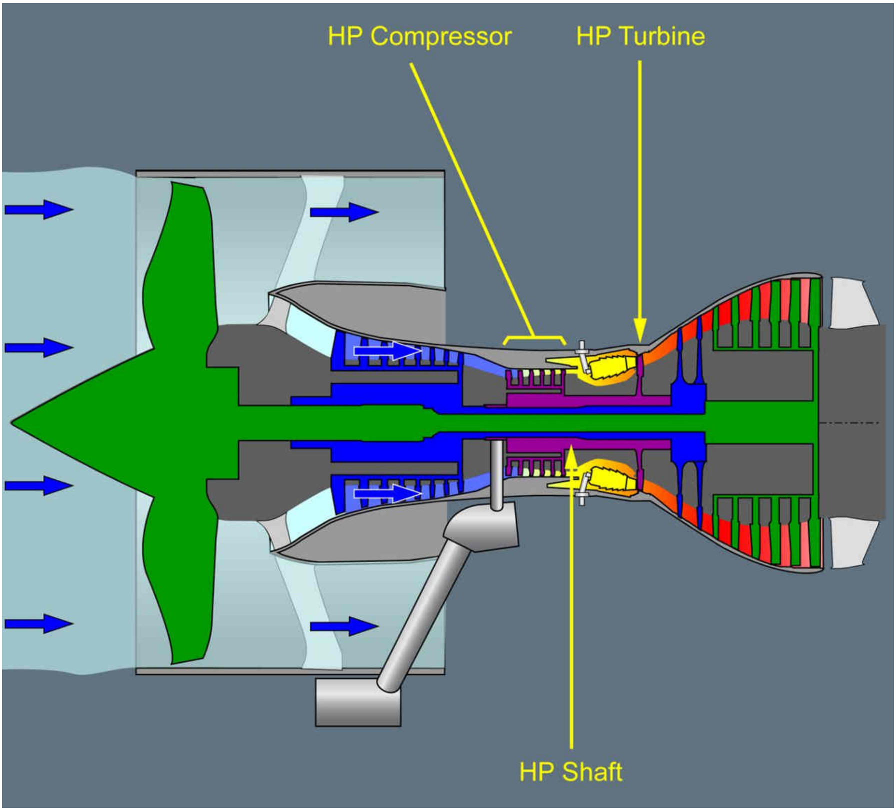
Ident.: DSC-70-10-20-10-00014200.0001001 / 23 APR 14

HP COMPRESSOR TURBINE ASSEMBLY

The HP compressor turbine assembly has:
- One HP compressor
- L2 One HP shaft
- L1 One HP turbine.

L2 The HP shaft connects the HP compressor to the HP turbine.

HP Compressor Turbine Assembly



L3 The HP compressor has 6 stages, and the HP turbine has a single stage.

L1 The rotation speed of the HP rotor provides the N3 engine parameter. The FADEC uses the N3 engine parameter for engine control and monitoring. The N3 engine parameter appears on the ENG SD page.

L2 The N3 engine parameter is the current rotation speed of the HP rotor displayed in percentage.

Ident.: DSC-70-10-20-10-00014201.0001001 / 23 APR 14

COMBUSTION CHAMBER

The combustion chamber burns a mixture of fuel and HP air. The FADEC controls the fuel/air mixture in accordance with the position of the thrust lever and the aircraft operating conditions.

L3 The combustion chamber is an annular assembly with fuel nozzles and two igniters.

The combustion chamber is between the HP compressor and the HP turbine.

Ident.: DSC-70-10-20-10-00014202.0001001 / 23 APR 14

ACCESSORY GEARBOX

The accessory gearbox drives various accessories with mechanical power via the HP shaft for the operation of the engine and the aircraft systems.

L2 The accessory gearbox of each engine operates:

- The oil feed pump that provides the oil system with oil. For more information, *Refer to DSC-70-10-50 Oil System*
- The main engine fuel pump that provides the combustion chamber with fuel. For more information, *Refer to DSC-70-10-40 Main Engine Fuel Pump*
- The engine-driven hydraulic pumps that pressurize the GREEN and the YELLOW hydraulic systems. For more information, *Refer to DSC-29-10 ENG Pumps*
- The engine-driven generators that are the primary source of electrical power. For more information, *Refer to DSC-24-10-20 Engine-driven Generators*
- The FADEC alternator that provides the FADEC with electrical power. For more information, *Refer to DSC-70-10-30-10 Electrical Supply*
- The pneumatic starter that enables the engine start. For more information, *Refer to DSC-70-10-80-30 Start System*.

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General

OVERVIEW

Ident.: DSC-70-10-30-10-00014863.0001001 / 23 APR 14
Applicable to: ALL

Each engine has a Full Authority Digital Engine Control (FADEC).

The FADEC :

- Manages engine power

L2 For more information, *Refer to DSC-70-10-30-30 Thrust Control*.

L1 - Provides engine protection

L2 For more information, *Refer to DSC-70-10-30-20 Engine Protection*.

L1 - Controls the engine fuel flow

L2 For more information about the engine fuel system, *Refer to DSC-70-10-40 Fuel System*.

L1 - Controls engine ignition and engine start.

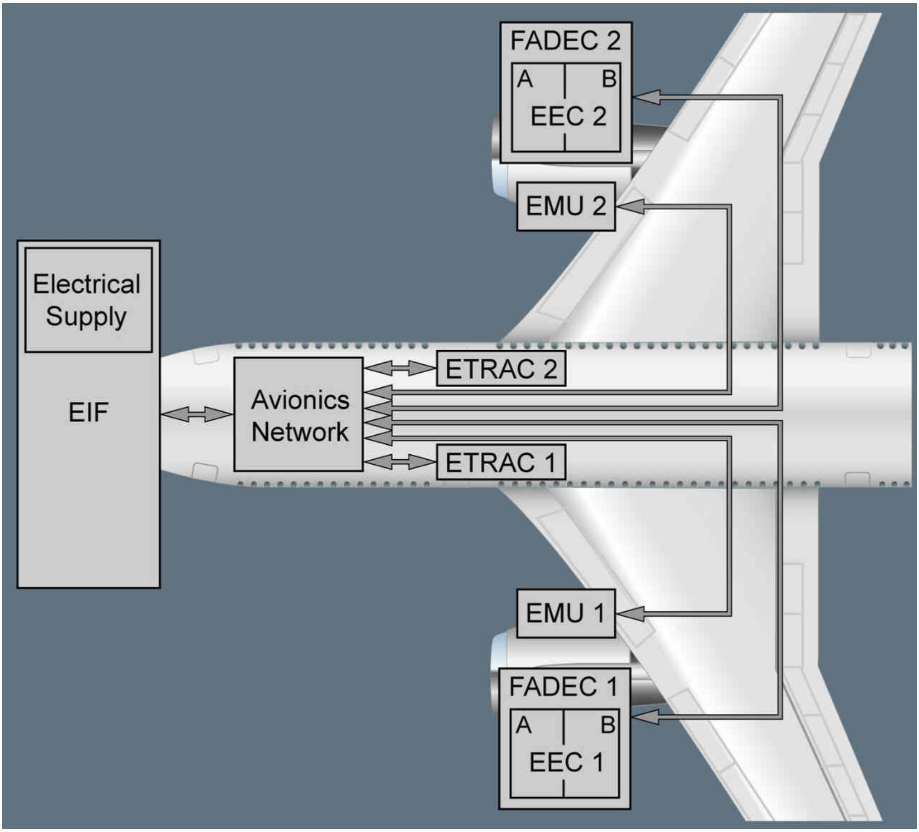
L2 For more information about the ignition system and the start system, *Refer to DSC-70-10-80-10 General*.

ARCHITECTURE

Applicable to: ALL

Ident.: DSC-70-10-30-10-10-00014865.0001001 / 23 APR 14

Architecture


FADEC 2
A
B
EEC 2
EMU 2
Electrical Supply
EIF
Avionics Network
ETRAC 2
ETRAC 1
EMU 1
FADEC 1
A
B
EEC 1

Ident.: DSC-70-10-30-10-10-00016350.0001001 / 23 APR 14

ETRAC 1(2)

Each engine has one Electrical Thrust Reverser Actuation Controller (ETRAC).

L2 For more information, *Refer to DSC-70-10-70-10 Thrust Reverser Control*.

Ident.: DSC-70-10-30-10-10-00014867.0001001 / 23 APR 14

FADEC 1(2)

Each engine has one FADEC also called Engine Electronic Controller (EEC). The EEC controls the engine and computes the engine parameters for cockpit indications.

L3 Each EEC has two redundant channels: Channel A and channel B.
Only one EEC channel controls the engine at a time.
At each engine start, a different EEC channel is used (i.e. channel B if channel A was used during the last engine start).
If one EEC channel fails, the other EEC channel controls the engine.

Ident.: DSC-70-10-30-10-10-00014866.0001001 / 23 APR 14

EIF

Each engine has two Engine Interface Functions (EIF). The EIF is the main interface between the EEC and the other aircraft systems.

L2 The EIF:

- Controls the electrical supply to:
  - The EEC
  - The Engine Monitoring Unit (EMU)
  - The ETRAC
- Provides the EEC with the following data:
  - The air data
  - The bleed air data
  - The position of the thrust levers
  - The data of the cockpit panels
  - The commands in order to start the engine: The EIF monitors the actions of the flight crew, computes the appropriate commands in order to start the engine, and sends the commands to the EEC.
- Provides the aircraft systems (e.g. CDS) with the engine data.

L3 Four CPIOMs (two CPIOMs for each engine) host the EIF applications:

- For engine 1:
  - CPIOM J21: EIF 1.1
  - CPIOM J23: EIF 1.2
- For engine 2:
  - CPIOM J22: EIF 2.2
  - CPIOM J24: EIF 2.1.

Ident.: DSC-70-10-30-10-10-00015757.0001001 / 23 APR 14

EMU 1(2)

The aircraft has two Engine Monitoring Units (EMUs): One for each engine.
Each EMU monitors the vibrations data of its associated engine.

Ident.: DSC-70-10-30-10-10-00014864.0001001 / 23 APR 14

ELECTRICAL SUPPLY

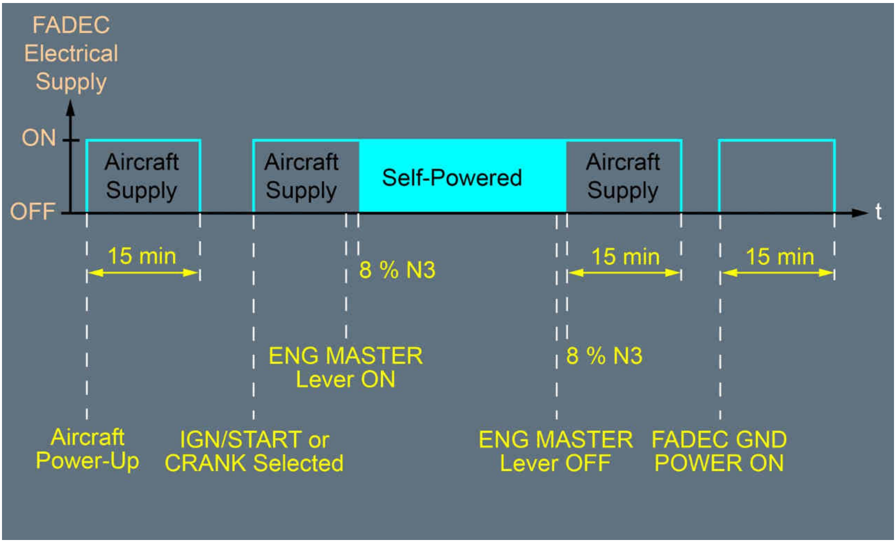
The FADEC is electrically supplied as follows:

- The alternator of the FADEC supplies the FADEC when N3 is above 8 %
  L2 The accessory gearbox operates the FADEC alternator.
- L1 The electrical network of the aircraft supplies the FADEC:
  - When N3 is below 8 %, or
  - If the FADEC alternator fails.

  L3 The EIF controls and supplies the electrical power from the electrical network of the aircraft to the FADEC.

On ground, with the ENG MASTER lever set to OFF, the electrical network of the aircraft supplies the FADEC for 15 min.
When the flight crew sets the ENG FADEC GND PWR pb to ON, the electrical network of the aircraft supplies the FADEC for 15 min.

FADEC Electrical Supply


FADEC Electrical Supply
ON
OFF
Aircraft Supply
Aircraft Supply
Self-Powered
Aircraft Supply
t
15 min
8 % N3
15 min
15 min
ENG MASTER Lever ON
8 % N3
Aircraft Power-Up
IGN/START or CRANK Selected
ENG MASTER Lever OFF
FADEC GND POWER ON

Engine Protection

ENGINE PROTECTION

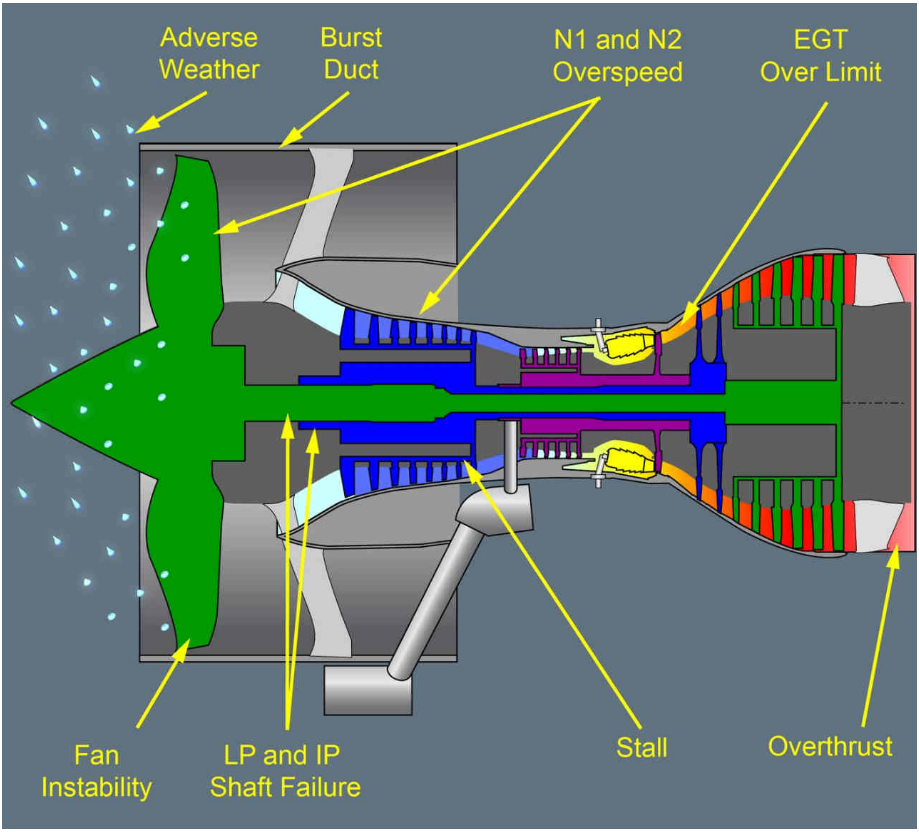
Applicable to: ALL

Ident.: DSC-70-10-30-20-10-00014868.0001001 / 23 APR 14

The FADEC provides protection against the following engine malfunctions:

- Adverse weather
- Exhaust Gas Temperature (EGT) over limit
- Engine stall
- Fan instability
- LP and IP shaft rupture
- N1 and N2 overspeed
- Overthrust
- Burst duct.

Engine Protection


Adverse Weather
Burst Duct
N1 and N2 Overspeed
EGT Over Limit
Fan Instability
LP and IP Shaft Failure
Stall
Overthrust

Ident.: DSC-70-10-30-20-10-00014875.0001001 / 23 APR 14

ADVERSE WEATHER

Heavy rain or hail does not affect the operation of the engine.

In order to increase the engine protection in adverse weather conditions, the FADEC automatically:
- Turns on both igniters
- Defines the minimum HP compressor delivery temperature required to maintain combustor stability.

When weather conditions improve, the FADEC automatically:
- Turns off both igniters
- Returns to the initial HP compressor delivery temperature computation.

Ident.: DSC-70-10-30-20-10-00014870.0001001 / 23 APR 14

EGT OVER LIMIT

On ground during an automatic start sequence, if the FADEC detects that the EGT exceeds the temperature limit, the FADEC automatically shuts down the engine. The FADEC automatically initiates a second and last automatic sequence after an automatic crank process.

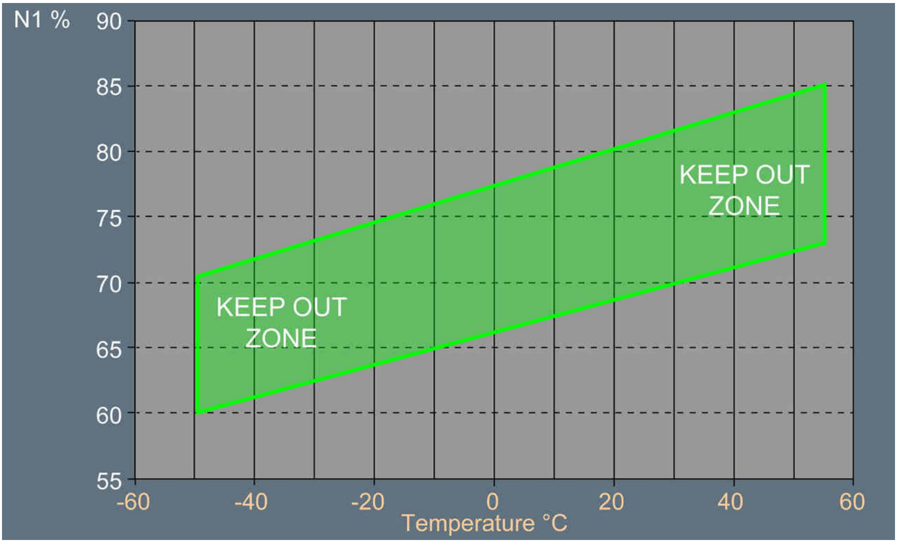
L2 For more information about automatic starts on ground that are automatically stopped, *Refer to DSC-70-40 Start Abort During Automatic Start*.

Ident.: DSC-70-10-30-20-10-00014874.0006001 / 29 JAN 19

FAN INSTABILITY

The EEC protects the engine against fan instability.
The fan instability depends on the aircraft speed and fan rotation speed (N1%).

L2 At aircraft speed below 60 kt, the EEC prevents stabilized operation in N1 Keep Out Zone (KOZ).
The KOZ is nominally from 67 % up to 78 % at 0 °C.



Ident.: DSC-70-10-30-20-10-00014871.0001001 / 23 APR 14

LP AND IP SHAFT FAILURE

In the case of an LP or an IP shaft failure between the compressor and the turbine, the FADEC automatically shuts down the engine.

L2 Associated with the following ECAM alert: ENG 1(2) FAIL (*Refer to procedure*).

Ident.: DSC-70-10-30-20-10-00014869.0001001 / 14 JUN 16

N1 AND N2 OVERSPEED

In the case of overspeed of the LP compressor, or the IP compressor, the FADEC automatically shuts down the engine.

L2 The FADEC automatically shuts down the engine if:
- N1 reaches 107.9 %, or
- N2 reaches 111.3 %.

Associated with the following ECAM alerts:
- ENG 1(2) N1 OVER LIMIT (*Refer to procedure*), or
- ENG 1(2) N2 OVER LIMIT (*Refer to procedure*).

Ident.: DSC-70-10-30-20-10-00014872.0001001 / 23 APR 14

OVERTHRUST

If the current engine thrust is above the commanded engine thrust, the FADEC ensures that the engine thrust remains within the safe limits.

The overthrust protection is active when:
- The aircraft is below 16 600 ft
- The aircraft speed is below M 0.45.

Depending on the aircraft altitude and the aircraft speed, if the FADEC detects overthrust, the FADEC:
- Shuts down the affected engine, or
- Reduces the thrust.

L2 The FADEC shuts down the affected engine if:
- The aircraft is on ground
- The flight crew sets the thrust lever associated with the affected engine to the idle (0) detent, or to the reverser position
- The flight crew sets the thrust lever associated with the other engine to, or below, the CL detent.

The FADEC reduces the thrust of the affected engine if the aircraft is in flight below 16 600 ft and M 0.45.

Ident.: DSC-70-10-30-20-10-00014873.0001001 / 30 APR 14

STALL

At low engine speeds, smooth airflow through the IP and the HP compressors is necessary to ensure that the engine does not stall.
To obtain smooth airflow, the FADEC regulates the volume of airflow through the IP and the HP compressors.

L2 The FADEC regulates the volume of airflow through the IP and the HP compressors via:

- The variable bleed valves that adjust the amount of airflow through the IP and the HP compressors

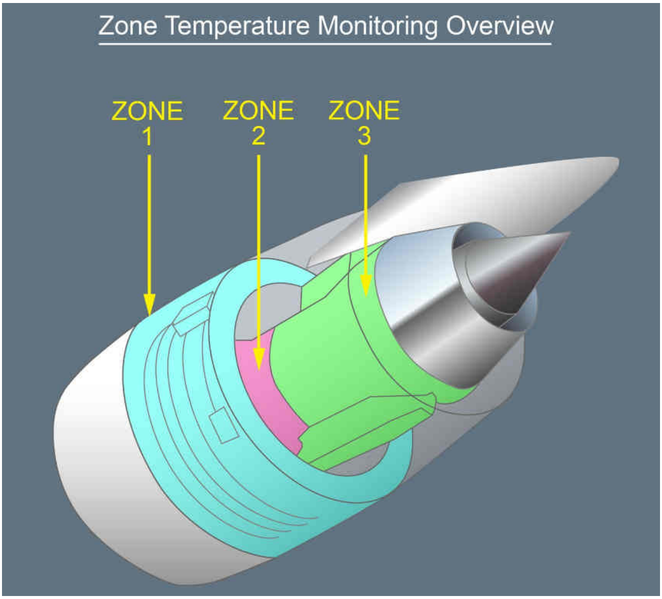
L3 For more information about the Variable Bleed Valves (VBVs), *Refer to DSC-70-10-60 Engine Stability*.

L2
- The Variable Inlet Guide Vanes (VIGVs) and the Variable Stator Vanes (VSVs) that adjust the angle at which the airflow enters the IP compressor.

Ident.: DSC-70-10-30-20-10-00016046.0001001 / 03 JUL 20

BURST DUCT - ENGINE ZONES TEMPERATURE MONITORING

Zones Temperature Monitoring Overview



1 FAN ZONE (ZONE 1)

The Propulsion Control System (PCS=EEC+EIF) monitors the temperature in the fan compartment in order to detect a potential leakage or burst duct.

- When the PCS detects an hot air leakage, the ENG 1(2) FAN ZONE AIR LEAK message is displayed on the DISPATCH page.
- When the PCS detects a burst duct, the EEC isolates the fan compartment from hot air.

L3 In order to isolate the fan compartment from hot air, the EIF orders:

- The anti-ice protection system to close the nacelle anti-ice valve
- The bleed air system to close the overpressure shutoff valve and the engine bleed valve.

L1 INTERMEDIATE CORE ZONE (ZONE 2)

The EEC compares the temperature measured in the upper section zone 2 with a fixed temperature threshold (200 °C) to detect if leak or burst duct event occurred in the region.

L2 When the PCS detects an hot air leakage, the ENG 1(2) INTERMEDIATE CORE ZONE AIR LEAK message is displayed on the DISPATCH page.

L1 CORE ZONE (ZONE 3)

The engine core zone temperature also called nacelle temperature parameter is no more displayed on the ENG SD page.
The engine core zone temperature is continuously monitored by the EEC.

L2 Associated with 2 levels of detection:

- ENG 1(2) CORE ZONE AIR LEAK LO message is displayed on the DISPATCH page, for the low level of detection.
- ENG 1(2) CORE ZONE AIR LEAK HI message is displayed on the DISPATCH page, for the high level of detection.

Power Management

THRUST CONTROL

Applicable to: ALL

Ident.: DSC-70-10-30-30-10-00014876.0001001 / 23 APR 14

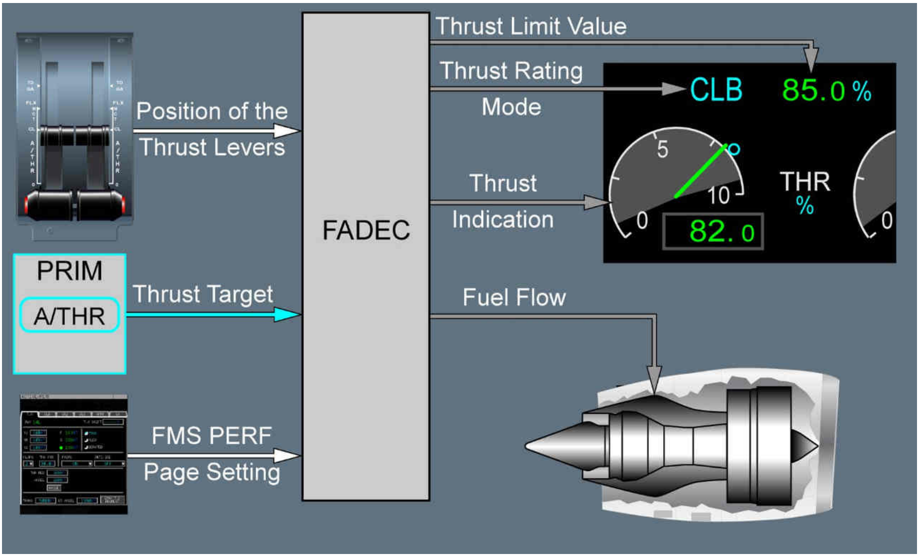
The FADEC controls the engine thrust.

The FADEC controls the engine thrust in:
- Automatic mode: The FADEC computes the engine thrust in accordance with the A/THR target, or
- Manual mode: The FADEC computes the engine thrust in accordance with:
  - The position of the thrust levers
  - The air data
  - The use of engine bleed air.

The FADEC:
- Adjusts the fuel flow in order to control the engine thrust
- Computes the thrust rating limit in accordance with the position of the thrust levers.

Note: *The engine thrust is always limited by the thrust lever position, with or without A/THR, except when the* ***A.FLOOR*** *protection is active.*

Thrust Control


Thrust Limit Value
Thrust Rating
Mode
CLB
85.0 %
Position of the
Thrust Levers
FADEC
Thrust
Indication
5
10
0
82.0
THR
%
0
PRIM
A/THR
Thrust Target
Fuel Flow
FMS PERF
Page Setting

Ident.: DSC-70-10-30-30-10-00014879.0001001 / 03 JAN 19

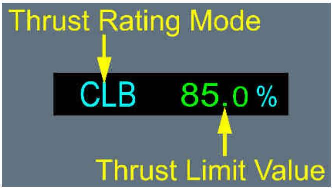
THRUST RATING MODE AND THRUST LIMIT VALUE

The FADEC computes the thrust rating mode and the corresponding thrust limit value in accordance with:

- The position of the thrust levers.
- The data that the flight crew entered in the T.O panel and the CLB panel of the FMS PERF page.

The thrust rating mode and the corresponding thrust limit value appear on the ED.

Thrust Rating Mode and Thrust limit Value


Thrust Rating Mode
CLB
85.0 %
Thrust Limit Value

THRUST LIMIT VALUE

The thrust limit value corresponds to the maximum available thrust of the engine with the current position of the thrust levers, the bleed configuration and the data entered in the FMS PERF page.

THRUST RATING MODE

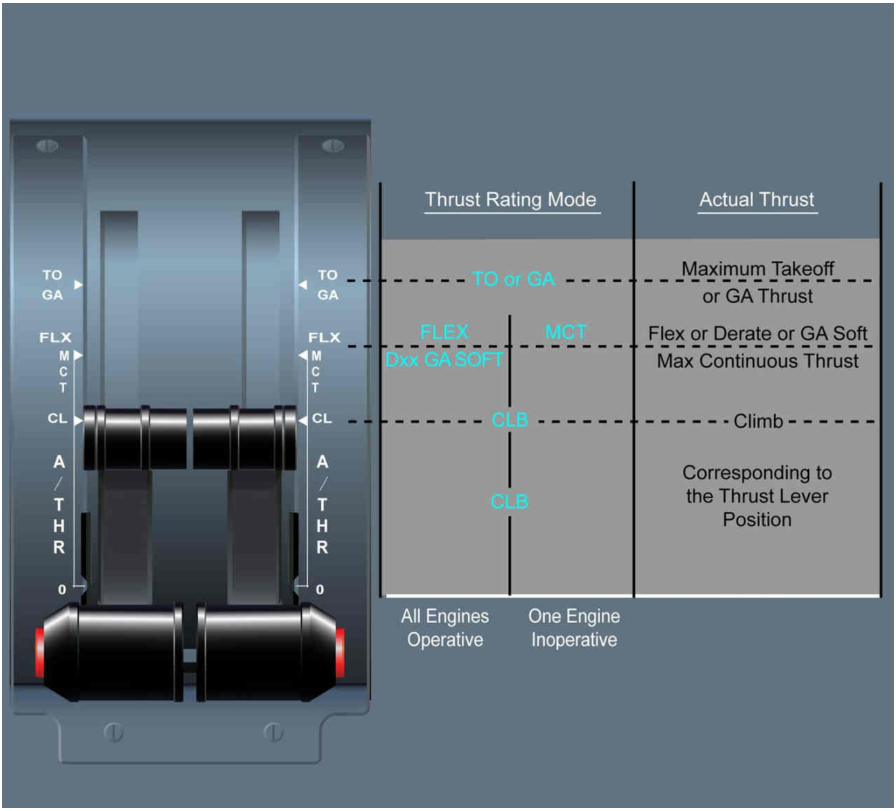
The thrust rating modes are:

- TOGA: Takeoff or Go-Around mode
  The TOGA mode provides the maximum available thrust at takeoff or go-around.
  L2 For more information about the TOGA mode, *Refer to PER-TOF-20-10 TOGA Thrust*.
- L1 Dxx: Derated takeoff mode
  The Dxx takeoff mode reduces the thrust at takeoff.
  L2 For more information about the Dxx takeoff mode, *Refer to PER-TOF-20-20-30 Derated Takeoff Definition*.
  L1 The flight crew selects the level of the derated takeoff via the T.O panel of the FMS PERF page.
  L2 For more information about the selection of the derated takeoff, *Refer to DSC-22-FMS-20-20-20 T.O Thrust Option List*.
- L1 FLEX: Flexible (FLEX) takeoff mode
  The FLEX mode reduces the thrust at takeoff in order to limit the fuel consumption and the engine degradation.
  L2 For more information about the FLEX mode, *Refer to PER-TOF-20-20-20 Flexible Takeoff Definition*.
  L1 The flight crew selects the FLEX mode via the T.O panel of the FMS PERF page.
  L2 For more information about the selection of the FLEX mode, *Refer to DSC-22-FMS-20-20-20 T.O Thrust Option List*.
- L1 CLB: Climb mode (CLB)
  The CLB mode provides the maximum climb thrust during climb.
- DCLB: Derated climb mode reduces automatically the thrust during climb.
  L2 For more information, *Refer to DSC-22-FMS-10-50-40 Auto-Derated Thrust during Climb*
- L1 MCT: Maximum Continuous Thrust (MCT) mode.
  The MCT mode provides the maximum engine thrust with one engine inoperative
- GA SOFT: Go Around Soft mode provides:
  - The engine thrust to target a vertical speed at approximately 2 000 ft/min, or
  - The maximum available thrust (TOGA), if 2 000 ft/min target cannot be reached.

  L2 For more information, (*Refer to DSC-22-FG-50-60 From Soft Go-around to Thrust reduction Altitude*)

THRUST CONTROL IN MANUAL MODE

In manual mode, each FADEC computes the associated engine thrust based on the position of the corresponding thrust lever. The flight crew can move the thrust lever from the idle (0) detent to the TO/GA detent.
The position of the thrust lever corresponds to a specific percent of maximum thrust.


TO GA
FLX
MCT
CL
A/THR
0
Thrust Rating Mode
Actual Thrust
TO or GA
Maximum Takeoff or GA Thrust
FLEX
Dxx GA SOFT
MCT
Flex or Derate or GA Soft
Max Continuous Thrust
CLB
Climb
CLB
Corresponding to the Thrust Lever Position
All Engines Operative
One Engine Inoperative

MANUAL THRUST ON GROUND (ENGINE RUNNING)

Depending on the data that the flight crew entered on the T.O panel of the FMS PERF page, the corresponding thrust rating mode (i.e. T.O, Dxx, or FLEX) appears on the ED, regardless of the position of the thrust levers.

Ident.: DSC-70-10-30-30-10-00014881.0001001 / 23 APR 14

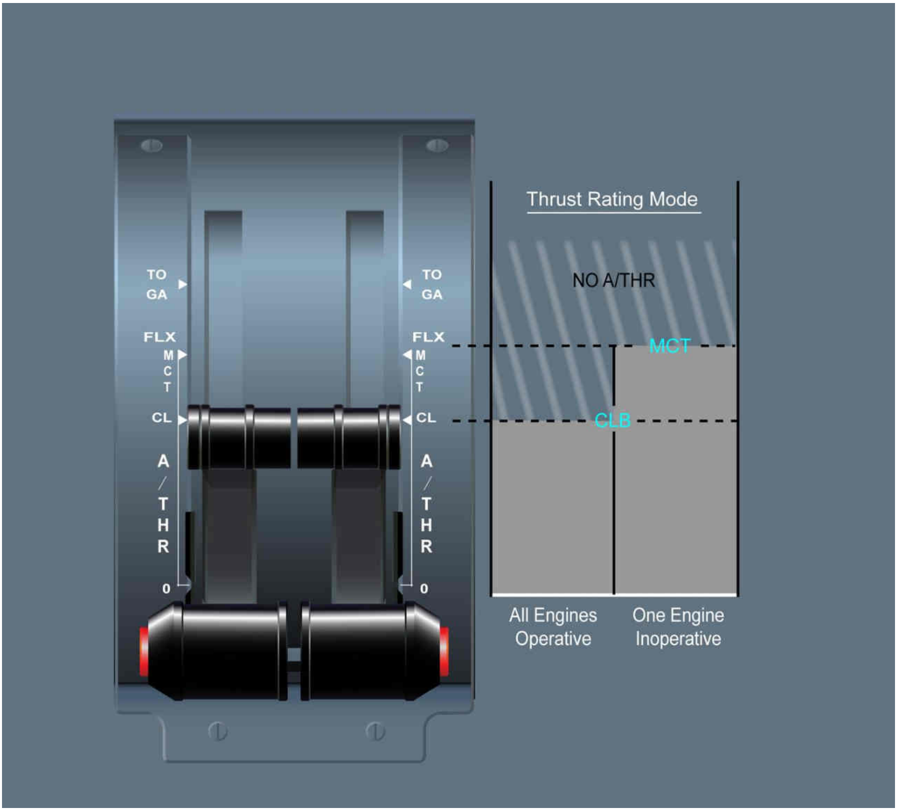
THRUST CONTROL IN AUTOMATIC MODE

In automatic mode, i.e. when the A/THR is active, the FADEC computes the engine thrust in accordance with the A/THR target.

L2 The A/THR target is a N1 target.

L1 When the A/THR is active, the thrust rating mode is CLB.

L2 For more information about the A/THR, *Refer to DSC-22-FG-50-10 General*.
For more information about the A/THR arming and activation, *Refer to DSC-22-FG-50-30 Preliminary Conditions Required for A/THR Arming or Activation*.


TO
GA
FLX
MCT
CL
A/THR
0
TO
GA
FLX
MCT
CL
A/THR
0
Thrust Rating Mode
NO A/THR
MCT
CLB
All Engines Operative
One Engine Inoperative

L1 The position of the thrust lever limits the engine thrust, except if the alpha floor protection is activated.

L2 For more information about the limit of the engine thrust, *Refer to DSC-22-FG-50-30 Effect of thrust lever movement when the A/THR is active*.

L1 If the alpha floor protection activates, the A/THR requests TOGA thrust, regardless of the position of the thrust levers.

L2 For more information about the alpha floor protection, *Refer to DSC-22-27-20 Alpha Floor Protection*.

ENGINE POWER SETTINGS

Applicable to: ALL

Ident.: DSC-70-10-30-30-20-00014877.0001001 / 23 APR 14

The FADEC manages the engine thrust in:
- Normal mode
- Degraded mode.

Depending on the availability of the sources for the air data parameters, the FADEC selects the appropriate mode to manage the engine thrust.
In normal operations, the FADEC operates in normal mode.
If all ADIRUs and sensor data of one air data parameter (P0, P20, or T20) are not available, the FADEC reverts to degraded mode.
In both normal and degraded modes, the primary engine parameter for thrust management is N1.

Ident.: DSC-70-10-30-30-20-00014882.0001001 / 23 APR 14

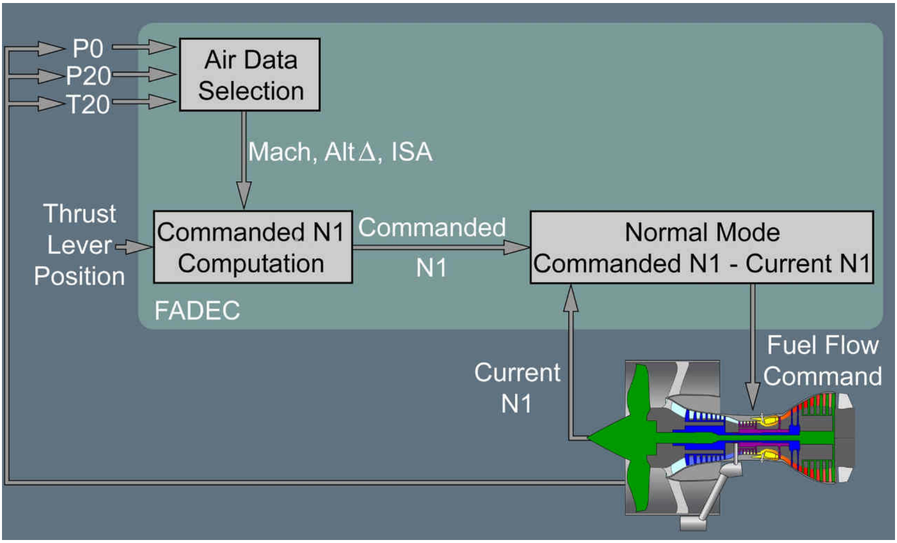
NORMAL MODE

In normal mode, the primary engine parameter that appears on the ED is the thrust (THR).

The THR engine parameter is a specific percent of the maximum thrust that the engine can provide with:
- The engine bleed air system off
- The thrust levers set to the TO/GA detent.

L2 In order to compute the N1 engine parameter, the FADEC uses:
- The position of the thrust lever
- The following air data parameters:
  - Static pressure (P0)
  - Total pressure (P20)
  - Total temperature (T20).

N1 Computation


P0
P20
T20
Air Data Selection
Mach, AltΔ, ISA
Thrust Lever Position
Commanded N1 Computation
Commanded N1
Normal Mode Commanded N1 - Current N1
FADEC
Current N1
Fuel Flow Command

The FADEC uses the air data parameters to compute the aircraft speed, altitude, and ISA deviation that are then used for computation of the commanded N1.
The commanded N1 takes into account the current N1 value (N1 that the FADEC monitors).

Ident.: DSC-70-10-30-30-20-00014883.0001001 / 23 APR 14

DEGRADED MODE

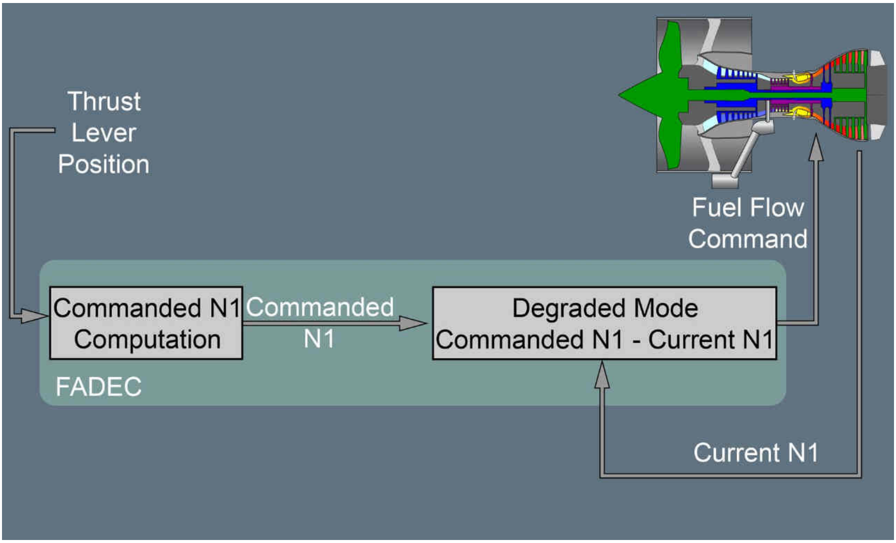
In degraded mode, the N1 engine parameter appears on the ED instead of the THR engine parameter.

L2 For more information about display on the ED in degraded mode, *Refer to DSC-70-20 Degraded Thrust Indicator*.

L1 The FADEC uses the degraded mode to avoid thrust bump if all ADIRUs and one of the following air data parameters are not valid:
- Static pressure (P0), or
- Total pressure (P20), or
- Total temperature (T20).

If both engines operate in degraded mode, the A/THR automatically disconnects.
L2 The FADEC computes the N1 command from the position of the thrust levers.
L1 If one engine is in degraded mode, the soft go-around functions is lost.

N1 Computation


Thrust
Lever
Position
Fuel Flow
Command
Commanded N1
Computation
Commanded
N1
Degraded Mode
Commanded N1 - Current N1
FADEC
Current N1

Ident.: DSC-70-10-30-30-20-00014884.0001001 / 23 APR 14

SELECTION OF THE FADEC AIR DATA

The FADEC uses air data parameters for power management.
The three ADIRUs, the ISIS, and two probes dedicated to the engine provide the FADEC with the air data parameters.

L2 In accordance with the validity of the sources of the air data parameters, the FADEC selects the appropriate source for each air data parameter.

L3 In order to validate the source of each air data parameter, the FADEC compares the air data parameter of all the sources. The FADEC uses the air data parameter of the source that is most similar to the other sources.

L1 If there is no valid source for the corresponding air data parameter, the FADEC:
- Uses the engine parameters, or
- Reverts to degraded mode.

IDLE SETTINGS

Ident.: DSC-70-10-30-30-00014878.0001001 / 23 APR 14
Applicable to: ALL

When the flight crew sets the thrust lever to the idle (0) detent, depending on the flight phase, the EIF adjusts the minimum thrust required to maintain correct engine operation at low speeds.

There are three idle settings:

- Approach idle
  The approach idle setting enables to rapidly accelerate the engine from idle to go-around thrust, if needed.

L2 The EIF selects the approach idle setting when the aircraft is in flight and:
- The landing gear is extended, or
- The FLAPS lever is set to 2, 3 or FULL position.

L1 - Minimum reverse idle
  The minimum reverse idle setting enables to rapidly accelerate the engine from reverse idle to maximum reverse thrust.

L2 The EIF selects the minimum reverse idle setting when:
- The aircraft is on ground
- The flight crew selects the reverse thrust, via the thrust reverser lever.

L1 - Normal idle

L2 The EIF selects the normal idle setting in flight when:
- The FLAPS lever is set to 0, 1
- The landing gear is retracted.

The EIF selects the normal idle setting on ground when the flight crew does not select the reverse thrust.

Intentionally left blank

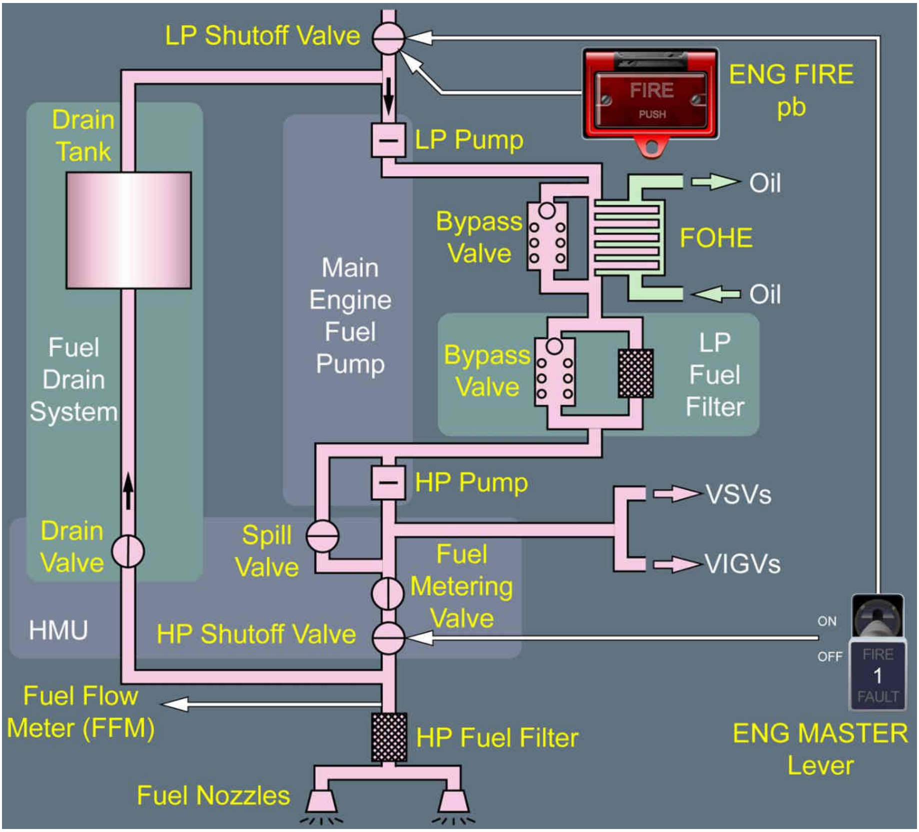
FUEL SYSTEM

Applicable to: ALL

Ident.: DSC-70-10-40-10-00014242.0001001 / 23 APR 14

The fuel system provides the combustion chamber with the fuel at the required flow rate, pressure, and temperature.

Fuel System


LP Shutoff Valve
ENG FIRE pb
FIRE
PUSH
Drain Tank
LP Pump
Oil
Bypass Valve
FOHE
Oil
Main Engine Fuel Pump
Fuel Drain System
Bypass Valve
LP Fuel Filter
HP Pump
VSVs
Drain Valve
Spill Valve
VIGVs
Fuel Metering Valve
HMU
HP Shutoff Valve
ON
OFF
FIRE
1
FAULT
Fuel Flow Meter (FFM)
HP Fuel Filter
ENG MASTER Lever
Fuel Nozzles

Ident.: DSC-70-10-40-10-00014246.0001001 / 23 APR 14

LP SHUTOFF VALVE

Each engine has a LP shutoff valve also called LP fuel valve.

The LP shutoff valve closes when the flight crew:
- Sets the ENG MASTER lever to OFF, or
- Presses the ENG FIRE pb.

When the LP shutoff valve closes, the fuel supply from the fuel tanks to the main engine fuel pump is stopped.

Ident.: DSC-70-10-40-10-00014243.0001001 / 23 APR 14

MAIN ENGINE FUEL PUMP

The main engine fuel pump provides the fuel nozzles with the fuel from the fuel tanks, at the required pressure and temperature.
The main engine fuel pump is a two-stage pump that has an LP stage and an HP stage.

LP PUMP

The fuel from the fuel tanks flows through the LP pump.
L3 The LP pump provides the FOHE with the fuel for temperature regulation purpose.

L1 HP PUMP

The fuel from the LP fuel filter flows through the HP pump to the fuel nozzles, via the HMU and the HP fuel filter.
L3 The HP pump pressurizes the fuel for pressure regulation purpose.

Ident.: DSC-70-10-40-10-00014251.0001001 / 02 OCT 14

FUEL/OIL HEAT EXCHANGER

The Fuel/Oil Heat Exchanger (FOHE) uses the cold LP fuel to decrease the temperature of the engine oil, and increases the temperature of the fuel.
The heat is continuously transmitted from the oil to the fuel when the engine is in operation. This prevents the fuel from icing.
If the FOHE is clogged (e.g. ice accretion from the upstream pipes), a bypass valve opens to ensure that the fuel continuously flows to the fuel nozzles.

L2 Associated with the following ECAM alert:
- ENG 1+2 FUEL HEAT EXCHANGER IN BYPASS (*Refer to procedure*).
- ENG 1(2) FUEL HEAT EXCHANGER IN BYPASS (*Refer to procedure*).

Ident.: DSC-70-10-40-10-00014244.0001001 / 02 OCT 14

LP FUEL FILTER

The LP fuel filter protects the fuel system from contamination.
L2 The LP fuel filter is downstream of the FOHE.

L1 If the LP fuel filter is clogged, a bypass valve opens to ensure that the fuel continuously flows to the fuel nozzles.
If the bypass valve opens, the fuel that flows through the HMU may be contaminated with particles.

L2 Associated with the following ECAM alerts:
- ENG 1(2) FUEL FILTER CLOGGED (*Refer to procedure*).
- ENG 1+2 FUEL FILTER CLOGGED (*Refer to procedure*).
- ENG 1(2) FUEL FILTER IN BYPASS (*Refer to procedure*).
- ENG 1+2 FUEL FILTER IN BYPASS (*Refer to procedure*), or
- ENG 1(2) CTL SYS FAULT (*Refer to procedure*).

Ident.: DSC-70-10-40-10-00014245.0001001 / 23 APR 14

HYDROMECHANICAL UNIT

The FADEC controls the fuel supply via the Hydromechanical Unit (HMU) to obtain the required engine thrust. The HMU commands the Fuel Metering Valve (FMV) to control the fuel that flows to the engine combustion chamber.

L3 The HMU:
- Controls the fuel flow to the combustion chamber via the FMV
- Operates the VSVs and the VIGVs to regulate the IP and the HP compressor flow. For more information about the VSVs and the VIGVs, *Refer to DSC-70-10-30-20 Stall*
- Operates the HP shutoff valve to start or stop the engine
- Closes the HP shutoff valve in order to prevent engine overspeed, or in the case of engine fire.

Ident.: DSC-70-10-40-10-00014250.0001001 / 23 APR 14

L3 SPILL VALVE

The spill valve regulates the fuel pressure upstream and downstream of the fuel metering valve.
The spill valve maintains a constant differential pressure through the fuel metering valve to ensure that the metered fuel flow is always in accordance with the fuel metering valve position.

Ident.: DSC-70-10-40-10-00014247.0001001 / 23 APR 14

HP SHUTOFF VALVE

Each engine has a HP shutoff valve also called HP fuel valve.
The HP shutoff valve closes when the flight crew sets the ENG MASTER lever to OFF.
When the HP shutoff valve closes, the fuel supply from the main engine fuel pump to the combustion chamber is stopped.

L3 When the HP shutoff valve closes, the drain valve opens. Any remaining fuel from the fuel nozzles is sent to the fuel drain via the drain valve.

L2 Associated with the following ECAM alerts:
- ENG 1(2) HP FUEL VLV NOT CLOSED (*Refer to procedure*), or
- ENG 1(2) HP FUEL VLV NOT OPEN (*Refer to procedure*).

Ident.: DSC-70-10-40-10-00014249.0001001 / 23 APR 14

L3 FUEL DRAIN SYSTEM

The fuel drain system drains and stores the fuel that did not burn after an engine shutdown or an aborted start sequence on the ground, via the drain valve.
During the engine start, the fuel from the fuel drain is transferred to the fuel drain system.
The LP fuel pump also uses fuel from the drain tank.

Ident.: DSC-70-10-40-10-00014248.0001001 / 23 APR 14

HP FUEL FILTER

The HP fuel filter protects the fuel nozzles against blockage.
L2 The HP fuel filter is upstream of the fuel nozzles.

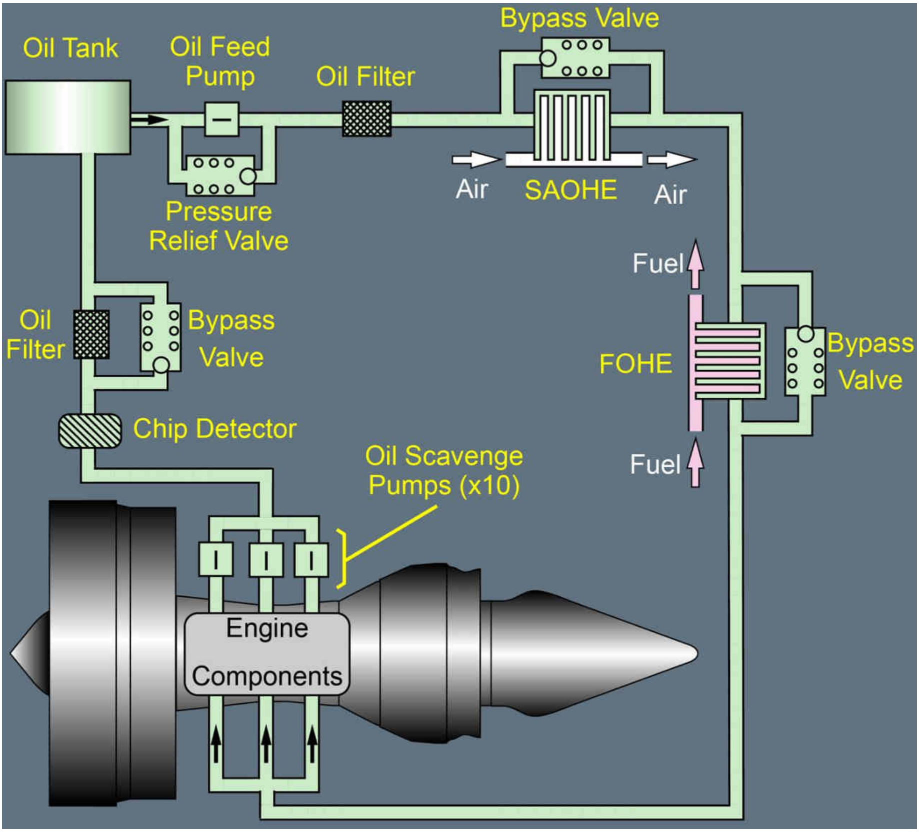
OIL SYSTEM

Applicable to: ALL

Ident.: DSC-70-10-50-10-00014252.0001001 / 23 APR 14

The oil system lubricates and cools the following engine components:
- The gears
- The bearings
- The accessory drivers.

Oil System


Oil Tank
Oil Feed Pump
Oil Filter
Bypass Valve
Pressure Relief Valve
Air
SAOHE
Air
Fuel
Oil Filter
Bypass Valve
FOHE
Bypass Valve
Chip Detector
Oil Scavenge Pumps (x10)
Fuel
Engine Components

Ident.: DSC-70-10-50-10-00014254.0001001 / 23 APR 14

OIL FEED PUMP

The oil feed pump supplies the oil to lubricate the engine components.

Ident.: DSC-70-10-50-10-00014255.0001001 / 23 APR 14

PRESSURE RELIEF VALVE

The pressure relief valve opens to decrease the oil pressure if:
- The oil pressure is too high at the oil feed pump outlet, or
- The oil filter is clogged.

L3 When the oil temperature is low, or there is a blockage in the system, the oil pressure increases. Therefore, to protect the oil system, the pressure relief valve opens when the oil pressure is too high. When the pressure relief valve opens, the oil is fed back to the oil feed pump inlet.

Ident.: DSC-70-10-50-10-00014256.0001001 / 23 APR 14

OIL FILTER

The oil system has two filters to protect the oil system from contamination:
- One system oil filter downstream of the oil feed pump
- One scavenge oil filter upstream of the oil tank.

Only the scavenge oil filter has a bypass valve.
L3 If the scavenge oil filter is blocked, the bypass valve opens to ensure that the oil continuously flows to the engine components.

Ident.: DSC-70-10-50-10-00014257.0001001 / 23 APR 14

L3 SURFACE AIR/OIL HEAT EXCHANGER

The Surface Air/Oil Heat Exchanger (SAOHE) uses cold air to cool the oil before it flows to the FOHE.

The SAOHE has a bypass valve. The FADEC controls the bypass valve as follows:
- If the temperature of the oil is above a specific value, the FADEC closes the bypass valve. The oil flows through the SAOHE
- If the temperature is below a specific value, the FADEC opens the bypass valve. The oil directly flows to the FOHE.

Ident.: DSC-70-10-50-10-00014259.0001001 / 23 APR 14

OIL SCAVENGE PUMPS

The oil scavenge pumps send the oil that lubricates the engine components to the oil tank.

Ident.: DSC-70-10-50-10-00014260.0001001 / 23 APR 14

CHIP DETECTOR

The chip detector detects any particles in the oil, and so provides an indication of the state of the engine components.
The chip detector is downstream of the oil scavenge pumps.

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AIR SYSTEM

Applicable to: ALL

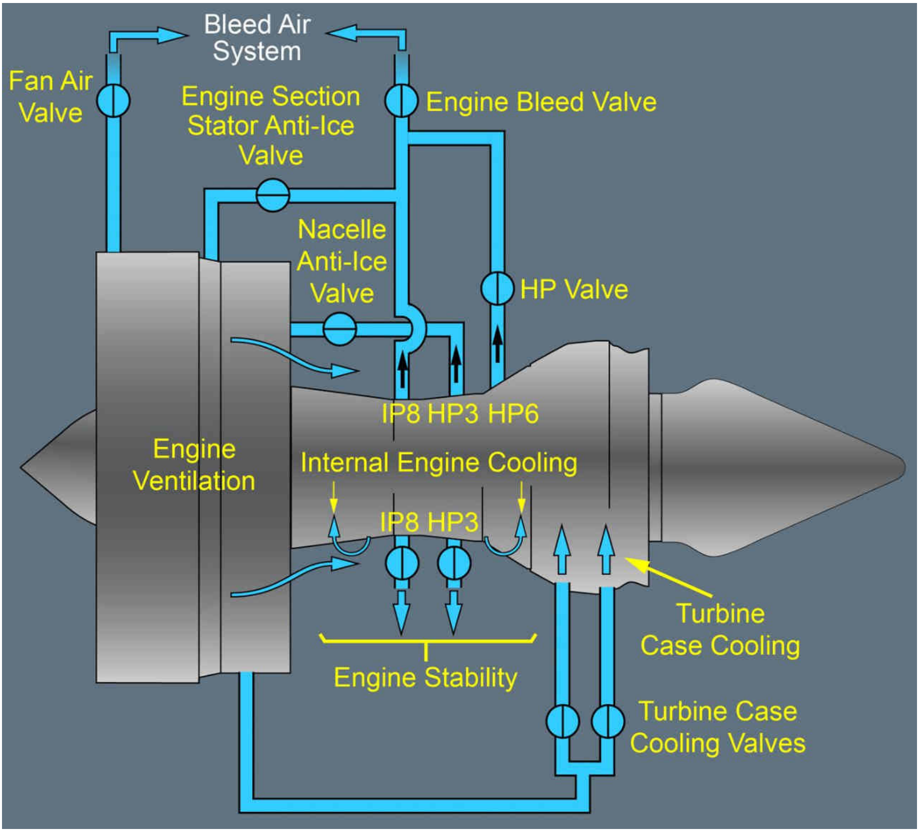
Ident.: DSC-70-10-60-10-00014262.0001001 / 03 JUL 20

1

The engines provide bleed air to ensure:
- The internal engine cooling
- The engine stator section de-icing
- The turbine case cooling to improve the turbine efficiency.
- L3 The engine stability via the control of the volume of airflow in the IP and HP compressors.

L1 The engines also provide bleed air to:
- The bleed air system
  (*Refer to DSC-36-10-20 Engine Bleed Air System*).
- The engine anti-ice system.
  (*Refer to DSC-30-20-10 Engine Anti-ice*).

Air System


Bleed Air System
Fan Air Valve
Engine Section Stator Anti-Ice Valve
Engine Bleed Valve
Nacelle Anti-Ice Valve
HP Valve
IP8 HP3 HP6
Engine Ventilation
Internal Engine Cooling
IP8 HP3
Turbine Case Cooling
Engine Stability
Turbine Case Cooling Valves

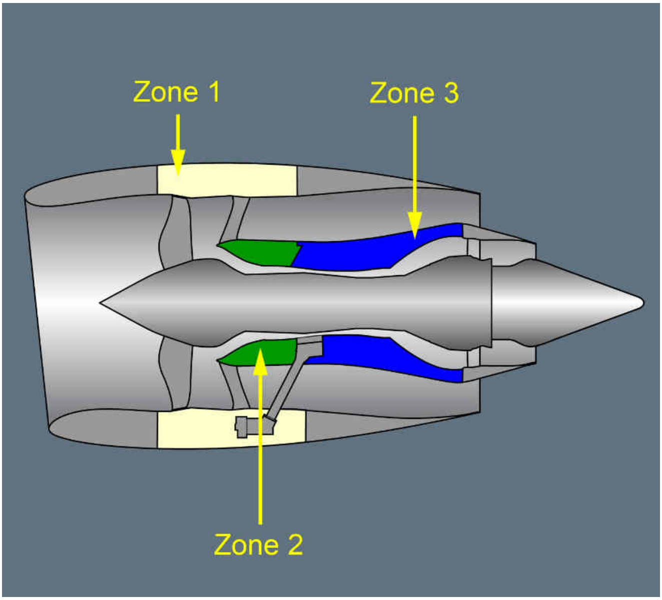
Ident.: DSC-70-10-60-10-00014263.0001001 / 23 APR 14

ENGINE VENTILATION

The engine has three fire resistant zones that are isolated from each other:
- Zone 1: The fan compartment
- Zone 2: The IP compressor compartment
- Zone 3: The engine core compartment.

The airflow:
- Decreases the temperature of these three zones
- Prevents the accumulation of fumes.

Engine Zones



Ident.: DSC-70-10-60-10-00014264.0001001 / 23 APR 14

INTERNAL ENGINE COOLING

The internal part of the engine is cooled with air from the IP and the HP compressors.

L3 The air from the IP and the HP compressors also:
- Seals the bearing chambers
- Prevents any internal oil leakage.

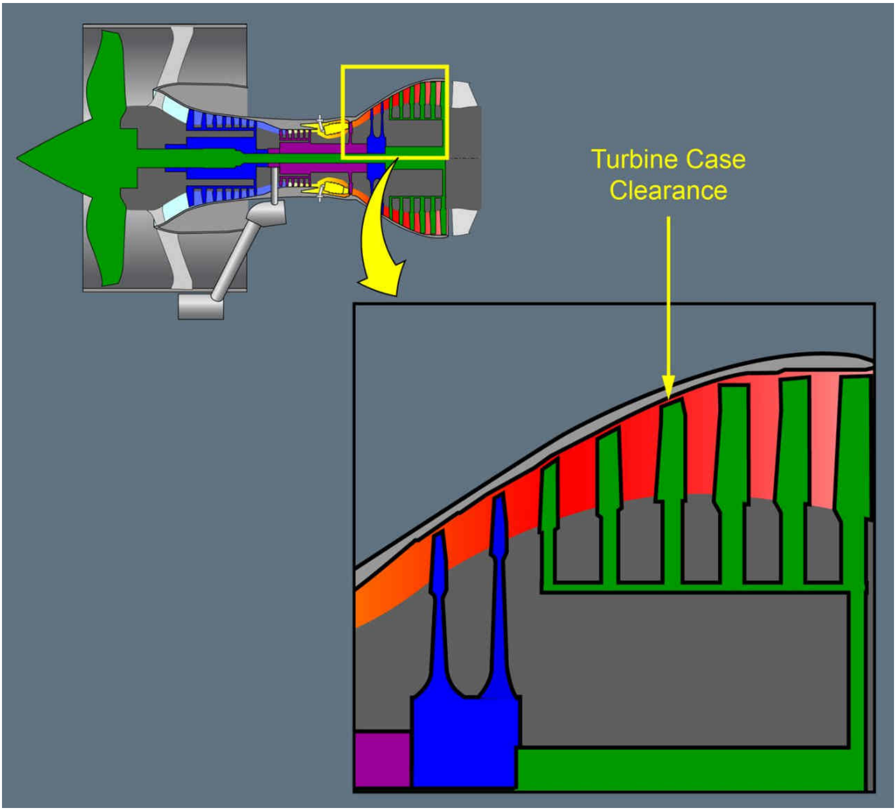
Ident.: DSC-70-10-60-10-00014265.0001001 / 23 APR 14

TURBINE CASE COOLING

The turbine case cooling improves the turbine efficiency.

L3 The turbine case cooling reduces the clearance of the turbine blade tip to optimize the engine performance.
The FADEC controls the turbine case cooling via the turbine case cooling valves.
When the turbine case cooling valves open, the air goes to three manifolds to cool the LP, the IP, and the HP turbine cases.

Turbine Case Clearance



Ident.: DSC-70-10-60-10-00014266.0001001 / 23 APR 14

L3 ENGINE STABILITY

The air system ensures the engine stability via the control of the airflow through the IP and the HP compressors.

The FADEC controls the volume of the airflow through the IP and the HP compressors via:

- The bleed valves at the 8th stage of the IP compressor, and at the third stage of the HP compressor
  At low engine speeds, the FADEC opens the Variable Bleed Valves (VBVs) to deviate some airflow out of the core engine.
  At high engine speeds, the FADEC closes the VBVs to supply the full airflow to the IP and the HP compressors.
- The VSVs and the VIGVs on the IP compressor.
  For more information about the VSVs and the VIGVs, *Refer to DSC-70-10-30-20 Stall*.

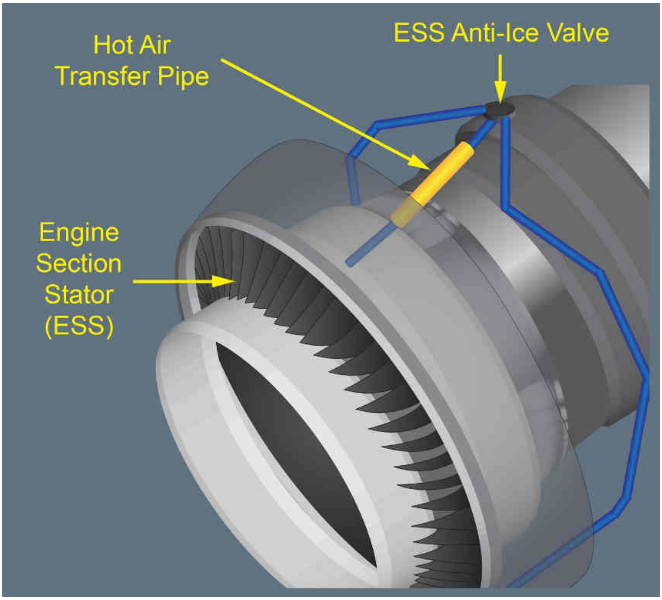
Ident.: DSC-70-10-60-10-00019021.0001001 / 25 JUN 14

ENGINE SECTION STATOR ANTI-ICE SYSTEM

The Engine Section Stator (ESS) anti-ice system prevents ice accretion at compressor inlet to avoid engine core damages.

L2 Hot air from intermediary pressure compressor is bled and piped to the engine section stator to warm the aerofoil surfaces and prevent buildup of ice.

Engine Section Stator Anti-Ice System



L1 ENGINE SECTION STATOR ANTI-ICE VALVE

The Engine Section Stator Anti-Ice Valve (ESS A-ICE VLV) is automatically controlled and monitored.

L2 The ESS A-ICE VLV is spring loaded (failed safe position), and HP muscle air is used to drive the valve open.
Associated with the following ECAM alert: ENG 1(2) STATOR A-ICE VLV CLOSED (*Refer to procedure*).

L1 HOT AIR TRANSFER PIPE

There are 3 hot air transfer pipes.

L2 The hot air transfer pipes bring hot air from IP compressor to the Engine Section Stator (ESS).

General

OVERVIEW

Applicable to: ALL

Ident.: DSC-70-10-70-10-10-00014943.0001001 / 23 APR 14

Each engine has one thrust reverser system.

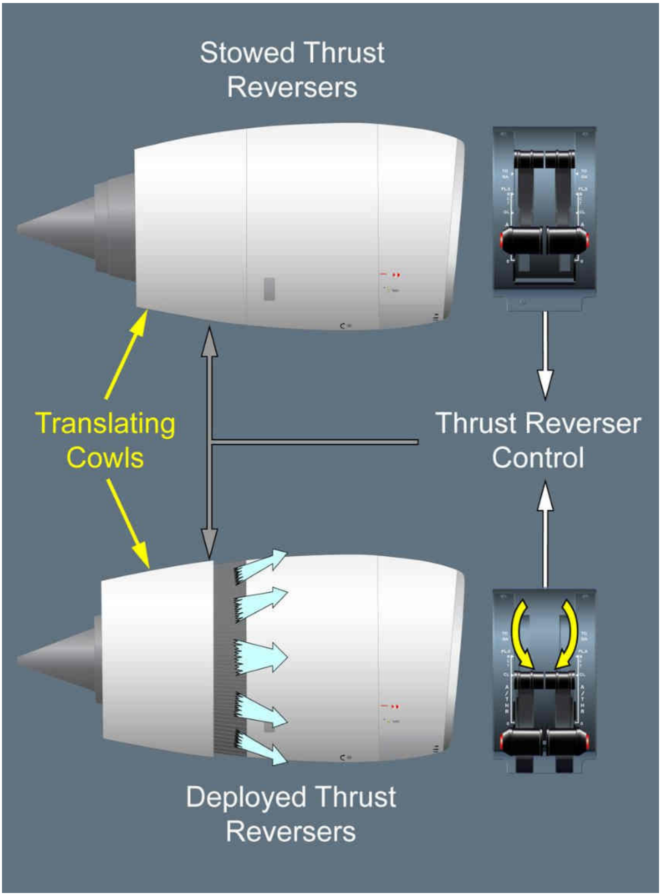
The thrust reversers enable the reduction of:
- The landing distance
- The energy that the brakes absorb during landing.

Each thrust reverser system has two electrical translating cowls.

On ground, the thrust reversers open to obtain a reverse thrust when the flight crew sets:
- The thrust lever to the idle (0) detent
- The thrust reverser lever to the reverse thrust positions, i.e. between the minimum and maximum reverse detents.

The thrust reverser lever is mechanically locked when the flight crew sets the associated thrust lever above the idle (0) detent.

Overview

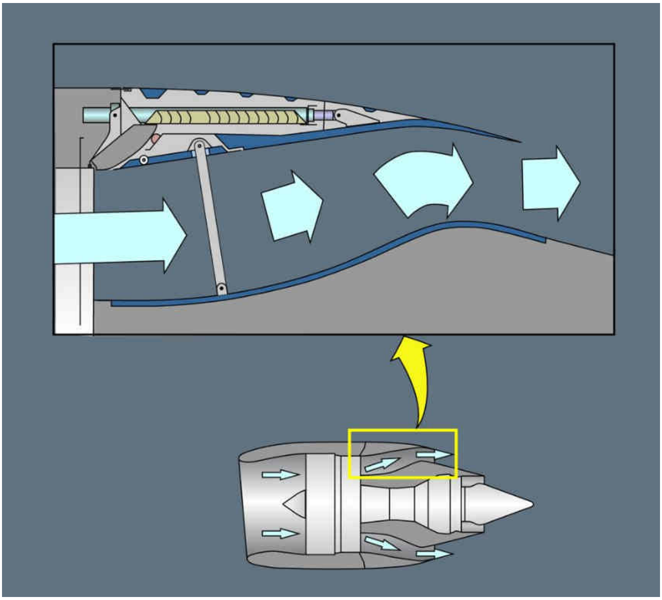

Stowed Thrust Reversers
Translating Cowls
Thrust Reverser Control
Deployed Thrust Reversers

Ident.: DSC-70-10-70-10-10-00014944.0001001 / 23 APR 14

STOWED THRUST REVERSERS

When the thrust reversers are in the stowed position:
- The translating cowls are closed and mechanically locked
- The airflow outside the core engine continues to move through the engine exhaust.

Stowed Position



Ident.: DSC-70-10-70-10-10-00014945.0001001 / 23 APR 14

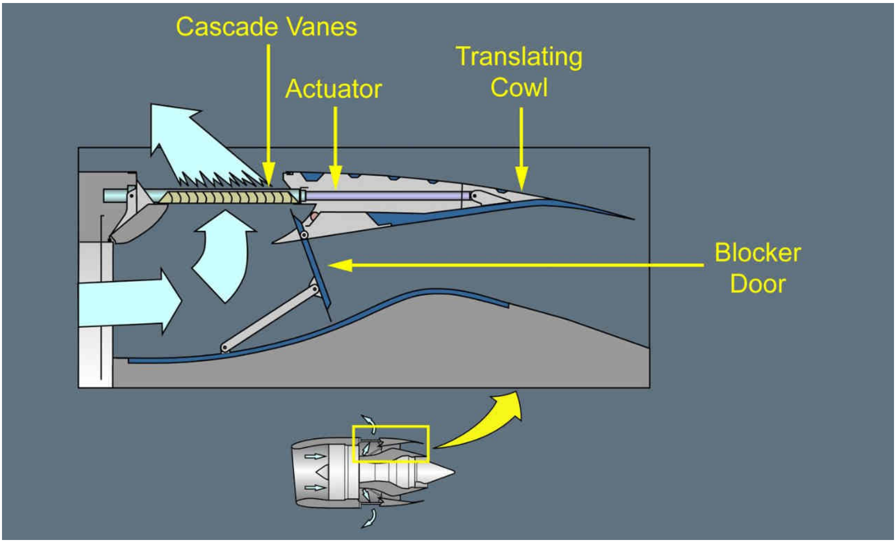
DEPLOYED THRUST REVERSERS

When the thrust reversers are in the deployed position, the airflow that goes outside the core engine is deviated forward as follows:

1. The translating cowls move backward
2. The blocker doors rotate
3. The airflow is deviated forward through the cascade vanes.

Note: *The actuators enable the deployment of the thrust reversers.*

Deployed Position



Ident.: DSC-70-10-70-10-10-00014946.0001001 / 23 APR 14

THRUST REVERSER CONTROL

The Electric Thrust Reverser Actuation System (ETRAS) operates and locks the translating cowls. During operation of the thrust reversers, the Electrical Thrust Reverser Actuation Controller (ETRAC) controls the translating cowls in order to put the thrust reversers in the deployed or stowed position.
The EIF sends the deploy or the stow command to the ETRAC.
The EIF sends the electrical supply command to the EPDC, which delivers power supply to the ETRAC.

L3 The ETRAC controls the translating cowls via six actuators. Each translating cowl has three actuators:
- The non-locking actuator
- The locking actuator
- The locking feedback actuator.

The locking actuator and the locking feedback actuator provide the primary locking devices through the Primary Locking System (PLS). These locking actuators provide the first and the second lines of defense of the thrust reverser system.

The thrust reverser system has one other locking device that provides the third line of defense. This locking device is referred to as the track lock.

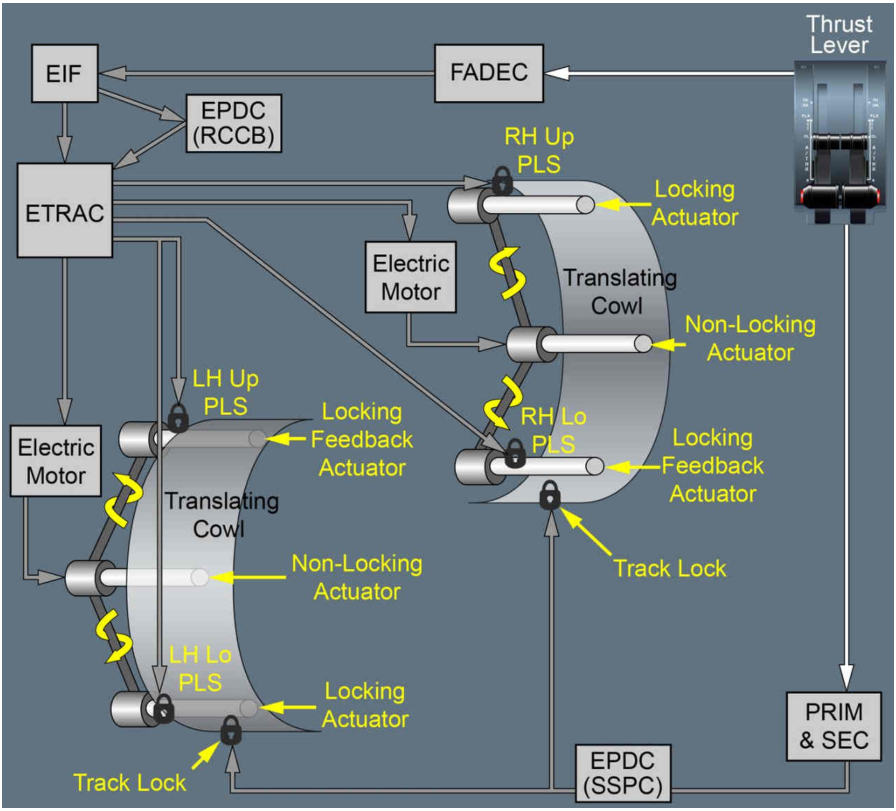
L1 The ETRAC monitors and controls the first and the second lines of defense, and the PRIM & SEC control the third line of defense.

L2 For more information about the three lines of defense, *Refer to DSC-70-10-70-20 Three Lines of Defense*.

L3 When the thrust reversers deployment is commanded, the translating cowls operate in the following sequence:

1. The ETRAC controls both electric motors, and supplies these motors with electrical power Each translating cowl has one electric motor.
2. Each electric motor provides the non-locking actuator with mechanical power via the associated flexible shaft
3. Each non-locking actuator provides the locking actuator and the locking feedback actuator with mechanical power via the associated flexible shafts.

Thrust Reversers Control


Thrust Lever
FADEC
EIF
EPDC (RCCB)
ETRAC
RH Up PLS
Locking Actuator
Electric Motor
Translating Cowl
Non-Locking Actuator
RH Lo PLS
Locking Feedback Actuator
Track Lock
LH Up PLS
Electric Motor
Locking Feedback Actuator
Translating Cowl
Non-Locking Actuator
LH Lo PLS
Locking Actuator
Track Lock
EPDC (SSPC)
PRIM & SEC

Protection of the Thrust Reverser System

PROTECTION OF THE THRUST REVERSER SYSTEM

Applicable to: ALL

Ident.: DSC-70-10-70-20-10-00014948.0001001 / 23 APR 14

The thrust reverser system has the two following types of protection in order to ensure that the FADEC does not deploy the thrust reversers in flight:

- Three lines of defense
  For more information, *Refer to Three Lines of Defense*.
- Idle protection.
  For more information, *Refer to Idle Protection*.

The thrust reverser lever is mechanically locked when the associated throttle lever is not in the IDLE detent.

Ident.: DSC-70-10-70-20-10-00014949.0001001 / 23 APR 14

THREE LINES OF DEFENSE

The thrust reverser system has three lines of defense in order to ensure that the EIF does not deploy the thrust reversers in flight.
The three lines of defense must be cleared in order to enable the deployment of the thrust reversers.

L2 *Note:* *If the thrust reverser lever is used in flight, the ENG REVERSER SELECTED alert is displayed on the WD. Refer to procedure.*

The ETRAC monitors and controls the first and the second lines of defense, and the PRIM & SEC controls the third line of defense through the RCCB of the EPDC. The third line of defense (track lock) is monitored by the EEC which send the status to the EIF.

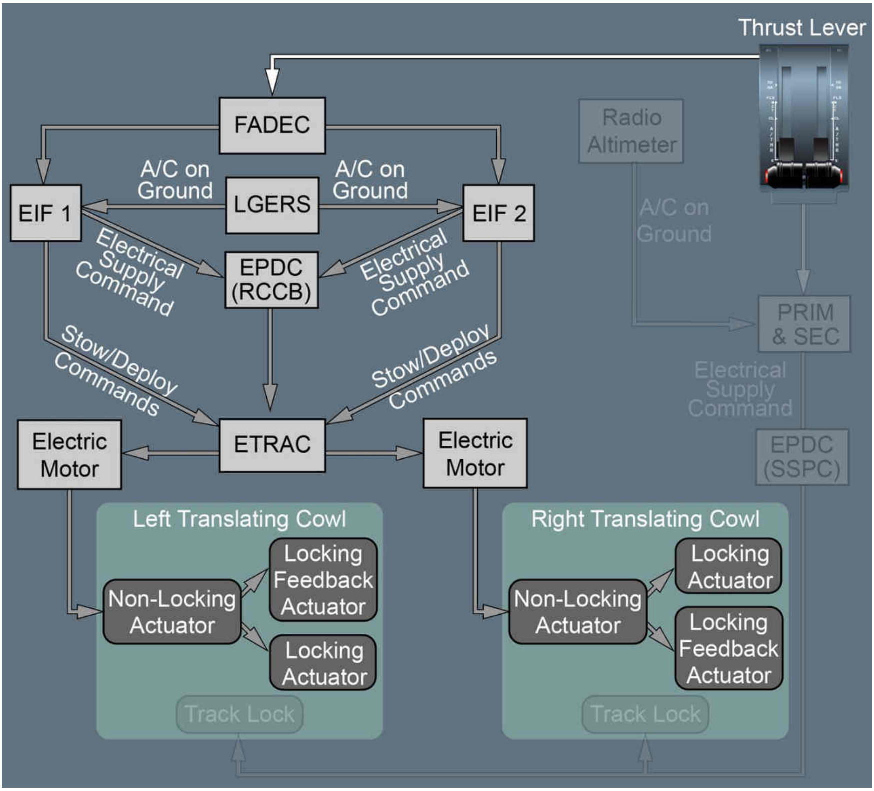
FIRST AND SECOND LINES OF DEFENSE

The first and the second lines of defense are automatically cleared when:

- The flight crew sets the thrust reverser lever to the reverse thrust positions
- The aircraft is on ground.

L3 The EIF sends the electrical supply command to the RCCB which energize the ETRAC.
When the condition to clear the third line of defense (track lock released) is satisfied, the EIF sends the deploy command to the ETRAC to unlock the PLS and drive the electric motors.

First and Second Lines of Defense


Thrust Lever
FADEC
Radio Altimeter
A/C on Ground
LGERS
A/C on Ground
EIF 1
EIF 2
A/C on Ground
Electrical Supply Command
EPDC (RCCB)
Electrical Supply Command
PRIM & SEC
Stow/Deploy Commands
Stow/Deploy Commands
Electrical Supply Command
Electric Motor
ETRAC
Electric Motor
EPDC (SSPC)
Left Translating Cowl
Locking Feedback Actuator
Non-Locking Actuator
Locking Actuator
Track Lock
Right Translating Cowl
Locking Actuator
Non-Locking Actuator
Locking Feedback Actuator
Track Lock

L2

THIRD LINE OF DEFENSE

The third line of defense is automatically cleared when:

- The flight crew sets the thrust reverser lever to the reverse thrust positions
- The aircraft is on ground.

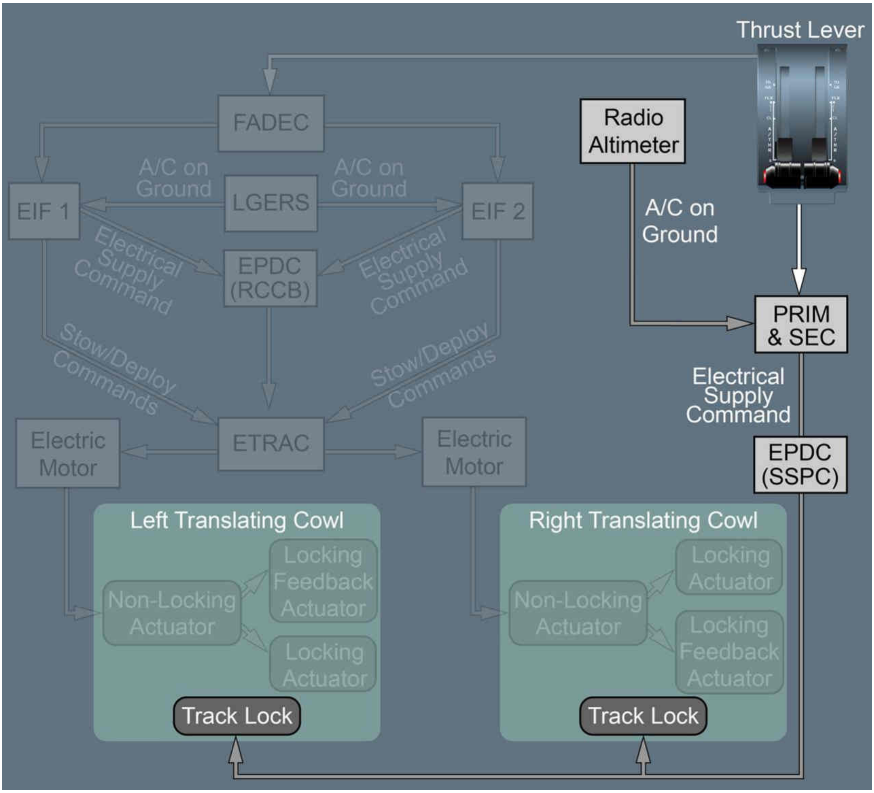
L3

When the conditions to clear the third line of defense are satisfied, the PRIM & SEC provide the track lock with electrical power through the SSPC of the EPDC.

Note: *The PRIM & SEC do not use the same sources as the FADEC and the EIF to detect:*

- *The aircraft is on ground*
- *The position of the thrust reverser lever.*

Third Line of Defense


Thrust Lever
FADEC
Radio Altimeter
A/C on Ground
LGERS
A/C on Ground
EIF 1
EIF 2
A/C on Ground
Electrical Supply Command
EPDC (RCCB)
Electrical Supply Command
PRIM & SEC
Stow/Deploy Commands
Stow/Deploy Commands
Electrical Supply Command
Electric Motor
ETRAC
Electric Motor
EPDC (SSPC)
Left Translating Cowl
Locking Feedback Actuator
Non-Locking Actuator
Locking Actuator
Track Lock
Right Translating Cowl
Locking Actuator
Non-Locking Actuator
Locking Feedback Actuator
Track Lock

Ident.: DSC-70-10-70-20-10-00014950.0001001 / 23 APR 14

IDLE PROTECTION

If the FADEC detects an inadvertent deployment of the thrust reversers, the FADEC automatically limits the associated engine thrust to idle.

L3 The FADEC detects an inadvertent deployment of the thrust reversers if:
- The translating cowls are open by 5 %
- The thrust reverser lever is not set to the reverse thrust positions.

Intentionally left blank

Deployment and Stowage

THRUST REVERSER DEPLOYMENT

Ident.: DSC-70-10-70-30-00014951.0001001 / 23 APR 14
Applicable to: ALL

The deployment of the thrust reversers starts when the three lines of defense are cleared (i.e. the aircraft is on ground and the flight crew sets the thrust reverser lever to the reverse thrust position).

L3 The EIF sends the electrical supply command to the RCCB which energize the ETRAC.
When the condition to clear the third line of defense (track lock released) is satisfied, the EIF sends the deploy command to the ETRAC to unlock the PLS and drive the electric motors.
For more information about the three lines of defense, *Refer to DSC-70-10-70-20 Three Lines of Defense*.

L1 During thrust reverser deployment phase, the engine thrust is limited by reverse idle thrust.

L3 Reverse thrust is only available when the translating cowls open by 85 %. This process lasts 2 to 3 s.
The idle thrust limits the loads on the thrust reverser system, and provides protection against the possibility of an engine stall.

L1 When the thrust reverser is deployed, the engine increases the reverse thrust in order to reach the selected engine thrust depending on the position of the thrust reverser lever.

THRUST REVERSERS STOWAGE

Ident.: DSC-70-10-70-30-00014952.0001001 / 23 APR 14
Applicable to: ALL

The stowage of the thrust reversers starts when the flight crew sets the thrust reverser lever forward the minimum reverse idle (0) detent.
When the thrust reverser reaches the stowed position, the primary locks and the track lock engage.

Intentionally left blank

General

GENERAL

Ident.: DSC-70-10-80-10-00014514.0001001 / 23 APR 14
Applicable to: ALL

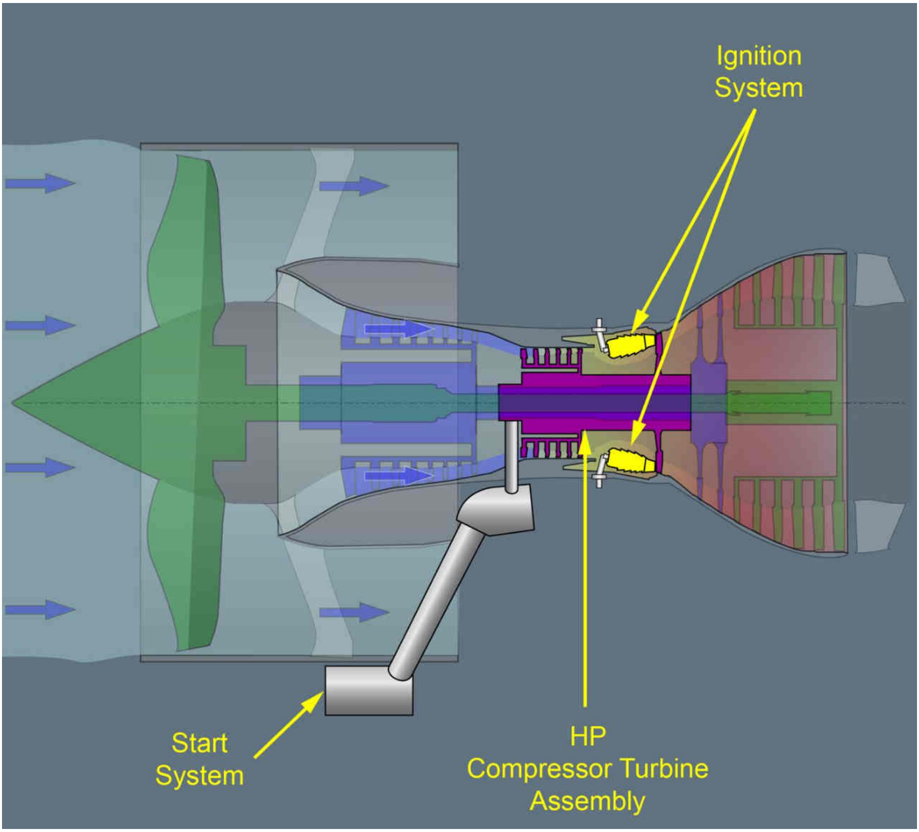
On ground, the ignition and the start systems:
- Start the engine
- Crank the engine.

In flight, the ignition and the start systems start the engine.

L2 The ignition and the start systems perform the following procedures in the following sequence:
- The start system uses bleed air in order to operate the pneumatic starter
- The pneumatic starter operates the HP compressor turbine assembly via the accessory gearbox
- Then, the fuel system adds fuel in the combustion chamber for the ignition.

The FADEC controls and monitors the ignition and the start systems.

Ignition and Start Systems


Ignition System
Start System
HP Compressor Turbine Assembly

Ignition System

IGNITION SYSTEM

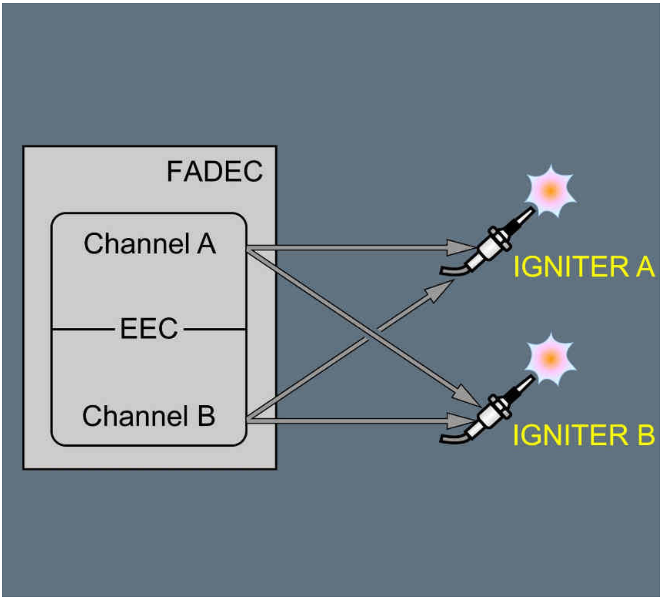
Ident.: DSC-70-10-80-20-00014515.0001001 / 23 APR 14
Applicable to: ALL

The ignition system ensures:
- Engine start on ground (automatic and manual engine starts)
- Engine relight in flight
- Flameout prevention.

In each engine, the ignition system has two independent igniters: Igniter A and igniter B.
The FADEC controls the ignition system.

L2 Each EEC channel can control both igniters.

Ignition System



IGNITION FOR ENGINE START

Ident.: DSC-70-10-80-20-00014516.0001001 / 13 JAN 15
Applicable to: ALL

ON GROUND

AUTOMATIC START

During an automatic start, the FADEC only uses one igniter.

L2 When the EGT is too high, the FADEC orders the engine to crank until the EGT goes below 150 °C.

L1 The EEC channel in control selects the ignition system to be used at each engine start and alternates it at least every 2 flights to avoid dormant failure.

L2 When the flight crew sets the ENG MASTER lever to ON, 2 s after N3 reaches 25 % and N2 reaches 5 %, the FADEC automatically selects the igniter.

L1 If an automatic start attempt is not successful, the FADEC uses both igniters during the second attempt.

L2 *Note:* *The FADEC automatically stops the ignition at the end of the start sequence, when N3 reaches approximately 50 %.*

L1 MANUAL START

During a manual start, the FADEC uses both igniters when the flight crew sets the ENG MASTER lever to ON.

L2 *Note:* *The FADEC automatically stops the ignition at the end of the start sequence, when N3 reaches approximately 50 %.*

L1 IN FLIGHT

In flight, the FADEC uses both igniters.

CONTINUOUS IGNITION

Ident.: DSC-70-10-80-20-00014517.0001001 / 03 JUL 20
Applicable to: ALL

FLAMEOUT PREVENTION

If the FADEC detects a possibility of flameout in the engine, the FADEC automatically selects both igniters in order to rapidly recover the engine.
The ignition ends 10 s after engine relight.

1 QUICK RELIGHT

The FADEC automatically selects continuous ignition with both igniters in the case of inadvertent cycling of the ENG MASTER lever with engine running.

Refer to DSC-70-10-80-20 Windmilling Quick Relight Function for Quick Relight function.

WINDMILLING QUICK RELIGHT FUNCTION

2 Ident.: DSC-70-10-80-20-00025507.0001001 / 03 JUL 20
Applicable to: ALL

In case of inadvertent engine shutdown by cycling the Engine Master lever to OFF then ON, the FADEC will attempt automatically a relight regardless of the rotary selector position.

To initiate a quick relight, the flight crew must set:
- The ENG START selector to NORM, and
- The ENG MASTER lever to ON then set it to OFF, and back to ON within 40 s.

L2 The quick relight is available if N3 is above 10 % in flight.
The FADEC automatically selects continuous ignition with both igniters during a quick relight.
L1 The ignition ends 10 s after engine relight.

Intentionally left blank

Start System

START SYSTEM

Ident.: DSC-70-10-80-30-00014518.0001001 / 23 APR 14
Applicable to: ALL

The start system uses pressurized air to:
- Start the engine on ground
- Relight the engine in flight.

The start system has:
- A pneumatic starter

L2 The pneumatic starter operates the HP compressor turbine assembly.

L3 The pneumatic starter is connected to the accessory gearbox.

L1
- An engine start valve.

The FADEC controls the engine start valve, depending on the position of the ENG MASTER lever.

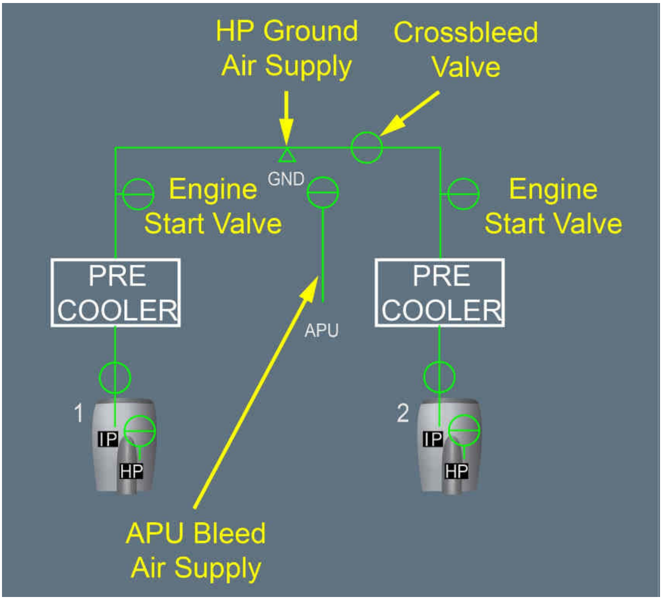
L2 The maintenance personnel can manually open and close the engine start valve on ground.

Associated with the following ECAM alerts:
- ENG 1(2) START VLV NOT CLOSED (*Refer to procedure*), or
- ENG 1(2) START VLV NOT OPEN (*Refer to procedure*).

L1 The pneumatic starter starts the engine with the air of one of the following sources:
- The APU, or
- The other engine in operation (cross engine start), or
- The HP ground sources.

The engine starts either automatically or manually. To manually start the engine, the flight crew must set the ENG MAN START pb-sw to ON.

Engine Air Supply


HP Ground
Air Supply
Crossbleed
Valve
GND
Engine
Start Valve
Engine
Start Valve
PRE
COOLER
PRE
COOLER
APU
1
IP
HP
2
IP
HP
APU Bleed
Air Supply

AUTOMATIC START

Applicable to: ALL

Ident.: DSC-70-10-80-30-10-00014519.0001001 / 23 APR 14

In the automatic start sequence, the FADEC controls the following systems in order to manage the engine start:
- The engine start valve
- The igniter(s)
- The Fuel Metering Valve (FMV)
- The HP shutoff valve of the fuel system.

L2 For more information about the automatic start sequence, *Refer to DSC-70-30 Sequence of the Automatic Start*.

Ident.: DSC-70-10-80-30-10-00014522.0001001 / 23 APR 14

START ABORT DURING AUTOMATIC START

As per associated ECAM procedure, the FADEC automatically stops the engine start if one of the following cases occurs:

- Hung start

L2 Associated with the following ECAM alert: ENG 1(2) START FAULT LOW N1 (*Refer to procedure*).

L1
- No light up

L2 Associated with the following ECAM alert: ENG 1(2) START FAULT [NO LIGHT UP] (*Refer to procedure*).

L1
- Hot start or EGT exceeds the limit

L2 Associated with the following ECAM alert: ENG 1(2) START FAULT [EGT OVERLIMIT] (*Refer to procedure*).

L1
- Engine stall

L2 Associated with the following ECAM alert: ENG 1(2) START FAULT [ENG STALL] (*Refer to procedure*).

L1
- LP rotor jammed

L2 Associated with the following ECAM alert: ENG 1(2) START FAULT LOW N1 (*Refer to procedure*).

L1
- Abnormal position of the engine start valve

L2 Associated with the following ECAM alerts:
  - ENG 1(2) START VLV NOT CLOSED (*Refer to procedure*), or
  - ENG 1(2) START VLV NOT OPEN (*Refer to procedure*).

L1
- Activation time of the pneumatic starter exceeded

L2 Associated with the following ECAM alert: ENG 1(2) START FAULT [STARTER TIME EXCEEDED] (*Refer to procedure*).

L1
- No sufficient bleed pressure to start the engine.

L2 Associated with the following ECAM alert: ENG 1(2) START VLV NO AIR PRESSURE (*Refer to procedure*).

For more information about start abort during automatic start, *Refer to DSC-70-40 Start Abort During Automatic Start*.

Ident.: DSC-70-10-80-30-10-00014524.0001001 / 23 APR 14

STARTER ASSISTED OR WINDMILLING START

In flight, if the flight crew sets the ENG MASTER lever to ON after an engine shutdown, the FADEC starts the engine via:
- The assistance of the pneumatic starter, or
- Windmilling.

In the case of a starter assisted start, the engine in operation or the APU provides the bleed air to the pneumatic starter.

L2 The FADEC starts the engine via a starter assisted start (i.e. the FADEC automatically opens the engine start valve) if:
- N3 is below 6 %, or
- The airspeed is below 250 kt.

L1 In the case of a windmilling engine start, the engine uses the relative wind for its own rotation.
L2 The FADEC disconnects both associated engine-driven hydraulic pumps in order to increase the relight envelope.

MANUAL START

Applicable to: ALL

Ident.: DSC-70-10-80-30-20-00014520.0001001 / 30 JUL 15

If an automatic start is not successful, the flight crew can perform a manual start.
In the manual start sequence, the FADEC has limited control. As a result, the flight crew must monitor engine acceleration.

To perform a manual start, the flight crew must:
- Set the ENG START selector to IGN/START
- Set the ENG MAN START pb-sw to ON
- Set the ENG MASTER lever to ON.

L2 The FADEC:
- Opens the engine start valve when the flight crew:
  - Sets the ENG START selector to IGN/START
  - Sets the ENG MAN START pb-sw to ON

  Note: *The engine start valve opens only if N3 is below 30 % in flight.*
- Opens the HP shutoff valve, and operates both igniters when the flight crew sets the ENG MASTER lever to ON
- Closes the engine start valve, and cuts off the ignition when N3 reaches 48 %.

For more information about the manual start sequence, *Refer to PRO-NOR-SUP-SUP-ENG Manual Engine Start*.

L1 The FADEC does not abort an abnormal manual start, except if the starter is engaged above the maximum engagement speed.

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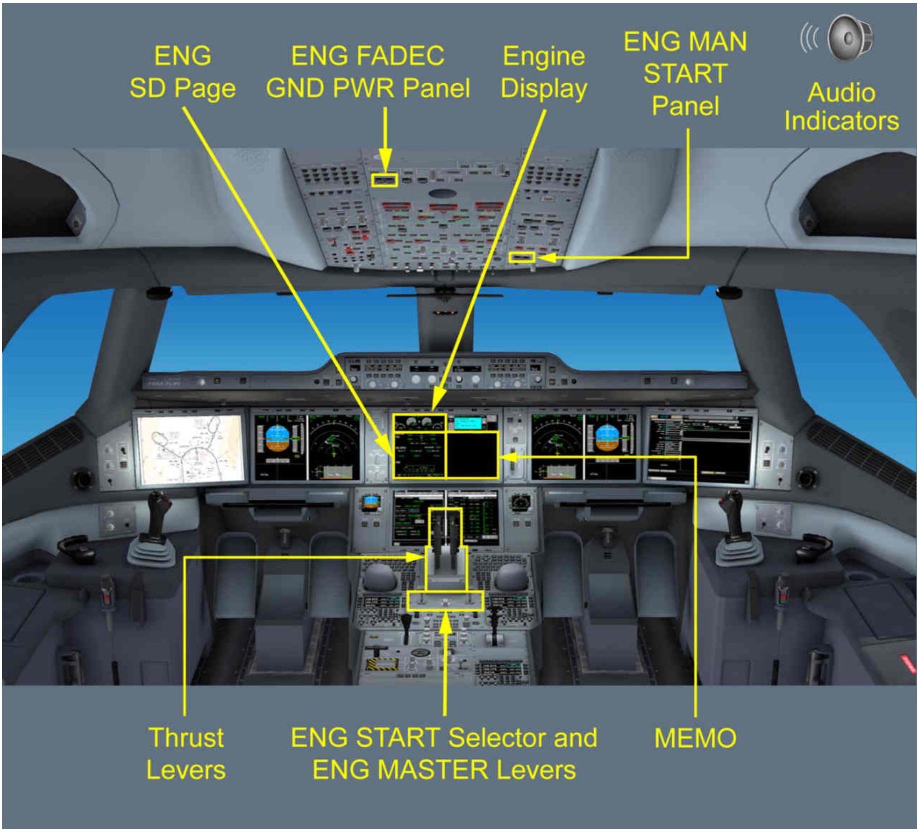
COCKPIT VIEW

Ident.: DSC-70-20-00014888.0001001 / 23 APR 14
Applicable to: ALL

Cockpit View


ENG SD Page
ENG FADEC GND PWR Panel
Engine Display
ENG MAN START Panel
Audio Indicators
Thrust Levers
ENG START Selector and ENG MASTER Levers
MEMO

AUDIO INDICATORS

Ident.: DSC-70-20-00016542.0001001 / 02 OCT 14

Applicable to: ALL

Automatic Callout	**Condition or Cause**	**Duration** (1)
Retard (Synthetic voice)	The FWS triggers this automatic callout when the following conditions are met: - At least one engine thrust lever angle is above 10 °, and - The other engine thrust lever is at IDLE or in REV position, and - The aircraft is on ground or spoiler are extended.	Sounds until the flight crew sets thrust levers to IDLE.

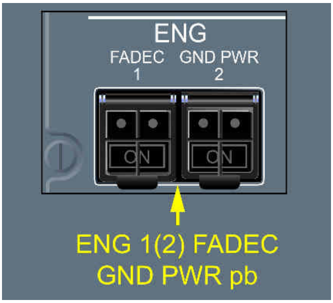
(1) *All audio indicators can be canceled by pressing the EMER CANC pb on the ECP.*

ENG FADEC GND PWR PANEL

Applicable to: ALL

Ident.: DSC-70-20-10-00014913.0001001 / 23 APR 14

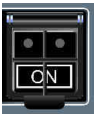
ENG FADEC GND PWR Panel



Ident.: DSC-70-20-10-00014932.0001001 / 23 APR 14

ENG 1(2) FADEC GND PWR PB

The electrical network of the aircraft or the FADEC alternator supplies the FADEC.



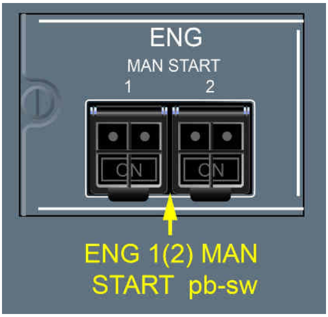
On ground, when pressed the electrical network of the aircraft supplies the FADEC for 15 min, when:
- The ENG FIRE pb-sw is not pressed
- The FADEC alternator does not supply the FADEC.

ENG MAN START PANEL

Applicable to: ALL

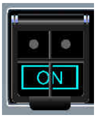
Ident.: DSC-70-20-20-00014911.0001001 / 23 APR 14

ENG MAN START Panel

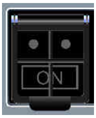


Ident.: DSC-70-20-20-00014933.0001001 / 03 AUG 16

ENG 1(2) MAN START PB-SW



- Initiates the manual start sequence of the associated engine, when the ENG START selector is set to IGN/START, or
- Initiates the dry crank process of the associated engine, when the ENG START selector is set to CRANK and the ENG MASTER lever is set to OFF.



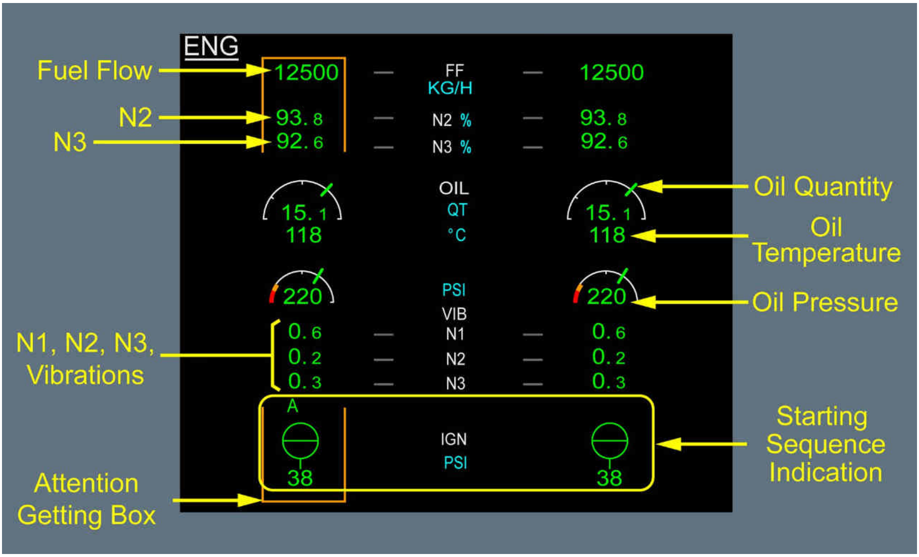
- Aborts the manual start sequence of the associated engine, when the ENG START selector is set to IGN/START and the ENG MASTER lever is set to OFF, or
- Stops the dry crank process of the associated engine, when the ENG START selector is set to CRANK and the ENG MASTER lever is set to OFF.

ENG SD PAGE

Applicable to: ALL

Ident.: DSC-70-20-60-00014895.0001001 / 18 DEC 17

ENG SD Page

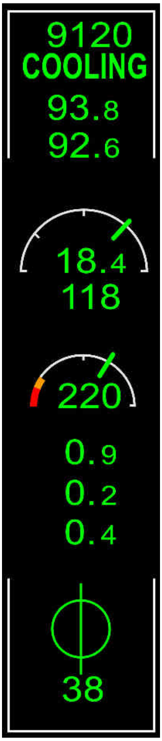

ENG
Fuel Flow
N2
N3
12500
93.8
92.6
FF
KG/H
N2 %
N3 %
12500
93.8
92.6
OIL
QT
°C
15.1
118
15.1
118
Oil Quantity
Oil Temperature
220
PSI
220
Oil Pressure
VIB
N1
N2
N3
0.6
0.2
0.3
0.6
0.2
0.3
N1, N2, N3, Vibrations
A
IGN
PSI
38
38
Starting Sequence Indication
Attention Getting Box

Ident.: DSC-70-20-60-00015850.0002001 / 29 JAN 19

ATTENTION GETTING BOX

The attention getting box appears:
- In amber, or
- In white.

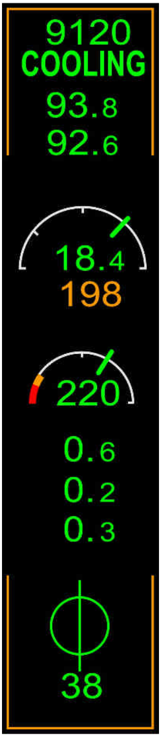
The attention getting box also appears on the ED.


9120
COOLING
93.8
92.6
18.4
118
220
0.9
0.2
0.4
38

The white attention getting box:

- Appears during the engine start sequence, or the crank process,
- Disappears as soon as the AVAIL indication is displayed on the ED.

L12

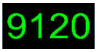


The amber attention getting box appears if:

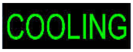
- The N2 value exceeds the N2 red limit, or
- The N3 value exceeds the N3 red limit, or
- The oil temperature exceeds the upper amber limit temperature, or
  The amber upper limit of the oil temperature is 175 °C.
- The oil pressure is below the upper amber limit pressure, or
  The amber upper limit of the oil pressure is around 40 PSI.
- The engine thrust reverser is unlocked (in flight), or
- The engine is failed, or
- The level of LP(IP)(HP) rotor vibration is excessive.

Ident.: DSC-70-20-60-00015797.0001001 / 02 OCT 14

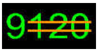
FUEL FLOW



The fuel flow is normal.

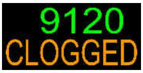


A dry crank process is in progress to reduce the EGT.



The accuracy of the fuel flow measurement is degraded.

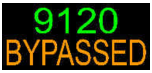
L12


9120
CLOGGED

The LP fuel filter is clogged, and the bypass valve of the LP fuel filter is not open.

Associated with the following ECAM alert:
- ENG 1(2) FUEL FILTER CLOGGED (*Refer to procedure*).
- ENG 1+2 FUEL FILTER CLOGGED (*Refer to procedure*).

L12

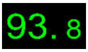

9120
BYPASSED

The LP fuel filter is clogged, and the bypass valve of the LP fuel filter is open.

Associated with the following ECAM alert:
- ENG 1(2) FUEL FILTER IN BYPASS (*Refer to procedure*).
- ENG 1+2 FUEL FILTER IN BYPASS (*Refer to procedure*).

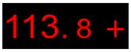
Ident.: DSC-70-20-60-00015798.0001001 / 31 AUG 16

N2


93.8

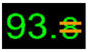
N2 is in normal range.

L12


113.8 +

N2 exceeds the N2 red limit.
For more information, *Refer to Shaft Speeds*.
Associated with the following ECAM alert: ENG 1(2) N2 OVER LIMIT (*Refer to procedure*).

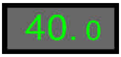
L12


93.~~8~~

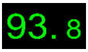
The accuracy of the N2 measurement is degraded.
Associated with the ENG 1(2) FADEC SYS FAULT alert (*Refer to procedure*).

Ident.: DSC-70-20-60-00015799.0001001 / 31 AUG 16

N3

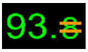

40.0

The engine start sequence or the crank process is in progress.


93.8

N3 is in normal range.

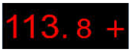
L12



The accuracy of the N3 measurement is degraded.

Associated with the following ECAM alerts:
- ENG 1(2) CTL SYS FAULT (*Refer to procedure*), or
- ENG 1(2) FADEC SYS FAULT (*Refer to procedure*).

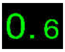
L12



N3 exceeds the red limit.
For more information, *Refer to Shaft Speeds*.
Associated with the following ECAM alert: ENG 1(2) N3 OVER LIMIT(*Refer to procedure*).

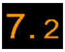
Ident.: DSC-70-20-60-00015800.0001001 / 01 JUL 14

N1, N2, N3 VIBRATIONS



The vibration of the LP(IP)(HP) rotor is in normal range.

L12

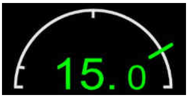


The level of LP(IP)(HP) rotor vibration is excessive.

Associated with the following ECAM alerts:
- ENG 1(2) N1 HIGH VIBRATIONS (*Refer to procedure*), or
- ENG 1(2) N2(N3) HIGH VIBRATIONS (*Refer to procedure*), or

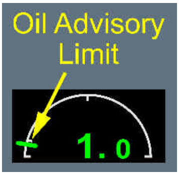
Ident.: DSC-70-20-60-00015801.0001001 / 10 SEP 18

OIL QUANTITY



The oil quantity is in normal range.

L12



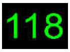
The oil quantity goes below the oil advisory limit, that corresponds to the first white dash.
The needle and the oil quantity value pulse green.
The Oil Advisory Limit is reached when the oil quantity displayed is 1.5 quarts.

Note: *When the oil quantity displayed reaches 1.5 quarts, the remaining oil quantity in the tank is around 6.5 quarts.*

The advisory is inhibited:
- At takeoff or go-around, or
- When the thrust reversers are selected, or
- When the alpha floor protection is active.

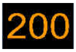
Ident.: DSC-70-20-60-00015802.0001001 / 03 DEC 15

OIL TEMPERATURE



The oil temperature is in normal range.

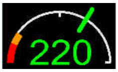
L12



The oil temperature is above 180 °C.
Associated with the following ECAM alert: ENG 1(2) OIL TEMP HI (*Refer to procedure*).

Ident.: DSC-70-20-60-00015803.0003001 / 15 APR 19

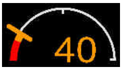
L12



The oil pressure is in normal range.

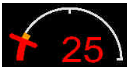
Note: *The scale is divided into two parts as follows:*
- *The first half part of the scale goes from 0 PSI to 100 PSI*
- *The second half part of the scale, goes from 100 PSI to 430 PSI.*

L12

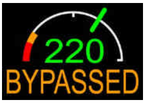


The oil pressure is in the amber range.
The amber range is above 25 PSI and below the upper amber threshold (around 40 PSI).
Associated with the following ECAM alert: ENG 1(2) OIL PRESS LO(*Refer to procedure*).

L12



The engine oil pressure is in the red range.
The red range is between 25 PSI to 0 PSI.
Associated with the following ECAM alert: ENG 1(2) OIL PRESS LO (*Refer to procedure*).

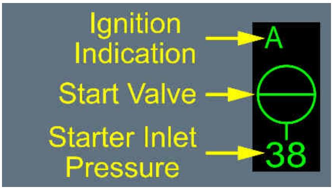
	The oil filter bypass valve is open.

Ident.: DSC-70-20-60-00015804.0001001 / 23 APR 14

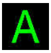
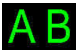
STARTING SEQUENCE INDICATION

During the engine start sequence, the start indications appear on the ENG SD page.

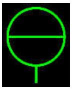
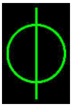
Start Parameters



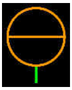
IGNITION INDICATION

	The igniter A is used for the engine start sequence.
	Both igniters A and B are used for the engine start sequence or continuous ignition.

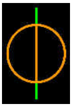
START VALVE

	The engine start valve is fully closed.
	The engine start valve is fully open.

L12

	The engine start valve failed in the closed position. Associated with the ENG 1(2) START VLV NOT OPEN (*Refer to procedure*).

L12

	The engine start valve failed in the open position. Associated with the following ECAM alert: ENG 1(2) START VLV NOT CLOSED (*Refer to procedure*).

STARTER INLET PRESSURE

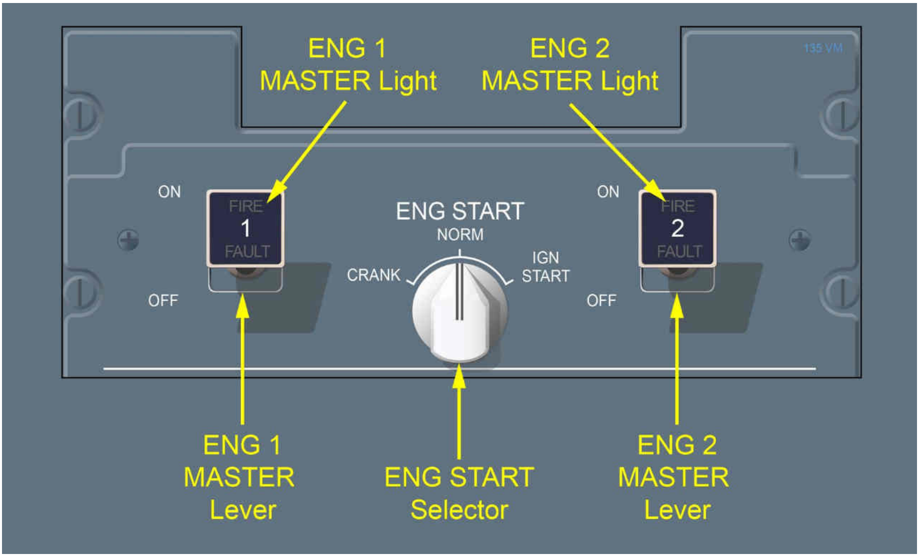
38	The starter inlet pressure is normal.
61	The starter inlet pressure is: - Abnormally high - Above the engine start valve overpressure (60 PSI).
0	The starter inlet pressure is: - Abnormally low - Below 15 PSI, when N3 is above 8 %.

ENG START SELECTOR AND ENG MASTER LEVERS

Applicable to: ALL

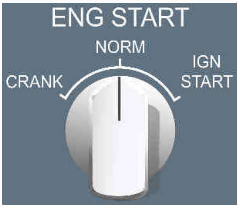
Ident.: DSC-70-20-30-00014914.0001001 / 23 APR 14

ENG START Selector and ENG MASTER Levers

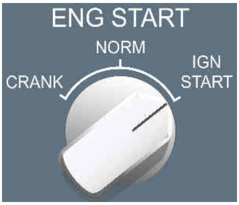

ENG 1
MASTER Light
ENG 2
MASTER Light
135 VM
ON
FIRE
1
FAULT
OFF
ENG START
NORM
CRANK
IGN
START
ON
FIRE
2
FAULT
OFF
ENG 1
MASTER
Lever
ENG START
Selector
ENG 2
MASTER
Lever

Ident.: DSC-70-20-30-00014915.0001001 / 03 AUG 16

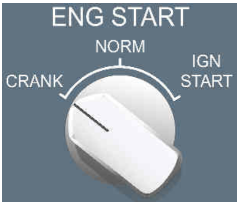
ENG START SELECTOR


ENG START
NORM
CRANK
IGN
START

Normal mode of operation.


ENG START
NORM
CRANK
IGN
START

Use the IGN START position to initiate the automatic or manual start sequences of the associated engine, when the ENG MASTER lever is set to OFF.

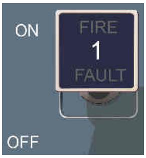

ENG START
NORM
CRANK
IGN
START

Use the CRANK position to initiate a dry crank, for more information *Refer to PRO-NOR-SUP-SUP-ENG Engine Ventilation (Dry Cranking)*.

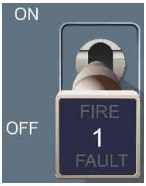
Ident.: DSC-70-20-30-00014916.0001001 / 23 APR 14

ENG 1(2) MASTER LEVER

L123



The FADEC:
- Provides the associated engine with continuous ignition, when both engines are running and the ENG START selector is set to IGN/START, or
- Initiates the wet crank process of the associated engine for maintenance purpose, when the ENG START selector is set to CRANK and the ENG MAN START pb-sw is set to ON, or
- Initiates the automatic start sequence of the associated engine, when the ENG START selector is set to IGN/START, or
  For more information, *Refer to DSC-70-10-80-30 Automatic Start*.
- Initiates the manual start sequence of the associated engine, when the ENG START selector is set to IGN/START and the ENG MAN START pb-sw is set to ON.
  For more information, *Refer to DSC-70-10-80-30 Manual Start*.

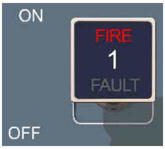


The FADEC:
- Shuts down the associated engine, or
- Aborts the start sequence of the associated engine.

Ident.: DSC-70-20-30-00015600.0001001 / 01 JUL 14

ENG 1(2) MASTER LIGHT

L12



A fire is detected in the corresponding engine.
Associated with ENG 1(2) FIRE (*Refer to procedure*).

L12

ON
FIRE
1
FAULT
OFF

- The position of the HP fuel shutoff valve is abnormal, or

  Associated with one of the following ECAM alerts:
  - ENG 1(2) HP FUEL VLV NOT CLOSED (*Refer to procedure*), or
  - ENG 1(2) HP FUEL VLV NOT OPEN (*Refer to procedure*).
- The automatic start sequence of the associated engine aborts, or

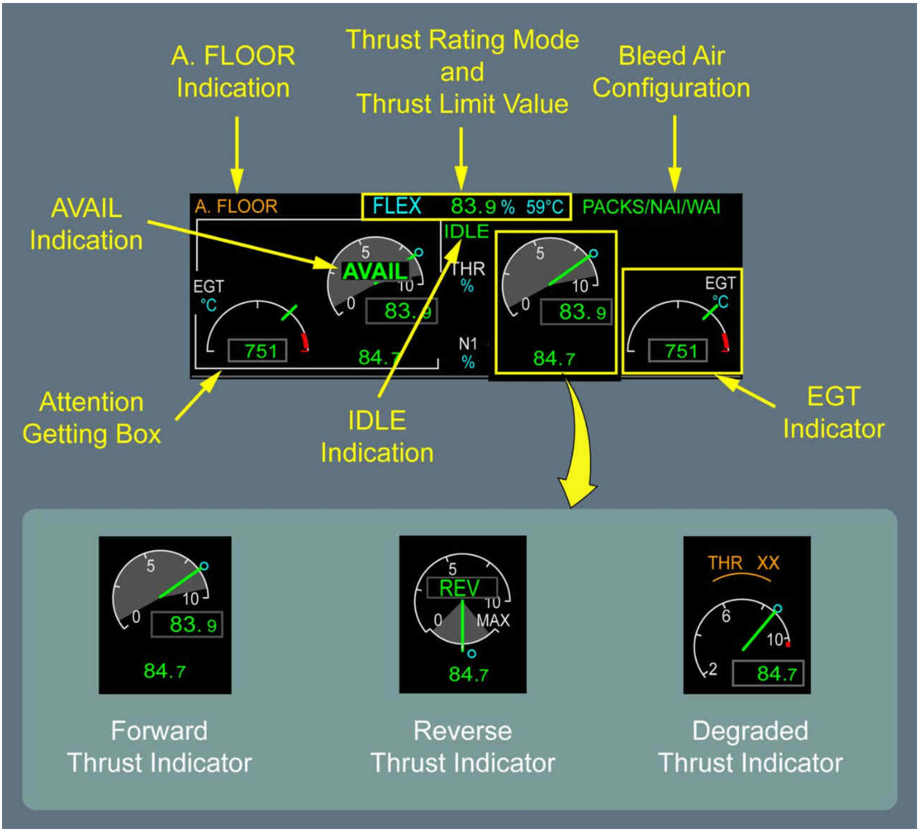
  Associated with one of the following ECAM alerts:
  - ENG 1(2) START FAULT (*Refer to procedure*), or
  - ENG 1(2) START FAULT [LOW N1] (*Refer to procedure*), or
  - ENG 1(2) START FAULT [STARTER TIME EXCEEDED] (*Refer to procedure*), or
  - ENG 1(2) START VLV NOT OPEN (*Refer to procedure*), or
  - ENG 1(2) START VLV NO AIR PRESSURE (*Refer to procedure*), or
  - ENG 1(2) START VLV NOT CLOSED (*Refer to procedure*).
- The overthrust protection is active and the current thrust of the associated engine is above the commanded engine thrust, or
- There is a malfunction of the thrust control.
  Associated with the following ECAM alert: ENG 1(2) CTL SYS FAULT (*Refer to procedure*).

ENGINE DISPLAY

Applicable to: ALL

Ident.: DSC-70-20-50-00014902.0001001 / 23 APR 14

Engine Display


A. FLOOR Indication
Thrust Rating Mode and Thrust Limit Value
Bleed Air Configuration
AVAIL Indication
A. FLOOR
FLEX 83.9 % 59°C
PACKS/NAI/WAI
IDLE
AVAIL
5
10
0
83.9
84.7
EGT
°C
751
THR
%
N1
%
Attention Getting Box
IDLE Indication
EGT Indicator
Forward Thrust Indicator
REV
MAX
Reverse Thrust Indicator
THR XX
6
2
Degraded Thrust Indicator

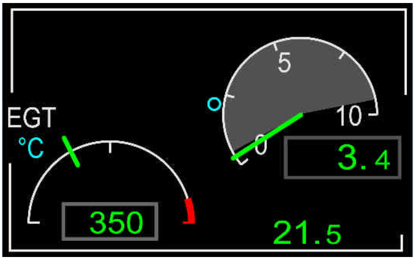
Ident.: DSC-70-20-50-00014920.0001001 / 23 APR 14

ATTENTION GETTING BOX

The attention getting box appears:
- In amber, or
- In white.

The attention getting box also appears on the ENG SD page.

L12

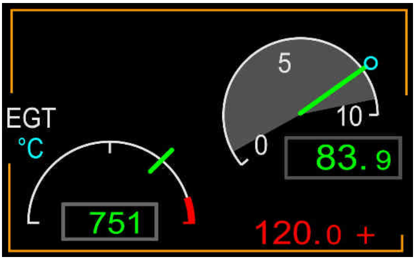


The flight crew must monitor the parameters of the corresponding engine.

The attention getting box:

- Appears during the engine start sequence, or the crank process
- Disappears as soon as the AVAIL indication appears on the ED.

L12



The flight crew must pay high attention to the parameters of the affected engine.

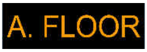
Appears if:

- The associated engine is failed, or
- N1 exceeds the red limit, or
- The EGT exceeds the EGT limit, or
- The thrust reversers are unlocked in flight.

Ident.: DSC-70-20-50-00015652.0001001 / 02 MAY 14

A.FLOOR INDICATION

L12



The alpha floor protection is active.
For more information, *Refer to DSC-22-27-20 Alpha Floor Protection*.

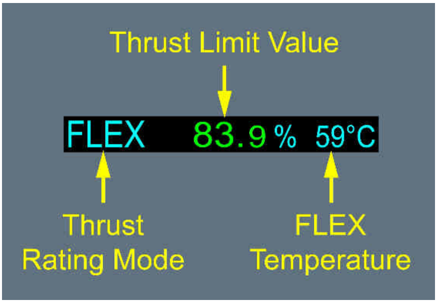
Ident.: DSC-70-20-50-00015657.0001001 / 03 JAN 19

THRUST RATING MODE AND THRUST LIMIT VALUE

Indicates the thrust limit value and the associated thrust rating mode based on:

- The position of the thrust levers,
- Aircraft on ground or in flight,
- The engine status, i.e. running or not running,
- The data entered in the T.O and CLB panels of the FMS ACTIVE/PERF page.

Thrust Rating Mode and Thrust limit Value



THRUST RATING MODE

The thrust rating modes are:

- TOGA	Takeoff or go-around (TOGA) thrust rating mode is selected.
- MCT	Maximum Continuous Thrust (MCT) rating mode is selected.
- CLB	Climb (CLB) thrust rating mode is selected.
- FLEX	Flexible (FLEX) takeoff thrust rating mode is selected.
- DCLB	: Derated Climb thrust rating mode is selected.
- D04	Derated takeoff thrust rating mode is selected.
L12 - GA SOFT	Go-around soft (GA SOFT) thrust rating mode is selected. *Refer to DSC-22-FG-50-60 From Soft Go-around to Thrust reduction Altitude*.
- T.O+BUMP	Takeoff with bump thrust rating mode is selected.
- XX	There is no thrust rating mode selected or the selected rating mode is not available.
- N/A	The selected derated takeoff thrust rating mode is not available.

THRUST LIMIT VALUE

83.9 %	Indicates the thrust limit value associated with the thrust rating mode.

XX	Indicates that the thrust limit value is: - Not available, or - Below 0.1 %.

FLEX TEMPERATURE

59°C	Indicates the flexible temperature that the flight crew entered in the T.O panel of the FMS PERF page, when the FLEX rating mode is selected.

Ident.: DSC-70-20-50-00015684.0001001 / 23 APR 14

BLEED AIR CONFIGURATION

PACKS	The engine bleeds supply the air conditioning packs.
NAI	The engine nacelle anti-ice is on.
WAI	The wing anti-ice is on.

All indications can appear independently.

L2 The indication of the bleed air configuration disappears at the end of the takeoff.

Ident.: DSC-70-20-50-00015695.0001001 / 23 APR 14

IDLE INDICATION

L12

IDLE	Both engines are at idle speed, and the aircraft is in flight. Pulses during 10 s, and then remains steady.

Ident.: DSC-70-20-50-00015699.0001001 / 23 APR 14

AVAIL INDICATION

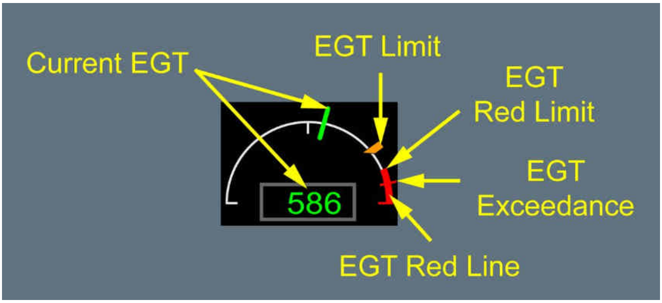
L12

AVAIL	The engine is started, and at or above idle. On ground, appears steady at least 10 s. In flight, pulses after a successful relight.

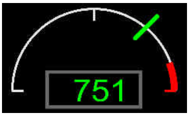
Ident.: DSC-70-20-50-00015711.0001001 / 23 APR 14

EGT INDICATOR

EGT Indicator

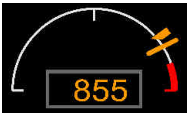


CURRENT EGT



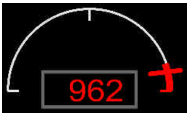
The current EGT is in normal range.

L13



The current EGT exceeds the EGT limit.
Associated with the following ECAM alert: ENG 1(2) EGT OVER LIMIT (*Refer to procedure*).

L123



The EGT is above the EGT red limit.

- During the takeoff, the current EGT:
  - Is between 900 °C and 920 °C for more than 20 s, or
  - Exceeds 920 °C
- During the other flight phases, the current EGT exceeds the EGT red limit.

Associated with the following ECAM alert: ENG 1(2) EGT OVER LIMIT (*Refer to procedure*).

EGT LIMIT

The amber line indicates the maximum EGT (i.e. the EGT limit).

L2 The maximum EGT is:
- 700 °C, during the engine start sequence on ground, or
- 850 °C, in all other cases.

The EGT limit does not appear:
- During takeoff, or
- When the thrust reversers are selected, or
- If the alpha floor protection is activated.

L1 **EGT EXCEEDANCE**

The EGT exceedance is the highest value that the EGT reached.

The EGT exceedance appears when:
- The current EGT exceeds the EGT red limit, or
- The EGT exceeded the EGT red limit.

L2 The red mark no longer appears at the next engine start sequence on ground.

L1 **EGT RED LINE**

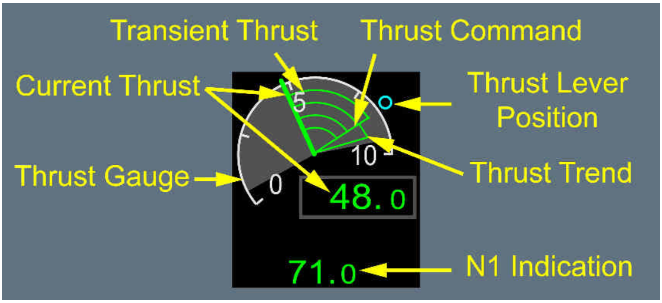
The EGT red line appears between the EGT red limit and the end of the scale.

L2 The EGT red limit is 900 °C.

Ident.: DSC-70-20-50-00015710.0001001 / 05 NOV 15

FORWARD THRUST INDICATOR

Forward Thrust Indicator


Transient Thrust
Thrust Command
Current Thrust
Thrust Lever Position
Thrust Gauge
Thrust Trend
N1 Indication
5
10
0
48.0
71.0

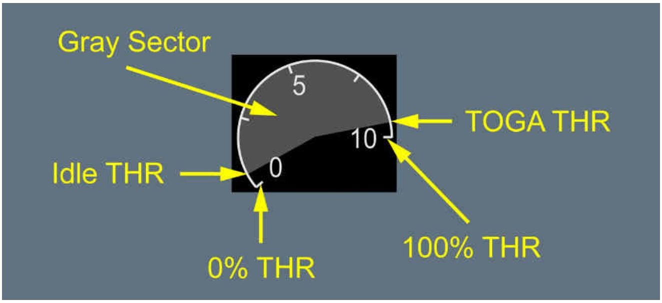
CURRENT THRUST

The needle and the digital value indicate the current thrust of the associated engine.

L2 The current thrust is a specific percent of the maximum thrust that the engine can provide with:
- The engine bleed off
- The thrust levers set to the TO/GA detent.

L1 THRUST GAUGE

Thrust Gauge



GRAY SECTOR

The gray sector indicates the usable thrust range.

L2 The gray sector appears when:
- The thrust levers are set to, or above, the idle (0) detent for more than 1 s
- The engine is not failed and is running
- The engine is in normal mode.

L1 IDLE THR

The lower position of the gray sector indicates the idle thrust.

L2 The idle thrust corresponds to the engine thrust when the associated thrust lever is set to the idle (0) detent.

L1 TOGA THR

The upper position of the gray sector indicates the TO GA thrust.

L2 The TOGA thrust corresponds to the engine thrust when the associated thrust lever is set to the TO/GA detent.
The TOGA thrust takes into account the bleed use.

L1 0 % THR

The 0 % THR is the engine thrust when:
- The associated engine is not running, or
- The windmilling starts.

100 % THR

The 100 % THR is the thrust that the engine can provide with:
- The associated thrust lever set to the TO/GA detent
- The engine bleed off.

TRANSIENT THRUST

The four green arcs indicate the difference between the thrust command and the current thrust, when the A/THR is active.

THRUST COMMAND

Indicates the thrust target, when the A/THR is active.

THRUST LEVER POSITION

The blue circle indicates:
- In manual mode, indicates the thrust after the engine stabilization
- In automatic mode, indicates the thrust that corresponds to the position of the associated thrust lever and the conditions of the flight.

L2 The thrust lever indication moves within the gray sector.

L1 THRUST TREND

The green triangle indicates the direction of the thrust trend, when the A/THR is active.

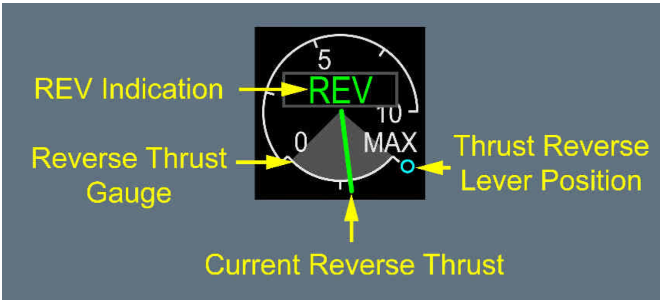
N1 INDICATION

93.8	N1 is in normal range.
L12 113.8 +	N1 exceeds the N1 red limit. For more information, *Refer to LIM-ENG Shaft Speeds*. The red cross will disappear at the next engine start on ground. Associated with the following ECAM alert: ENG 1(2) N1 OVER LIMIT (*Refer to procedure*).
L12 93.~~8~~	The accuracy of the N1 measurement is degraded. Associated with the following ECAM alerts: - ENG 1(2) CTL SYS FAULT (*Refer to procedure*), or - ENG 1(2) FADEC SYS FAULT (*Refer to procedure*).
XX	N1 indication is not available.

Ident.: DSC-70-20-50-00014926.0001001 / 24 JUN 14

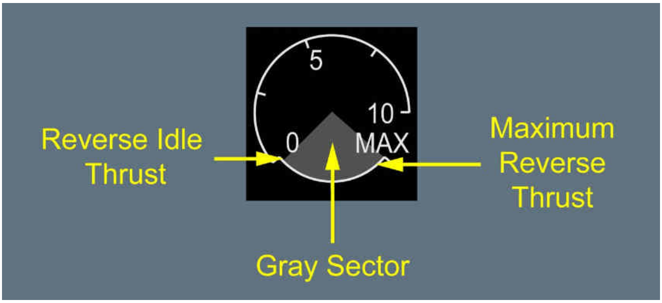
REVERSE THRUST INDICATOR

Reverse Thrust Indications


5
REV Indication
REV
10
0
MAX
Reverse Thrust
Gauge
Thrust Reverse
Lever Position
Current Reverse Thrust

REVERSE THRUST GAUGE

Reverse Thrust Gauge


5
10
0
MAX
Reverse Idle
Thrust
Maximum
Reverse
Thrust
Gray Sector

REVERSE GRAY SECTOR

The gray sector indicates the usable reverse thrust gauge.

L2 The gray sector appears when:
- The thrust reversers are selected
- The thrust reversers are unlocked
- The thrust reverser lever is set to, or above, the reverse idle position for more than 1 s
- The engine is not failed and is running
- The engine master lever is set to ON
- The aircraft is on ground.

L1

REVERSE IDLE THRUST

The left position of the gray sector indicates the reverse idle thrust.
The reverse idle thrust corresponds to the engine thrust when the thrust reverser lever is set to the IDLE REV position.

MAXIMUM REVERSE THRUST

The right position of the gray sector indicates the maximum reverse thrust.
The maximum reverse thrust corresponds to the engine thrust when the thrust reverser lever is set to the MAX REV position.

REVERSE INDICATION

REV	The thrust reverser system is in deployment/stowage sequence.
REV	On ground, the thrust reverser system is fully deployed.

L12

REV	- On ground: • The reverse thrust is selected but not available, or • The thrust reverser system is unlocked - In flight, the REV indication pulses during 9 s and then remains steady, if the thrust reverser system is unlocked. Associated with the following ECAM alert: ENG 1(2) REVERSER UNLOCKED (*Refer to procedure*).

THRUST REVERSER LEVER POSITION

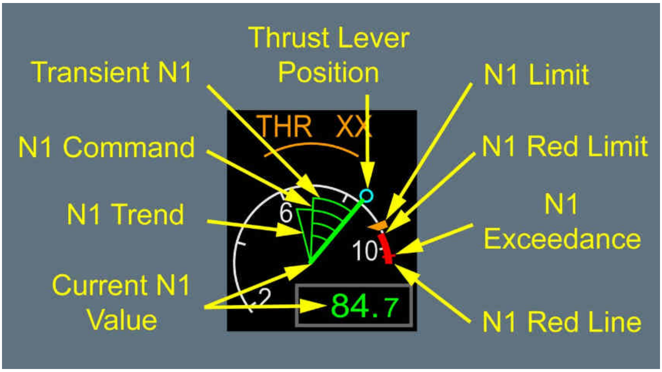
The blue circle indicates the position of the thrust reverser lever.

CURRENT REVERSE THRUST

The needle indicates the current reverse thrust of the engine, as a percentage of the maximum reverse thrust.

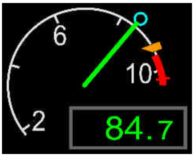
Ident.: DSC-70-20-50-00015713.0001001 / 05 NOV 15

DEGRADED THRUST INDICATOR


Thrust Lever Position
Transient N1
N1 Limit
N1 Command
THR XX
N1 Red Limit
N1 Trend
6
N1 Exceedance
10
Current N1 Value
2
84.7
N1 Red Line

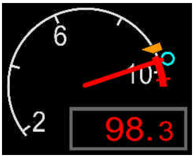
Degraded Thrust Indicator

CURRENT N1 VALUE



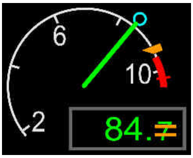
The current N1 is in normal range.

L12



The current N1 exceeds the N1 red limit.
For more information, *Refer to LIM-ENG Shaft Speeds*.
Associated with the following ECAM alert: ENG 1(2) N1 OVER LIMIT (*Refer to procedure*).

L12



The accuracy of the N1 measurement is degraded.

Associated with the following ECAM alerts:
- ENG 1(2) CTL SYS FAULT (*Refer to procedure*), or
- ENG 1(2) FADEC SYS FAULT (*Refer to procedure*).

N1 TREND

The green triangle indicates the direction of the N1 trend, when the A/THR mode is active.

N1 COMMAND

Indicates the N1 target, when the A/THR mode is active.

TRANSIENT N1

The four green arcs indicate the difference between the N1 command and the current N1, when the A/THR is active.

THRUST LEVER POSITION

The blue circle indicates the position of the thrust lever.
In manual mode, the blue circle corresponds to the N1 value reached after the stabilization of the engine parameters.

N1 LIMIT

The amber mark indicates the N1 limit.
L2 This corresponds to the maximum N1 value when the thrust levers are in TO/GA detent or in the MAX REV position.

L1 N1 EXCEEDANCE

The N1 exceedance is the highest value that the N1 reached.
The N1 exceedance appears when the current N1 exceeds the N1 red limit.
The N1 exceedance remains even if the N1 value decreases below the N1 red limit.
L2 The red mark no longer appears at the next engine start sequence on ground.

L1 N1 RED LINE

The N1 red line appears between the N1 red limit and the end of the scale.
L2 For more information, *Refer to LIM-ENG Shaft Speeds*.

MEMO

Applicable to: ALL

Ident.: DSC-70-20-70-00016543.0001001 / 23 APR 14

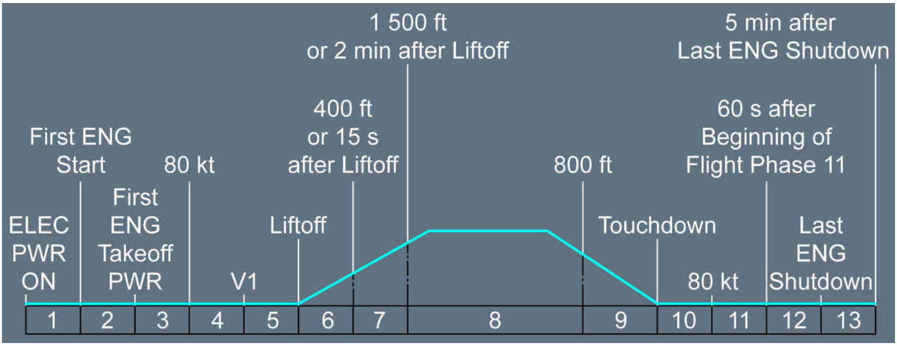
MEMO ENG 1(2) WARM UP IN PROG

L12

ENG 1(2) WARM UP IN PROG	The FADEC is warming up the associated engine by a crank during an engine start. Appears on the WD.

L2 Flight Phase Inhibition:

Flight Phase Inhibition

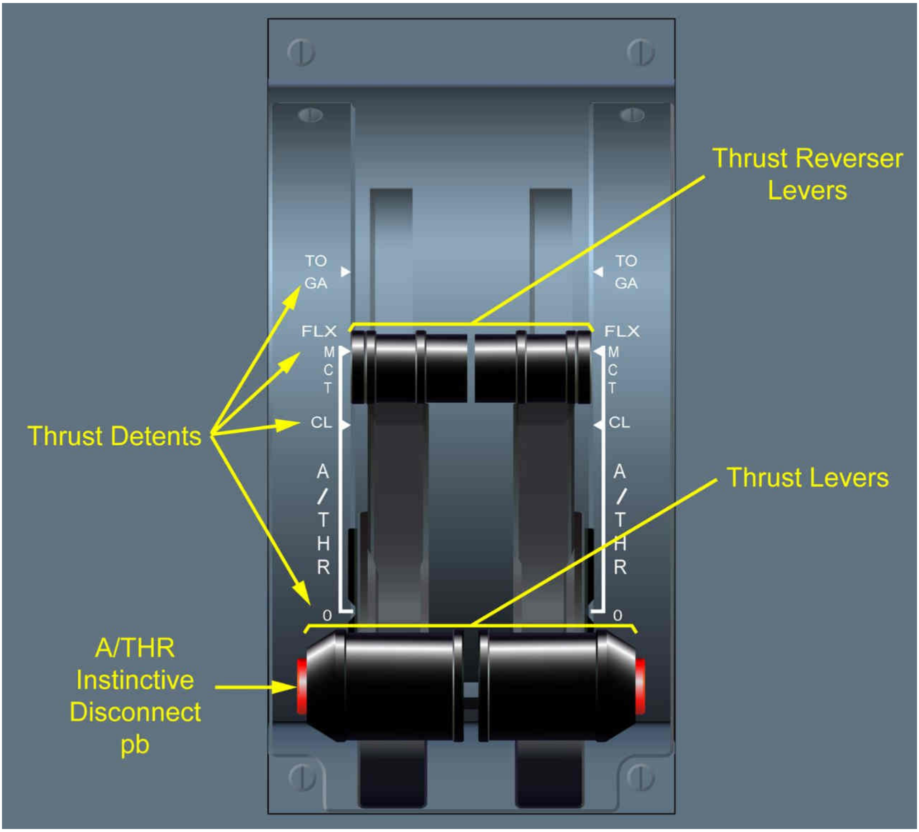

1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

THRUST LEVERS

Applicable to: ALL

Ident.: DSC-70-20-40-00014924.0001001 / 23 APR 14

Thrust Levers


Thrust Reverser Levers
TO GA
FLX
M C T
CL
A / T H R
0
TO GA
FLX
M C T
CL
A / T H R
0
Thrust Detents
Thrust Levers
A/THR Instinctive Disconnect pb

Ident.: DSC-70-20-40-00014917.0001001 / 23 APR 14

THRUST LEVERS

The flight crew uses the thrust levers in order to:
- Adjust the thrust, or
- Select a thrust detent.

The flight crew can move each thrust lever individually.

L2 The position of the thrust levers appears on the ED, via a blue circle on the thrust gauge.

Ident.: DSC-70-20-40-00014922.0001001 / 23 APR 14

THRUST DETENTS

There are four detents:

- The Idle (0) detent
- The Climb (CL) detent
- The Maximum Continuous Thrust (MCT)/Flexible Take Off (FLX) detent
- The Takeoff (TO)/Go-Around (GA) detent.

Ident.: DSC-70-20-40-00014923.0001001 / 23 APR 14

THRUST REVERSER LEVERS

The flight crew uses the thrust reverser levers in order to:

- Control the deployment and the stowage of the associated reversers
- Adjust the associated reverse thrust.

The flight crew can move each thrust reverser lever from the IDLE REV position to the MAX REV position, when the associated thrust lever is set to the Idle (0) detent.

L2 The position of the thrust reverser levers appears on the ED, via a blue circle on the reverse thrust gauge.

Ident.: DSC-70-20-40-00014925.0001001 / 03 AUG 16

A/THR INSTINCTIVE DISCONNECT PB

Pressing the A/THR instinctive disconnect pb disconnects the A/THR (in flight) and the autobrake (on ground).

L2 For more information about the A/THR instinctive disconnect pb, *Refer to DSC-22-FG-90-70 Thrust Levers*.

For more information about the A/THR disconnection, *Refer to DSC-22-FG-50-40 A/THR Disconnection*.

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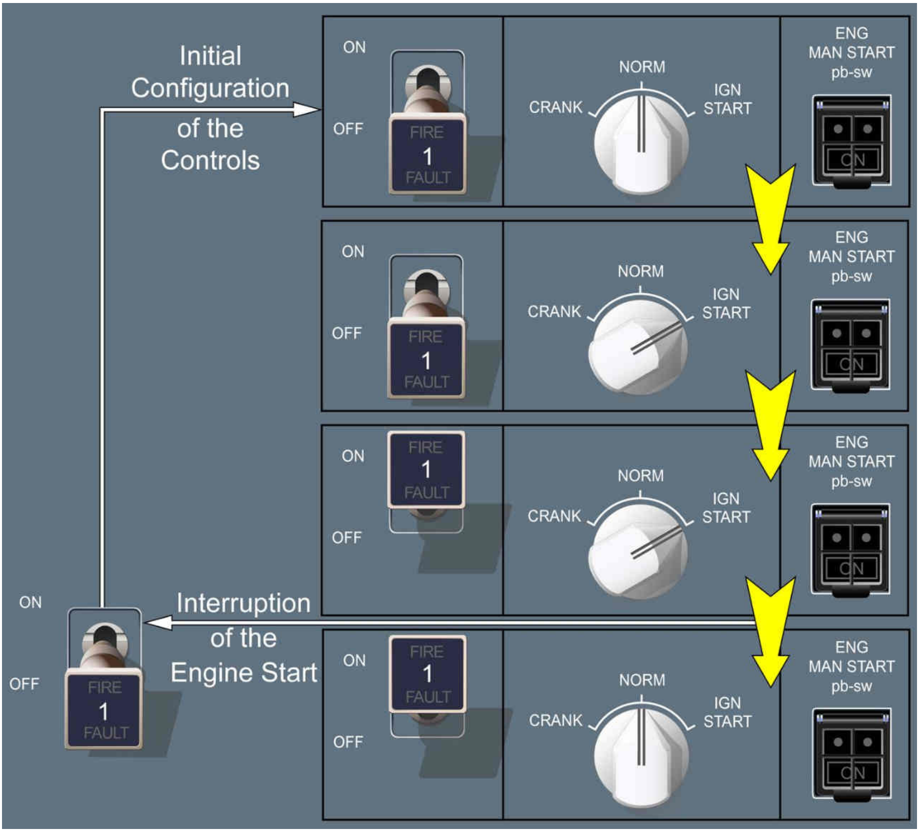
SEQUENCE OF THE AUTOMATIC START

Applicable to: ALL

Ident.: DSC-70-30-10-00014974.0001001 / 23 APR 14


Initial
Configuration
of the
Controls
ON
OFF
FIRE
1
FAULT
NORM
CRANK
IGN
START
ENG
MAN START
pb-sw
ON
Interruption
of the
Engine Start

Sequence of the Automatic Start

Ident.: DSC-70-30-10-00014975.0001001 / 23 APR 14

INITIAL CONFIGURATION OF THE CONTROLS

The initial configuration of the ENG MASTER lever, the ENG START selector, and the ENG MAN START pb-sw is as follows:

- The ENG MASTER lever is set to OFF
- The ENG START selector is set to NORM
- The ENG MAN START pb-sw is set to OFF.

Ident.: DSC-70-30-10-00014978.0001001 / 23 APR 14

FIRST STEP

The flight crew must set the ENG START selector to IGN/START. As a result:

- The ENG SD page appears on the SD
- All engine parameters are available
- All pack valves automatically close.
  After 30 s, if the flight crew does not set the ENG MASTER lever to ON (*Refer to second step*), the pack valves automatically open again.

Ident.: DSC-70-30-10-00014979.0001001 / 25 JUN 14

SECOND STEP

The flight crew must set the ENG MASTER lever to ON.

ON GROUND

When the flight crew sets the ENG MASTER lever to ON:

- The LP fuel shutoff valve opens
- The FADEC opens the engine start valve
- The FADEC closes the pack valves if formally open.

When N3 reaches 25 %, and N2 reaches 8 % with EGT<150 °C, the FADEC:

- Supplies one ignitor
- Opens the HP fuel shutoff valve.

When N3 reaches 48 %, the FADEC:

- Closes the engine start valve
- Stop to energize the ignitor.

The automatic start sequence finishes, and the engine is at idle speed:

- **AVAIL** indication appears for few seconds on the engine display
- If there is no other engine start within 30 s, the pack valves automatically open.

IN FLIGHT

When the flight crew sets the ENG MASTER lever to ON:
- The LP fuel shutoff valve opens
- Depending on N3 or the airspeed, the FADEC:
  - Opens the engine start valve in order to start the engine, if N3 is below 6 % or the airspeed is below 250 kt, or
  - Starts the engine via a windmilling engine start.

The FADEC:
- Supplies one ignitor
- Opens the HP fuel shutoff valve.

When N3 reaches 48 %, the FADEC:
- Closes the engine start valve, if the FADEC previously opened it
- Stop to energize the ignitor.

The automatic start sequence finishes, and the engine is at idle speed:
- **AVAIL** indication appears for few seconds on the engine display
- If there is no other engine start within 30 s, the pack valves automatically open.

Ident.: DSC-70-30-10-00014982.0001001 / 23 APR 14

THIRD STEP

The automatic engine start is finished.

On ground:
- The WHEEL SD page replaces the ENG SD page
- The flight crew must set the ENG START selector to NORM.

In flight:
- The CRUISE SD page replaces the ENG SD page
- The flight crew must set the ENG START selector to NORM.

Ident.: DSC-70-30-10-00014983.0001001 / 23 APR 14

INTERRUPTION OF THE AUTOMATIC START

When required by ECAM and after confirmation, the flight crew must set the ENG MASTER lever to OFF.

If the flight crew sets the ENG MASTER lever to OFF, the FADEC automatically:
- Closes the engine start valve
- Closes the LP and the HP fuel shutoff valves
- Stop to energize the ignitor.

ENGINE SHUTDOWN

Ident.: DSC-70-30-00015060.0001001 / 23 APR 14
Applicable to: ALL

In order to shut down an engine, the flight crew must:
- Set the corresponding thrust lever to idle (0)
- Set the ENG MASTER lever to OFF, when the engine parameters are fixed at the correct value (i.e. the value that corresponds to the idle thrust).
  The FADEC automatically closes the LP and the HP fuel shutoff valves.

As a result, the engine decelerates and stops.

START ABORT DURING AUTOMATIC START

Ident.: DSC-70-40-00015374.0001001 / 09 MAR 16
Applicable to: ALL

As per associated ECAM procedure, the engine start must be stopped if one of the following cases occurs:

- Hung start

L2 Associated with the following ECAM alert: ENG 1(2) START FAULT [ENG STALL] (*Refer to procedure*).

L1 - No light up

L2 Associated with the following ECAM alert: ENG 1(2) START FAULT [NO LIGHT UP] (*Refer to procedure*).

L1 - Hot start or EGT exceeds the limit

L2 Associated with the following ECAM alert: ENG 1(2) START FAULT [EGT OVERLIMIT] (*Refer to procedure*).

L1 - Engine stall

L2 Associated with the following ECAM alert: ENG 1(2) START FAULT [ENG STALL] (*Refer to procedure*).

L1 - LP rotor jammed

L2 Associated with the following ECAM alert: ENG 1(2) START FAULT LOW N1 (*Refer to procedure*).

L1 - Abnormal position of the engine start valve

L2 Associated with the following ECAM alerts:
- ENG 1(2) START VLV NOT CLOSED (*Refer to procedure*), or
- ENG 1(2) START VLV NOT OPEN (*Refer to procedure*).

L1 - Activation time of the pneumatic starter exceeded

L2 Associated with the following ECAM alert: ENG 1(2) START FAULT [STARTER TIME EXCEEDED] (*Refer to procedure*).

L1 - No sufficient bleed pressure to start the engine.

L2 Associated with the following ECAM alert: ENG 1(2) START VLV NO AIR PRESSURE (*Refer to procedure*).

L1 There are three types of aborted start during an automatic start:
- The automatic start on ground is automatically stopped (See below)
- The automatic start in flight is manually stopped (See below)
- The automatic start is manually stopped (See below).

AUTOMATIC START ON GROUND AUTOMATICALLY STOPPED

If one of the above-listed cases occurs on ground (See Start Abort During Automatic Start), the FADEC automatically stops the automatic start.

L2 The FADEC automatically:

- Closes the engine start valve
- Closes the HP fuel shutoff valve and the fuel metering valve
- Stops the ignition.

L1 The FADEC initiates a second and last automatic start sequence after the crank process, except if the LP rotor is jammed.

AUTOMATIC START IN FLIGHT AUTOMATICALLY STOPPED

In flight, automatic start is not aborted, However the FADEC monitors the engine parameters, and, as necessary, the ECAM triggers the associated alerts.
According to the ECAM alerts, the flight crew must initiate the associated corrective actions.

AUTOMATIC START MANUALLY STOPPED

The flight crew can interrupt an automatic start sequence and must set the ENG MASTER lever to OFF.

L2 If the flight crew sets the ENG MASTER lever to OFF:

- The LP and HP fuel shutoff valves close
- The engine start valve closes
- The ignition stops.

PROCEDURES

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PRO-ABN Abnormal and Emergency Procedures

PRO-NOR Normal Procedures

PRO-SPO Special Operations

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M (1)	Localization	DU Title	DU identification	DU date
	PRO-ABN-ABN-ADV	**[ADV] ECAM Advisory**	PG02575	
	PRO-ABN-ABN-ADV	**CAB PRESS Advisories**	00024950.0001001	03 JAN 19

Criteria: XW

Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYB

Impacted DU: 00024073 CAB PRESS Advisories

Reason for issue:

In climb, if the CAB V/S(ALT) ECAM advisory pulses, the flight crew should consider the CAB PRESS CTL MODE RESET procedure. This reset can prevent the triggering of the CAB PRESS EXCESS CAB ALT alert and a possible abortion of the mission.

For more information on this Temporary Abnormal Behavior, Refer to DSC-21-PRESS-45 Abnormal cabin altitude increase in climb due to OFV erroneously open.

M (1)	Localization	DU Title	DU identification	DU date
	PRO-NOR-SOP-60	**MFD FMS Preparation**	PG00638	
	PRO-NOR-SOP-60	**MFD FMS Preparation - CRZ TEMP**	00024882.0001001	05 NOV 18

Criteria: XW

Applicable to: ALL

Impacted DU: NONE

Reason for issue:

This temporary documentary unit is issued to cover the risk of incorrect FMS predictions of:
- *The climb temperature profile*
- *The cruise temperature at top of climb.*

This can lead to unexpected fluctuations and low value of the REC MAX FL computed by FMS until top of climb. Once the aircraft is in cruise, this misbehavior no longer exists.

This can occur when one or both of the following occurs:
- *In the case of hot weather conditions on ground or during initial climb (i.e. the measured DISA is at least above +15 °C): if the flight crew has not manually entered a CRZ TEMP, the FMS incorrectly predicts a higher cruise temperature instead of the default FMS value of the INIT page.*
- *On ground, after a TROPO entry, the FMS automatically changes the pilot-entered CRZ TEMP value.*

As a result, to prevent such FMS misbehavior, the flight crew should:
- *Manually enter the CRZ TEMP (even the default value if deemed as applicable for the day-conditions)*
- *Keep the default value (i.e. 36 098 ft) of the TROPO value for the climb.*

M (1)	Localization	DU Title	DU identification	DU date
R	PRO-NOR-SOP-90	**After Start**	PG00643	
	PRO-NOR-SOP-90	**After Start - ENG Start Selector**	00024191.0001001	27 SEP 18

Criteria: XW

Applicable to: ALL

Impacted DU: 00006558 After Start - ENG Start Selector

Continued on the following page

Continued from the previous page

M [(1)]	Localization	DU Title	DU identification	DU date
	Reason for issue: *This temporary documentary unit is issued to prevent the triggering of the ENG 1(2) STATOR A-ICE VLV CLOSED alert. This ECAM alert results in engine shut down and a "No Dispatch" situation. This ECAM alert is due to a variation in engine speed that is induced by any increase in thrust demand just after the engine start. This alert may interrupt the Engine Section Stator (ESS) anti-ice valve test.* *As a result, the flight crew must keep the engine thrust levers to IDLE for at least 30 seconds after AVAIL indication is displayed on the Engine Display (ED).*			

	PRO-NOR-SOP-110	**Before Takeoff**	PG00646	
	PRO-NOR-SOP-110	**Before Takeoff - PARK BRK**	00024407.0001001	27 OCT 17
	Criteria: XW **Applicable to: ALL** *Impacted DU: NONE*			
	Reason for issue: *This Temporary Documentary Unit is issued to provide the flight crew with a procedure to prevent any potential low level of residual braking during takeoff roll after parking brake release.*			

R	PRO-NOR-SOP-160	**Descent Preparation**	PG00651	
N	PRO-NOR-SOP-160	**Descent Preparation - ROW/ROP**	00025495.0001001	28 MAY 20
	Criteria: XW **Applicable to: ALL** *Impacted DU: 00018776 Descent Preparation - ROW/ROP*			
	Reason for issue: *When a pilot enters a runway shift on the ANF, the offside ANF is not fully synchronized.* *The effects of this erroneous synchronization are as follows:* - *An erroneous display of BTV data (ROW lines, blue arrow, and BTV path) on the offside ANF* - *In addition, if the offside ANF is the CM2 ANF (master ANF for PRIM and BTV):* • *A possible spurious ROW/ROP alert below the transition altitude* • *A possible strong deceleration rate during rollout in BTV mode.* *As a result, the tasksharing changes to enable CM2 to enter the runway shift, if required. This avoids a possible spurious ROW/ROP alert and a strong deceleration rate in BTV mode.* *A future standard of the ANF will remove this temporary documentary unit.*			
N	PRO-NOR-SOP-160	**Descent Preparation - Autobrake**	00025496.0001001	28 MAY 20
	Criteria: XW **Applicable to: ALL** *Impacted DU: 00006639 Descent Preparation - Autobrake*			

Continued on the following page

Continued from the previous page

M (1)	Localization	DU Title	DU identification	DU date
	Reason for issue: *This temporary documentary unit modifies the tasksharing when a runway shift is entered during ROW/ROP preparation. After CM2 (right side) enters the runway shift, CM2 continues with BTV preparation and arming (if BTV is used). This ensures a continuous flow and avoids a possible spurious ROW/ROP alert and a strong deceleration rate in BTV mode.* *If a runway shift is not entered, the tasksharing does not change.* *A future standard of the ANF will remove this temporary documentary unit.*			
N	PRO-NOR-TSK	**Descent Preparation**	00025497.0001001	28 MAY 20
	Criteria: XW **Applicable to: ALL** *Impacted DU: 00018759 Descent Preparation*			
	Reason for issue: *This temporary documentary unit modifies the tasksharing when a runway shift is entered. This avoids a possible spurious ROW/ROP alert and a strong deceleration rate in BTV mode.* *The tasksharing is therefore modified as follows:* *- CM2 (right side) enters the runway shift, if required* *- If BTV is used, CM2 continues with BTV preparation and arming.* *If a runway shift is not entered, the tasksharing does not change.* *A future standard of the ANF will remove this temporary documentary unit.*			
	PRO-NOR-SUP-SUP-ENG	**Crossbleed Engine Start**	PG02394	
	PRO-NOR-SUP-SUP-ENG	**Crossbleed Engine Start - After Start**	00024193.0001001	05 MAR 20
	Criteria: XW **Applicable to: ALL** *Impacted DU: 00006912 Crossbleed Engine Start - After Start*			
	Reason for issue: *This temporary documentary unit is issued to cover the triggering of the ENG 1(2) STATOR A-ICE VLV CLOSED alert leading to engine shut down and a "No Dispatch" situation. This alert is due to engine speed variation induced by any thrust demand increase just after the engine start, and may interrupt the Engine Section Stator (ESS) anti-ice valve test. As a result, the flight crew must keep the engine thrust lever to IDLE for at least 30 seconds after AVAIL indication is displayed on the Engine Display (ED) and also delay engine bleed setting.*			

(1) Evolution code : N=New, R=Revised, E=Effectivity

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PROCEDURES

ABNORMAL AND EMERGENCY PROCEDURES

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FWS FWS 1(2) Reset........Z
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OIS AVNCS Reset........AB
OIS CAB&MAINT Reset........AC
OIS Laptop Docking Station Reset........AD
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SURV AESU 1(2) Reset........AF
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PRO-ABN-A-ICE A-ICE

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A-ICE ICE DET FAULT........D
A-ICE ICE DETECTED........E
A-ICE L(R) LATERAL(AFT) WINDOW HEATG FAULT........F
A-ICE L(R) WINDOWS HEATG FAULT........G
A-ICE L+R WINDOWS HEATG FAULT........H
A-ICE L(R) WINDSHIELD HEATG FAULT........I
A-ICE L+R WINDSHIELDS HEATG FAULT........J
A-ICE L(R) WING VLV CLOSED........K
A-ICE L(R) WING VLV OPEN........L
A-ICE L(R) WING VLV PRESS HI........M
A-ICE L(R) WING VLV PRESS LO........N
A-ICE SEVERE ICE DETECTED........O
A-ICE WING SYS FAULT........P

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PRO-ABN-AIR AIR

AIR ABNORM BLEED CONFIG......A
AIR APU BLEED FAULT......B
AIR APU BLEED LEAK......C
AIR BLEED LEAK......D
AIR ENG 1(2) BLEED FAULT......E
AIR ENG 1(2) BLEED LEAK......F
AIR ENG 1(2) BLEED MONITORING + CTL FAULT......G
AIR ENG 1(2) BLEED OFF......H
AIR ENG 1(2) BLEED TEMP LO......I
AIR ENG 1(2) HP BLEED VLV NOT OPEN......J
AIR ENG 1+2 BLEED FAULT......K
AIR ENG BLEED TEMP LO......L
AIR HOT AIR 1(2) LEAK......M
AIR L(R) WING A-ICE LEAK......N
AIR L(R) WING LEAK......O
AIR LEAK ON FUEL INERTING......P
AIR OVHT ON FUEL INERTING 1(2)......Q
AIR PACK 1(2) FAULT......R
AIR PACK 1+2 FAULT......S
AIR PACK 1(2) LEAK......T
AIR PACK 1(2) OFF......U
AIR PACK 1(2) OVHT......V
AIR PACK 1(2) REGUL FAULT......W
AIR PACK BAY 1(2) VENT FAULT......X
AIR PACK BAY 1+2 VENT FAULT......Y
AIR XBLEED FAULT......Z

PRO-ABN-APU APU

APU AUTO SHUTDOWN......A
APU EMER SHUTDOWN......B
APU FAULT......C
APU FIRE DET FAULT......D

PRO-ABN-APUF APU FIRE

APU FIRE......A

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PRO-ABN-AUTO_FLT AUTO FLT

AUTO FLT A/THR LIMITED....A
AUTO FLT A/THR OFF....B
AUTO FLT AFS CTL PNL FAULT....C
AUTO FLT AFS CTL PNL+CAPT(F/O) BKUP CTL FAULT....D
[redacted] AUTO FLT AP OFF [redacted]....E
AUTO FLT APPROACH CAPABILITY DOWNGRADED....F
AUTO FLT AUTO EMER DES FAULT....G
[redacted] AUTO FLT EMER DESCENT [redacted]....H
AUTO FLT FMS BKUP REJECTED RNP AR CAPABILITY DOWNGRADED....I
AUTO FLT FMC-A(B)(C) FAULT....J
AUTO FLT FMS 1(2) FAULT....K
AUTO FLT FMS 1(2) REJECTED RNP AR CAPABILITY DOWNGRADED....L
AUTO FLT FMS 1+2 FAULT....M
AUTO FLT FMS 1+2 REJECTED RNP AR CAPABILITY LOST....N
AUTO FLT LIMITED....O
AUTO FLT ROLLOUT FAULT....P
AUTO FLT TCAS MODE FAULT....Q

PRO-ABN-AVNCS AVIONICS NETWORK

AVIONICS NETWORK SWITCH/CABLE FAULT (NETWORK DEGRADED)....A

PRO-ABN-BRAKES BRAKES

[redacted] [MEM] LOSS OF BRAKING [redacted]....A
BRAKES ALTN+EMER BRK FAULT ON ALL WHEELS....B
BRAKES ALTN BRK FAULT ON ALL WHEELS....C
BRAKES A-SKID FAULT ON ALL WHEELS....D
BRAKES A-SKID OFF....E
BRAKES AUTO BRK FAULT....F
1 BRAKES AFT(FWD) WHEELS BRK LOST....G
BRAKES BTV FAULT....H
BRAKES G(Y) ACCU PRESS LO....I
BRAKES G(Y) ACCU REINFLATE FAULT....J
BRAKES HOT....K
BRAKES L(R) PEDAL BRAKING....L
BRAKES NORM BRK FAULT ON ALL WHEELS....M
BRAKES PARK BRK FAULT....N

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BRAKES PARK BRK ON....O
BRAKES PARK BRK PRESS LO....P
BRAKES PART ALTN BRK FAULT....Q
BRAKES PART ALTN+EMER BRK FAULT....R
2 BRAKES PART A-SKID FAULT....S
BRAKES PART NORM BRK FAULT....T
BRAKES RELEASED BRK 01(XX) RELEASED....U
BRAKES RESIDUAL BRAKING RESIDUAL BRAKING ON BRK 01(XX)....V

PRO-ABN-CAB_COM CAB COM

CAB COM CIDS 1+2 FAULT....A
CAB COM CABIN INTERPHONE FAULT....B
CAB COM PAX ADDRESS FAULT....C

PRO-ABN-CAB_PRESS CAB PRESS

3 CAB PRESS AUTO CTL FAULT....A
CAB PRESS CAB ALT MAN CTL FAULT....B
CAB PRESS CAB V/S MAN CTL FAULT....C
CAB PRESS DIFF PRESS LO....D
■ CAB PRESS EXCESS CAB ALT ■....E
■ CAB PRESS EXCESS DIFF PRESS ■....F
■ CAB PRESS EXCESS NEGATIVE DIFF PRESS ■....G
■ CAB PRESS EXCESS RESIDUAL DIFF PRESS ■....H
CAB PRESS INHIBITED BY DOORS....I
CAB PRESS LDG ELEVN FAULT....J
CAB PRESS MAN CTL FAULT....K
CAB PRESS SYS FAULT....L

PRO-ABN-CDS CDS

CDS CAPT + F/O EFIS CTL PNLs FAULT....A
CDS CAPT(F/O) EFIS CTL PNL + BKUP CTL FAULT....B
CDS CAPT(F/O) EFIS CTL PNL FAULT....C
CDS CAPT(F/O) INNER DU FAULT....D
CDS CAPT(F/O) KCCU CURSOR CTL + KEYBOARD FAULT....E

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CDS CAPT(F/O) KCCU CURSOR CTL FAULT....F
CDS CAPT(F/O) KCCU KEYBOARD FAULT....G
CDS CAPT(F/O) OUTER DU FAULT....H
CDS CENTER LOWER DU ACCESS FAULT....I
CDS CENTER UPPER(LOWER) DU FAULT....J
CDS DISPLAY DISAGREE....K

PRO-ABN-CDS_AFLT CDS & AUTO FLT

CDS & AUTO FLT FCU SWITCHED OFF....A

PRO-ABN-COM COM

COM ATC DATALINK FAULT....A
COM ADS-C DATALINK FAULT....B
COM CAPT(F/O)(THIRD OCCUPANT)(FOURTH OCCUPANT) PTT STUCK....C
COM COMPANY COM FAULT....D
COM DATALINK FAULT....E
COM HF 1(HF 2) DATALINK FAULT ....F
COM HF 1(HF 2) EMITTING....G
COM HF 1(HF 2) FAULT....H
COM HF FAULT....I
COM OIS/AVNCS DATA XFR FAULT....J
COM RMP 1(2)(3) FAULT....K
COM SATCOM DATALINK FAULT....L
COM SATCOM FAULT....M
COM SATCOM VOICE FAULT....N
COM VHF 1(2)(3) EMITTING....O
COM VHF 1(2)(3) FAULT....P
COM VHF 3 DATALINK FAULT....Q

PRO-ABN-COND COND

COND AFT CARGO ISOL FAULT ....A
COND AFT CARGO VENT FAULT ....B
COND BULK CARGO DUCT OVHT....C
COND BULK CARGO HEATER FAULT....D
COND BULK CARGO ISOL FAULT....E
COND BULK CARGO VENT FAULT....F
COND CABIN FANS FAULT....G

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COND DUCT OVHT....H
COND FWD CARGO ISOL FAULT ◁✳ I
COND FWD CARGO TEMP REGUL FAULT ◁✳ ....J
COND FWD CARGO VENT FAULT ◁✳ ....K
COND HOT AIR 1(2) FAULT....L
COND MIXER FLOW REGUL FAULT....M
COND PURSER TEMP SEL FAULT....N
COND RAM AIR FAULT....O
COND TEMP CTL FAULT....P
COND TWO CABIN FANS FAULT....Q
COND VENT CTL DEGRADED....R

PRO-ABN-CONFIG CONFIG

■ CONFIG L(R) SIDESTICK FAULT (BY TAKEOVER) ■....A
■ CONFIG SPEED BRAKES NOT RETRACTED ■....B
■ CONFIG RUDDER TRIM NOT IN T.O RANGE ■....C
■ CONFIG PITCH TRIM NOT IN T.O RANGE ■....D
■ CONFIG SLATS(FLAPS) NOT IN T.O CONFIG ■....E
■ CONFIG AFT(FWD) CARGO DOOR NOT CLOSED ■....F
■ CONFIG PARK BRK ON ■....G

PRO-ABN-DISPATCH DISPATCH

DISPATCH PAGE UPDATE....A

PRO-ABN-DOOR DOOR

DOOR 1(2)(3)(4) L(R) NOT CLOSED....A
DOOR 1(2)(3)(4) L(R) POS DET FAULT....B
DOOR 1(2)(3)(4) L(R) SLIDE FAULT....C
DOOR AFT(BULK)(FWD) CARGO POS DET FAULT....D
DOOR AFT(FWD) CARGO NOT CLOSED....E
DOOR ALL POS DET FAULT....F
DOOR AVNCS NOT CLOSED....G
DOOR AVNCS POS DET FAULT....H
DOOR BULK CARGO NOT CLOSED....I
DOOR CKPT DOOR EMER OPENING IN PROGRESS....J

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DOOR CKPT DOOR LOCK FAULT....K
DOOR ESCAPE HATCH NOT CLOSED....L
DOOR ESCAPE HATCH POS DET FAULT....M
DOOR INTERNAL AFT(FWD) AVNCS NOT CLOSED....N
DOOR MULTIPLE POS DET FAULT....O
DOOR RESIDUAL DIFF PRESS DET FAULT....P

PRO-ABN-ELEC ELEC

ELEC AC 1A BUS 115V FAULT....A
ELEC AC 1A BUS 230V FAULT....B
ELEC AC 1A BUS 230V+115V FAULT AC 1B BUS 230V+115V FAULT....C
ELEC AC 1A BUS 230V+115V FAULT AC 1B BUS 230V+115V + DC 1 BUS FAULT....D
ELEC AC 1A BUS 230V + AC 2A BUS 230V FAULT DC 1 + DC 2 BUS FAULT....E
ELEC AC 1A PART BUS 115V FAULT....F
ELEC AC 1B(2B) BUS 115V FAULT....G
ELEC AC 1B BUS 230V FAULT....H
ELEC AC 1B BUS 230V +AC 2B BUS 230V FAULT....I
ELEC AC 2A BUS 115V FAULT....J
ELEC AC 2A BUS 230V FAULT....K
ELEC AC 2A BUS 230V+115V FAULT AC 2B BUS 230V+115V FAULT....L
ELEC AC 2A BUS 230V+115V FAULT AC 2B BUS 230V+115V + DC 2 BUS FAULT....M
ELEC AC 2A PART BUS 115V FAULT....N
ELEC AC 2B BUS 230V FAULT....O
ELEC AC EMER 1 BUS 115V FAULT....P
ELEC AC EMER 1 BUS 230V+115V FAULT....Q
ELEC AC EMER 1 BUS 230V+115V FAULT AC EMER 2 BUS 230V+115V FAULT....R
ELEC AC EMER 2 BUS 115V FAULT....S
ELEC AC EMER 2 BUS 230V+115V FAULT....T
ELEC APU GEN FAULT....U
ELEC ATU 1A(1B)(2B)(2A) FAULT....V
ELEC BAT 1(2)(EMER 1)(EMER 2) FAULT....W
ELEC BAT 1(2)(EMER 1)(EMER 2) OFF....X
[redacted] ELEC BAT 1(2)(EMER 1)(EMER 2) OVERCHARGE [redacted]....Y
ELEC BUS TIE OFF....Z
ELEC C/B TRIPPED....AA
ELEC DC 1 BUS FAULT....AB
ELEC DC 1 PART BUS FAULT....AC

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ELEC DC 1 + DC 2 BUS FAULT........AD
ELEC DC 2 BUS FAULT........AE
ELEC DC 2 PART BUS FAULT........AF
ELEC DC 2 + DC EMER 1 BUS FAULT........AG
ELEC DC EMER 1 BUS FAULT........AH
ELEC DC EMER 1 BUS ON BAT DC 1 + DC 2 BUS FAULT........AI
ELEC DC EMER 1 PART BUS FAULT........AJ
ELEC DC EMER 1 + DC EMER 2 BUS FAULT........AK
ELEC DC EMER 2 BUS FAULT........AL
ELEC DC EMER 2 PART BUS FAULT........AM
ELEC DRIVE 1A(1B)(2B)(2A) DISCONNECTED........AN
ELEC DRIVE 1A(1B)(2B)(2A) DISC SELECTED........AO
ELEC DRIVE 1A(1B)(2B)(2A) MECH FAULT........AP
ELEC DRIVE 1A(1B)(2B)(2A) OIL OVHT........AQ
4 ■ ELEC EMER CONFIG ■........AR
ELEC EMER NETWORK MANAGEMENT 1(2) FAULT........AS
ELEC EXT PWR 1(2) FAULT........AT
ELEC GEN 1A(1B)(2B)(2A) FAULT........AU
ELEC GEN 1A(1B)(2B)(2A) OFF........AV
ELEC LOAD MANAGEMENT FAULT........AW
ELEC NORMAL NETWORK MANAGEMENT 1(2) FAULT........AX
ELEC RAT NOT LOCKED UP........AY
ELEC REMOTE C/B CTL ACTIVE........AZ
ELEC SIDE 1&2 ISOL ON........BA
ELEC SIDE 1 OFF (SMOKE CONFIG)........BB
ELEC SIDE 2 OFF (SMOKE CONFIG)........BC
ELEC STATIC INV FAULT........BD
ELEC TR 1(2)(EMER 1)(EMER 2) FAULT........BE

PRO-ABN-ENG ENG

[ABN] ENG RELIGHT IN FLT........A
[ABN] ENG TAIL PIPE FIRE........B
■ ENG ALL ENGINES FAILURE ■........C
ENG REVERSER SELECTED........D
ENG SAT ABOVE FLEX TEMP........E
ENG START FAULT [THR LEVERS NOT AT IDLE]........F
ENG T.O THRUST DISAGREE........G

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ENG THR LEVERS NOT SET (At takeoff)....H
ENG THR LEVERS NOT SET (At Go-Around)....I
ENG THRUST LOCKED....J
ENG TYPE DISAGREE....K
ENG 1+2 FUEL FILTER CLOGGED....L
ENG 1+2 FUEL FILTER IN BYPASS....M
ENG 1+2 FUEL HEAT EXCHANGER IN BYPASS - FUEL CONTAMINATED....N
ENG 1(2) CTL SYS FAULT....O
ENG 1(2) EGT OVER LIMIT....P
ENG 1(2) EIM FAULT....Q
ENG 1(2) FADEC FAULT....R
ENG 1(2) FADEC SYS FAULT....S
ENG 1(2) FADEC TEMP HI....T
ENG 1(2) FAIL....U
ENG 1(2) FIRE DET FAULT....V
ENG 1(2) FUEL LEAK SUSPECTED....W
ENG 1(2) FUEL FILTER CLOGGED....X
ENG 1(2) FUEL FILTER IN BYPASS....Y
ENG 1(2) FUEL HEAT EXCHANGER IN BYPASS - FUEL CONTAMINATED....Z
ENG GA SOFT FAULT....AA
ENG 1(2) HP FUEL VLV NOT CLOSED....AB
ENG 1(2) HP FUEL VLV NOT OPEN....AC
ENG 1(2) IGN A+B FAULT....AD
ENG 1(2) N1 DEGRADED MODE....AE
ENG 1(2) N1 HIGH VIBRATIONS....AF
■ ENG 1(2) N1 OVER LIMIT ■....AG
ENG 1(2) N2(N3) HIGH VIBRATIONS....AH
■ ENG 1(2) N2 OVER LIMIT ■....AI
■ ENG 1(2) N3 OVER LIMIT ■....AJ
ENG 1(2) OIL PRESS LO (Amber Alert)....AK
■ ENG 1(2) OIL PRESS LO (Red Alert) ■....AL
ENG 1(2) OIL TEMP HI....AM
ENG 1(2) OIL TEMP LO....AN
ENG 1(2) REVERSER CTL FAULT....AO
ENG 1(2) REVERSER ENERGIZED....AP
ENG 1(2) REVERSER FAULT....AQ
ENG 1(2) REVERSER INHIBITED....AR

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ENG 1(2) REVERSER LOCKED.......... AS
ENG 1(2) REVERSER UNLOCKED.......... AT
ENG 1(2) SHUTDOWN.......... AU
ENG 1(2) STALL.......... AV
ENG 1(2) START FAULT.......... AW
ENG 1(2) START FAULT LOW N1.......... AX
ENG 1(2) START FAULT [STARTER TIME EXCEEDED].......... AY
ENG 1(2) START VLV NO AIR PRESSURE.......... AZ
ENG 1(2) START VLV NOT CLOSED.......... BA
ENG 1(2) START VLV NOT OPEN.......... BB
ENG 1(2) STATOR A-ICE VLV CLOSED.......... BC
■ ENG 1(2) THR LEVER ABOVE IDLE ■.......... BD
ENG 1(2) THR LEVER FAULT.......... BE
ENG 1(2) THRUST LOSS.......... BF
■ ENG 1(2) TURBINE OVHT ■.......... BG

PRO-ABN-ENGF ENG FIRE

■ ENG 1(2) FIRE ■.......... A

PRO-ABN-EXT_LT EXT LT

EXT LT NAV LT 1 FAULT.......... A

PRO-ABN-F_CTL F/CTL

[ABN] F/CTL LDG WITH FLAPS LEVER JAMMED.......... A
[ABN] F/CTL LDG WITH NO SLATS & NO FLAPS.......... B
[ABN] F/CTL RUDDER PEDAL JAMMED.......... C
[ABN] F/CTL RUDDER TRIM RUNAWAY.......... D
[ABN] F/CTL SPEED BRAKES LEVER JAMMED.......... E
F/CTL ALTN LAW (PROT LOST).......... F
F/CTL CAPT(F/O) RUDDER PEDAL FAULT.......... G
F/CTL CAPT+F/O RUDDER PEDALS FAULT.......... H
F/CTL DIFF FLAP SETTING FAULT.......... I
F/CTL DIRECT LAW (PROT LOST).......... J
F/CTL FCDC 1+2 FAULT.......... K
F/CTL FCDC 1(2) FAULT.......... L
F/CTL FLAP RETRACTION INHIBITED.......... M
F/CTL FLAP SYS 1+2 FAULT.......... N

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F/CTL FLAP SYS 1 FAULT.......O
F/CTL FLAP SYS 2 FAULT.......P
[redacted] F/CTL FLAPS LEVER NOT ZERO [redacted].......Q
F/CTL FLAPS LEVER OUT OF DETENT.......R
F/CTL FLAPS LEVER SYS 1(2) FAULT.......S
F/CTL FLAPS LOAD TEST REQUIRED.......T
F/CTL FLAPS LOCKED.......U
F/CTL GND SPLRS FAULT.......V
F/CTL GND SPLRs NOT ARMED.......W
F/CTL INR FLAPS FAULT.......X
F/CTL L(R) ELEVATOR FAULT PITCH CONTROL DEGRADED FOR FLARE.......Y
5 F/CTL L(R) INR(OUTR) AILERON FAULT.......Z
F/CTL L(R) SIDESTICK FAULT.......AA
F/CTL PART(MOST) SPLRS FAULT.......AB
F/CTL PITCH TRIM/FMS/CG DISAGREE.......AC
F/CTL PRIM 1(2)(3) FAULT.......AD
F/CTL RUDDER FAULT.......AE
F/CTL RUDDER DOUBLE ACTUATOR FAULT.......AF
F/CTL RUDDER TRIM 1+2 FAULT.......AG
F/CTL SEC 1(2)(3) FAULT.......AH
F/CTL SLAT SYS 1+2 FAULT.......AI
F/CTL SLAT SYS 1(2) FAULT.......AJ
F/CTL SLATS LOCKED.......AK
F/CTL SPEED BRAKES FAULT.......AL
F/CTL SPEED BRAKES POS/LEVER DISAGREE.......AM
F/CTL SPEED BRAKES STILL EXTENDED.......AN
F/CTL SPLRs PARTLY EXTENDED.......AO
F/CTL STABILIZER FAULT.......AP
F/CTL T.O FLAPS/FMS DISAGREE.......AQ

PRO-ABN-FIRE FIRE

[redacted] [ABN] FIRE SMOKE/FUMES [redacted].......A
[redacted] [QRH] FIRE SMOKE / FUMES [redacted].......B
[QRH] FIRE SMOKE / FIRE FROM LITHIUM BATTERY.......C

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PRO-ABN-FUEL FUEL

[ABN] FUEL LEAK .... A
[ABN] FUEL JETTISON .... B
[ABN] FUEL WINGS MAN BALANCING C
FUEL ABNORM DISTRIBUTION .... D
FUEL APU FEED FAULT .... E
FUEL APU LINE FAULT .... F
FUEL AUTO FEED FAULT .... G
FUEL CG DATA DISAGREE .... H
FUEL CROSSFEED VLV A(B) FAULT I
FUEL CROSSFEED VLV A+B FAULT .... J
FUEL CTR TK L(R) PMP FAULT .... K
FUEL CTR TK L+R PMPs FAULT L
FUEL CTR TK LEVEL LO .... M
FUEL ENG 1(2) LP VLV FAULT .... N
FUEL FQI FAULT .... O
FUEL FQMS 1(2) FAULT .... P
FUEL FQMS 1+2 FAULT .... Q
FUEL IMBALANCE CORRECTED .... R
FUEL JETTISON COMPLETED .... S
FUEL JETTISON FAULT .... T
FUEL LEAK DET FAULT .... U
FUEL LEAK SUSPECTED V
FUEL L(R) FEEDLINE BURST .... W
FUEL L(R) TK MAIN PMP FAULT X
FUEL L(R) TK MAIN+STBY PMPs FAULT .... Y
FUEL L(R) TK STBY PMP FAULT .... Z
FUEL L(R) WING TK OVERFLOW .... AA
FUEL L(R) WING TK TEMP HI .... AB
FUEL L(R) WING TK LEVEL LO .... AC
FUEL L+R WING TK LEVEL LO .... AD
FUEL NO ZFW OR ZFWCG DATA .... AE
FUEL OVERFLOW CORRECTED .... AF

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FUEL REFUEL FAULT.... AG
FUEL TEMP LO.... AH
FUEL T.O FUEL TEMP HI.... AI
FUEL WINGS NOT BALANCED.... AJ
FUEL WEIGHT DATA DISAGREE.... AK
FUEL ZFW OR ZFWCG FMS DISAGREE.... AL

PRO-ABN-FWS FWS

FWS AUDIO FUNCTION LOST RNP AR CAPABILITY LOST.... A
FWS ECP FAULT.... B
FWS FWS 1(2) FAULT.... C
FWS FWS 1+2 FAULT.... D
FWS FWS 1+2 & CPIOM FAULT.... E

PRO-ABN-HYD HYD

HYD G(Y) ELEC PMP FAULT.... A
HYD ENG 1(2) G(Y) PMP FAULT.... B
HYD ENG 1(2) G(Y) PMP ISOL FAULT.... C
HYD ENG 1(2) G(Y) PMP PRESS LO.... D
HYD G(Y) RSVR LEVEL LO.... E
[redacted] HYD G(Y) RSVR OVHT [redacted].... F
HYD G(Y) RSVR PRESS LO.... G
HYD G(Y) RSVR TEMP HI.... H
HYD G(Y) SYS MONITORING FAULT.... I
6 HYD G(Y) SYS PRESS LO.... J
HYD G(Y) SYS TEMP HI.... K
[redacted] HYD G(Y) SYS OVHT [redacted].... L
[redacted] HYD G+Y SYS PRESS LO [redacted].... M

PRO-ABN-IMA IMA

IMA MODULE FAULT.... A

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PRO-ABN-LG L/G

[ABN] L/G LDG WITH ABNORM MAIN L/G........A
[ABN] L/G LDG WITH ABNORM NOSE L/G........B
L/G CTL 1+2 FAULT........C
L/G DOORS NOT CLOSED........D
L/G GEAR NOT DOWN........E
L/G GEAR NOT LOCKED DOWN........F
L/G GEAR NOT LOCKED UP........G
L/G GEAR UPLOCK FAULT........H
L/G RETRACTION FAULT........I

PRO-ABN-MISC MISC

[ABN] MISC BOMB ON BOARD........A
[ABN] MISC CIRCLING APPROACH WITH ONE ENG INOP........B
[ABN] MISC CKPT WINDOW CRACKED........C
[ABN] MISC CKPT WINDOW ELEC ARCING........D
[ABN] MISC DITCHING........E
[ABN] MISC EMER DESCENT........F
[ABN] MISC EMER EVAC........G
[ABN] MISC FORCED LANDING........H
[ABN] MISC OVERWEIGHT LDG........I
[ABN] MISC SEVERE TURBULENCE IN CRUISE........J
[ABN] MISC VOLCANIC ASH ENCOUNTER........K
[MEM] EMER DESCENT........L
[MEM] STALL RECOVERY........M
[QRH] CIRCLING APPROACH WITH ONE ENGINE INOPERATIVE........N
[QRH] EFB FAULT........O
[QRH] EMER EVAC........P
[QRH] EMER LANDING ALL ENG FAILURE........Q

PRO-ABN-MLG_BAY MLG BAY

MLG BAY FIRE DET FAULT........A

PRO-ABN-MLG_BAYF MLG BAY FIRE

MLG BAY FIRE........A

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[7] PRO-ABN-NAV NAV

[ABN] NAV IR ALIGNMENT IN ATT MODE.......A
[redacted] [ABN] NAV UNRELIABLE AIR SPEED INDICATION [redacted].......B
[redacted] [MEM] UNRELIABLE AIR SPEED INDICATION [redacted].......C
NAV ACFT POS DEGRADED.......D
NAV ADR 1(2)(3) FAULT.......E
NAV ADR 1+2 (1+3) (2+3) FAULT.......F
NAV ADR 1+2+3 DATA DEGRADED.......G
NAV ADR 1+2+3 FAULT.......H
NAV AIR DATA REDUNDANCY LOST.......I
NAV AOA DISAGREE.......J
NAV CAPT(F/O) ARPT NAV FAULT.......K
NAV CAPT+F/O ARPT NAV FAULT.......L
NAV CAPT(F/O) HUD FAULT.......M
NAV CAPT+F/O HUDs FAULT.......N
NAV CAPT(F/O) HUD NOT LOCKED.......O
NAV CAPT(F/O) PFD ON BKUP.......P
NAV CAPT & F/O ATT DISAGREE.......Q
NAV CAPT & F/O BARO REF DISAGREE.......R
NAV CAPT & F/O BARO VALUE DISAGREE.......S
NAV CAPT & F/O HDG DISAGREE.......T
NAV EXTREME LATITUDE.......U
NAV FLS 1(2) FAULT.......V
NAV FLS 1+2 FAULT.......W
NAV GLS 1(2) FAULT.......X
NAV GLS 1+2 FAULT.......Y
NAV GNSS 1(2) FAULT.......Z
NAV GNSS 1+2 FAULT.......AA
NAV GNSS 1(2) REJECTED BY IRs.......AB
NAV GNSS 1+2 REJECTED BY IRs.......AC
NAV GNSS/ACFT POS DISAGREE.......AD
NAV ILS 1(2) FAULT.......AE
NAV ILS 1+2 FAULT.......AF
NAV IR 1(2)(3) FAULT.......AG
NAV IR 1+2 (1+3) (2+3) FAULT.......AH
NAV IR NOT ALIGNED.......AI

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NAV ISIS ALT(SPD) RECOVERED.......... AJ
NAV ISIS ALT(ATT)(SPD) UNRELIABLE.......... AK
NAV ISIS/FCU BKUP BARO REF DISAGREE.......... AL
NAV LS 1 DEGRADED.......... AM
NAV LS 1(2) FAULT.......... AN
NAV LS 1+2 FAULT.......... AO
NAV LS TUNING DISAGREE.......... AP
NAV MULTIPLE ADR STATIC PROBE FAULT.......... AQ
NAV NOT ON FMS RUNWAY.......... AR
NAV ON TAXIWAY.......... AS
NAV ON TAXIWAY.......... AS
NAV RA SYS A+B (A+C) (B+C) FAULT.......... AT
NAV RA SYS A+B+C FAULT.......... AU
NAV RNP AR CAPABILITY DOWNGRADED.......... AV
NAV RNP AR CAPABILITY LOST.......... AW
NAV SLS 1(2) FAULT .... AX
NAV SLS 1+2 FAULT .... AY

PRO-ABN-OIS OIS

OIS CAPT(F/O) OIS DISPLAY FAULT.......... A
OIS CAPT+F/O OIS DISPLAY FAULT.......... B

PRO-ABN-OVERSPEED OVERSPEED

OVERSPEED .... A

PRO-ABN-OXY OXY

OXY PAX OXY MASKS FAULT.......... A
OXY CAPT(F/O) BOTTLE PRESS LO.......... B

PRO-ABN-SMOKE SMOKE

SMOKE AFT/BULK CARGO DET FAULT.......... A
SMOKE AFT/BULK CARGO SMOKE .... B
SMOKE DET FAULT.......... C
SMOKE FLT(CABIN) REST DET FAULT .... D
SMOKE FLT(CABIN) REST SMOKE .... E
SMOKE FWD CARGO DET FAULT.......... F
SMOKE FWD CARGO SMOKE .... G

Continued on the following page

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SMOKE FWD(AFT/BULK) CARGO BOTTLES FAULT .... H
SMOKE FWD+AFT CARGOS BOTTLES FAULT I
SMOKE FWD+AFT CARGOS BTL 1(2)(3) FAULT .... J
SMOKE IFE BAY DET FAULT .... K
■ SMOKE IFE BAY SMOKE ■ L
SMOKE L(R) AVNCS DET FAULT .... M
■ SMOKE L(R) AVNCS SMOKE ■ .... N
SMOKE LAVATORY DET FAULT .... O
■ SMOKE LAVATORY SMOKE ■ .... P
SMOKE PAX BBAND DET FAULT ◁✳ .... Q
■ SMOKE PAX BBAND SMOKE ◁✳ ■ .... R

PRO-ABN-STEER STEER

STEER CAPT(F/O) STEER TILLER FAULT .... A
STEER N/W STEER ANGLE LIMIT EXCEEDED .... B
STEER N/W STEER DISC FAULT C
STEER N/W STEER FAULT .... D
STEER N/W STEER NOT DISC .... E
STEER PEDAL STEER CTL FAULT .... F

PRO-ABN-SURV SURV

[MEM] TAWS CAUTION .... A
■ [MEM] TAWS WARNING ■ .... B
[MEM] TCAS CAUTION - TRAFFIC ADVISORY C
■ [MEM] TCAS WARNING - RESOLUTION ADVISORY ■ .... D
■ [MEM] WINDSHEAR WARNING - PREDICTIVE WINDSHEAR ■ .... E
■ [MEM] WINDSHEAR WARNING - REACTIVE WINDSHEAR ■ .... F
SURV ADS-B TRAFFIC 1(2) FAULT ◁✳ .... G
SURV ADS-B TRAFFIC 1+2 FAULT ◁✳ .... H
SURV GPWS FAULT I
SURV PRED W/S 1(2) FAULT .... J
SURV PRED W/S 1+2 FAULT .... K
SURV REACTIVE W/S DET FAULT L
SURV ROW/ROP LOST .... M
SURV SYS 1(2) FAULT .... N
SURV SYS 1+2 FAULT .... O
SURV SYS DEGRADED .... P

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SURV TAWS FAULT.......... Q
SURV TCAS 1(2) FAULT.......... R
SURV TCAS 1+2 FAULT.......... S
SURV TCAS STBY.......... T
SURV TERR SYS FAULT.......... U
SURV WXR 1(2) FAULT.......... V
SURV WXR 1+2 FAULT.......... W
SURV XPDR 1(2) FAULT.......... X
SURV XPDR 1+2 FAULT.......... Y
SURV XPDR STBY.......... Z

PRO-ABN-TAIL_STRK TAIL STRIKE

TAIL STRIKE .... A

PRO-ABN-T-O T.O

[redacted] T.O ACCELERATION DEGRADED ◁ [redacted].......... A
[redacted] T.O RWY TOO SHORT [redacted].......... B
T.O RWY TOO SHORT.......... B
T.O SPEEDS NOT INSERTED.......... C
T.O SPEEDS TOO LOW.......... D
T.O V1/VR/V2 DISAGREE.......... E

PRO-ABN-VENT VENT

VENT AVNCS EXTRACT FAULT.......... A
VENT AVNCS L(R) BLOWING FAULT.......... B
VENT AVNCS L+R BLOWING FAULT.......... C
VENT AVNCS OVBD VLV FAULT.......... D
VENT IFE BAY VENT FAULT.......... E
VENT LAV AND GALLEYS EXTRACT FAULT.......... F
VENT PAX BBAND VENT FAULT ◁ .... G

PRO-ABN-WHEEL WHEEL

8 [ABN] WHEEL TIRE DAMAGE SUSPECTED.......... A
WHEEL TIRE PRESS LO.......... B

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Localization Title	Toc Index	ID	Reason
PRO-ABN-PLP-TOC BRAKES AFT(FWD) WHEELS BRK LOST		1	Documentation update: Deletion of the "00022163 BRAKES AFT(FWD) WHEELS BRK LOST - Procdesc" table of content entry.
			Documentation update: Deletion of the "00022163.0001001 BRAKES AFT(FWD) WHEELS BRK LOST" documentary unit.
			TDU information is moved to DU.
PRO-ABN-PLP-TOC BRAKES PART A-SKID FAULT		2	Documentation update: Deletion of the "00022166 BRAKES PART A-SKID FAULT - Procdesc" table of content entry.
			Documentation update: Deletion of the "00022166.0002001 BRAKES PART A-SKID FAULT - Procdesc" documentary unit.
			TDU information is moved to DU.
PRO-ABN-PLP-TOC CAB PRESS AUTO CTL FAULT		3	Documentation update: Deletion of the "00025064 CAB PRESS AUTO CTL FAULT - Alert" table of content entry.
			Documentation update: Deletion of the "00025064.0005001 CAB PRESS AUTO CTL FAULT - Alert" documentary unit.
			TDU information is moved to DU.
			Documentation update: Deletion of the "00007250.0001001 CAB PRESS AUTO CTL FAULT - Alert" documentary unit.
PRO-ABN-PLP-TOC ELEC EMER CONFIG		4	Documentation update: Deletion of the "00024522 ELEC EMER CONFIG - Alert" table of content entry.
			Documentation update: Deletion of the "00024522.0001001 ELEC EMER CONFIG - Alert" documentary unit.
			TDU information is moved to DU
PRO-ABN-PLP-TOC ELEC EMER CONFIG		4	Documentation update: Deletion of the "00024522 ELEC EMER CONFIG - Alert" table of content entry.
			Documentation update: Deletion of the "00024522.0001001 ELEC EMER CONFIG - Alert" documentary unit.
			TDU information is moved to DU
PRO-ABN-PLP-TOC F/CTL L(R) INR(OUTR) AILERON FAULT		5	Documentation update: Deletion of the "00008142.0003001 F/CTL L(R) INR(OUTR) AILERON FAULT - Alert" documentary unit.
			Documentation update: Deletion of the "00024824 F/CTL L(R) INR(OUTR) AILERON FAULT - Alert" table of content entry.
			Documentation update: Deletion of the "00024824.0002001 F/CTL L(R) INR(OUTR) AILERON FAULT - Alert" documentary unit.
			TDU information is moved to DU.
PRO-ABN-PLP-TOC HYD G(Y) SYS PRESS LO		6	Documentation update: Deletion of the "00022168 HYD G(Y) SYS PRESS LO - Procdesc" table of content entry.
			Documentation update: Deletion of the "00022168.0001001 HYD G(Y) SYS PRESS LO - Procdesc" documentary unit.
			TDU information is moved to DU.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-PLP-TOC HYD G(Y) SYS PRESS LO		6	Documentation update: Deletion of the "00022168 HYD G(Y) SYS PRESS LO - Procdesc" table of content entry.
			Documentation update: Deletion of the "00022168.0001001 HYD G(Y) SYS PRESS LO - Procdesc" documentary unit.
			TDU information is moved to DU.
PRO-ABN-PLP-TOC NAV		7	Documentation update: Deletion of the "PG02335 NAV ISIS FCUB BARO REF DISAGREE" table of content entry.
			Documentation update: Deletion of the "00020364.0001001 NAV ISIS FCUB BARO REF DISAGREE" documentary unit.
			Documentation update: Deletion of the "00020369.0001001 NAV ISIS FCUB BARO REF DISAGREE - Alert" documentary unit.
PRO-ABN-PLP-TOC [ABN] WHEEL TIRE DAMAGE SUSPECTED		8	Documentation update: Deletion of the "00023515.0001001 [ABN] WHEEL TIRE DAMAGE SUSPECTED - Alert" documentary unit.
			Documentation update: Deletion of the "00024529 [ABN] WHEEL TIRE DAMAGE SUSPECTED - Alert" table of content entry.
			Documentation update: Deletion of the "00024530 [ABN] WHEEL TIRE DAMAGE SUSPECTED - Fwspage" table of content entry.
			Documentation update: Deletion of the "00024529.0001001 [ABN] WHEEL TIRE DAMAGE SUSPECTED - Alert" documentary unit.
			Documentation update: Deletion of the "00024530.0001001 [ABN] WHEEL TIRE DAMAGE SUSPECTED - Fwspage" documentary unit.
			TDU information is moved to DU.
			Documentation update: Deletion of the "00023516.0001001 [ABN] WHEEL TIRE DAMAGE SUSPECTED - Fwspage" documentary unit.
PRO-ABN-ABN-RESET COM	A	1	Addition of the HF datalink fault line and the hyperlink to the related reset procedure.
PRO-ABN-ABN-RESET CAB COM CABIN CONNECTIVITY Reset Procedure	J	2	Documentation update: Deletion of information.
			Revision of the reset procedure to increase the duration of the reset (from 3s to 10s).
			Documentation update: Information "P.00023101.0002001.046" moved from "P.00023101.0002001.045" to "P.00023101.0002001.116"
PRO-ABN-ABN-RESET CAB COM CABIN CONNECTIVITY Reset Procedure	K	3	Revision of the reset procedure to increase the duration of the reset (from 3s to 10s).
PRO-ABN-ABN-RESET CAB COM CABIN CONNECTIVITY Reset Procedure	L	4	Revision of the reset procedure to increase the duration of the reset (from 3s to 10s).
PRO-ABN-ABN-RESET	R	5	Documentation update: Deletion of information.

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Localization Title	Toc Index	ID	Reason
COM HF DATALINK Reset			
PRO-ABN-ABN-RESET COM HF-DATALINK Reset Procedure	R	6	Documentation update: Addition of "COM HF-DATALINK Reset Procedure" documentary unit
PRO-ABN-AIR AIR ABNORM BLEED CONFIG	A	1	Correction of the Flight Phase Inhibition illustration: the alert is not inhibited in FP 3.
			Documentation update: Deletion of text.
PRO-ABN-AIR AIR ENG 1+2 BLEED FAULT - Alert	K	2	Revision of the action line from "ENG X BLEED (POSSIBLE SIDE)" to "ENG BLEED (POSSIBLE SIDE)". This is to avoid confusion with XBLEED selector.
			Revision of the procedure for the case that the APU is not available. This is to be in line with the ECAM procedures.
PRO-ABN-BRAKES BRAKES AFT(FWD) WHEELS BRK LOST	G	1	Documentation update: Addition of "BRAKES AFT(FWD) WHEELS BRK LOST" documentary unit
PRO-ABN-BRAKES BRAKES PART A-SKID FAULT - Procdesc	S	2	Documentation update: Addition of "BRAKES PART A-SKID FAULT - Procdesc" documentary unit
PRO-ABN-CAB_PRESS CAB PRESS AUTO CTL FAULT - Alert	A	1	Documentation update: Addition of "CAB PRESS AUTO CTL FAULT - Alert" documentary unit
PRO-ABN-COND COND MIXER FLOW REGUL FAULT - Alert	M	1	Documentation update: Information "P.00007140.0002001.002" moved from "P.00007140.0002001.001" to "P.00007140.0002001.006"
			Addition of the condition about the mixer unit low pressure because the procedure line to set the AIR FLOW to HI is only applicable in this case.
PRO-ABN-CONFIG CONFIG L(R) SIDESTICK FAULT (BY TAKEOVER)	A	1	Enhancement of the wording for standardization purposes.
PRO-ABN-CONFIG CONFIG SPEED BRAKES NOT RETRACTED	B	2	Enhancement of the wording for standardization purposes.
PRO-ABN-CONFIG CONFIG RUDDER TRIM NOT IN T.O RANGE	C	3	Enhancement of the wording for standardization purposes.
PRO-ABN-CONFIG CONFIG PITCH TRIM NOT IN T.O RANGE	D	4	Enhancement of the wording for standardization purposes.
PRO-ABN-CONFIG	E	5	Enhancement of the wording for standardization purposes.

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Localization Title	Toc Index	ID	Reason
CONFIG SLATS(FLAPS) NOT IN T.O CONFIG			
PRO-ABN-CONFIG CONFIG AFT(FWD) CARGO DOOR NOT CLOSED	F	6	Enhancement of the wording for standardization purposes.
			Addition of the missing "Press the T.O Config pb on the ECP" condition to the list of the triggering conditions.
PRO-ABN-ELEC ELEC AC 1A BUS 230V + AC 2A BUS 230V FAULT DC 1 + DC 2 BUS FAULT - Fwspage	E	1	Revision of the if-installed element to be in accordance with the if-installed table.
PRO-ABN-ELEC ELEC AC 2A BUS 230V+115V FAULT AC 2B BUS 230V+115V + DC 2 BUS FAULT - Fwspage	M	2	Revision of the if-installed element to be in accordance with the if-installed table.
PRO-ABN-ELEC ELEC DC 1 + DC 2 BUS FAULT - Fwspage	AD	3	Revision of the if-installed element to be in accordance with the if-installed table.
PRO-ABN-ELEC ELEC DC2 BUS FAULT - Fwspage	AE	4	Revision of the if-installed element to be in accordance with the if-installed table.
PRO-ABN-ELEC ELEC DC 2 PART BUS FAULT - Fwspage	AF	5	Revision of the if-installed element to be in accordance with the if-installed table.
PRO-ABN-ELEC ELEC EMER CONFIG - Fwspage	AR	7	Revision of the if-installed element to be in accordance with the if-installed table.
			Addition of ROW/ROP in the list of INOP SYS in order to reflect the exact system design.
PRO-ABN-ELEC ELEC EMER CONFIG - Alert	AR	8	Documentation update: Addition of "ELEC EMER CONFIG - Alert" documentary unit
PRO-ABN-ELEC ELEC EMER CONFIG - Fwspage	AR	9	Revision of the if-installed element to be in accordance with the if-installed table.
			Addition of ROW/ROP in the list of INOP SYS in order to reflect the exact system design.
PRO-ABN-ELEC ELEC SIDE 2 OFF (SMOKE CONFIG) - Fwspage	BC	10	Revision of the if-installed element to be in accordance with the if-installed table.
PRO-ABN-ENG [ABN] ENG RELIGHT IN FLT - Alert	A	1	Removal of procedure line "PACK 1+2...OFF" and "PACK 1+2...ON" to restore consistency with FWS S6.
			Documentation update: Deletion of information.
			Removal of the quick windmill relight envelope for consistency with AFM.

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Localization Title	Toc Index	ID	Reason
			Addition of reference to the Windmilling Quick Relight Function section. The section provides more information on the quick relight capability.
PRO-ABN-ENG ENG 1(2) FUEL LEAK SUSPECTED - Alert	W	2	Update of the layer 2 description in order to provide more guidance about the parameters to be checked in order to confirm the fuel leak.
PRO-ABN-ENG ENG 1(2) STATOR A-ICE VLV CLOSED	BC	3	Correction of the wording.
PRO-ABN-F_CTL F/CTL LDG WITH NO SLATS & NO FLAPS - Alert	B	1	Enhancement of the position of “DEACTIVATE” for readability on all formats. Documentation update: Deletion of information.
PRO-ABN-F_CTL F/CTL RUDDER TRIM RUNAWAY - Alert	D	2	Enhancement of the position of “DEACTIVATE” for readability on all formats. Documentation update: Deletion of information.
PRO-ABN-F_CTL F/CTL L(R) INR(OUTR) AILERON FAULT - Alert	Z	3	Documentation update: Addition of "F/CTL L(R) INR(OUTR) AILERON FAULT - Alert" documentary unit
PRO-ABN-FUEL FUEL JETTISON - Alert	B	1	Addition of the command line “DEACTIVATE” to be in accordance with the ECAM display behavior.
PRO-ABN-FUEL FUEL WINGS MAN BALANCING - Alert	C	2	Addition of the command line “DEACTIVATE” to be in accordance with the ECAM display behavior.
PRO-ABN-FUEL FUEL FQMS 1(2) FAULT - Alert	P	3	Correction of the wording from "switch" to "button".
PRO-ABN-FUEL FUEL FQMS 1+2 FAULT - Alert	Q	4	Correction of the wording from "switch" to "button".
PRO-ABN-HYD HYD G(Y) SYS PRESS LO - Procdesc	J	1	Update of the procedure description to incorporate the information from the Temporary Documentary Unit (TDU).
PRO-ABN-HYD HYD G(Y) SYS PRESS LO - Fwspage	J	2	Removal of the FLAP FULL:NO RETRACT limit that is not applicable since FWS STD 4/2.0. Documentation update: Deletion of information.
PRO-ABN-HYD HYD G(Y) SYS PRESS LO - Procdesc	J	3	Update of the procedure description to incorporate the information from the Temporary Documentary Unit (TDU).
PRO-ABN-HYD HYD G(Y) SYS PRESS LO - Fwspage	J	4	Removal of the FLAP FULL:NO RETRACT limit that is not applicable since FWS STD 4/2.0. Documentation update: Deletion of information.
PRO-ABN-MISC	C	1	Update of the layer 2 wording to clarify that when only one of the two internal structural layers is affected, the integrity of the

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Localization Title	Toc Index	ID	Reason
MISC CKPT WINDOW CRACKED - Alert			structure is not affected. When the internal cockpit side layer is affected, the flight crew is not able to accurately determine how many internal layers are affected and the structure is considered affected.
PRO-ABN-MISC MISC EMER DESCENT - Alert	F	2	Enhancement of the position of “DEACTIVATE” for readability on all formats. Documentation update: Deletion of information.
PRO-ABN-MISC MISC [ABN] EMER EVAC - Alert	G	3	Correction of the comment in case the SIDE 1&2 ISOL pb-sw is set to ON during the procedure. If the engines are off, the DC EVAC busbar will still be electrically supplied but some systems necessary for the emergency evacuation will not be.
PRO-ABN-MISC MISC SEVERE TURBULENCE IN CRUISE - Alert	J	4	Enhancement of the position of “DEACTIVATE” to be in accordance with the position as shown on the ECAM.
PRO-ABN-NAV NAV IR ALIGNMENT IN ATT MODE - Alert	A	1	Enhancement of the position of “DEACTIVATE” for readability on all formats. Documentation update: Deletion of information.
PRO-ABN-NAV NAV IR 1(2)(3) FAULT	AG	2	Documentation update: Deletion of information. Correction of the Flight Phase Inhibition illustration: the alert is inhibited in FP 3.
PRO-ABN-OIS OIS CAPT+F/O OIS DISPLAY FAULT - Alert	B	1	Documentation update: Information "P.00023584.0001001.002" moved from "P.00023584.0001001.001" to "P.00023584.0001001.025" Addition of the possibility to perform a reset of the OIS, in the case of display fault is caused by a failure of the OIS. This update enables to correctly reflect the ECAM actions.
PRO-ABN-SURV [MEM] WINDSHEAR WARNING - REACTIVE WINDSHEAR - Alert	F	1	Addition of a note to specify the pitch value to be targeted if the FD bars are not displayed.
PRO-ABN-WHEEL [ABN] WHEEL TIRE DAMAGE SUSPECTED - Alert	A	1	Documentation update: Addition of "[ABN] WHEEL TIRE DAMAGE SUSPECTED - Alert" documentary unit
PRO-ABN-WHEEL [ABN] WHEEL TIRE DAMAGE SUSPECTED - Fwspage	A	2	Documentation update: Addition of "[ABN] WHEEL TIRE DAMAGE SUSPECTED - Fwspage" documentary unit

PRO-ABN-A-ICE A-ICE WING SYS FAULT - Alert	P	1	Effectivity update: The information now also applies to ET-ATQ, ET-AUC.
PRO-ABN-A-ICE A-ICE WING SYS FAULT - Fwspage	P	2	Effectivity update: The information now also applies to ET-ATQ, ET-AUC.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-A-ICE A-ICE WING SYS FAULT- Alert	P	3	Effectivity update: The information no longer applies to ET-ATQ, ET-AUC.
PRO-ABN-A-ICE A-ICE WING SYS FAULT- Fwspage	P	4	Effectivity update: The information no longer applies to ET-ATQ, ET-AUC.
PRO-ABN-ELEC ELEC EMER CONFIG - Alert	AR	6	Effectivity update: The information no longer applies to all ACN.

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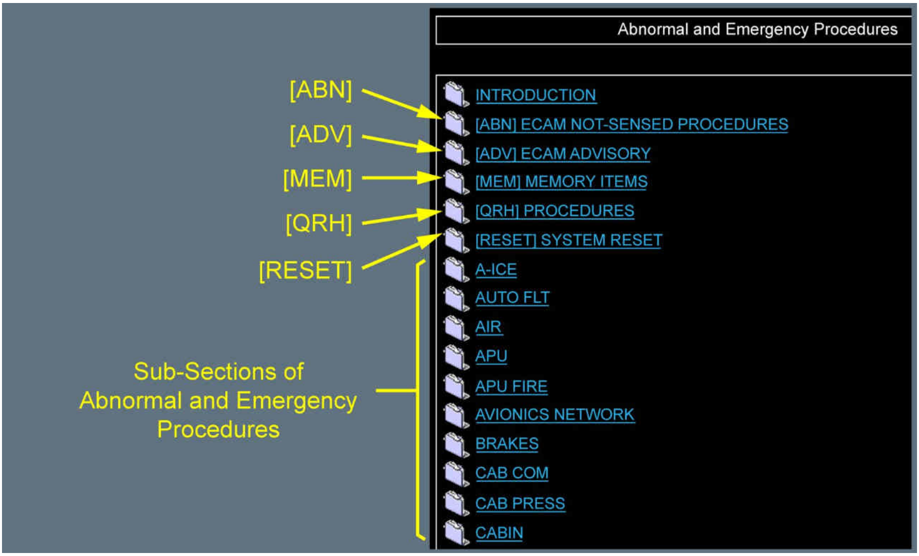
CONTENTS

Ident.: PRO-ABN-ABN-00-00021250.0001001 / 15 APR 19
Applicable to: ALL

Abnormal and Emergency procedures involve actions that the flight crew must perform in order to ensure adequate safety, and help to make the remainder of the flight easier.

L2 For more information about the management of abnormal operations, *Refer to FCTM/AOP-30-10 General*.

Abnormal and Emergency Procedure Overview


Abnormal and Emergency Procedures
INTRODUCTION
[ABN] ECAM NOT-SENSED PROCEDURES
[ADV] ECAM ADVISORY
[MEM] MEMORY ITEMS
[QRH] PROCEDURES
[RESET] SYSTEM RESET
A-ICE
AUTO FLT
AIR
APU
APU FIRE
AVIONICS NETWORK
BRAKES
CAB COM
CAB PRESS
CABIN
[ABN]
[ADV]
[MEM]
[QRH]
[RESET]
Sub-Sections of Abnormal and Emergency Procedures

L1 [ABN] ECAM NOT-SENSED PROCEDURES

The [ABN] ECAM NOT-SENSED PROCEDURES menu provides direct access to the list of all abnormal and emergency ECAM not-sensed procedures published in the FCOM.

L2 For direct access to the [ABN] ECAM NOT-SENSED PROCEDURES menu, *Refer to PRO-ABN-ABN-ABN [ABN] EMERGENCY*.

L1 Abnormal and emergency not-sensed procedures are all the procedures that the flight crew can manually activate via the ECAM.

L2 For more information, *Refer to DSC-31-CDS-60-10-40 Abnormal Not-Sensed Procedures*.

L1 This [ABN] ECAM NOT-SENSED PROCEDURES menu in the FCOM is similar to the ABNORMAL NOT-SENSED PROCEDURES menu displayed on the WD via the ABN pb on the

ECP. However, for the sole purpose of the FCOM consultation, the title of each ABN not-sensed procedure listed in the FCOM menu starts with the prefix [ABN].
The abnormal not-sensed procedures are described in the applicable sub-sections of the abnormal and emergency procedures.

Note: *To consult the content of an abnormal not-sensed procedure, the flight crew must use the FCOM. The activation of the procedure via the ECAM Abnormal not-sensed menu is only dedicated to apply the procedure.*

[ADV] ECAM ADVISORY

The [ADV] ECAM ADVISORY section provides direct access to the list of all the advisories that can be displayed on applicable ECAM SD page.
L2 For direct access to the [ADV] ECAM ADVISORY section, *Refer to ECAM Advisory*.
L1 Advisories are system parameters that start to deviate from their usual operational range. However, an advisory does not require flight crew actions, except monitoring.
L2 For more information about the Advisory function, *Refer to DSC-31-CDS-60-10-40 Abnormal Not-Sensed Procedures*.

L1 [MEM] MEMORY ITEMS

The [MEM] MEMORY ITEMS menu provides direct access to the list of the memory items.
L2 For direct access to the menu, *Refer to [MEM] MEMORY ITEMS*.
L1 The content of the memory items are described in the applicable sub-sections of the abnormal and emergency procedures.
Memory items are procedures, or critical immediate actions of an ECAM/QRH/OEB procedure, that the flight crew must apply by memory to ensure a safe flight path. In some time-critical situations, the flight crew has no time to refer the ECAM and/or to the FCOM.
L2 For more information, *Refer to FCTM/AOP-10-40 Abnormal and Emergency Procedures*.

L1 [QRH] PROCEDURES

The [QRH] PROCEDURES menu provides direct access to the list of all the procedures that are in the QRH.
L2 For direct access to the menu, *Refer to [QRH] PROCEDURES*.
L1 The content of the QRH procedures are described in the applicable sub-sections of the abnormal and emergency procedures.

Note: *The QRH procedure in the FCOM manual is an electronic FCOM version of the associated procedure in the QRH manual. However, layer 2 or 3 information, if any, are only provided in the electronic FCOM manual, for FCOM consultation purpose.*

[RESET] SYSTEM RESET

The [RESET] SYSTEM RESET section provides direct access to the table listing all the system resets that are permitted, and the condition to apply them.

L2 For direct access to the table, *Refer to [RESET] SYSTEM RESET*.

L1 SUB-SECTIONS OF ABNORMAL AND EMERGENCY PROCEDURES

This part of the FCOM describes the detailed content of all abnormal and emergency procedures.
All procedures are grouped in sub-sections that can be system related (e.g. AIR, FUEL, etc.) or non-system related (e.g. MISC, T.O, TAIL STRIKE, etc.)
The sub-sections are sorted by alphabetic order.

For each sub-section, procedures are listed in the following order:

1. The ECAM abnormal or emergency not-sensed procedures
   The title of these procedures starts with the [ABN] prefix
2. The memory items
   The title of the memory items starts with the [MEM] prefix
3. The abnormal or emergency procedures of the QRH
   The title of these procedures starts with the [QRH] prefix
4. The ECAM sensed procedures.

FCOM PROCEDURE LAYOUT

Applicable to: ALL

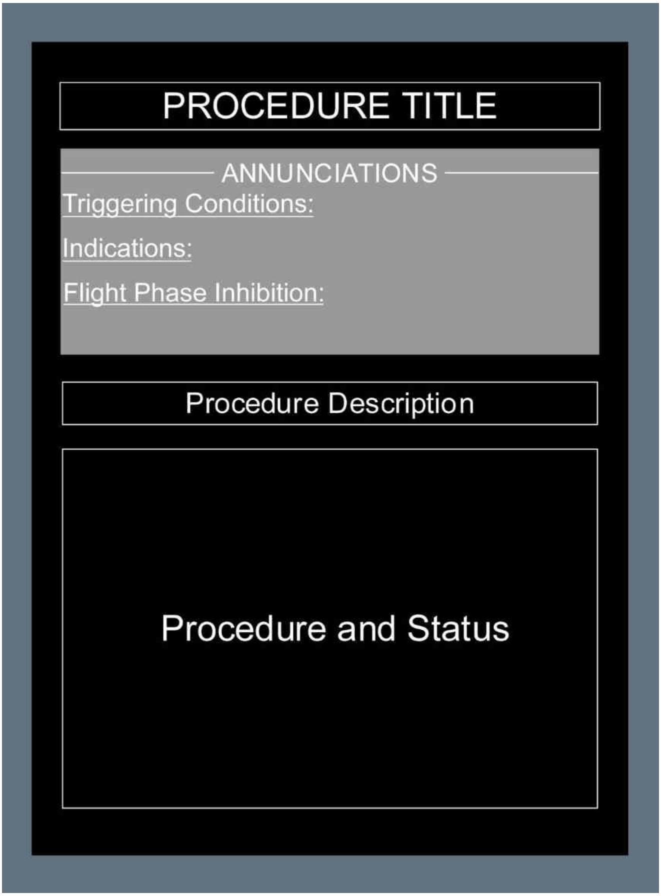
Ident.: PRO-ABN-ABN-00-100-00007087.0001001 / 07 NOV 16

The presentation of abnormal and emergency procedures is as far as possible, identical to the presentation on the ECAM.

L2 In particular, the combination of failures is generally not considered in the FCOM and the information actually displayed on the ECAM (e.g. LDG PERF AFFECTED) may differ depending on the other active failures, if any.

L1 However, the FCOM also provides additional operational information (comments).
The FCOM displays in uppercase letters the information that appears on the ECAM and uses the same color as the ECAM. All the additional comments appear in the FCOM in lowercase letters.

FCOM Presentation of ABN or EMER procedures


PROCEDURE TITLE
ANNUNCIATIONS
Triggering Conditions:
Indications:
Flight Phase Inhibition:
Procedure Description
Procedure and Status

Ident.: PRO-ABN-ABN-00-100-00007088.0001001 / 06 NOV 14

PROCEDURE TITLE

ECAM PROCEDURES

The title of an abnormal or emergency procedure, that appears on the ECAM, is:

- Red for a warning
- Amber for a caution
- On a black background

Note: The [ABN] prefix indicates that the procedure is an ECAM not-sensed procedure.

Examples :

ECAM Sensed Procedure Title

SMOKE L(R) AVNCS SMOKE

ECAM Not-Sensed Procedure Title

[ABN] FIRE SMOKE/FUMES

NON ECAM PROCEDURES

The title of an abnormal or emergency procedure, that does not appear on the ECAM, is:

- Red for a warning
- Amber for a caution
- On a grey background

Note:
- *The [MEM] prefix indicates that the procedure contains memory items*
- *The [QRH] prefix indicates that the procedure is a QRH procedure.*

Examples:

Non ECAM QRH Procedure Title

[QRH] FIRE SMOKE/FUMES

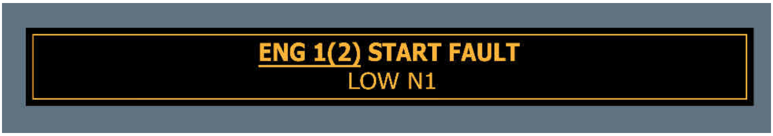
Non ECAM Memory Procedure Title

[MEM] TAWS CAUTION

SUBTITLE

When relevant, the procedure subtitle that appears on the ECAM is displayed below the procedure title.
Example:

Subtitle

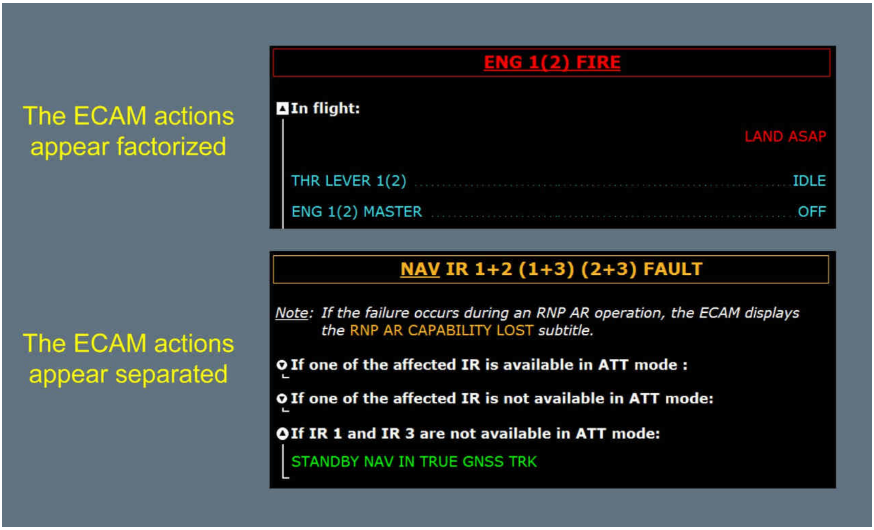


ENG 1(2) START FAULT
LOW N1

SEVERAL ALERTS UNDER THE SAME TITLE

When applicable, several alerts may be grouped under the same procedure title. However, depending on the failure, the actions that the flight crew should perform may differ.

Several Alerts Under the Same Title



The ECAM actions appear factorized

ENG 1(2) FIRE

In flight:

LAND ASAP

THR LEVER 1(2) .... IDLE

ENG 1(2) MASTER .... OFF

The ECAM actions appear separated

NAV IR 1+2 (1+3) (2+3) FAULT

Note: If the failure occurs during an RNP AR operation, the ECAM displays the RNP AR CAPABILITY LOST subtitle.

If one of the affected IR is available in ATT mode :

If one of the affected IR is not available in ATT mode:

If IR 1 and IR 3 are not available in ATT mode:

STANDBY NAV IN TRUE GNSS TRK

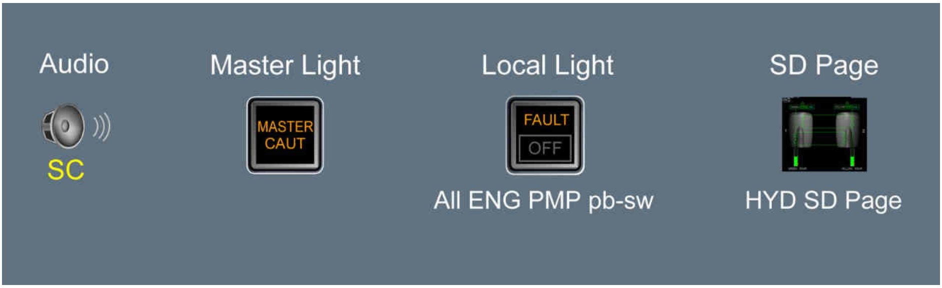
Ident.: PRO-ABN-ABN-00-100-00007089.0001001 / 06 NOV 14

ANNUNCIATIONS

When applicable, the annunciations section provides:

- The triggering conditions, that describe the cause of the alert activation
- The following indications associated with the alert:
  - Audio effect such as Single Chime (SC), or Continuous Repetitive Chime (CRC)
  - Master light (MASTER WARN or MASTER CAUT)
  - The local lights
  - The applicable SD page.

Indications


Audio
SC
Master Light
MASTER
CAUT
Local Light
FAULT
OFF
All ENG PMP pb-sw
SD Page
HYD SD Page

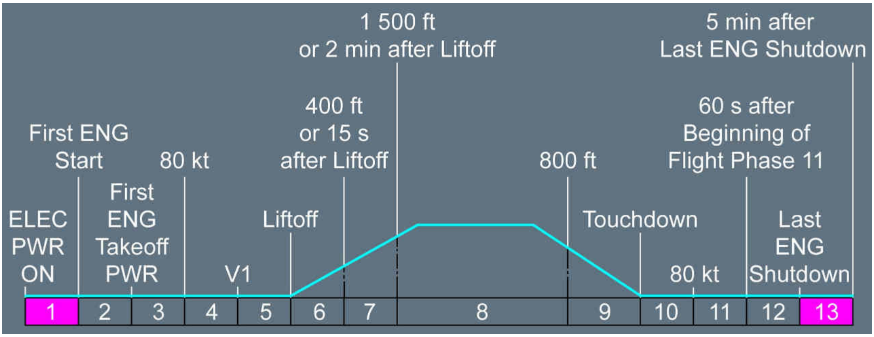
- The Flight phase inhibition .

FLIGHT PHASE INHIBITION

The Flight Phase Inhibition section indicates the flight phases during which the alert is inhibited. In the below example, the alert is inhibited in the aircraft flight phase 1, and 13.

L2 For more information, *Refer to DSC-31-CDS-60-10-10 ECAM Flight Phases*

Flight Phase Inhibition


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

Ident.: PRO-ABN-ABN-00-100-00007090.0001001 / 06 NOV 14

PROCEDURE DESCRIPTION

When necessary, the Procedure Description section provides the purpose of the procedure or a summary of the procedure when the procedure is complex.

Ident.: PRO-ABN-ABN-00-100-00007091.0001001 / 07 NOV 16

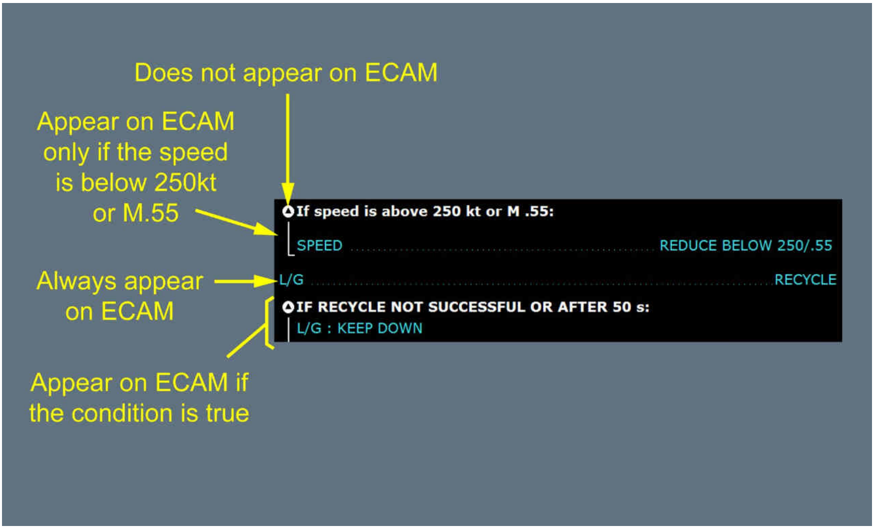
PROCEDURE AND STATUS

The Procedure and Status section provides the procedure and additional comments.

CONDITIONS

A white bullet appears in front of lines that are conditions. These lines are also referred to as condition lines. The content that is associated with a condition can be expanded or collapsed. The conditions that appear on the ECAM are in uppercase bold letters in the FCOM.
There are conditions, that are automatically managed by the ECAM, and do not appear on the ECAM, or that are part of non-ECAM procedures. Such conditions appear in the FCOM in lowercase letters.

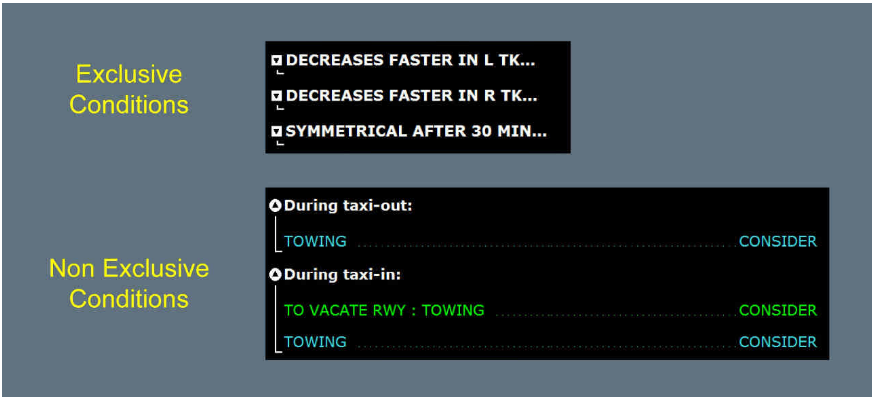
Conditions


Does not appear on ECAM
Appear on ECAM only if the speed is below 250kt or M.55
Always appear on ECAM
Appear on ECAM if the condition is true

○ **If speed is above 250 kt or M .55:**
SPEED .... REDUCE BELOW 250/.55
L/G .... RECYCLE
○ **IF RECYCLE NOT SUCCESSFUL OR AFTER 50 s:**
L/G : KEEP DOWN

The conditions can be exclusive or not. Exclusive conditions are identified via a square bullet and non exclusive conditions are identified via a circle bullet.

Exclusive or Non Exclusive Conditions



☐ DECREASES FASTER IN L TK...

☐ DECREASES FASTER IN R TK...

☐ SYMMETRICAL AFTER 30 MIN...

○ During taxi-out:

TOWING .... CONSIDER

○ During taxi-in:

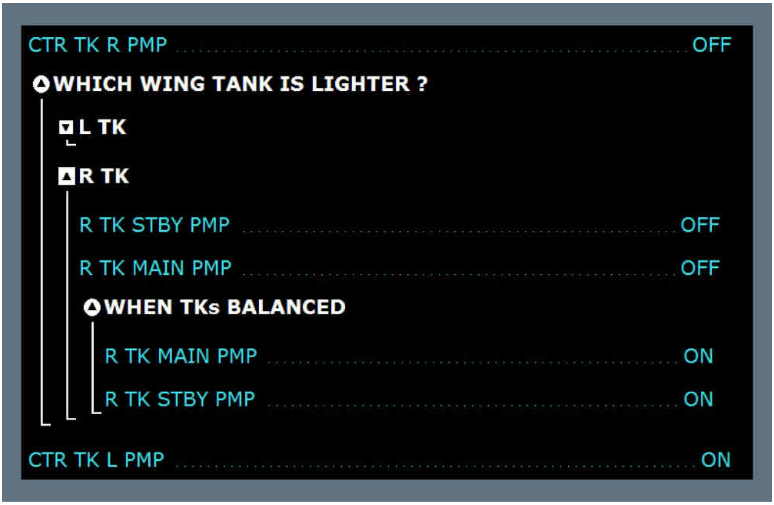
TO VACATE RWY : TOWING .... CONSIDER

TOWING .... CONSIDER

INDENTATION

When a procedure line depends on several conditions, these conditions are indented on the ECAM and in the FCOM.

Indentation



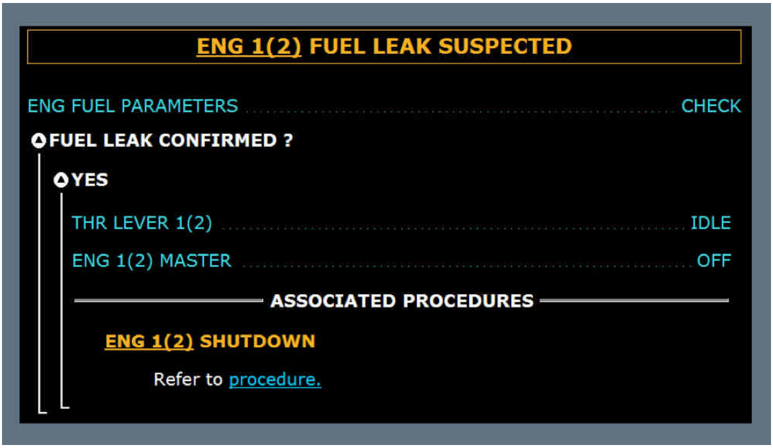
```
CTR TK R PMP ........................ OFF
○ WHICH WING TANK IS LIGHTER ?
  ☐ L TK
  ■ R TK
    R TK STBY PMP .................. OFF
    R TK MAIN PMP .................. OFF
    ○ WHEN TKs BALANCED
      R TK MAIN PMP ................ ON
      R TK STBY PMP ................ ON
CTR TK L PMP ........................ ON
```

ASSOCIATED PROCEDURES

Some alerts, also referred to as primary alerts, automatically trigger other associated alerts.

Associated alerts appear in the FCOM below the primary procedure.

Associated Procedures



ENG 1(2) FUEL LEAK SUSPECTED

ENG FUEL PARAMETERS .... CHECK

FUEL LEAK CONFIRMED ?

YES

THR LEVER 1(2) .... IDLE

ENG 1(2) MASTER .... OFF

ASSOCIATED PROCEDURES

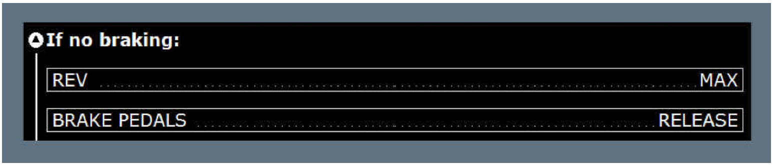
ENG 1(2) SHUTDOWN

Refer to procedure.

MEMORY ITEMS

Memory items are items that the flight crew must memorize, in order to be able to rapidly apply them, without referring to the ECAM, and/or to the FCOM.
Memory items are surrounded by a white box in the FCOM procedure, in order to enable the flight crew to easily identify them.

Memory Items



If no braking:

REV .... MAX

BRAKE PEDALS .... RELEASE

ALERTS IMPACTING LANDING PERF

The description of the abnormal procedure in the FCOM does not display the ALERTS IMPACTING LANDING PERF section of the STATUS page.

However, the flight crew can notice an abnormal procedure affects the landing distance computation with :
- The LDG DIST AFFECTED or LDG PERF AFFECTED action in the procedure description
- The LDG DIST AFFECTED or LDG PERF AFFECTED limitation in the LIMITATIONS ON ECAM part of the procedure description.

L2 For more information on the landing performance ECAM indications, *Refer to PER-LDG-50 Landing Performance following In-Flight Failure*.

STANDARD CALLOUTS FOR ABNORMAL OPERATIONS

Ident.: PRO-ABN-ABN-00-00021325.0001001 / 23 OCT 17
Applicable to: ALL

MEMORY ITEMS

The aim of the following callouts is to announce the appropriate procedure by calling out, in most cases, the title of the procedure. This allows the flight crew to be aware of the situation and be prepared to properly react (crew coordination, tasksharing, and communication).

EMERGENCY DESCENT

L2 For more information on the associated memory items, *Refer to PRO-ABN-MISC [MEM] EMER DESCENT*.

L1 ”EMERGENCY DESCENT”

LOSS OF BRAKING

L2 For more information on the associated memory items, *Refer to PRO-ABN-BRAKES [MEM] LOSS OF BRAKING*.

L1 ”LOSS OF BRAKING”

STALL INDICATIONS

L2 For more information on the associated memory items, *Refer to PRO-ABN-MISC [MEM] STALL RECOVERY*.

L1 "STALL, I HAVE CONTROL"

TAWS

- **If the flight crew considers an avoidance maneuver:**

  L2 For more information on the associated memory items, *Refer to PRO-ABN-SURV [MEM] TAWS WARNING*.

  L1 “PULL UP TOGA”

TCAS

L2 For more information on the associated memory items, *Refer to PRO-ABN-SURV [MEM] TCAS CAUTION - TRAFFIC ADVISORY* and *Refer to PRO-ABN-SURV [MEM] TCAS WARNING - RESOLUTION ADVISORY*.

L1
- **If a Traffic Advisory (TA) alert is triggered:**
  - **If AP/FD TCAS mode is armed:**

    "TCAS BLUE"

- **If AP/FD TCAS mode does not arm:**
  "TCAS, I HAVE CONTROL"

UNRELIABLE AIR SPEED INDICATIONS

L2 For more information on the associated memory items, *Refer to PRO-ABN-NAV [MEM] UNRELIABLE AIR SPEED INDICATION*.

L1 "UNRELIABLE SPEED"

WINDSHEAR WARNINGS

L2 For more information on the associated memory items, *Refer to PRO-ABN-SURV [MEM] WINDSHEAR WARNING - PREDICTIVE WINDSHEAR* and *Refer to PRO-ABN-SURV [MEM] WINDSHEAR WARNING - REACTIVE WINDSHEAR*.

L1 ”WINDSHEAR TOGA”

MALFUNCTION BEFORE V1 AT TAKEOFF

EVENT	CAPT	F/O
If GO decision	GO	
If RTO decision:	STOP	
- REV green on WD		REVERSE GREEN (1)
- Deceleration		DECEL (2)

(1) *If the reverse deployment is not as expected, call NO REVERSE ENGINE_ or NO REVERSE, as appropriate.*

(2) *In the case of failure or no positive deceleration: NO DECEL*
DECEL callout means that the deceleration is felt by the flight crew, and confirmed by the speed trend on the PFD. It can also be confirmed by the DECEL indication on the PFD, if the autobrake is active.
However, the DECEL indication appears when the current deceleration reaches 80 % of the selected deceleration rate. Therefore it is not an indication of the correct autobrake functioning, but it indicates that the deceleration rate is reached. E.g. the DECEL indication may not appear on a contaminated runway, with the autobrake active, due to the effect of the anti-skid.

COCKPIT/CABIN COMMUNICATION

For more information on the cabin/cockpit communication:
- *Refer to CCOM/14-30 Emergency Calls*
- *Refer to CCOM/14-30 Planned Emergency Landing*

EMERGENCY CALL

From	To	Communication Actions	Remark
Cockpit	Cabin	Passenger Address (PA) system: "CHIEF PURSER TO COCKPIT, PLEASE!"	The Chief Purser goes immediately to the cockpit to be briefed by the Captain. If time permits, the Captain should allow the Chief Purser to brief the cabin crew.
Cabin	Cockpit	Interphone: Press PRIO then CAPT	In the case of an abnormal or emergency situation in the cabin, any cabin crewmember must inform the flight crew. The flight crew must reply.

EMERGENCY ALERT

From	To	Communication Actions	Remark
Cockpit	Cabin	Passenger Address (PA) system: "ATTENTION CREW! AT STATIONS!"	The flight crew announces shortly and briefly that an emergency evacuation may be soon required. The cabin crew must proceed to their emergency stations and fasten their seat belts.

NOTIFICATION TO PASSENGERS

From	To	Communication Actions	Remark
Cockpit	Cabin	SIGNS set to ON. If duties permit, use the Passenger Address (PA) system	For psychological reason, the flight crew should inform the passengers of an intended emergency landing.

FINISH PREPARATION

From	To	Communication Actions	Remark
Cockpit	Cabin	Passenger Address (PA) system: "FINISH PREPARATION"	The flight crew announces that the preparation is finished a short time before the emergency landing.

BRACE FOR IMPACT

From	To	Communication Actions	Remark
Cockpit	Cabin	Passenger Address (PA) system: "BRACE FOR IMPACT"	The flight crew announces to brace for impact approximately 1 min before landing.

INITIATE EVACUATION

From	To	Communication Actions	Remark
Cockpit	Cabin	Press the EVAC COMMAND pb-sw . Passenger Address (PA) system: "EVACUATE, EVACUATE"	The Captain orders an immediate evacuation. The cabin crew directs passengers to all available emergency exits.

EVACUATION NOT REQUIRED

From	To	Communication Actions	Remark
Cockpit	Cabin	Passenger Address (PA) system: "CABIN CREW and PASSENGERS REMAIN SEATED"	If the Captain decides that an evacuation is not necessary, the flight crew immediately announces the decision.

[ABN] ECAM NOT-SENSED PROCEDURES

Applicable to: ALL

Ident.: PRO-ABN-ABN-ABN-ABN-ABN-00014314.0002001 / 26 JUL 17

[ABN] SMOKE / FUMES (*Refer to procedure*)
[ABN] EMER EVAC (*Refer to procedure*)
[ABN] EMER DESCENT (*Refer to procedure*)
[ABN] DITCHING (*Refer to procedure*)
[ABN] FORCED LANDING (*Refer to procedure*)
[ABN] UNRELIABLE AIR SPEED INDICATION (*Refer to procedure*)

Ident.: PRO-ABN-ABN-ABN-ABN-ABN-00014315.0001001 / 06 NOV 14

ENG

[ABN] RELIGHT IN FLT (*Refer to procedure*)
[ABN] TAIL PIPE FIRE (*Refer to procedure*)

Ident.: PRO-ABN-ABN-ABN-ABN-ABN-00014316.0001001 / 06 NOV 14

F/CTL

[ABN] RUDDER PEDAL JAMMED (*Refer to procedure*)
[ABN] LDG WITH FLAPS LEVER JAMMED (*Refer to procedure*)
[ABN] LDG WITH NO SLATS & NO FLAPS (*Refer to procedure*)
[ABN] RUDDER TRIM RUNAWAY (*Refer to procedure*)
[ABN] SPEED BRAKES LEVER JAMMED (*Refer to procedure*)

Ident.: PRO-ABN-ABN-ABN-ABN-ABN-00014317.0001001 / 09 MAR 16

FUEL

[ABN] FUEL LEAK (*Refer to procedure*)
[ABN] JETTISON ◁ (*Refer to procedure*)
[ABN] WINGS MAN BALANCING (*Refer to procedure*)

Ident.: PRO-ABN-ABN-ABN-ABN-ABN-00014318.0002001 / 07 JUL 16

L/G-WHEEL

[ABN] LDG WITH ABNORM NOSE L/G (*Refer to procedure*)
[ABN] LDG WITH ABNORM MAIN L/G (*Refer to procedure*)
[ABN] TIRE DAMAGE SUSPECTED (*Refer to procedure*)

Ident.: PRO-ABN-ABN-ABN-ABN-ABN-00016333.0001001 / 06 NOV 14

NAV

[ABN] IR ALIGNMENT IN ATT MODE (*Refer to procedure*)

Ident.: PRO-ABN-ABN-ABN-ABN-ABN-00014319.0001001 / 08 JUL 19

MISCELLANEOUS

[ABN] VOLCANIC ASH ENCOUNTER (*Refer to procedure*)
[ABN] OVERWEIGHT LANDING (*Refer to procedure*)
[ABN] CKPT WINDOW CRACKED (*Refer to procedure*)
[ABN] CKPT WINDOW ELEC ARCING (*Refer to procedure*)
[ABN] BOMB ON BOARD (*Refer to procedure*)
[ABN] SEVERE TURBULENCE IN CRUISE (*Refer to procedure*)
[ABN] CIRCLING APPROACH WITH ONE ENG INOP (*Refer to procedure*)

[ADV] ECAM ADVISORY

Ident.: PRO-ABN-ABN-ADV-ADV-00024072.0001001 / 28 APR 17
Applicable to: ALL

APU ADVISORY

L12

Parameters	System Display	Conditions
OIL LEVEL LO	APU SD page	If the oil quantity reaches the low level, the APU SD page displays the OIL LEVEL LO indication, when the aircraft is on ground, and the APU is not in operation. For more information about the advisory indication of the oil quantity, *Refer to DSC-49-10 Oil System*. For the associated limitation, *Refer to LIM-APU Oil Quantity*. If the oil quantity continues to decrease, the APU AUTO SHUTDOWN (*Refer to procedure*) ECAM alert can appear.

Ident.: PRO-ABN-ABN-ADV-ADV-00024073.0002001 / 03 JAN 19
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYB
Impacted by TDU: 00024950 CAB PRESS Advisories

CAB PRESS ADVISORIES

L12

Parameters	System Display	Conditions
DELTA P	CAB PRESS SD page	The DELTA P indication pulses, when the differential becomes high. For more information about DELTA P advisory indication on the CAB PRESS SD page, *Refer to DSC-21-PRESS-20 DELTA P Indications* . If the differential pressure continues to increase, the CAB PRESS EXCESS DIFF PRESS (*Refer to procedure*) ECAM alert can appear.
CAB V/S	CAB PRESS SD page	The CAB V/S indication pulses, when the rate of climb or descent of the cabin altitude becomes high. For more information about CAB V/S advisory indication on the CAB PRESS SD page, *Refer to DSC-21-PRESS-20 CAB V/S Indications*.
CAB ALT	CAB PRESS SD page	The CAB ALT indication pulses, when the cabin altitude becomes high. For more information about CAB ALT advisory indication on the CAB PRESS SD page, *Refer to DSC-21-PRESS-20 CAB ALT Indications*. If the cabin altitude continues to increase, the CAB PRESS EXCESS CAB ALT (*Refer to procedure*) ECAM alert can appear.

Ident.: PRO-ABN-ABN-ADV-ADV-00024073.0002001 / 03 JAN 19
Applicable to: ET-AYA

CAB PRESS ADVISORIES

L12

Parameters	System Display	Conditions
DELTA P	CAB PRESS SD page	The DELTA P indication pulses, when the differential becomes high. For more information about DELTA P advisory indication on the CAB PRESS SD page, *Refer to DSC-21-PRESS-20 DELTA P Indications* . If the differential pressure continues to increase, the CAB PRESS EXCESS DIFF PRESS (*Refer to procedure*) ECAM alert can appear.
CAB V/S	CAB PRESS SD page	The CAB V/S indication pulses, when the rate of climb or descent of the cabin altitude becomes high. For more information about CAB V/S advisory indication on the CAB PRESS SD page, *Refer to DSC-21-PRESS-20 CAB V/S Indications*.
CAB ALT	CAB PRESS SD page	The CAB ALT indication pulses, when the cabin altitude becomes high. For more information about CAB ALT advisory indication on the CAB PRESS SD page, *Refer to DSC-21-PRESS-20 CAB ALT Indications*. If the cabin altitude continues to increase, the CAB PRESS EXCESS CAB ALT (*Refer to procedure*) ECAM alert can appear.

Ident.: TDU / PRO-ABN-ABN-ADV-ADV-00024950.0001001 / 03 JAN 19
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYB
Impacted DU: 00024073 CAB PRESS Advisories

CAB PRESS ADVISORIES

L12

Parameters	System Display	Conditions
DELTA P	CAB PRESS SD page	The DELTA P indication pulses, when the differential becomes high. For more information about DELTA P advisory indication on the CAB PRESS SD page,*Refer to DSC-21-PRESS-20 DELTA P Indications*. If the differential pressure continues to increase, the CAB PRESS EXCESS DIFF PRESS (*Refer to procedure*) ECAM alert can appear.
CAB V/S	CAB PRESS SD page	The CAB V/S indication pulses, when the rate of climb or descent of the cabin altitude becomes high. *Note:* *In climb, if the CAB V/S ECAM advisory pulses: Consider the CAB PRESS CTL MODE RESET procedure (Refer to PRO-ABN-ABN-RESET CAB PRESS CTL MODE Reset).* For more information about CAB V/S advisory indication on the CAB PRESS SD page,*Refer to DSC-21-PRESS-20 CAB V/S Indications*.
CAB ALT	CAB PRESS SD page	The CAB ALT indication pulses, when the cabin altitude becomes high. *Note:* *In climb, if the CAB ALT ECAM advisory pulses: Consider the CAB PRESS CTL MODE RESET procedure (Refer to PRO-ABN-ABN-RESET CAB PRESS CTL MODE Reset).* For more information about CAB ALT advisory indication on the CAB PRESS SD page, *Refer to DSC-21-PRESS-20 CAB ALT Indications*. If the cabin altitude continues to increase, the CAB PRESS EXCESS CAB ALT (*Refer to procedure*) ECAM alert can appear.

Ident.: PRO-ABN-ABN-ADV-ADV-00024074.0001001 / 10 APR 18
Applicable to: ALL

ENG ADVISORIES

L12

Parameters	System Display	Conditions
Oil Quantity	ENG SD page	The oil quantity indication flashes when the oil quantity of the engine reaches the advisory level. Due to oil gulping effect, the oil quantity can decrease to or below the advisory level in both of the following cases: - On ground at engine start. Expect an increase in oil level during warm-up period - At high power setting. Expect an increase in the oil level after power reduction. If the oil quantity continues to decrease, both of the following ECAM alerts can appear: - ENG 1(2) OIL PRESS LO (in flight) *Refer to procedure* - ENG 1(2) OIL PRESS LO (the ECAM alert directly appears in red during taxi) *Refer to procedure.* For more information about the advisory indication of the oil quantity, *Refer to DSC-70-20 Oil Quantity*.

Ident.: PRO-ABN-ABN-ADV-ADV-00024075.0001001 / 28 APR 17
Applicable to: ALL

F/CTL ADVISORY

L12

Parameters	System Display	Conditions
Ailerons and Spoilers	F/CTL SD page	The ailerons and spoilers indications flash when the lateral imbalance becomes high. For more information about spoilers and aileron advisory indications, *Refer to DSC-27-10-20 Spoiler Position*.

[MEM] MEMORY ITEMS

Applicable to: ALL

Ident.: PRO-ABN-ABN-MEM-ABN-MEM-00020397.0001001 / 06 NOV 14

BRAKES

[MEM] LOSS OF BRAKING (*Refer to procedure*)

Ident.: PRO-ABN-ABN-MEM-ABN-MEM-00020382.0001001 / 06 NOV 14

MISC

[MEM] EMER DESCENT (*Refer to procedure*)
[MEM] STALL RECOVERY (*Refer to procedure*)

Ident.: PRO-ABN-ABN-MEM-ABN-MEM-00020501.0001001 / 06 NOV 14

NAV

[MEM] UNRELIABLE AIR SPEED INDICATION (*Refer to procedure*)

Ident.: PRO-ABN-ABN-MEM-ABN-MEM-00020386.0001001 / 06 NOV 14

SURV

[MEM] TAWS CAUTION (*Refer to procedure*)
[MEM] TAWS WARNING (*Refer to procedure*)
[MEM] TCAS CAUTION - TRAFFIC ADVISORY (*Refer to procedure*)
[MEM] TCAS WARNING - RESOLUTION ADVISORY (*Refer to procedure*)
[MEM] WINDSHEAR WARNING - PREDICTIVE WINDSHEAR (*Refer to procedure*)
[MEM] WINDSHEAR WARNING - REACTIVE WINDSHEAR (*Refer to procedure*)

Intentionally left blank

[QRH] PROCEDURES

Applicable to: ALL

Ident.: PRO-ABN-ABN-QRH-ABN-QRH-00025085.0001001 / 15 APR 19

[QRH] SMOKE / FUMES (*Refer to procedure*)
[QRH] EMER LANDING (ALL ENG FAILURE)(*Refer to procedure*)
[QRH] EMER EVAC (*Refer to procedure*)
[QRH] SMOKE / FIRE FROM LITHIUM BATTERY (*Refer to procedure*)
[QRH] CIRCLING APPROACH WITH ONE ENGINE INOPERATIVE (*Refer to procedure*)
[QRH] EFB FAULT (*Refer to procedure*)

Intentionally left blank

[RESET] SYSTEM RESET TABLE

Applicable to: ALL

Ident.: PRO-ABN-ABN-RESET-RESET-00006875.0001001 / 12 DEC 16
Applicable to: ALL

Some systems that operate abnormally can be recovered by a computer reset.

WARNING	1. The flight crew can attempt a system reset when: - The ECAM/OEB procedure requests to reset a system, or - The reset is permitted in the system reset table. 2. Only perform one reset at a time, unless indicated differently in the applicable reset procedure of the table.

L2 The flight crew can perform a system reset with the use of the associated cockpit controls (e.g. pushbutton), or the reset button.

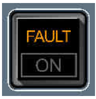
The below system reset table:
- Lists all the systems that the flight crew can reset
- Provides the conditions to perform the reset
- Describes the precautions to take and the potential effects of the reset.

L1 To perform a system reset, follow the here below actions, unless indicated differently in the applicable reset procedure:
- If the associated control is used: Set the associated control to OFF, wait three seconds, and set the associated control to ON.
- If the associated reset button is used: Pull the associated reset button, wait one second, and push the associated reset button.

Note: The flight crew should report any in-flight reset to the maintenance.

Ident.: PRO-ABN-ABN-RESET-RESET-00022466.0001001 / 06 MAR 15
Applicable to: ALL

A-ICE

System malfunction or ECAM Alert / Dispatch Message	System Reset Procedure
A-ICE WING SYS FAULT and the ON light of the WING A-ICE pb is off .	*Refer to PRO-ABN-ABN-RESET A-ICE Wing Anti-Ice Reset.*

Ident.: PRO-ABN-ABN-RESET-RESET-00021334.0001001 / 08 JUL 19
Applicable to: ALL

AUTO FLT

System malfunction or ECAM Alert / Dispatch Message	System Reset Procedure
AUTO FLT A/THR OFF	*Refer to PRO-ABN-ABN-RESET AUTO FLT A/THR Reset*
AUTO FLT AFS CTL PNL FAULT	*Refer to PRO-ABN-ABN-RESET AUTO FLT FCU Reset*
AUTO FLT AFS CTL PNL + CAPT(F/O) BKUP CTL FAULT	
CDS CAPT(F/O) EFIS CTL PNL FAULT	
CDS CAPT + F/O EFIS CTL PNLS FAULT	
CDS CAPT(F/O) EFIS CTL PNL + BKUP CTL FAULT	
AUTO FLT AFS CTL PNL	
AUTO FLT AFS CTL PNL + CAPT BKUP CTL	
CDS CAPT(F/O) EFIS CTL PNL	
CDS CAPT + F/O EFIS CTL PNLs	
CDS CAPT(F/O) EFIS CTL PNL + BKUP CTL	
AUTO FLT FMC-A(B)(C) FAULT	*Refer to PRO-ABN-ABN-RESET AUTO FLT FMC-A(B)(C) Reset*
AUTO FLT FMC-A(B)(C)	
AUTO FLT FMS 1(2) FAULT	*Refer to PRO-ABN-ABN-RESET AUTO FLT FMS 1(2)(1+2) Reset*
AUTO FLT FMS 1+2 FAULT	
AUTO FLT FMC-(A+C)(A+B)	
AUTO FLT FMC-(A+B)(B+C)	
AUTO FLT ALL FMCs	
FMS in Independent Mode	*Refer to PRO-ABN-ABN-RESET AUTO FLT FMS in Independent Mode*

Ident.: PRO-ABN-ABN-RESET-RESET-00024069.0001001 / 30 JAN 17
Applicable to: ALL

BRAKES

System malfunction or ECAM Alert / Dispatch Message	System Reset Procedure
BRAKES BRK PEDAL TRANSMITTER SWITCH	*Refer to PRO-ABN-ABN-RESET BRAKES BRK PEDAL TRANSMITTER SWITCH Reset*

Ident.: PRO-ABN-ABN-RESET-RESET-00022430.0004001 / 08 NOV 18
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB

CAB COM

System malfunction or ECAM Alert / Dispatch Message	System Reset Procedure
CAB COM CABIN INTERPHONE FAULT	*Refer to PRO-ABN-ABN-RESET CAB COM CIDS Reset*
CAB COM CIDS 1+2 FAULT	
CAB COM PAX ADDRESS FAULT	
CAB COM CABIN INTERPHONE	
CAB COM CABIN INTERPHONE DEGRADED	
CAB COM CIDS 1+2	
CAB COM PAX ADDRESS	
CAB COM PAX ADDRESS DEGRADED	
CAB COM SINGLE CIDS	
CABIN EMER EXIT LT	
CABIN DRAIN MASTS HEATING	
After some cases of Smoke Detection Systems (SDS) reset. *Refer to PRO-ABN-ABN-RESET SMOKE SDS 1(2) Reset Procedure*.	
Loss of cabin lighting control via FAP or AAP.	
Spurious full bright mode of the cabin lighting.	
Malfunction of FAP/AAP indications or controls (e.g DOORS and SLIDES STATUS, CABIN READY). *Refer to CCOM/04-20-10 CIDS deviations impacting Cabin systems*	
Loss of cabin connectivity services (i.e. internet ◁✻ and/or mobile telephony ◁✻) for passengers.	*Refer to PRO-ABN-ABN-RESET CAB COM CABIN CONNECTIVITY Reset*
Loss of Wi-Fi Telemedicine ◁✻ cabin service.	
Loss of A/C position for passengers IFE	*Refer to PRO-ABN-ABN-RESET OIS CAB&MAINT Reset*

Ident.: PRO-ABN-ABN-RESET-RESET-00022430.0003001 / 08 NOV 18
Applicable to: ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB

CAB COM

System malfunction or ECAM Alert / Dispatch Message	System Reset Procedure
CAB COM CABIN INTERPHONE FAULT	*Refer to PRO-ABN-ABN-RESET CAB COM CIDS Reset*
CAB COM CIDS 1+2 FAULT	
CAB COM PAX ADDRESS FAULT	
CAB COM CABIN INTERPHONE	
CAB COM CABIN INTERPHONE DEGRADED	
CAB COM CIDS 1+2	
CAB COM PAX ADDRESS	
CAB COM PAX ADDRESS DEGRADED	
CAB COM SINGLE CIDS	
CABIN EMER EXIT LT	
CABIN DRAIN MASTS HEATING	
After some cases of Smoke Detection Systems (SDS) reset. *Refer to PRO-ABN-ABN-RESET SMOKE SDS 1(2) Reset Procedure*.	
Loss of cabin lighting control via FAP or AAP.	
Spurious full bright mode of the cabin lighting.	
Malfunction of FAP/AAP indications or controls (e.g DOORS and SLIDES STATUS, CABIN READY). *Refer to CCOM/04-20-10 CIDS deviations impacting Cabin systems*	
Loss of cabin connectivity services (i.e. internet and/or mobile telephony) for passengers.	*Refer to PRO-ABN-ABN-RESET OIS CAB&MAINT Reset*
Loss of A/C position for passengers IFE.	
Loss of Wi-Fi Telemedicine cabin service.	*Refer to PRO-ABN-ABN-RESET CAB COM CABIN CONNECTIVITY Reset*

Ident.: PRO-ABN-ABN-RESET-RESET-00023524.0001001 / 03 JAN 19
Applicable to: ALL

CAB PRESS

System malfunction or ECAM Alert / Dispatch Message	System Reset Procedure
On ground only, CAB PRESS INHIBITED BY DOORS and all doors are confirmed closed on DOORS SD page	*Refer to PRO-ABN-ABN-RESET CAB PRESS CTL MODE Reset*
On ground only, CAB PRESS AFT(FWD) OUTFLOW VLV BACKUP CTL	
In climb, the CAB V/S(ALT) ECAM advisory pulses on the CAB PRESS SD page.	

Ident.: PRO-ABN-ABN-RESET-RESET-00021369.0001001 / 03 JAN 20
Applicable to: ALL

CDS

System malfunction or ECAM Alert / Dispatch Message	System Reset Procedure
CDS CAPT(F/O) EFIS CTL PNL FAULT	*Refer to PRO-ABN-ABN-RESET AUTO FLT FCU Reset*
CDS CAPT + F/O EFIS CTL PNLS FAULT	
CDS CAPT(F/O) EFIS CTL PNL + BKUP CTL FAULT	
CDS CAPT(F/O) EFIS CTL PNL	
CDS CAPT + F/O EFIS CTL PNLS	
CDS CAPT(F/O) EFIS CTL PNL + BKUP CTL	
Loss of KCCU (CCD and/or KBD) at aircraft power-up	*Refer to PRO-ABN-ABN-RESET CDS KCCU Reset*
NAV CAPT(F/O) HUD FAULT ✳	*Refer to PRO-ABN-ABN-RESET CDS HUD Reset*
NAV CAPT + F/O HUDs FAULT ✳	
NAV CAPT(F/O) HUD ✳	
NAV CAPT + F/O HUDs ✳	

Ident.: PRO-ABN-ABN-RESET-RESET-00022249.0001001 / 03 JUL 20
Applicable to: ALL

COM

System malfunction or ECAM Alert / Dispatch Message	System Reset Procedure
COM VHF 3 DATALINK FAULT	*Refer to PRO-ABN-ABN-RESET COM VHF 3 Datalink Reset*
COM ATC DATALINK FAULT	*Refer to PRO-ABN-ABN-RESET COM ATC Datalink Reset*
COM ADS-C DATALINK FAULT	
COM HF DATALINK FAULT	*Refer to PRO-ABN-ABN-RESET COM HF DATALINK Reset*

Ident.: PRO-ABN-ABN-RESET-RESET-00022130.0001001 / 09 JUL 15
Applicable to: ALL

COND

System malfunction or ECAM Alert / Dispatch Message	System Reset Procedure
COND VENT LOCAL CTL REDUNDANCY	*Refer to PRO-ABN-ABN-RESET VENT VCS 1+2 Reset*
In the case the reset of the Supplemental Cooling System (SCS) is requested by the Cabin Crew. *Refer to CCOM/06-120-60 Supplemental Cooling System.*	*Refer to PRO-ABN-ABN-RESET COND SCS Reset*

Ident.: PRO-ABN-ABN-RESET-RESET-00021404.0001001 / 04 DEC 14
Applicable to: ALL

DOOR

System malfunction or ECAM Alert / Dispatch Message	System Reset Procedure
DOOR ALL POS DET FAULT	*Refer to PRO-ABN-ABN-RESET DOOR DSCS Reset.*
DOOR ALL POS DET	
DOOR CAB PRESS COM REDUNDANCY	
DOOR POS MONITORING REDUNDANCY	

Ident.: PRO-ABN-ABN-RESET-RESET-00021255.0002001 / 05 NOV 18
Applicable to: ALL

ELEC

System malfunction or ECAM Alert / Dispatch Message	System Reset Procedure
ELEC TR 1(2)(EMER 1)(EMER 2) FAULT	*Refer to PRO-ABN-ABN-RESET ELEC TR 1(2)(EMER 1)(EMER 2) Reset*
ELEC TR 1(2)(EMER 1)(EMER 2)	

Ident.: PRO-ABN-ABN-RESET-RESET-00022106.0001001 / 06 NOV 14
Applicable to: ALL

ENG

System malfunction or ECAM Alert / Dispatch Message	System Reset Procedure
ENG 1(2) EIM FAULT	*Refer to PRO-ABN-ABN-RESET ENG EIM 1(2) Reset*
ENG 1 EIF 1	
ENG 1 EIF 2	
ENG 2 EIF 1	
ENG 2 EIF 2	
Engine parameters XX on the Engine Display	

Ident.: PRO-ABN-ABN-RESET-RESET-00021669.0001001 / 06 NOV 14
Applicable to: ALL

F/CTL

System malfunction or ECAM Alert / Dispatch Message	System Reset Procedure
F/CTL FLAP SYS 1+2 FAULT	*Refer to PRO-ABN-ABN-RESET F/CTL FLAPS 1(2) Reset*
F/CTL FLAP SYS 1 FAULT	
F/CTL FLAP SYS 2 FAULT	
F/CTL INR FLAPS FAULT	
F/CTL FLAP SYS 1+2	
F/CTL FLAP SYS 1	
F/CTL FLAP SYS 2	
F/CTL FLAP PCU 2	
F/CTL FLAPS TIP BRK SENSOR	
F/CTL FLAP 1 SAFETY TEST REQUIRED	
F/CTL FLAP 2 SAFETY TEST REQUIRED	
F/CTL FLAPS TIP BRK TEST REQUIRED	
F/CTL FLAP ADGB	
F/CTL FLAP 1 ADGB BRK	
F/CTL INR FLAP MOVING DAMPER DATA	
F/CTL L INR FLAP MOVING DAMPER SENSOR	
F/CTL R INR FLAP MOVING DAMPER SENSOR	
F/CTL SLAT SYS 1+2 FAULT	*Refer to PRO-ABN-ABN-RESET F/CTL SLATS 1(2) Reset*
F/CTL SLAT SYS 1 FAULT	
F/CTL SLAT SYS 2 FAULT	
F/CTL SLAT SYS 1+2	
F/CTL SLAT SYS 1	
F/CTL SLAT SYS 2	
F/CTL SLATS TIP BRK SENSOR	
F/CTL SLAT 1 SAFETY TEST REQUIRED	
F/CTL SLAT 2 SAFETY TEST REQUIRED	
F/CTL SLATS TIP BRK TEST REQUIRED	

Ident.: PRO-ABN-ABN-RESET-RESET-00018668.0001001 / 04 DEC 14
Applicable to: ALL

FUEL

System malfunction or ECAM Alert / Dispatch Message	System Reset Procedure
FUEL FQMS 1(2) FAULT	*Refer to PRO-ABN-ABN-RESET FUEL FQMS 1(2) Reset*
FUEL FQMS 1+ 2 FAULT	
FUEL L(R) WING TK LEVEL LO	
FUEL L+R WING TK LEVEL LO	
FUEL L(R) WING TK OVERFLOW	
FUEL CTR TK LEVEL LO DET	
FUEL FQI DEGRADED	
FUEL FQI INTEGRITY DET	
FUEL FQMS 1(2)	
FUEL FUEL PROPERTIES MEASUREMENT	
FUEL L(R) TK MAIN CELL TEMP MONITORING	
FUEL L(R) TK MAIN CELL +R(L) WING TEMP MONIT	
FUEL L+R TK MAIN CELL TEMP MONITORING	
FUEL L(R) WING TEMP MONITORING	
FUEL L+R WING TK LEVEL LO DET	
FUEL L+R WING TK LVL DET	

Ident.: PRO-ABN-ABN-RESET-RESET-00022136.0001001 / 06 NOV 14
Applicable to: ALL

FWS

System malfunction or ECAM Alert / Dispatch Message	System Reset Procedure
FWS FWS 1(2) FAULT	*Refer to PRO-ABN-ABN-RESET FWS FWS 1(2) Reset*
FWS FWS 1+2 FAULT	
FWS AUDIO FUNCTION LOST	
FWS 1(2)	
FWS 1+2	

Ident.: PRO-ABN-ABN-RESET-RESET-00022251.0002001 / 27 NOV 17
Applicable to: ALL

NAV

System malfunction or ECAM Alert / Dispatch Message	System Reset Procedure
On ground only, out of the runway, if the RNP AR CAPABILITY LOST message appears on the ND.	*Refer to PRO-ABN-ABN-RESET NAV IR Fast Alignment Procedure*
On ground only, out of the runway, if the NAV PRIMARY LOST message appears on the ND or MFD.	

Ident.: PRO-ABN-ABN-RESET-RESET-00021976.0002001 / 28 APR 17
Applicable to: ALL

OIS

System Malfunction or ECAM Alert / Dispatch Message		System Reset Procedure
COMPANY COM	COM COMPANY COM FAULT COMPANY COM NOT AVAIL displayed on the CAPT or F/O outer DU for more than 2 min	*Refer to PRO-ABN-ABN-RESET OIS AVNCS Reset*
OIS	OIS CAPT(F/O) OIS DISPLAY FAULT OIS CAPT+F/O OIS DISPLAY FAULT OIS NOT AVAIL displayed on CAPT and/or F/O outer DU The following situation occurs during more than 7 min : OIS MENU frozen, with cursor movement still possible. The following message is displayed during more than 7 min : "OIS CAB & MAINT SERVER REDUNDANCY RECONFIGURATION IN PROGRESS... For EFB display: set AVNCS/EFB switch to EFB (or push EFB key on keyboard)" After the pilot presses the OIS menu key, the following message still appears on the OIS: "OIS CAB & MAINT SERVER REDUNDANCY RECONFIGURATION COMPLETED Push OIS Menu Key (or Ctrl + OIS Menu keys for maintenance)"	*Refer to PRO-ABN-ABN-RESET OIS CAB&MAINT Reset*
EFB	Freeze of EFB The number of notifications increases continuously It is impossible to launch some EFB application	*Refer to [QRH] EFB Fault*
	Loss of avionics parameters on EFB.	*Refer to PRO-ABN-ABN-RESET OIS Laptop Docking Station Reset*
PRINTER	Print from ATC, FMS and COMPANY COM fails	*Refer to PRO-ABN-ABN-RESET OIS CAB&MAINT Reset*

Ident.: PRO-ABN-ABN-RESET-RESET-00022101.0001001 / 02 MAR 18
Applicable to: ALL

SMOKE

System malfunction or ECAM Alert / Dispatch Message	System Reset Procedure
SMOKE DET FAULT	Consider a SDS reset if: - At least two dispatch messages are triggered, or - At least one ECAM alert is triggered. *Refer to PRO-ABN-ABN-RESET SMOKE SDS 1(2) Reset*
SMOKE FLT(CABIN) REST DET FAULT	
SMOKE FWD(AFT/BULK) CARGO BOTTLES FAULT	
SMOKE FWD(AFT/BULK) CARGO DET FAULT	
SMOKE FWD+AFT CARGOS BOTTLES FAULT	
SMOKE FWD+AFT CARGOS BTL 1(2) FAULT	
SMOKE IFE BAY DET FAULT	
SMOKE L(R) AVNCS DET FAULT	
SMOKE LAVATORY DET FAULT	
SMOKE PAX BBAND DET FAULT ◁	
SMOKE CABIN REST DET REDUNDANCY	
SMOKE DET	
SMOKE DET REDUNDANCY	
SMOKE FLT(CABIN) REST DET	
SMOKE FWD(AFT/BULK) CARGO BOTTLES	
SMOKE FWD(AFT/BULK) CARGO BTLs REDUNDANCY	
SMOKE FWD(AFT/BULK) CARGO DET	
SMOKE FWD(AFT/BULK) CARGO DET REDUNDANCY	
SMOKE FWD+AFT CARGOS BOTTLES	
SMOKE FWD+AFT CARGOS BTL 1(2)	
SMOKE FWD+AFT CARGOS BTL 1(2) REDUNDANCY	
SMOKE FWD+AFT CARGOS BTLs REDUNDANCY	
SMOKE IFE BAY DET	
SMOKE IFE BAY DET REDUNDANCY	
SMOKE L(R) AVNCS DET	
SMOKE L(R) AVNCS DET REDUNDANCY	
SMOKE LAVATORY DET	
SMOKE PAX BBAND DET ◁	
SMOKE PAX BBAND DET REDUNDANCY ◁	
In the case of erroneous cargo smoke warning that triggered on ground, with the cargo door open, and confirmed to be caused by a high level of humidity or insecticide spraying in a cargo compartment.	*Refer to PRO-ABN-ABN-RESET VENT VCS 1+2 Reset*

Ident.: PRO-ABN-ABN-RESET-RESET-00022179.0001001 / 09 MAR 16
Applicable to: ALL

SURV

System malfunction or ECAM Alert / Dispatch Message	System Reset Procedure
SURV ADS-B TRAFFIC 1+2 FAULT ◁✳	*Refer to PRO-ABN-ABN-RESET SURV AESU 1(2) Reset*
SURV GPWS FAULT	
SURV PRED W/S 1+2 FAULT	
SURV SYS 1+2 FAULT	
SURV TAWS FAULT	
SURV TCAS 1+2 FAULT	
SURV TERR SYS FAULT	
SURV WXR 1+2 FAULT	
SURV XPDR 1+2 FAULT	

A-ICE WING ANTI-ICE RESET

Applicable to: ALL

Ident.: PRO-ABN-ABN-RESET-A-ICE-00022464.0001001 / 12 DEC 16

WARNING	1. The flight crew can attempt a system reset when: - The ECAM/OEB procedure requests to reset a system, or - The reset is permitted in the system reset table. 2. Only perform one reset at a time, unless indicated differently in the applicable reset procedure of the table.

For system reset table consultation, *Refer to PRO-ABN-ABN-RESET A-ICE*.

Ident.: PRO-ABN-ABN-RESET-A-ICE-00022465.0001001 / 04 DEC 14

PROCEDURE

WING A-ICE..OFF

- **After 3 s:**
  WING A-ICE..ON

AUTO FLT A/THR RESET

Applicable to: ALL

Ident.: PRO-ABN-ABN-RESET-AUTO_FLT_0-00025036.0001001 / 08 JUL 19

WARNING	1. The flight crew can attempt a system reset when: - The ECAM/OEB procedure requests to reset a system, or - The reset is permitted in the system reset table. 2. Only perform one reset at a time, unless indicated differently in the applicable reset procedure of the table.

For system reset table consultation, *Refer to PRO-ABN-ABN-RESET AUTO FLT*.

LOCATION

- The A/THR pb is located on the AFS CP.
  L2 For more info on the A/THR pb on the AFS CP, *Refer to DSC-22-FG-90-20 AP, FD and A/THR Control*.
- L1 The A/THR instinctive disconnect pushbutton is located on the Thrust Levers.
  L2 For more info on the A/THR instinctive disconnect pushbutton on the Thrust Levers, *Refer to DSC-22-FG-90-70 Thrust Levers*.
- L1 The ENG 1(2) MASTER levers are located on the ENG MASTER Panel.
  L2 For more info on the ENG MASTER Panel,*Refer to DSC-26-30-20 ENG MASTER Panel*.

Continued on the following page

AUTO FLT A/THR RESET (Cont'd)

Ident.: PRO-ABN-ABN-RESET-AUTO_FLT_0-00025037.0001001 / 08 JUL 19

PROCEDURE

On ground, before taxi only:

■ **If no engine running:**

A/THR....................PRESS

This enables to re-engage the A/THR. This cancels the ECAM alert.

A/THR INSTINCTIVE DISCONNECT....................PRESS

■ **If at least one engine is running:**

EXTERNAL OR APU GEN POWER....................APPLY

● **For running engine(s):**

ENG MASTER....................OFF

A/THR....................PRESS

This enables to re-engage the A/THR. This cancels the ECAM alert.

A/THR INSTINCTIVE DISCONNECT....................PRESS

AUTO FLT FCU RESET

Applicable to: ALL

Ident.: PRO-ABN-ABN-RESET-AUTO_FLT_1-00021335.0001001 / 12 DEC 16

WARNING	1. The flight crew can attempt a system reset when: - The ECAM/OEB procedure requests to reset a system, or - The reset is permitted in the system reset table. 2. Only perform one reset at a time, unless indicated differently in the applicable reset procedure of the table.

For system reset table consultation, *Refer to PRO-ABN-ABN-RESET AUTO FLT*.

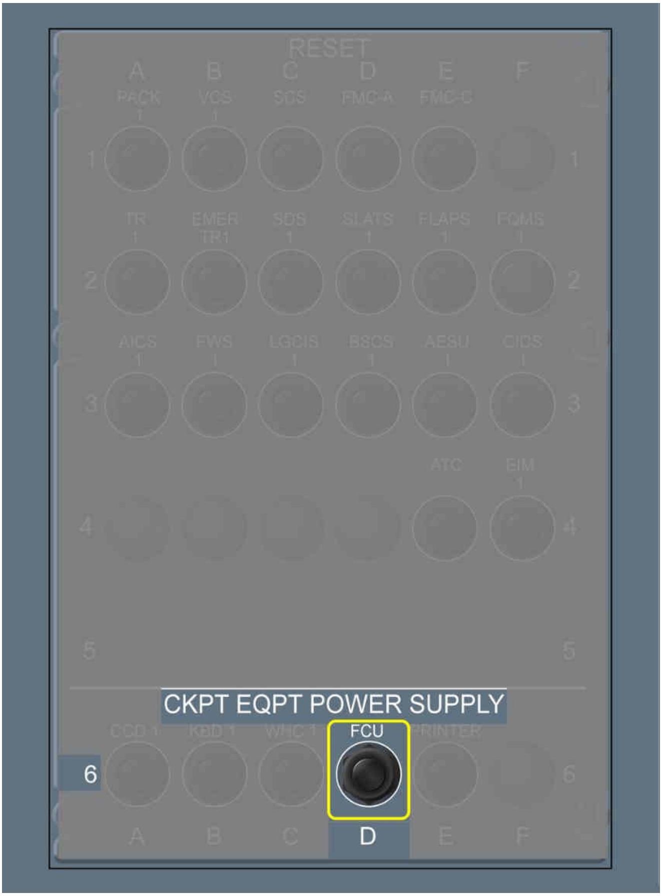
LOCATION

The FCU power supply button is on the overhead panel, on the CKPT EQPT POWER SUPPLY panel, at location [D6] (left panel):

Continued on the following page

AUTO FLT FCU RESET (Cont'd)

FCU Power Supply Button Location


RESET
A
B
C
D
E
F
PACK 1
VCS 1
SCS
FMC-A
FMC-C
1
1
TR 1
EMER TR1
SDS 1
SLATS 1
FLAPS 1
FQMS 1
2
2
AICS 1
FWS 1
LGCIS 1
BSCS 1
AESU 1
CIDS 1
3
3
ATC
EIM 1
4
4
5
5
CKPT EQPT POWER SUPPLY
CCD 1
KBD 1
WHC 1
FCU
PRINTER
6
6
A
B
C
D
E
F

Continued on the following page

AUTO FLT FCU RESET (Cont'd)

Ident.: PRO-ABN-ABN-RESET-AUTO_FLT_1-00021336.0001001 / 06 FEB 18

PROCEDURE

- **On ground only:**
  FCU.......... PULL
  - **After 3 sec:**
    FCU.......... PUSH
    FCU TARGETS AND SELECTIONS.......... CHECK
    L2 *Check targets and selections on the AFS CP and both EFIS CPs.*
  - L1 **If reset not successful:**
    USE CAPT(F/O) MFD FCU BKUP
    L2 *The flight crew should permanently display the AFS CONTROL PANEL page of the MFD FCU BKUP, except during cruise. The use of other MFD displays must be minimized.*

AUTO FLT FMC-A(B)(C) RESET

Applicable to: ALL

Ident.: PRO-ABN-ABN-RESET-AUTO_FLT_2-00021354.0001001 / 12 DEC 16

WARNING	1. The flight crew can attempt a system reset when: - The ECAM/OEB procedure requests to reset a system, or - The reset is permitted in the system reset table. 2. Only perform one reset at a time, unless indicated differently in the applicable reset procedure of the table.

For system reset table consultation, *Refer to PRO-ABN-ABN-RESET AUTO FLT*.

L2 For more information on FMC reset, *Refer to DSC-22-FMS-40 Manual FMC Reset*.

L1 *Note:* *The flight crew should reset only one FMC at a time.*

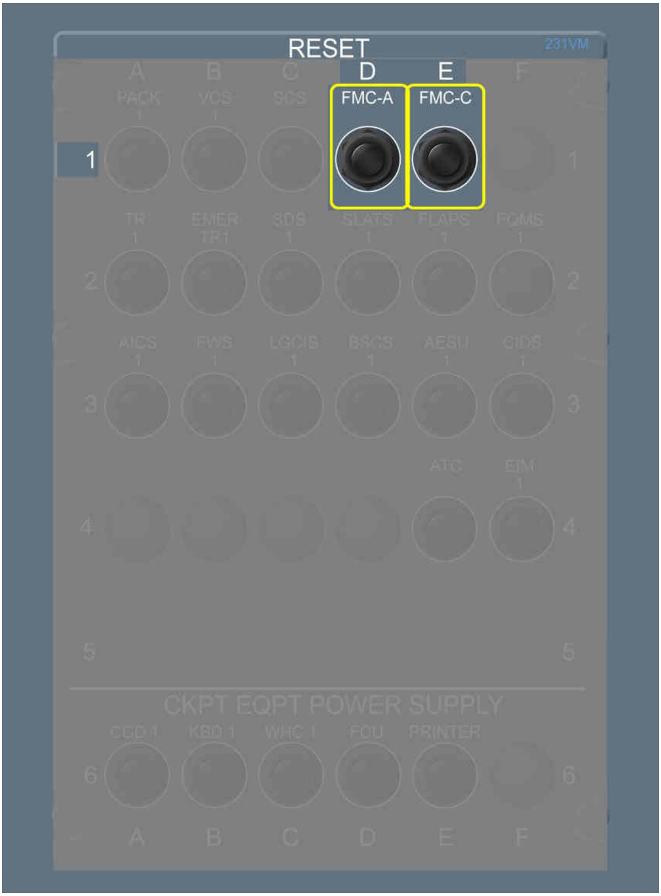
LOCATION

The FMC-A(B)(C) reset buttons are on the overhead panel, on the RESET panel, at location:
- FMC-A(C) [D1]([E1]) (left panel):

Continued on the following page

AUTO FLT FMC-A(B)(C) RESET (Cont'd)

FMC-A(C) Reset Button Location

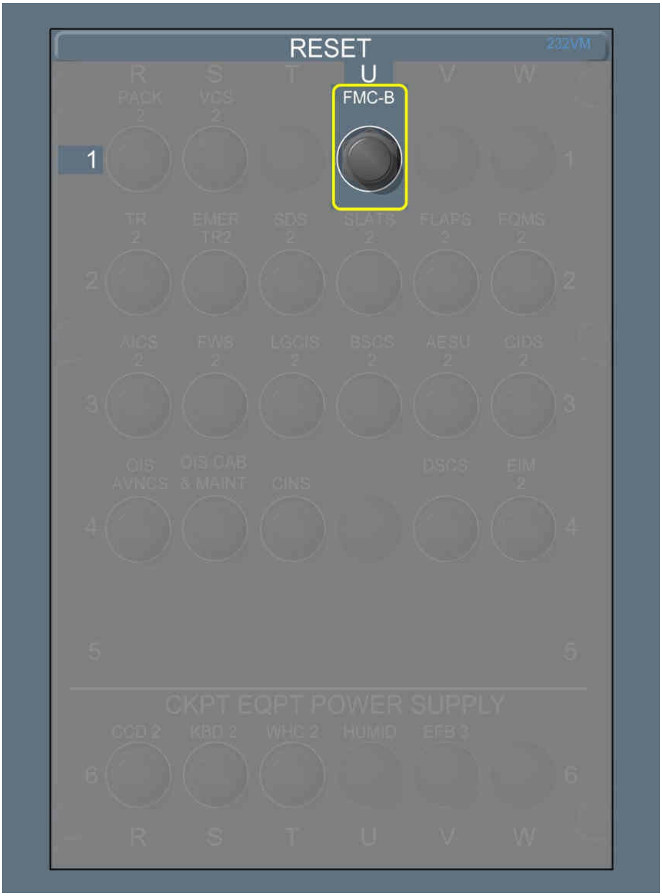

RESET
231VM
A
B
C
D
E
F
PACK 1
VCS 1
SCS
FMC-A
FMC-C
1
TR 1
EMER TR1
SDS 1
SLATS 1
FLAPS 1
FQMS 1
2
AICS 1
FWS 1
LGCIS 1
BSCS 1
AESU 1
CIDS 1
3
ATC
EIM 1
4
5
CKPT EQPT POWER SUPPLY
CCD 1
KBD 1
WHC 1
FCU
PRINTER
6

- FMC-B [U1] (right panel):

Continued on the following page

AUTO FLT FMC-A(B)(C) RESET (Cont'd)

FMC-B Reset Button Location


RESET
232VM
R
S
T
U
V
W
PACK 2
VCS 2
FMC-B
1
TR 2
EMER TR2
SDS 2
SLATS 2
FLAPS 2
FQMS 2
2
AICS 2
FWS 2
LGCIS 2
BSCS 2
AESU 2
CIDS 2
3
OIS AVNCS
OIS CAB & MAINT
CINS
DSCS
EIM 2
4
5
CKPT EQPT POWER SUPPLY
CCD 2
KBD 2
WHC 2
HUMID
EFB 3
6
R
S
T
U
V
W

Continued on the following page

AUTO FLT FMC-A(B)(C) RESET (Cont'd)

Ident.: PRO-ABN-ABN-RESET-AUTO_FLT_2-00021355.0001001 / 06 NOV 14

PROCEDURE

- **If RNP AR operation in progress**

  DO NOT RESET FMC-A(B)(C)

AFFECTED FMC.. PULL

- **After 3 s**

  AFFECTED FMC.. PUSH

- **If reset successful and FMC-C not in backup position (i.e. one MFD system menu displaysFMS 1-C or FMS 2-C)**

  FMC-C.. PULL

  - **After 10 s**

    FMC-C.. PUSH

AUTO FLT FMS IN INDEPENDENT MODE

Applicable to: ALL

Ident.: PRO-ABN-ABN-RESET-AUTO_FLT_4-00021358.0001001 / 12 DEC 16

WARNING	1. The flight crew can attempt a system reset when: - The ECAM/OEB procedure requests to reset a system, or - The reset is permitted in the system reset table. 2. Only perform one reset at a time, unless indicated differently in the applicable reset procedure of the table.

For system reset table consultation, *Refer to PRO-ABN-ABN-RESET AUTO FLT*.

Both FMS change from DUAL to INDEPENDENT mode, if there is a communication failure between the active FMCs.

L2 For more information on independent mode, *Refer to DSC-22-FMS-40 INDEPENDENT Mode*.

L1 In normal configuration:
- If AP1 is engaged, the Master FMC is FMC-A and the Slave FMC is FMC-B
- If AP2 is engaged, the Master FMC is FMC-B and the Slave FMC is FMC-A

L2 For more information on master and slave FMCs, *Refer to DSC-22-FMS-40 Normal Operation*.

L1 *Note: The flight crew should reset only one FMC at a time.*

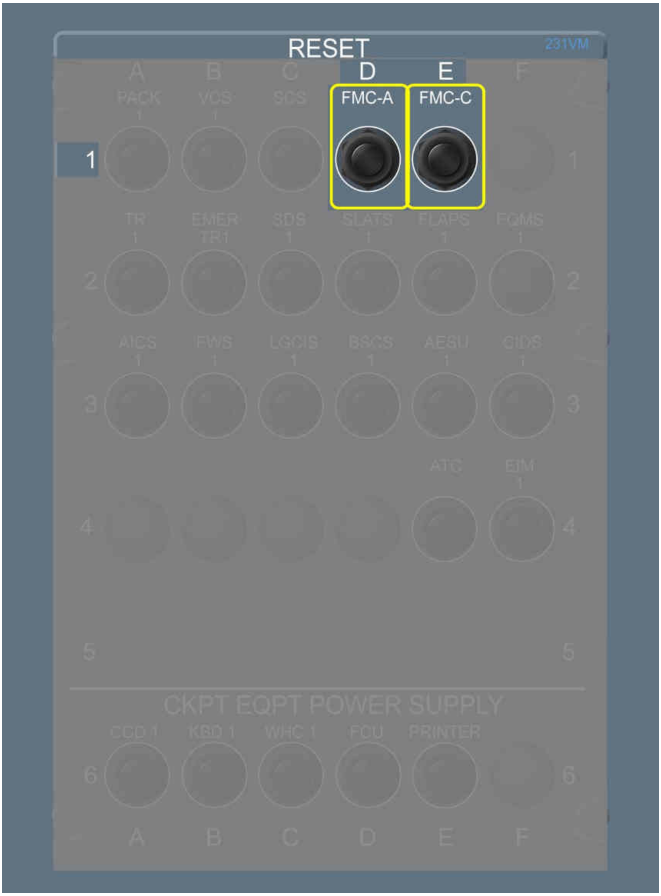
LOCATION

The FMC-A(B)(C) reset buttons are on the overhead panel, on the RESET panel, at location:
- FMC-A(C) [D1]([E1]) (left panel):

Continued on the following page

AUTO FLT FMS IN INDEPENDENT MODE (Cont'd)

FMC-A(C) Reset Button Location

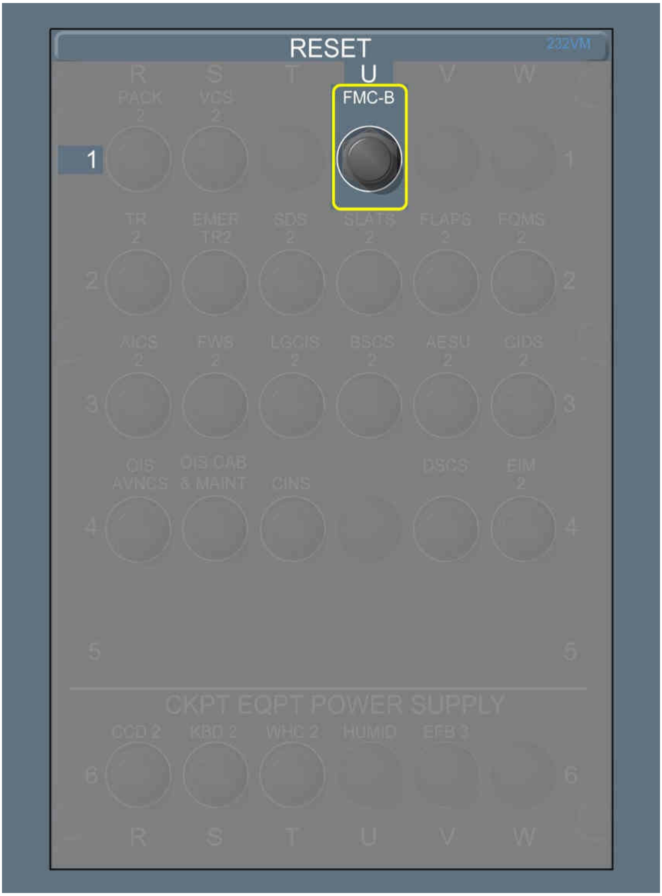

RESET
231VM
A
B
C
D
E
F
PACK 1
VCS 1
SCS
FMC-A
FMC-C
1
TR 1
EMER TR1
SDS 1
SLATS 1
FLAPS 1
FQMS 1
2
AICS 1
FWS 1
LGCIS 1
BSCS 1
AESU 1
CIDS 1
3
ATC
EIM 1
4
5
CKPT EQPT POWER SUPPLY
CCD 1
KBD 1
WHC 1
FCU
PRINTER
6

- FMC-B [U1] (right panel):

Continued on the following page

AUTO FLT FMS IN INDEPENDENT MODE (Cont'd)

FMC-B Reset Button Location


RESET
232VM
R
S
T
U
V
W
PACK 2
VCS 2
FMC-B
1
TR 2
EMER TR2
SDS 2
SLATS 2
FLAPS 2
FQMS 2
2
AICS 2
FWS 2
LGCIS 2
BSCS 2
AESU 2
CIDS 2
3
OIS AVNCS
OIS CAB & MAINT
CINS
DSCS
EIM 2
4
5
CKPT EQPT POWER SUPPLY
CCD 2
KBD 2
WHC 2
HUMID
EFB 3
6

Continued on the following page

AUTO FLT FMS IN INDEPENDENT MODE (Cont'd)

Ident.: PRO-ABN-ABN-RESET-AUTO_FLT_4-00021359.0001001 / 06 NOV 14

PROCEDURE

- **If RNP AR operation in progress**

  DO NOT RESET FMC-A(B)(C)

FMC ON THE OPPOSITE SIDE OF THE AP ENGAGED (IF ENGAGED).............................PULL

- **After 3 s**

  FMC ON THE OPPOSITE SIDE OF THE AP ENGAGED (IF ENGAGED)..................... PUSH

AUTO FLT FMS 1(2)(1+2) RESET

Applicable to: ALL

Ident.: PRO-ABN-ABN-RESET-AUTO_FLT_5-00021360.0001001 / 08 JUL 19

WARNING	1. The flight crew can attempt a system reset when: - The ECAM/OEB procedure requests to reset a system, or - The reset is permitted in the system reset table. 2. Only perform one reset at a time, unless indicated differently in the applicable reset procedure of the table.

For system reset table consultation, *Refer to PRO-ABN-ABN-RESET AUTO FLT*.

L2 *Note: The flight crew should reset only one FMC at a time.*

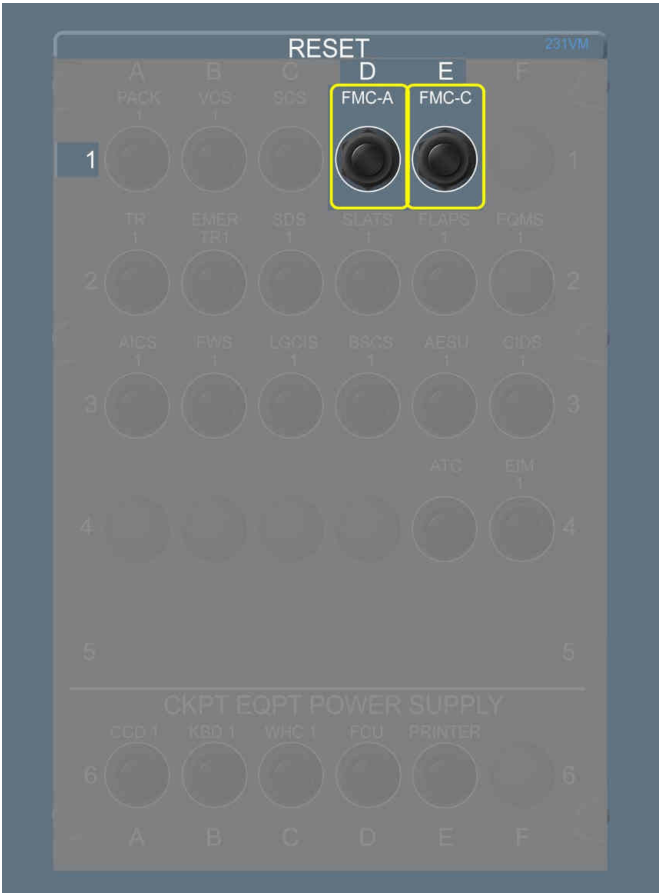
L1 LOCATION

The FMC-A(B)(C) reset buttons are on the overhead panel, on the RESET panel, at location:
- FMC-A(C) [D1]([E1]) (left panel):

Continued on the following page

AUTO FLT FMS 1(2)(1+2) RESET (Cont'd)

FMC-A(C) Reset Button Location

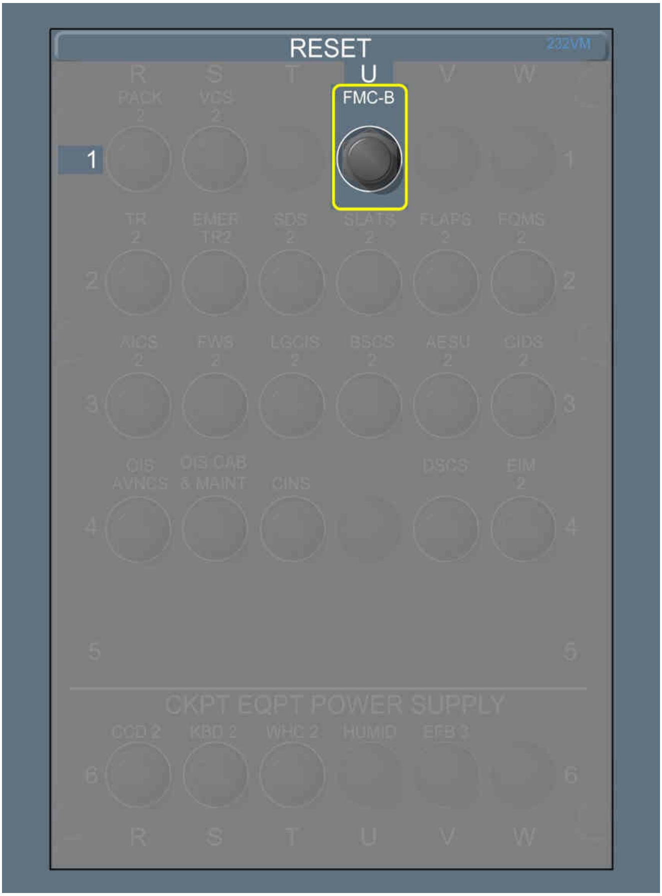

RESET
231VM
A
B
C
D
E
F
PACK 1
VCS 1
SCS
FMC-A
FMC-C
1
TR 1
EMER TR1
SDS 1
SLATS 1
FLAPS 1
FQMS 1
2
AICS 1
FWS 1
LGCIS 1
BSCS 1
AESU 1
CIDS 1
3
ATC
EIM 1
4
5
CKPT EQPT POWER SUPPLY
CCD 1
KBD 1
WHC 1
FCU
PRINTER
6

- FMC-B [U1] (right panel):

Continued on the following page

AUTO FLT FMS 1(2)(1+2) RESET (Cont'd)

FMC-B Reset Button Location


RESET
232VM
R
S
T
U
V
W
PACK 2
VCS 2
FMC-B
1
TR 2
EMER TR2
SDS 2
SLATS 2
FLAPS 2
FQMS 2
2
AICS 2
FWS 2
LGCIS 2
BSCS 2
AESU 2
CIDS 2
3
OIS AVNCS
OIS CAB & MAINT
CINS
DSCS
EIM 2
4
5
CKPT EQPT POWER SUPPLY
CCD 2
KBD 2
WHC 2
HUMID
EFB 3
6

Continued on the following page

AUTO FLT FMS 1(2)(1+2) RESET (Cont'd)

Ident.: PRO-ABN-ABN-RESET-AUTO_FLT_5-00021361.0001001 / 08 JUL 19

PROCEDURE

- **If RNP AR operation in progress**
  DO NOT RESET FMC-A(B)(C)
- **In the case of** AUTO FLT FMS 1 FAULT
  FMC-A.......PULL
  - **After 3 s**
    FMC-A.......PUSH
    - ■ **After 10 s , if FMS 2-C is displayed on the MFD**
      FMC-B.......PULL
      - **After 3 s**
        FMC-B.......PUSH
        - **If FMC-B is operative**

CAUTION	The flight plan will be lost if the FMC-C is reset.

          FMC-C.......PULL
          - **After 5 s**
            FMC-C.......PUSH
    - ■ **After 10 s, if FMC-C is inoperative**
      FMC-C.......PULL
      - **After 3 s**
        FMC-C.......PUSH
- **In the case of** AUTO FLT FMS 2 FAULT
  FMC-B.......PULL
  - **After 3 s**
    FMC-B.......PUSH
    - ■ **After 10 s, if FMS 1-C is displayed on the MFD**
      FMC-A.......PULL
      - **After 3 s**
        FMC-A.......PUSH

Continued on the following page

AUTO FLT FMS 1(2)(1+2) RESET (Cont'd)

- **If FMC-A is operative**

CAUTION	The flight plan will be lost if the FMC-C is reset.

  FMC-C....................PULL

  - **After 5 s**

    FMC-C....................PUSH

■ **After 10 s, if FMC-C is inoperative**

FMC-C....................PULL

- **After 3 s**

  FMC-C....................PUSH

- **In the case of AUTO FLT FMS 1+2 FAULT:**

  ■ **On ground:**

  FMC-A....................PULL

  - **After 3 s:**

    FMC-A....................PUSH

    - **After 50 s:**

      FMC-B....................PULL

      - **After 3 s:**

        FMC-B....................PUSH

        - **After 50 s:**

          FMC-C....................PULL

          - **After 3 s:**

            FMC-C....................PUSH

  ■ **In flight:**

  FMC-A....................PULL

  - **After 3 s:**

    FMC-A....................PUSH

    - **After 10 s:**

      FMC-B....................PULL

      - **After 3 s:**

        FMC-B....................PUSH

        - **After 10 s:**

          FMC-C....................PULL

Continued on the following page

AUTO FLT FMS 1(2)(1+2) RESET (Cont'd)

- **After 3 s:**
  FMC-C..PUSH

BRAKES BRK PEDAL TRANSMITTER SWITCH RESET

Applicable to: ALL

Ident.: PRO-ABN-ABN-RESET-BRAKES-00024048.0001001 / 27 NOV 17

WARNING	1. The flight crew can attempt a system reset when: - The ECAM/OEB procedure requests to reset a system, or - The reset is permitted in the system reset table. 2. Only perform one reset at a time, unless indicated differently in the applicable reset procedure of the table.

For system reset table, *Refer to PRO-ABN-ABN-RESET BRAKES*.

The below reset procedure is applicable:
- On ground only, and
- When no other BRAKES related messages are displayed on the DISPATCH page than the BRAKES BRK PEDAL TRANSMITTER SWITCH.

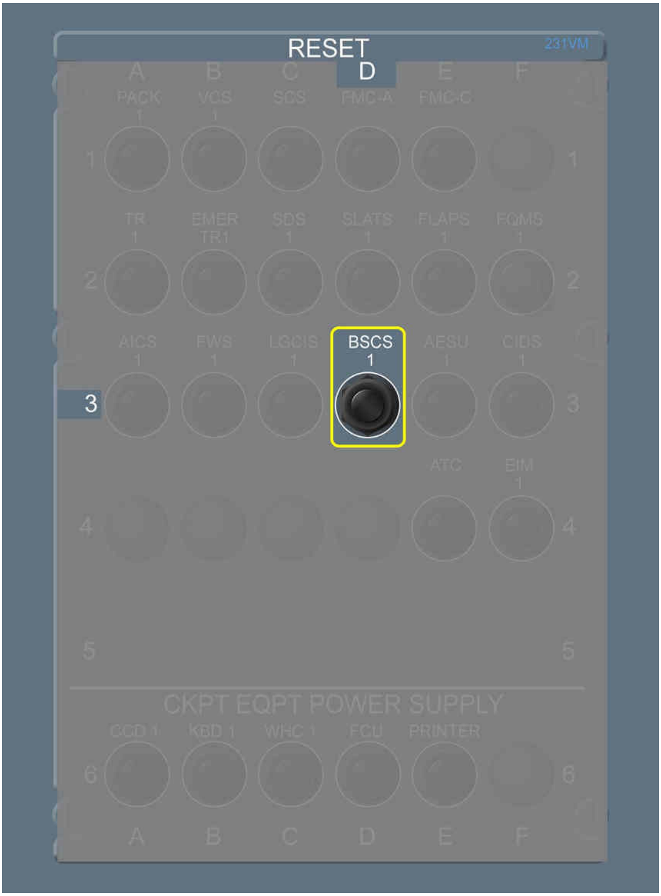
LOCATION

The Braking Control System (BCS) reset buttons are on the overhead panel, on the RESET panel, at location:
- BSCS 1 [D3] (left panel)

Continued on the following page

BRAKES BRK PEDAL TRANSMITTER SWITCH RESET (Cont'd)

BSCS 1 Reset Button Location

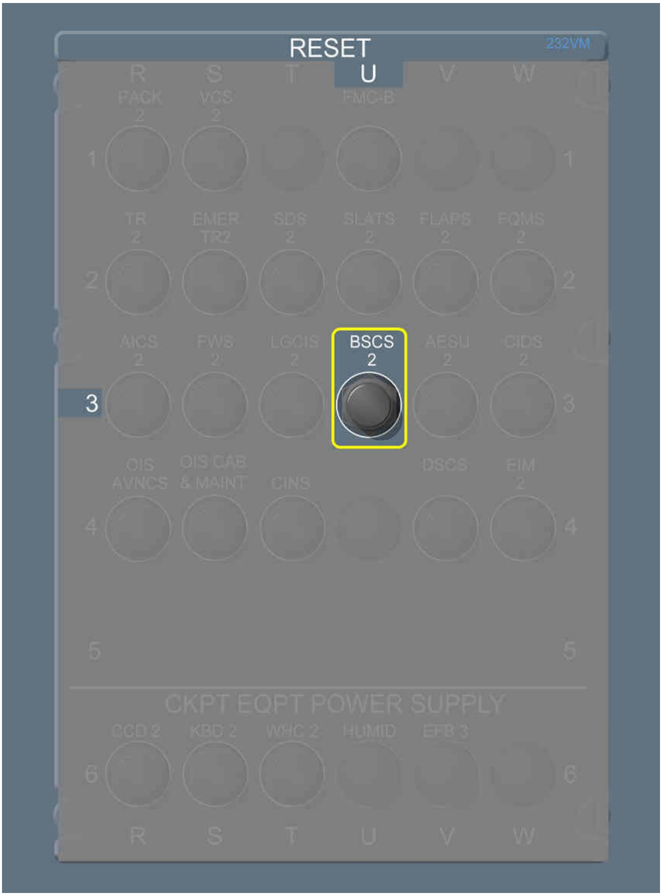

RESET
231VM
A B C D E F
PACK 1
VCS 1
SCS
FMC-A
FMC-C
1
TR 1
EMER TR1
SDS 1
SLATS 1
FLAPS 1
FQMS 1
2
AICS 1
FWS 1
LGCIS 1
BSCS 1
AESU 1
CIDS 1
3
ATC
EIM 1
4
5
CKPT EQPT POWER SUPPLY
CCD 1
KBD 1
WHC 1
FCU
PRINTER
6
A B C D E F

- BSCS 2 [U3] (right panel)

Continued on the following page

BRAKES BRK PEDAL TRANSMITTER SWITCH RESET (Cont'd)

BSCS 2 Reset Button Location


RESET
232VM
R
S
T
U
V
W
PACK 2
VCS 2
FMC-B
1
TR 2
EMER TR2
SDS 2
SLATS 2
FLAPS 2
FQMS 2
2
AICS 2
FWS 2
LGCIS 2
BSCS 2
AESU 2
CIDS 2
3
OIS AVNCS
OIS CAB & MAINT
CINS
DSCS
EIM 2
4
5
CKPT EQPT POWER SUPPLY
CCD 2
KBD 2
WHC 2
HUMID
EFB 3
6

Continued on the following page

BRAKES BRK PEDAL TRANSMITTER SWITCH RESET (Cont'd)

Ident.: PRO-ABN-ABN-RESET-BRAKES-00024049.0001001 / 30 JAN 17

PROCEDURE

INITIAL CONDITIONS

PARK BRK....................SET

L2 *The flight crew should set the parking brake to prevent aircraft movement during the reset procedure.*

L1 **TO CLEAR THE** BRAKES BRK PEDAL TRANSMITTER SWITCH **MESSAGE:**

BSCS 1....................PULL
BSCS 2....................PULL

L2 *This action results in the display of the BRAKES AUTO BRK FAULT alert on the WD and the BRAKES CTL 1+2 message on the DISPATCH page. These messages remain displayed until the BSCS 1 or BSCS 2 reset button is pushed again.*

L1 After 3 s:
BSCS 1....................PUSH
BSCS 2....................PUSH

TO CHECK THAT BOTH SIDES OF THE BRAKING CONTROL SYSTEM DO NOT DETECT THE FAILURE:

L2 The procedure below checks that the failure that led to the display of the BRAKES BRK PEDAL TRANSMITTER SWITCH message is not present anymore in the braking control system. The check is first done on BSCS side 1 and then on BSCS side 2.
If the message BRAKES BRK PEDAL TRANSMITTER SWITCH is displayed again during this procedure, this means that an actual failure is detected on the brake pedals transmitter unit. In this case, maintenance action is due.

L1 BSCS 2....................PULL
After 3 s:
BSCS 2....................PUSH

L2 *This reset of the side 2 of the braking control system permits to give control to the side 1.*

L1 BOTH BRAKE PEDALS....................FULLY PRESS AND RELEASE
DISPCH pb....................PRESS
BRAKES BRK PEDAL TRANSMITTER SWITCH MESSAGE....................CHECK NOT DISPLAYED

- **If** BRAKES BRK PEDAL TRANSMITTER SWITCH **message displayed:**
  RESET PROC....................ABORT

Continued on the following page

BRAKES BRK PEDAL TRANSMITTER SWITCH RESET (Cont'd)

MAINTENANCE CREW..NOTIFY

BSCS 1..PULL
After 3 s:
BSCS 1..PUSH

L2 *This reset of the side 1 of the braking control system permits to give control to the side 2.*

L1 BOTH BRAKE PEDALS..FULLY PRESS AND RELEASE
BRAKES BRK PEDAL TRANSMITTER SWITCH MESSAGE...........CHECK NOT DISPLAYED

- **If** BRAKES BRK PEDAL TRANSMITTER SWITCH **message displayed:**
  MAINTENANCE CREW..NOTIFY

PARK BRK..AS RQRD

CAB COM CIDS RESET

Applicable to: ALL

Ident.: PRO-ABN-ABN-RESET-CAB_COM-00022436.0001001 / 12 DEC 16

WARNING	
	1. The flight crew can attempt a system reset when: - The ECAM/OEB procedure requests to reset a system, or - The reset is permitted in the system reset table. 2. Only perform one reset at a time, unless indicated differently in the applicable reset procedure of the table.

For system reset table.*Refer to PRO-ABN-ABN-RESET [RESET] System Reset Table*
A complete CIDS reset will result in the loss of PA and interphone for 3 min.
When all CIDS reset buttons are pulled disregard CAB COM CIDS 1+2 FAULT alert.

Note: *If the flight crew keeps one CIDS reset button pulled, there is no impact on the aircraft dispatch, Refer to MMEL/MI-44-10 CIDS Director.*

LOCATION

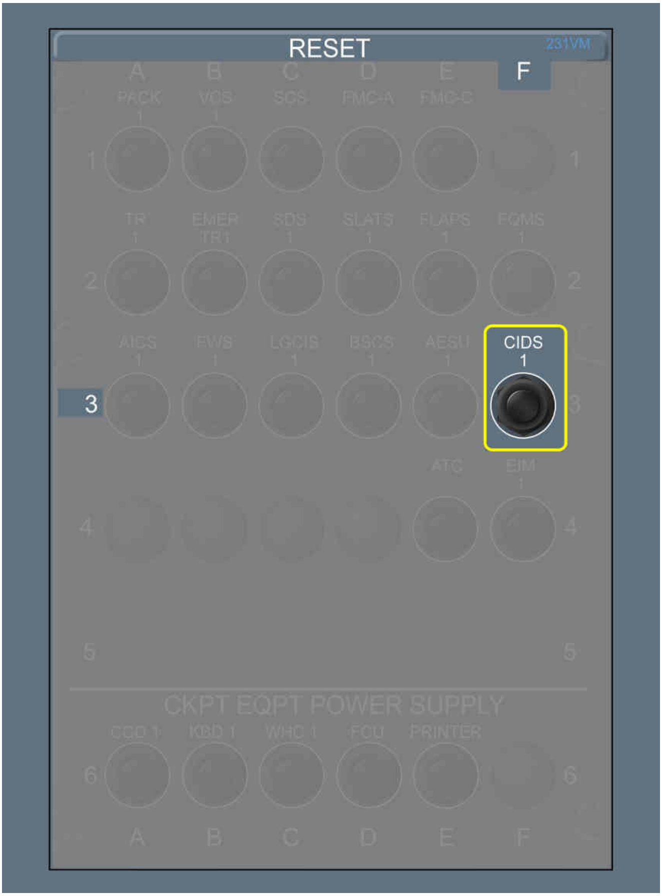
The CIDS reset buttons are on the overhead panel, on the RESET panel, at location:

- CIDS 1 [F3] (left panel):

Continued on the following page

CAB COM CIDS RESET (Cont'd)

CIDS 1 Reset Button Location

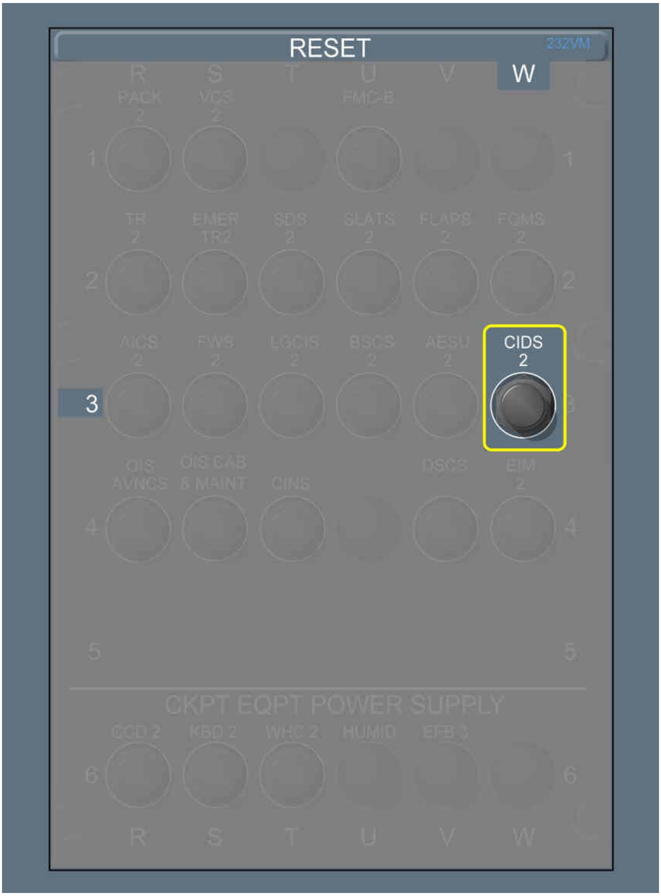

RESET
231VM
A
B
C
D
E
F
PACK 1
VCS 1
SCS
FMC-A
FMC-C
1
TR 1
EMER TR1
SDS 1
SLATS 1
FLAPS 1
FQMS 1
2
AICS 1
FWS 1
LGCIS 1
BSCS 1
AESU 1
CIDS 1
3
ATC
EIM 1
4
5
CKPT EQPT POWER SUPPLY
CCD 1
KBD 1
WHC 1
FCU
PRINTER
6

- CIDS 2 [W3] (right panel):

Continued on the following page

CAB COM CIDS RESET (Cont'd)

CIDS 2 Reset Button Location


RESET
232VM
R
S
T
U
V
W
PACK 2
VCS 2
FMC-B
1
1
TR 2
EMER TR2
SDS 2
SLATS 2
FLAPS 2
FCMS 2
2
2
AICS 2
FWS 2
LGCIS 2
BSCS 2
AESU 2
CIDS 2
3
3
OIS AVNCS
OIS CAB & MAINT
CINS
DSCS
EIM 2
4
4
5
5
CKPT EQPT POWER SUPPLY
CCD 2
KBD 2
WHC 2
HUMID
EFB 3
6
6
R
S
T
U
V
W

Continued on the following page

CAB COM CIDS RESET (Cont'd)

Ident.: PRO-ABN-ABN-RESET-CAB_COM-00022437.0001001 / 03 JAN 20

PROCEDURE

- **With no passengers on board (on ground only):**
  CIDS 2 RESET .... PULL
  - **After 5 s**
    CIDS 1 RESET .... PULL
  - **After 5 s**
    CIDS 1, 2 .... PUSH AT THE SAME TIME

    L2 This action results in:
    - A full bright cabin illumination
    - The loss of basic CIDS communications (e.g. PA, interphone) for 3 min
    - The loss of FAPs for 5 min.

    L1 CABIN CREW .... ADVISE

    L2 Inform the cabin crew that the cabin systems should be recovered in 5 min.

L1
- **With passengers on board (on ground or in flight):**
  - **If no CIDS under MMEL 44-10-01:**
    CIDS 1 RESET .... PULL
    CABIN CREW .... ADVISE

    L2 *Inform the cabin crew that the cabin systems should be recovered in 1 min.*

    L1
    - **After 1 min, if the cabin crew informs that the pull action on the CIDS 1 reset button is successful:**
      CIDS 1 RESET .... KEEP PULLED
    - **If the cabin crew informs that the pull action on the CIDS 1 reset button is not successful:**
      CIDS 1 RESET .... PUSH

      L2 *CIDS 1 restart.*

      If CIDS 1 becomes the active computer, the following occurs:
      - *CIDS 1 is in default settings (basic) mode.*
        In default settings (basic) mode the cabin is fully illuminated.
      - *The basic CIDS communications (e.g. PA, interphone) are lost for 30 s.*
      - *The FAPs are not available for 5 min.*

Continued on the following page

CAB COM CIDS RESET (Cont'd)

If the push action is successful, the cabin systems are recovered after 5 min.

L1 CABIN CREW..ADVISE

L2 Inform the cabin crew that the cabin systems should be recovered in 5 min.

L1
- **After 5 min, if the cabin crew informs that the push action on the CIDS 1 reset button is not successful:**

  Repeat the same actions on the CIDS 2 reset button.

- **If CIDS 1 under MMEL 44-10-01:**

  CABIN CREW..ADVISE

  L2 Inform the cabin crew that the cabin systems should be recovered in 5 min.

  L1 CIDS 2 RESET..PULL

  - **After 5 s**

    CIDS 2 RESET..PUSH

    L2 *CIDS 2 restart.*

    If CIDS 2 restarts while CIDS 1 is deactivated, the following occurs:
    - *CIDS 2 is in default settings (basic) mode.*
      In default settings (basic) mode the cabin is fully illuminated.
    - *The basic CIDS communications (e.g. PA, interphone) are lost for 30 s.*
    - *The FAPs are not available for 5 min.*

    If the push action is successful, the cabin systems are recovered after 5 min.

L1
- **If CIDS 2 under MMEL 44-10-01:**

  CABIN CREW..ADVISE

  L2 Inform the cabin crew that the cabin systems should be recovered in 5 min.

  L1 CIDS 1 RESET..PULL

  - **After 5 s**

    CIDS 1 RESET..PUSH

    L2 *CIDS 1 restart.*

    If CIDS 1 restarts while CIDS 2 is deactivated, the following occurs:
    - *CIDS 1 is in default settings (basic) mode.*
      In default settings (basic) mode the cabin is fully illuminated.
    - *The basic CIDS communications (e.g. PA, interphone) are lost for 30 s.*
    - *The FAPs are not available for 5 min.*

Continued on the following page

CAB COM CIDS RESET (Cont'd)

If the push action is successful, the cabin systems are recovered after 5 min.

CAB COM CABIN CONNECTIVITY ⩤ RESET

Applicable to: ET-ATQ, ET-ATR

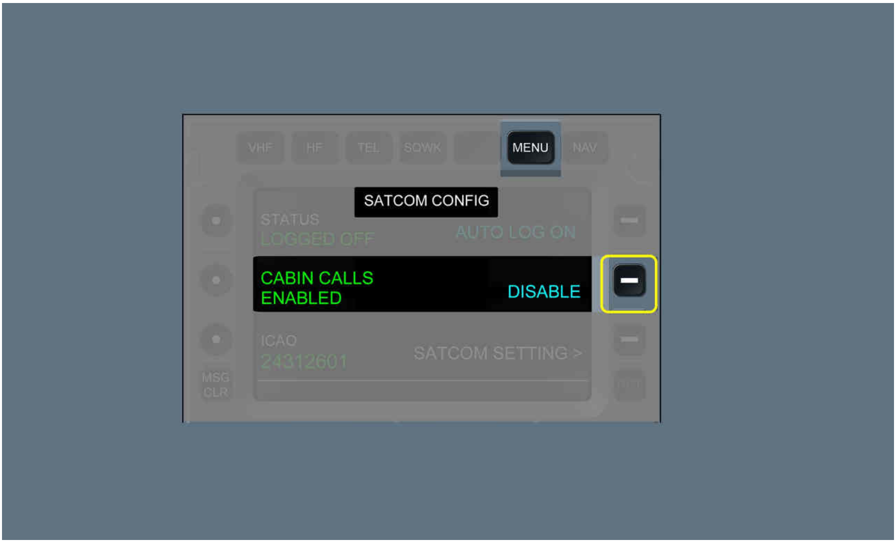
Ident.: PRO-ABN-ABN-RESET-CAB_COM1-00023100.0002001 / 03 AUG 16

WARNING	1. The flight crew can attempt a system reset when: - The ECAM procedure requests to reset a system, or - The reset is permitted in the system reset table. 2. Only perform one reset at a time, unless indicated differently in the applicable reset procedure of the table.

For system reset table, *Refer to PRO-ABN-ABN-RESET CAB COM*.

LOCATION

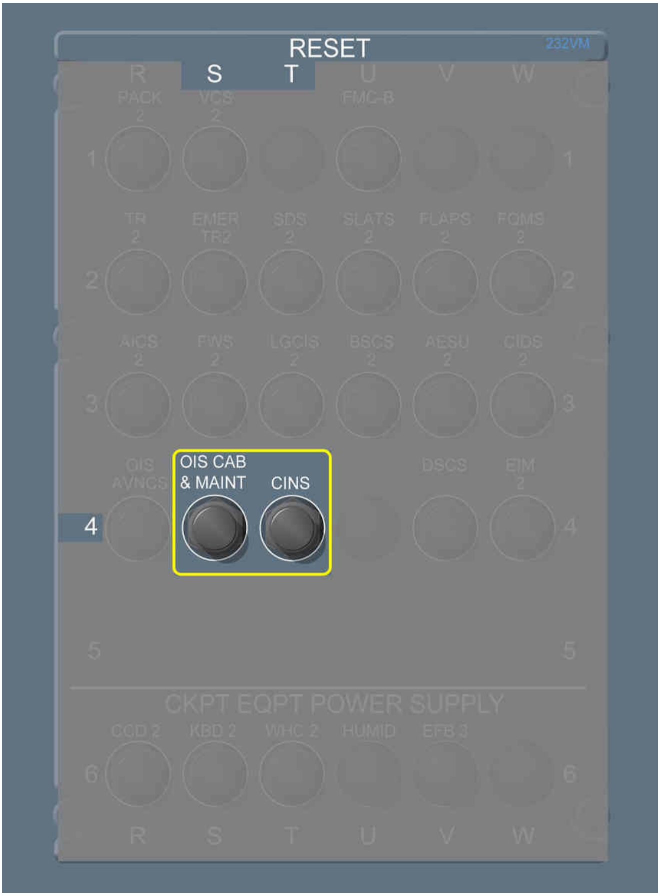
The access to the control of the cabin connectivity services via SATCOM is available on any of the three RMPs, on the pedestal panel, via the MENU access key, and the SATCOM CONFIG page:


VHF
HF
TEL
SQWK
MENU
NAV
SATCOM CONFIG
STATUS
LOGGED OFF
AUTO LOG ON
CABIN CALLS
ENABLED
DISABLE
ICAO
24312601
SATCOM SETTING >
MSG CLR

The OIS CAB&MAINT reset and the CINS reset buttons are on the overhead panel, on the right RESET panel, respectively at locations [S4] and [T4].

Continued on the following page

CAB COM CABIN CONNECTIVITY ◁ RESET (Cont'd)


RESET
232VM
R
S
T
U
V
W
PACK 2
VCS 2
FMC-B
1
TR 2
EMER TR2
SDS 2
SLATS 2
FLAPS 2
FQMS 2
2
AICS 2
FWS 2
LGCIS 2
BSCS 2
AESU 2
CIDS 2
3
OIS AVNCS
OIS CAB & MAINT
CINS
DSCS
EIM 2
4
5
CKPT EQPT POWER SUPPLY
CCD 2
KBD 2
WHC 2
HUMID
EFB 3
6

LIMITATIONS / CONSEQUENCES

- The SATCOM "CABIN CALLS" reset results in the loss of the following applications for 7 min:
  - The cabin connectivity for passengers (i.e. internet ◁ and/or mobile telephony ◁ services),
  - The Telemedicine ◁ ,

Continued on the following page

CAB COM CABIN CONNECTIVITY ◁ RESET (Cont'd)

  - The transmission/reception of company communication messages (EFF ◁ and Weather on Board ◁) on the EFB, via SATCOM.

- The subsequent OIS CAB&MAINT reset (if required) results in the loss of the following applications:
  - The EFB display on OIS for 3 min,
  - The cabin connectivity for passengers (i.e. internet ◁ and/or mobile telephony ◁ services) for 9 min,
  - The Telemedicine ◁ for 9 min,
  - The CAB&MAINT and COMPANY COM applications for 9 min.
- The subsequent CINS reset (if required) results in the loss of the cabin connectivity services for passengers (i.e. internet ◁ and/or mobile telephony ◁ services) for 10 min.

Continued on the following page

CAB COM CABIN CONNECTIVITY ◁ RESET (Cont'd)

Ident.: PRO-ABN-ABN-RESET-CAB_COM1-00023101.0002001 / 03 JUL 20

2 PROCEDURE

EXPECT CABIN PAX CONNECTIVITY ◁ LOSS (RESET 7 MIN)
EXPECT TELEMEDICINE ◁ LOSS (RESET 7 MIN)
EXPECT EFF ◁ AND EFB WXR ON BOARD ◁ LOSS (RESET 7 MIN)

On any of the three RMPs:

MENU ACCESS KEY....................PRESS
SATCOM CONFIG PAGE....................SELECT
CABIN CALLS....................DISABLE

- **After 10 s:**
  CABIN CALLS....................ENABLE
  CABIN CREW ....ADVISE
  L2 *Inform the cabin crew that the cabin systems should be recovered in less than 7 min.*

- L1 **After 7 minutes, if the reset is not successful :**
  L2 The loss of the Telemedicine ◁ or of the cabin connectivity services (i.e. internet ◁ and/or mobile telephony ◁ services) can be also due to the OIS CAB&MAINT applications system.

  L1 EXPECT EFB DISPLAY LOSS ON OIS (RESET 3 MIN)
  EXPECT CABIN PAX CONNECTIVITY ◁ LOSS (RESET 9 MIN)
  EXPECT TELEMEDICINE ◁ LOSS (RESET 9 MIN)
  EXPECT CPNY COM LOSS (RESET 9 MIN)

  - **If EFB applications are required during 3 min reset time:**
    EFB LAPTOP UNSTOW....................CONSIDER

  OIS CAB&MAINT [S4]....................PULL

  - **After 10 s:**
    OIS CAB&MAINT [S4]....................PUSH
    CABIN CREW ....ADVISE
    L2 *Inform the cabin crew that the cabin systems should be recovered in less than 9 min.*

  - L1 **After 9 minutes, if passengers connectivity services (i.e. internet ◁ and/or mobile telephony ◁) remains inoperative:**
    L2 The loss of the cabin connectivity services can be also due to the Cabin Information Network System ◁ (CINS) .

Continued on the following page

CAB COM CABIN CONNECTIVITY ⩤ RESET (Cont'd)

L1 EXPECT CABIN PAX CONNECTIVITY LOSS (RESET 10 MIN)

CINS [T4] .... PULL

- **After 3 s:**

  CINS [T4] .... PUSH

  CABIN CREW .... ADVISE

L2 *Inform the cabin crew that the cabin systems should be recovered in less than 10 min.*

CAB COM CABIN CONNECTIVITY ⋞ RESET

Applicable to: ET-ATY, ET-AUA, ET-AUB

Ident.: PRO-ABN-ABN-RESET-CAB_COM1-00023100.0004001 / 07 NOV 18

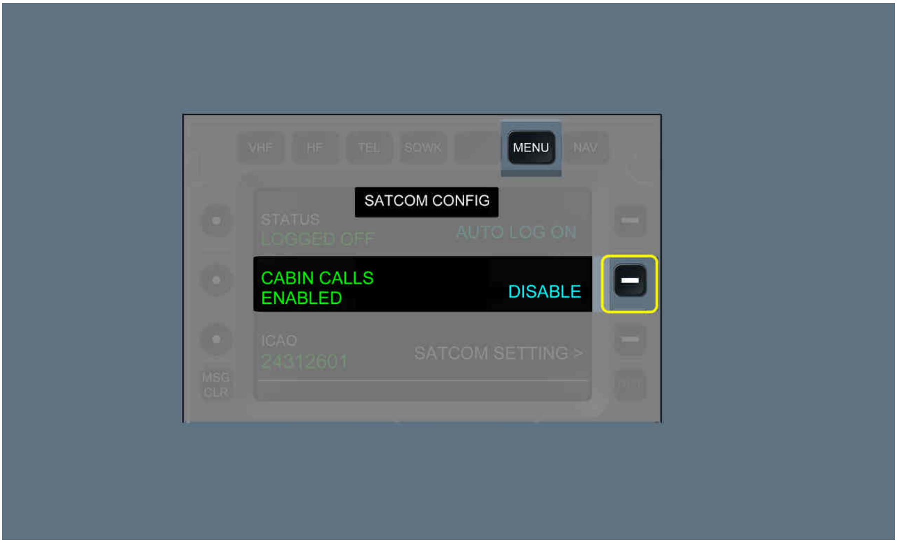
WARNING

1. The flight crew can attempt a system reset when:
   - The ECAM procedure requests to reset a system, or
   - The reset is permitted in the system reset table.
2. Only perform one reset at a time, unless indicated differently in the applicable reset procedure of the table.

For system reset table, *Refer to PRO-ABN-ABN-RESET CAB COM*.

LOCATION

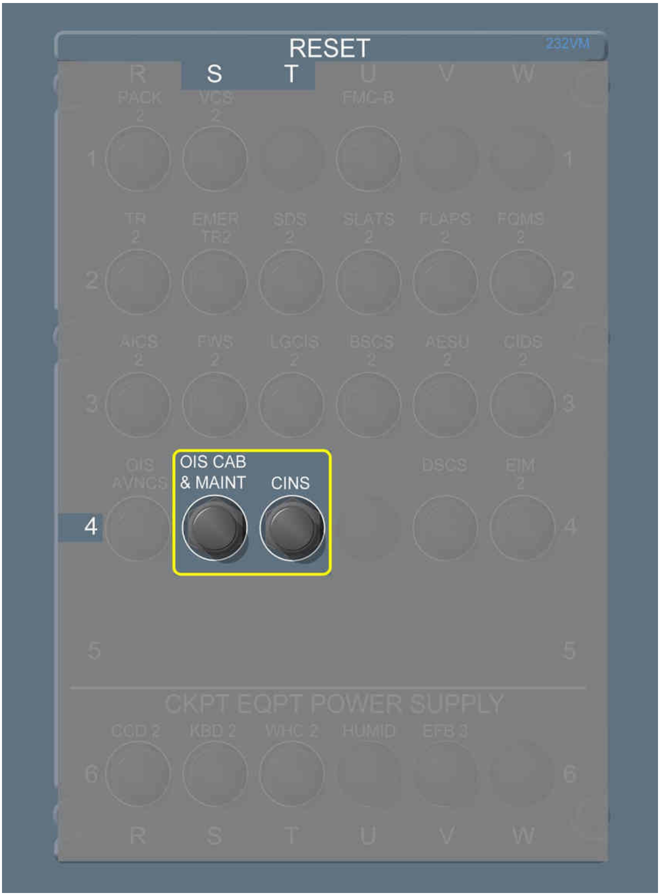
The access to the control of the cabin connectivity services via SATCOM is available on any of the three RMPs, on the pedestal panel, via the MENU access key, and the SATCOM CONFIG page:


VHF
HF
TEL
SQWK
MENU
NAV
SATCOM CONFIG
STATUS
LOGGED OFF
AUTO LOG ON
CABIN CALLS
ENABLED
DISABLE
ICAO
24312601
SATCOM SETTING >
MSG
CLR

The OIS CAB&MAINT reset and the CINS reset buttons are on the overhead panel, on the right RESET panel, respectively at locations [S4] and [T4].

Continued on the following page

CAB COM CABIN CONNECTIVITY ◁ RESET (Cont'd)


RESET
232VM
R
S
T
U
V
W
PACK 2
VCS 2
FMC-B
1
TR 2
EMER TR2
SDS 2
SLATS 2
FLAPS 2
FQMS 2
2
AICS 2
FWS 2
LGCIS 2
BSCS 2
AESU 2
CIDS 2
3
OIS AVNCS
OIS CAB & MAINT
CINS
DSCS
EIM 2
4
5
CKPT EQPT POWER SUPPLY
CCD 2
KBD 2
WHC 2
HUMID
EFB 3
6

LIMITATIONS / CONSEQUENCES

- The SATCOM "CABIN CALLS" reset results in the loss of the following applications for 7 min:
  - The cabin mobile telephony ◁ service for passengers (OMTS),
  - The Telemedicine ◁ , depending on the Operator customization.
  - The transmission/reception of company communication messages (EFF ◁ and Weather on Board ◁) on the EFB, via SATCOM.

Continued on the following page

CAB COM CABIN CONNECTIVITY ◁ RESET (Cont'd)

- The subsequent OIS CAB&MAINT reset (if required) results in the loss of the following applications:
    - The EFB display on OIS for 3 min,
    - The cabin connectivity for passengers (i.e. internet ◁ and/or mobile telephony ◁ services) for 9 min,
    - The Telemedicine ◁ for 9 min, depending on the Operator customization.
    - The CAB&MAINT and COMPANY COM applications for 9 min.
- The subsequent CINS reset (if required) results in the loss of the mobile telephony ◁ service for passengers (OMTS) for 10 min.

Continued on the following page

CAB COM CABIN CONNECTIVITY ◁ RESET (Cont'd)

Ident.: PRO-ABN-ABN-RESET-CAB_COM1-00023101.0004001 / 03 JUL 20

3 PROCEDURE

EXPECT PAX MOBILE TELEPHONY ◁ SERVICE LOSS (RESET 7 MIN)
EXPECT TELEMEDICINE ◁ LOSS (RESET 7 MIN).
EXPECT EFF ◁ AND EFB WXR ON BOARD ◁ LOSS (RESET 7 MIN)

On any of the three RMPs:

MENU ACCESS KEY.......................PRESS
SATCOM CONFIG PAGE.......................SELECT
CABIN CALLS.......................DISABLE

- **After 10 s:**
  CABIN CALLS.......................ENABLE
  CABIN CREW ....ADVISE
  L2 *Inform the cabin crew that the cabin systems should be recovered in less than 7 min.*

L1
- **After 7 minutes, if the reset is not successful :**
  L2 The loss of the Telemedicine ◁ or of the cabin connectivity services (i.e. internet ◁ and/or mobile telephony ◁ services) can be also due to the OIS CAB&MAINT applications system.

  L1 EXPECT EFB DISPLAY LOSS ON OIS (RESET 3 MIN)
  EXPECT CABIN PAX CONNECTIVITY ◁ LOSS (RESET 9 MIN)
  EXPECT TELEMEDICINE ◁ LOSS (RESET 9 MIN)
  EXPECT CPNY COM LOSS (RESET 9 MIN)

  - **If EFB applications are required during 3 min reset time:**
    EFB LAPTOP UNSTOW.......................CONSIDER

  OIS CAB&MAINT [S4].......................PULL

  - **After 10 s:**
    OIS CAB&MAINT [S4].......................PUSH
    CABIN CREW ....ADVISE
    L2 *Inform the cabin crew that the cabin systems should be recovered in less than 9 min.*

  L1
  - **After 9 minutes, if passengers mobile telephony ◁ service remains inoperative:**
    L2 The loss of the mobile telephony ◁ service can be also due to the Cabin Information Network System ◁ (CINS) .

Continued on the following page

CAB COM CABIN CONNECTIVITY ⩤ RESET (Cont'd)

L1 EXPECT PAX MOBILE TELEPHONY SERVICE LOSS (RESET 10 MIN)

CINS [T4] .... PULL

- **After 3 s:**

  CINS [T4] .... PUSH

  CABIN CREW .... ADVISE

L2 *Inform the cabin crew that the mobile telephony service should be recovered in less than 10 min.*

CAB COM CABIN CONNECTIVITY ⩤ RESET

Applicable to: ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB

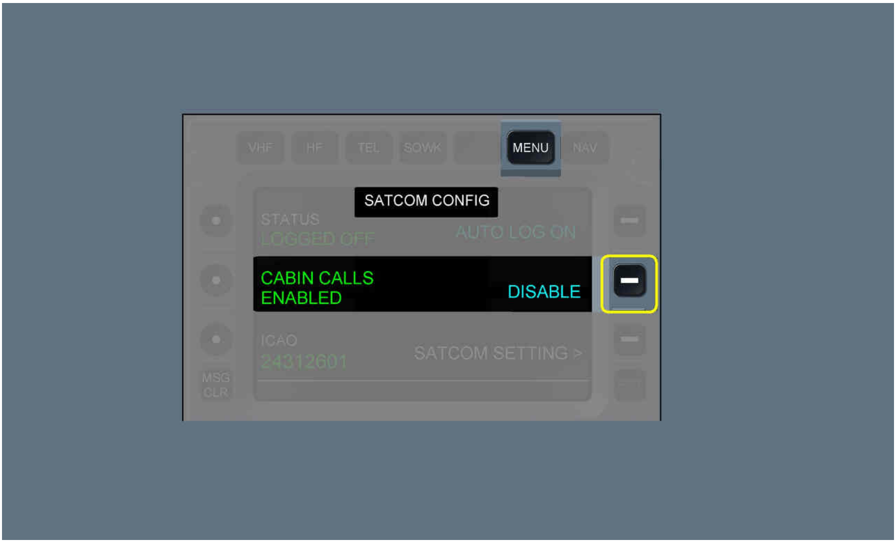
Ident.: PRO-ABN-ABN-RESET-CAB_COM1-00023100.0001001 / 12 DEC 16

WARNING	1. The flight crew can attempt a system reset when: - The ECAM/OEB procedure requests to reset a system, or - The reset is permitted in the system reset table. 2. Only perform one reset at a time, unless indicated differently in the applicable reset procedure of the table.

For system reset table, *Refer to PRO-ABN-ABN-RESET CAB COM*.

LOCATION

The access to the control of the cabin connectivity services via SATCOM is available on any of the three RMPs, on the pedestal panel, via the MENU access key, and the SATCOM CONFIG page:

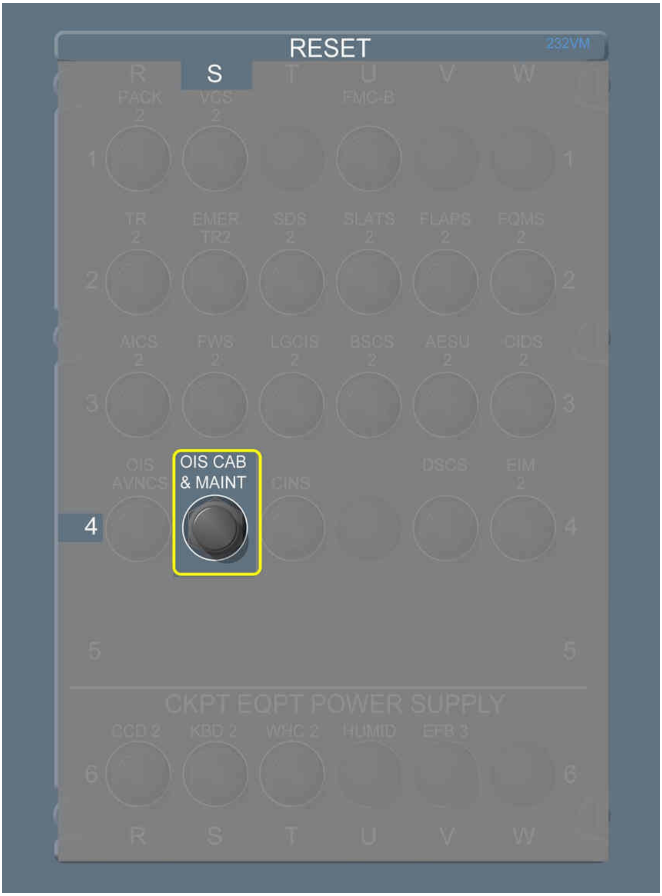


STATUS LOGGED OFF
AUTO LOG ON
CABIN CALLS ENABLED
DISABLE
ICAO 24312601
SATCOM SETTING >

The OIS CAB&MAINT reset button is on the overhead panel, on the right RESET panel, at location [S4].

Continued on the following page

CAB COM CABIN CONNECTIVITY ◁ RESET (Cont'd)


RESET
232VM
R
S
T
U
V
W
PACK 2
VCS 2
FMC-B
1
TR 2
EMER TR2
SDS 2
SLATS 2
FLAPS 2
FQMS 2
2
AICS 2
FWS 2
LGCIS 2
BSCS 2
AESU 2
CIDS 2
3
OIS AVNCS
OIS CAB & MAINT
CINS
DSCS
EIM 2
4
5
CKPT EQPT POWER SUPPLY
CCD 2
KBD 2
WHC 2
HUMID
EFB 3
6
R
S
T
U
V
W

LIMITATIONS / CONSEQUENCES

- The SATCOM "CABIN CALLS" reset results in the loss of the following applications for 7 min:
  - The Telemedicine ◁ ,
  - The transmission/reception of company communication messages (EFF ◁ and Weather on Board ◁) on the EFB, via SATCOM.

Continued on the following page

CAB COM CABIN CONNECTIVITY ◁ RESET (Cont'd)

- The subsequent OIS CAB&MAINT reset (if required) results in the loss of the following applications:
  - The EFB display on OIS for 3 min,
  - The Telemedicine ◁ for 9 min,
  - The CAB&MAINT and COMPANY COM applications for 9 min.

Ident.: PRO-ABN-ABN-RESET-CAB_COM1-00023101.0001001 / 03 JUL 20

4 **PROCEDURE**

EXPECT TELEMEDICINE ◁ LOSS (RESET 7 MIN)
EXPECT EFF ◁ AND EFB WXR ON BOARD ◁ LOSS (RESET 7 MIN)

On any of the three RMPs:

MENU ACCESS KEY.......................................PRESS
SATCOM CONFIG PAGE.......................................SELECT
CABIN CALLS.......................................DISABLE

● **After 10 s:**
CABIN CALLS.......................................ENABLE
CABIN CREW ....ADVISE

L2 *Inform the cabin crew that the cabin systems should be recovered in less than 7 min.*

L1 ● **After 7 minutes, if the reset is not successful :**

L2 The loss of the Telemedicine can be also due to the OIS CAB&MAINT applications system.

L1 EXPECT EFB DISPLAY LOSS ON OIS (RESET 3 MIN)
EXPECT TELEMEDICINE ◁ LOSS (RESET 9 MIN)
EXPECT CPNY COM LOSS (RESET 9 MIN)

● **If EFB applications are required during 3 min reset time:**
EFB LAPTOP UNSTOW.......................................CONSIDER

OIS CAB&MAINT [S4].......................................PULL

● **After 10 s:**
OIS CAB&MAINT [S4].......................................PUSH
CABIN CREW ....ADVISE

L2 *Inform the cabin crew that the cabin systems should be recovered in less than 9 min.*

CAB PRESS CTL MODE RESET

Applicable to: ALL

Ident.: PRO-ABN-ABN-RESET-CAB_PRESS-00023525.0001001 / 03 JAN 19

WARNING	1. The flight crew can attempt a system reset when: - The ECAM/OEB procedure requests to reset a system, or - The reset is permitted in the system reset table. 2. Only perform one reset at a time, unless indicated differently in the applicable reset procedure of the table.

For system reset table consultation, *Refer to PRO-ABN-ABN-RESET CAB PRESS*.

LOCATION

The CABIN ALT MODE pb-sw and the CABIN V/S MODE pb-sw are on the overhead panel, on the CABIN PRESS panel. *Refer to DSC-21-PRESS-20 CABIN PRESS Panel*.

LIMITATIONS / CONSEQUENCES

- On ground, flight crew must wait for 2 min in order to check that the CAB PRESS control mode reset is successful, and
- Only one reset attempt is permitted.

Continued on the following page

CAB PRESS CTL MODE RESET (Cont'd)

Ident.: PRO-ABN-ABN-RESET-CAB_PRESS-00023526.0001001 / 03 JAN 19

PROCEDURE

- **On ground:**
  CABIN ALT MODE (CABIN V/S MODE).. MAN

  The CAB PRESS control mode reset can be performed by use of either the CABIN ALT MODE pb-sw or the CABIN V/S MODE pb-sw.

  - **After 3 s:**
    CABIN ALT MODE (CABIN V/S MODE)..AUTO

    Flight crew must wait for 2 min in order to check that the CAB PRESS control mode reset is successful.

    - **After 2 min, if ECAM alert (or dispatch message, as applicable) still displayed:**
      CABIN ALT MODE (CABIN V/S MODE): DO NOT RESET

      Do not attempt a second CAB PRESS control mode reset.
      Consider the ECAM alert (or dispatch message, as applicable) as valid.

- **In flight:**
  CABIN ALT MODE (CABIN V/S MODE).. MAN

  Use either the CABIN ALT MODE pb-sw or the CABIN V/S MODE pb-sw to perform the CAB PRESS control mode reset.

  - **After 3 s:**
    CABIN ALT MODE (CABIN V/S MODE)..AUTO

    Do not attempt a second CAB PRESS control mode reset.

CDS HUD RESET

Applicable to: ALL

Ident.: PRO-ABN-ABN-RESET-CDS-00022536.0001001 / 12 DEC 16

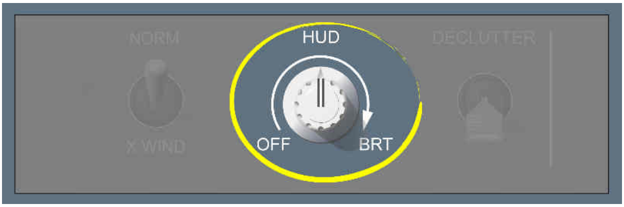
WARNING	1. The flight crew can attempt a system reset when: - The ECAM/OEB procedure requests to reset a system, or - The reset is permitted in the system reset table. 2. Only perform one reset at a time, unless indicated differently in the applicable reset procedure of the table.

For system reset table consultation, *Refer to PRO-ABN-ABN-RESET CDS*.

LOCATION

Each HUD has its own HUD knob located on the HUD CP, in front of each flight crew. The HUD knob turns off or on, and adjusts the brightness of the associated HUD.

HUD knob



Ident.: PRO-ABN-ABN-RESET-CDS-00022537.0001001 / 22 JAN 15

PROCEDURE

HUD knob...OFF

- **After 5 s:**

  HUD knob...ON

- **If reset not successful:**

  HUD knob...OFF

  HUD...STOW

CDS CAPT(F/O) KCCU RESET

Applicable to: ALL

Ident.: PRO-ABN-ABN-RESET-CDS1-00025332.0001001 / 03 JAN 20

WARNING	1. The flight crew can attempt a system reset when: - The ECAM/OEB procedure requests to reset a system, or - The reset is permitted in the system reset table. 2. Only perform one reset at a time, unless indicated differently in the applicable reset procedure of the table.

For system reset table consultation, *Refer to PRO-ABN-ABN-RESET CDS*.
The below reset procedure is applicable on ground only.
A complete reset of CAPT(F/O) KCCU will result in the loss of CAPT(F/O) KCCU for 3 min.

LOCATION

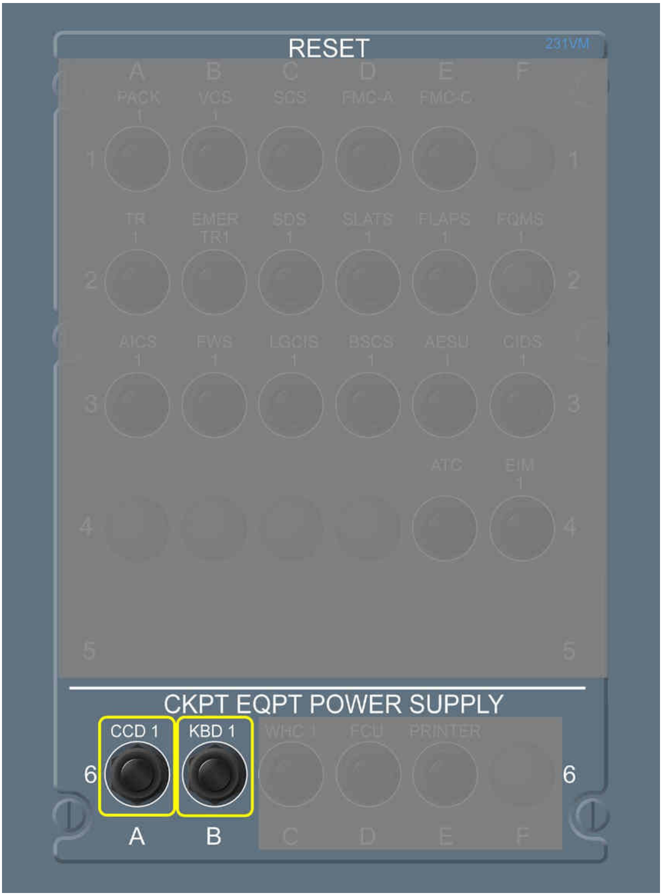
Each KCCU has two power supply buttons on the overhead panel, on the CKPT EQPT POWER SUPPLY panels:

- At location [A6] for CCD 1 and [B6] for KBD 1 (left panel):

Continued on the following page

CDS CAPT(F/O) KCCU RESET (Cont'd)

Left CKPT EQPT POWER SUPPLY Panel

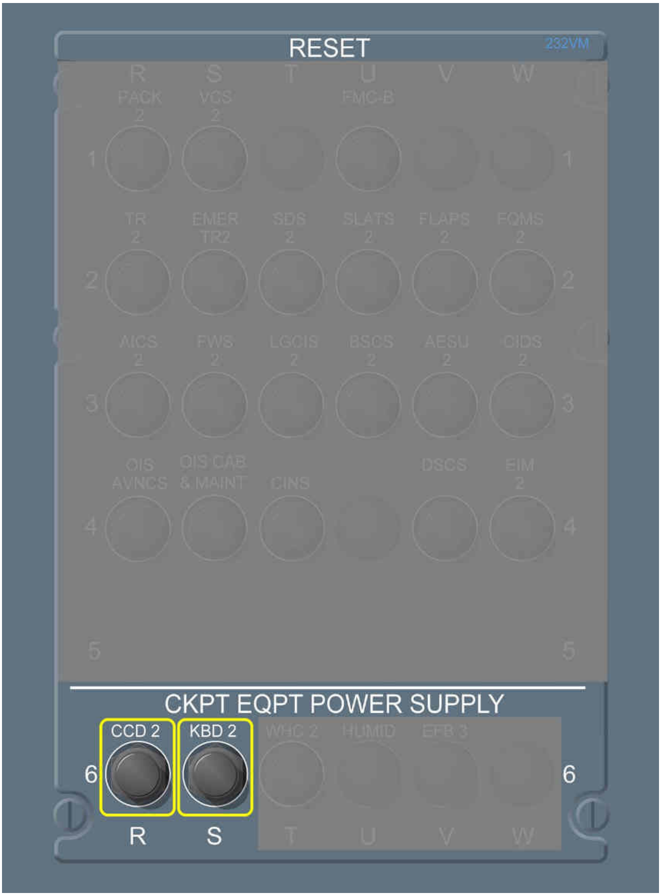

RESET
231VM
A
B
C
D
E
F
PACK 1
VCS 1
SCS
FMC-A
FMC-C
1
TR 1
EMER TR1
SDS 1
SLATS 1
FLAPS 1
FQMS 1
2
AICS 1
FWS 1
LGCIS 1
BSCS 1
AESU 1
CIDS 1
3
ATC
EIM 1
4
5
CKPT EQPT POWER SUPPLY
CCD 1
KBD 1
WHC 1
FCU
PRINTER
6
A
B
C
D
E
F

- At location [R6] for CCD 2 and [S6] for KBD 2 (right panel):

Continued on the following page

CDS CAPT(F/O) KCCU RESET (Cont'd)

Right CKPT EQPT POWER SUPPLY Panel


RESET
232VM
R
S
T
U
V
W
PACK 2
VCS 2
FMC-B
1
1
TR 2
EMER TR2
SDS 2
SLATS 2
FLAPS 2
FQMS 2
2
2
AICS 2
FWS 2
LGCIS 2
BSCS 2
AESU 2
CIDS 2
3
3
OIS AVNCS
OIS CAB & MAINT
CINS
DSCS
EIM 2
4
4
5
5
CKPT EQPT POWER SUPPLY
CCD 2
KBD 2
WHC 2
HUMID
EFB 3
6
6
R
S
T
U
V
W

Continued on the following page

CDS CAPT(F/O) KCCU RESET (Cont'd)

Ident.: PRO-ABN-ABN-RESET-CDS1-00025333.0001001 / 03 JAN 20

PROCEDURE

After aircraft power-up, if the CAPT(F/O) KCCU is inoperative:

- **In the case of CAPT KCCU (CCD and/or KBD) inoperative:**

  CCD 1 .... PULL

  L2 When the CCD 1 power supply button is pulled, the associated CDS CAPT KCCU CURSOR CTL FAULT ECAM alert appears on the ECAM.

  - L1 **After 30 s:**

    KBD 1 .... PULL

    L2 When the KBD 1 power supply button is pulled, the CDS CAPT KCCU CURSOR CTL FAULT ECAM alert disappears.

    The CDS CAPT KCCU CURSOR CTL+KEYBOARD FAULT ECAM alert appears on the ECAM.

  - L1 **After 30 s:**

    KBD 1 .... PUSH

    L2 When the KBD 1 power supply button is pushed, the CDS CAPT KCCU CURSOR CTL +KEYBOARD FAULT ECAM alert disappears.

    The CDS CAPT KCCU CURSOR CTL FAULT ECAM alert appears on the ECAM.

  - L1 **After 30 s:**

    CCD 1 .... PUSH

    L2 When the CCD 1 power supply button is pushed, the CDS CAPT KCCU CURSOR CTL FAULT ECAM alert disappears.

- L1 **In the case of F/O KCCU (CCD and/or KBD) inoperative:**

  CCD 2 .... PULL

  L2 When the CCD 2 power supply button is pulled, the associated CDS F/O KCCU CURSOR CTL FAULT ECAM alert appears on the ECAM.

  - L1 **After 30 s:**

    KBD 2 .... PULL

    L2 When the KBD 2 power supply button is pulled, the CDS F/O KCCU CURSOR CTL FAULT ECAM alert disappears.

Continued on the following page

CDS CAPT(F/O) KCCU RESET (Cont'd)

The CDS F/O KCCU CURSOR CTL+KEYBOARD FAULT ECAM alert appears on the ECAM.

L1

- **After 30 s:**

  KBD 2 .... PUSH

L2

When the KBD 2 power supply button is pushed, the CDS F/O KCCU CURSOR CTL +KEYBOARD FAULT ECAM alert disappears.

The CDS F/O KCCU CURSOR CTL FAULT ECAM alert appears on the ECAM.

L1

- **After 30 s:**

  CCD 2 .... PUSH

L2

When the CCD 2 power supply button is pushed, the CDS F/O KCCU CURSOR CTL FAULT ECAM alert disappears.

COM ATC DATALINK RESET

Applicable to: ALL

Ident.: PRO-ABN-ABN-RESET-COM-00022250.0001001 / 12 DEC 16

WARNING	1. The flight crew can attempt a system reset when: - The ECAM/OEB procedure requests to reset a system, or - The reset is permitted in the system reset table. 2. Only perform one reset at a time, unless indicated differently in the applicable reset procedure of the table.

For system reset table consultation, *Refer to PRO-ABN-ABN-RESET COM*.
If the alert is due to an IMA module failure, do not reset the ATC datalink.

During the ATC datalink reset, several ECAM alerts may be temporarily displayed, e.g.:
- COM ATC DATALINK FAULT
- COM ADS-C DATALINK FAULT.

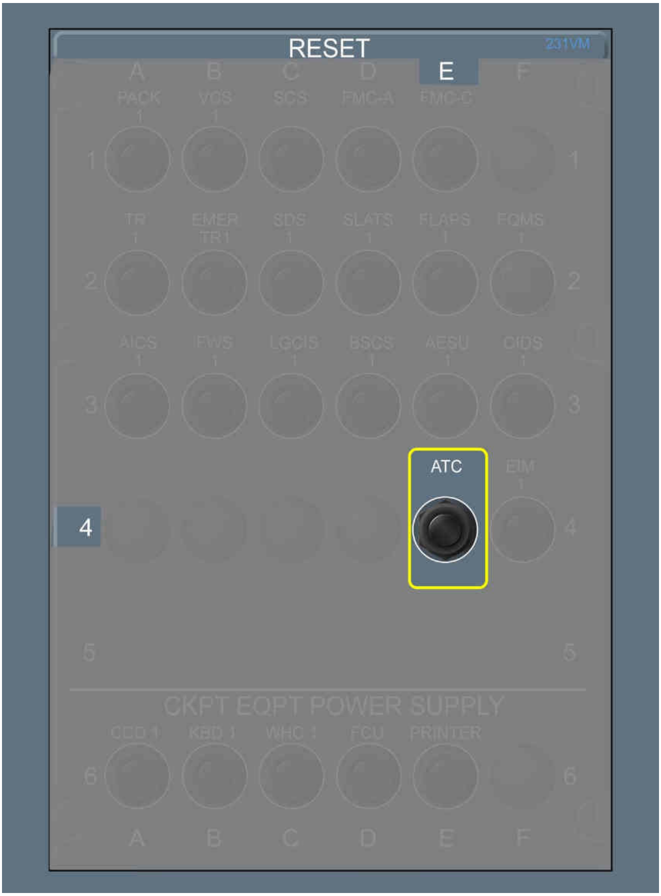
LOCATION

The ATC datalink reset button is on the overhead panel, on the RESET panel, at location [E4] (left panel):

Continued on the following page

COM ATC DATALINK RESET (Cont'd)

ATC Datalink Reset Button Location


RESET
231VM
A
B
C
D
E
F
PACK 1
VCS 1
SCS
FMC-A
FMC-C
1
TR 1
EMER TR1
SDS 1
SLATS 1
FLAPS 1
FQMS 1
2
AICS 1
FWS 1
LGCIS 1
BSCS 1
AESU 1
CIDS 1
3
ATC
EIM 1
4
5
CKPT EQPT POWER SUPPLY
CCD 1
KBD 1
WHC 1
FCU
PRINTER
6
A
B
C
D
E
F

Continued on the following page

COM ATC DATALINK RESET (Cont'd)

Ident.: PRO-ABN-ABN-RESET-COM-00022247.0001001 / 04 DEC 14

PROCEDURE

ATC....................PULL

- **After 3 s:**
  ATC....................PUSH
- **In order to perform CPDLC or ADS-C:**
  - **On the CONNECT page of the MFD:**
    NOTIFY TO ATC....................ENTER OR SELECT
    NOTIFY BUTTON....................PRESS
  - **For ADS-C:**
    - **On the CONNECT page of the MFD:**
      ADS-C....................ARMED OR ON
  - **For CPDLC:**
    - **On the CONNECT page of the MFD and on the mailbox:**

      When the ATC center has initiated CPDLC connection, the active ATC is displayed.

      ACTIVE ATC....................CHECK

COM VHF 3 DATALINK RESET

Applicable to: ALL

Ident.: PRO-ABN-ABN-RESET-COM1-00023188.0001001 / 12 DEC 16

WARNING	1. The flight crew can attempt a system reset when: - The ECAM/OEB procedure requests to reset a system, or - The reset is permitted in the system reset table. 2. Only perform one reset at a time, unless indicated differently in the applicable reset procedure of the table.

For system reset table consultation, *Refer to PRO-ABN-ABN-RESET COM*.

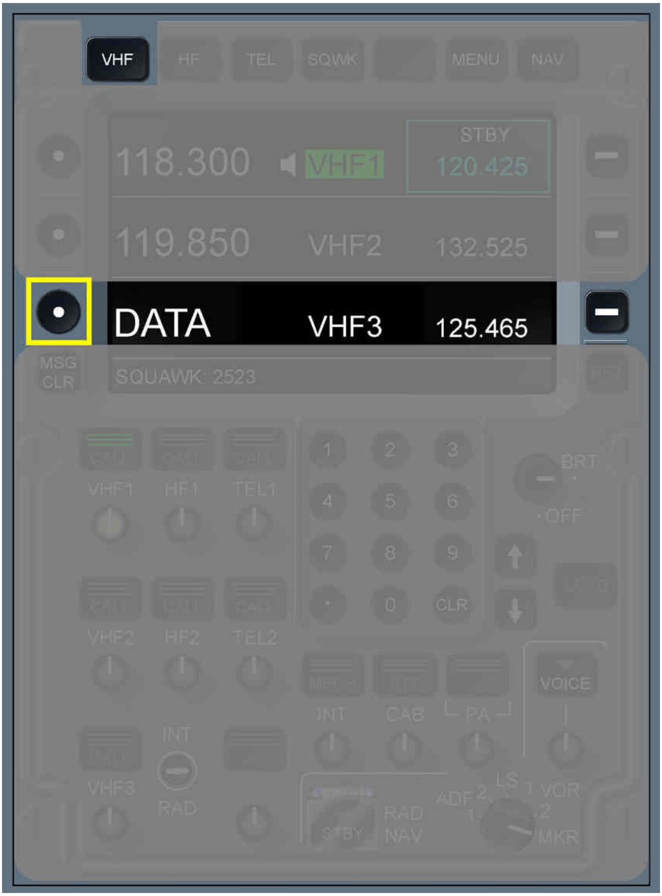
LOCATION

The Activation / Dialing Key 3 [ADK3] is on the RMP, on the pedestal.

Continued on the following page

COM VHF 3 DATALINK RESET (Cont'd)

Activation / Dialing Key 3 Location


VHF
HF
TEL
SQWK
MENU
NAV
118.300
VHF1
STBY
120.425
119.850
VHF2
132.525
DATA
VHF3
125.465
MSG CLR
SQUAWK 2523
RST
CALL
VHF1
HF1
TEL1
VHF2
HF2
TEL2
VHF3
INT
RAD
1
2
3
4
5
6
7
8
9
.
0
CLR
BRT
OFF
LOUD
VOICE
MECH
INT
CAB
PA
STBY
RAD
NAV
ADF
LS
VOR
MKR

Continued on the following page

COM VHF 3 DATALINK RESET (Cont'd)

Ident.: PRO-ABN-ABN-RESET-COM1-00023189.0001001 / 29 MAR 17

PROCEDURE

On any RMP:

VHF 3 VOICE FREQUENCY [ADK3].. ACTIVATE

L2 *The VHF 3 changes to the voice mode*

L1
- **After 5 s:**

  VHF 3 DATA [ADK3]...ACTIVATE

  L2 *The VHF 3 reverts to the DATA mode to recover VHF 3 data communication*

L1 Note : If data communication is still inoperative via VHF 3, data communication remains available via HF in data mode or SATCOM.

COM HF DATALINK RESET

Applicable to: ALL

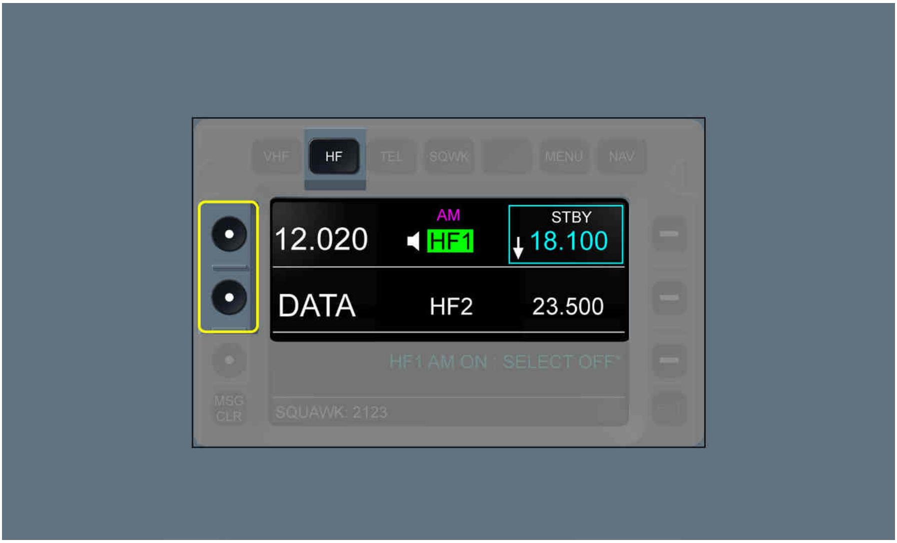
Ident.: PRO-ABN-ABN-RESET-COM2-00023749.0001001 / 03 JUL 20

WARNING	1. The flight crew can attempt a system reset when: - The ECAM/OEB procedure requests to reset a system, or - The reset is permitted in the system reset table. 2. Only perform one reset at a time, unless indicated differently in the applicable reset procedure of the table.

For system reset table consultation, *Refer to PRO-ABN-ABN-RESET COM*.

LOCATION

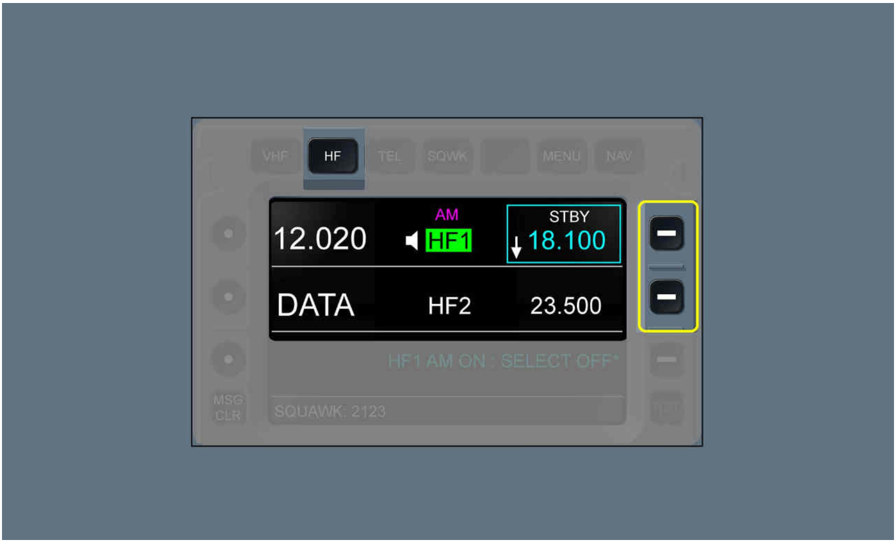
The Activation / Dialing Key 1 and 2 ◁ [ADK1 and ADK2] are located on the left side of any of the 3 RMPs, on the pedestal panel, via the HF access key.



The Line Selection Key 1 and 2 ◁ [LSK1 and LSK2] are located on the right side of any of the 3 RMPs, on the pedestal panel, via the HF access key.

Continued on the following page

COM HF DATALINK RESET (Cont'd)


VHF
HF
TEL
SQWK
MENU
NAV
AM
12.020
HF1
STBY
18.100
DATA
HF2
23.500
MSG
CLR
SQUAWK: 2123

HF1 AM ON : SELECT OFF*

6 Ident.: PRO-ABN-ABN-RESET-COM2-00023750.0001001 / 03 JUL 20

PROCEDURE

To reset HF DATA mode, use any of the three RMPs:

HF 1(2 ◁) VOICE MODE ....SELECT AND ACTIVATE

L2 *The HF 1(2 ◁) is changed to VOICE mode.*

L1
- **After 5 s:**

  HF 1(2 ◁) DATA MODE..SELECT AND ACTIVATE

L2 If data communication is still inoperative via HF 1(2 ◁), data communication remains available via VHF or SATCOM.

COND SCS RESET

Applicable to: ALL

Ident.: PRO-ABN-ABN-RESET-COND-00022127.0001001 / 12 DEC 16

WARNING	1. The flight crew can attempt a system reset when: - The ECAM/OEB procedure requests to reset a system, or - The reset is permitted in the system reset table. 2. Only perform one reset at a time, unless indicated differently in the applicable reset procedure of the table.

For system reset table consultation, *Refer to PRO-ABN-ABN-RESET COND*.

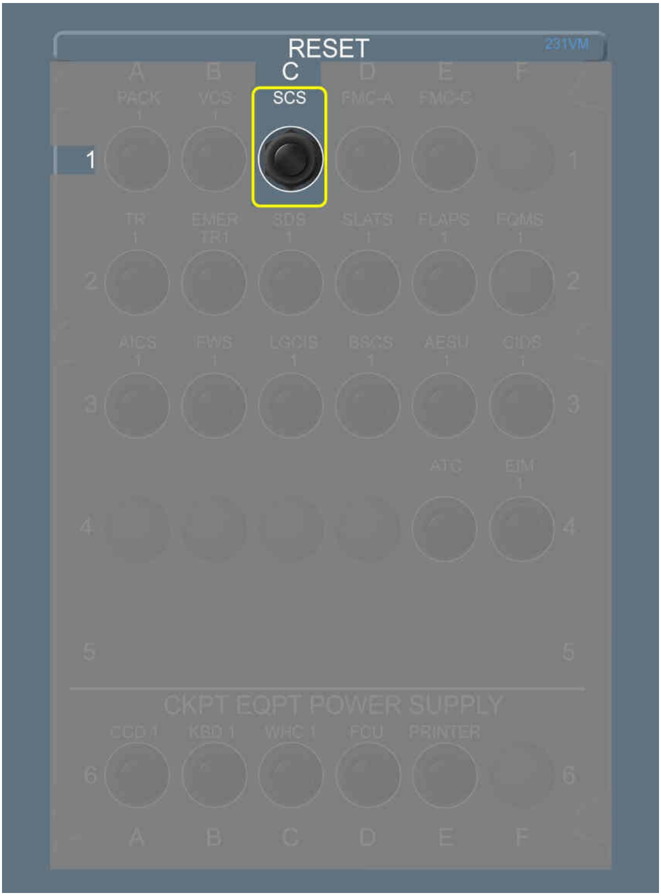
LOCATION

The SCS reset button is on the overhead panel, on the RESET panel, at location [C1] (left panel):

Continued on the following page

COND SCS RESET (Cont'd)

SCS Reset Button Location


RESET
231VM
A
B
C
D
E
F
PACK 1
VCS 1
SCS
FMC-A
FMC-C
1
1
TR 1
EMER TR1
SDS 1
SLATS 1
FLAPS 1
FQMS 1
2
2
AICS 1
FWS 1
LGCIS 1
BSCS 1
AESU 1
CIDS 1
3
3
ATC
EIM 1
4
4
5
5
CKPT EQPT POWER SUPPLY
CCD 1
KBD 1
WHC 1
FCU
PRINTER
6
6
A
B
C
D
E
F

Continued on the following page

COND SCS RESET (Cont'd)

Ident.: PRO-ABN-ABN-RESET-COND-00022128.0001001 / 06 DEC 16

PROCEDURE

The cabin crew will inform the flight crew, when a reset of the Supplemental Cooling System (SCS) should be performed.

COMMERCIAL 1 pb-sw........ CHECK ON
COMMERCIAL 2 pb-sw........ CHECK ON
COOLG pb-sw........ CHECK AUTO
SCS [C1]........ PULL

- **After 5 s:**
  SCS [C1]........ PUSH
- **If reset not successful:**
  SCS: DO NOT RESET

DOOR DSCS RESET

Applicable to: ALL

Ident.: PRO-ABN-ABN-RESET-DOOR-00021405.0001001 / 12 DEC 16

WARNING	1. The flight crew can attempt a system reset when: - The ECAM/OEB procedure requests to reset a system, or - The reset is permitted in the system reset table. 2. Only perform one reset at a time, unless indicated differently in the applicable reset procedure of the table.

For system reset table consultation, *Refer to PRO-ABN-ABN-RESET DOOR*

If the alert is due to an IMA module failure, do not reset the DSCS.

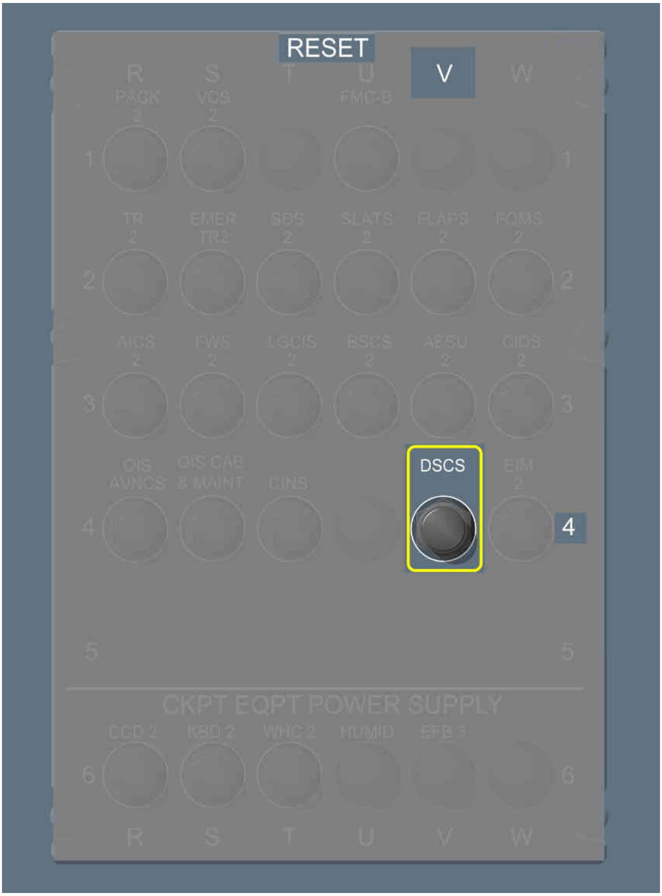
LOCATION

The DSCS reset button is on the overhead panel, on the RESET panel, at location [V4] (right panel) :

Continued on the following page

DOOR DSCS RESET (Cont'd)

DSCS Reset Button Location


RESET
V
R
S
T
U
W
PACK 2
VCS 2
FMC-B
1
TR 2
EMER TR2
SDS 2
SLATS 2
FLAPS 2
FQMS 2
2
AICS 2
FWS 2
LGCIS 2
BSCS 2
AESU 2
CIDS 2
3
OIS AVNCS
OIS CAB & MAINT
CINS
DSCS
EIM 2
4
5
CKPT EQPT POWER SUPPLY
CCD 2
KBD 2
WHC 2
HUMID
EFB 3
6
R
S
T
U
V
W

Continued on the following page

DOOR DSCS RESET (Cont'd)

Ident.: PRO-ABN-ABN-RESET-DOOR-00021406.0001001 / 27 NOV 17

PROCEDURE

- **On ground only:**
  DSCS....................PULL
  - **After 3 s:**
    DSCS....................PUSH

    Wait 1 minute.
  - **If reset not successful:**

    The flight crew can attempt a second DSCS reset.

    DSCS....................PULL
    - **After 3 s:**
      DSCS....................PUSH

ELEC TR 1(2)(EMER 1)(EMER 2) RESET

Applicable to: ALL

Ident.: PRO-ABN-ABN-RESET-ELEC-00021256.0001001 / 12 DEC 16

WARNING	1. The flight crew can attempt a system reset when: - The ECAM/OEB procedure requests to reset a system, or - The reset is permitted in the system reset table. 2. Only perform one reset at a time, unless indicated differently in the applicable reset procedure of the table.

For system reset table consultation, *Refer to PRO-ABN-ABN-RESET ELEC*.

During the TR reset, several ECAM alerts may be temporarily displayed, e.g.:
- ELEC TR 1 FAULT for TR 1 reset

Those temporary alerts have to be disregarded.

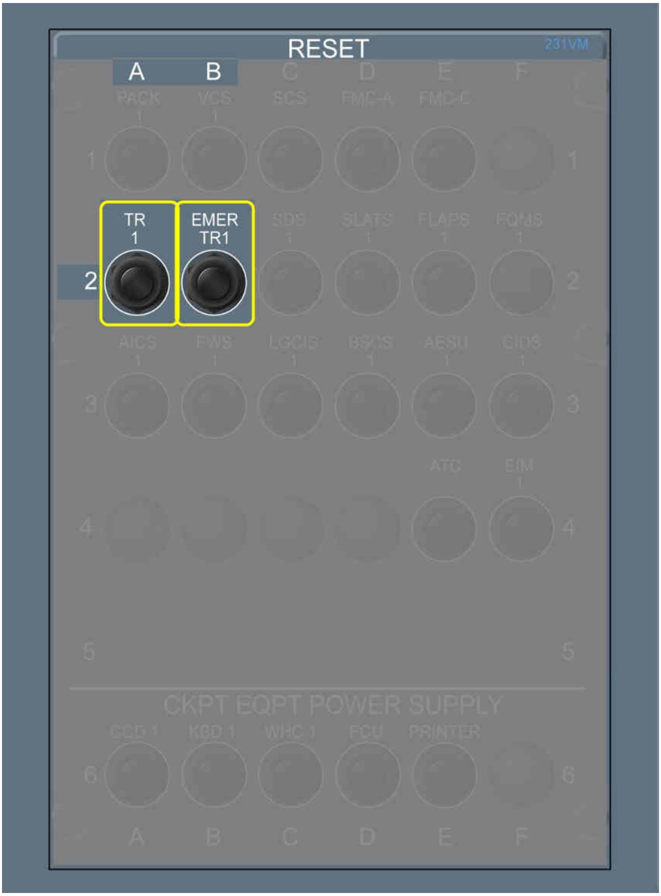
LOCATION

The TR reset buttons are on the overhead panel, on the RESET panel, at location:
- TR 1 [A2] and TR EMER 1 [B2] (left panel):

Continued on the following page

ELEC TR 1(2)(EMER 1)(EMER 2) RESET (Cont'd)

TR 1 and TR EMER 1 Reset Buttons Location

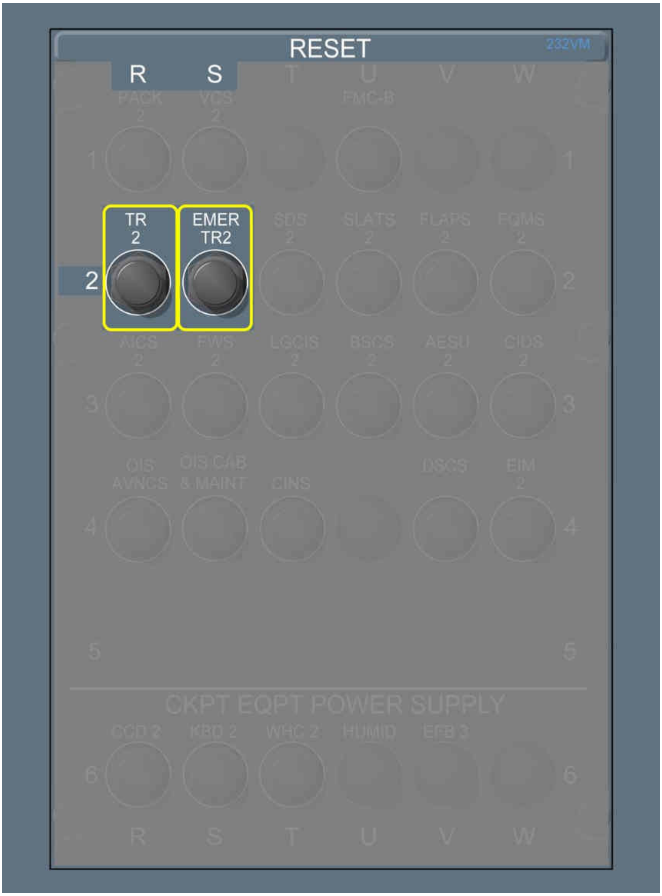

RESET
231VM
A
B
C
D
E
F
PACK 1
VCS 1
SCS
FMC-A
FMC-C
1
TR 1
EMER TR1
SDS 1
SLATS 1
FLAPS 1
FQMS 1
2
AICS 1
FWS 1
LGCIS 1
BSCS 1
AESU 1
CIDS 1
3
ATC
EIM 1
4
5
CKPT EQPT POWER SUPPLY
CCD 1
KCD 1
WHC 1
FCU
PRINTER
6

- TR 2 [R2] and TR EMER 2 [S2] (right panel):

Continued on the following page

ELEC TR 1(2)(EMER 1)(EMER 2) RESET (Cont'd)

TR 2 and TR EMER 2 Reset Buttons Location


RESET
232VM
R
S
T
U
V
W
PACK 2
VCS 2
FMC-B
1
TR 2
EMER TR2
SDS 2
SLATS 2
FLAPS 2
FQMS 2
2
AICS 2
FWS 2
LGCIS 2
BSCS 2
AESU 2
CIDS 2
3
OIS AVNCS
OIS CAB & MAINT
CINS
DSCS
EIM 2
4
5
CKPT EQPT POWER SUPPLY
CCD 2
KBD 2
WHC 2
HUMID
EFB 3
6

Continued on the following page

ELEC TR 1(2)(EMER 1)(EMER 2) RESET (Cont'd)

Ident.: PRO-ABN-ABN-RESET-ELEC-00021260.0001001 / 27 NOV 17

PROCEDURE

- **On ground only:**

  TR 1(2)(EMER 1)(EMER 2)..PULL

  - **After 3 sec:**

    TR 1(2)(EMER 1)(EMER 2)..PUSH

ENG EIM 1(2) RESET

Applicable to: ALL

Ident.: PRO-ABN-ABN-RESET-ENG-00022104.0001001 / 12 DEC 16

WARNING	1. The flight crew can attempt a system reset when: - The ECAM/OEB procedure requests to reset a system, or - The reset is permitted in the system reset table. 2. Only perform one reset at a time, unless indicated differently in the applicable reset procedure of the table.

For system reset table, *Refer to PRO-ABN-ABN-RESET ENG*.

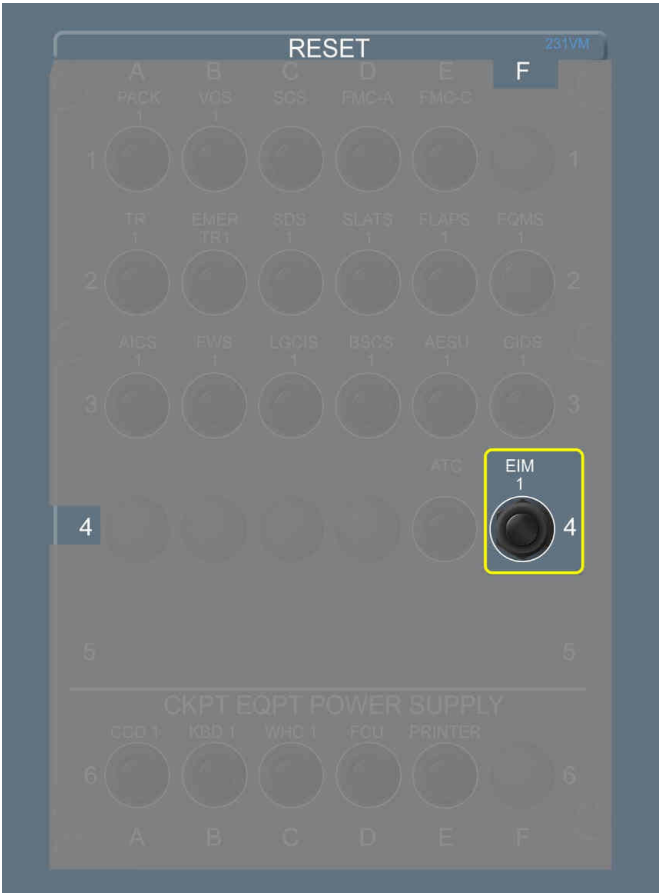
LOCATION

The Engine Interface Management (EIM) reset buttons are on the overhead panel, on the RESET panel, at location:
- EIM 1 [F4] (left panel)

Continued on the following page

ENG EIM 1(2) RESET (Cont'd)

EIM 1 Reset Button Location

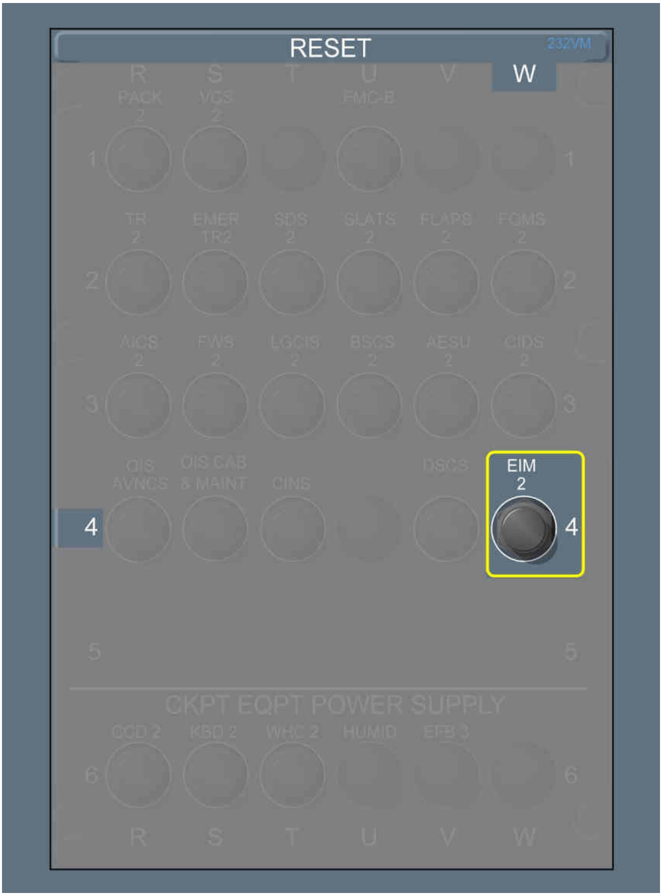

RESET
231VM
A
B
C
D
E
F
PACK 1
VDS 1
SCS
FMC-A
FMC-C
1
TR 1
EMER TR1
SDS 1
SLATS 1
FLAPS 1
FQMS 1
2
AICS 1
FWS 1
LGCIS 1
BSCS 1
AESU 1
CIDS 1
3
ATC
EIM 1
4
5
CKPT EQPT POWER SUPPLY
CDD 1
KBD 1
WHC 1
FCU
PRINTER
6

- EIM 2 [W4] (right panel)

Continued on the following page

ENG EIM 1(2) RESET (Cont'd)

EIM 2 Reset Button Location


RESET
232VM
R S T U V W
PACK 2
VCS 2
FMC-B
1
TR 2
EMER TR2
SDS 2
SLATS 2
FLAPS 2
FQMS 2
2
AICS 2
FWS 2
LGCIS 2
BSCS 2
AESU 2
CIDS 2
3
OIS AVNCS
OIS CAB & MAINT
CIMS
DSCS
EIM 2
4
5
CKPT EQPT POWER SUPPLY
CCD 2
KBD 2
WHC 2
HUMID
EFB 3
6
R S T U V W

Continued on the following page

ENG EIM 1(2) RESET (Cont'd)

Ident.: PRO-ABN-ABN-RESET-ENG-00022105.0001001 / 06 NOV 14

PROCEDURE

When the reset is applicable:
- EIM 1 resets EIF 1 and 2 applications on engine 1
- EIM 2 resets EIF 1 and 2 applications on engine 2.

AFFECTED EIM.. PULL

● **After 3 s:**
AFFECTED EIM.. PUSH

F/CTL FLAPS 1(2) RESET

Applicable to: ALL

Ident.: PRO-ABN-ABN-RESET-F_CTL-00021670.0001001 / 17 NOV 17

WARNING	1. The flight crew can attempt a system reset when: - The ECAM/OEB procedure requests to reset a system, or - The reset is permitted in the system reset table. 2. Only perform one reset at a time, unless indicated differently in the applicable reset procedure of the table.

For system reset table, *Refer to PRO-ABN-ABN-RESET F/CTL*.

Note: - *Do not perform any reset during flaps or slats movement*
- *Reset only one slats system or flaps system at a time.*

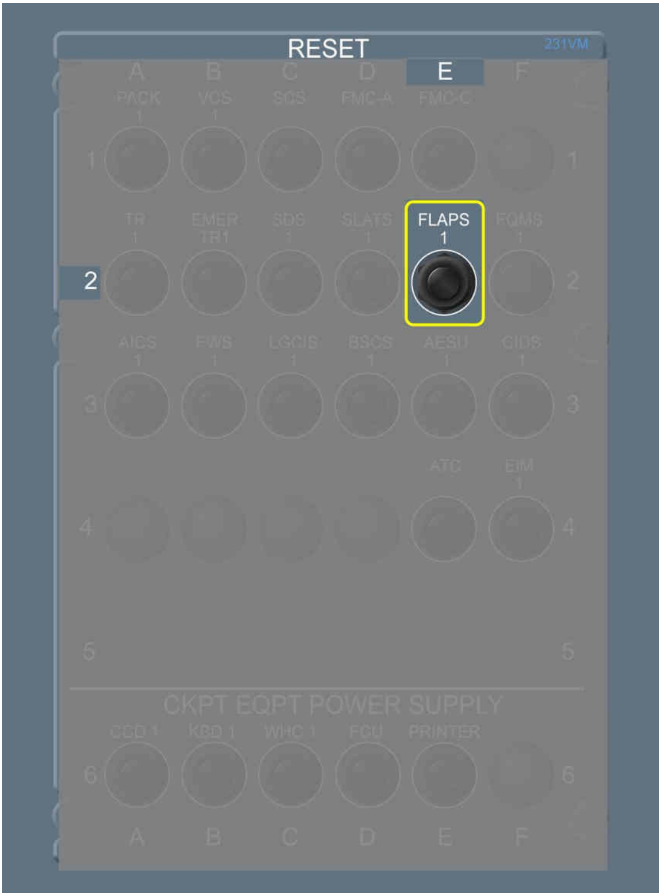
LOCATION

The FLAPS reset buttons are on the overhead panel, on the RESET panel, at location:
- FLAPS 1 [E2] (left panel)

Continued on the following page

F/CTL FLAPS 1(2) RESET (Cont'd)

FLAPS 1 Reset Button Location

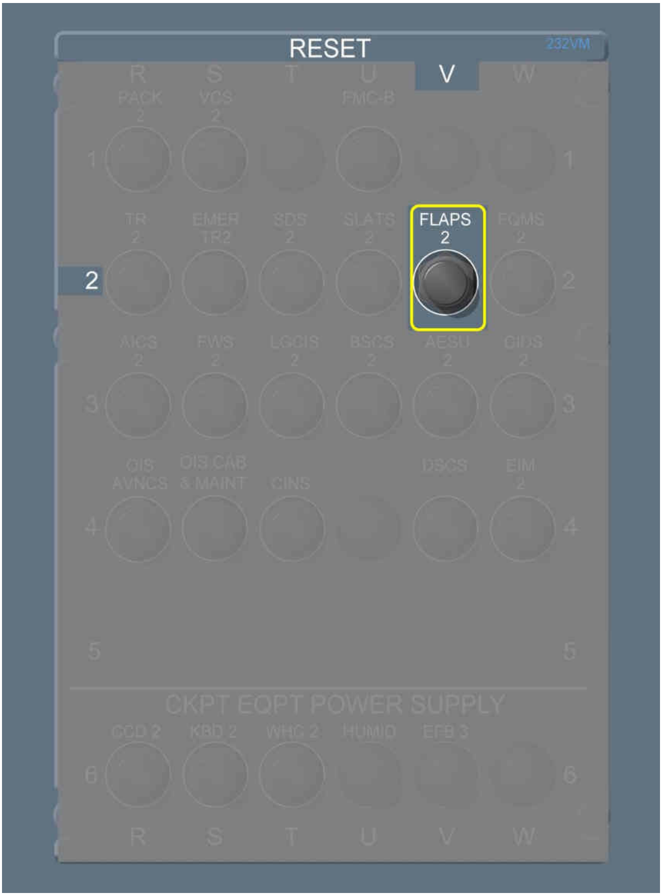

RESET
231VM
A
B
C
D
E
F
PACK 1
VCS 1
SCS
FMC-A
FMC-C
1
TR 1
EMER TR1
SDS 1
SLATS 1
FLAPS 1
FQMS 1
2
AICS 1
FWS 1
LGCIS 1
BSCS 1
AESU 1
CIDS 1
3
ATC
EIM 1
4
5
CKPT EQPT POWER SUPPLY
CCD 1
KBD 1
WHC 1
FCU
PRINTER
6

- FLAPS 2 [V2] (right panel)

Continued on the following page

F/CTL FLAPS 1(2) RESET (Cont'd)

FLAPS 2 Reset Button Location


RESET
232VM
R
S
T
U
V
W
PACK 2
VCS 2
FMC-B
1
TR 2
EMER TR2
SDS 2
SLATS 2
FLAPS 2
FQMS 2
2
AICS 2
FWS 2
LGCIS 2
BSCS 2
AESU 2
CIDS 2
3
OIS AVNCS
OIS CAB & MAINT
CINS
DSCS
EIM 2
4
5
CKPT EQPT POWER SUPPLY
CCD 2
KBD 2
WHC 2
HUMID
EFB 3
6

Continued on the following page

F/CTL FLAPS 1(2) RESET (Cont'd)

Ident.: PRO-ABN-ABN-RESET-F_CTL-00021672.0001001 / 06 NOV 14

PROCEDURE

AFFECTED FLAPS.. PULL

- **After 3 s**

  AFFECTED FLAPS.. PUSH

F/CTL SLATS 1(2) RESET

Applicable to: ALL

Ident.: PRO-ABN-ABN-RESET-F_CTL1-00021671.0001001 / 12 DEC 16

WARNING	1. The flight crew can attempt a system reset when: - The ECAM/OEB procedure requests to reset a system, or - The reset is permitted in the system reset table. 2. Only perform one reset at a time, unless indicated differently in the applicable reset procedure of the table.

For system reset table, *Refer to PRO-ABN-ABN-RESET F/CTL*.

Note:
- *Do not perform any reset during flaps or slats movement*
- *Reset only one slats system or flaps system at a time.*

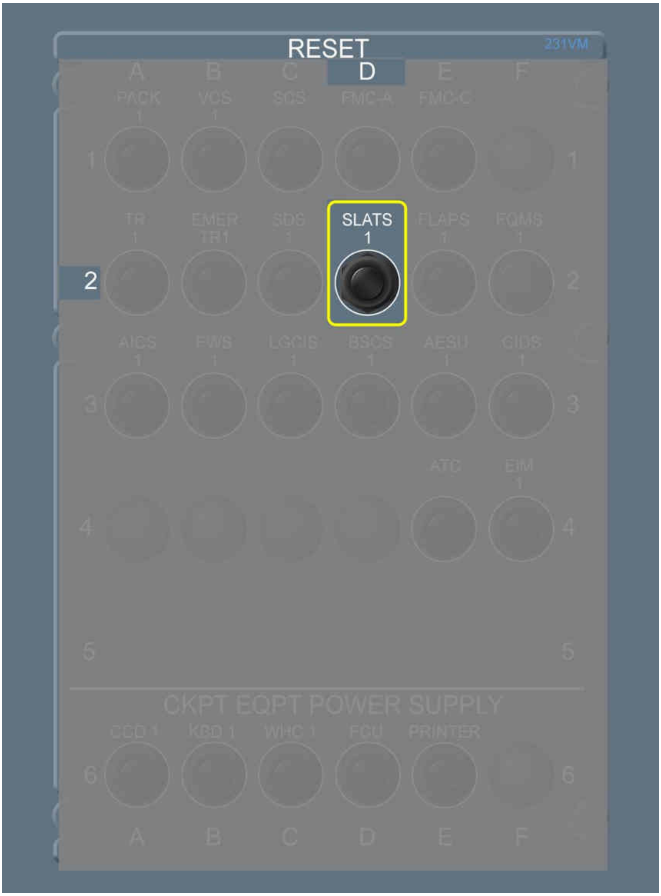
LOCATION

The SLATS reset buttons are on the overhead panel, on the RESET panel, at location:
- SLATS 1 [D2] (left panel)

Continued on the following page

F/CTL SLATS 1(2) RESET (Cont'd)

SLATS 1 Reset Button Location

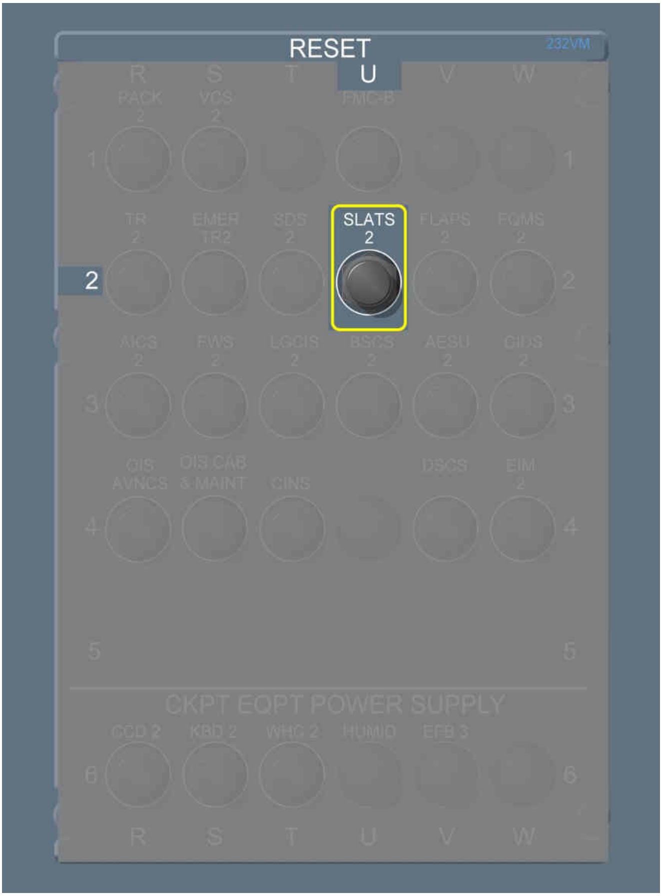

RESET
231VM
A
B
C
D
E
F
PACK 1
VCS 1
SCS
FMC-A
FMC-C
1
TR 1
EMER TR1
SDS 1
SLATS 1
FLAPS 1
FQMS 1
2
AICS 1
FWS 1
LGCIS 1
BSCS 1
AESU 1
CIDS 1
3
ATC
EIM 1
4
5
CKPT EQPT POWER SUPPLY
CCD 1
KBD 1
WHC 1
FCU
PRINTER
6

- SLATS 2 [U2] (right panel)

Continued on the following page

F/CTL SLATS 1(2) RESET (Cont'd)

SLATS 2 Reset Button Location


RESET
232VM
R S T U V W
PACK 2
VCS 2
FMC-B
1
TR 2
EMER TR2
SDS 2
SLATS 2
FLAPS 2
FQMS 2
2
AICS 2
FWS 2
LGCIS 2
BSCS 2
AESU 2
CIDS 2
3
OIS AVNCS
OIS CAB & MAINT
CINS
DSCS
EIM 2
4
5
CKPT EQPT POWER SUPPLY
CCD 2
KBD 2
WHC 2
HUMID
EFB 3
6

Continued on the following page

F/CTL SLATS 1(2) RESET (Cont'd)

Ident.: PRO-ABN-ABN-RESET-F_CTL1-00021673.0001001 / 06 NOV 14

PROCEDURE

AFFECTED SLATS....................PULL

- **After 3 s**
  AFFECTED SLATS....................PUSH

FUEL FQMS 1(2) RESET

Applicable to: ALL

Ident.: PRO-ABN-ABN-RESET-FUEL-00021252.0001001 / 12 DEC 16

WARNING	1. The flight crew can attempt a system reset when: - The ECAM/OEB procedure requests to reset a system, or - The reset is permitted in the system reset table. 2. Only perform one reset at a time, unless indicated differently in the applicable reset procedure of the table.

For system reset table consultation, *Refer to PRO-ABN-ABN-RESET FUEL*.

If the alert is due to an IMA module failure, do not reset the FQMS.

During the FQMS reset, several ECAM alerts may be temporarily displayed, e.g.:
- FUEL FQMS 1 FAULT for FQMS 1 reset
- FUEL FQMS 2 FAULT for FQMS 2 reset.

Those temporary alerts have to be disregarded.

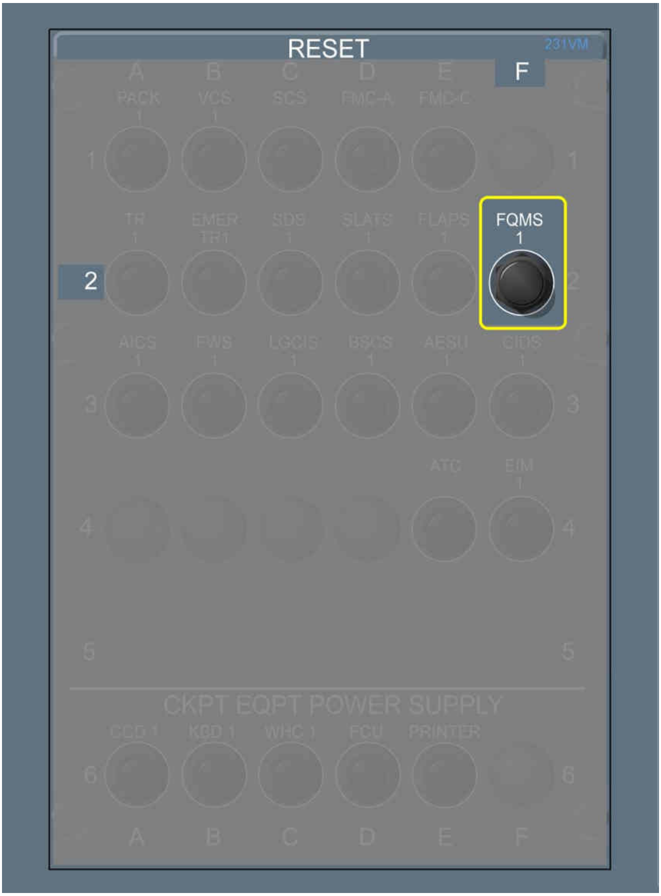
LOCATION

The FQMS reset buttons are on the overhead panel, on the RESET panel, at location:
- FQMS 1 [F2] (left panel):

Continued on the following page

FUEL FQMS 1(2) RESET (Cont'd)

FQMS 1 Reset Button Location

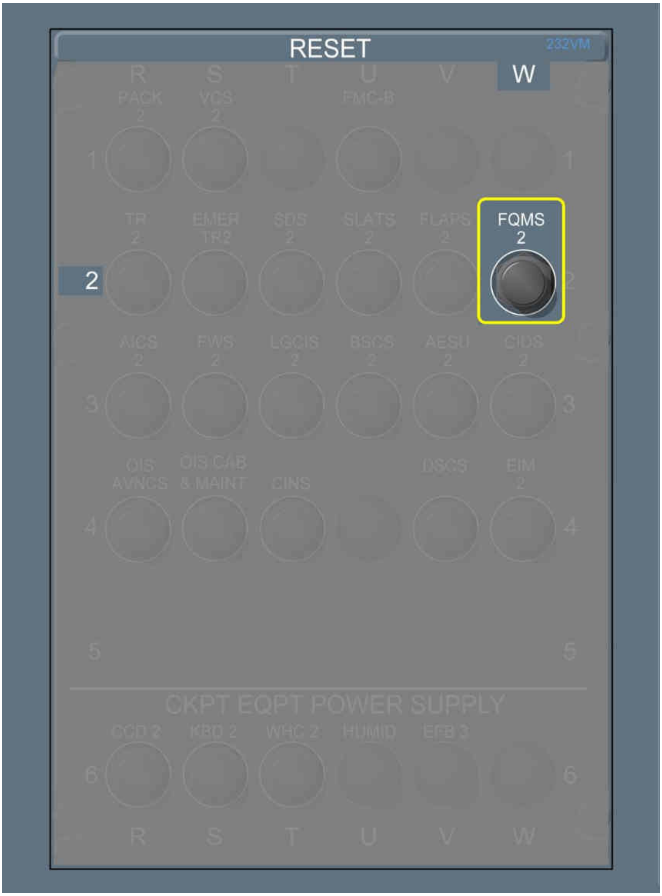

RESET
231VM
A B C D E F
PACK 1
VCS 1
SCS
FMC-A
FMC-C
1
TR 1
EMER TR1
SDS 1
SLATS 1
FLAPS 1
FQMS 1
2
AICS 1
FWS 1
LGCIS 1
BSCS 1
AESU 1
CIDS 1
3
ATC
EIM 1
4
5
CKPT EQPT POWER SUPPLY
CCD 1
KCD 1
WHC 1
FCU
PRINTER
6
A B C D E F

- FQMS 2 [W2] (right panel):

Continued on the following page

FUEL FQMS 1(2) RESET (Cont'd)

FQMS 2 Reset Button Location


RESET
232VM
R S T U V W
PACK 2
VCS 2
FMC-B
1
TR 2
EMER TR2
SDS 2
SLATS 2
FLAPS 2
FQMS 2
2
AICS 2
FWS 2
LGCIS 2
BSCS 2
AESU 2
CIDS 2
3
OIS AVNCS
OIS CAB & MAINT
CINS
DSCS
EIM 2
4
5
CKPT EQPT POWER SUPPLY
CCD 2
KBD 2
WHC 2
HUMID
EFB 3
6

Continued on the following page

FUEL FQMS 1(2) RESET (Cont'd)

Ident.: PRO-ABN-ABN-RESET-FUEL-00021261.0001001 / 06 NOV 14

PROCEDURE

- **On ground only:**

  FQMS 1(2)..PULL

  - **After 3 s:**

    FQMS 1(2)..PUSH

  - **If reset not successful:**

    FQMS 1(2): DO NOT RESET

FWS FWS 1(2) RESET

Applicable to: ALL

Ident.: PRO-ABN-ABN-RESET-FWS-00022137.0001001 / 12 DEC 16

WARNING	1. The flight crew can attempt a system reset when: - The ECAM/OEB procedure requests to reset a system, or - The reset is permitted in the system reset table. 2. Only perform one reset at a time, unless indicated differently in the applicable reset procedure of the table.

For system reset table consultation, *Refer to PRO-ABN-ABN-RESET FWS*.

If the alert is due to an IMA module failure, do not reset the FWS.

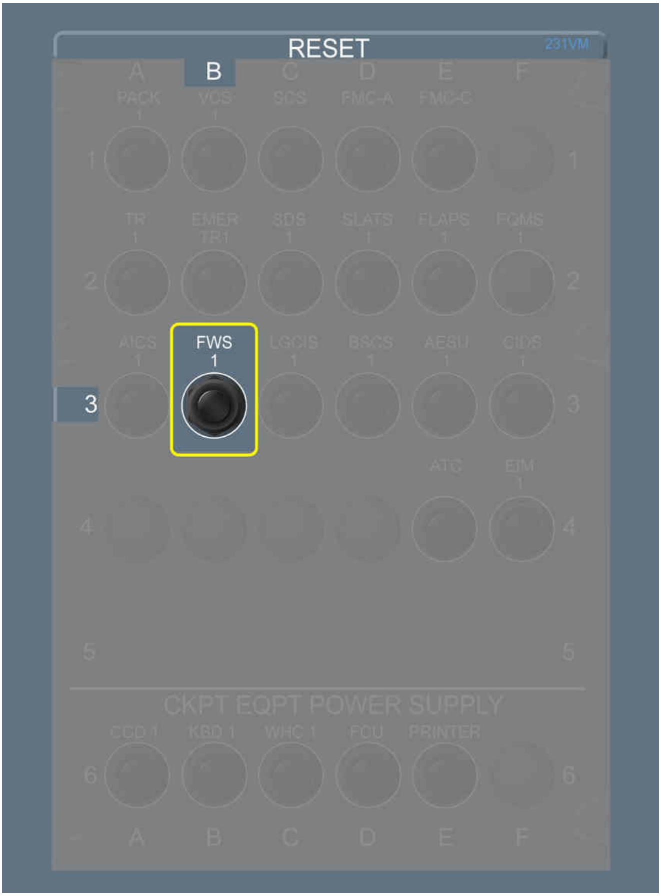
LOCATION

The FWS reset buttons are on the overhead panel, on the RESET panel, at location:
- FWS 1 [B3] (left panel):

Continued on the following page

FWS FWS 1(2) RESET (Cont'd)

FWS 1 Reset Button Location

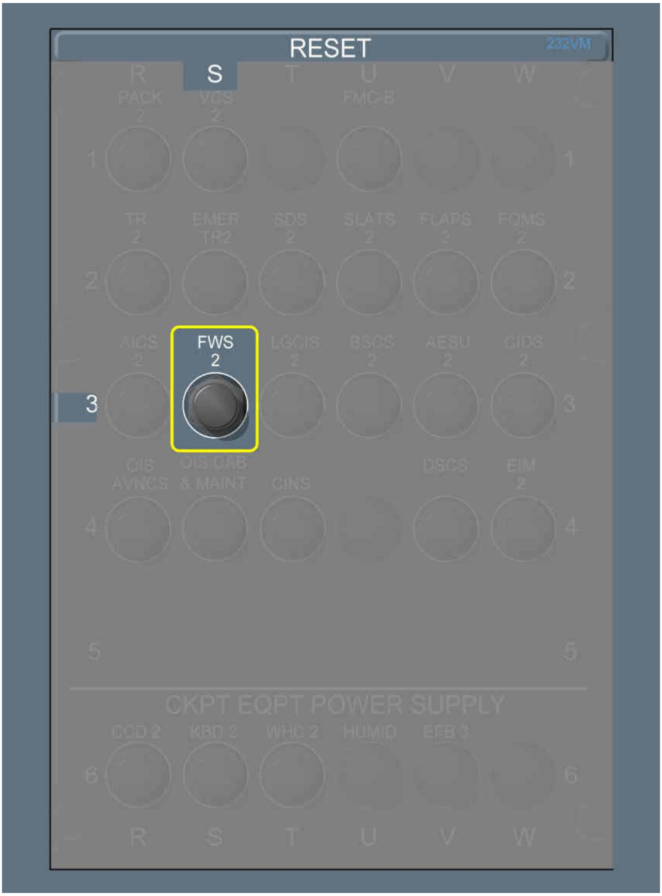

RESET
231VM
A
B
C
D
E
F
PACK 1
VCS 1
SCS
FMC-A
FMC-C
1
TR 1
EMER TR1
SDS 1
SLATS 1
FLAPS 1
FQMS 1
2
AICS 1
FWS 1
LGCIS 1
BSCS 1
AESU 1
CIDS 1
3
ATC
EIM 1
4
5
CKPT EQPT POWER SUPPLY
CCD 1
KBD 1
WHC 1
FCU
PRINTER
6
A
B
C
D
E
F

- FWS 2 [S3] (right panel):

Continued on the following page

FWS FWS 1(2) RESET (Cont'd)

FWS 2 Reset Button Location


RESET
232VM
R S T U V W
PACK 2
VCS 2
FMC-B
1
TR 2
EMER TR2
SDS 2
SLATS 2
FLAPS 2
FQMS 2
2
AICS 2
FWS 2
LGCIS 2
BSCS 2
AESU 2
CIDS 2
3
OIS AVNCS
OIS CAB & MAINT
CINS
DSCS
EIM 2
4
5
CKPT EQPT POWER SUPPLY
CCD 2
KBD 2
WHC 2
HUMID
EFB 3
6
R S T U V W

Continued on the following page

FWS FWS 1(2) RESET (Cont'd)

Ident.: PRO-ABN-ABN-RESET-FWS-00022138.0001001 / 06 NOV 14

PROCEDURE

- **If one FWS affected:**
  FWS 1(2)....................PULL
  - **After 3 s:**
    FWS 1(2)....................PUSH
- **If both FWS affected:**
  FWS 1 AND FWS 2....................PULL
  - **After 3 s:**
    FWS 1 AND FWS 2....................PUSH

NAV IR FAST ALIGNMENT

Applicable to: ALL

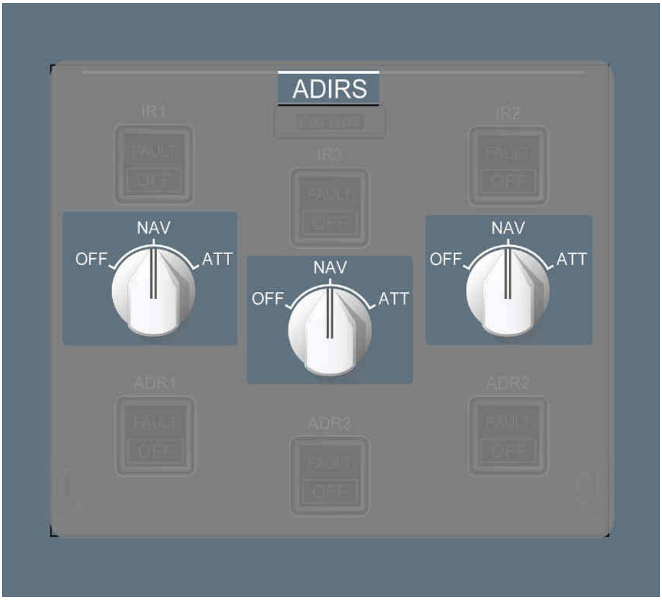
Ident.: PRO-ABN-ABN-RESET-NAV-00023759.0001001 / 27 NOV 17

WARNING	1. The flight crew can attempt a system reset when: - The ECAM/OEB procedure requests to reset a system, or - The reset is permitted in the system reset table. 2. Only perform one reset at a time, unless indicated differently in the applicable reset procedure of the table.

For system reset table consultation, *Refer to PRO-ABN-ABN-RESET NAV*.
On ground only, the IR fast alignment can reset the erroneous NAV RNP AR CAPABILITY LOST message on the ND and the erroneous NAV PRIMARY LOST message on the ND and MFD.

LOCATION

The access to the control of the IR 1(2)(3) is available on the ADIRS panel, on the overhead panel IR MODE selector



Continued on the following page

NAV IR FAST ALIGNMEMENT (Cont'd)

LMITATIONS

For alignment, the aircraft must be stopped. Any aircraft movement automatically restarts the alignment.

Note: The alignment during engines start or while engines are running is possible.

Ident.: PRO-ABN-ABN-RESET-NAV-00022252.0001001 / 06 NOV 14

PROCEDURE

- **On ground only:**
  IR 1(2)(3) MODE SEL.......................................OFF
  - **Within 4 s:**
    IR 1(2)(3) MODE SEL.......................................NAV
    L2 *A fast IR alignment is started (that lasts approximately 30 s).*
  - L1 **If reset not successful:**
    Consider the NAV RNP AR CAPABILITY LOST message on ND or the NAV PRIMARY LOST message on ND and MFD as valid.

OIS AVNCS RESET

Applicable to: ALL

Ident.: PRO-ABN-ABN-RESET-OIS_1-00021978.0001001 / 12 DEC 16

WARNING	1. The flight crew can attempt a system reset when: - The ECAM/OEB procedure requests to reset a system, or - The reset is permitted in the system reset table. 2. Only perform one reset at a time, unless indicated differently in the applicable reset procedure of the table.

For system reset table consultation, *Refer to PRO-ABN-ABN-RESET [RESET] System Reset Table*.
The reset duration is 7 min.

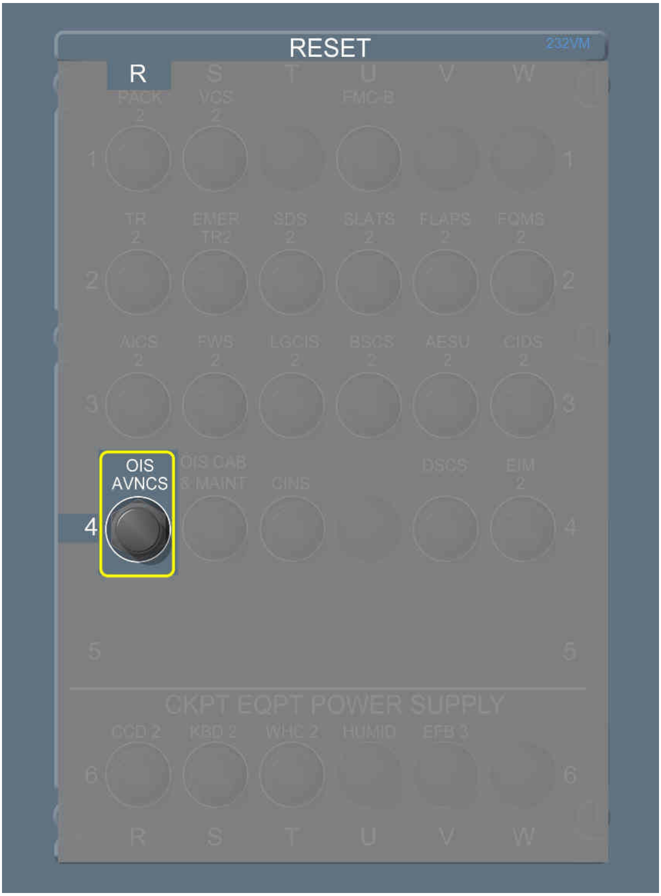
LOCATION

The OIS AVNCS reset button is on the overhead panel, on the RESET panel, at location [R4] (right panel):

Continued on the following page

OIS AVNCS RESET (Cont'd)

OIS AVNCS Reset Button Location


RESET
232VM
R
S
T
U
V
W
PACK 2
VCS 2
FMC-B
1
TR 2
EMER TR2
SDS 2
SLATS 2
FLAPS 2
FQMS 2
2
AICS 2
FWS 2
LGCIS 2
BSCS 2
AESU 2
CIDS 2
3
OIS AVNCS
OIS CAB 3 MAINT
CINS
DSCS
EIM 2
4
5
CKPT EQPT POWER SUPPLY
CCD 2
KBD 2
WHC 2
HUMID
EFB 3
6

Continued on the following page

OIS AVNCS RESET (Cont'd)

Ident.: PRO-ABN-ABN-RESET-OIS_1-00021979.0001001 / 06 NOV 14

PROCEDURE

OIS AVNCS.. PULL

- **After 3 s:**
  OIS AVNCS..PUSH

OIS CAB&MAINT RESET........................ *REFER TO PROC APPLY*

OIS CAB&MAINT RESET

Applicable to: ALL

Ident.: PRO-ABN-ABN-RESET-OIS_2-00021980.0001001 / 03 JAN 20

WARNING	1. The flight crew can attempt a system reset when: - The ECAM/OEB procedure requests to reset a system, or - The reset is permitted in the system reset table. 2. Only perform one reset at a time, unless indicated differently in the applicable reset procedure of the table.

For system reset table consultation, *Refer to PRO-ABN-ABN-RESET [RESET] System Reset Table*.

The OIS CAB&MAINT reset results in the loss of the following applications:
- The EFB display on OIS for 3 min
- The cabin connectivity for passengers (i.e. internet ◁✳ and/or mobile telephony ◁✳ services) for 9 min
- The telemedicine ◁✳ for 9 min
- The CAB&MAINT and COMPANY COM applications for 9 min.

The complete reset duration is 12 min.

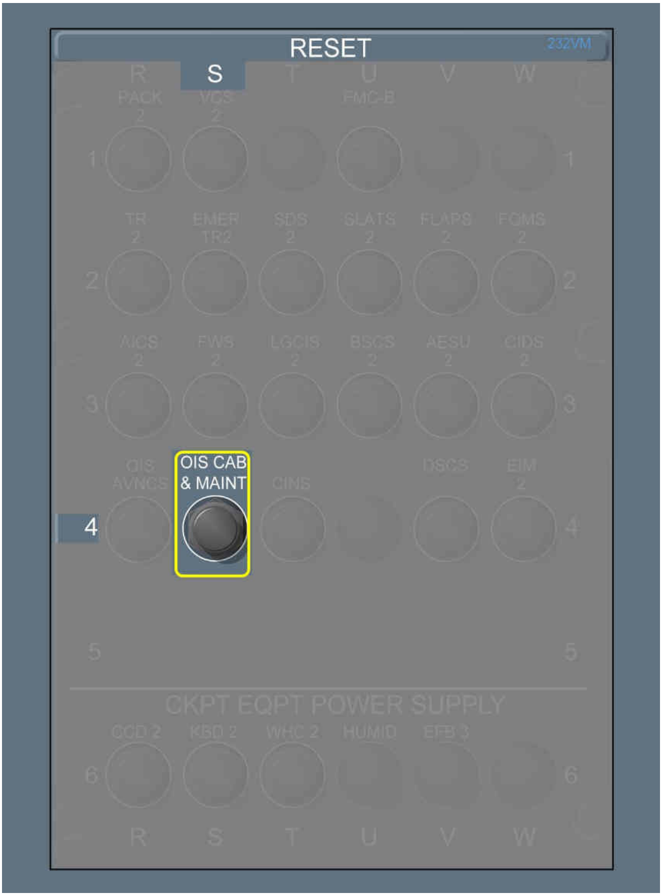
LOCATION

The OIS CAB&MAINT reset button is on the overhead panel, on the RESET panel, at location [S4] (right panel):

Continued on the following page

OIS CAB&MAINT RESET (Cont'd)

OIS CAB&MAINT Reset Button Location


RESET
232VM
R
S
T
U
V
W
PACK 2
VCS 2
FMC-B
1
TR 2
EMER TR2
SDS 2
SLATS 2
FLAPS 2
FQMS 2
2
AICS 2
FWS 2
LGCIS 2
BSCS 2
AESU 2
CIDS 2
3
OIS AVNCS
OIS CAB & MAINT
CIMS
DSCS
EIM 2
4
5
CKPT EQPT POWER SUPPLY
CCD 2
KBD 2
WHC 2
HUMID
EFB 3
6

Continued on the following page

OIS CAB&MAINT RESET (Cont'd)

Ident.: PRO-ABN-ABN-RESET-OIS_2-00021981.0001001 / 03 JAN 20

PROCEDURE

- **If EFB applications are required during 3 min reset time:**
  EFB LAPTOP UNSTOW....................CONSIDER

OIS CAB&MAINT [S4]....................PULL
EXPECT EFB DISPLAY LOSS ON OIS (RESET 3 MIN)
EXPECT CABIN PAX CONNECTIVITY ◁ LOSS (RESET 9 MIN)
EXPECT TELEMEDICINE ◁ LOSS (RESET 9 MIN)
EXPECT COMPANY COM LOSS (RESET 9 MIN)

- **After 10 s:**
  OIS CAB&MAINT [S4]....................PUSH
  CABIN CREW....................ADVISE

L2 *Inform the cabin crew that the cabin systems should be recovered in less than 9 min.*

L1
- **On ground only (engines not running):**
  EFB (ALL SIMULTANEOUSLY)....................RESTART

L2 *Restart simultaneously all the EFBs, including the Spare EFB (EFB 3) ◁ .*

L1

The simultaneous EFB restart will enable to recover wireless data communication with the ground.

The EFB restart will require to re-initialize the flight data in the EFB including the selection of MEL/CDL items.

OIS LAPTOP DOCKING STATION RESET

Applicable to: ALL

Ident.: PRO-ABN-ABN-RESET-OIS_3-00021982.0001001 / 12 DEC 16

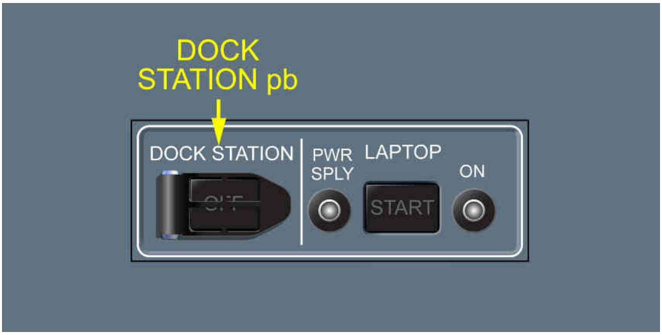
WARNING	1. The flight crew can attempt a system reset when: - The ECAM/OEB procedure requests to reset a system, or - The reset is permitted in the system reset table. 2. Only perform one reset at a time, unless indicated differently in the applicable reset procedure of the table.

For system reset table consultation, *Refer to PRO-ABN-ABN-RESET AUTO FLT*.
After the OIS CAB&MAINT reset, the EFB display is available after 3 min. The complete reset duration of the OIS CAB&MAINT server is 9 min.

LOCATION

The DOCK STATION pb is on the control panel of the laptop docking station:

LDS Power Supply Button Location



Continued on the following page

OIS LAPTOP DOCKING STATION RESET (Cont'd)

Ident.: PRO-ABN-ABN-RESET-OIS_3-00021983.0001001 / 06 NOV 14

PROCEDURE

DOCK STATION PB....................OFF

- **After 3 s:**
  DOCK STATION PB....................ON
- **If reset not successful:**
  OIS CAB&MAINT RESET.................... *REFER TO PROC APPLY*

SMOKE SDS 1(2) RESET

Applicable to: ALL

Ident.: PRO-ABN-ABN-RESET-SMK-00022120.0001001 / 12 DEC 16

WARNING	1. The flight crew can attempt a system reset when: - The ECAM/OEB procedure requests to reset a system, or - The reset is permitted in the system reset table. 2. Only perform one reset at a time, unless indicated differently in the applicable reset procedure of the table.

For system reset table consultation, *Refer to PRO-ABN-ABN-RESET AUTO FLT*.

LOCATION

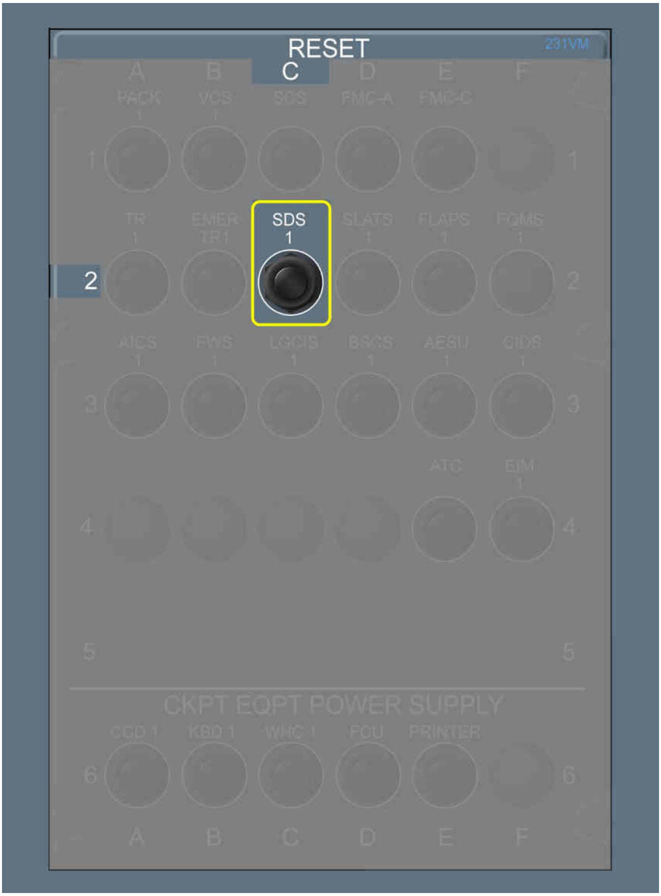
The Smoke Detection Systems (SDS) reset buttons are on the overhead panel, on the RESET panel, at location:

- SDS 1 [C2] (left panel)

Continued on the following page

SMOKE SDS 1(2) RESET (Cont'd)

SDS 1 Reset Button Location

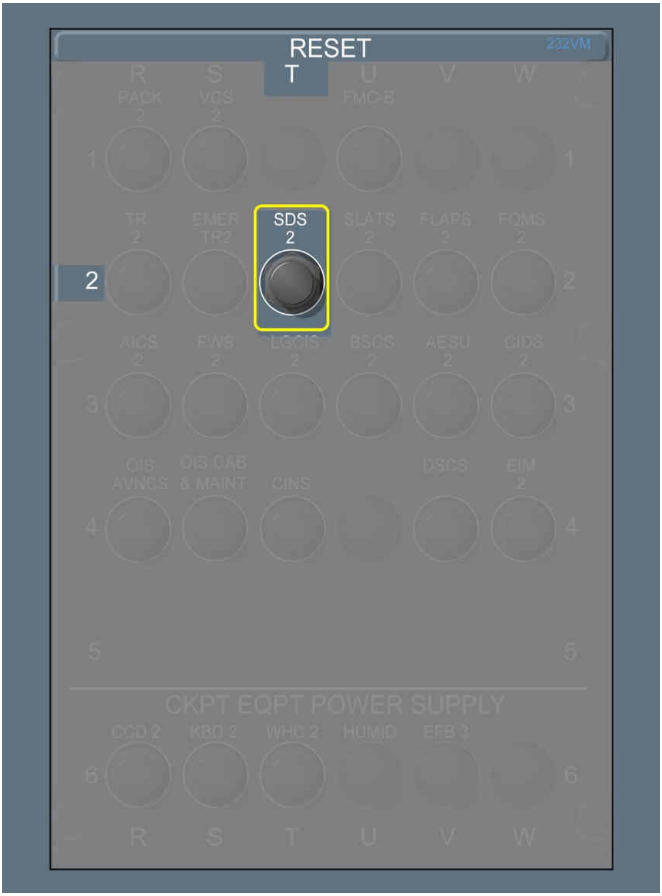

RESET
231VM
A
B
C
D
E
F
PACK 1
VCS 1
SCS
FMC-A
FMC-C
1
TR 1
EMER TR1
SDS 1
SLATS 1
FLAPS 1
FQMS 1
2
AICS 1
FWS 1
LGCIS 1
BSCS 1
AESU 1
CIDS 1
3
ATC
EIM 1
4
5
CKPT EQPT POWER SUPPLY
CCD 1
KBD 1
WHC 1
FCU
PRINTER
6

- SDS 2 [T2] (right panel).

Continued on the following page

SMOKE SDS 1(2) RESET (Cont'd)

SDS 2 Reset Button Location


RESET
232VM
R
S
T
U
V
W
PACK 2
VCS 2
FMC-B
1
TR 2
EMER TR2
SDS 2
SLATS 2
FLAPS 2
FQMS 2
2
AICS 2
FWS 2
LGCIS 2
BSCS 2
AESU 2
CIDS 2
3
OIS AVNCS
OIS CAB & MAINT
CINS
DSCS
EIM 2
4
5
CKPT EQPT POWER SUPPLY
CCD 2
KBD 2
WHC 2
HUMID
EFB 3
6
R
S
T
U
V
W

Continued on the following page

SMOKE SDS 1(2) RESET (Cont'd)

Ident.: PRO-ABN-ABN-RESET-SMK-00022139.0001001 / 06 NOV 14

PROCEDURE

SDS 1 AND SDS 2.. PULL

- **After 3 sec:**
  SDS 1 AND SDS 2.. PUSH
- **If at least one SMOKE dispatch message still displayed:**
  CIDS RESET.. CONSIDER

SURV AESU 1(2) RESET

Applicable to: ALL

Ident.: PRO-ABN-ABN-RESET-SURV-00022181.0001001 / 12 DEC 16

WARNING	1. The flight crew can attempt a system reset when: - The ECAM/OEB procedure requests to reset a system, or - The reset is permitted in the system reset table. 2. Only perform one reset at a time, unless indicated differently in the applicable reset procedure of the table.

For system reset table consultation, *Refer to PRO-ABN-ABN-RESET SURV*.
During the AESU reset, several ECAM alerts may be temporarily displayed. In the case of SURV XPDR 1+2 FAULT, the flight crew must inform the ATC of the temporary loss of the XPDR. All other temporary alerts can be disregarded.

Note: - *The AESU reset is not recommended during the approach.*
- *Reset only one AESU at a time.*

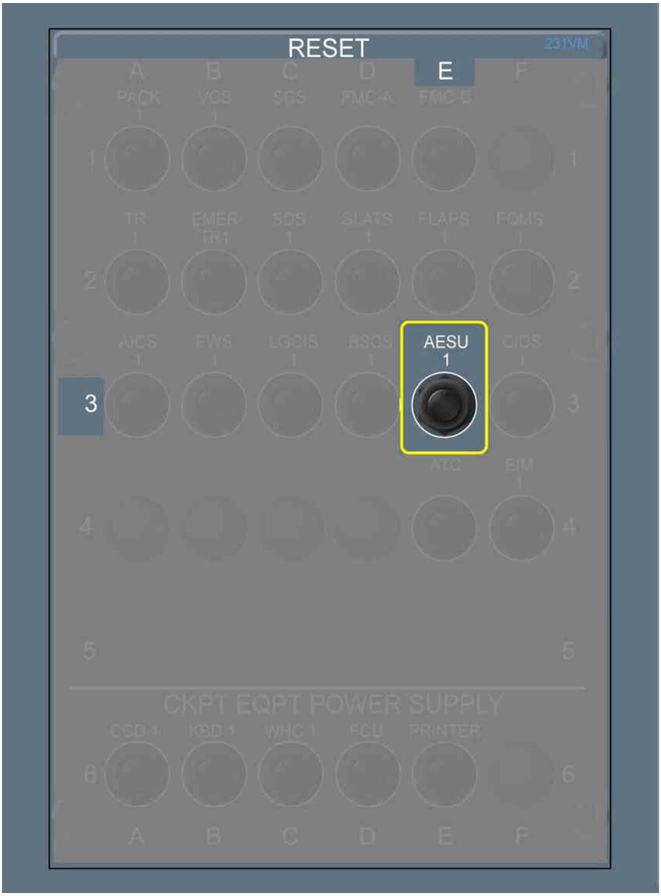
LOCATION

The AESU reset buttons are on the overhead panel, on the RESET panel, at location:
- AESU 1 [E3] (left panel):

Continued on the following page

SURV AESU 1(2) RESET (Cont'd)

AESU 1 Reset Button Location

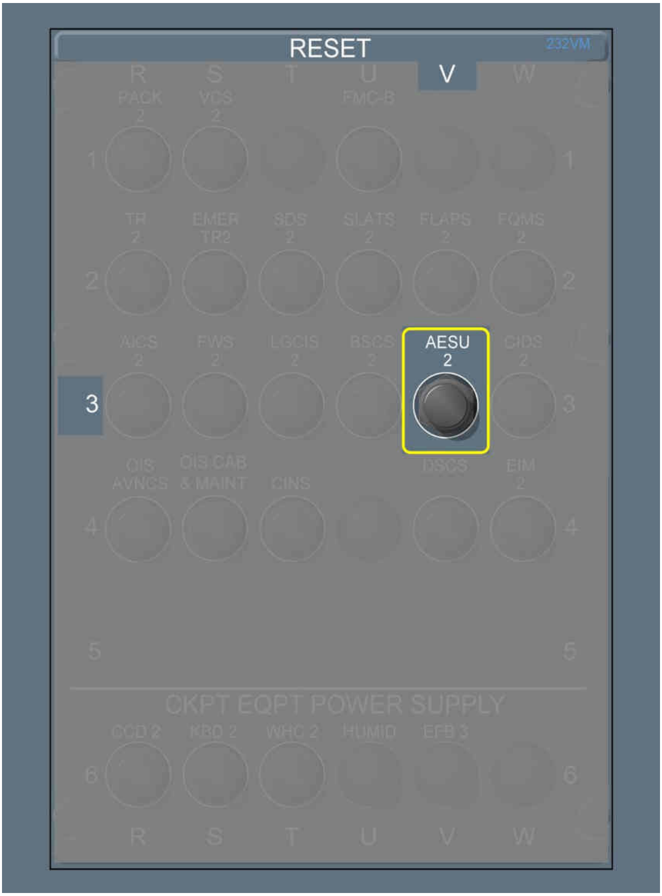

RESET
231VM
A
B
C
D
E
F
PACK 1
VCS 1
SCS
FMC-A
FMC-C
1
TR 1
EMER TR1
SDS 1
SLATS 1
FLAPS 1
FQMS 1
2
AICS 1
FWS 1
LGCIS 1
BSCS 1
AESU 1
CIDS 1
3
ATC
EIM 1
4
5
CKPT EQPT POWER SUPPLY
CCD 1
KBD 1
WHC 1
FCU
PRINTER
6

- AESU 2 [V3] (right panel):

Continued on the following page

SURV AESU 1(2) RESET (Cont'd)

AESU 2 Reset Button Location


RESET
232VM
R S T U V W
PACK 2
VDS 2
FMC-B
1
TR 2
EMER TR2
SDS 2
SLATS 2
FLAPS 2
FQMS 2
2
AICS 2
FWS 2
LGCIS 2
BSCS 2
AESU 2
CIDS 2
3
OIS AVNCS
OIS CAB & MAINT
CINS
DSCS
EIM 2
4
5
CKPT EQPT POWER SUPPLY
CCD 2
KBD 2
WHC 2
HUMID
EFB 3
6
R S T U V W

Continued on the following page

SURV AESU 1(2) RESET (Cont'd)

Ident.: PRO-ABN-ABN-RESET-SURV-00022182.0001001 / 06 NOV 14

PROCEDURE

AESU 1(2)..PULL

- **After 5 s:**

  AESU 1(2)..PUSH

VENT VCS 1+2 RESET

Applicable to: ALL

Ident.: PRO-ABN-ABN-RESET-VENT-00022125.0001001 / 08 AUG 18

WARNING	1. The flight crew can attempt a system reset when: - The ECAM/OEB procedure requests to reset a system, or - The reset is permitted in the system reset table. 2. Only perform one reset at a time, unless indicated differently in the applicable reset procedure of the table.

For system reset table consultation, *Refer to PRO-ABN-ABN-RESET COND*.

Note: *It is recommended to reset both Ventilation Control Systems (VCSs) at the same time, to ensure a successful VCS reset.*

LOCATION

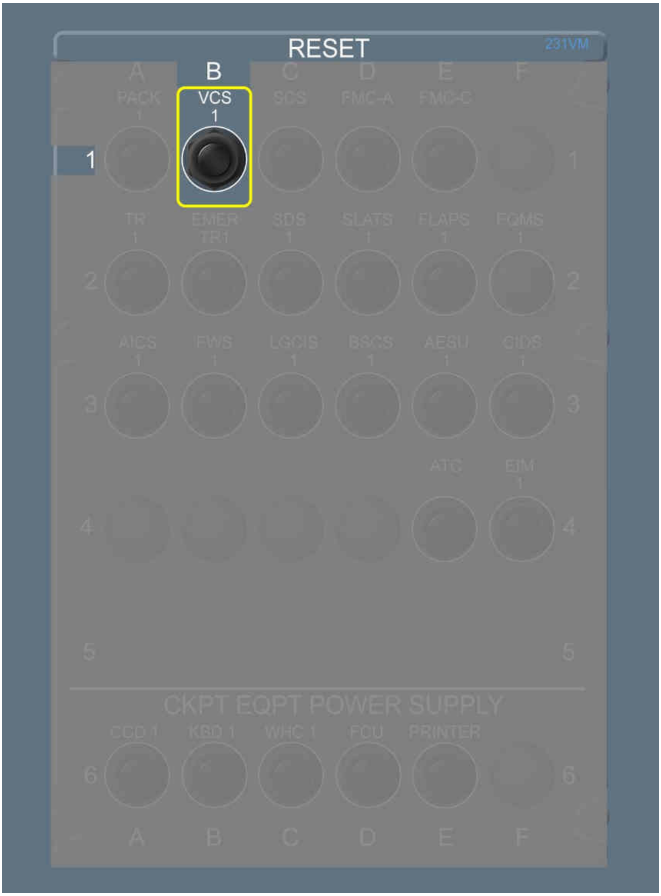
The VCS reset buttons are on the overhead panel, on the RESET panel, at location:

- VCS 1 [B1] (left panel):

Continued on the following page

VENT VCS 1+2 RESET (Cont'd)

VCS 1 Reset Button Location

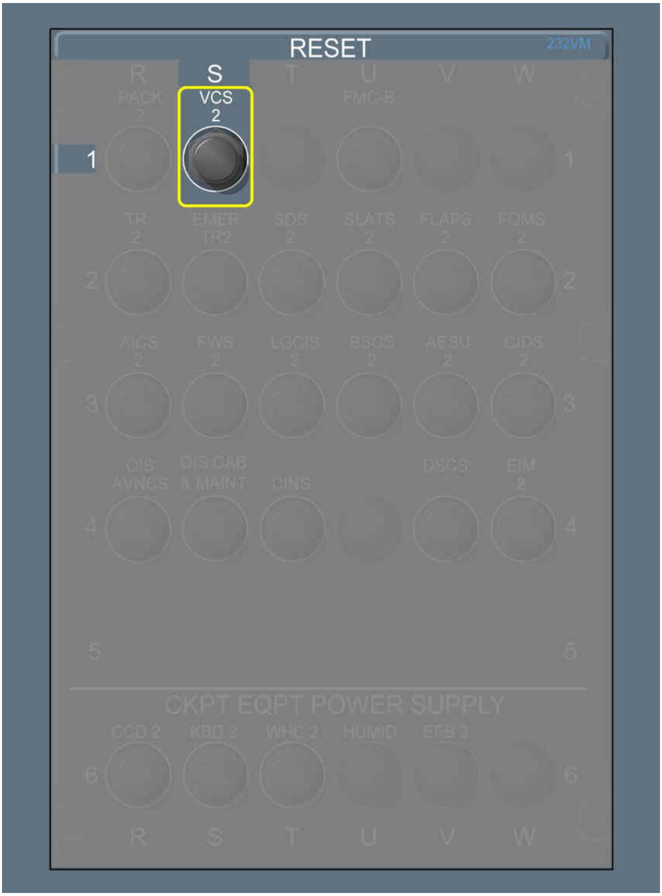

RESET
231VM
A
B
C
D
E
F
PACK 1
VCS 1
SCS
FMC-A
FMC-C
1
TR 1
EMER TR1
SDS 1
SLATS 1
FLAPS 1
FQMS 1
2
AICS 1
FWS 1
LGCIS 1
BSCS 1
AESU 1
CIDS 1
3
ATC
EIM 1
4
5
CKPT EQPT POWER SUPPLY
CCD 1
KBD 1
WHC 1
FCU
PRINTER
6
A B C D E F

- VCS 2 [S1] (right panel):

Continued on the following page

VENT VCS 1+2 RESET (Cont'd)

VCS 2 Reset Button Location


RESET
232VM
R
S
T
U
V
W
PACK 2
VCS 2
FMC-B
1
TR 2
EMER TR2
SDS 2
SLATS 2
FLAPS 2
FQMS 2
2
AICS 2
FWS 2
LGCIS 2
BSCS 2
AESU 2
CIDS 2
3
OIS AVNCS
OIS CAB & MAINT
CINS
DSCS
EIM 2
4
5
CKPT EQPT POWER SUPPLY
CCD 2
KBD 2
WHC 2
HUMID
EFB 3
6

LIMITATION/CONSEQUENCES

During the reset:

- The COND VENT CTL DEGRADED ECAM alert is triggered
- If VCS 1 and 2 are pulled for more than 8 s, the IFE and PAX BBAND ◁ automatically shut down.

Continued on the following page

VENT VCS 1+2 RESET (Cont'd)

Ident.: PRO-ABN-ABN-RESET-VENT-00022126.0001001 / 02 MAR 18

PROCEDURE

- **On ground:**
  VCS 1 [B1] AND VCS 2 [S1]............PULL
  - **After 5 s:**
    VCS 1 [B1] AND VCS 2 [S1]............PUSH
- **In flight, if the following conditions are respected:**
  - A SMOKE FWD(AFT/BULK) CARGO SMOKE ECAM alert occurred on ground with the cargo doors opened and was confirmed to be caused by a high level of humidity or insecticide spraying, and
  - Another SMOKE FWD(AFT/BULK) CARGO SMOKE ECAM alert was not triggered.

  VCS 1 [B1] AND VCS 2 [S1]............PULL
  - **After 5 s:**
    VCS 1 [B1] AND VCS 2 [S1]............PUSH

A-ICE ADR 1(2)(3) PROBES NOT DEICED

Applicable to: ALL

Ident.: PRO-ABN-A-ICE-3031W161-00025009.0002001 / 04 FEB 19

ANNUNCIATIONS

Triggering Conditions:

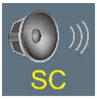
L2 At least one engine is running and at least one probe is not automatically deiced.

L3 The cause is a communication failure between the ADIRU and the affected probe(s).

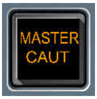
Indications:

L2

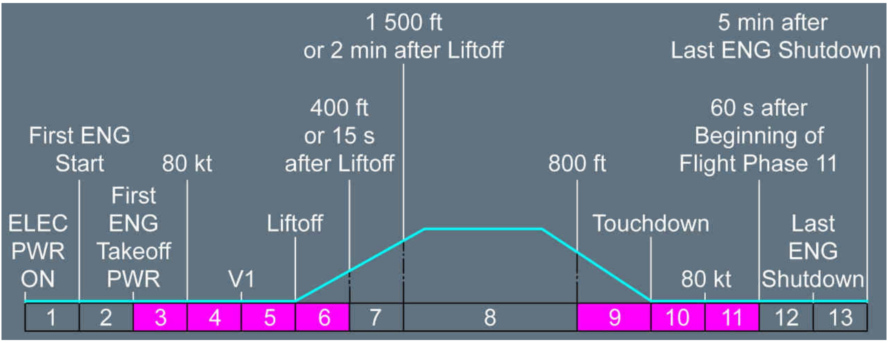
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
2
3
4
5
6
7
8
9
10
11
12
13

Ident.: PRO-ABN-A-ICE-3031W161-00025012.0002001 / 04 FEB 19

PROBE & WINDOW HEAT P/B.. ON

L2 *Due to the fact that the automatic probe heating is failed, the flight crew must manually turn on the probe heating.*

Continued on the following page

A-ICE ADR 1(2)(3) PROBES NOT DEICED (Cont'd)

Ident.: PRO-ABN-A-ICE-3031W161-00025013.0002001 / 04 FEB 19

STATUS

INFO

- **If two ADRs are affected**
  LAND3 SINGLE ONLY

A-ICE ENG 1(2) VLV CLOSED

Applicable to: ALL

Ident.: PRO-ABN-A-ICE-3021W300-00005136.0001001 / 04 DEC 14

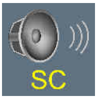
ANNUNCIATIONS

Triggering Conditions:

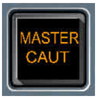
L2 The shutoff valve or the pressure regulating valve of the ENG 1(2) anti-ice system is abnormally closed.

Indications:

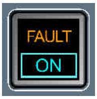
Audio



Master Light

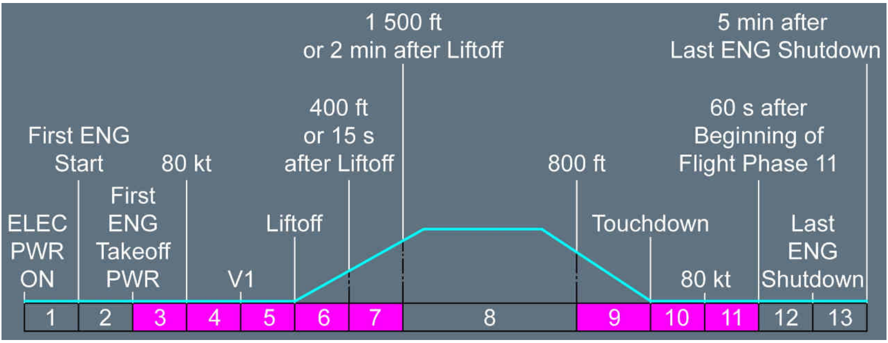

MASTER
CAUT

Local Light



ENG 1(2) ANTI ICE pb

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
2
3
4
5
6
7
8
9
10
11
12
13

Ident.: PRO-ABN-A-ICE-3021W300-00007532.0001001 / 30 JUN 14

AVOID ICING CONDs

Continued on the following page

A-ICE ENG 1(2) VLV CLOSED (Cont'd)

Ident.: PRO-ABN-A-ICE-3021W300-00007534.0001001 / 30 JUN 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

AVOID ICING CONDs

LIMITATIONS ON PFD

ALL PHASES

AVOID ICING CONDs

STATUS

INOP SYS

ALL PHASES

ENG 1(2) A-ICE

A-ICE ENG 1(2) VLV OPEN

Applicable to: ALL

Ident.: PRO-ABN-A-ICE-3021W400-00005137.0001001 / 30 JUN 14

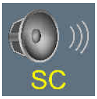
ANNUNCIATIONS

Triggering Conditions:

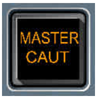
L2 The shutoff valve of the ENG 1(2) anti-ice system is abnormally open.

Indications:

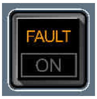
Audio



Master Light

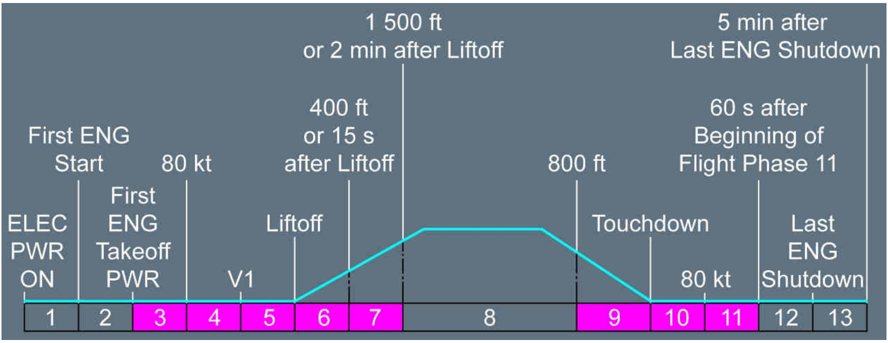

MASTER
CAUT

Local Light



ENG 1(2) ANTI ICE pb

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
2
3
4
5
6
7
8
9
10
11
12
13

Ident.: PRO-ABN-A-ICE-3021W400-00022302.0003001 / 08 AUG 18

L2 On ground, if one PRSOV remains abnormally open after engine start, the flight crew must increase the N1 on the affected engine. This N1 increase creates enough power to close the affected PRSOV.
If the issue is solved, the alert disappears and the flight crew should set the thrust levers to IDLE and resume normal operations.

Continued on the following page

A-ICE ENG 1(2) VLV OPEN (Cont'd)

Ident.: PRO-ABN-A-ICE-3021W400-00007536.0003001 / 08 AUG 18

- **On ground:**
  GROUND CREW....................NOTIFY
  PARK BRK....................ON
  ENG 1(2)....................INCREASE N1 UP TO 35% MAX

L2 *Increasing the N1 should solve the issue. If the engine 1(2) A-ICE valve is correctly closed after the N1 increase, the issue is solved and the alert disappears. If the alert disappears, the flight crew should set the thrust levers to IDLE and resume normal operations.*

L1
  - **AFTER 30 s**
    THR LEVER 1(2)....................IDLE

A-ICE ICE DET FAULT

Applicable to: ALL

Ident.: PRO-ABN-A-ICE-3081W400-00005138.0001001 / 30 JUN 14

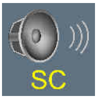
ANNUNCIATIONS

Triggering Conditions:

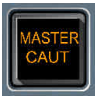
L2 Both ice detectors are failed.

Indications:

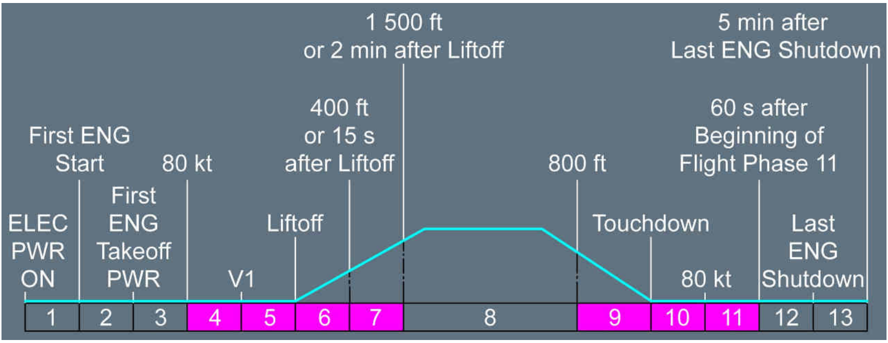
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

Ident.: PRO-ABN-A-ICE-3081W400-00007538.0001001 / 30 JUN 14

A-ICE..AS RQRD

L2 *When icing conditions exist or are anticipated, engine anti-ice must be ON during all ground and flight operations, except during climb and cruise, when the Static Air Temperature (SAT) is below -40 °C.*

The flight crew must turn on the wing anti-ice, if there is an indication that the airframe is icing up (the indication may be ice accumulation on the visual ice detectors, or on the windshield wipers).

Continued on the following page

A-ICE ICE DET FAULT (Cont'd)

Ident.: PRO-ABN-A-ICE-3081W400-00007539.0001001 / 30 JUN 14

STATUS

INOP SYS

ALL PHASES

ICE DET

A-ICE ICE DETECTED

Applicable to: ALL

Ident.: PRO-ABN-A-ICE-3081W100-00005139.0001001 / 30 JUN 14

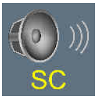
ANNUNCIATIONS

Triggering Conditions:

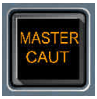
L2 Ice is detected, and the engine anti-ice system is off.

Indications:

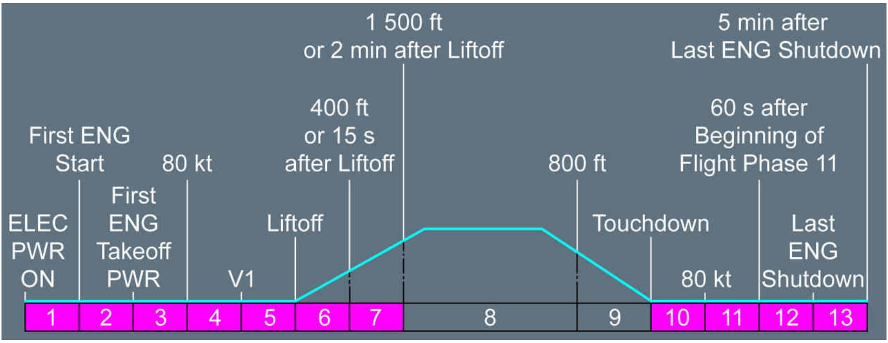
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

Ident.: PRO-ABN-A-ICE-3081W100-00007540.0002001 / 09 JUL 15

- **If the associated engine is running:**

  ENG 1 A-ICE...ON

  ENG 2 A-ICE...ON

A-ICE L(R) LATERAL(AFT) WINDOW HEATG FAULT

Applicable to: ALL

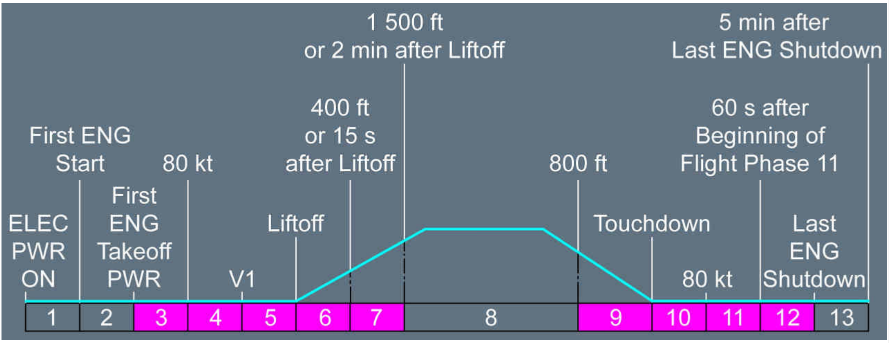
Ident.: PRO-ABN-A-ICE-3042W330-00005140.0001001 / 30 JUN 14

ANNUNCIATIONS

Triggering Conditions:

L2 The heating system of the left (right) LATERAL(AFT) cockpit window is failed.
This failure may be due to window overheat, a short-circuit, or a failure of the temperature sensors of the cockpit windows.

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
2
3
4
5
6
7
8
9
10
11
12
13

Ident.: PRO-ABN-A-ICE-3042W330-00007542.0001001 / 30 JUN 14

Crew awareness.

Ident.: PRO-ABN-A-ICE-3042W330-00007543.0001001 / 30 JUN 14

STATUS

INOP SYS

ALL PHASES

L(R) LAT(AFT) WINDOW HEATG

A-ICE L(R) WINDOWS HEATG FAULT

Applicable to: ALL

Ident.: PRO-ABN-A-ICE-3042W200-00005141.0001001 / 30 JUN 14

ANNUNCIATIONS

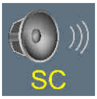
Triggering Conditions:

L2 The heating system of the left (right) windows is failed.

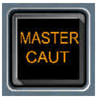
This might be due to:
- The failure of the associated electrical supply, or
- The combined failures of the associated windshield heating, lateral window heating and aft window heating.

Indications:

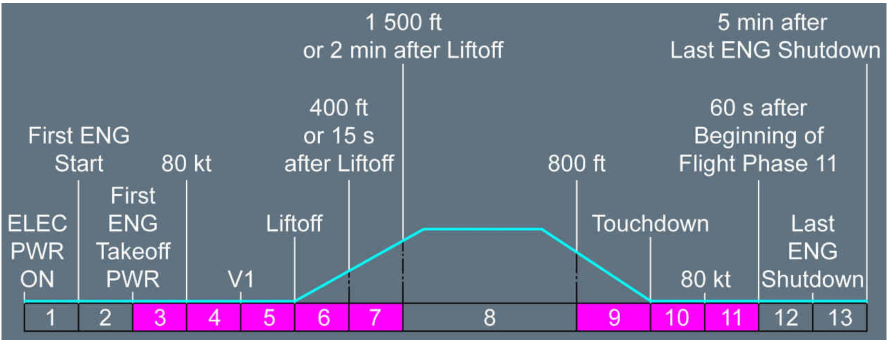
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
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8
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10
11
12
13

Ident.: PRO-ABN-A-ICE-3042W200-00007545.0001001 / 30 JUN 14

Crew awareness.

Continued on the following page

A-ICE L(R) WINDOWS HEATG FAULT (Cont'd)

Ident.: PRO-ABN-A-ICE-3042W200-00007546.0001001 / 30 JUN 14

STATUS

INOP SYS

ALL PHASES

ALL L(R) WINDOWS HEATG

A-ICE L+R WINDOWS HEATG FAULT

Applicable to: ALL

Ident.: PRO-ABN-A-ICE-3042W220-00013545.0001001 / 30 JUN 14

ANNUNCIATIONS

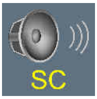
Triggering Conditions:

L2 The heating system of left and right windows is failed.

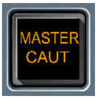
This might be due to:
- The failure of both associated electrical supplies, or
- The combined failures of both windshields heating, both lateral windows heating and both aft windows heating.

Indications:

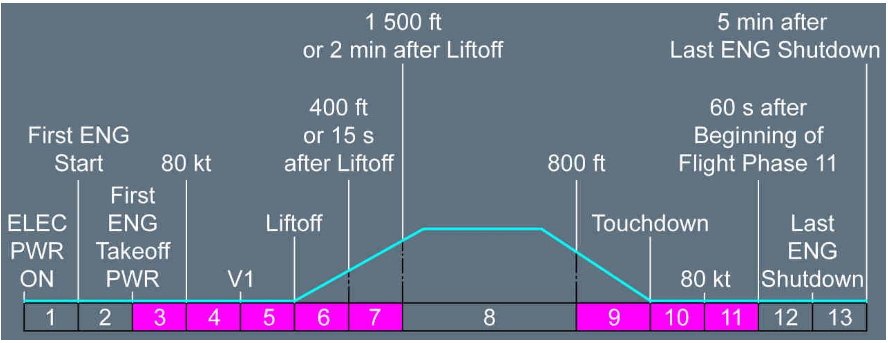
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
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12
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Ident.: PRO-ABN-A-ICE-3042W220-00013546.0001001 / 30 JUN 14

AVOID ICING CONDs

Continued on the following page

A-ICE L+R WINDOWS HEATG FAULT (Cont'd)

Ident.: PRO-ABN-A-ICE-3042W220-00013547.0001001 / 30 JUN 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

AVOID ICING CONDs

LIMITATIONS ON PFD

ALL PHASES

AVOID ICING CONDs

STATUS

INOP SYS

ALL PHASES

L+R WINDOWS HEATG

A-ICE L(R) WINDSHIELD HEATG FAULT

Applicable to: ALL

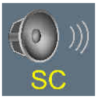
Ident.: PRO-ABN-A-ICE-3042W300-00005142.0001001 / 30 JUN 14

ANNUNCIATIONS

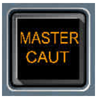
Triggering Conditions:

L2 The heating system of the left (right) windshield is failed.
This failure may be due to window overheat, a short-circuit, or a failure of the windshield temperature sensors.
Indications:

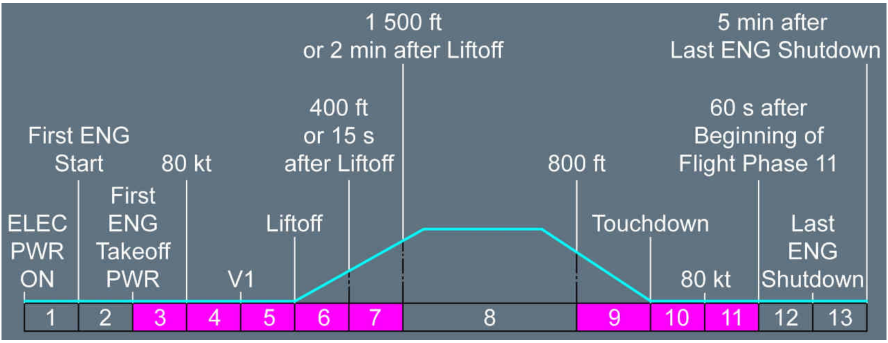
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
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13

Ident.: PRO-ABN-A-ICE-3042W300-00007548.0002001 / 09 JUL 15

Note: *If the failure is only due to an IMA module failure, the ECAM displays the DUE TO IMA MODULE FAULT subtitle.*

Crew awareness.

Continued on the following page

A-ICE L(R) WINDSHIELD HEATG FAULT (Cont'd)

Ident.: PRO-ABN-A-ICE-3042W300-00007549.0001001 / 30 JUN 14

STATUS

INOP SYS

ALL PHASES

L(R) WINDSHIELD HEATG

A-ICE L+R WINDSHIELDS HEATG FAULT

Applicable to: ALL

Ident.: PRO-ABN-A-ICE-3042W320-00005147.0001001 / 30 JUN 14

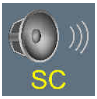
ANNUNCIATIONS

Triggering Conditions:

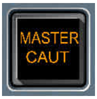
L2 The heating system of both windshields is failed.
This failure may be due to window overheat, a short-circuit, or a failure of the windshield temperature sensors.

Indications:

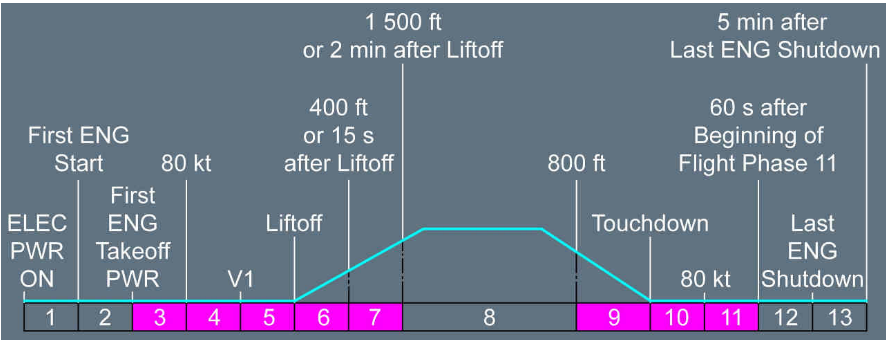
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Ident.: PRO-ABN-A-ICE-3042W320-00007562.0001001 / 30 JUN 14

AVOID ICING CONDs

Continued on the following page

A-ICE L+R WINDSHIELDS HEATG FAULT (Cont'd)

Ident.: PRO-ABN-A-ICE-3042W320-00007563.0001001 / 30 JUN 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

AVOID ICING CONDs

LIMITATIONS ON PFD

ALL PHASES

AVOID ICING CONDs

STATUS

INOP SYS

ALL PHASES

L+R WINDSHLDs HEATG

A-ICE L(R) WING VLV CLOSED

Applicable to: ALL

Ident.: PRO-ABN-A-ICE-3011W600-00005143.0001001 / 04 DEC 14

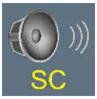
ANNUNCIATIONS

Triggering Conditions:

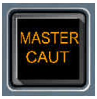
L2 The left (right) wing anti-ice valve is abnormally closed.

Indications:

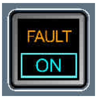
Audio



Master Light


MASTER
CAUT

Local Light

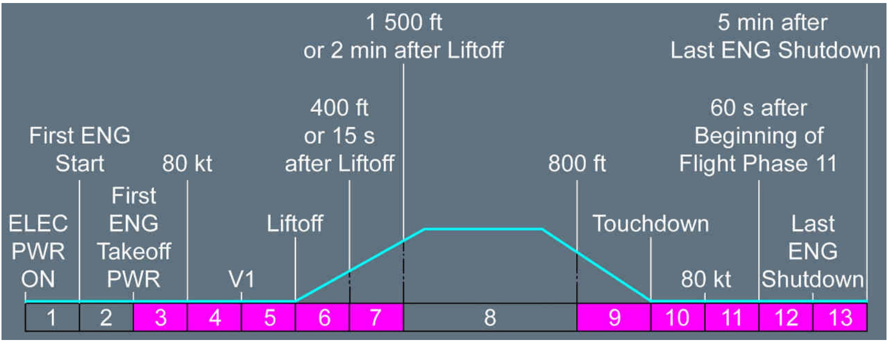


WING ANTI ICE pb

SD page

BLEED SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Ident.: PRO-ABN-A-ICE-3011W600-00007551.0001001 / 30 JUN 14

WING A-ICE..OFF

AVOID ICING CONDs

Continued on the following page

A-ICE L(R) WING VLV CLOSED (Cont'd)

Ident.: PRO-ABN-A-ICE-3011W600-00007552.0001001 / 30 JUN 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

AVOID ICING CONDs

LIMITATIONS ON PFD

ALL PHASES

AVOID ICING CONDs

STATUS

INOP SYS

ALL PHASES

WING A-ICE

A-ICE L(R) WING VLV OPEN

Applicable to: ALL

Ident.: PRO-ABN-A-ICE-3011W420-00005144.0001001 / 30 JUN 14

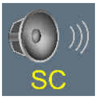
ANNUNCIATIONS

Triggering Conditions:

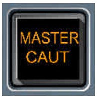
L2 The left (right) wing anti-ice valve is abnormally open. The abnormal opening of the valve can be detected either by:
- Pressure sensors (downstream of the valve), or
- Temperature sensors in the slats (on ground only).

Indications:

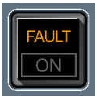
Audio



Master Light


MASTER
CAUT

Local Light

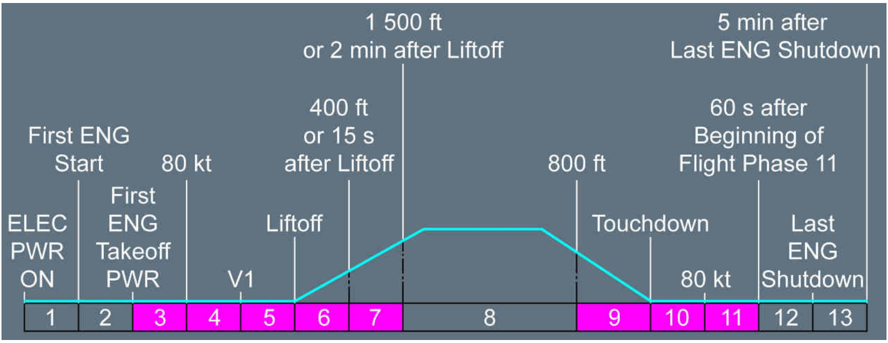


WING ANTI ICE pb

SD page

BLEED SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
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Continued on the following page

A-ICE L(R) WING VLV OPEN (Cont'd)

Ident.: PRO-ABN-A-ICE-3011W420-00021009.0001001 / 30 JUN 14

L2 When the alert is triggered, the affected wing is automatically isolated from the hot air by closure of the associated bleed.
In the case of automatic isolation failure, the flight crew must manually switch off the bleeds that feed the anti-ice system on the affected wing.

Note: When the ENG 1(2) bleed is switched off, the AIR ABNORM BLEED CONFIG alert is triggered.

Continued on the following page

A-ICE L(R) WING VLV OPEN (Cont'd)

Ident.: PRO-ABN-A-ICE-3011W420-00007554.0004001 / 03 JAN 19

- **If the L wing valve is affected:**
  - **If automatic isolation of the bleed failed:**

    ENG 1 BLEED.....OFF
    APU BLEED.....OFF

L2 *The objective is to:*
- Set the bleed pushbutton-switches in accordance with the valves position if the automatic isolation of the bleeds succeeded
- Isolate the wing from the bleeds if the automatic isolation of the bleeds failed.

L1 XBLEED.....CLOSE

ENG 1 & APU BLEED ISOLATED

  - **If the alert is triggered after engine start by the temperature sensors only:**
    - **FOR WING A-ICE & BLEED RECOVERY:**

      FLAPS.....T.O
      WING A-ICE P/B.....RECYCLE

- **If the R wing valve is affected:**
  - **If automatic isolation of the bleed failed:**

    ENG 2 BLEED.....OFF

L2 *The objective is to:*
- Set the bleed pushbutton-switch in accordance with the valve position if the automatic isolation of the bleed succeeded
- Isolate the wing from the bleed if the automatic isolation of the bleed failed.

L1 XBLEED.....CLOSE

ENG 2 BLEED ISOLATED

  - **If the alert is triggered after engine start by the temperature sensors only:**
    - **FOR WING A-ICE & BLEED RECOVERY:**

      FLAPS.....T.O
      WING A-ICE P/B.....RECYCLE

Continued on the following page

A-ICE L(R) WING VLV OPEN (Cont'd)

Ident.: PRO-ABN-A-ICE-3011W420-00007555.0003001 / 26 JUL 17

STATUS

INOP SYS

ALL PHASES

ENG 1 BLEED (If the L valve is affected)
APU BLEED (If the L valve is affected)
ENG 1 STARTER (If the L valve is affected)
ENG 2 BLEED (If the R valve is affected)
ENG 2 STARTER (If the R valve is affected)
XBLEED AUTO CTL

A-ICE L(R) WING VLV PRESS HI

Applicable to: ALL

Ident.: PRO-ABN-A-ICE-3011W800-00005145.0001001 / 04 DEC 14

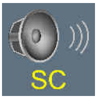
ANNUNCIATIONS

Triggering Conditions:

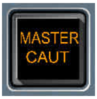
L2 The left (right) wing anti-ice valve is commanded ON, however the pressure sensor (downstream of the valve) indicates there is an abnormal high pressure in the duct. The alert is also triggered in case of over-temperature detected in the heated section.

Indications:

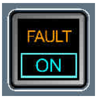
Audio



Master Light


MASTER
CAUT

Local Light

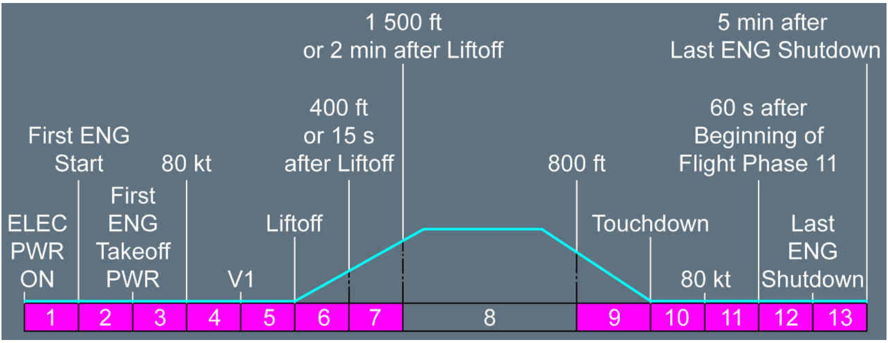


WING ANTI ICE pb

SD page

BLEED SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
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Ident.: PRO-ABN-A-ICE-3011W800-00007557.0001001 / 30 JUN 14

L2 To avoid overheating the slats on the affected side, the Wing Anti Ice system must be shut down.

L1 WING A-ICE..OFF
AVOID ICING CONDs

Continued on the following page

A-ICE L(R) WING VLV PRESS HI (Cont'd)

Ident.: PRO-ABN-A-ICE-3011W800-00008503.0001001 / 30 JUN 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

AVOID ICING CONDs

LIMITATIONS ON PFD

ALL PHASES

AVOID ICING CONDs

STATUS

INOP SYS

ALL PHASES

WING A-ICE

A-ICE L(R) WING VLV PRESS LO

Applicable to: ALL

Ident.: PRO-ABN-A-ICE-3011W500-00005146.0001001 / 04 DEC 14

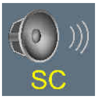
ANNUNCIATIONS

Triggering Conditions:

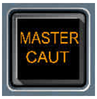
L2 The left (right) wing anti-ice valve is commanded ON, however the pressure sensors (downstream of the valve) indicate that the pressure is low.

Indications:

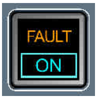
Audio



Master Light


MASTER
CAUT

Local Light

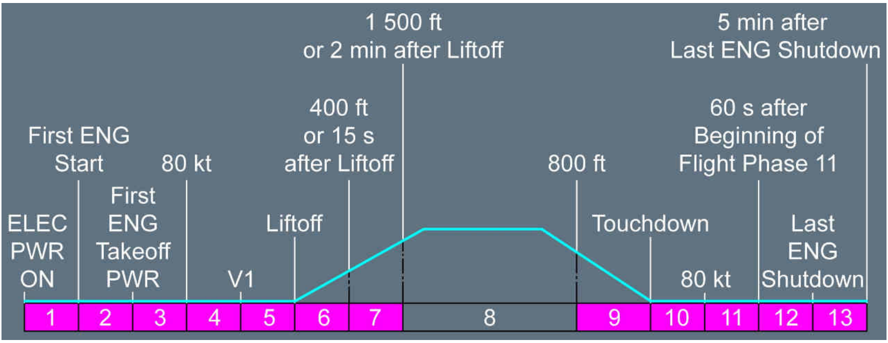


WING ANTI ICE pb

SD page

BLEED SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Continued on the following page

A-ICE L(R) WING VLV PRESS LO (Cont'd)

Ident.: PRO-ABN-A-ICE-3011W500-00007559.0002001 / 07 JUL 16

- **If duct burst suspected:**

  DUCT BURST SUSPECTED

  L2 *A duct burst is suspected if the low pressure is detected by an outboard pressure sensor only.*

  L1 WING A-ICE...OFF

  AVOID ICING CONDs

- **In flight, if no duct burst suspected:**

  A/THR OFF...CONSIDER

  - **If ENG 1(2) BLEED is ON:**

    ENG 1(2) THRUST...INCREASE

    L2 *An increase in thrust will increase bleed pressure. This will help open the wing anti-ice valve and, therefore, clear the ECAM caution.*

  - L1 **if ENG 1(2) BLEED is OFF:**

    ENG 2(1) THRUST...INCREASE

    L2 *An increase in thrust will increase bleed pressure. This will help open the wing anti-ice valve and, therefore, clear the ECAM caution.*

  - L1 ● **IF PRESS STILL LO:**

    L2 If the thrust increase does not clear the ECAM caution, the wing anti-ice system is inoperative.

    L1 WING A-ICE...OFF

    AVOID ICING CONDs

Continued on the following page

A-ICE L(R) WING VLV PRESS LO (Cont'd)

Ident.: PRO-ABN-A-ICE-3011W500-00007560.0001001 / 30 JUN 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

- **If wing anti-ice is failed:**
  AVOID ICING CONDs

LIMITATIONS ON PFD

ALL PHASES

- **If wing anti-ice is failed:**
  AVOID ICING CONDs

STATUS

INOP SYS

ALL PHASES

WING A-ICE (On ground, or if wing anti-ice is failed)

A-ICE SEVERE ICE DETECTED

Applicable to: ALL

Ident.: PRO-ABN-A-ICE-3081W200-00005149.0001001 / 30 JUN 14

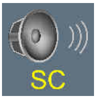
ANNUNCIATIONS

Triggering Conditions:

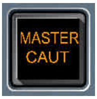
L2 Severe ice is detected, and the wing anti-ice system is off.

Indications:

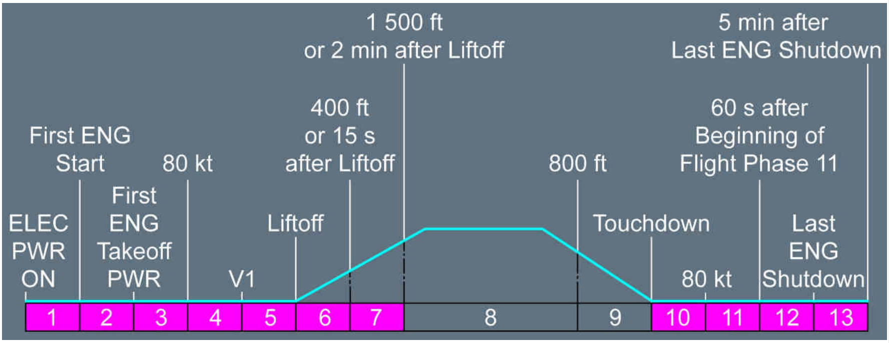
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Ident.: PRO-ABN-A-ICE-3081W200-00007567.0001001 / 30 JUN 14

ENG 1 A-ICE...ON
ENG 2 A-ICE...ON
WING A-ICE...ON

A-ICE WING SYS FAULT

Applicable to: ET-ATQ, ET-AUC, ET-AVB, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB

Ident.: PRO-ABN-A-ICE-3011W900-00005154.0001001 / 04 DEC 14

ANNUNCIATIONS

Triggering Conditions:

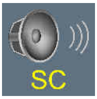
L2 The alert is triggered in the case of:

- The failure of the control or monitoring of the wing anti-ice system, or
  L3 For more information, *Refer to DSC-30-20-10 Wing Anti-ice*.
- L2 The failure of multiple IMA modules. In this case, the ECAM displays the ECAM subtitle DUE TO IMA MODULE FAULT, or
  L3 For more information on CPIOM Group H4, *Refer to DSC-42-10 CPIOM Group H4*.
- L2 The activation of both the wing anti-ice system and the APU bleed. In this case, the ECAM displays the ECAM subtitle WING A-ICE NOT AVAILABLE ON APU BLEED.
  L3 The wing anti-ice system cannot operate when the bleed air is supplied by the APU.

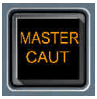
Indications:

L2

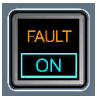
Audio



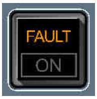
Master Light



Local Light



WING ANTI ICE pb (system commanded ON)



WING ANTI ICE pb (system not commanded ON)

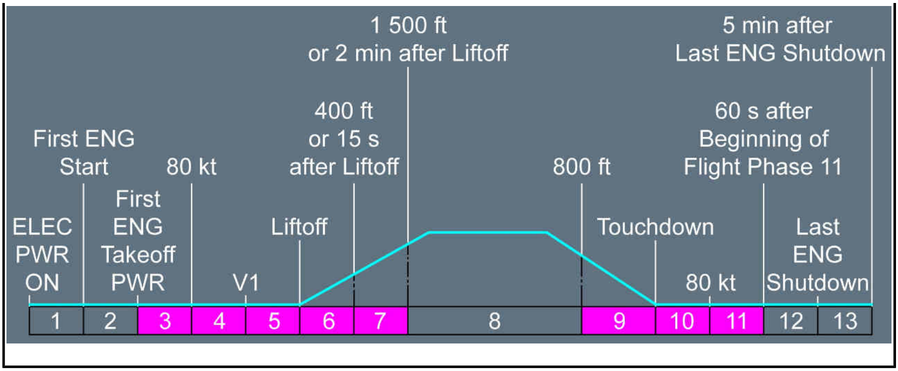
SD page

BLEED SD Page

Flight Phase Inhibition:

Continued on the following page

A-ICE WING SYS FAULT (Cont'd)


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-A-ICE-3011W900-00007580.0002001 / 29 JAN 19

Depending on the failure, the ECAM alert proposes appropriate actions to attempt a recovery of the wing anti-ice system if it is possible:

- If wing anti-ice is on, and provided that the engines are not at takeoff power, the flight crew can attempt an immediate recovery by applying the proposed ECAM actions, or
- The flight crew can activate the deferred procedure > WING A-ICE RECOVERY later on, as required.

Note: 1. *If the alert is only due to an IMA module failure, the ECAM displays the DUE TO IMA MODULE FAULT subtitle.*
2. *If the alert is due to the simultaneous activation of the wing anti-ice system and the APU bleed, the ECAM displays the WING A-ICE NOT AVAIL ON APU BLEED subtitle.*

Continued on the following page

A-ICE WING SYS FAULT (Cont'd)

Ident.: PRO-ABN-A-ICE-3011W900-00007581.0007001 / 29 JAN 19

1

- ■ **If wing anti-ice is on and wing anti-ice recovery is not possible:**
  WING A-ICE..OFF
  AVOID ICING CONDs
- ■ **If wing anti-ice recovery is possible:**
  - ■ **If wing anti-ice is off or engines are at takeoff power:**
    WING A-ICE RECOVERY POSSIBLE
  - ■ **If wing anti-ice is on and engines are not at takeoff power:**
    - ■ **If the operative packs are off:**
      PACK 1..ON
      PACK 2..ON

      L2 The objective to turn on the packs is to check if it enables the recovery of the wing anti-ice system.

      L1 WING A-ICE..OFF 15S THEN ON
    - ■ **If the monitoring of the temperature of the wing anti-ice is degraded on affected side:**
      ENG 1(2) BLEED..OFF

      L2 This enables the crossbleed valve to be automatically opened. Both sides of the wing anti-ice system can use the operative bleed air sensors for the recovery attempt.

      L1 WING A-ICE..OFF 5S THEN ON
      - ● **If not successful:**
        ENG 1(2) BLEED..ON
    - ● **If wing anti-ice recovery is not successful:**
      WING A-ICE..OFF
      AVOID ICING CONDs

Continued on the following page

A-ICE WING SYS FAULT (Cont'd)

Ident.: PRO-ABN-A-ICE-3011W900-00007582.0007001 / 29 JAN 19

2

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

- **If wing anti-ice recovery is not possible:**
  AVOID ICING CONDs

LIMITATIONS ON PFD

ALL PHASES

- **If wing anti-ice recovery is not possible:**
  AVOID ICING CONDs

L12

DEFERRED PROC

ALL PHASES

> WING A-ICE RECOVERY

- **If the operative packs are off:**
  PACK 1..ON
  PACK 2..ON

  The objective to set the pack to on is to check if it enables to recover the wing anti-ice system.

  WING A-ICE..ON
- **If the monitoring of the temperature of the wing anti-ice is degraded on affected side:**
  ENG 1(2) BLEED..OFF

  This enables the crossbleed valve to be automatically opened. Both sides of the wing anti-ice system can use the operative bleed air sensors for the recovery attempt.

  WING A-ICE..OFF 5S THEN ON

Continued on the following page

A-ICE WING SYS FAULT (Cont'd)

- **If not successful:**
  ENG 1(2) BLEED.. ON

- **If wing anti-ice recovery is not successful:**
  WING A-ICE...OFF
  AVOID ICING CONDs

STATUS

INOP SYS

ALL PHASES

WING A-ICE

INFO

- **If wing anti-ice is off when failure occurs and recovery is possible:**
  WING A-ICE RECOVERY POSSIBLE
- **If both APU bleed and wing anti-ice are on:**
  WING A-ICE NOT AVAIL ON APU BLEED

A-ICE WING SYS FAULT

Applicable to: ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AVC, ET-AVD, ET-AVE, ET-AWM

Ident.: PRO-ABN-A-ICE-3011W900-00005154.0001001 / 04 DEC 14

ANNUNCIATIONS

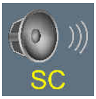
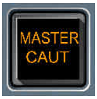
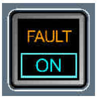
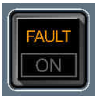
Triggering Conditions:

L2 The alert is triggered in the case of:

- The failure of the control or monitoring of the wing anti-ice system, or
  L3 For more information, *Refer to DSC-30-20-10 Wing Anti-ice*.
- L2 The failure of multiple IMA modules. In this case, the ECAM displays the ECAM subtitle DUE TO IMA MODULE FAULT, or
  L3 For more information on CPIOM Group H4, *Refer to DSC-42-10 CPIOM Group H4*.
- L2 The activation of both the wing anti-ice system and the APU bleed. In this case, the ECAM displays the ECAM subtitle WING A-ICE NOT AVAILABLE ON APU BLEED.
  L3 The wing anti-ice system cannot operate when the bleed air is supplied by the APU.

Indications:

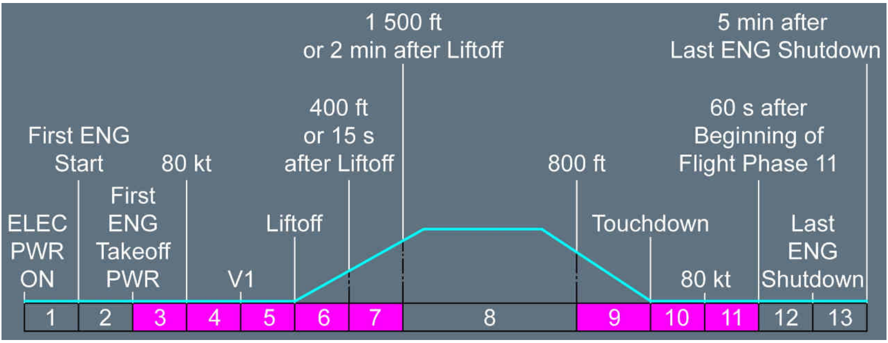
L2

Audio	Master Light	Local Light	SD page
		 WING ANTI ICE pb (system commanded ON)  WING ANTI ICE pb (system not commanded ON)	 BLEED SD Page

Flight Phase Inhibition:

Continued on the following page

A-ICE WING SYS FAULT (Cont'd)


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
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Ident.: PRO-ABN-A-ICE-3011W900-00007580.0002001 / 29 JAN 19

Depending on the failure, the ECAM alert proposes appropriate actions to attempt a recovery of the wing anti-ice system if it is possible:

- If wing anti-ice is on, and provided that the engines are not at takeoff power, the flight crew can attempt an immediate recovery by applying the proposed ECAM actions, or
- The flight crew can activate the deferred procedure > WING A-ICE RECOVERY later on, as required.

Note: 1. *If the alert is only due to an IMA module failure, the ECAM displays the DUE TO IMA MODULE FAULT subtitle.*
2. *If the alert is due to the simultaneous activation of the wing anti-ice system and the APU bleed, the ECAM displays the WING A-ICE NOT AVAIL ON APU BLEED subtitle.*

Ident.: PRO-ABN-A-ICE-3011W900-00007581.0001001 / 30 JUN 14

3

WING A-ICE..OFF
AVOID ICING CONDs

Continued on the following page

A-ICE WING SYS FAULT (Cont'd)

Ident.: PRO-ABN-A-ICE-3011W900-00007582.0001001 / 08 JUL 19

4

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

AVOID ICING CONDs

LIMITATIONS ON PFD

ALL PHASES

AVOID ICING CONDs

STATUS

INOP SYS

ALL PHASES

WING A-ICE

INFO

- **If both APU bleed and wing anti-ice are on:**
  WING A-ICE NOT AVAIL ON APU BLEED

AIR ABNORM BLEED CONFIG

Applicable to: ALL

Ident.: PRO-ABN-AIR-3621W100-00005118.0001001 / 03 JUL 20

1

ANNUNCIATIONS

Triggering Conditions:

L2 The bleed air distribution is not in the normal configuration due to the loss of one engine bleed air system and the crossbleed valve is closed.

This alert is activated when one of the following applies:

1. One engine bleed air system is lost, and the crossbleed valve is automatically closed (due to hot air leak or an engine fire).

   This is indicated by one of the following alerts:
   - AIR APU BLEED LEAK, or
   - AIR ENG 1(2) BLEED LEAK, or
   - AIR L(R) WING A-ICE LEAK, or
   - AIR L(R) WING LEAK, or
   - AIR LEAK ON FUEL INERTING, or
   - AIR PACK 1(2) LEAK, or
   - ENG 1(2) FIRE.
2. One engine bleed air system is lost, and the crossbleed valve did not open.

   This is indicated by:
   - The AIR XBLEED FAULT alert, and
   - One of the following alerts:
     - AIR ENG 1(2) BLEED FAULT, or
     - AIR ENG 1(2) BLEED LEAK, or
     - AIR ENG 1(2) BLEED TEMP LO, or
     - ENG 1(2) SHUTDOWN.

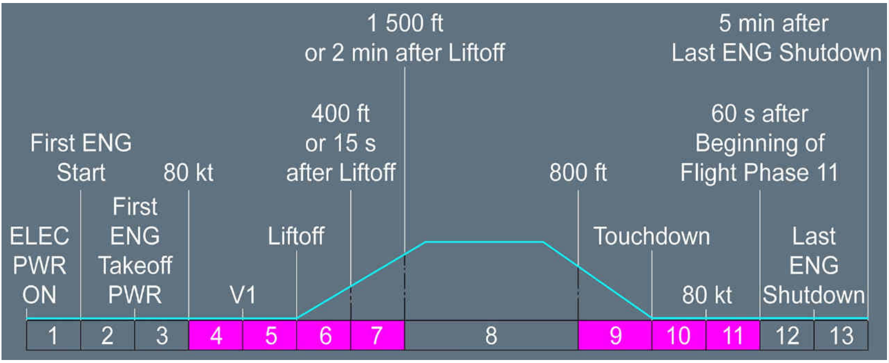
Indications:

Audio	Master Light	SD page
SC	MASTER CAUT	 BLEED SD Page

Continued on the following page

AIR ABNORM BLEED CONFIG (Cont'd)

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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12
13

Ident.: PRO-ABN-AIR-3621W100-00008430.0005001 / 07 JUL 16

WING A-ICE...OFF

AVOID ICING CONDs

L2 *This limitation is not displayed in the case of a minor leak in a wing anti-ice bleed duct.*

Continued on the following page

AIR ABNORM BLEED CONFIG (Cont'd)

Ident.: PRO-ABN-AIR-3621W100-00008431.0002001 / 09 JUL 15

L12

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

AVOID ICING CONDs

This limitation is not displayed in the case of a minor leak in a wing anti-ice bleed duct.

LIMITATIONS ON PFD

ALL PHASES

AVOID ICING CONDs

This limitation is not displayed in the case of a minor leak in a wing anti-ice bleed duct.

STATUS

INOP SYS

ALL PHASES

PACK 1(2)
WING A-ICE

AIR APU BLEED FAULT

Applicable to: ALL

Ident.: PRO-ABN-AIR-3612W010-00005119.0001001 / 01 JUL 14

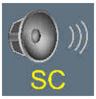
ANNUNCIATIONS

Triggering Conditions:

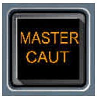
L2 The APU is running and the APU bleed valve is abnormally open(closed).
For more information on the operational limitations of the APU bleed, *Refer to LIM-APU Operational Envelope*.

Indications:

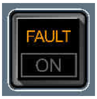
Audio



Master Light


MASTER
CAUT

Local Light

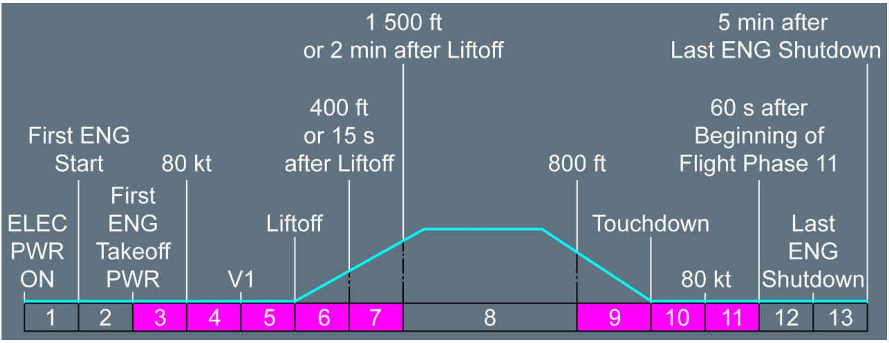


APU BLEED pb-sw

SD page

BLEED SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
V1
Touchdown
80 kt
Last
ENG
Shutdown
1
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Ident.: PRO-ABN-AIR-3612W010-00008433.0001001 / 01 JUL 14

- **If the APU BLEED pb-sw is set to ON and the APU bleed valve is closed:**
  APU BLEED..OFF

  Note: *The APU bleed valve automatically closes above FL 270.*

Continued on the following page

AIR APU BLEED FAULT (Cont'd)

Ident.: PRO-ABN-AIR-3612W010-00008434.0001001 / 01 JUL 14

STATUS

INOP SYS

ALL PHASES

APU BLEED (If APU bleed valve is failed closed)

AIR APU BLEED LEAK

Applicable to: ALL

Ident.: PRO-ABN-AIR-3622W090-00005120.0001001 / 01 JUL 14

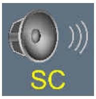
ANNUNCIATIONS

Triggering Conditions:

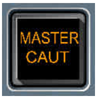
L2 Hot air leak is detected in the APU bleed ducts.
For more information on leak detection, *Refer to DSC-36-10-60 Leak Detection*.

Indications:

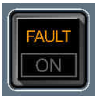
Audio



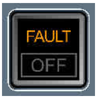
Master Light


MASTER
CAUT

Local Light



APU BLEED pb-sw

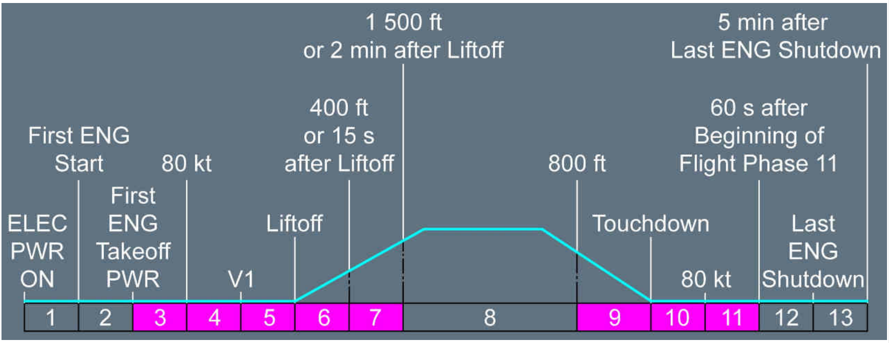


ENG 1 BLEED pb-sw

SD page

BLEED SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Ident.: PRO-ABN-AIR-3622W090-00008435.0001001 / 01 JUL 14

L2 The APU bleed valve, the engine 1 bleed valve and the crossbleed valve automatically close.
For more information on bleed system reconfiguration, *Refer to DSC-36-10-60 APU Bleed Leaks*.

Continued on the following page

AIR APU BLEED LEAK (Cont'd)

Ident.: PRO-ABN-AIR-3622W090-00008436.0004001 / 08 JUL 19

- **On ground, for any engine not yet started:**
  ENG 1(2) MASTER : KEEP OFF
- **If the APU bleed valve does not automatically close:**
  APU BLEED..OFF
  L2 *If the APU BLEED pb-sw is set to OFF, the FAULT light goes off when the overheat due to the bleed leak disappears.*
- L1 **If the engine 1 bleed valve and the engine 1 bleed overpressure valve do not automatically close:**
  ENG 1 BLEED..OFF
  L2 *If the ENG 1 BLEED pb-sw is set to OFF, the FAULT light goes off when the overheat due to the bleed leak disappears.*
- L1 **If the crossbleed valve does not automatically close:**
  XBLEED..CLOSE

AVOID ICING CONDs

- **When the leak is automatically or manually isolated:**
  AIR LEAK ISOLATED

ASSOCIATED PROCEDURES

AIR ABNORM BLEED CONFIG
Refer to procedure.

Continued on the following page

AIR APU BLEED LEAK (Cont'd)

Ident.: PRO-ABN-AIR-3622W090-00008437.0003001 / 08 AUG 18

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

AVOID ICING CONDs

LIMITATIONS ON PFD

ALL PHASES

AVOID ICING CONDs

STATUS

INOP SYS

ALL PHASES

APU BLEED
ENG 1 BLEED
ENG 1 STARTER
XBLEED AUTO CTL (If the crossbleed valve does not automatically close)

AIR BLEED LEAK

Applicable to: ALL

Ident.: PRO-ABN-AIR-3622W400-00005121.0001001 / 01 JUL 14

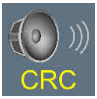
ANNUNCIATIONS

Triggering Conditions:

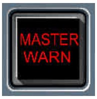
L2 A bleed leak is detected and cannot be isolated because the XBLEED selector is set to OPEN.

Indications:

Audio



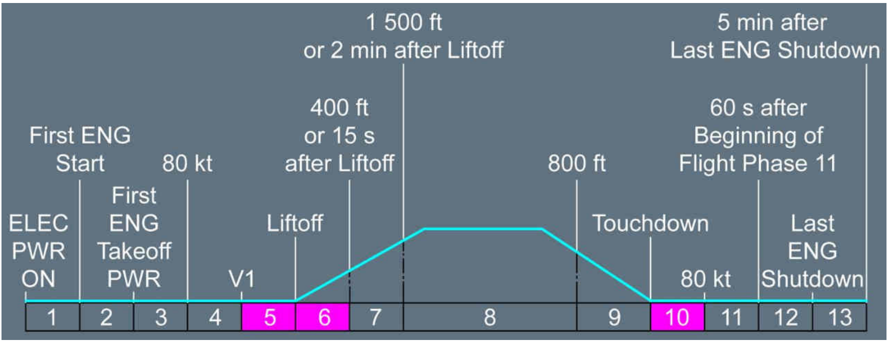
Master Light


MASTER
WARN

SD page

BLEED SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Ident.: PRO-ABN-AIR-3622W400-00008438.0001001 / 01 JUL 14

XBLEED..CLOSE

L2 *Closing the crossbleed valve will isolate the bleed leak (For more information on bleed leak detection and associated bleed system reconfiguration, Refer to DSC-36-10-60 Leak Detection).*

AIR ENG 1(2) BLEED FAULT

Applicable to: ALL

Ident.: PRO-ABN-AIR-3621W010-00005122.0001001 / 01 JUL 14

ANNUNCIATIONS

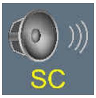
Triggering Conditions:

L2 The engine bleed supply is lost when one of the following conditions occurs:
- Bleed overtemperature,
- Bleed overpressure,
- Bleed low pressure,
- Bleed air system control failure,
- Loss of reverse flow protection.

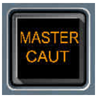
For more information on the engine bleed air system, *Refer to DSC-36-10-20 Engine Bleed Air System*.

Indications:

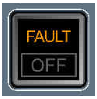
Audio



Master Light


MASTER
CAUT

Local Light

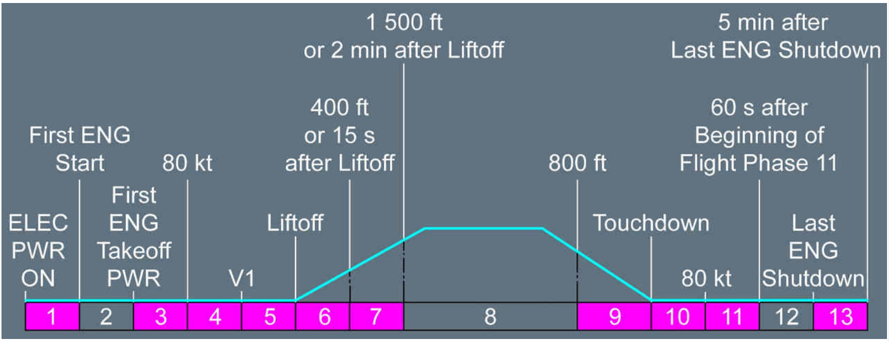


ENG 1(2) BLEED pb-sw

SD page

BLEED SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

AIR ENG 1(2) BLEED FAULT (Cont'd)

Ident.: PRO-ABN-AIR-3621W010-00008440.0001001 / 01 JUL 14

- **If the corresponding engine bleed valve does not close automatically:**

  ENG 1(2) BLEED.....OFF

L2 *The corresponding engine bleed valve does not close when the engine bleed air control system is failed.*

L1

ASSOCIATED PROCEDURES

AIR ABNORM BLEED CONFIG

Refer to procedure.

Ident.: PRO-ABN-AIR-3621W010-00008441.0001001 / 01 JUL 14

STATUS

INOP SYS

ALL PHASES

ENG 1(2) BLEED

AIR ENG 1(2) BLEED LEAK

Applicable to: ALL

Ident.: PRO-ABN-AIR-3622W050-00012101.0001001 / 01 JUL 14

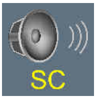
ANNUNCIATIONS

Triggering Conditions:

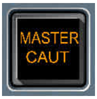
L2 Hot air leak is detected in an engine bleed duct.
For more information on leak detection, *Refer to DSC-36-10-60 Leak Detection*.

Indications:

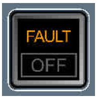
Audio



Master Light


MASTER
CAUT

Local Light

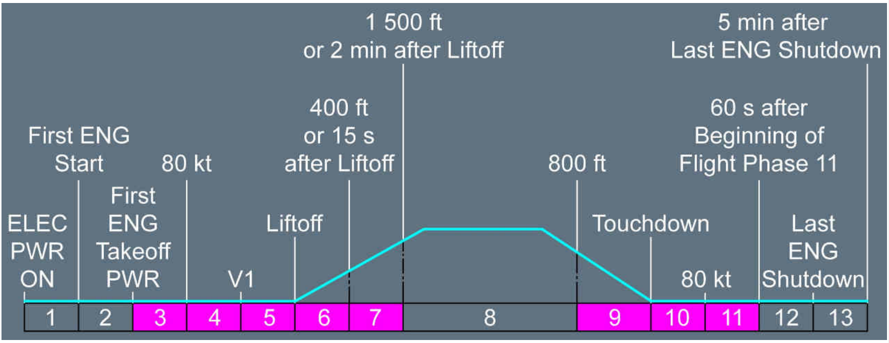


ENG 1(2) BLEED pb-sw

SD page

BLEED SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Ident.: PRO-ABN-AIR-3622W050-00012102.0001001 / 01 JUL 14

L2 The corresponding engine bleed valve automatically closes.
For more information on bleed system reconfiguration, *Refer to DSC-36-10-60 Engine Bleed Leaks*.

Continued on the following page

AIR ENG 1(2) BLEED LEAK (Cont'd)

Ident.: PRO-ABN-AIR-3622W050-00012103.0001001 / 08 AUG 18

- **On ground, for any engine not yet started:**

  ENG 2(1) MASTER : KEEP OFF

- **If the corresponding engine bleed valve does not automatically close:**

  ENG 1(2) BLEED....................OFF

L2 *If the ENG 1(2) BLEED pb-sw is set to OFF, the FAULT light goes off when the overheat due to the bleed leak disappears.*

L1
- **When the leak is automatically or manually isolated:**

  AIR LEAK ISOLATED

ASSOCIATED PROCEDURES

AIR ABNORM BLEED CONFIG

Refer to procedure.

AVOID ICING CONDs

Continued on the following page

AIR ENG 1(2) BLEED LEAK (Cont'd)

Ident.: PRO-ABN-AIR-3622W050-00012104.0001001 / 01 JUL 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

AVOID ICING CONDs

LIMITATIONS ON PFD

ALL PHASES

AVOID ICING CONDs

STATUS

INOP SYS

ALL PHASES

ENG 1(2) BLEED
ENG 1(2) STARTER
XBLEED AUTO CTL (If the crossbleed valve does not automatically close)
APU BLEED (If the leak is detected in the engine 1 bleed duct and if the APU bleed valve is closed)
ENG 1(2) A-ICE

AIR ENG 1(2) BLEED MONITORING + CTL FAULT

Applicable to: ALL

Ident.: PRO-ABN-AIR-3621W070-00019081.0001001 / 01 JUL 14

ANNUNCIATIONS

Triggering Conditions:

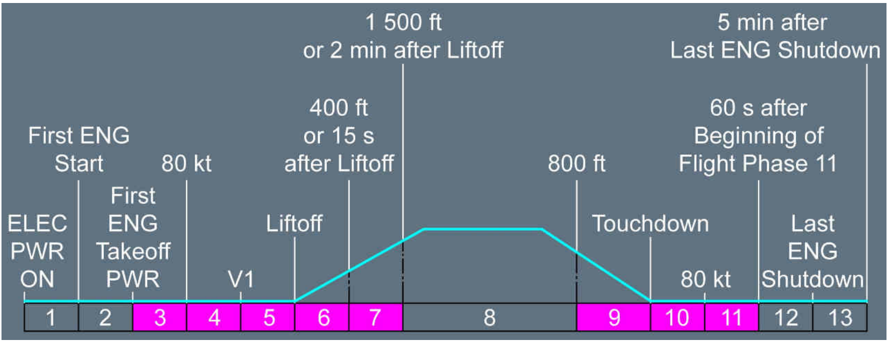
L2 The monitoring and the control of the engine 1(2) bleed air system is failed due to the failure of both EBAS control channels of the affected side.

Indications:

SD page

BLEED SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-AIR-3621W070-00019082.0001001 / 01 JUL 14

L2 The monitoring capability and the isolation capability of the engine bleed air system are lost on the affected side. The temperature regulation is degraded.

Ident.: PRO-ABN-AIR-3621W070-00019083.0001001 / 01 JUL 14

Crew awareness.

Continued on the following page

AIR ENG 1(2) BLEED MONITORING + CTL FAULT (Cont'd)

Ident.: PRO-ABN-AIR-3621W070-00019084.0001001 / 01 JUL 14

STATUS

INFO

BLEED SYS STATUS DEGRADED

AIR ENG 1(2) BLEED OFF

Applicable to: ALL

Ident.: PRO-ABN-AIR-3621W050-00005124.0001001 / 01 JUL 14

ANNUNCIATIONS

Triggering Conditions:

L2 The ENG 1(2) BLEED pb-sw is abnormally set to OFF.

Indications:

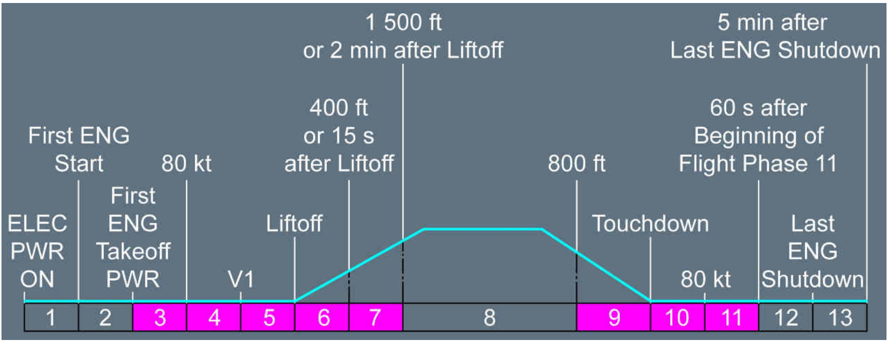
Audio
SC

Master Light
MASTER CAUT

SD page

BLEED SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Ident.: PRO-ABN-AIR-3621W050-00008446.0001001 / 01 JUL 14

Crew awareness.

Continued on the following page

AIR ENG 1(2) BLEED OFF (Cont'd)

Ident.: PRO-ABN-AIR-3621W050-00008447.0001001 / 01 JUL 14

STATUS

INOP SYS

ALL PHASES

ENG 1(2) BLEED

AIR ENG 1(2) BLEED TEMP LO

Applicable to: ALL

Ident.: PRO-ABN-AIR-3621W200-00005126.0001001 / 01 JUL 14

ANNUNCIATIONS

Triggering Conditions:

L2 In flight, the temperature of one engine bleed air is too low for wing anti-ice.

This may be due to:
- Low outside air temperature, or
- Failure in the open position of the fan air valve of the associated engine bleed system.

Indications:

Audio

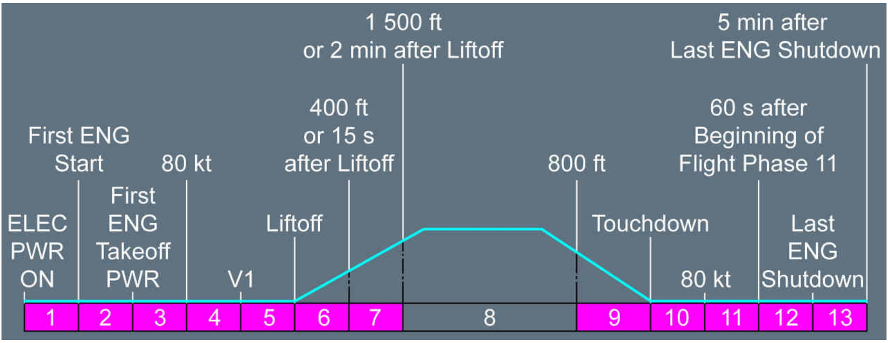
Master Light

MASTER
CAUT

SD page

BLEED SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
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Shutdown
V1
80 kt
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Ident.: PRO-ABN-AIR-3621W200-00008451.0001001 / 01 JUL 14

L2 The WING A-ICE pb is set to ON, and one engine bleed air temperature is below 150 °C.

Continued on the following page

AIR ENG 1(2) BLEED TEMP LO (Cont'd)

Ident.: PRO-ABN-AIR-3621W200-00008452.0002001 / 29 JAN 19

ENG 1(2) BLEED.. OFF

L2 *The crossbleed valve automatically opens when one bleed is set to OFF.*

L1 IF WING A-ICE OFF : BLEED 1(2) AVAIL

L2 *If the WING ANTI ICE pb is set to off, the flight crew can set the engine 1(2) bleed air system back to on.*

L1

ASSOCIATED PROCEDURES

AIR ABNORM BLEED CONFIG

Refer to procedure.

Ident.: PRO-ABN-AIR-3621W200-00008453.0002001 / 29 JAN 19

STATUS

INOP SYS

ALL PHASES

ENG 1(2) BLEED

INFO

IF WING A-ICE OFF : BLEED 1(2) AVAIL

AIR ENG 1(2) HP BLEED VLV NOT OPEN

Applicable to: ALL

Ident.: PRO-ABN-AIR-3611W010-00005125.0001001 / 01 JUL 14

ANNUNCIATIONS

Triggering Conditions:

L2 The HP bleed valve is abnormally closed.

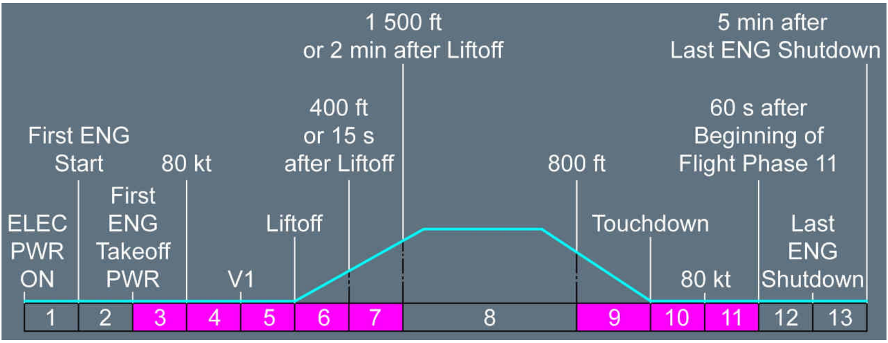
Note: The EBAS performs the HP/IP switching during ground operation or during descent/holding.

Indications:

SD page

BLEED SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Ident.: PRO-ABN-AIR-3611W010-00008449.0001001 / 01 JUL 14

Crew awareness.

Continued on the following page

AIR ENG 1(2) HP BLEED VLV NOT OPEN (Cont'd)

Ident.: PRO-ABN-AIR-3611W010-00008450.0001001 / 01 JUL 14

L12

STATUS

INFO

NO BLEED 1(2) AT LO ENG PWR

At low engine thrust settings, the air pressure from the IP stage is not sufficiently high. Therefore, no bleed is available from the affected engine.

AIR ENG 1+2 BLEED FAULT

Applicable to: ALL

Ident.: PRO-ABN-AIR-3621W250-00023694.0001001 / 08 JUL 16

ANNUNCIATIONS

Triggering Conditions:

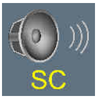
L2 The engine bleed supply is lost on both sides. The double failure may be due to a combination of the following failures:

- Bleed overtemperature
- Bleed overpressure
- Bleed low pressure
- Bleed air system control failure
- Loss of reverse flow protection
- Bleed leaks.

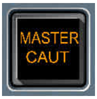
For more information on the engine bleed air system, *Refer to DSC-36-10-20 Engine Bleed Air System*.

Indications:

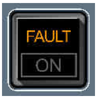
Audio



Master Light



Local Light



ENG 1 BLEED pb-sw
& ENG 2 BLEED pb-sw

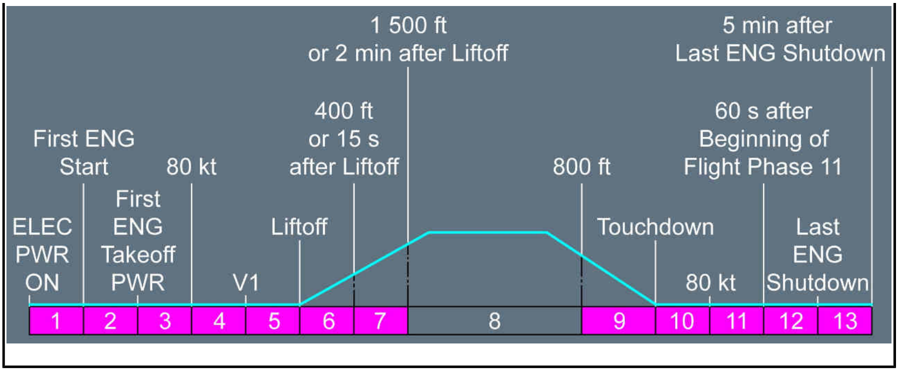
SD page

BLEED SD Page

Flight Phase Inhibition:

Continued on the following page

AIR ENG 1+2 BLEED FAULT **(Cont'd)**


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-AIR-3621W250-00023695.0001001 / 08 JUL 16

L2 With the AIR ENG 1+2 BLEED FAULT procedure, the ECAM takes into account the combination of failures leading to the loss of both engine bleed air systems.

Then, the ECAM proposes appropriate actions: if an engine bleed can be reset, the ECAM proposes a reset to recover this engine bleed. With certain failures, such as a bleed leak, the reset is not possible.

If an ENG 1(2) BLEED reset is possible, the ECAM will propose up to two ENG 1(2) BLEED reset.

Continued on the following page

AIR ENG 1+2 BLEED FAULT **(Cont'd)**

Ident.: PRO-ABN-AIR-3621W250-00023696.0001001 / 03 JUL 20

2 ● **Depending on the failure case, the following subtitles may appear:**

LEFT(RIGHT) LEAK

ENG 1(2) BLEED LEAK

APU BLEED LEAK

■ **If engine bleed resets are not possible:**

L2 The bleed air system is lost and must be secured.
The descent is initiated to anticipate a loss of cabin pressurization.

L1 DESCENT TO FL 100/MEA-MORA.......INITIATE
ENG 1+2 BLEED.......OFF

- ● **If the left side of the bleed air system has to be isolated:**
  APU BLEED.......OFF

WING A-ICE.......OFF
AVOID ICING CONDs
MAX FL: 100/MEA-MORA

■ **If an engine bleed reset is possible at least on one side:**

L2 Up to two engine bleed resets will be proposed by the ECAM, depending on the conditions. If the reset is possible only on one engine bleed, the other engine bleed reset will not be proposed.

L1 AFTER 15 S: ENG BLEED (POSSIBLE SIDE).......OFF THEN ON

- ■ **If at least one engine bleed air system is recovered:**
  ENG 1(2) BLEED RECOVERED

  L2 The ECAM displays the ENG 1(2) BLEED RECOVERED line if:
  - The corresponding engine bleed air system is recovered, and
  - The flight crew did not try the other engine bleed reset.

- L1 ■ **IF NO ENG BLEED RECOVERED:**
  DESCENT TO FL 100/MEA-MORA.......INITIATE

  L2 The descent is initiated to anticipate a loss of cabin pressurization.

  - L1 ● **If there is no leak on the left side of the bleed air system:**
    APU.......START

Continued on the following page

AIR ENG 1+2 BLEED FAULT **(Cont'd)**

ENG 1+2 BLEED............OFF
WING A-ICE............OFF
AVOID ICING CONDs

- **If the APU is not available:**

  MAX FL: 100/MEA-MORA

  - **WHEN FL < 100/MEA-MORA:**

    L2 The ECAM proposes the second engine bleed reset.

    L1 ENG BLEED (POSSIBLE SIDE)............ON

    - **If at least one engine bleed air system is recovered:**

      ENG 1(2) BLEED RECOVERED

      L2 The ECAM displays the ENG 1(2) BLEED RECOVERED line if:
      - The corresponding engine bleed air system is recovered, and
      - The flight crew did not try the other engine bleed reset.

    - L1 **IF NO ENG BLEED RECOVERED:**

      ENG 1+2 BLEED............OFF

      - **WHEN DIFF PR < 2 PSI:**

        RAM AIR............ON
        CAB FANS............OFF

- **WHEN FL < 250 & APU AVAIL:**

  APU BLEED............ON
  WING A-ICE............KEEP OFF

  - **IF APU BLEED AVAIL AFTER 10 s:**

    L2 The ECAM proposes the second engine bleed reset.

    L1 MAX FL: 250/MEA-MORA
    ENG BLEED (POSSIBLE SIDE)............ON
    APU BLEED............OFF

    - **If at least one engine bleed air system is recovered:**

      ENG 1(2) BLEED RECOVERED

      L2 The ECAM displays the ENG 1(2) BLEED RECOVERED line if:
      - The corresponding engine bleed air system is recovered, and
      - The flight crew did not try the other engine bleed reset.

Continued on the following page

AIR ENG 1+2 BLEED FAULT **(Cont'd)**

L1

■ **IF NO ENG BLEED RECOVERED:**

APU BLEED...ON
ENG 1+2 BLEED...OFF

■ **IF APU BLEED NOT AVAIL AFTER 10 s:**

MAX FL: 100/MEA-MORA
APU BLEED...OFF

● **WHEN FL < 100/MEA-MORA:**

L2

The ECAM proposes the second engine bleed reset.

L1

ENG BLEED (POSSIBLE SIDE)...ON

■ **If at least one engine bleed air system is recovered:**

ENG 1(2) BLEED RECOVERED

L2

The ECAM displays the ENG 1(2) BLEED RECOVERED line if:
- The corresponding engine bleed air system is recovered, and
- The flight crew did not try the other engine bleed reset.

L1

■ **IF NO ENG BLEED RECOVERED:**

ENG 1+2 BLEED...OFF

● **WHEN DIFF PR < 2 PSI:**

RAM AIR...ON
CAB FANS...OFF

ASSOCIATED PROCEDURES

AIR ENG 1(2) BLEED FAULT
(ONLY IF ENG 2(1) BLEED IS RECOVERED)
Refer to PRO-ABN-AIR AIR ENG 1(2) BLEED FAULT

AIR ABNORM BLEED CONFIG
Refer to PRO-ABN-AIR AIR ABNORM BLEED CONFIG

Continued on the following page

AIR ENG 1+2 BLEED FAULT **(Cont'd)**

Ident.: PRO-ABN-AIR-3621W250-00023697.0005001 / 03 JAN 19

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

- **In flight:**
  MAX FL: 100/MEA-MORA (if the bleed air system is lost on both sides)
  MAX FL: 250/MEA-MORA (if the bleed air system is available only with the APU bleed)
  AVOID ICING CONDs (if both engine bleeds are lost or in case of bleed leak)

LIMITATIONS ON PFD

ALL PHASES

- **In flight:**
  MAX FL: 100/MEA-MORA (if the bleed air system is lost on both sides)
  MAX FL: 250/MEA-MORA (if the bleed air system is available only with the APU bleed)
  AVOID ICING CONDs (if both engine bleeds are lost or in case of bleed leak)

STATUS

INOP SYS

ALL PHASES

Continued on the following page

AIR ENG 1+2 BLEED FAULT **(Cont'd)**

ENG 1+2 BLEED (If both engine bleed air systems are lost)
APU BLEED (If the APU bleed air system is inoperative)
PACK 1+2 (If both packs are inoperative)
ENG 1(2) STARTER (If the associated engine starter cannot be supplied with air)
WING A-ICE (If both engine bleed air systems are lost or if the crossbleed valve is closed with only one engine bleed available)

AIR ENG BLEED TEMP LO

Applicable to: ALL

Ident.: PRO-ABN-AIR-3621W220_1-00023355.0001001 / 07 JUL 16

ANNUNCIATIONS

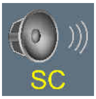
Triggering Conditions:

L2 In flight, the temperature of both engine bleed air is too low for wing anti-ice.

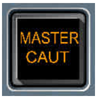
This may be due to:
- Low outside air temperature, or
- Failure in the open position of the fan air valve of the associated engine bleed system.

Indications:

Audio



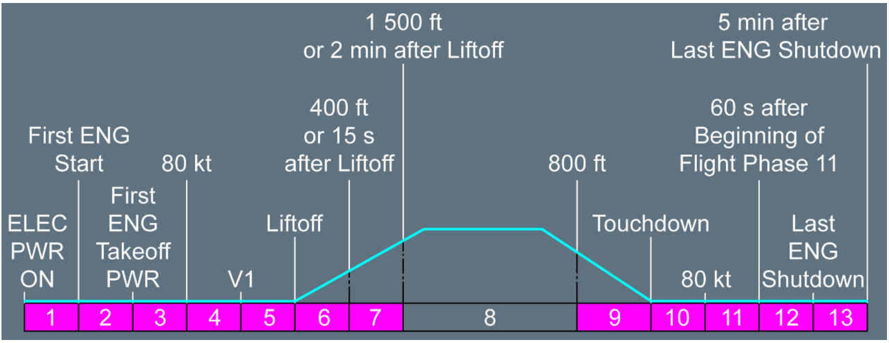
Master Light


MASTER
CAUT

SD page

BLEED SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
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80 kt
800 ft
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ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
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Continued on the following page

AIR ENG BLEED TEMP LO (Cont'd)

Ident.: PRO-ABN-AIR-3621W220_1-00023356.0001001 / 07 JUL 16

L2 The WING A-ICE pb is set to ON, and:
- Both engine bleed air temperature are below 150 °C, or
- One engine bleed air temperature is below 150 °C, and the other engine bleed is not available.

Ident.: PRO-ABN-AIR-3621W220_1-00023357.0001001 / 07 JUL 16

A/THR OFF....................CONSIDER
ENG 1+2 THRUST....................INCREASE

L2 *Low bleed temperature may be due to low outside air temperature. Therefore, the increase of the engine thrust may increase the bleed air temperature, and clear the alert.*

L3 *If the bleed air temperature remains below 150 °C on one engine after thrust increase, Refer to PRO-ABN-AIR AIR ENG 1(2) BLEED TEMP LO.*

L1 ● **ENGs BLEED TEMP STILL LO ?**

- ● **YES**
  WING A-ICE....................OFF
  AVOID ICING CONDs

L2 *Engine bleed temperature is too low for wing deicing.*

Continued on the following page

AIR ENG BLEED TEMP LO (Cont'd)

Ident.: PRO-ABN-AIR-3621W220_1-00023358.0001001 / 07 JUL 16

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

AVOID ICING CONDs

LIMITATIONS ON PFD

ALL PHASES

AVOID ICING CONDs

STATUS

INOP SYS

ALL PHASES

WING A-ICE (When the assigned WING ANTI ICE pb is set to OFF)

AIR HOT AIR 1(2) LEAK

Applicable to: ALL

Ident.: PRO-ABN-AIR-3622W120-00005128.0001001 / 01 JUL 14

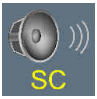
ANNUNCIATIONS

Triggering Conditions:

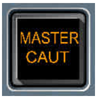
L2 Hot air leak is detected on one of the ducts of the air conditioning hot-air system.
For more information on leak detection, *Refer to DSC-36-10-60 Hot-Air Leaks*.

Indications:

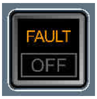
Audio



Master Light


MASTER
CAUT

Local Light

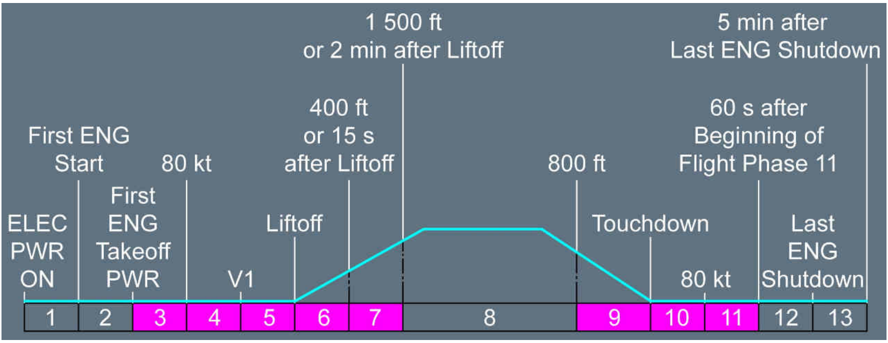


HOT AIR 1(2) pb-sw

SD page

BLEED SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
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12
13

Ident.: PRO-ABN-AIR-3622W120-00008454.0001001 / 01 JUL 14

L2 The corresponding hot-air valve automatically closes.
For more information on bleed system reconfiguration, *Refer to DSC-36-10-60 Hot-Air Leaks*.

Continued on the following page

AIR HOT AIR 1(2) LEAK (Cont'd)

Ident.: PRO-ABN-AIR-3622W120-00008455.0006001 / 03 JAN 19

- **If the corresponding hot-air valve does not automatically close:**

L2 Both pack valves of the associated pack automatically close.

L1 PACK 1(2)..OFF
CARGO FWD TEMP REGUL ◁✳ ....OFF

- **If the automatic isolation is not successful:**

  HOT AIR 1(2)..OFF

L2 *If the HOT AIR 1(2) pb-sw is set to OFF, the FAULT light goes off when the overheat due to the bleed leak disappears.*

L1 FWD CARGO TEMP ◁✳ ....MONITOR

- **When the leak is automatically or manually isolated:**

  AIR LEAK ISOLATED

Ident.: PRO-ABN-AIR-3622W120-00008456.0005001 / 05 NOV 18

STATUS

INOP SYS

ALL PHASES

CKPT TEMP REGUL (If the hot-air valve 1 is closed)
PART CAB TEMP REGUL (If the corresponding hot-air valve is closed)
FWD CARGO TEMP REGUL ◁✳ (If the forward cargo temperature regulation is off)
ALL ZONES TEMP REGUL (If both hot-air valves are closed)
PACK 1(2) (If the corresponding hot-air valve does not automatically close)

INFO

- **If one hot-air valve is closed:**

  CABIN TEMP REGUL DEGRADED

FWD CARGO TEMP REGUL DEGRADED ◁✳

AIR L(R) WING A-ICE LEAK

Applicable to: ALL

Ident.: PRO-ABN-AIR-3622W030-00012110.0001001 / 01 JUL 14

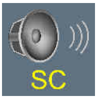
ANNUNCIATIONS

Triggering Conditions:

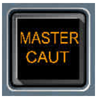
L2 Hot air leak is detected in the left or right wing anti-ice bleed duct, downstream of the wing anti-ice valve.
For more information on leak detection, *Refer to DSC-36-10-60 Leak Detection*.

Indications:

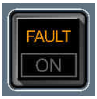
Audio



Master Light


MASTER
CAUT

Local Light

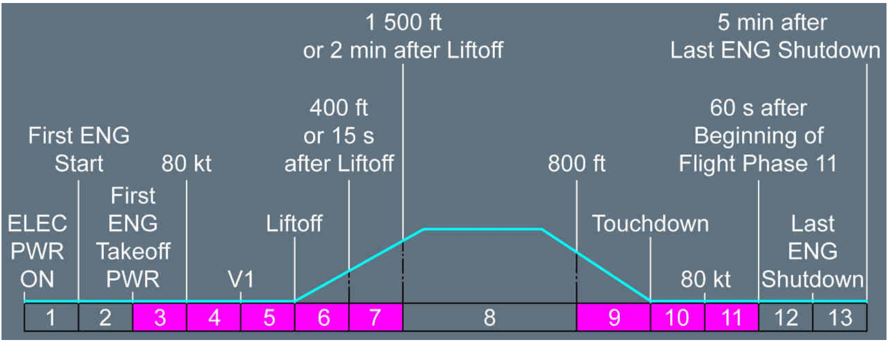


WING ANTI ICE pb

SD page

BLEED SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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3
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Ident.: PRO-ABN-AIR-3622W030-00012111.0001001 / 01 JUL 14

L2 Both wing anti-ice valves automatically close. The wing anti-ice is no longer available.
For more information on bleed system reconfiguration, *Refer to DSC-36-10-60 Wing Anti-Ice Leaks*.

Continued on the following page

AIR L(R) WING A-ICE LEAK (Cont'd)

Ident.: PRO-ABN-AIR-3622W030-00012112.0001001 / 01 JUL 14

- **If the automatic isolation is not successful:**
  WING A-ICE..OFF
- **When the leak is automatically or manually isolated:**
  AIR LEAK ISOLATED
  AVOID ICING CONDs

ASSOCIATED PROCEDURES

AIR ABNORM BLEED CONFIG

Refer to procedure.

Continued on the following page

AIR L(R) WING A-ICE LEAK (Cont'd)

Ident.: PRO-ABN-AIR-3622W030-00012114.0001001 / 01 JUL 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

- **If the leak is isolated:**
  AVOID ICING CONDs

LIMITATIONS ON PFD

ALL PHASES

- **If the leak is isolated:**
  AVOID ICING CONDs

STATUS

INOP SYS

ALL PHASES

WING A-ICE
XBLEED AUTO CTL (If the crossbleed valve does not automatically close)
ENG 1(2) BLEED (If the corresponding engine bleed valve closes)
ENG 1(2) STARTER (If the corresponding engine bleed valve closes)
APU BLEED (When the leak is detected on the left wing anti-ice bleed duct and if the APU bleed valve closes)

AIR L(R) WING LEAK

Applicable to: ALL

Ident.: PRO-ABN-AIR-3622W010-00012105.0001001 / 01 JUL 14

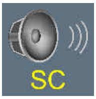
ANNUNCIATIONS

Triggering Conditions:

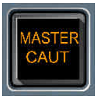
L2 Hot air leak is detected in the left or right wing bleed duct.
For more information on leak detection, *Refer to DSC-36-10-60 Leak Detection*.

Indications:

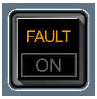
Audio



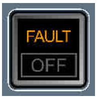
Master Light


MASTER
CAUT

Local Light



APU BLEED pb-sw

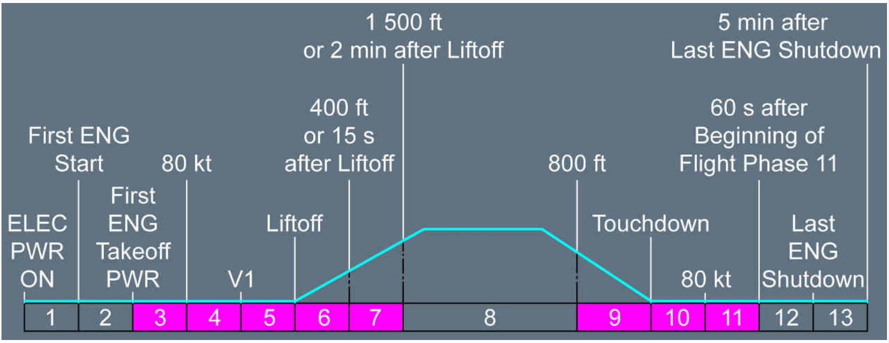


ENG 1 BLEED pb-sw

SD page

BLEED SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Continued on the following page

AIR L(R) WING LEAK (Cont'd)

Ident.: PRO-ABN-AIR-3622W010-00012107.0001001 / 01 JUL 14

L2 The corresponding engine bleed valve and the crossbleed valve automatically close. In addition, when the leak is detected on the left wing bleed duct, the APU bleed valve also automatically closes.
For more information on bleed system reconfiguration, *Refer to DSC-36-10-60 Wing Leaks*.

Ident.: PRO-ABN-AIR-3622W010-00012108.0001001 / 01 JUL 14

● **On ground, for any engine not yet started:**
ENG 1(2) MASTER : KEEP OFF

● **If the corresponding engine bleed valve does not automatically close:**
ENG 1(2) BLEED..OFF

L2 *The FAULT light goes off when the overheat due to the bleed leak disappears.*

L1 ● **If the crossbleed valve does not automatically close:**
XBLEED..CLOSE

● **When the leak is detected on the left wing bleed duct**
and
If the APU bleed valve does not automatically close:
APU BLEED..OFF

L2 *The FAULT light goes off when the overheat due to the bleed leak disappears.*

L1 ● **When the leak is automatically or manually isolated:**
AIR LEAK ISOLATED

ASSOCIATED PROCEDURES

AIR ABNORM BLEED CONFIG
Refer to procedure.

Continued on the following page

AIR L(R) WING LEAK (Cont'd)

Ident.: PRO-ABN-AIR-3622W010-00012109.0001001 / 01 JUL 14

STATUS

INOP SYS

ALL PHASES

ENG 1(2) BLEED
ENG 1(2) STARTER
APU BLEED (When a left wing leak is isolated)
XBLEED AUTO CTL (If the crossbleed valve does not automatically close)

AIR LEAK ON FUEL INERTING

Applicable to: ALL

Ident.: PRO-ABN-AIR-3622W070-00012115.0001001 / 01 JUL 14

ANNUNCIATIONS

Triggering Conditions:

L2 Hot air leak is detected in the CSAS ducts.
For more information on leak detection, *Refer to DSC-36-10-60 Leak Detection*.
Indications:

Audio

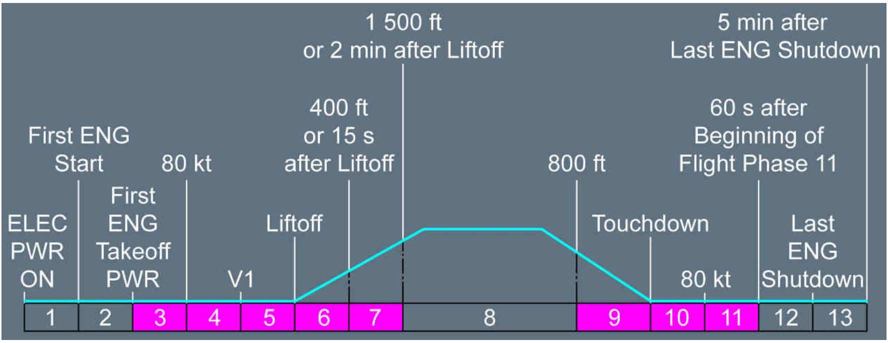
Master Light

MASTER
CAUT

SD page

BLEED SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
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Ident.: PRO-ABN-AIR-3622W070-00012117.0001001 / 01 JUL 14

L2 The CSAS on the affected side is automatically isolated. The FTIS is no longer available.
If the isolation is not successful, the associated engine bleed valve, the crossbleed valve and the APU bleed valve (for CSAS 1 only) are automatically closed in a second step.
For more information on bleed system reconfiguration, *Refer to DSC-36-10-60 Fuel Tank Inerting Leaks*.

Continued on the following page

AIR LEAK ON FUEL INERTING (Cont'd)

Ident.: PRO-ABN-AIR-3622W070-00012118.0001001 / 01 JUL 14

Crew awareness.

- **When the leak is automatically or manually isolated:**
  AIR LEAK ISOLATED

ASSOCIATED PROCEDURES

AIR ABNORM BLEED CONFIG

Refer to procedure.

Ident.: PRO-ABN-AIR-3622W070-00012120.0002001 / 07 JUL 16

STATUS

INOP SYS

ALL PHASES

ENG 1(2) BLEED (If the CSAS automatic isolation is not successful)
APU BLEED (If the CSAS automatic isolation is not successful)
ENG 1(2) STARTER (If the CSAS automatic isolation is not successful)
XBLEED AUTO CTL (If the CSAS automatic isolation is not successful and the crossbleed valve does not automatically close)

AIR OVHT ON FUEL INERTING 1(2)

Applicable to: ALL

Ident.: PRO-ABN-AIR-2158W010-00014771.0002001 / 07 JUL 16

ANNUNCIATIONS

Triggering Conditions:

L2 On ground, an overheat occurs in a duct of the fuel inerting system.

Indications:

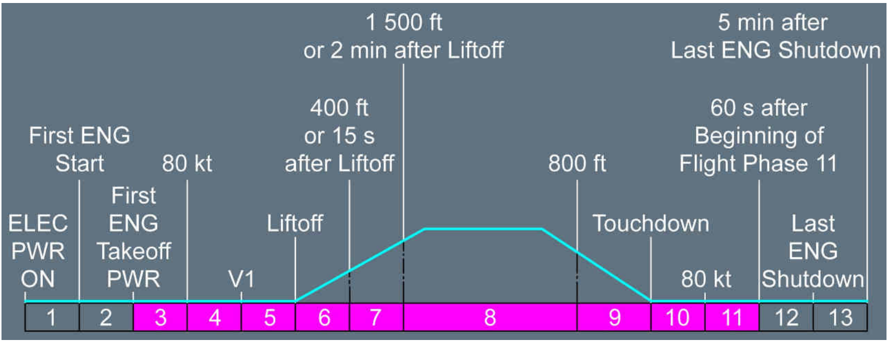
Audio

Master Light

MASTER CAUT

SC

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Ident.: PRO-ABN-AIR-2158W010-00014772.0001001 / 01 JUL 14

L2 The flight crew must shut down all bleed sources to immediately isolate the overheated duct. Maintenance action is due.

Ident.: PRO-ABN-AIR-2158W010-00014773.0001001 / 01 JUL 14

APU BLEED...OFF
ENG 1 BLEED...OFF
ENG 2 BLEED...OFF

Continued on the following page

AIR OVHT ON FUEL INERTING 1(2) (Cont'd)

Ident.: PRO-ABN-AIR-2158W010-00014774.0001001 / 01 JUL 14

STATUS

INOP SYS

ALL PHASES

ENG 1 BLEED
ENG 2 BLEED
APU BLEED

AIR PACK 1(2) FAULT

Applicable to: ALL

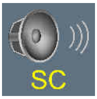
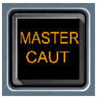
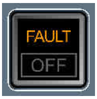
Ident.: PRO-ABN-AIR-2153W040-00004695.0001001 / 01 JUL 14

ANNUNCIATIONS

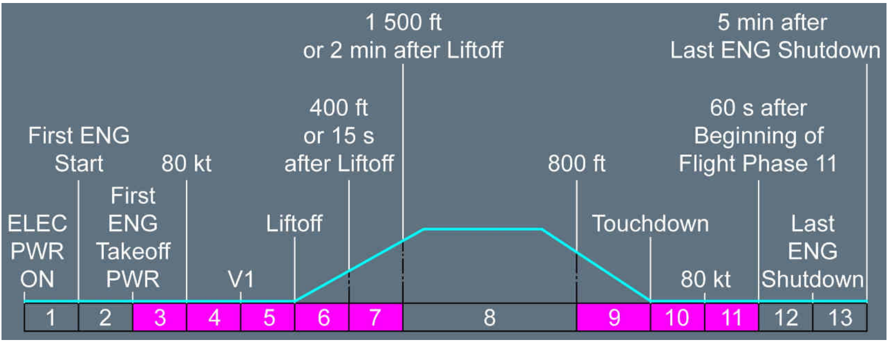
Triggering Conditions:

L2 Pack 1(2) is failed.

Indications:

Audio	Master Light	Local Light	SD page
	 MASTER CAUT		
		PACK 1(2) pb-sw	BLEED SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-AIR-2153W040-00007096.0001001 / 09 MAR 16

PACK 1(2).. OFF

L2 *The airflow of the remaining pack is automatically set to high.*

L1 CARGO FWD TEMP REGUL ◁ .... OFF

L2 *The temperature regulation of the forward cargo compartment ◁ cannot operate with only one pack running.*

Continued on the following page

AIR PACK 1(2) FAULT (Cont'd)

Ident.: PRO-ABN-AIR-2153W040-00007097.0001001 / 01 JUL 14

STATUS

INOP SYS

ALL PHASES

PACK 1(2)

AIR PACK 1+2 FAULT

Applicable to: ALL

Ident.: PRO-ABN-AIR-2153W010-00004700.0001001 / 01 JUL 14

ANNUNCIATIONS

Triggering Conditions:

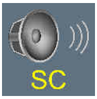
L2 Both packs do not operate.

L3 A pack does not operate, if:
- It is failed, or
- The associated PACK pb-sw is set to OFF, or
- It overheats.

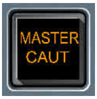
Indications:

L2

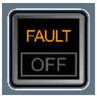
Audio



Master Light


MASTER
CAUT

Local Light

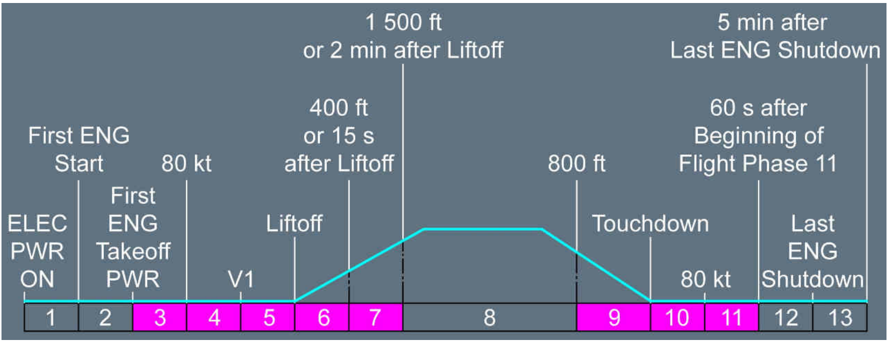


PACK 1(2) pb-sw

SD page

BLEED SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
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Continued on the following page

AIR PACK 1+2 FAULT (Cont'd)

Ident.: PRO-ABN-AIR-2153W010-00007111.0001001 / 06 MAY 15

- **If associated with the** CAB PRESS EXCESS DIFF PRESS **alert:**

LAND ANSA

PACK 1....................OFF
PACK 2....................OFF

- **If pack 1(2) was in overheat:**
  - **PACK OVHT OUT ?**
    - **YES**
      PACK 1(2)....................ON
      L2 *If the overheat disappears, the fault light of the PACK 1(2) pb-sw goes off.*
    - L1 **NO**
      DESCENT TO FL 100/MEA-MORA....................INITIATE
      MAX FL : 100/MEA-MORA
      - **WHEN DIFF PR <2 PSI & FL <100/MEA-MORA:**
        RAM AIR....................ON
        - **If associated with the** CAB PRESS EXCESS DIFF PRESS **alert:**
          VENT AVNCS EXTRACT....................OVRD
- **If there was no pack overheat:**
  DESCENT TO FL 100/MEA-MORA....................INITIATE
  MAX FL : 100/MEA-MORA
  - **WHEN DIFF PR <2 PSI & FL <100/MEA-MORA:**
    RAM AIR....................ON
    L2 *If cabin temperature is getting too cold, with low number of passengers onboard, consider grouping passengers in one area.*
    L1 CAB FANS....................OFF
    - **If associated with the** CAB PRESS EXCESS DIFF PRESS **alert:**
      VENT AVNCS EXTRACT....................OVRD

Continued on the following page

AIR PACK 1+2 FAULT (Cont'd)

Ident.: PRO-ABN-AIR-2153W010-00007113.0001001 / 01 JUL 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

- **If both packs are inoperative:**
  MAX FL: 100/MEA-MORA

LIMITATIONS ON PFD

ALL PHASES

- **If both packs are inoperative:**
  MAX FL: 100/MEA-MORA

DEFERRED PROC

ALL PHASES

- **If pack 1(2) was in overheat:**

  > WHEN PACK OVHT OUT

  PACK 1(2)...ON

STATUS

INOP SYS

ALL PHASES

PACK 1+2

MEMOPAGE

MEMO ON ECAM

- **If associated with the** CAB PRESS EXCESS DIFF PRESS **alert:**
  LAND ANSA

AIR PACK 1(2) LEAK

Applicable to: ALL

Ident.: PRO-ABN-AIR-3622W100-00005132.0001001 / 01 JUL 14

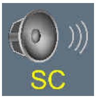
ANNUNCIATIONS

Triggering Conditions:

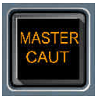
L2 Hot air leak is detected in the pack 1 or pack 2 bay area.
For more information on leak detection, *Refer to DSC-36-10-60 Leak Detection*.

Indications:

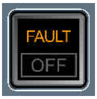
Audio



Master Light


MASTER
CAUT

Local Light

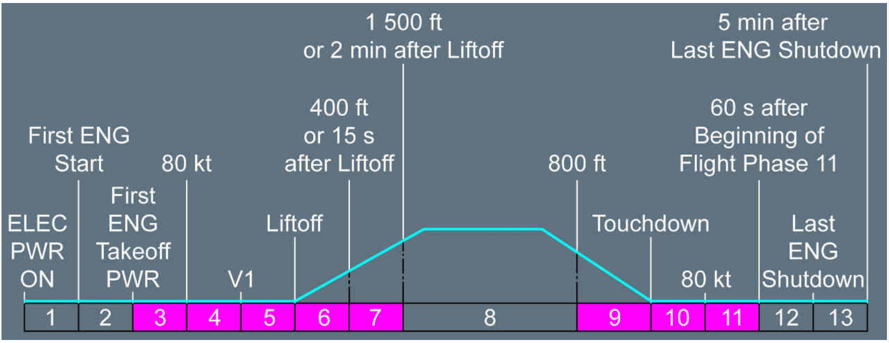


PACK 1(2) pb-sw

SD page

BLEED SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-AIR-3622W100-00008466.0001001 / 01 JUL 14

L2 The two pack valves of the affected pack automatically close and the affected pack is no longer available.
If the isolation is not successful, the associated engine bleed valve, the crossbleed valve and the APU bleed valve (for pack 1 only) are automatically closed in a second step.

Continued on the following page

AIR PACK 1(2) LEAK (Cont'd)

Ident.: PRO-ABN-AIR-3622W100-00008467.0001001 / 09 MAR 16

- **If the automatic isolation is not successful:**
  PACK 1(2)..OFF
  CARGO FWD TEMP REGUL ◁ ....OFF
- **When the leak is automatically or manually isolated:**
  AIR LEAK ISOLATED

ASSOCIATED PROCEDURES

AIR ABNORM BLEED CONFIG

Refer to procedure.

Ident.: PRO-ABN-AIR-3622W100-00008468.0002001 / 07 JUL 16

STATUS

INOP SYS

ALL PHASES

PACK 1(2)
ENG 1(2) BLEED (If the automatic closure of the pack valves of the affected pack is not successful)
ENG 1(2) STARTER (If the automatic closure of the pack valves of the affected pack is not successful)
APU BLEED (If the automatic closure of the pack valves of pack 1 is not successful)
XBLEED AUTO CTL (If the automatic closure of the pack valves of the affected pack is not successful and the crossbleed valve does not automatically close)

AIR PACK 1(2) OFF

Applicable to: ALL

Ident.: PRO-ABN-AIR-2153W060-00004696.0001001 / 01 JUL 14

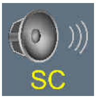
ANNUNCIATIONS

Triggering Conditions:

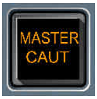
L2 Pack 1(2) is abnormally set to off.

Indications:

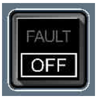
Audio



Master Light


MASTER
CAUT

Local Light

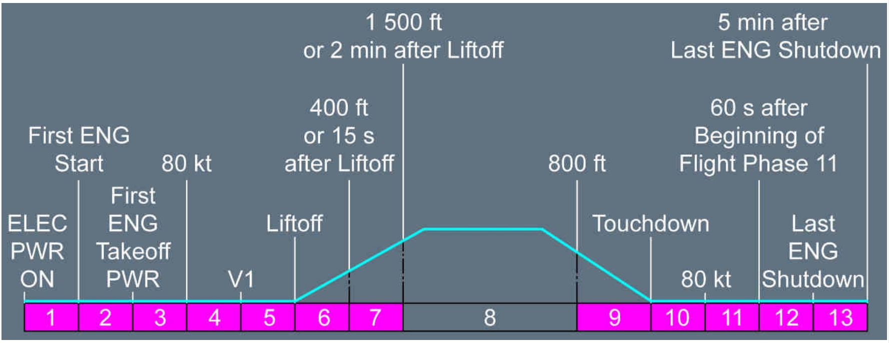


PACK 1(2) pb-sw

SD page

BLEED SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
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Other Inhibition:

This alert is also inhibited the first 65 s of the flight phase 8.

Ident.: PRO-ABN-AIR-2153W060-00007099.0001001 / 01 JUL 14

Crew awareness.

Continued on the following page

AIR PACK 1(2) OFF (Cont'd)

Ident.: PRO-ABN-AIR-2153W060-00007100.0001001 / 01 JUL 14

STATUS

INOP SYS

ALL PHASES

PACK 1(2)

AIR PACK 1(2) OVHT

Applicable to: ALL

Ident.: PRO-ABN-AIR-2153W020-00004697.0001001 / 01 JUL 14

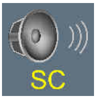
ANNUNCIATIONS

Triggering Conditions:

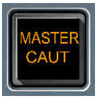
L2 Pack 1(2) overheats.

Indications:

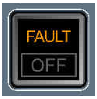
Audio



Master Light


MASTER
CAUT

Local Light

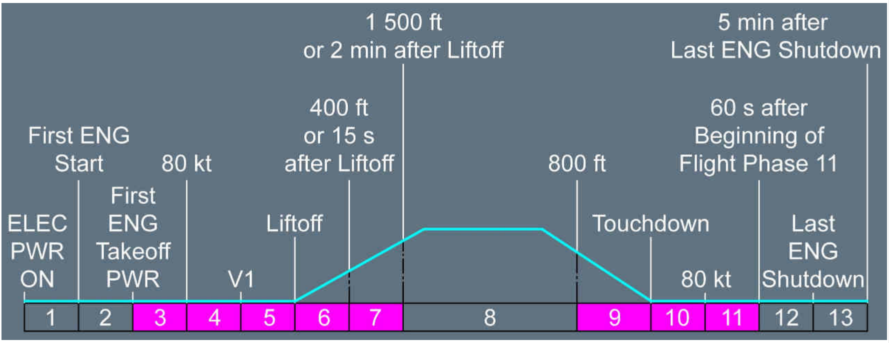


PACK 1(2) pb-sw

SD page

BLEED SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Ident.: PRO-ABN-AIR-2153W020-00007102.0001001 / 09 MAR 16

PACK 1(2) .... OFF

L2 *The airflow of the remaining pack is automatically set to high.*

L1 CARGO FWD TEMP REGUL ◁ .... OFF

L2 *The temperature regulation of the forward cargo compartment ◁ cannot operate with only one pack running.*

Continued on the following page

AIR PACK 1(2) OVHT (Cont'd)

Ident.: PRO-ABN-AIR-2153W020-00007104.0001001 / 09 MAR 16

DEFERRED PROC

ALL PHASES

> WHEN PACK OVHT OUT

PACK 1(2).. ON
CARGO FWD TEMP REGUL ◁ ....ON

STATUS

INOP SYS

ALL PHASES

PACK 1(2)

AIR PACK 1(2) REGUL FAULT

Applicable to: ALL

Ident.: PRO-ABN-AIR-2153W080-00004698.0001001 / 01 JUL 14

ANNUNCIATIONS

Triggering Conditions:

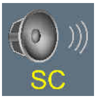
L2 Pack 1(2) performance is degraded.

L3 The performance of a pack is degraded if one of the following conditions occurs:
- The pack is in bypass mode
- The temperature control valve is failed, and the pack outlet temperature can only be controlled with the ram air inlet door
- The ram air inlet or outlet door is jammed in closed position
- The communication between the ASCU and the CPIOMs H41 and H42 is failed.

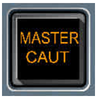
Indications:

L2

Audio



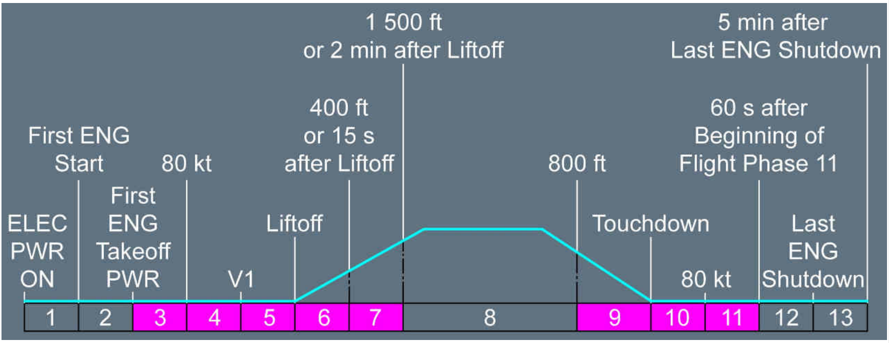
Master Light


MASTER
CAUT

SD page

BLEED SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

AIR PACK 1(2) REGUL FAULT (Cont'd)

Ident.: PRO-ABN-AIR-2153W080-00007105.0001001 / 01 JUL 14

L2 When the ECAM does not require the flight crew to perform any action, no single chime and no master caution are triggered.

Ident.: PRO-ABN-AIR-2153W080-00007106.0001001 / 09 MAR 16

- **On ground, if the pack 1(2) operates in bypass mode:**

PACK 1(2)..OFF

L2 *The airflow of the remaining pack is automatically set to high.*

L1 CARGO FWD TEMP REGUL ◁ ....OFF

L2 *The temperature regulation of the forward cargo compartment ◁ cannot operate with only one pack running.*

L1 PACK 1(2) AVAIL IN FLT

L2 *For more information about packs operating in bypass mode, Refer to DSC-21-COND-30 Air Cycle Machine (ACM) Failure.*

L1 CARGO FWD TEMP REGUL AVAIL IN FLT ◁

Continued on the following page

AIR PACK 1(2) REGUL FAULT (Cont'd)

Ident.: PRO-ABN-AIR-2153W080-00007107.0001001 / 09 MAR 16

L12

DEFERRED PROC

ALL PHASES

> APPROACH PROCEDURE (PACK REGULATION)

PACK 1(2)..OFF

The airflow of the remaining pack is automatically set to high.

CARGO FWD TEMP REGUL ❄ ....OFF

The temperature regulation of the forward cargo compartment ❄ cannot operate with only one pack running.

STATUS

INOP SYS

ALL PHASES

PACK 1(2)

INFO

- **On ground, if the pack 1(2) operates in bypass mode:**
  PACK 1(2) AVAIL IN FLT
  CARGO FWD TEMP REGUL AVAIL IN FLT ❄

PACK 1(2) REGUL DEGRADED

AIR PACK BAY 1(2) VENT FAULT

Applicable to: ALL

Ident.: PRO-ABN-AIR-2153W400-00005155.0001001 / 01 JUL 14

ANNUNCIATIONS

Triggering Conditions:

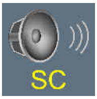
L2 The ventilation system of pack 1(2) bay is failed.

L3 The blowing fan associated to the pack bay ventilation is failed.

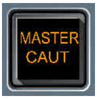
Indications:

L2

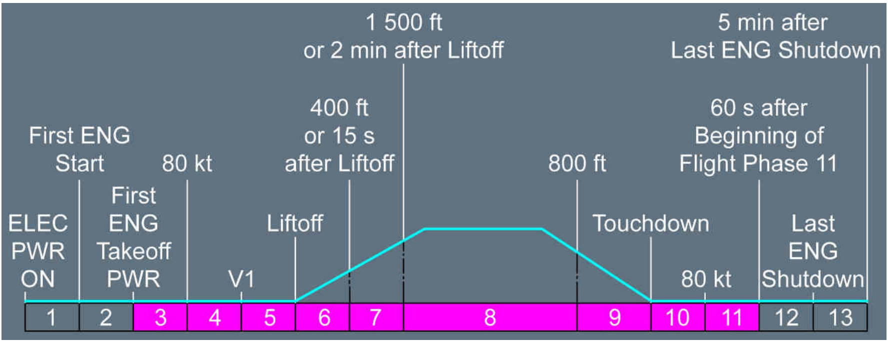
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Continued on the following page

AIR PACK BAY 1(2) VENT FAULT (Cont'd)

Ident.: PRO-ABN-AIR-2153W400-00007166.0001001 / 09 MAR 16

PACK 1(2) .... OFF

L2 *The airflow of the remaining pack is automatically set to high.*

L1 CARGO FWD TEMP REGUL ◁ .... OFF

L2 *The temperature regulation of the forward cargo compartment ◁ cannot operate with only one pack running.*

L1 PACK 1(2) AVAIL IN FLT

L2 This alert is recalled after touchdown, 60 s after the aircraft speed is below 80 kt, to remind the flight crew to set the PACK 1(2) pb-sw to OFF.

L1 CARGO FWD TEMP REGUL AVAIL IN FLT ◁

Ident.: PRO-ABN-AIR-2153W400-00007167.0001001 / 09 MAR 16

STATUS

INOP SYS

ALL PHASES

PACK 1(2)
PACK BAY 1(2) VENT

INFO

PACK 1(2) AVAIL IN FLT
CARGO FWD TEMP REGUL AVAIL IN FLT ◁

AIR PACK BAY 1+2 VENT FAULT

Applicable to: ALL

Ident.: PRO-ABN-AIR-2153W420-00005156.0001001 / 01 JUL 14

ANNUNCIATIONS

Triggering Conditions:

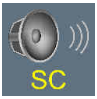
L2 The ventilation system of both pack bays is failed.

L3 Both blowing fans associated to the pack bays ventilation are failed.

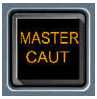
Indications:

L2

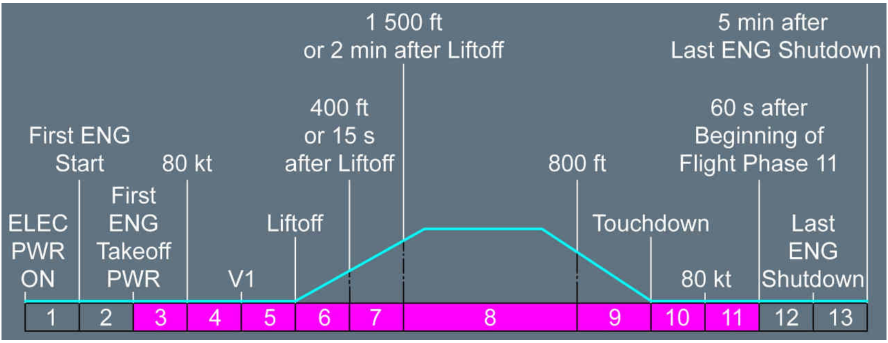
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-AIR-2153W420-00007169.0001001 / 01 JUL 14

PACK 1...OFF
PACK 2...OFF
PACK 1+2 AVAIL IN FLT

L2 This alert is recalled after touchdown, 60 s after the aircraft speed is below 80 kt, to remind the flight crew to set both PACK pb-sw to OFF.

Continued on the following page

AIR PACK BAY 1+2 VENT FAULT (Cont'd)

Ident.: PRO-ABN-AIR-2153W420-00007170.0001001 / 01 JUL 14

STATUS

INOP SYS

ALL PHASES

PACK 1+2
PACK BAY 1+2 VENT

INFO

PACK 1+2 AVAIL IN FLT

AIR XBLEED FAULT

Applicable to: ALL

Ident.: PRO-ABN-AIR-3612W100-00005133.0001001 / 06 AUG 14

ANNUNCIATIONS

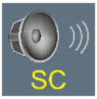
Triggering Conditions:

L2 One of the following applies:
- The crossbleed valve is abnormally open(closed)
- The manual control of the crossbleed valve is lost
- The automatic control of the crossbleed valve is lost due to either:
  - The failure of both BAS applications, or
L3 For more information, *Refer to DSC-36-10-10 Overview*
L2
  - The failure of CPIOMs H43 and H44. In this case, the ECAM displays the ECAM subtitle DUE TO IMA MODULE FAULT.
L3 For more information on CPIOM Group H4, *Refer to DSC-42-10 CPIOM Group H4*

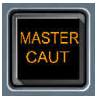
Indications:

L2

Audio



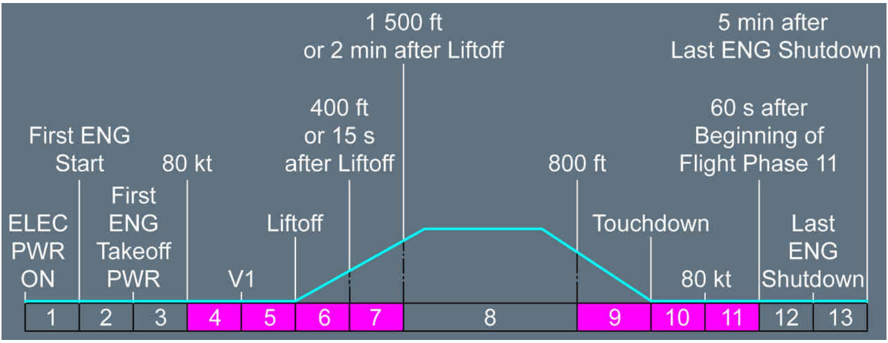
Master Light


MASTER
CAUT

SD page

BLEED SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Continued on the following page

AIR XBLEED FAULT (Cont'd)

Ident.: PRO-ABN-AIR-3612W100-00008469.0001001 / 01 JUL 14

Note: If the failure is only due to an IMA module failure, the ECAM displays the DUE TO IMA MODULE FAULT subtitle.

Ident.: PRO-ABN-AIR-3612W100-00008470.0001001 / 01 JUL 14

■ **If the automatic control of the crossbleed valve is lost:**
XBLEED MAN CTL ONLY

L2 *Manually open the crossbleed valve :*
- *When the APU BLEED pb-sw is set to ON*
- *For engine start.*

L1 ● **If one engine bleed is off:**
XBLEED..OPEN

■ **If the manual control of the crossbleed valve is lost:**
XBLEED..AUTO

Ident.: PRO-ABN-AIR-3612W100-00008471.0001001 / 01 JUL 14

STATUS

INOP SYS

ALL PHASES

XBLEED (If both the automatic and the manual controls of the crossbleed valve are lost)
XBLEED MAN CTL (If only the manual control of the crossbleed valve is lost)
XBLEED AUTO CTL (If only the automatic control of the crossbleed valve is lost)

INFO

● **If only the automatic control of the crossbleed valve is lost:**
XBLEED MAN CTL ONLY

● **If only the manual control of the crossbleed valve is lost:**
XBLEED AUTO CTL ONLY

APU AUTO SHUTDOWN

Applicable to: ALL

Ident.: PRO-ABN-APU-4961W020-00011617.0001001 / 24 JUN 14

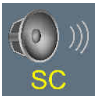
ANNUNCIATIONS

Triggering Conditions:

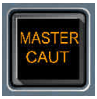
L2 An APU automatic shutdown occurs in the case of an APU failure or misbehavior.
For more details about the list of failures, *Refer to DSC-49-40 APU Automatic Shutdown*.

Indications:

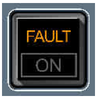
Audio



Master Light


MASTER
CAUT

Local Light

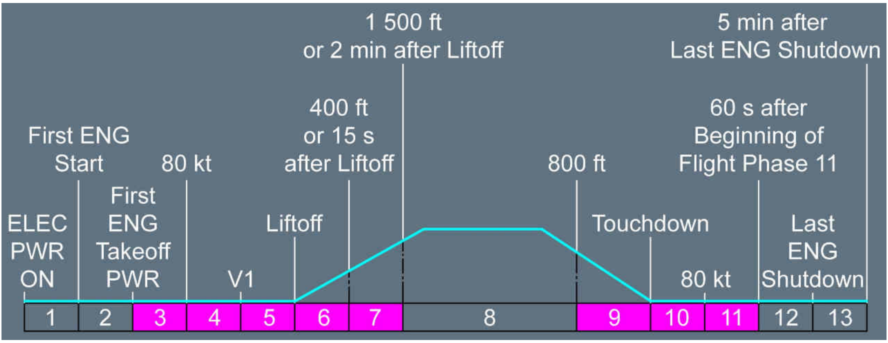


APU MASTER pb-sw

SD page

APU SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
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Ident.: PRO-ABN-APU-4961W020-00011724.0001001 / 24 JUN 14

APU MASTER SW..OFF

- **On ground, if the failure comes from the APU STARTER POWER UNIT :**
  APU START AVAIL ON EXT PWR ONLY

L2 After three consecutive APU start attempts, the flight crew should wait 60 min before a new start attempt.

APU EMER SHUTDOWN

Applicable to: ALL

Ident.: PRO-ABN-APU-4962W010-00011616.0001001 / 06 NOV 14

ANNUNCIATIONS

Triggering Conditions:

L2 An immediate APU emergency shutdown, without a cooling period, can occur when one of the following occurs:

- The APU FIRE pb of the overhead panel is pressed
- The APU EMERGENCY SHUTDOWN sw of the external refuel panel (ERP) is pressed
- The APU SHUT OFF sw of the Maintenance Nose Gear panel is pressed

Indications:

Audio

Master Light

MASTER
CAUT

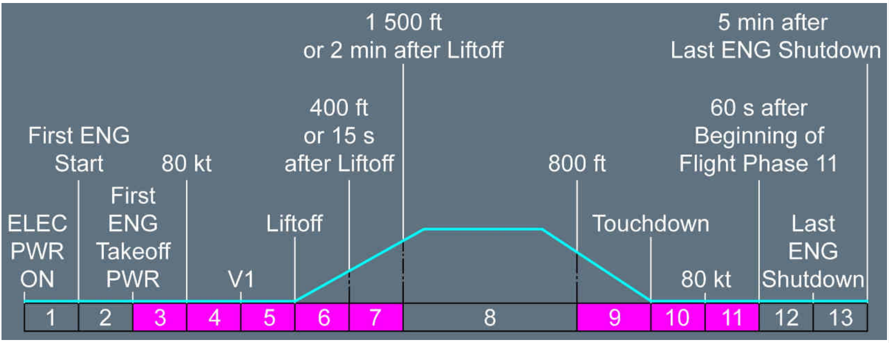
Local Light

APU MASTER pb-sw

SD page

APU SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-APU-4962W010-00011721.0001001 / 24 JUN 14

APU MASTER SW..OFF

Continued on the following page

APU EMER SHUTDOWN (Cont'd)

Ident.: PRO-ABN-APU-4962W010-00011722.0001001 / 24 JUN 14

STATUS

INOP SYS

ALL PHASES	
APU	

APU FAULT

Applicable to: ALL

Ident.: PRO-ABN-APU-4961W010-00005186.0002001 / 03 JAN 19

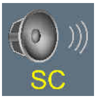
ANNUNCIATIONS

Triggering Conditions:

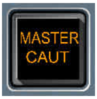
L2 The APU is faulty.

Indications:

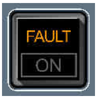
Audio



Master Light


MASTER
CAUT

Local Light

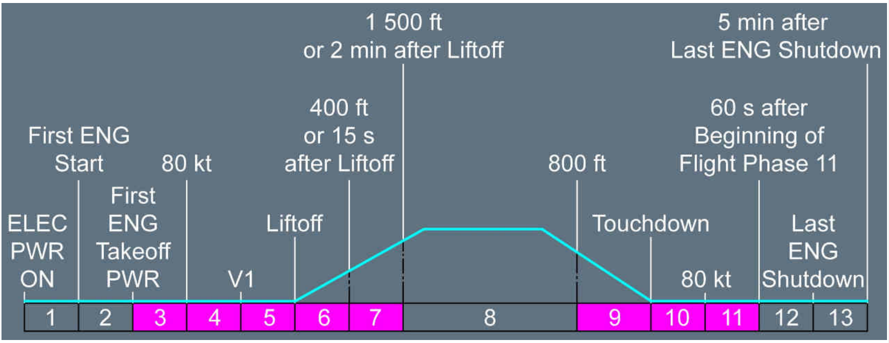


APU MASTER SW pb-sw

SD page

APU SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

APU FAULT (Cont'd)

Ident.: PRO-ABN-APU-4961W010-00019080.0002001 / 03 JAN 19

L2 The APU remains operative when all of the following apply:
- The APU is running when the failure occurs,
- The APU indications are still available on the APU SD page.

If the APU is not required, or the APU indications are not available on the APU SD page, the flight crew shuts down the APU.

The flight crew cannot start the APU when:
- The APU is not running when a failure occurs, or
- The APU has been shutdown after the loss of "DC EMER2" busbar.

Ident.: PRO-ABN-APU-4961W010-00008505.0002001 / 03 JAN 19

■ **If the APU indications are still available on the APU SD page:**

  ● **If APU is operating and "DC EMER2" busbar is lost:**
  NO APU RESTART

  ● **APU ABSOLUTELY RQRD ?**

    ● **NO**
    APU MASTER SW.. OFF

L2 *Note: Manually shut down the APU, unless the APU is required for electrical or pneumatic purposes during the flight.*

L1 ■ **If the APU indications are not available on the APU SD page:**
APU MASTER SW..OFF

Continued on the following page

APU FAULT (Cont'd)

Ident.: PRO-ABN-APU-4961W010-00008506.0002001 / 03 JAN 19

STATUS

INOP SYS

ALL PHASES

APU (If APU is shut down)

INFO

- **If APU is operating with the APU indications available, and "DC EMER2" busbar is lost:**
  NO APU RESTART

APU FIRE DET FAULT

Applicable to: ALL

Ident.: PRO-ABN-APU-2613W100-00017027.0001001 / 02 JUL 14

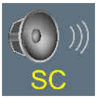
ANNUNCIATIONS

Triggering Conditions:

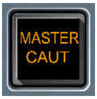
L2 The APU fire detection is failed due to the failure of both loops A and B. For more information about the detection logic in the APU, *Refer to DSC-26-40-10 Detection Logic*.

Indications:

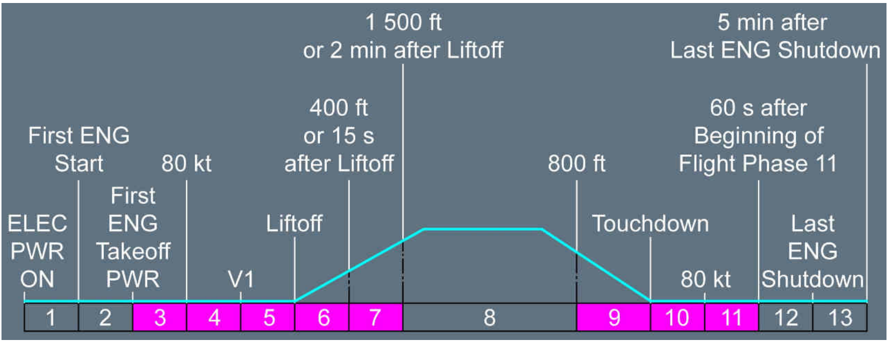
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Ident.: PRO-ABN-APU-2613W100-00019039.0001001 / 02 JUL 14

Note: *If the failure is only due to an IMA module failure, the ECAM displays the DUE TO IMA MODULE FAULT subtitle.*

Ident.: PRO-ABN-APU-2613W100-00017029.0001001 / 02 JUL 14

Crew awareness.

Continued on the following page

APU FIRE DET FAULT (Cont'd)

Ident.: PRO-ABN-APU-2613W100-00017030.0001001 / 02 JUL 14

STATUS

INOP SYS

ALL PHASES

APU FIRE DET

APU FIRE

Applicable to: ALL

Ident.: PRO-ABN-APUF-2622W100-00017004.0001001 / 02 JUL 14

ANNUNCIATIONS

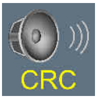
Triggering Conditions:

L2 A fire is detected in the APU when:
- Both loops A and B detect a fire, or
- One loop detects a fire and the other is failed, or
- Both loops fail within 5 s.

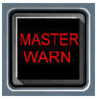
For more information about the detection logic in the APU, *Refer to DSC-26-40-10 Detection Logic*.

Indications:

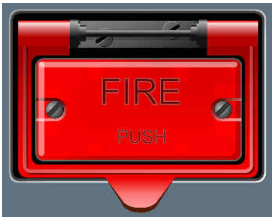
Audio



Master Light


MASTER
WARN

Local Light

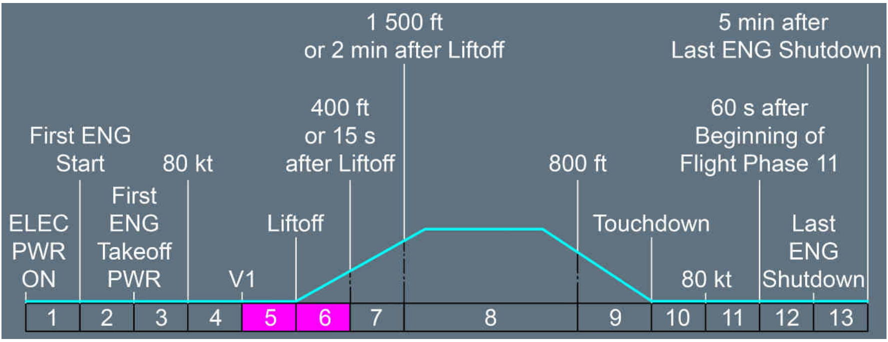


APU FIRE pb-sw

SD page

APU SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

APU FIRE (Cont'd)

Ident.: PRO-ABN-APUF-2622W100-00017007.0001001 / 07 NOV 16

LAND ASAP

APU FIRE P/B..PUSH

L2 *When pushed:*
- *APU LP valve closes*
- *Aural warning stops*
- *The light remains on, until the fire is extinguished, regardless of the position of the APU FIRE pb-sw.*

L1 APU BLEED..OFF

● **IF STILL FIRE AFTER 10 s:**

L2 The 10 seconds delay allows the airflow to decrease, in order to increase the efficiency of the agent. The countdown on the ECAM is automatic.
On ground, the agent is automatically discharged, therefore this line do not appear.

L1 APU AGENT..DISCH

APU MASTER SW..OFF

L2 *Do not attempt to restart the APU.*

Ident.: PRO-ABN-APUF-2622W100-00017008.0001001 / 02 JUL 14

STATUS

INOP SYS

ALL PHASES	
APU	

MEMOPAGE

MEMO ON ECAM

	LAND ASAP

AUTO FLT A/THR LIMITED

Applicable to: ALL

Ident.: PRO-ABN-AUTO_FLT-2230W110-00006647.0001001 / 13 JAN 15

ANNUNCIATIONS

Triggering Conditions:

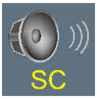
L2

The A/THR is active, and:
- Both engines are operative, and both thrust levers are below the CL detent, or
- One engine is inoperative, and the thrust lever of the operative engine is below the MCT detent.

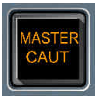
The alert triggers every 5 seconds, until the flight crew applies the following procedure.

Indications:

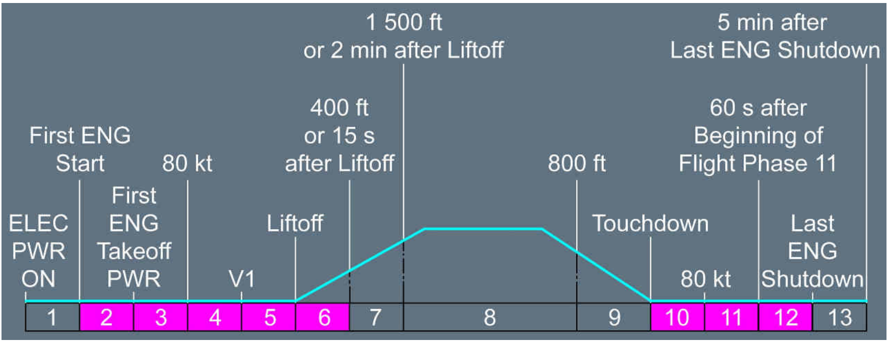
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

AUTO FLT A/THR LIMITED (Cont'd)

Ident.: PRO-ABN-AUTO_FLT-2230W110-00007288.0003001 / 07 JUL 16

- **When both engines are operative :**

  ALL THR LEVERS....................CLB

L2 *Both thrust levers must be set to the CL detent.*

L1
- **In the case of engine 1(2) out or at idle:**

  THR LEVER....................MCT

L2 *The thrust lever of the operative engine must be set to the MCT detent.*

AUTO FLT A/THR OFF

Applicable to: ALL

Ident.: PRO-ABN-AUTO_FLT-2230W040-00006649.0001001 / 06 MAR 15

ANNUNCIATIONS

Triggering Conditions:

L2 A not voluntary A/THR disconnection occurs due to one of the following reasons:

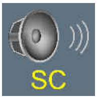
- The flight crew presses the A/THR pb on the AFS CP
- The A/THR becomes inoperative.
  One of the preliminary conditions required for A/THR arming or activation is no longer available: *Refer to DSC-22-FG-50-30 Preliminary Conditions Required for A/THR Arming or Activation*.

Note: *To cancel the indications, the flight crew can:*

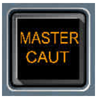
- *Press one A/THR instinctive disconnect pushbutton*
- *Press the MASTER CAUT light*
- *Arm, or activate the A/THR.*

Indications:

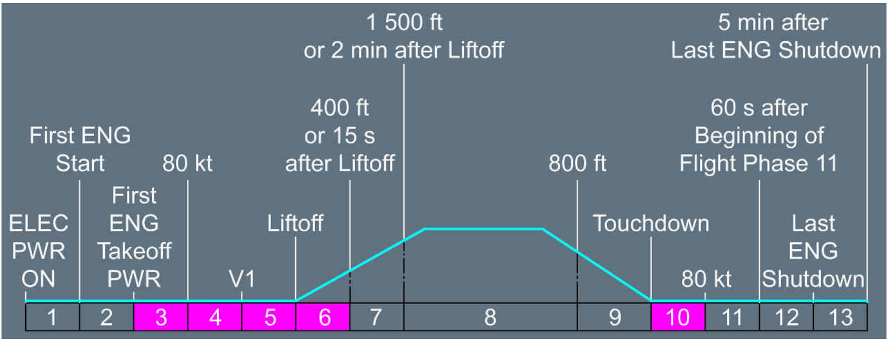
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

AUTO FLT A/THR OFF (Cont'd)

Ident.: PRO-ABN-AUTO_FLT-2230W040-00007290.0001001 / 06 MAR 15

ALL THR LEVERS....................MOVE

L2 *The thrust freezes after A/THR disconnection, and the flight crew should put the thrust reference on the actual thrust.*

Note: 1. *The THR LK indication flashes on the FMA, until the flight crew moves the thrust levers*
2. *If the flight crew does not quickly move the thrust levers, the ENG THRUST LOCKED (Refer to procedure) alert can also trigger.*

Ident.: PRO-ABN-AUTO_FLT-2230W040-00007291.0001001 / 04 SEP 14

STATUS

INOP SYS

ALL PHASES

A/THR (if A/THR failed)

INFO

LAND 2 ONLY (if A/THR failed)

MEMOPAGE

MEMO ON PFD

A/THR OFF

AUTO FLT AFS CTL PNL FAULT

Applicable to: ALL

Ident.: PRO-ABN-AUTO_FLT-2281W040-00006651.0001001 / 01 JUL 14

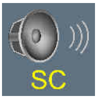
ANNUNCIATIONS

Triggering Conditions:

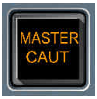
L2 The AFS control panel is failed.

Indications:

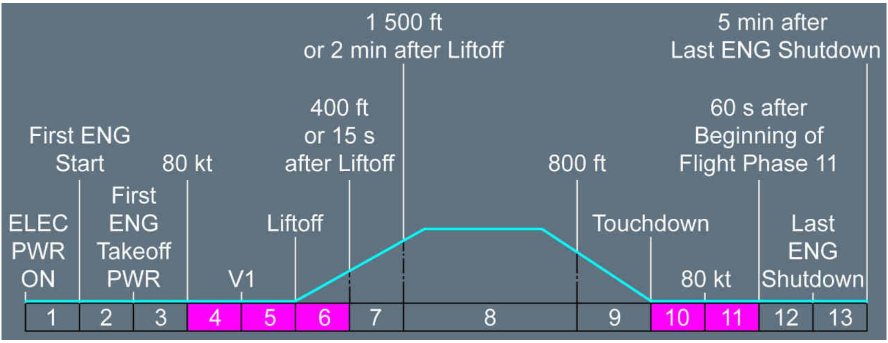
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-AUTO_FLT-2281W040-00019785.0001001 / 02 JUL 14

Note: *If the failure occurs during an RNP AR operation, the ECAM displays the RNP AR CAPABILITY DOWNGRADED subtitle.*

Continued on the following page

AUTO FLT AFS CTL PNL FAULT (Cont'd)

Ident.: PRO-ABN-AUTO_FLT-2281W040-00007293.0001001 / 06 FEB 18

● **If RNP AR operation in progress:**

Minimum LIMITED TO RNP 0.30

■ **If FCU BKUP is available on both CAPT and F/O sides :**

USE MFD FCU BKUP

L2 *The flight crew should permanently display the AFS CONTROL PANEL page of the MFD FCU BKUP, except during cruise. The use of other MFD displays must be minimized.*

L1 ■ **If FCU BKUP is available on the CAPT (F/O) side only :**

USE CAPT (F/O) MFD FCU BKUP

L2 *The flight crew should permanently display the AFS CONTROL PANEL page of the MFD FCU BKUP, except during cruise. The use of other MFD displays must be minimized.*

Ident.: PRO-ABN-AUTO_FLT-2281W040-00007294.0001001 / 01 JUL 14

STATUS

INOP SYS

ALL PHASES

AFS CTL PNL

INFO

FOR RNP AR : MINIMUM LIMITED TO RNP 0.30

AUTO FLT AFS CTL PNL+CAPT(F/O) BKUP CTL FAULT

Applicable to: ALL

Ident.: PRO-ABN-AUTO_FLT-2281W070-00012574.0001001 / 01 JUL 14

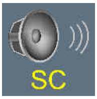
ANNUNCIATIONS

Triggering Conditions:

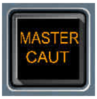
L2 The AFS control panel is failed, and the CAPT (F/O) AFS page of the FCU BKUP is failed.

Indications:

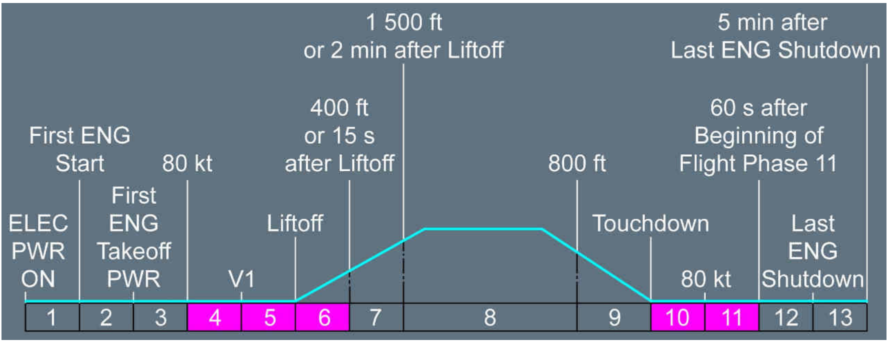
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Ident.: PRO-ABN-AUTO_FLT-2281W070-00023489.0001001 / 07 JUL 16

Note: *If the failure occurs during an RNP AR operation, the ECAM displays the RNP AR CAPABILITY DOWNGRADED subtitle.*

Continued on the following page

AUTO FLT AFS CTL PNL+CAPT(F/O) BKUP CTL FAULT (Cont'd)

Ident.: PRO-ABN-AUTO_FLT-2281W070-00012576.0002001 / 06 FEB 18

- **If RNP AR operation in progress:**
  Minimum LIMITED TO RNP 0.30

USE F/O(CAPT) MFD FCU BKUP

L2 *The flight crew should permanently display the AFS CONTROL PANEL page of the MFD FCU BKUP, except during cruise. The use of other MFD displays must be minimized.*

Ident.: PRO-ABN-AUTO_FLT-2281W070-00012577.0001001 / 01 JUL 14

STATUS

INOP SYS

ALL PHASES

CAPT(F/O) AFS BKUP CTL
AFS CTL PNL

AUTO FLT AP OFF

Applicable to: ALL

Ident.: PRO-ABN-AUTO_FLT-2210W040-00006653.0001001 / 01 JUL 14

ANNUNCIATIONS

Triggering Conditions:

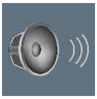
L2 The AP disengages due to:

- Not voluntary manual AP disconnection:
  - The flight crew presses the sidestick pushbutton one time, or
  - The flight crew presses the AP1(2) pb, when AP1(2) is engaged, or
  - The flight crew moves a sidestick, or
  - The flight crew moves the rudder pedals.
- Automatic AP disconnection.
  For more information about automatic AP disconnection, *Refer to DSC-22-FG-40-30 Automatic Disengagement*.

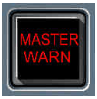
In accordance with the method of disconnection, different warnings trigger. For information on the sequence of the warnings, *Refer to DSC-22-FG-40-30 Disengagement Annunciations and Warnings*.

Indications:

Audio



Master Light



Ident.: PRO-ABN-AUTO_FLT-2210W040-00007296.0001001 / 01 JUL 14

Crew awareness.

Continued on the following page

AUTO FLT AP OFF (Cont'd)

Ident.: PRO-ABN-AUTO_FLT-2210W040-00007297.0002001 / 07 JUL 16

STATUS

INOP SYS

ALL PHASES

AP (If failed)

MEMOPAGE

MEMO ON ECAM

- **If the flight crew presses the sidestick pushbutton one time.**
  AP OFF

MEMO ON PFD

AP OFF

AUTO FLT APPROACH CAPABILITY DOWNGRADED

Applicable to: ALL

Ident.: PRO-ABN-AUTO_FLT-2213W750-00006655.0002001 / 07 JUL 16

ANNUNCIATIONS

Triggering Conditions:

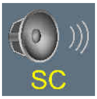
L2 The approach and landing capability is downgraded.

L3 The FWS triggers the AUTO FLT APPROACH CAPABILITY DOWNGRADED alert, if the approach and landing capability downgrades without an associated alert.

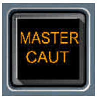
L2 *Note: For more information about approach and landing capabilities, Refer to LIM-AFS-20 Required Equipment for ILS CAT II/III Approach with Autoland.*

Indications:

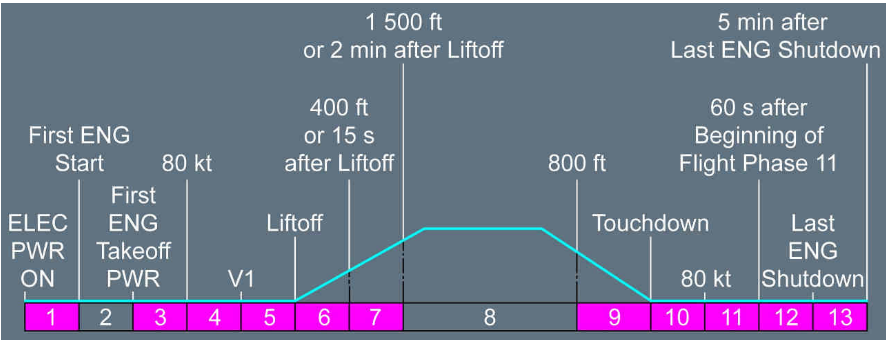
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-AUTO_FLT-2213W750-00007299.0001001 / 01 JUL 14

Crew awareness.

Continued on the following page

AUTO FLT APPROACH CAPABILITY DOWNGRADED (Cont'd)

Ident.: PRO-ABN-AUTO_FLT-2213W750-00007300.0007001 / 26 JUL 17

STATUS

INOP SYS

APPR_AND_LND

AUTOLAND (if autoland is inoperative)
GLS AUTOLAND (If GLS ◁ autoland is inoperative)

INFO

- **If autoland is not available:**
  APPR 1 ONLY
- **If GLS ◁ autoland is not available:**
  GLS LIMITED TO APPR 1
- **Depending on the autoland capability:**
  LAND 3 SINGLE ONLY
  LAND 2 ONLY
- **If erroneous G/S deviation from MMR 1(2) is detected:**
  GLS 1(2) ◁ & SLS 1(2) ◁ G/S UNRELIABLE
- **If erroneous G/S deviations from both MMRs are detected:**
  GLS 1+2 ◁ & SLS 1+2 ◁ G/S UNRELIABLE

AUTO FLT AUTO EMER DES FAULT

Applicable to: ALL

Ident.: PRO-ABN-AUTO_FLT-2210W120-00023326.0001001 / 01 JUN 17

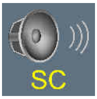
ANNUNCIATIONS

Triggering Conditions:

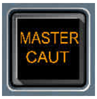
L2 The AUTO EMER DESCENT function is lost.

Indications:

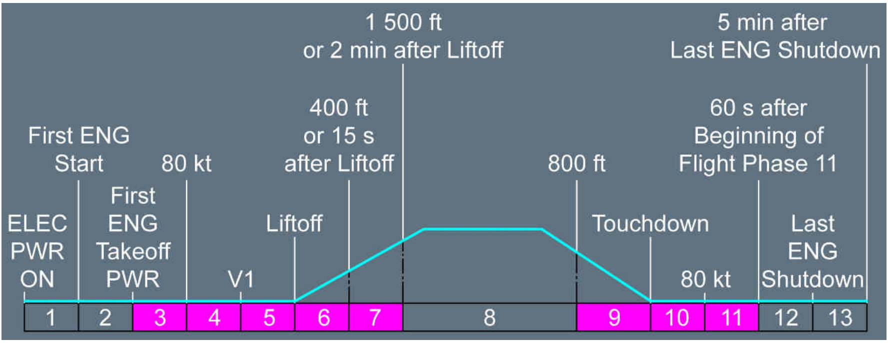
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
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5 min after
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400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-AUTO_FLT-2210W120-00023327.0001001 / 01 JUN 17

Crew awareness.

Continued on the following page

AUTO FLT AUTO EMER DES FAULT (Cont'd)

Ident.: PRO-ABN-AUTO_FLT-2210W120-00023328.0001001 / 01 JUN 17

STATUS

INOP SYS

ALL PHASES

AUTO EMER DES

AUTO FLT EMER DESCENT

Applicable to: ALL

Ident.: PRO-ABN-AUTO_FLT-2210W130-00023329.0002001 / 26 JUL 17

ANNUNCIATIONS

Triggering Conditions:

L2 The flight crew arms the AUTO EMER DESCENT function by pressing the EMER DESCENT pb.

Note: The AUTO EMER DESCENT function arms when the aircraft flies above the maximum altitude between 10 000 ft and 40 NM MORA.

Indications:

Local Light

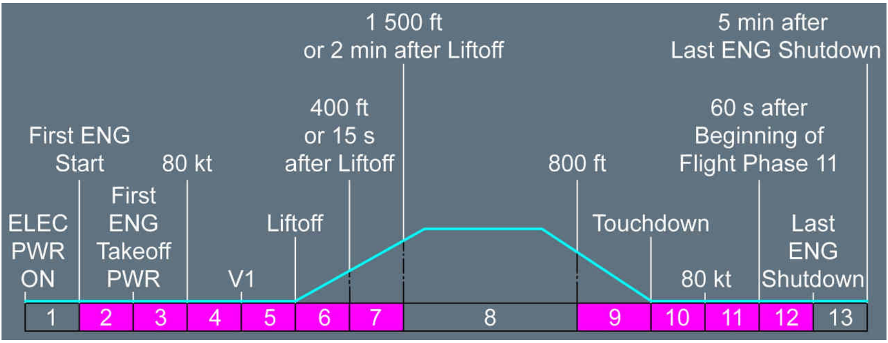
EMER
DESCENT
ARM

ARM light comes on

SD page

CAB PRESS SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Continued on the following page

AUTO FLT EMER DESCENT (Cont'd)

CREW OXY MASKS.......USE
SIGNS.......ON
EMER DESCENT.......INITIATE

Initiate the emergency descent with use of the AUTO EMER DESCENT function.

L3 *For more information on the use of the AUTO EMER DESCENT function, Refer to FCTM/PR-AEP-MISC EMER DESCENT.*

L1
- **If A/THR is not active:**

  ALL THR LEVERS.......IDLE

L2 *If the A/THR is active, check A/THR is at IDLE on the ED.*

L1 SPEED BRAKES LEVER.......FULL
SPEED.......MAX / APPROPRIATE

The flight crew may extend the landing gear when the speed is below VLO.

ATC.......NOTIFY

L2 *Notify ATC of the nature of the emergency, and state intentions.*

L1 EMER DESCENT (PA).......ANNOUNCE

L2 *The flight crew must inform the cabin crew and the passengers of the emergency descent, via the Passenger Address (PA).*

L1 ATC SQUAWK.......7700

L2 *When the flight crew engages the AUTO EMER DES function, the aircraft automatically squawks 7700.*

L1 MAX FL : 100/MEA-MORA

L2 *The initial descent altitude target is MORA $_{dISA/dP}$. The flight crew should consider to readjust the AFS altitude target according to the MORA displayed on ND. The flight crew should be aware that a PULL or PUSH action on the ALT knob will disengage the EMER DES mode and remove the AUTO FLT EMER DESCENT procedure from the WD.*

L1
- **CAB ALT ABOVE 14000 FT:**
  - **YES**

    PAX OXY MASK MAN ON.......PRESS

L2 *If the cabin altitude is above 13 800 ft, the passenger oxygen masks will automatically drop. If the automatic drop did not operate, the oxygen masks of the passengers releases when the flight crew presses the MASK MAN ON pb.*

Continued on the following page

AUTO FLT EMER DESCENT (Cont'd)

Notify the cabin crew when the aircraft reaches a safe flight level, and when cabin oxygen is no more necessary

L1
- **WHEN DESCENT ESTABLISHED:**

  CREW OXY MASKS DILUTION..........NORM

  To save oxygen, set the EMER/100%/NORM selector to NORM.
  With the EMER/100%/NORM selector set to 100 %, oxygen quantity may be insufficient to cover the entire emergency descent profile.
  Ensure that crew communication is established with oxygen masks. Avoid the continuous use of the interphone to minimize interference with the breathing noise in the oxygen mask.

Ident.: PRO-ABN-AUTO_FLT-2210W130-00023331.0001001 / 01 JUN 17

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

MAX FL : 100/MEA-MORA

LIMITATIONS ON PFD

ALL PHASES

MAX FL : 100/MEA-MORA

AUTO FLT FMS BKUP REJECTED
RNP AR CAPABILITY DOWNGRADED

Applicable to: ALL

Ident.: PRO-ABN-AUTO_FLT-2280W040-00014191.0001001 / 01 JUL 14

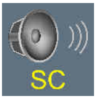
ANNUNCIATIONS

Triggering Conditions:

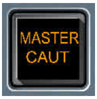
L2 The flight guidance system rejects the data of the FMC that is on standby, when an RNP AR approach procedure is engaged.

Indications:

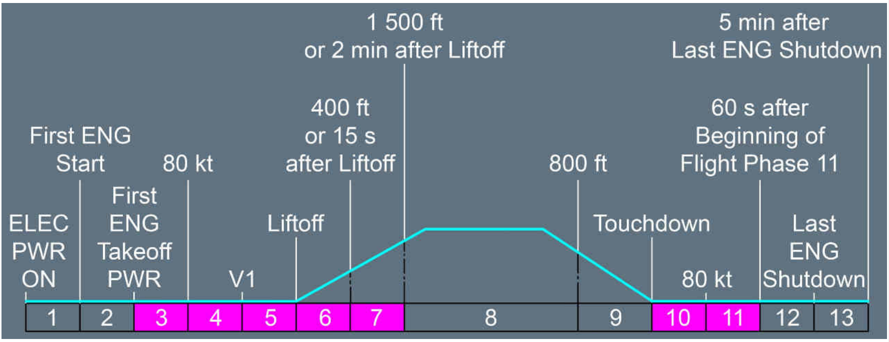
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-AUTO_FLT-2280W040-00014192.0001001 / 01 JUL 14

MINIMUM LIMITED TO RNP 0.30
FMS SWTG.. NORM

Continued on the following page

AUTO FLT FMS BKUP REJECTED (Cont'd)
RNP AR CAPABILITY DOWNGRADED

Ident.: PRO-ABN-AUTO_FLT-2280W040-00019121.0001001 / 06 NOV 14

STATUS

INFO

FOR RNP AR : MINIMUM LIMITED TO RNP 0.30

Note: *The status info remains displayed as long as the aircraft flies on a RNP AR procedure in NAV mode.*

AUTO FLT FMC-A(B)(C) FAULT

Applicable to: ALL

Ident.: PRO-ABN-AUTO_FLT-2270W010-00007313.0001001 / 20 OCT 14

ANNUNCIATIONS

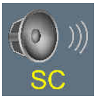
Triggering Conditions:

L2 FMC-A(B)(C) is failed.
FMS 1 and FMS 2 remain operative.

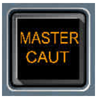
Note:
1. *The FWS triggers the single chime and the master caution if the aircraft flies a RNP AR operation.*
2. *In the case of AUTO FLT FMC-A(B) FAULT, the FMS message area displays PLEASE WAIT FOR FMS RESYNCH during the automatic FMC-C reconfiguration on side 1(2).*

Indications:

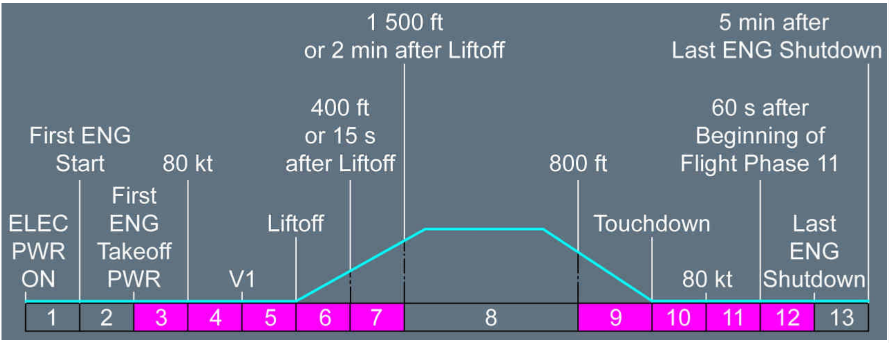
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition: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First ENG
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80 kt
400 ft
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60 s after
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PWR
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Takeoff
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Liftoff
Touchdown
80 kt
Last
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AUTO FLT FMC-A(B)(C) FAULT (Cont'd)

Ident.: PRO-ABN-AUTO_FLT-2270W010-00020098.0001001 / 20 OCT 14

Note: If the failure occurs during an RNP AR operation, the ECAM displays the RNP AR CAPABILITY DOWNGRADED subtitle.

Ident.: PRO-ABN-AUTO_FLT-2270W010-00007317.0001001 / 20 OCT 14

● **If RNP AR operation in progress:**
Minimum LIMITED TO RNP 0.30

FMS SWTG.. NORM

L2 *If FMC-A(B) fails, an automatic reconfiguration of the FMCs occurs without impact on AP, nor on guidance modes. FMC-C takes over, and synchronizes with FMC-B(A). After synchronization, FMC-C controls FMS 1(2).*
If FMC-C fails, the reconfiguration of the FMCs is not necessary. FMC-A and FMC-B will continue to control FMS 1 and FMS 2.
For more information about the abnormal operation of the FMCs, Refer to DSC-22-FMS-40 Abnormal Operation.

Ident.: PRO-ABN-AUTO_FLT-2270W010-00007318.0001001 / 20 OCT 14

STATUS

INOP SYS

ALL PHASES

FMC-A(B)(C)

INFO

FOR RNP AR : MINIMUM LIMITED TO RNP 0.30

AUTO FLT FMS 1(2) FAULT

Applicable to: ALL

Ident.: PRO-ABN-AUTO_FLT-2270W040-00007314.0001001 / 20 OCT 14

ANNUNCIATIONS

Triggering Conditions:

L2 FMS 1(2) is failed.

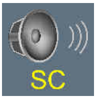
FMS 1 is failed, if
- FMC-A and FMC-C are failed, or
- FMC-A and FMC-B are failed, and FMC-C controls FMS 2, or
- FMC-A is failed, and FMC-C controls FMS 2 (FMC-B cannot control FMS 1).

FMS 2 is failed, if:
- FMC-B and FMC-C are failed, or
- FMC-A and FMC-B are failed, and FMC-C controls FMS 1, or
- FMC-B is failed, and FMC-C controls FMS 1 (FMC-A cannot control FMS 2).

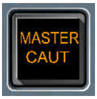
For more information about the abnormal operation of the FMCs, *Refer to DSC-22-FMS-40 Abnormal Operation*.

Indications:

Audio



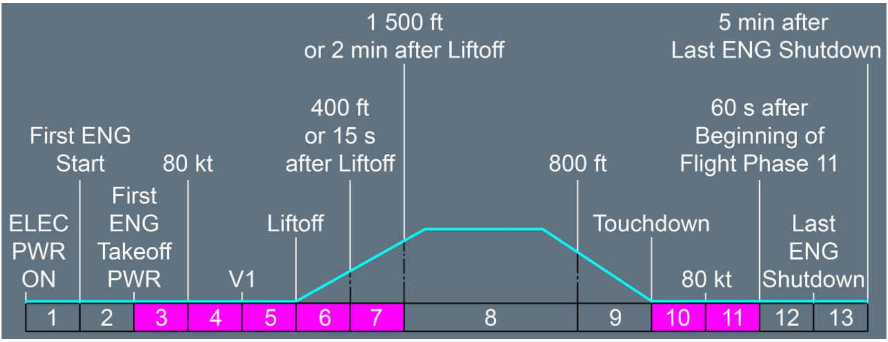
Master Light



Flight Phase Inhibition:

Continued on the following page

AUTO FLT FMS 1(2) FAULT (Cont'd)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5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
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Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-AUTO_FLT-2270W040-00020101.0001001 / 20 OCT 14

Note: *If the failure occurs during an RNP AR operation, the ECAM displays the RNP AR CAPABILITY LOST subtitle.*

Ident.: PRO-ABN-AUTO_FLT-2270W040-00007320.0001001 / 20 OCT 14

FMS SWTG..BOTH ON 2(1)

L2 *After the flight crew sets the FMS selector to BOTH ON 2(1), the PFD, the ND, and the MFD display FMS 2(1) data on both sides of the cockpit.*
The flight crew can still use AP 1(2). AP 1(2) uses the long-term guidance data from FMS 2(1).

L3 *After the flight crew sets the FMS selector to BOTH ON 2(1):*
- *The MFD of the Captain(First Officer) displays the ACTIVE/F-PLN page*
  The MFD system menu displays the same label as on the MFD of the First Officer(Captain). The fact that both MFD system menus display the same label indicates that both sides of the cockpit display data that comes from the same FMC.
- *The ND of the Captain(First Officer) displays the OFFSIDE FM CONTROL message*
  This message indicates that the active FMC on the side of the First Officer(Captain) provides the FMS data for the side of the Captain(First Officer).
- *On the EFIS CP of the Captain(First Officer), the flight crew can no longer select:*
  - *The FMS display options: CSTR, WPT, VORD, NDB, and ARPT*
  - *The ND mode (except the ROSE-VOR and ROSE-LS modes)*
  - *The ND range (except the ZOOM position).*

  The flight crew manages these display options via the EFIS CP of the First Officer(Captain).

Continued on the following page

AUTO FLT FMS 1(2) FAULT (Cont'd)

Ident.: PRO-ABN-AUTO_FLT-2270W040-00007321.0001001 / 20 OCT 14

STATUS

INOP SYS

ALL PHASES

FMS 1(2)
RNP AR

AUTO FLT FMS 1(2) REJECTED
RNP AR CAPABILITY DOWNGRADED

Applicable to: ALL

Ident.: PRO-ABN-AUTO_FLT-2280W020-00012628.0001001 / 01 JUL 14

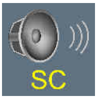
ANNUNCIATIONS

Triggering Conditions:

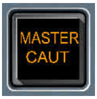
L2 The flight guidance system rejects the FMS1(2) data, when an RNP AR approach procedure is engaged.
For more information, *Refer to DSC-22-FMS-40 FMC Data Not Valid during a RNP AR Procedure*.

Indications:

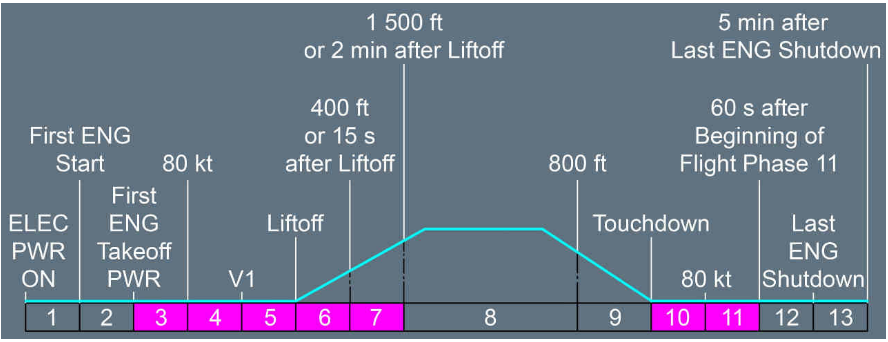
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Ident.: PRO-ABN-AUTO_FLT-2280W020-00012629.0001001 / 01 JUL 14

MINIMUM LIMITED TO RNP 0.30
AP 2(1)..........SELECT
FMS SWTG..........BOTH ON 2(1)

Continued on the following page

AUTO FLT FMS 1(2) REJECTED (Cont'd)

RNP AR CAPABILITY DOWNGRADED

Ident.: PRO-ABN-AUTO_FLT-2280W020-00019124.0001001 / 06 NOV 14

STATUS

INFO

FOR RNP AR : MINIMUM LIMITED TO RNP 0.30

Note: *The status info remains displayed as long as the aircraft flies on a RNP AR procedure in NAV mode.*

AUTO FLT FMS 1+2 FAULT

Applicable to: ALL

Ident.: PRO-ABN-AUTO_FLT-2270W100-00007315.0001001 / 01 JUL 14

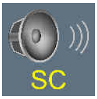
ANNUNCIATIONS

Triggering Conditions:

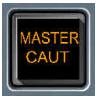
L2 FMC-A, FMC-B, and FMC-C are failed. As a result, FMS 1 and FMS 2 are inoperative.
For more information about the abnormal operation of the FMCs, *Refer to DSC-22-FMS-40 Abnormal Operation*.

Indications:

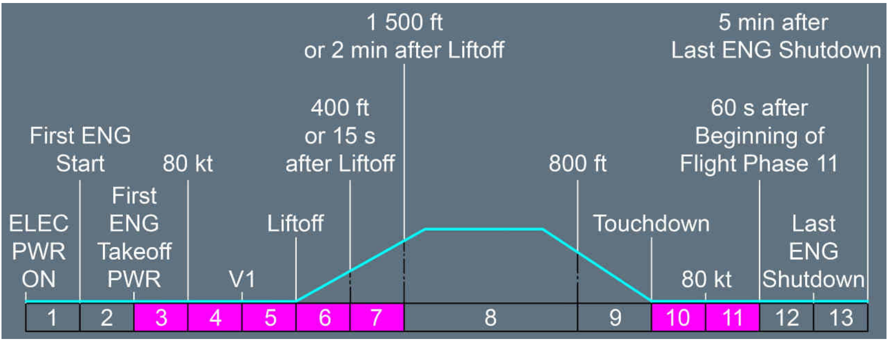
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition: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400 ft
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Ident.: PRO-ABN-AUTO_FLT-2270W100-00020108.0001001 / 02 OCT 14

Note: *If the failure occurs during an RNP AR operation, the ECAM displays the RNP AR CAPABILITY LOST subtitle.*

Continued on the following page

AUTO FLT FMS 1+2 FAULT (Cont'd)

Ident.: PRO-ABN-AUTO_FLT-2270W100-00007323.0001001 / 01 JUL 14

FMS SWTG..NORM
[MFD SURV] TAWS FLAP MODE........................OFF
FOR NAVIGATION :
  BKUP TRAJ AVAIL ON ND (RNG MAX 160 NM)
  ISIS AVAIL
FOR NAVAID / LS TUNING : USE RMP

Ident.: PRO-ABN-AUTO_FLT-2270W100-00007324.0001001 / 01 JUL 14

DEFERRED PROC

ALL PHASES

> AT TOP OF DES : LDG ELEVN

CABIN ALT MODE..MAN
CABIN ALT TRGT..LDG ELEVN

STATUS

INOP SYS

ALL PHASES

FMS 1+2
RNP AR

AUTO FLT FMS 1+2 REJECTED
RNP AR CAPABILITY LOST

Applicable to: ALL

Ident.: PRO-ABN-AUTO_FLT-2280W010-00014193.0002001 / 07 JUL 16

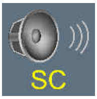
ANNUNCIATIONS

Triggering Conditions:

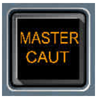
L2 When a RNP AR approach procedure is engaged, the flight guidance system rejects both FMS 1 and 2 data if one of the following is applicable:
- FMS in INDEPENDENT mode (*Refer to DSC-22-FMS-40 INDEPENDENT Mode*)
- FMS 1 and FMS 2 data not valid (*Refer to DSC-22-FMS-40 FMC Data Not Valid during a RNP AR Procedure*).

Indications:

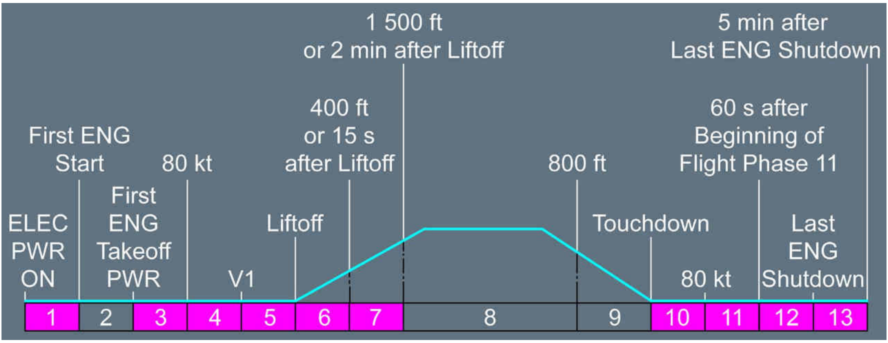
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition: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400 ft
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60 s after
Beginning of
Flight Phase 11
First ENG
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80 kt
800 ft
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ENG
Takeoff
PWR
ELEC
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Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

AUTO FLT FMS 1+2 REJECTED (Cont'd)
RNP AR CAPABILITY LOST

Ident.: PRO-ABN-AUTO_FLT-2280W010-00014194.0001001 / 29 JUL 14

Note: *1. Both NDs display the BACKUP TRAJ. For more information, Refer to DSC-31-CDS-40-40-90 BACKUP TRAJ.*

2. After the flight crew applies the AUTO FLT FMS 1+2 REJECTED procedure, due to FMS INDEPENDENT mode, the flight crew shall modify both active flight plans before NAV re-engagement. If not, the NDs display again the BACKUP TRAJ and the backup guidance (from backup FMC) activates again.

BKUP GUIDANCE ACTIVE
KEEP NAV ENGAGED FOR BKUP GUIDANCE

● **ABOVE SAFETY ALTITUDE:**

TO ACCESS FMS FUNCTIONS : PULL HDG

Ident.: PRO-ABN-AUTO_FLT-2280W010-00019123.0001001 / 01 JUL 14

STATUS

INOP SYS

ALL PHASES	
RNP AR	

AUTO FLT LIMITED

Applicable to: ALL

Ident.: PRO-ABN-AUTO_FLT-2210W300-00024184.0001001 / 26 JUL 17

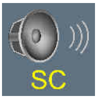
ANNUNCIATIONS

Triggering Conditions:

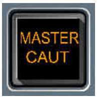
L2 The AP/ FD is available, and FMS (managed guidance) modes are not available.

Indications:

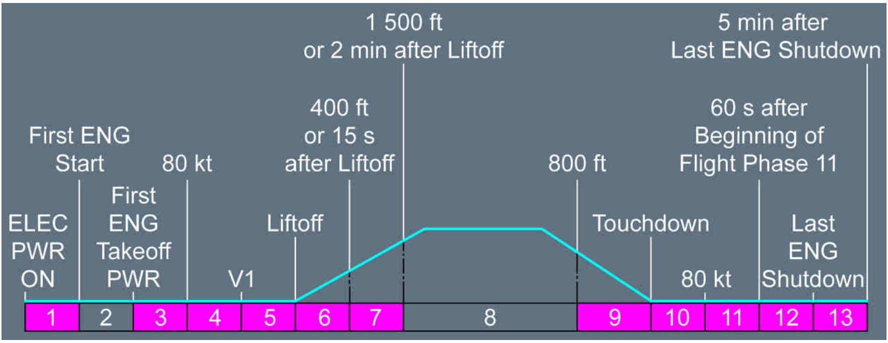
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition: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Liftoff
Touchdown
Last
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Shutdown
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80 kt
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Ident.: PRO-ABN-AUTO_FLT-2210W300-00024186.0001001 / 05 NOV 18

MANAGED MODES NOT AVAIL

L2 *The FMS managed modes NAV, CLB, DES, APP DES, SPEED and MACH are not available. The F-G/S et F-LOC modes remain available.*

Continued on the following page

AUTO FLT LIMITED (Cont'd)

Ident.: PRO-ABN-AUTO_FLT-2210W300-00024187.0001001 / 26 JUL 17

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

NO MANAGED MODES

AUTO FLT ROLLOUT FAULT

Applicable to: ALL

Ident.: PRO-ABN-AUTO_FLT-2210W100-00006662.0001001 / 01 JUL 14

ANNUNCIATIONS

Triggering Conditions:

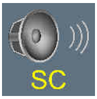
L2 The AP/FD ROLL OUT mode is not operative for autoland.
The flight crew must perform the rollout manually.

Note: The alert does not prevent the ROLL OUT mode to engage.

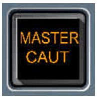
If the ROLL OUT mode engages:
- *The FMA displays the ROLL OUT indication*
- *The PFD displays the yaw bar.*

Indications:

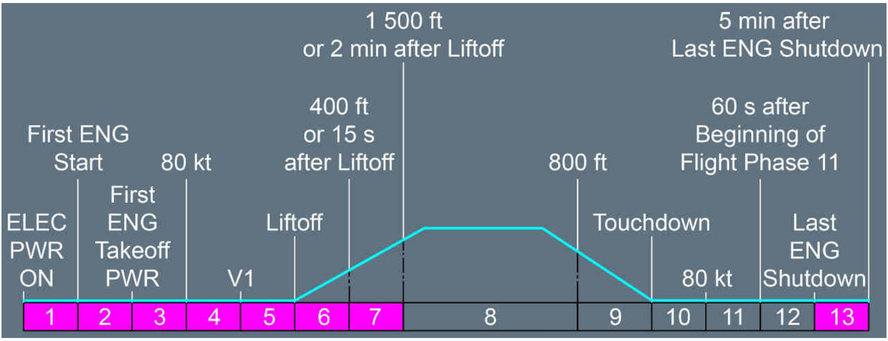
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
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8
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12
13

Ident.: PRO-ABN-AUTO_FLT-2210W100-00007310.0001001 / 01 JUL 14

FOR AUTOLAND : MAN ROLLOUT ONLY

Continued on the following page

AUTO FLT ROLLOUT FAULT (Cont'd)

Ident.: PRO-ABN-AUTO_FLT-2210W100-00007311.0001001 / 01 JUL 14

STATUS

INOP SYS

APPR & LDG

ROLLOUT

INFO

FOR AUTOLAND : MAN ROLLOUT ONLY
LAND 3 SINGLE ONLY

AUTO FLT TCAS MODE FAULT

Applicable to: ALL

Ident.: PRO-ABN-AUTO_FLT-2210W150-00012586.0001001 / 01 JUL 14

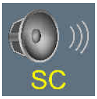
ANNUNCIATIONS

Triggering Conditions:

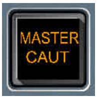
L2 The AP/FD TCAS mode is failed.

Indications:

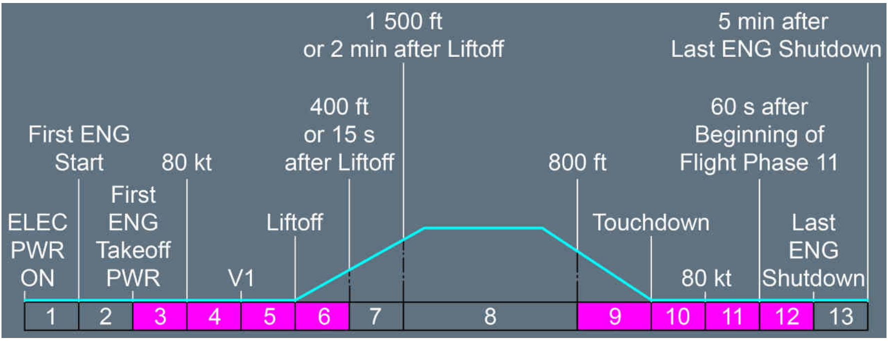
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Ident.: PRO-ABN-AUTO_FLT-2210W150-00018310.0001001 / 06 NOV 14

L2 The ECAM reminds that the AP/FD TCAS mode is not available, and in the case of a Resolution Advisory (RA), the flight crew must be prepared to disconnect the AP and manually follow the TCAS guidances. For more information about the TCAS procedure, *Refer to PRO-ABN-SURV [MEM] TCAS WARNING - RESOLUTION ADVISORY*.

Continued on the following page

AUTO FLT TCAS MODE FAULT (Cont'd)

Ident.: PRO-ABN-AUTO_FLT-2210W150-00012589.0001001 / 01 JUL 14

IF TCAS ALERT :
AP & FD.......................OFF
FLY MANUALLY TCAS RA ORDER

Ident.: PRO-ABN-AUTO_FLT-2210W150-00012590.0001001 / 01 JUL 14

STATUS

INOP SYS

ALL PHASES

AP/FD TCAS MODE

INFO

IF TCAS ALERT :
AP & FD ....OFF
FLY MANUALLY TCAS RA ORDER

AVIONICS NETWORK SWITCH/CABLE FAULT (NETWORK DEGRADED)

Applicable to: ALL

Ident.: PRO-ABN-AVNCS-4230W1401-00024938.0001001 / 03 JAN 19

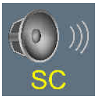
ANNUNCIATIONS

Triggering Conditions:

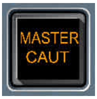
L2 One or more switches or cables are failed on the avionics networks: Communication between the aircraft systems may be affected (*Refer to DSC-42-20 Multiple Switch or Cable Failures That Affect Both Networks*).

Indications:

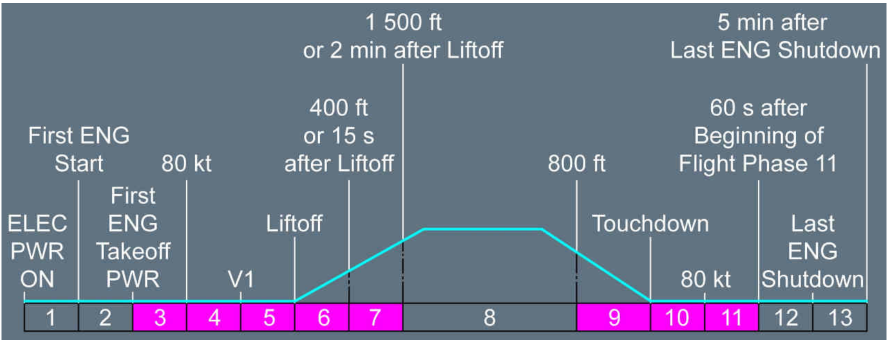
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

AVIONICS NETWORK SWITCH/CABLE FAULT (NETWORK DEGRADED) (Cont'd)

Ident.: PRO-ABN-AVNCS-4230W1401-00024939.0001001 / 03 JAN 19

L2 Depending on the failed switches or cables, communication between some aircraft systems is no longer possible. The ECAM will trigger the applicable system alerts below the AVIONICS NETWORK SWITCH/CABLE FAULT [NETWORK DEGRADED] alert.
Some indications on several displays (e.g. on the SD) may be lost: However, the corresponding systems may continue to operate normally.
In any case, the following systems will be available:

FLY	F/CTL normal law Stall warning PFD with attitude, altitude, heading, airspeed and barometric reference indications AP in selected mode (1) Auto Trim Manual thrust, with engine parameters displayed on ED L/G gravity extension Slats/Flaps Ground spoilers Thrust reversers Normal braking, with manual braking and antiskid
NAVIGATE	ISIS with ILS1/GLS1 approaches in APPR 1. Tuning via RMPs ISIS with A/C position, heading and track ND ROSE-NAV with a range of 80 NM Backup Trajectory up to 160 NM with active F-PLN RA auto callouts FOB and GW computation. Depending on the failure, the FOB and GW indications may be displayed with a degraded accuracy.
COMMUNICATE	Voice communication (VHF/HF). Tuning via RMPs Passenger Address/Cabin Intercom Transponder mode A
MANAGE SYSTEMS	FWS 1 and 2 WD CAB PRESS manual mode XBLEED selector APU Engine anti-ice Windshield and window heating on F/O side Automatic probe heating Manual deployment of cabin oxygen masks OIS, with OIS keyboard

(1) *Depending on the failed switches or cables, the EFIS may not display the Flight Guidance data.*

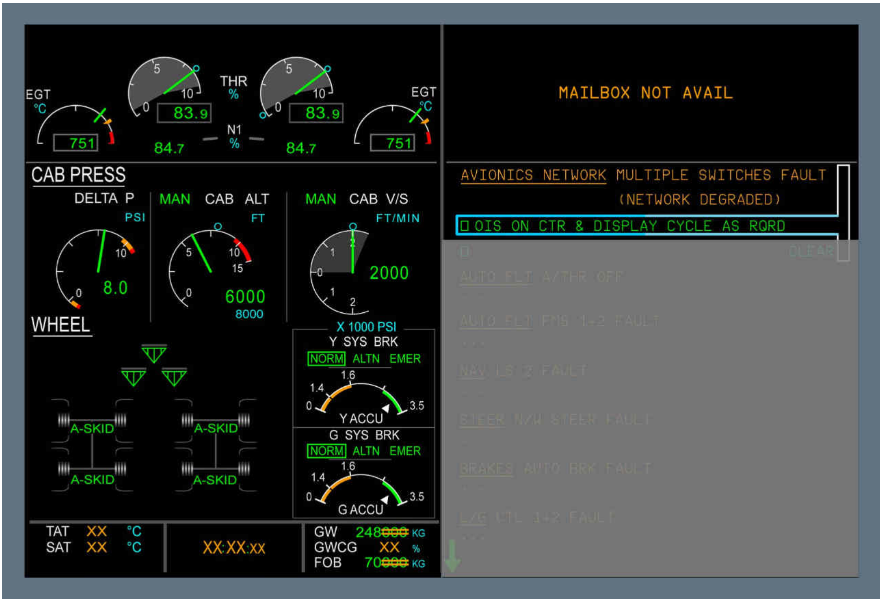
Continued on the following page

AVIONICS NETWORK SWITCH/CABLE FAULT (NETWORK DEGRADED) (Cont'd)

Ident.: PRO-ABN-AVNCS-4230W1401-00024940.0001001 / 03 JAN 19

- **If CDS CENTER UPPER (LOWER) DU is lost:**
  DISPLAY CYCLE AS RQRD
- **If CDS CAPT(F/O) OUTER (INNER) DU is lost:**
  OIS ON CTR & DISPLAY CYCLE AS RQRD
- **If STATUS and ECAM SD pages are not available:**

L2 In some cases of multiple switches or cables failure, the flight crew can no longer access the ECAM SD pages and STATUS page. Instead, the ECAM displays a specific SD page that gathers essential information from the conventional CAB PRESS SD page and WHEEL SD page.


EGT
°C
751
THR
%
83.9
N1
%
84.7
83.9
84.7
EGT
°C
751
CAB PRESS
DELTA P
PSI
8.0
MAN CAB ALT
FT
6000
8000
MAN CAB V/S
FT/MIN
2000
WHEEL
A-SKID
A-SKID
A-SKID
A-SKID
X 1000 PSI
Y SYS BRK
NORM ALTN EMER
Y ACCU
G SYS BRK
NORM ALTN EMER
G ACCU
TAT XX °C
SAT XX °C
XX:XX:xx
GW 248~~000~~ KG
GWCG XX %
FOB 70~~000~~ KG

MAILBOX NOT AVAIL

AVIONICS NETWORK MULTIPLE SWITCHES FAULT
(NETWORK DEGRADED)
☐ OIS ON CTR & DISPLAY CYCLE AS RQRD
☐ CLEAR

AUTO FLT A/THR OFF

AUTO FLT FMS 1+2 FAULT

NAV LS 2 FAULT

STEER N/W STEER FAULT

BRAKES AUTO BRK FAULT

L/G CTL 1+2 FAULT

Continued on the following page

AVIONICS NETWORK SWITCH/CABLE FAULT (NETWORK DEGRADED) (Cont'd)

Ident.: PRO-ABN-AVNCS-4230W1401-00024941.0001001 / 03 JAN 19

STATUS

INFO

- **Depending on the switches or cables affected, one (or more) of the following messages appear(s):**
  SMOKE DET AVAIL ON OVHD PNL & FAP ONLY
  SLATS & FLAPS NOT MONITORED
  FIRE DET AVAIL ON OVHD PNL ONLY

[MEM] LOSS OF BRAKING

Ident.: PRO-ABN-BRAKES-00016272.0001001 / 24 MAY 17
Applicable to: ALL

- **If no braking:**

  REV...MAX

  L2 *If needed, the flight crew may keep maximum reverse thrust until full aircraft stop.*

  L1 BRAKE PEDALS...RELEASE

  L2 *When the flight crew sets the A-SKID to OFF, the control of the braking is transferred from the BCS to the RBCU, and the emergency braking mode is activated. Consequently the PF should release the brake pedals before the PM selects the A-SKID to OFF. This action avoids brutal braking application.*
  For more information on the emergency braking mode, Refer to Emergency Braking.

  L1 A-SKID...ORDER

  L2 *The PF orders the PM to select the A-SKID to OFF.*

  L1 A-SKID...OFF
  BRAKE PEDALS...PRESS

  L2 *The pressure of the brakes is automatically limited.*

  L1
  - **If still no braking:**

    PARK BRK...ON

    L2 *For more information on the parking brake and ultimate braking, Refer to parking brake and ultimate braking.*

BRAKES ALTN+EMER BRK FAULT ON ALL WHEELS

Applicable to: ALL

Ident.: PRO-ABN-BRAKES-3243W040-00014368.0001001 / 02 OCT 14

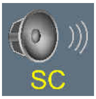
ANNUNCIATIONS

Triggering Conditions:

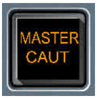
L2 The alternate and the emergency braking modes are failed on all wheels. The normal braking mode is available on all wheels as soon as no failure is detected on the normal braking mode.

Indications:

Audio



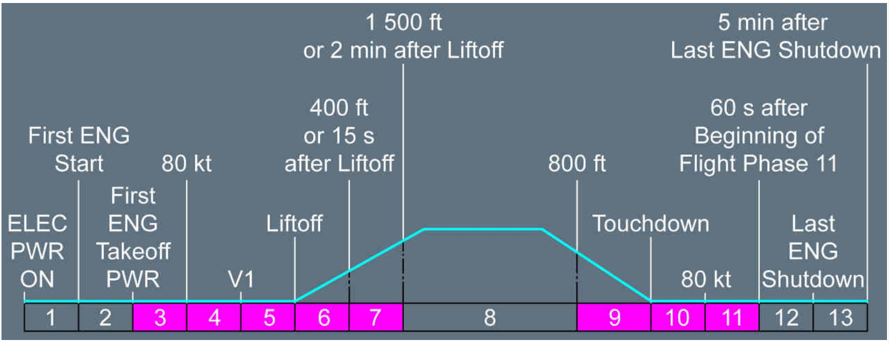
Master Light


MASTER
CAUT

SD page

WHEEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Continued on the following page

BRAKES ALTN+EMER BRK FAULT ON ALL WHEELS (Cont'd)

Ident.: PRO-ABN-BRAKES-3243W040-00014370.0002001 / 26 JUL 17

- **If normal braking is available:**
  NORM BRK AVAIL ON ALL WHEELS
- **If the green and yellow brake accumulators are failed:**
  G+Y BRK ACCUs NOT USABLE
- **BEFORE ENG SHUTDOWN:**
  CHOCKS.. CONSIDER

Ident.: PRO-ABN-BRAKES-3243W040-00014371.0002001 / 26 JUL 17

STATUS

INOP SYS

APPR & LDG

ALTN+EMER BRK
PARK BRK (If the green and yellow brake accumulators are failed or If the pressure in the green and yellow brake accumulators is low)
G+Y BRK ACCUs (If the green and yellow brake accumulators are failed)

INFO

- **If normal braking is available:**
  NORM BRK AVAIL ON ALL WHEELS

BRAKES ALTN BRK FAULT ON ALL WHEELS

Applicable to: ALL

Ident.: PRO-ABN-BRAKES-3243W010-00014364.0001001 / 02 OCT 14

ANNUNCIATIONS

Triggering Conditions:

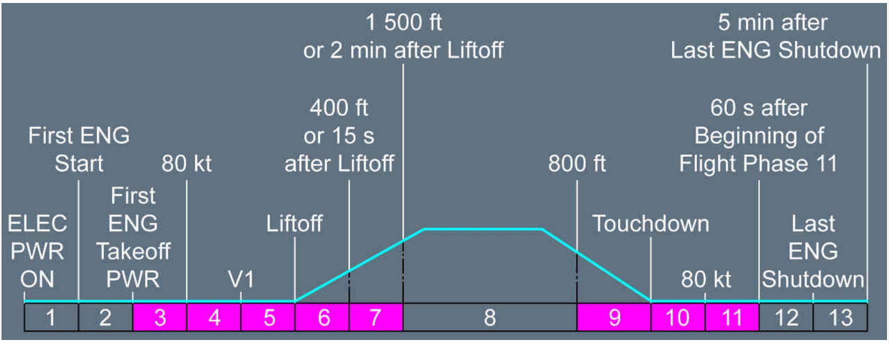
L2 The alternate braking mode is failed on all wheels. The normal braking mode is available on all wheels as soon as no failure is detected on the normal braking mode.

Indications:

SD page

WHEEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Ident.: PRO-ABN-BRAKES-3243W010-00014366.0001001 / 02 OCT 14

- **If normal braking is available:**
  NORM BRK AVAIL ON ALL WHEELS

Continued on the following page

BRAKES ALTN BRK FAULT ON ALL WHEELS (Cont'd)

Ident.: PRO-ABN-BRAKES-3243W010-00014367.0001001 / 02 OCT 14

STATUS

INOP SYS

APPR & LDG

ALTN BRK

INFO

- **If normal braking is available:**
  NORM BRK AVAIL ON ALL WHEELS

BRAKES A-SKID FAULT ON ALL WHEELS

Applicable to: ALL

Ident.: PRO-ABN-BRAKES-3242W240-00014372.0002001 / 03 JAN 19

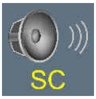
ANNUNCIATIONS

Triggering Conditions:

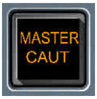
L2 The A-SKID is failed on all wheels. The braking system is in emergency braking mode on all wheels.

Indications:

Audio



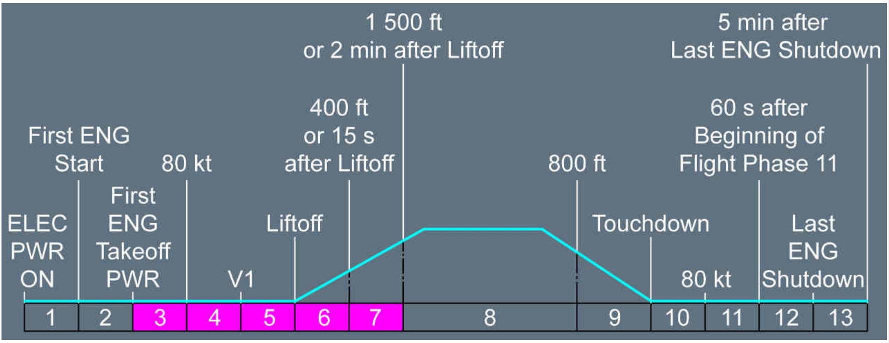
Master Light


MASTER
CAUT

SD page

WHEEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Continued on the following page

BRAKES A-SKID FAULT ON ALL WHEELS (Cont'd)

Ident.: PRO-ABN-BRAKES-3242W240-00014374.0004001 / 03 JAN 19

BRK PRESS LIMITED ON ALL WHEELS

L2 *Even if the flight crew applies maximum deflection on the brake pedals, the braking pressure is automatically limited on the affected wheels to reduce the risk of tire burst.*
In the case of wet or contaminated runway, tire may burst.

L1 ● **If yellow hydraulic circuit is not available:**

AT LDG IF ACCU PRESS BELOW 1 400 PSI : FWD BRK LOST

L2 *If the accumulator pressure is below 1400 psi, all braking modes are lost.*

L1 ● **If green hydraulic circuit is not available:**

AT LDG IF ACCU PRESS BELOW 1 400 PSI : AFT BRK LOST

L2 *If the accumulator pressure is below 1400 psi, all braking modes are lost.*

L1 LDG DIST AFFECTED

Continued on the following page

BRAKES A-SKID FAULT ON ALL WHEELS (Cont'd)

Ident.: PRO-ABN-BRAKES-3242W240-00014375.0004001 / 03 JAN 19

LIMITATIONS

LIMITATIONS ON PFD

APPR & LDG

LDG DIST AFFECTED

L12

STATUS

INOP SYS

APPR & LDG

A-SKID
AUTO BRK

INFO

BRK PRESS LIMITED ON ALL WHEELS

Even if the flight crew applies maximum deflection on the brake pedals, the braking pressure is automatically limited on the affected wheels to reduce the risk of tire burst.
In the case of wet or contaminated runway, tire may burst.

- **If one or both engines are running:**
  TAXI WITH CARE

NO BRAKED PIVOT TURN
LAND 3 SINGLE ONLY

- **If yellow hydraulic circuit is not available:**
  AT LDG IF ACCU PRESS BELOW 1 400 PSI

  FWD BRK LOST

- **If green hydraulic circuit is not available:**
  AT LDG IF ACCU PRESS BELOW 1 400 PSI

  AFT BRK LOST

BRAKES A-SKID OFF

Applicable to: ALL

Ident.: PRO-ABN-BRAKES-3242W100-00014376.0001001 / 02 OCT 14

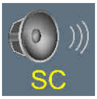
ANNUNCIATIONS

Triggering Conditions:

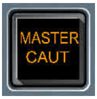
L2 The ANTI SKID sw is set to OFF. The braking system is in emergency braking mode on all wheels.

Indications:

Audio



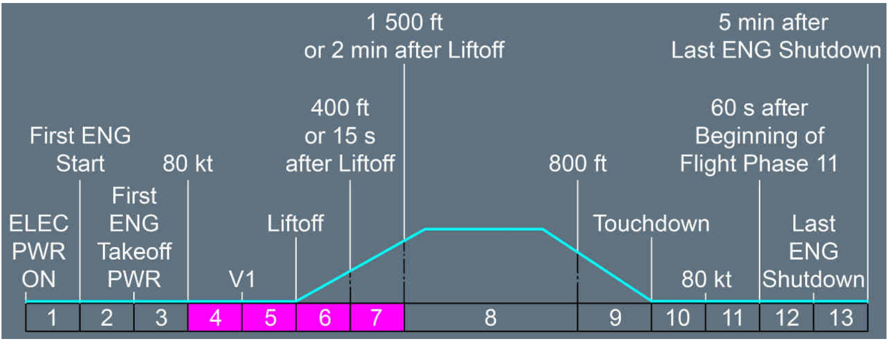
Master Light


MASTER
CAUT

SD page

WHEEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Continued on the following page

BRAKES A-SKID OFF (Cont'd)

Ident.: PRO-ABN-BRAKES-3242W100-00014378.0004001 / 03 JAN 19

BRK PRESS LIMITED ON ALL WHEELS

L2 *Even if the flight crew applies maximum deflection on the brake pedals, the braking pressure is automatically limited on the affected wheels to reduce the risk of tire burst.*
In the case of wet or contaminated runway, tire may burst.

L1

- ■ **If yellow hydraulic circuit is not available:**
  AT LDG IF ACCU PRESS BELOW 1400 PSI: FWD BRK LOST
- ■ **If green hydraulic circuit is not available:**
  AT LDG IF ACCU PRESS BELOW 1400 PSI: AFT BRK LOST

LDG DIST AFFECTED

Continued on the following page

BRAKES A-SKID OFF (Cont'd)

Ident.: PRO-ABN-BRAKES-3242W100-00014379.0004001 / 03 JAN 19

LIMITATIONS

LIMITATIONS ON PFD

APPR & LDG

LDG DIST AFFECTED

L12

STATUS

INOP SYS

APPR & LDG

A-SKID
AUTO BRK

INFO

LAND 3 SINGLE ONLY
BRK PRESS LIMITED ON ALL WHEELS

Even if the flight crew applies maximum deflection on the brake pedals, the braking pressure is automatically limited on the affected wheels to reduce the risk of tire burst.
In the case of wet or contaminated runway, tire may burst.

- **If one or both engines are running:**
  TAXI WITH CARE

NO BRAKED PIVOT TURN

- **If yellow hydraulic circuit is not available:**
  AT LDG IF ACCU PRESS BELOW 1400 PSI : FWD BRK LOST
- **If green hydraulic circuit is not available:**
  AT LDG IF ACCU PRESS BELOW 1400 PSI : AFT BRK LOST

BRAKES AUTO BRK FAULT

Applicable to: ALL

Ident.: PRO-ABN-BRAKES-3242W010-00014380.0001001 / 02 OCT 14

ANNUNCIATIONS

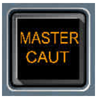
Triggering Conditions:

L2 The autobrake is failed.

Indications:

Audio

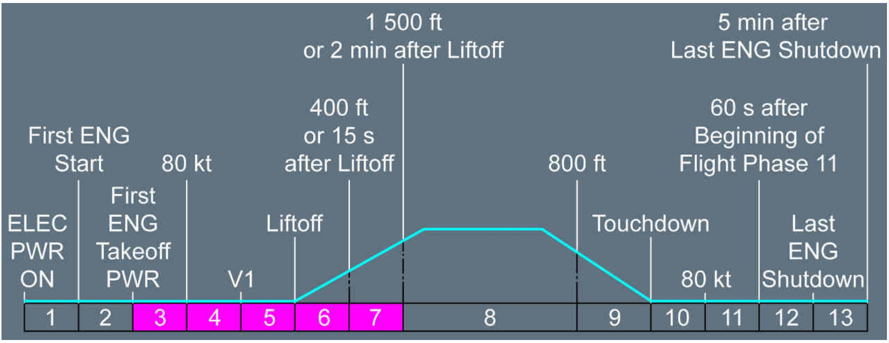
Master Light


MASTER
CAUT

SD page

WHEEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-BRAKES-3242W010-00014381.0001001 / 02 OCT 14

Note: *If the failure is only due to an IMA module failure, the ECAM displays the DUE TO IMA MODULE FAULT subtitle.*

Ident.: PRO-ABN-BRAKES-3242W010-00014382.0001001 / 02 OCT 14

Crew awareness.

Continued on the following page

BRAKES AUTO BRK FAULT (Cont'd)

Ident.: PRO-ABN-BRAKES-3242W010-00014383.0001001 / 02 OCT 14

STATUS

INOP SYS

APPR & LDG

AUTO BRK

INFO

NO BRAKED PIVOT TURN

BRAKES AFT(FWD) WHEELS BRK LOST

Applicable to: ALL

Ident.: PRO-ABN-BRAKES-3242W070-00014444.0001001 / 02 OCT 14

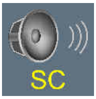
ANNUNCIATIONS

Triggering Conditions:

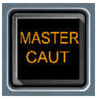
L2 The normal, the alternate and the emergency braking modes are lost on the aft or forward wheels.

Indications:

Audio



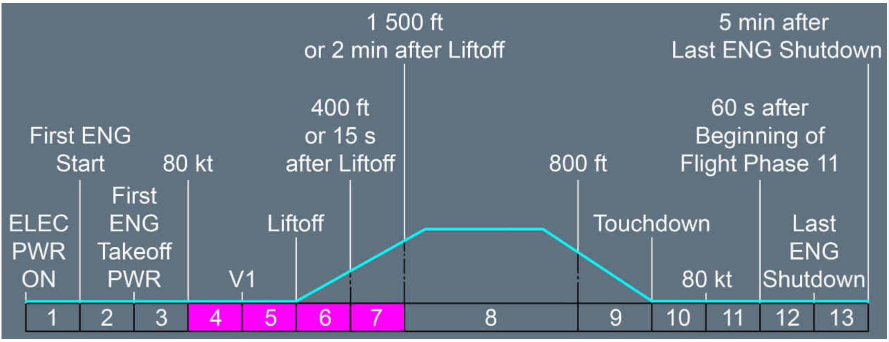
Master Light


MASTER
CAUT

SD page

WHEEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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1 Ident.: PRO-ABN-BRAKES-3242W070-00025518.0001001 / 07 JUL 20

L2 *Note:* *On the WHEEL SD page, the A-SKID indication may be displayed between the wheels pairs of the affected wheel group.*
Disregard A-SKID indication on the WHEEL SD page.

Continued on the following page

BRAKES AFT(FWD) WHEELS BRK LOST (Cont'd)

Ident.: PRO-ABN-BRAKES-3242W070-00014446.0001001 / 04 FEB 20

Note: *Some failure modes of the landing gear lever may cause the Brake Control System (BCS) to consider the landing gear lever in an erroneous position. This situation may delay the application of the brakes during the retraction braking sequence and cause erroneous ECAM alerts (Refer to DSC-32-20-25 Erroneous ECAM Alert BRK Lost after landing gear retraction).*

- **If the normal braking mode is available on the FWD (AFT) wheels:**
  NORM BRK AVAIL ON FWD (AFT) WHEELS

LDG DIST AFFECTED

Ident.: PRO-ABN-BRAKES-3242W070-00014447.0001001 / 07 NOV 16

LIMITATIONS

LIMITATIONS ON PFD

APPR & LDG

LDG DIST AFFECTED

STATUS

INOP SYS

APPR & LDG

AUTO BRK
AFT(FWD) BRKs

INFO

- **If the aft wheels are affected and normal braking mode is available on the FWD wheels:**
  NORM BRK AVAIL ON FWD WHEELS
- **If the forward wheels are affected and normal braking mode is available on the AFT wheels:**
  NORM BRK AVAIL ON AFT WHEELS

BRAKES BTV FAULT

Applicable to: ALL

Ident.: PRO-ABN-BRAKES-3242W320-00014655.0002001 / 04 DEC 14

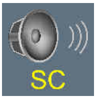
ANNUNCIATIONS

Triggering Conditions:

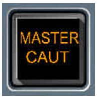
L2 The BTV mode is failed.

Indications:

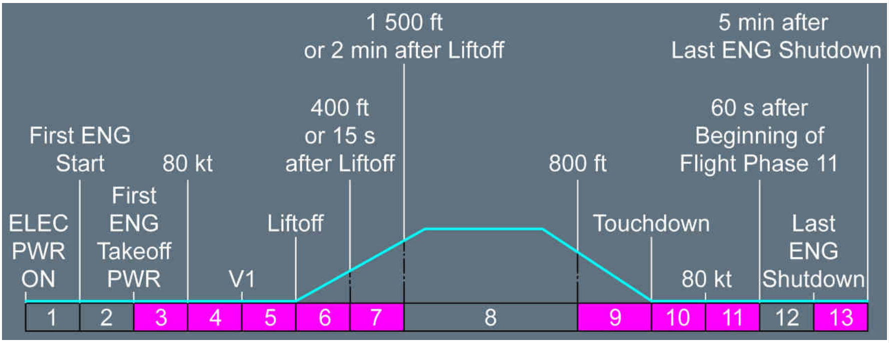
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Ident.: PRO-ABN-BRAKES-3242W320-00014657.0001001 / 02 OCT 14

Crew awareness.

Continued on the following page

BRAKES BTV FAULT (Cont'd)

Ident.: PRO-ABN-BRAKES-3242W320-00014658.0001001 / 02 OCT 14

STATUS

INOP SYS

APPR & LDG

BTV

BRAKES G(Y) ACCU PRESS LO

Applicable to: ALL

Ident.: PRO-ABN-BRAKES-3245W040-00014388.0001001 / 02 OCT 14

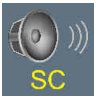
ANNUNCIATIONS

Triggering Conditions:

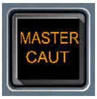
L2 The pressure in the green (yellow) brake accumulator is low.

Indications:

Audio



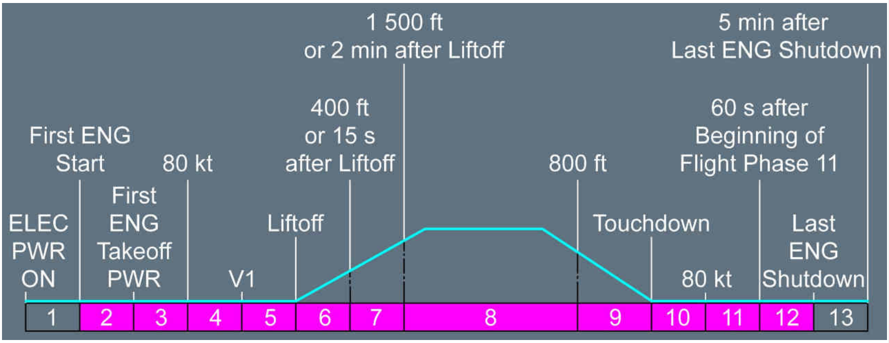
Master Light


MASTER
CAUT

SD page

WHEEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
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Takeoff
PWR
ELEC
PWR
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Liftoff
Touchdown
Last
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Shutdown
V1
80 kt
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Ident.: PRO-ABN-BRAKES-3245W040-00014389.0001001 / 02 OCT 14

CAUTION	There may be a loss of the park brake capability on the AFT(FWD) wheel group.

Continued on the following page

BRAKES G(Y) ACCU PRESS LO (Cont'd)

Ident.: PRO-ABN-BRAKES-3245W040-00014390.0002001 / 26 JUL 17

ACCU REINFLATE P/B..PRESS

L2 *The green(yellow) accumulator pressure can be monitored on the accumulator pressure indicator or on the WHEEL SD page.*
For more information, Refer to DSC-32-20-20 ACCU REINFLATE pb.

Ident.: PRO-ABN-BRAKES-3245W040-00014391.0001001 / 02 OCT 14

STATUS

INOP SYS

APPR & LDG

PARK BRK (If the pressure in the green and yellow brake accumulators is low)
G(Y) BRK ACCU

BRAKES G(Y) ACCU REINFLATE FAULT

Applicable to: ALL

Ident.: PRO-ABN-BRAKES-3245W060-00014392.0001001 / 02 OCT 14

ANNUNCIATIONS

Triggering Conditions:

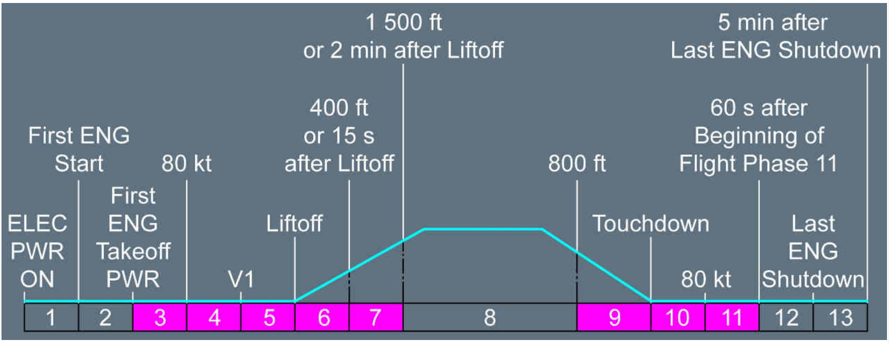
L2 The reinflation of the green(yellow) brake accumulator is failed.

Indications:

SD page

WHEEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-BRAKES-3245W060-00014393.0001001 / 02 OCT 14

Note: *If the failure is only due to an IMA module failure, the ECAM displays the DUE TO IMA MODULE FAULT subtitle.*

Ident.: PRO-ABN-BRAKES-3245W060-00014394.0001001 / 02 OCT 14

Crew awareness.

Continued on the following page

BRAKES G(Y) ACCU REINFLATE FAULT (Cont'd)

Ident.: PRO-ABN-BRAKES-3245W060-00014395.0001001 / 02 OCT 14

STATUS

INOP SYS

APPR & LDG

G(Y) BRK ACCU REINFLATE

BRAKES HOT

Applicable to: ALL

Ident.: PRO-ABN-BRAKES-3247W010-00014659.0001001 / 02 OCT 14

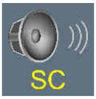
ANNUNCIATIONS

Triggering Conditions:

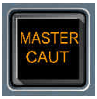
L2 One or more brake temperature is higher than 300 °C.

Indications:

Audio



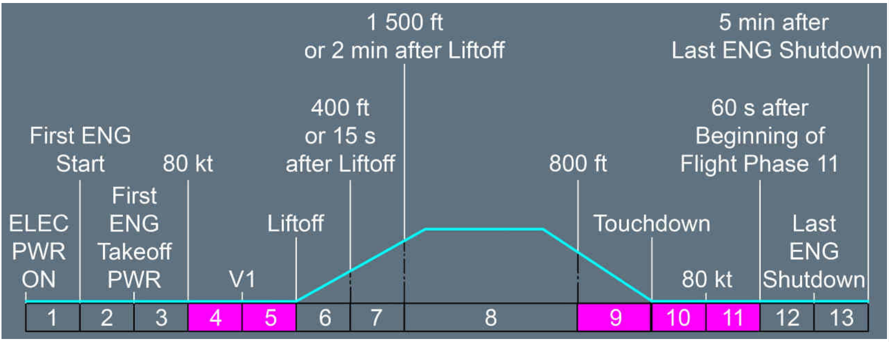
Master Light


MASTER
CAUT

SD page

WHEEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
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Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
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Continued on the following page

BRAKES HOT (Cont'd)

Ident.: PRO-ABN-BRAKES-3247W010-00014661.0005001 / 29 APR 20

- **On ground:**

PARK BRK..PREFER CHOCKS

L2 *The parking brake handle should not be set to ON in order to prevent mechanical damage to the brake component.*

L1 DELAY T.O FOR COOLG

L2 *Delay takeoff until the alert goes off. The alert goes off when the temperature of the hottest brake is at or lower than 290 °C.*
The flight crew can use the brake cooling time table to estimate a brake cooling time based on the current temperature of the hottest brake.

In order to use the brake cooling time table:
- *Make sure that the aircraft is stopped,*
- *Wait at least 15 min,*
- *Check the temperature of the hottest brake on the WHEEL SD page,*
- *Check the outside temperature (SAT) on the permanent data below the SD,*
- *Enter the table with both temperature values and read the estimated brake cooling time (in minutes) depending on the temperature target (300 °C, 250 °C, 200 °C, 150 °C, 100 °C).*

Estimated Brake Cooling Time (min)

Hottest Brake Temperature		*300 °C*	*350 °C*	*400 °C*	*450 °C*	*500 °C*	*550 °C*	*600 °C*	*650 °C*	*700 °C*
Temperature Target	*SAT*									
300 °C	*-54 °C*	*0*	*14*	*26*	*37*	*47*	*56*	*64*	*72*	*79*
	15 °C	*0*	*17*	*32*	*45*	*56*	*66*	*75*	*84*	*92*
	54 °C	*0*	*19*	*36*	*50*	*62*	*73*	*84*	*93*	*101*
250 °C	*-54 °C*	*16*	*30*	*42*	*53*	*63*	*72*	*80*	*88*	*95*
	15 °C	*21*	*38*	*53*	*66*	*77*	*87*	*96*	*105*	*113*
	54 °C	*24*	*43*	*60*	*74*	*86*	*97*	*108*	*117*	*125*
200 °C	*-54 °C*	*35*	*49*	*61*	*72*	*82*	*91*	*99*	*105*	*114*
	15 °C	*46*	*63*	*78*	*91*	*102*	*112*	*121*	*130*	*138*
	54 °C	*56*	*75*	*92*	*106*	*118*	*129*	*140*	*149*	*157*
150 °C	*-54 °C*	*58*	*72*	*84*	*95*	*105*	*114*	*122*	*130*	*137*
	15 °C	*79*	*96*	*111*	*122*	*135*	*144*	*154*	*163*	*171*
	54 °C	*100*	*119*	*136*	*150*	*162*	*173*	*184*	*193*	*201*
100 °C	*-54 °C*	*87*	*91*	*113*	*124*	*134*	*143*	*151*	*159*	*166*
	15 °C	*127*	*144*	*159*	*172*	*183*	*193*	*202*	*211*	*219*
	54 °C	*176*	*195*	*212*	*226*	*238*	*249*	*260*	*269*	*277*

Continued on the following page

BRAKES HOT (Cont'd)

Example:
- *SAT = 15 °C*
- *Temperature of the hottest brake on the WHEEL SD page = 450 °C*
- *In order to reach a temperature of 250 °C, the estimated time for brake cooling is 66 min.*

Note:
- *For intermediate values, the flight crew interpolates linearly.*
- *The estimated brake cooling times do not take into account the effect of the wind.*
- *To increase the precision of the estimation, the flight crew can use the table several times, using always as reference the temperature of the hottest brake displayed on the WHEEL SD page.*

L1 ■ **In flight:**

PERF (L/G DOWN)....................COMPUTE

- **PERF PERMITS L/G DOWN ?**
  - **YES**

    MAX SPEED: 250/.55

    L/G....................DOWN FOR COOLG

    If the L/G lever is UP, wait for the landing gear uplock. Then select the L/G lever DOWN.

Ident.: PRO-ABN-BRAKES-3247W010-00014662.0001001 / 02 OCT 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

- **If in flight, and the landing gear is down:**
  MAX SPEED : 250/.55

LIMITATIONS ON PFD

ALL PHASES

- **If in flight, and the landing gear is down:**
  MAX SPEED : 250/.55

BRAKES L(R) PEDAL BRAKING

Applicable to: ALL

Ident.: PRO-ABN-BRAKES-3242W350-00014396.0001001 / 02 OCT 14

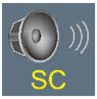
ANNUNCIATIONS

Triggering Conditions:

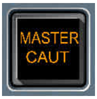
L2 The flight crew applies an inadvertent pedal braking order during the takeoff run.

Indications:

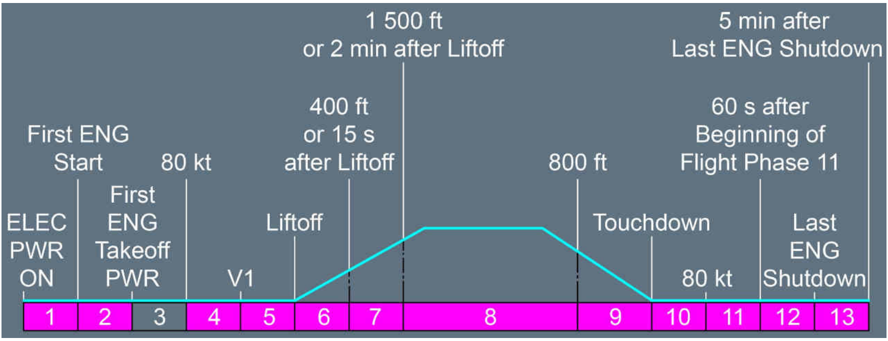
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-BRAKES-3242W350-00014398.0001001 / 02 OCT 14

Crew awareness.

BRAKES NORM BRK FAULT ON ALL WHEELS

Applicable to: ALL

Ident.: PRO-ABN-BRAKES-3242W040-00014400.0001001 / 02 OCT 14

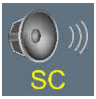
ANNUNCIATIONS

Triggering Conditions:

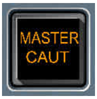
L2 The normal braking mode is failed on all wheels. The braking system is reconfigured in alternate braking mode on all wheels as soon as no failure is detected on the alternate braking mode.

Indications:

Audio



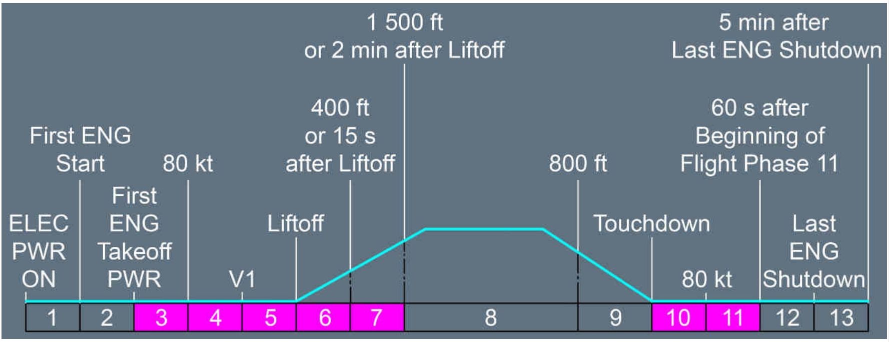
Master Light


MASTER
CAUT

SD page

WHEEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Continued on the following page

BRAKES NORM BRK FAULT ON ALL WHEELS (Cont'd)

Ident.: PRO-ABN-BRAKES-3242W040-00014402.0001001 / 07 NOV 16

AUTO BRK.. CONSIDER

ON ACCU : BRK AS RQRD WITHOUT RELEASING

L2 *In alternate braking mode, if the pedal is pressed and released several times, the brake accumulator level decreases rapidly.*

L1 LDG DIST AFFECTED

L2 *The alternate braking mode is available on all the wheels. For more information, Refer to DSC-32-20-10-40 Alternate Braking.*

Ident.: PRO-ABN-BRAKES-3242W040-00014403.0001001 / 07 NOV 16

LIMITATIONS

LIMITATIONS ON PFD

APPR & LDG

LDG DIST AFFECTED

STATUS

INOP SYS

APPR & LDG

BTV
NORM BRK

INFO

ON ACCU : BRK AS RQRD WITHOUT RELEASING

BRAKES PARK BRK FAULT

Applicable to: ALL

Ident.: PRO-ABN-BRAKES-3245W120-00014404.0001001 / 02 OCT 14

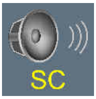
ANNUNCIATIONS

Triggering Conditions:

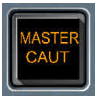
L2 The parking brake is failed.

Indications:

Audio



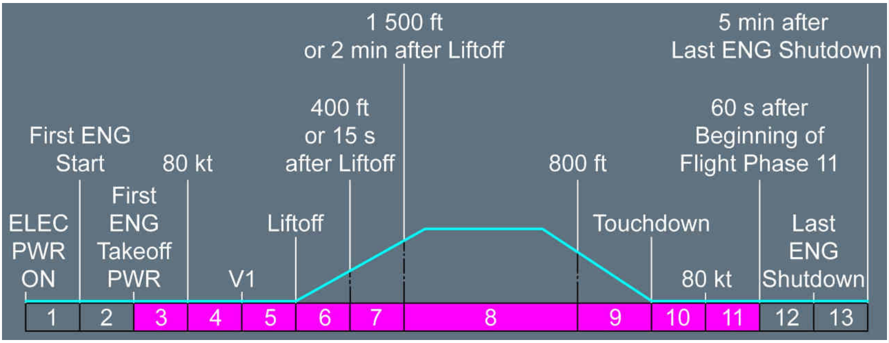
Master Light


MASTER
CAUT

SD page

WHEEL SD page

Flight Phase Inhibition: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or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
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Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
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Takeoff
PWR
ELEC
PWR
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Liftoff
Touchdown
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ENG
Shutdown
V1
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Continued on the following page

BRAKES PARK BRK FAULT (Cont'd)

Ident.: PRO-ABN-BRAKES-3245W120-00014406.0002001 / 26 JUL 17

■ **If the parking brake is active while the PARK BRK handle is set to the OFF position:**
PARK BRK PRESS STILL APPLIED

■ **If the parking brake is not active while the PARK BRK handle is set to the ON position:**
PARK BRK PRESS RELEASED
PARK BRK..OFF

● **BEFORE ENG SHUTDOWN:**
CHOCKS..CONSIDER

Ident.: PRO-ABN-BRAKES-3245W120-00014407.0001001 / 02 OCT 14

STATUS

INOP SYS

APPR & LDG

PARK BRK (If the parking brake is inoperative)

BRAKES PARK BRK ON

Applicable to: ALL

Ident.: PRO-ABN-BRAKES-3245W110-00014408.0001001 / 02 OCT 14

ANNUNCIATIONS

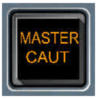
Triggering Conditions:

L2 The parking brake is set and the aircraft is in flight.

Indications:

Audio

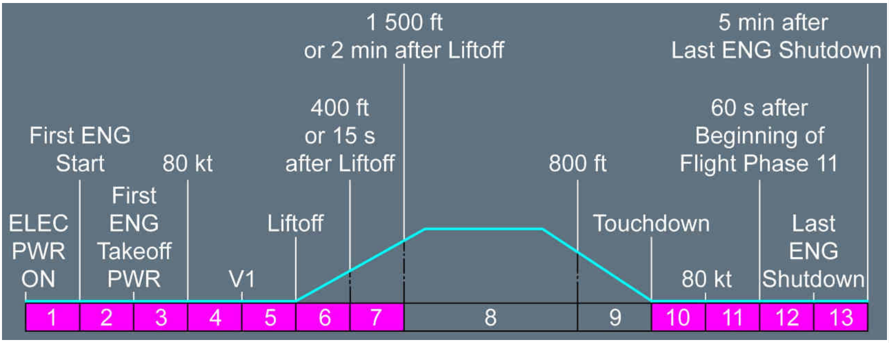
Master Light


MASTER
CAUT

SD page

WHEEL SD page

Flight Phase Inhibition: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or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
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after Liftoff
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Beginning of
Flight Phase 11
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Touchdown
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Ident.: PRO-ABN-BRAKES-3245W110-00014410.0001001 / 02 OCT 14

PARK BRK..OFF

BRAKES PARK BRK PRESS LO

Applicable to: ALL

Ident.: PRO-ABN-BRAKES-3245W020-00014412.0001001 / 02 OCT 14

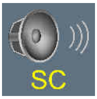
ANNUNCIATIONS

Triggering Conditions:

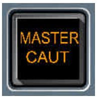
L2 The parking brake pressure is low on the forward or aft or all wheels when the parking brake handle is set to the ON position.

Indications:

Audio



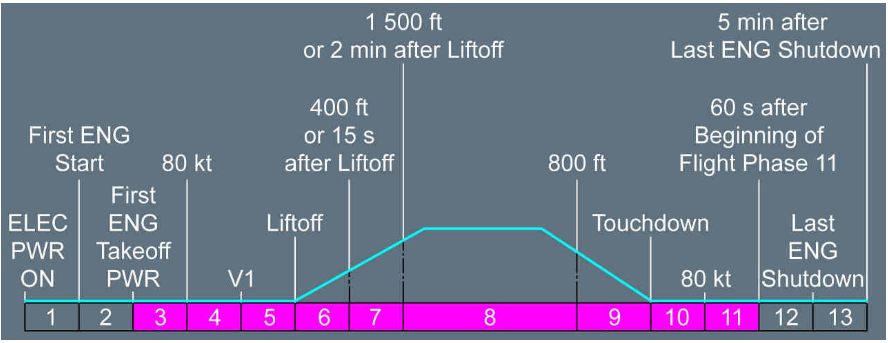
Master Light


MASTER
CAUT

SD page

WHEEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
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400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
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Takeoff
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V1
Liftoff
Touchdown
80 kt
Last
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13

Ident.: PRO-ABN-BRAKES-3245W020-00014413.0001001 / 02 OCT 14

CAUTION	There may be a loss of the park brake capability on the AFT(FWD) wheel group.

Ident.: PRO-ABN-BRAKES-3245W020-00014414.0002001 / 26 JUL 17

- **When both engines are off:**

  ACCU REINFLATE P/B..PRESS

Continued on the following page

BRAKES PARK BRK PRESS LO (Cont'd)

Ident.: PRO-ABN-BRAKES-3245W020-00014415.0001001 / 02 OCT 14

STATUS

INOP SYS

	APPR & LDG
	PARK BRK

BRAKES PART ALTN BRK FAULT

Applicable to: ALL

Ident.: PRO-ABN-BRAKES-3243W020-00014420.0001001 / 02 OCT 14

ANNUNCIATIONS

Triggering Conditions:

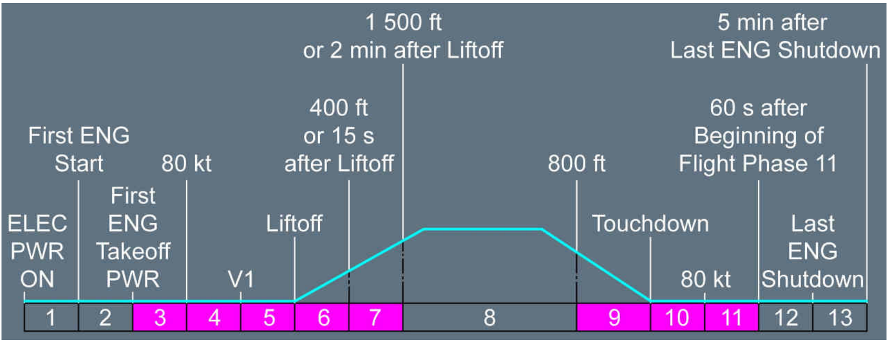
L2 The alternate braking mode is failed on the forward or aft wheels. The normal braking mode is still available on all wheels as soon as no failure is detected on the normal braking mode.

Indications:

SD page

WHEEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
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4
5
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Ident.: PRO-ABN-BRAKES-3243W020-00014422.0001001 / 02 OCT 14

- **If normal braking is available:**
  NORM BRK AVAIL ON ALL WHEELS

Continued on the following page

BRAKES PART ALTN BRK FAULT (Cont'd)

Ident.: PRO-ABN-BRAKES-3243W020-00014423.0001001 / 02 OCT 14

STATUS

INOP SYS

APPR & LDG

PART ALTN BRK

INFO

- **If normal braking is available:**
  NORM BRK AVAIL ON ALL WHEELS

BRAKES PART ALTN+EMER BRK FAULT

Applicable to: ALL

Ident.: PRO-ABN-BRAKES-3243W030-00014424.0001001 / 02 OCT 14

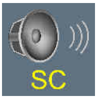
ANNUNCIATIONS

Triggering Conditions:

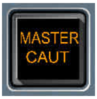
L2 The alternate and the emergency braking modes are failed on the forward or aft wheels. The normal braking mode is still available on all wheels as soon as no failure is detected on the normal braking mode.

Indications:

Audio



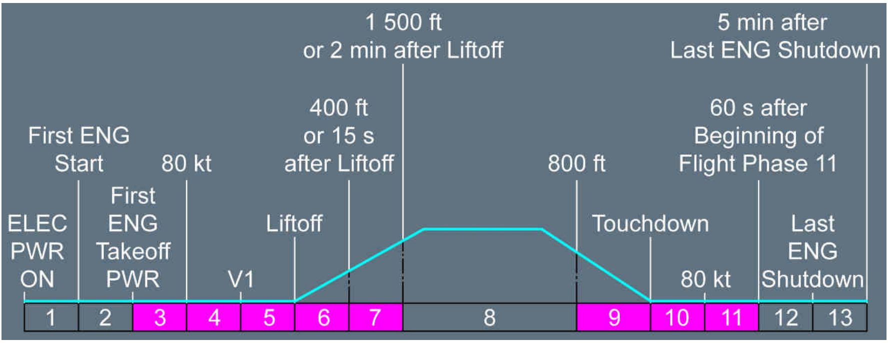
Master Light


MASTER
CAUT

SD page

WHEEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

BRAKES PART ALTN+EMER BRK FAULT (Cont'd)

Ident.: PRO-ABN-BRAKES-3243W030-00014426.0002001 / 26 JUL 17

● **If normal braking is available:**
NORM BRK AVAIL ON ALL WHEELS

■ **If the green brake accumulator is failed:**
G BRK ACCU NOT USABLE

■ **If the yellow brake accumulator is failed:**
Y BRK ACCU NOT USABLE

● **BEFORE ENG SHUTDOWN:**
CHOCKS.. CONSIDER

Ident.: PRO-ABN-BRAKES-3243W030-00014427.0001001 / 02 OCT 14

STATUS

INOP SYS

APPR & LDG

PART ALTN+EMER BRK
G BRK ACCU (If the green brake accumulator is failed)
Y BRK ACCU (If the yellow brake accumulator is failed)

INFO

● **If normal braking is available:**
NORM BRK AVAIL ON ALL WHEELS

BRAKES PART A-SKID FAULT

Applicable to: ALL

Ident.: PRO-ABN-BRAKES-3242W200-00014428.0003001 / 03 JAN 19

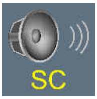
ANNUNCIATIONS

Triggering Conditions:

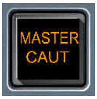
L2 The A-SKID is failed on the forward or aft wheels.

Indications:

Audio



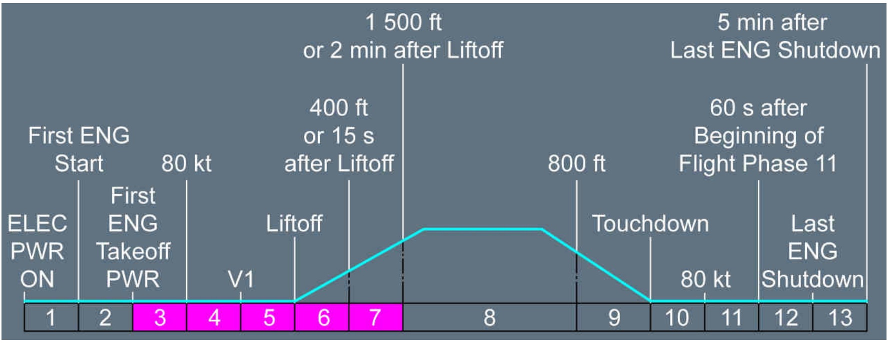
Master Light


MASTER
CAUT

SD page

WHEEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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2 Ident.: PRO-ABN-BRAKES-3242W200-00025519.0002001 / 07 JUL 20

L2 Note: *On the WHEEL SD page, A-SKID indication may be displayed between the wheels pairs of the affected wheel group. Disregard green A-SKID indication on the WHEEL SD page.*

Continued on the following page

BRAKES PART A-SKID FAULT (Cont'd)

Ident.: PRO-ABN-BRAKES-3242W200-00014430.0005001 / 03 JAN 19

■ **If the aft wheels are affected (Green HYD wheel group):**
BRK PRESS LIMITED ON AFT WHEELS

L2 *Even if the flight crew applies maximum deflection on the brake pedals, the braking pressure is automatically limited on the affected wheels to reduce the risk of tire burst.*
In the case of wet or contaminated runway, tire may burst.

L1 ■ **If the forward wheels are affected (Yellow HYD wheel group):**
BRK PRESS LIMITED ON FWD WHEELS

L2 *Even if the flight crew applies maximum deflection on the brake pedals, the braking pressure is automatically limited on the affected wheels to reduce the risk of tire burst.*
In the case of wet or contaminated runway, tire may burst.

L1 ● **If green hydraulic circuit is not available:**
AT LDG IF ACCU PRESS BELOW 1 400 PSI
: AFT BRK LOST

L2 *If the accumulator pressure is below 1400 psi, all braking modes are lost.*

L1 ● **If yellow hydraulic circuit is not available::**
AT LDG IF ACCU PRESS BELOW 1 400 PSI
: FWD BRK LOST

L2 *If the accumulator pressure is below 1400 psi, all braking modes are lost.*

L1 LDG DIST AFFECTED

Continued on the following page

BRAKES PART A-SKID FAULT (Cont'd)

Ident.: PRO-ABN-BRAKES-3242W200-00014431.0004001 / 03 JAN 19

LIMITATIONS

LIMITATIONS ON PFD

APPR & LDG

LDG DIST AFFECTED

STATUS

INOP SYS

APPR & LDG

PART A-SKID
AUTO BRK

INFO

LAND 3 SINGLE ONLY

- **If the aft wheels are affected (Green HYD wheel group):**
  BRK PRESS LIMITED ON AFT WHEELS
- **If green hydraulic circuit is not available:**
  AT LANDING IF ACCU PRESS BELOW 1 400 PSI

AFT BRK LOST

- **If the forward wheels are affected (Yellow HYD wheel group):**
  BRK PRESS LIMITED ON FWD WHEELS
- **If yellow hydraulic circuit is not available:**
  AT LANDING IF ACCU PRESS BELOW 1 400 PSI

FWD BRK LOST

- **If one or both engines are running:**
  TAXI WITH CARE

NO BRAKED PIVOT TURN

BRAKES PART NORM BRK FAULT

Applicable to: ALL

Ident.: PRO-ABN-BRAKES-3242W030-00014432.0001001 / 02 OCT 14

ANNUNCIATIONS

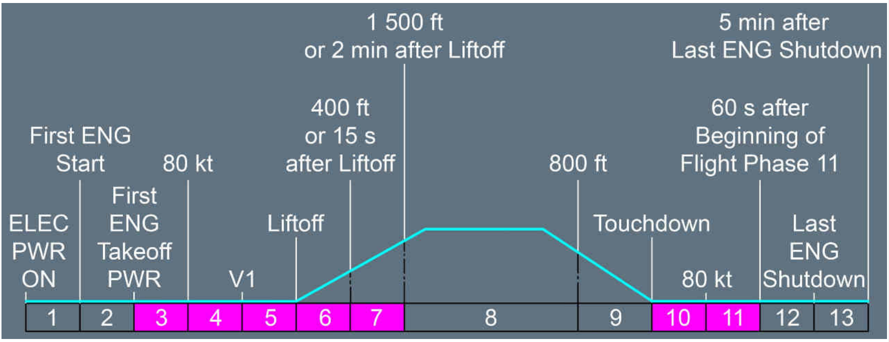
Triggering Conditions:

L2 The normal braking mode is failed on the forward or aft wheels. The aft or forward braking system is reconfigured in alternate braking mode as soon as no failure is detected on the aft or forward alternate braking mode.

Indications:

Audio	Master Light	SD page
SC	MASTER CAUT	 WHEEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Continued on the following page

BRAKES PART NORM BRK FAULT (Cont'd)

Ident.: PRO-ABN-BRAKES-3242W030-00014434.0001001 / 07 NOV 16

AUTO BRK.. CONSIDER
ON ACCU : BRK AS RQRD WITHOUT RELEASING

L2 *In alternate braking mode, if the pedal is pressed and released several times, the brake accumulator level decreases rapidly.*

L1 LDG DIST AFFECTED

L2 *The alternate braking mode is available on the affected wheels. For more information, Refer to DSC-32-20-10-40 Alternate Braking.*

Ident.: PRO-ABN-BRAKES-3242W030-00014435.0001001 / 07 NOV 16

LIMITATIONS

LIMITATIONS ON PFD

APPR & LDG

LDG DIST AFFECTED

STATUS

INOP SYS

APPR & LDG

BTV
PART NORM BRK

INFO

ON ACCU : BRK AS RQRD WITHOUT RELEASING

BRAKES RELEASED

BRK 01(XX) RELEASED

Applicable to: ALL

Ident.: PRO-ABN-BRAKES-3242W050-00014436.0004001 / 13 MAR 19

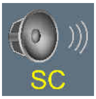
ANNUNCIATIONS

Triggering Conditions:

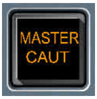
L2 One or more brakes remain released in normal and/or alternate braking modes, due to system failures.

Indications:

Audio



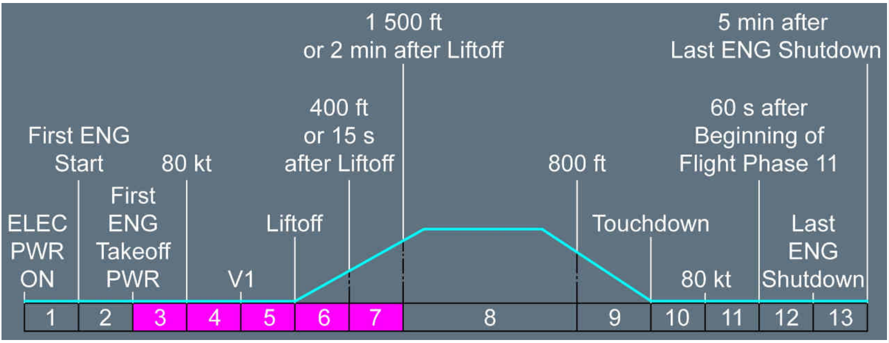
Master Light


MASTER
CAUT

SD page

WHEEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
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Shutdown
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Ident.: PRO-ABN-BRAKES-3242W050-00014438.0001001 / 07 NOV 16

LDG DIST AFFECTED

Continued on the following page

BRAKES RELEASED (Cont'd)

BRK 01(XX) RELEASED

Ident.: PRO-ABN-BRAKES-3242W050-00014439.0001001 / 07 NOV 16

LIMITATIONS

LIMITATIONS ON PFD

APPR & LDG

LDG DIST AFFECTED

STATUS

INOP SYS

APPR & LDG

BTV

BRAKES RESIDUAL BRAKING
RESIDUAL BRAKING ON BRK 01(XX)

Applicable to: ALL

Ident.: PRO-ABN-BRAKES-3242W060-00014440.0001001 / 31 MAR 17

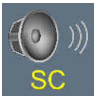
ANNUNCIATIONS

Triggering Conditions:

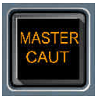
L2 Hydraulic pressure remains applied on at least one brake, even if the flight crew does not command braking.

Indications:

Audio



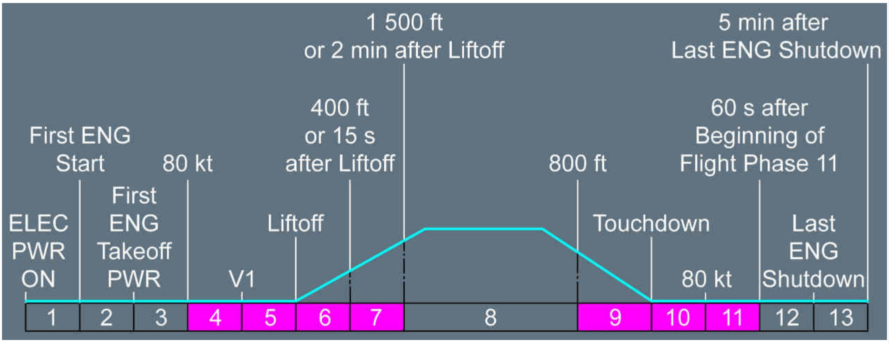
Master Light


MASTER
CAUT

SD page

WHEEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
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ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Ident.: PRO-ABN-BRAKES-3242W060-00014442.0001001 / 04 DEC 14

Crew awareness.

L2 *Note:* *The temperature of the affected brakes rises.*

CAB COM CIDS 1+2 FAULT

Applicable to: ALL

Ident.: PRO-ABN-CAB_COM-4411W010-00000554.0001001 / 07 JUL 16

ANNUNCIATIONS

Triggering Conditions:

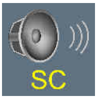
L2 Both CIDS directors are failed.

L3 All CIDS functions are lost.

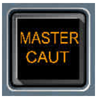
Indications:

L2

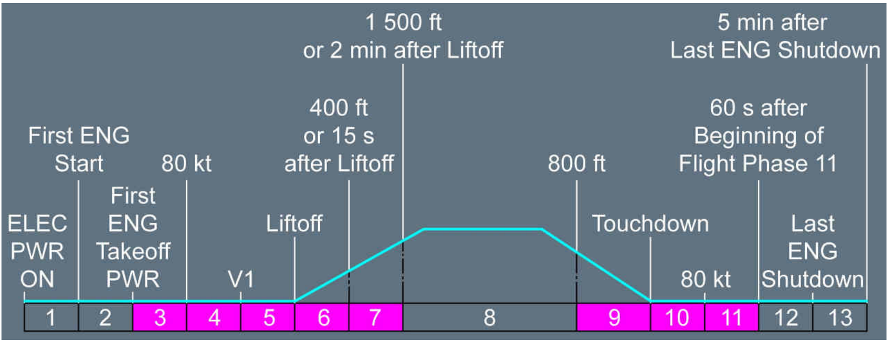
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
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Takeoff
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V1
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Touchdown
80 kt
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Continued on the following page

CAB COM CIDS 1+2 FAULT (Cont'd)

Ident.: PRO-ABN-CAB_COM-4411W010-00007326.0001001 / 07 NOV 16

Crew awareness.

L2 The following CIDS functions are lost:
- Cabin interphone
- Service interphone
- Passenger Address (PA)
- Passenger signs
- Cabin ready indication
- Calls
- Evacuation (EVAC) signaling ◁
- Emergency Crew Alerting System (ECAS) ◁
- Smoke Detection Function (SDF) of the Smoke Detection System (SDS).

In addition, in the cabin, the loss of both CIDS results in:
- The loss of the FAPs
- A full bright cabin illumination.

Ident.: PRO-ABN-CAB_COM-4411W010-00007327.0001001 / 06 NOV 14

STATUS

INOP SYS

ALL PHASES	
CIDS 1+2	

CAB COM CABIN INTERPHONE FAULT

Applicable to: ALL

Ident.: PRO-ABN-CAB_COM-4411W030-00016292.0001001 / 06 NOV 14

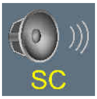
ANNUNCIATIONS

Triggering Conditions:

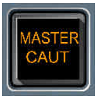
L2 The cabin interphone is no longer available.

Indications:

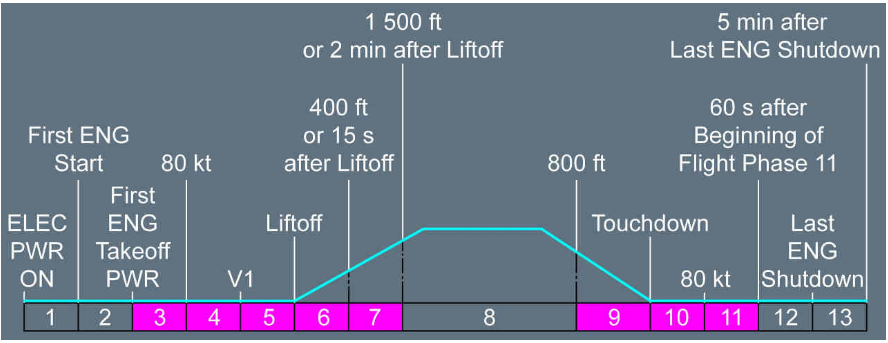
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
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400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
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ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-CAB_COM-4411W030-00016294.0001001 / 06 NOV 14

Crew awareness.

Continued on the following page

CAB COM CABIN INTERPHONE FAULT (Cont'd)

Ident.: PRO-ABN-CAB_COM-4411W030-00016295.0001001 / 06 NOV 14

STATUS

INOP SYS

ALL PHASES

CABIN INTERPHONE

CAB COM PAX ADDRESS FAULT

Applicable to: ALL

Ident.: PRO-ABN-CAB_COM-4411W020-00016288.0001001 / 06 NOV 14

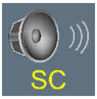
ANNUNCIATIONS

Triggering Conditions:

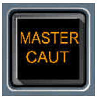
L2 The passenger address is no longer available.

Indications:

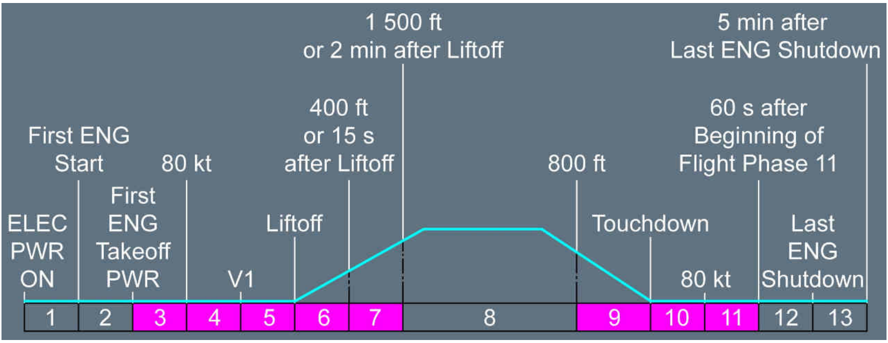
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition: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400 ft
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60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
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PWR
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Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-CAB_COM-4411W020-00016290.0001001 / 06 NOV 14

Crew awareness.

Continued on the following page

CAB COM PAX ADDRESS FAULT (Cont'd)

Ident.: PRO-ABN-CAB_COM-4411W020-00016291.0001001 / 06 NOV 14

STATUS

INOP SYS

ALL PHASES

PAX ADDRESS

CAB PRESS AUTO CTL FAULT

Applicable to: ALL

Ident.: PRO-ABN-CAB_PRESS-2131W120-00005712.0001001 / 03 JUL 14

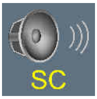
ANNUNCIATIONS

Triggering Conditions:

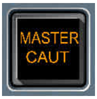
L2 The automatic mode of the pressurization system is failed.

Indications:

Audio



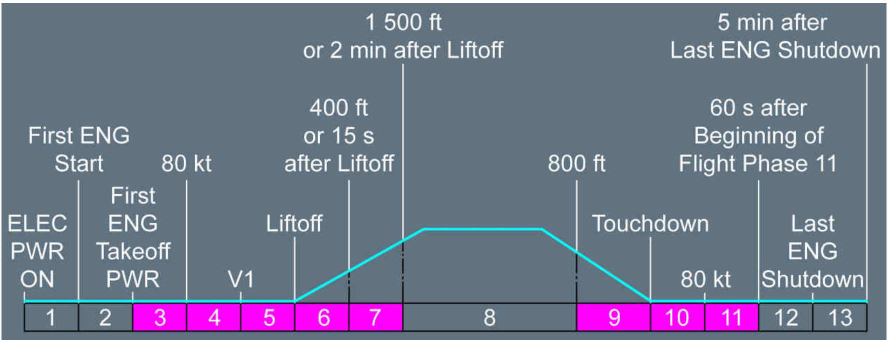
Master Light


MASTER
CAUT

SD page

CAB PRESS SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-CAB_PRESS-2131W120-00018898.0001001 / 03 JUL 14

Note: *If the failure is only due to an IMA module failure, the ECAM displays the DUE TO IMA MODULE FAULT subtitle.*

Continued on the following page

CAB PRESS AUTO CTL FAULT (Cont'd)

1 Ident.: PRO-ABN-CAB_PRESS-2131W120-00007250.0005001 / 07 JUL 20

- **Depending on the failure mode, the following subtitle appears:**
  DIFF PRESS HI

IN MAN MODE ALERT MAY DISAPPEAR
COMPLETE FULL SEQUENCE: MAN THEN AUTO
CABIN ALT MODE..MAN THEN AUTO

- **AFTER 2S**
  CABIN ALT MODE..MAN
  - **When the manual control of the cabin altitude is selected:**

ACFT CRZ FL	CABIN ALT TRGT
430	6000
400	5900
350	5000
300	4200
250	3300
200	2500
150	1600
100	800

CABIN ALT TRGT..AS RQRD

Continued on the following page

CAB PRESS AUTO CTL FAULT (Cont'd)

Ident.: PRO-ABN-CAB_PRESS-2131W120-00007251.0001001 / 03 JUL 14

L12

DEFERRED PROC

ALL PHASES

> AT TOP OF DES : LDG ELEVN

CABIN ALT TRGT..LDG ELEVN

Check the indication of the cabin altitude target on the CAB PRESS SD page, or on the CRUISE page, and select a cabin altitude target equal to the landing elevation, if necessary.

STATUS

INOP SYS

ALL PHASES

CAB PRESS AUTO CTL

INFO

ACFT CRZ FL	CABIN ALT TRGT
430	6000
400	5900
350	5000
300	4200
250	3300
200	2500
150	1600
100	800

CAB PRESS CAB ALT MAN CTL FAULT

Applicable to: ALL

Ident.: PRO-ABN-CAB_PRESS-2131W210-00014755.0001001 / 03 JUL 14

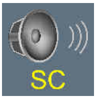
ANNUNCIATIONS

Triggering Conditions:

L2 The manual altitude control is inoperative due to:
- The CABIN ALT TRGT selector failure, or
- The Semi-Automatic Control Unit (SACU) stays in automatic mode, when the flight crew selects the manual control mode of the cabin altitude.

Indications:

Audio



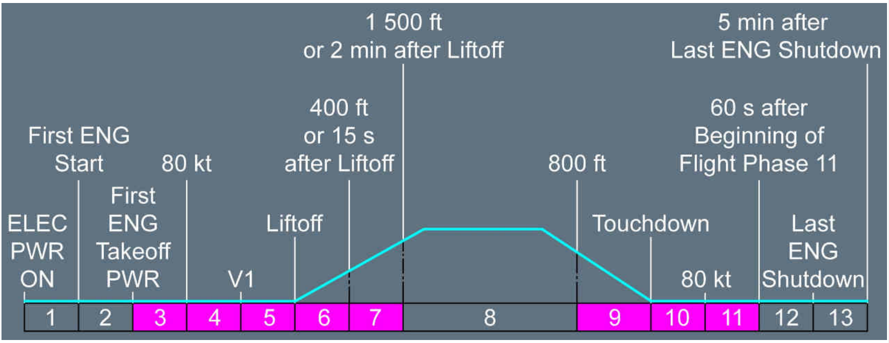
Master Light

MASTER
CAUT

SD page

CAB PRESS SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Ident.: PRO-ABN-CAB_PRESS-2131W210-00014757.0001001 / 03 JUL 14

FOR CAB ALT CTL : USE CAB V/S

Continued on the following page

CAB PRESS CAB ALT MAN CTL FAULT (Cont'd)

Ident.: PRO-ABN-CAB_PRESS-2131W210-00014758.0001001 / 03 JUL 14

STATUS

INOP SYS

ALL PHASES

CAB ALT MAN CTL

CAB PRESS CAB V/S MAN CTL FAULT

Applicable to: ALL

Ident.: PRO-ABN-CAB_PRESS-2131W220-00014759.0001001 / 03 JUL 14

ANNUNCIATIONS

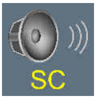
Triggering Conditions:

L2 The manual vertical speed control is inoperative due to:

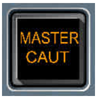
- The failure of the CABIN V/S TRGT selector, or
- The Semi-Automatic Control Unit (SACU) stays in automatic mode, when the flight crew selects the manual control mode of the cabin vertical speed.

Indications:

Audio



Master Light


MASTER
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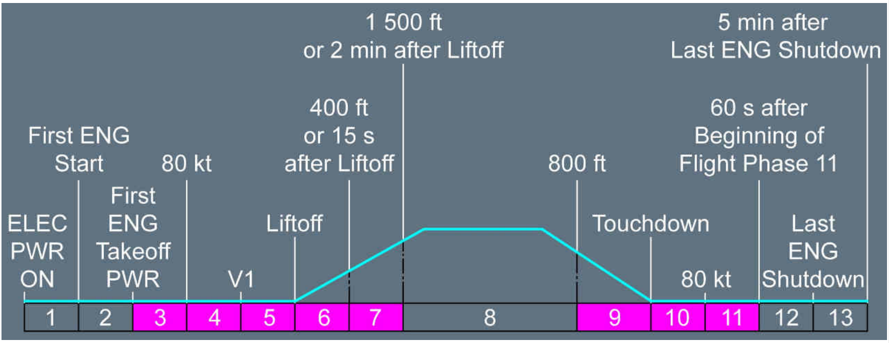
SD page

CAB PRESS SD Page

Flight Phase Inhibition: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400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
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PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-CAB_PRESS-2131W220-00014761.0001001 / 03 JUL 14

Crew awareness.

Continued on the following page

CAB PRESS CAB V/S MAN CTL FAULT (Cont'd)

Ident.: PRO-ABN-CAB_PRESS-2131W220-00017682.0001001 / 03 JUL 14

STATUS

INOP SYS

ALL PHASES

CAB V/S MAN CTL

CAB PRESS DIFF PRESS LO

Applicable to: ALL

Ident.: PRO-ABN-CAB_PRESS-2131W110-00005715.0001001 / 03 JUL 14

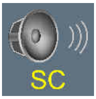
ANNUNCIATIONS

Triggering Conditions:

L2 The cabin differential pressure tends to reach 0 PSI during descent. This alert is not triggered if the aircraft altitude is below 1 500 ft AGL.

Indications:

Audio



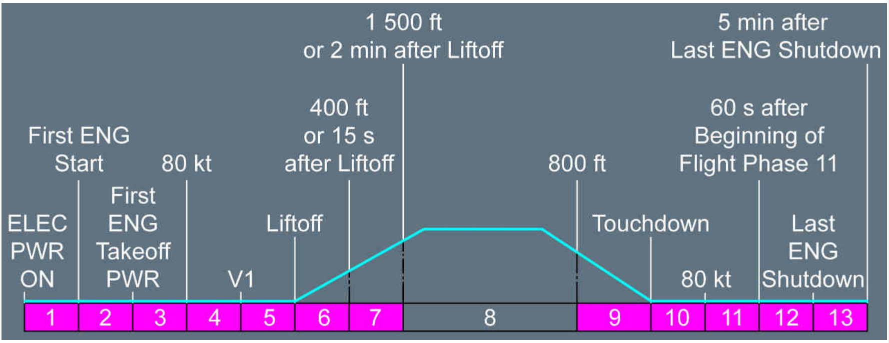
Master Light

MASTER
CAUT

SD page

CAB PRESS SD Page

Flight Phase Inhibition: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Ident.: PRO-ABN-CAB_PRESS-2131W110-00007256.0001001 / 03 JUL 14

ACFT DESCENT RATE...REDUCE

EXPECT HI CAB RATE

L2 *To protect the aircraft from negative differential pressure, a sudden change in the cabin vertical speed may occur.*

CAB PRESS EXCESS CAB ALT

Applicable to: ALL

Ident.: PRO-ABN-CAB_PRESS-2131W060-00005716.0001001 / 05 JAN 15

ANNUNCIATIONS

Triggering Conditions:

L2 The pressurization system detects excessive cabin altitude:
- When the cabin altitude exceeds 9 550 ft
- When the cabin altitude exceeds 13 500 ft, if the command function of one OCU is failed, and the aircraft altitude is lower than 25 000 ft, or
- When the cabin altitude exceeds 1 000 ft above the take-off or landing elevation, during high airport operation.

Indications:

Audio

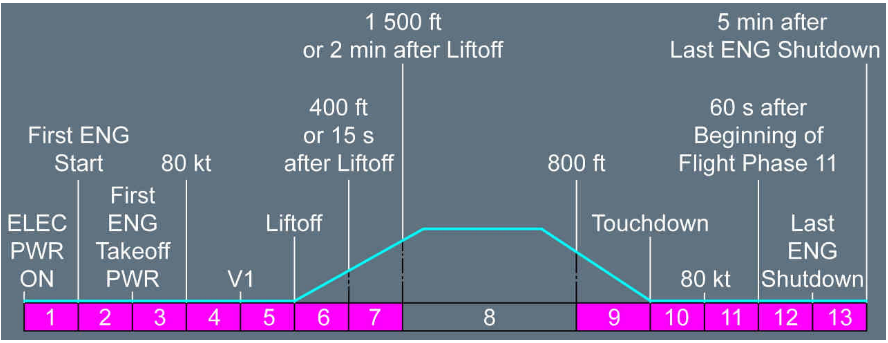
Master Light

MASTER
WARN

SD page

CAB PRESS SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
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80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
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First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Continued on the following page

CAB PRESS EXCESS CAB ALT (Cont'd)

Ident.: PRO-ABN-CAB_PRESS-2131W060-00007258.0003001 / 03 JAN 20

- **If the aircraft is above FL 100, and below FL 160:**

  CREW OXY MASKS.......... USE
  SIGNS.......... ON
  DESCENT.......... INITIATE
  CABIN CREW.......... ADVISE

- **If the aircraft is above FL 160:**

  CREW OXY MASKS.......... USE

  EMER DESCENT

  EMER DESCENT.......... INITIATE

  Initiate the emergency descent with one of the following techniques:
  - *Use of the AUTO EMER DESCENT function*
  - *Use of selected guidance via the AFS CP.*

L3 *For more information on the two techniques for emergency descent initiation, Refer to FCTM/PR-AEP-MISC EMER DESCENT.*

L1
  - **If AUTO EMER DESCENT function is automatically engaged:**

    AUTO EMER DES ENGAGED

    - **When automatic emergency descent is completed:**

      AUTO EMER DES COMPLETED

  - **If A/THR is not active:**

    ALL THR LEVERS.......... IDLE

L2 *If A/THR is either armed or active, check A/THR is at IDLE on the ED.*

L1 SPEED BRAKE LEVER.......... FULL

CAUTION	Descent at the maximum appropriate speed. If structural damage is suspected, use the flight controls with care and limit speed as appropriate.

SPEED.......... MAX / APPROPRIATE

The flight crew may extend the landing gear when the speed is below VLO.

ATC.......... NOTIFY

L2 *Notify ATC of the nature of the emergency, and state intentions.*

L1 EMER DESCENT (PA).......... ANNOUNCE

L2 *The flight crew must inform the cabin crew of the emergency descent, via the Passenger Address (PA).*

Continued on the following page

CAB PRESS EXCESS CAB ALT (Cont'd)

L1 ATC SQUAWK 7700..CONSIDER

L2 *Unless otherwise specified by ATC, squawk the emergency 7700 transponder code.*

L1 MAX FL : 100/MEA-MORA

L2 *The minimum altitude must take into account:*
- *The Minimum Safe Altitude (MSA)*
- *Oxygen requirements*
- *The turbulence, in order to minimize passenger discomfort*
- *The low Outside Air Temperature (OAT), in order to minimize passenger discomfort, when the aircraft cabin is ventilated with the ram air.*

The initial descent altitude target is MORA $_{dISA/dP}$. The flight crew should consider to readjust the AFS altitude target according to the MORA displayed on ND. The flight crew should be aware that a PULL or PUSH action on the ALT knob will disengage the EMER DES mode.

L1 ● **CAB ALT ABOVE 14 000 ft ?**

● **YES**

PAX OXY MASK MAN ON..PRESS

L2 *This action on the PAX OXY MASK MAN ON pb confirms that the oxygen masks drop in the cabin, in the case they do not automatically drop when the cabin altitude is above 13 800 ft.*
When the aircraft reaches a safe flight level and when the use of oxygen masks is no longer necessary, notify the cabin crew.

L1 ● **WHEN DESCENT ESTABLISHED**

● **If the aircraft is above FL 100:**

CREW OXY MASKS DILUTION..NORM

L2 *To save oxygen, set the N/100% selector to N.*
If the N/100% selector is set to 100 %, the oxygen quantity may be not sufficient to achieve the entire emergency descent profile.
Ensure that crew communication is established with oxygen masks. Avoid continuous use of the interphone, in order to minimize interference with the breathing noise in the oxygen mask.

L1 ● **WHEN DIFF PR <2 PSI & FL <100/MEA-MORA**

RAM AIR..ON

Continued on the following page

CAB PRESS EXCESS CAB ALT (Cont'd)

Ident.: PRO-ABN-CAB_PRESS-2131W060-00007259.0001001 / 03 JUL 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

- **In flight:**
  MAX FL : 100/MEA-MORA

LIMITATIONS ON PFD

ALL PHASES

- **In flight:**
  MAX FL : 100/MEA-MORA

CAB PRESS EXCESS DIFF PRESS

Applicable to: ALL

Ident.: PRO-ABN-CAB_PRESS-2131W070-00005717.0001001 / 03 JUL 14

ANNUNCIATIONS

Triggering Conditions:

L2 The cabin differential pressure exceeds 10.6 PSI.

Indications:

Audio

CRC

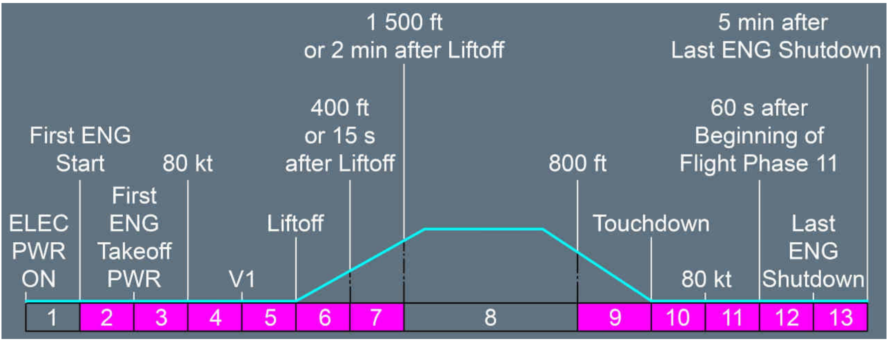
Master Light

MASTER WARN

SD page

CAB PRESS SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Continued on the following page

CAB PRESS EXCESS DIFF PRESS (Cont'd)

Ident.: PRO-ABN-CAB_PRESS-2131W070-00007261.0001001 / 03 JUL 14

- **In flight:**

  PACK 1 .... OFF
  PACK 2 .... OFF

L2 Both packs are shut off, in order to cut off the air supply to the cabin. This enables to decrease the cabin pressure and the cabin differential pressure.

L1
  - **If the alert is triggered above FL 100:**

    DESCENT TO FL 100/MEA-MORA .... INITIATE

ASSOCIATED PROCEDURES

AIR PACK 1+2 FAULT

Refer to procedure.

CAB PRESS EXCESS NEGATIVE DIFF PRESS

Applicable to: ALL

Ident.: PRO-ABN-CAB_PRESS-2131W080-00005718.0001001 / 03 JUL 14

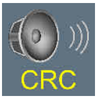
ANNUNCIATIONS

Triggering Conditions:

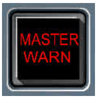
L2 The differential pressure is below -0.72 PSI. This alert is triggered, if, despite the negative and overpressure relief valves, the negative differential pressure becomes too low.
This alert has priority over all alerts that request an EMER DESCENT procedure.

Indications:

Audio



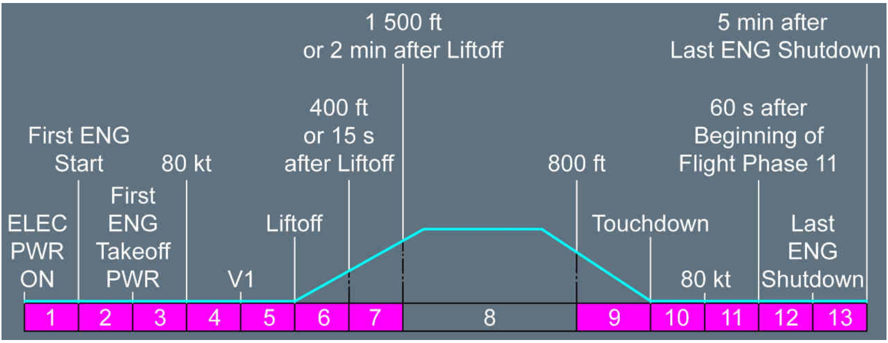
Master Light


MASTER
WARN

SD page

CAB PRESS SD Page

Flight Phase Inhibition:


1 500 ft
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400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-CAB_PRESS-2131W080-00007263.0002001 / 09 JUL 15

ACFT IMMEDIATE LEVEL OFF..INITIATE

- **If the emergency ram air inlet does not automatically open:**

  RAM AIR..ON

CAB PRESS EXCESS RESIDUAL DIFF PRESS

Applicable to: ALL

Ident.: PRO-ABN-CAB_PRESS-2131W090-00005719.0001001 / 03 JUL 14

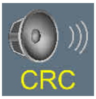
ANNUNCIATIONS

Triggering Conditions:

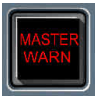
L2 On ground, the residual pressure exceeds 0.07 PSI.

Indications:

Audio



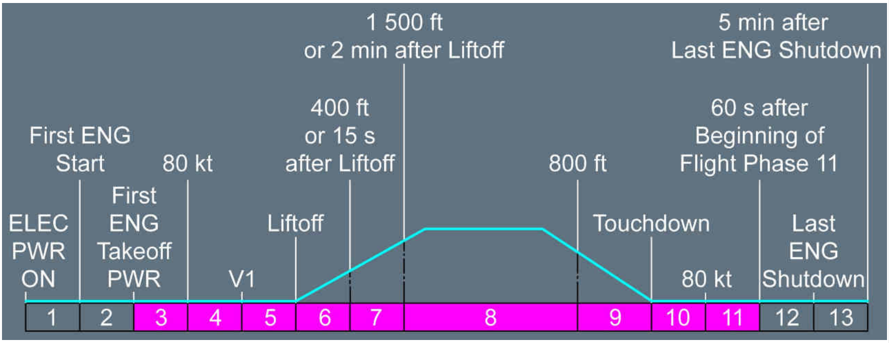
Master Light


MASTER
WARN

SD page

CAB PRESS SD Page

Flight Phase Inhibition: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5 min after
Last ENG Shutdown
400 ft
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60 s after
Beginning of
Flight Phase 11
First ENG
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Touchdown
80 kt
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Continued on the following page

CAB PRESS EXCESS RESIDUAL DIFF PRESS (Cont'd)

Ident.: PRO-ABN-CAB_PRESS-2131W090-00007265.0001001 / 17 NOV 17

CABIN CREW...ALERT

L2 *The flight crew must order the cabin crew to keep the doors closed until the CAB PRESS EXCESS RESIDUAL DIFF PRESS alert disappears.*

L1 PACK 1...OFF

PACK 2...OFF

- **BEFORE OPENING ANY CABIN DOOR**

  RESIDUAL DIFF PRESS...CHECK

CAB PRESS INHIBITED BY DOORS

Applicable to: ALL

Ident.: PRO-ABN-CAB_PRESS-2131W140-00005720.0001001 / 03 JUL 14

ANNUNCIATIONS

Triggering Conditions:

L2 If one door is not closed, latched and locked, or in the case of a door failure (electrical or mechanical failure), the pressurization of the aircraft will be prevented during take-off or at lift-off by keeping the outflow valves in the fully open position.

L3 *Note:* *The packs will be switched-off.*

L2 *Note:* *The door status is frozen within the CPCS when the takeoff power is set. If the abnormal door status is detected at takeoff, the alert is triggered after the climb phase (1 500 ft) to avoid a rejected takeoff.*

Indications:

Audio

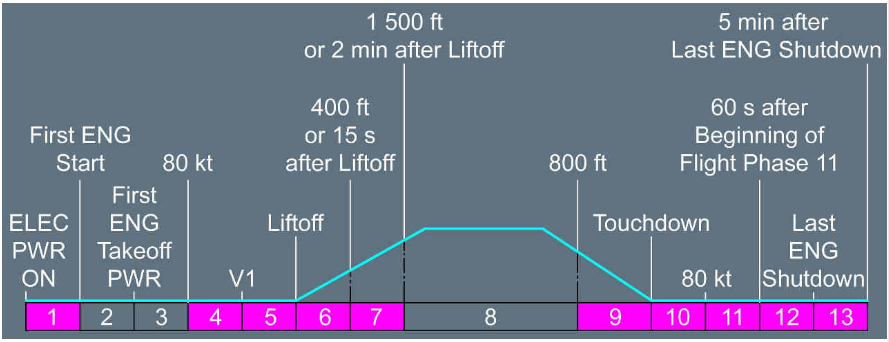
Master Light

MASTER
CAUT

SD page

CAB PRESS SD Page

Flight Phase Inhibition: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80 kt
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60 s after
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Touchdown
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Continued on the following page

CAB PRESS INHIBITED BY DOORS (Cont'd)

Ident.: PRO-ABN-CAB_PRESS-2131W140-00017677.0001001 / 03 JUL 14

Note: If the failure is only due to an IMA module failure, the ECAM displays the DUE TO IMA MODULE FAULT subtitle.

Ident.: PRO-ABN-CAB_PRESS-2131W140-00007267.0002001 / 03 JAN 19

Crew awareness.

MAX FL : 100/MEA-MORA

Note: In flight, this limitation is associated with the alert of the doors that generates the cabin pressure inhibition.

Ident.: PRO-ABN-CAB_PRESS-2131W140-00014751.0001001 / 03 JUL 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

MAX FL : 100/MEA-MORA

LIMITATIONS ON PFD

ALL PHASES

MAX FL : 100/MEA-MORA

CAB PRESS LDG ELEVN FAULT

Applicable to: ALL

Ident.: PRO-ABN-CAB_PRESS-2131W130-00005721.0001001 / 03 JUL 14

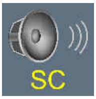
ANNUNCIATIONS

Triggering Conditions:

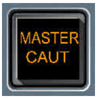
L2 In automatic mode, the OCUs do not receive the landing field elevation from the FMS.

Indications:

Audio



Master Light


MASTER
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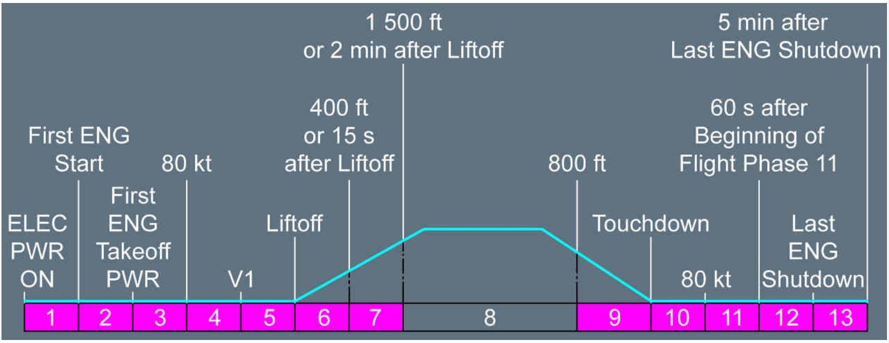
SD page

CAB PRESS SD Page

Flight Phase Inhibition: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Continued on the following page

CAB PRESS LDG ELEVN FAULT (Cont'd)

Ident.: PRO-ABN-CAB_PRESS-2131W130-00007269.0001001 / 03 JUL 14

- **If the manual mode of the cabin pressurization is available:**

  See the deferred procedure:

  DEFRD AT TOP OF DES : LDG ELEVN

  (*Refer to PRO-ABN-CAB_PRESS CAB PRESS LDG ELEVN FAULT - Fwspage*)

- **If the manual mode of the cabin pressurization is lost:**

  IN DES : CAB ALT REGULATED TO 7000 FT
  BELOW 7000 FT : CAB ALT = ACFT ALT
  BELOW 7000 FT : AVOID HI DESCENT V/S

ASSOCIATED PROCEDURES

CAB PRESS MAN CTL FAULT

Refer to procedure.

Continued on the following page

CAB PRESS LDG ELEVN FAULT (Cont'd)

Ident.: PRO-ABN-CAB_PRESS-2131W130-00007270.0001001 / 03 JUL 14

LIMITATIONS

LIMITATIONS ON ECAM

APPR & LDG

- **If the manual mode of the cabin pressurization is not available:**
  AVOID HI DESCENT V/S

L12

DEFERRED PROC

ALL PHASES

> AT TOP OF DES : LDG ELEVN

- **If the manual mode of the cabin pressurization is available:**
  CABIN ALT MODE...MAN
  CABIN ALT TRGT...LDG ELEVN
  Check the indication of the cabin altitude target on the CAB PRESS SD page, or on the CRUISE page, and select a cabin altitude target equal to the landing elevation, if necessary.

STATUS

INFO

- **If the manual mode of the cabin pressurization is not available:**
  IN DES : CAB ALT REGULATED TO 7000 FT
  BELOW 7000 FT : CAB ALT = ACFT ALT

CAB PRESS MAN CTL FAULT

Applicable to: ALL

Ident.: PRO-ABN-CAB_PRESS-2131W180-00005722.0002001 / 03 JAN 19

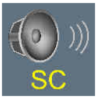
ANNUNCIATIONS

Triggering Conditions:

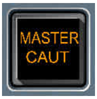
L2 The manual mode of the cabin pressurization system is:
- Totally lost, or
- Degraded due to:
  - a loss of communication with the CABIN PRESS panel
  - a complete loss of the cabin pressure data, or
  - an inadvertent activation of the automatic protection function, in MAN mode.

Indications:

Audio



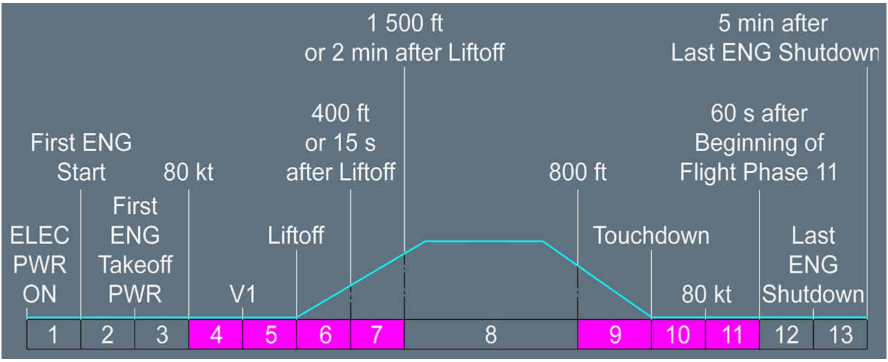
Master Light


MASTER
CAUT

SD page

CAB PRESS SD Page

Flight Phase Inhibition: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Beginning of
Flight Phase 11
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Touchdown
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Continued on the following page

CAB PRESS MAN CTL FAULT (Cont'd)

Ident.: PRO-ABN-CAB_PRESS-2131W180-00007272.0001001 / 03 JUL 14

- **If the manual mode of the cabin pressurization is totally lost:**
  MAN CABIN PRESS MODES : DO NOT USE
- **If the manual mode of the cabin pressurization is degraded and selected:**
  CAB ALT REGULATED TO 7000 FT

L2

The manual mode of the cabin pressurization is degraded when there is either a loss of communication with the CABIN PRESS panel or a complete loss of the ambient pressure data.

Ident.: PRO-ABN-CAB_PRESS-2131W180-00007273.0001001 / 03 JUL 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

- **If the manual mode of the cabin pressurization is totally lost:**
  MAN PRESS : DO NOT USE

STATUS

INOP SYS

ALL PHASES

CAB PRESS MAN CTL

INFO

- **If the manual mode of the cabin pressurization is degraded and selected:**
  CAB ALT REGULATED TO 7000 FT

CAB PRESS SYS FAULT

Applicable to: ALL

Ident.: PRO-ABN-CAB_PRESS-2131W050-00005726.0001001 / 03 JUL 14

ANNUNCIATIONS

Triggering Conditions:

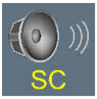
L2 The pressurization system is failed.

L3 One of the following conditions occurs:
- Both the automatic and the manual modes are lost, or
- Both outflow valves are lost.

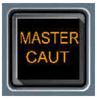
Indications:

L2

Audio



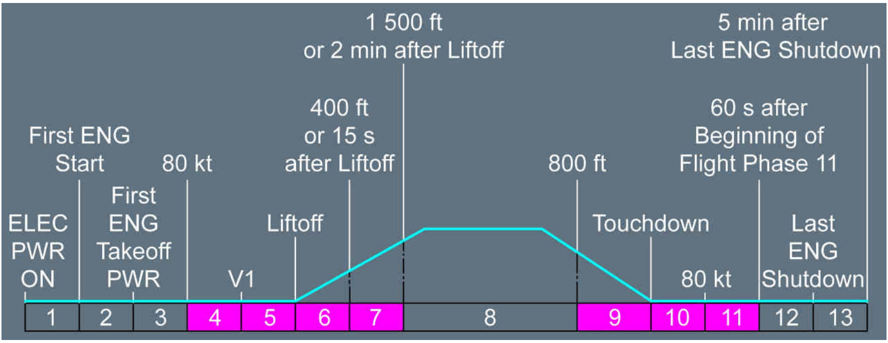
Master Light


MASTER
CAUT

SD page

CAB PRESS SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
2
3
4
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11
12
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Ident.: PRO-ABN-CAB_PRESS-2131W050-00007282.0001001 / 03 JUL 14

Continued on the following page

CAB PRESS SYS FAULT (Cont'd)

Ident.: PRO-ABN-CAB_PRESS-2131W050-00007283.0001001 / 03 JUL 14

- **In flight:**
  AIR FLOW.......................................NORM
  - **DELTA P AVAIL ON CAB PRESS SYS PAGE ?**
    - **YES**

      In that case, the deferred procedure is applicable:

      DEFRD AT TOP OF DES : CAB PRESS MANAGT

      (*Refer to PRO-ABN-CAB_PRESS CAB PRESS SYS FAULT - Fwspage*)
    - **NO**
      PACK 1.......................................OFF
      PACK 2.......................................OFF
      - **If the alert is triggered above FL 100:**
        DESCENT TO FL 100/MEA-MORA.......................................INITIATE

      MAX FL : 100/MEA-MORA
      - **WHEN FL < 100/MEA-MORA**
        RAM AIR.......................................ON
        CAB FANS.......................................OFF
        VENT AVNCS EXTRACT.......................................OVRD
- **On ground:**
  - **BEFORE OPENING ANY CABIN DOOR**
    PACK 1.......................................OFF
    PACK 2.......................................OFF
    CABIN CREW.......................................ALERT
    RESIDUAL DIFF PRESS.......................................CHECK

Continued on the following page

CAB PRESS SYS FAULT (Cont'd)

Ident.: PRO-ABN-CAB_PRESS-2131W050-00007284.0001001 / 02 OCT 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

- **In flight, when both packs are off:**
  MAX FL : 100/MEA-MORA

LIMITATIONS ON PFD

ALL PHASES

- **In flight, when both packs are off:**
  MAX FL : 100/MEA-MORA

L12

DEFERRED PROC

ALL PHASES

> AT TOP OF DES : CAB PRESS MANAGT

- **If the differential pressure is available on the CAB PRESS SD page, the following deferred procedure is applicable and can be activated:**

  Note: This deferred procedure ensures to keep the differential pressure within safe limits during descent.

  - **CABIN V/S EXCEEDS 1000FT/MIN ?**
    - **YES**
      - **Above FL 100:**
        DESCENT TO FL 100/MEA-MORA....................INITIATE

      MAX FL : 100/MEA-MORA
  - **WHEN DIFF PR <2 PSI & FL <100/MEA-MORA**
    RAM AIR....................ON
    CAB FANS....................OFF
    VENT AVNCS EXTRACT....................OVRD

Continued on the following page

CAB PRESS SYS FAULT (Cont'd)

- **FINAL APPROACH**
  The outflow valves do not close under aerodynamic forces. A decompression may occur if the first pack is switched off too early.

  PACK 1..OFF
  PACK 2..OFF

STATUS

INOP SYS

ALL PHASES

CAB PRESS SYS

MEMOPAGE

MEMO ON ECAM

LAND ANSA

CDS CAPT + F/O EFIS CTL PNLs FAULT

Applicable to: ALL

Ident.: PRO-ABN-CDS-2281W030-00017127.0001001 / 03 JUL 14

ANNUNCIATIONS

Triggering Conditions:

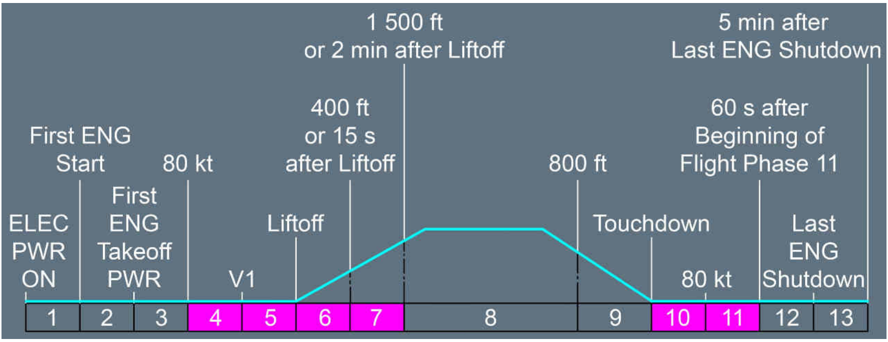
L2 The EFIS CP of the Captain and the EFIS CP of the First Officer are failed.

Indications:

Audio: SC

Master Light: MASTER CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Ident.: PRO-ABN-CDS-2281W030-00021076.0001001 / 03 JUL 14

Note: *If the failure is only due to an IMA module failure, the ECAM displays the DUE TO IMA MODULE FAULT subtitle.*

Ident.: PRO-ABN-CDS-2281W030-00017129.0001001 / 03 JUL 14

USE MFD FCU BKUP

Continued on the following page

CDS CAPT + F/O EFIS CTL PNLs FAULT (Cont'd)

Ident.: PRO-ABN-CDS-2281W030-00017130.0001001 / 03 JUL 14

STATUS

INOP SYS

ALL PHASES

CAPT EFIS CTL PNL
F/O EFIS CTL PNL

CDS CAPT(F/O) EFIS CTL PNL + BKUP CTL FAULT

Applicable to: ALL

Ident.: PRO-ABN-CDS-2281W050-00003198.0001001 / 03 JUL 14

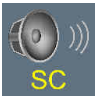
ANNUNCIATIONS

Triggering Conditions:

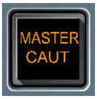
L2 The EFIS CP of the Captain(First Officer) is failed, and the EFIS CONTROL PANEL page on the MFD FCU BKUP of the Captain(First Officer) is failed.

Indications:

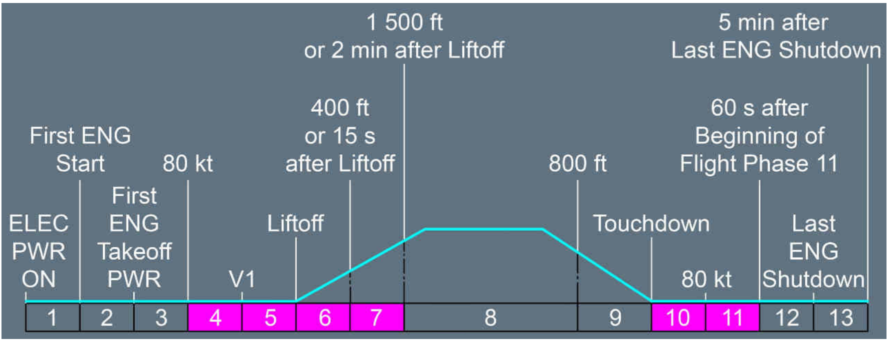
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-CDS-2281W050-00023493.0001001 / 07 JUL 16

Note: *If RNP AR operation in progress, the ECAM displays the RNP AR CAPABILITY DOWNGRADED subtitle.*

Continued on the following page

CDS CAPT(F/O) EFIS CTL PNL + BKUP CTL FAULT (Cont'd)

Ident.: PRO-ABN-CDS-2281W050-00007596.0003001 / 26 JUL 17

- **If RNP AR operation in progress:**
  Minimum LIMITED TO RNP 0.30

CAPT(F/O) BARO REF : STD ONLY

L2 *This line is inhibited if ISIS ALT or BKUP ALT is displayed on both PFDs, or when the NAV UNRELIABLE AIR SPEED INDICATION not-sensed procedure is activated and all ADRs are set to OFF.*

Ident.: PRO-ABN-CDS-2281W050-00007597.0002001 / 28 APR 17

STATUS

INOP SYS

ALL PHASES

CAPT(F/O) EFIS CTL

INFO

CAPT(F/O) BARO REF : STD ONLY
FOR RNP AR : MINIMUM LIMITED TO RNP 0.30

CDS CAPT(F/O) EFIS CTL PNL FAULT

Applicable to: ALL

Ident.: PRO-ABN-CDS-2281W010-00003199.0001001 / 03 JUL 14

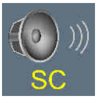
ANNUNCIATIONS

Triggering Conditions:

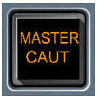
L2 The EFIS CP of the Captain(First Officer) is failed.

Indications:

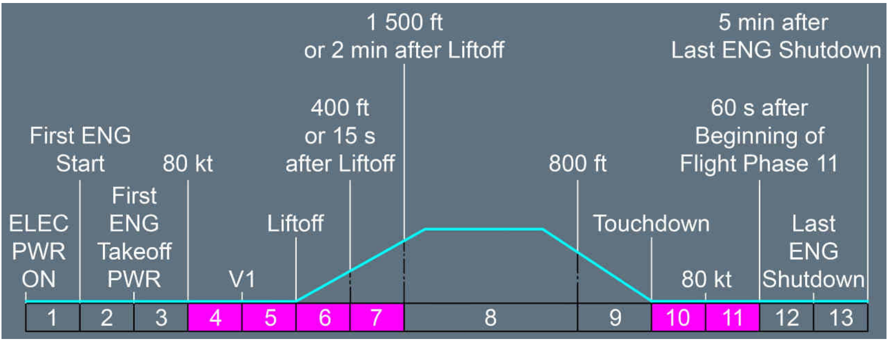
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Ident.: PRO-ABN-CDS-2281W010-00022500.0002001 / 07 JUL 16

Note: 1. *If the failure is only due to an IMA module failure, the ECAM displays the DUE TO IMA MODULE FAULT subtitle.*
2. *If RNP AR operation in progress, the ECAM displays the RNP AR CAPABILITY DOWNGRADED subtitle.*

Continued on the following page

CDS CAPT(F/O) EFIS CTL PNL FAULT (Cont'd)

Ident.: PRO-ABN-CDS-2281W010-00007599.0002001 / 28 APR 17

- **If RNP AR operation in progress:**

  Minimum LIMITED TO RNP 0.30

- **If the MFD FCU BKUP of the Captain(First Officer) is available:**

  USE CAPT(F/O) MFD FCU BKUP

L2 *Use the EFIS CONTROL PANEL page on the MFD FCU BKUP of the Captain(First Officer).*

Ident.: PRO-ABN-CDS-2281W010-00007600.0002001 / 07 JUL 16

STATUS

INOP SYS

ALL PHASES

CAPT(F/O) EFIS CTL PNL

INFO

FOR RNP AR : MINIMUM LIMITED TO RNP 0.30

CDS CAPT(F/O) INNER DU FAULT

Applicable to: ALL

Ident.: PRO-ABN-CDS-3160W160-00003204.0001001 / 03 JUL 14

ANNUNCIATIONS

Triggering Conditions:

L2 The CAPT(F/O) INNER DU is failed.

Indications:

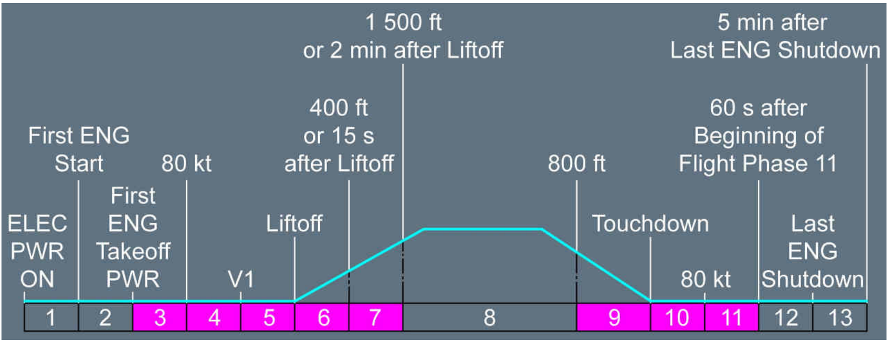
Audio

SC

Master Light

MASTER CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-CDS-3160W160-00007614.0004001 / 01 FEB 19

CAPT(F/O) INNER DU.. OFF 5 S THEN ON

- **DU RESET SUCCESSFUL ?**
  - **NO**
    CAPT(F/O) INNER DU..OFF
    OIS ON CTR & DISPLAY CYCLE AS RQRD

Continued on the following page

CDS CAPT(F/O) INNER DU FAULT (Cont'd)

Ident.: PRO-ABN-CDS-3160W160-00007615.0001001 / 03 JUL 14

STATUS

INOP SYS

ALL PHASES	APPR & LDG
CAPT(F/O) INNER DU	CAPT(F/O) ARPT NAV

CDS CAPT(F/O) KCCU CURSOR CTL + KEYBOARD FAULT

Applicable to: ALL

Ident.: PRO-ABN-CDS-3162W090-00003197.0001001 / 03 JUL 14

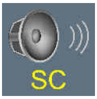
ANNUNCIATIONS

Triggering Conditions:

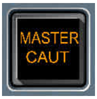
L2 The KCCU of the Captain(First Officer) is failed.

Indications:

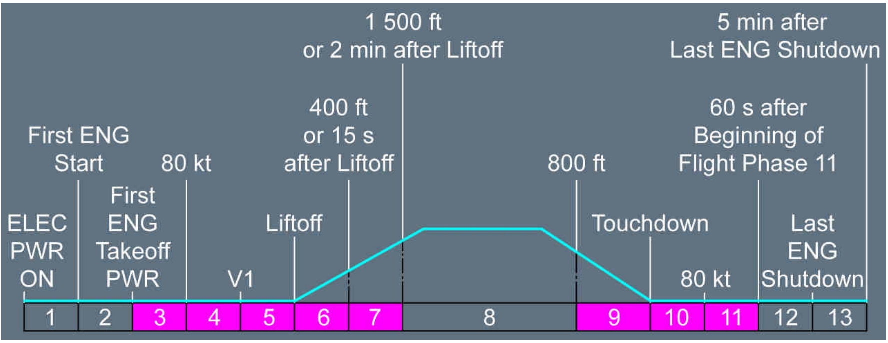
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-CDS-3162W090-00007593.0001001 / 03 JUL 14

Crew awareness.

L2 Consider transfer of PF/PM responsibilities.

Continued on the following page

CDS CAPT(F/O) KCCU CURSOR CTL + KEYBOARD FAULT (Cont'd)

Ident.: PRO-ABN-CDS-3162W090-00007594.0001001 / 03 JUL 14

STATUS

INOP SYS

ALL PHASES

CAPT(F/O) KCCU CCD + KBD

CDS CAPT(F/O) KCCU CURSOR CTL FAULT

Applicable to: ALL

Ident.: PRO-ABN-CDS-3162W050-00003196.0001001 / 03 JUL 14

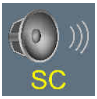
ANNUNCIATIONS

Triggering Conditions:

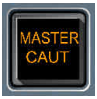
L2 The Cursor Control Device (CCD) on the KCCU of the Captain(First Officer) is failed.

Indications:

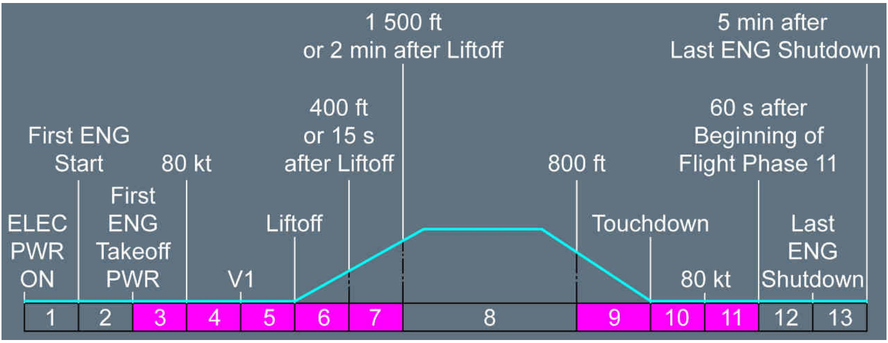
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-CDS-3162W050-00007590.0001001 / 03 JUL 14

FOR CURSOR:USE ARROWS ON CAPT(F/O) KCCU KBD

L2 *On the ND, the MFD, and the OIS, all functions remain fully available via the keyboard of the KCCU.*

Use the four direction arrow keys of the keyboard to move throughout the different fields of the display unit.

Continued on the following page

CDS CAPT(F/O) KCCU CURSOR CTL FAULT (Cont'd)

Ident.: PRO-ABN-CDS-3162W050-00007591.0001001 / 03 JUL 14

STATUS

INOP SYS

ALL PHASES

CAPT(F/O) KCCU CCD

INFO

CAPT(F/O) KCCU KEYBOARD ARROWS AVAIL

CDS CAPT(F/O) KCCU KEYBOARD FAULT

Applicable to: ALL

Ident.: PRO-ABN-CDS-3162W070-00003200.0001001 / 03 JUL 14

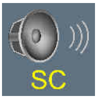
ANNUNCIATIONS

Triggering Conditions:

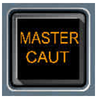
L2 The Keyboard (KBD) on the KCCU of the Captain(First officer) is failed.

Indications:

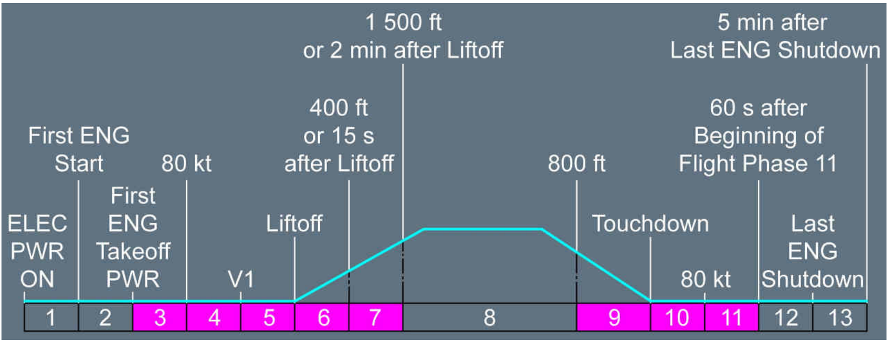
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

CDS CAPT(F/O) KCCU KEYBOARD FAULT (Cont'd)

Ident.: PRO-ABN-CDS-3162W070-00007602.0001001 / 03 JUL 14

SOFT KBD AVAIL ON MFD FOR CAPT(F/O)
FOR CAPT(F/O) OIS : USE OIS KEYBOARD

L2 *The soft keyboard is available on the MFD only.*
The soft keyboard automatically appears on the MFD, if the flight crew edits a field.
The flight crew can manually display the soft keyboard via the KBD key of the Cursor Control Device (CCD).
Use the FMS functions on the MFD instead of the ND.
Via the soft keyboard and the CCD, all functions remain available on the MFD, but not on the ND, and not on the OIS.

Ident.: PRO-ABN-CDS-3162W070-00007603.0001001 / 03 JUL 14

STATUS

INOP SYS

ALL PHASES

CAPT(F/O) KCCU KBD

CDS CAPT(F/O) OUTER DU FAULT

Applicable to: ALL

Ident.: PRO-ABN-CDS-3160W150-00011901.0001001 / 03 JUL 14

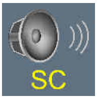
ANNUNCIATIONS

Triggering Conditions:

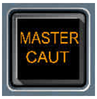
L2 The CAPT(F/O) OUTER DU is failed.

Indications:

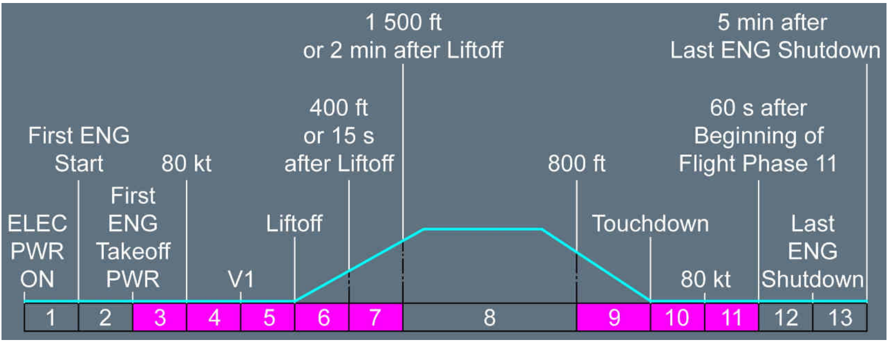
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Ident.: PRO-ABN-CDS-3160W150-00011899.0004001 / 01 FEB 19

CAPT(F/O) OUTER DU..OFF 5 S THEN ON

- **DU RESET SUCCESSFUL ?**
  - **NO**
    CAPT(F/O) OUTER DU..OFF
    OIS ON CTR & DISPLAY CYCLE AS RQRD

Continued on the following page

CDS CAPT(F/O) OUTER DU FAULT (Cont'd)

Ident.: PRO-ABN-CDS-3160W150-00011898.0001001 / 03 JUL 14

STATUS

INOP SYS

ALL PHASES	APPR & LDG
CAPT(F/O) OUTER DU	CAPT(F/O) ARPT NAV

CDS CENTER LOWER DU ACCESS FAULT

Applicable to: ALL

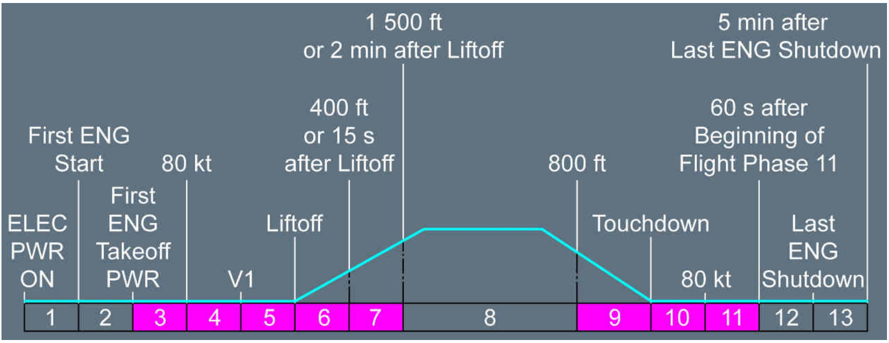
Ident.: PRO-ABN-CDS-3160W240-00012034.0001001 / 03 JUL 14

ANNUNCIATIONS

Triggering Conditions:

L2 The communication between the KCCU of the Captain and the CENTER LOWER DU, or between the KCCU of the First Officer and the CENTER LOWER DU, is failed. As a result, the Captain, or the First Officer, can no longer access the CENTER LOWER DU.

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
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Continued on the following page

CDS CENTER LOWER DU ACCESS FAULT (Cont'd)

Ident.: PRO-ABN-CDS-3160W240-00012036.0001001 / 03 JUL 14

- **If the access to the CENTER LOWER DU from the side of the Captain(First Officer) is failed:**

  CAPT(F/O) OIS ON CTR AS RQRD

L2 *In order to access the MFD from the side of the Captain(First Officer), press the CAPT OIS ON CENTER pb(F/O OIS ON CENTER pb). The OIS of the Captain(First Officer) appears on the CENTER LOWER DU, and the MFD of the Captain(First Officer) is automatically transferred to the CAPT(F/O) OUTER DU.*

CDS CENTER UPPER(LOWER) DU FAULT

Applicable to: ALL

Ident.: PRO-ABN-CDS-3160W180-00011875.0001001 / 03 JUL 14

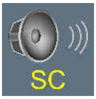
ANNUNCIATIONS

Triggering Conditions:

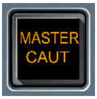
L2 The CENTER UPPER(LOWER) DU is failed.

Indications:

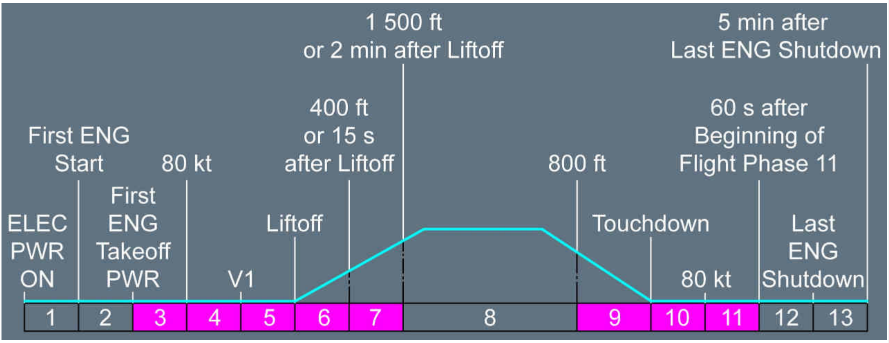
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
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Continued on the following page

CDS CENTER UPPER(LOWER) DU FAULT (Cont'd)

Ident.: PRO-ABN-CDS-3160W180-00011877.0002001 / 05 NOV 18

CENTER UPPER(LOWER) DU.......................................OFF 5 S THEN ON

L2 *Depending on the failure, the (FOB+FU)-BLOCK indication may display XX until the end of the flight. For more information,Refer to DSC-28-20 (FOB + FU) - BLOCK Indication.*

L1
- **DU RESET SUCCESSFUL ?**
  - **NO**

    CENTER UPPER(LOWER) DU.......................................OFF

    DISPLAY CYCLE AS RQRD

L2 *If an additional failure occurs (e.g. CAPT(F/O) OIS FAULT), the CAPT(F/O) OIS message is displayed on the STATUS page, and EFB LAPTOP UNSTOW......CONSIDER is displayed in the procedure.*

Ident.: PRO-ABN-CDS-3160W180-00011878.0001001 / 03 JUL 14

STATUS

INOP SYS

ALL PHASES

CAPT(F/O) HUD ⊲
CENTER UPPER(LOWER) DU
OIS ON CENTER

CDS DISPLAY DISAGREE

Applicable to: ALL

Ident.: PRO-ABN-CDS-3160W050-00003205.0001001 / 03 JUL 14

ANNUNCIATIONS

Triggering Conditions:

L2

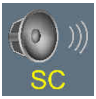
The CDS sends the information to be displayed to the applicable DU, and also to another DU for monitoring purposes.
The CDS DISPLAY DISAGREE alert is triggered, if the information sent to the DU that displays the information disagrees with the information sent to the DU that monitors the information.
As a result, the affected DU (i.e. the DU that displays the information) is not reliable.

In addition to the CDS DISPLAY DISAGREE alert, depending on the affected DU, one of the following messages appears on both PFDs and both NDs:

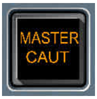
- CHECK CAPT OUTR DU, if the affected DU is the CAPT OUTER DU
- CHECK CAPT INR DU, if the affected DU is the CAPT INNER DU
- CHECK F/O OUTR DU, if the affected DU is the F/O OUTER DU
- CHECK F/O INR DU, if the affected DU is the F/O INNER DU
- CHECK CTR UPPR DU, if the affected DU is the CENTER UPPER DU
- CHECK CTR LWR DU, if the affected DU is the CENTER LOWER DU
- If HUD ◁ :
  - CHECK CTR UPPR DU & CAPT HUD, if the affected DU is the CENTER UPPER DU
  - CHECK CTR LWR DU & F/O HUD, if the affected DU is the CENTER LOWER DU.

Indications:

Audio



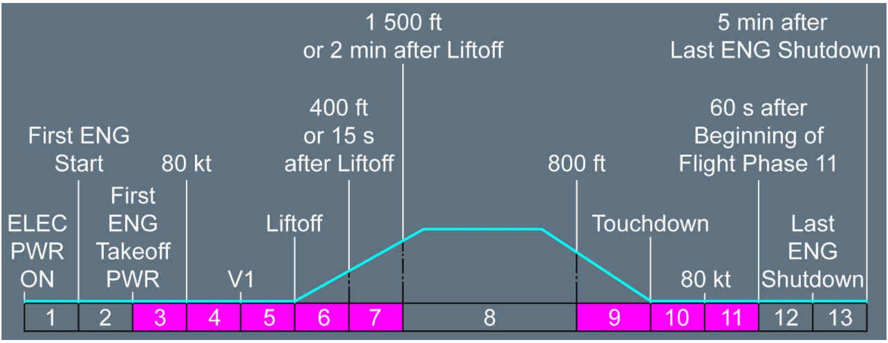
Master Light



Flight Phase Inhibition:

Continued on the following page

CDS DISPLAY DISAGREE (Cont'd)


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Continued on the following page

CDS DISPLAY DISAGREE (Cont'd)

Ident.: PRO-ABN-CDS-3160W050-00007617.0003001 / 26 JUL 17

AFFECTED DU .... OFF 5 S THEN ON

L2 *The ECAM procedure indicates the name of the affected DU:*
- *CAPT OUTER DU, or*
- *CAPT INNER DU, or*
- *F/O OUTER DU, or*
- *F/O INNER DU, or*
- *CENTER UPPER DU, or*
- *CENTER LOWER DU.*

L1 ● **DU RESET SUCCESSFUL ?**

● **NO**

AFFECTED DU.. OFF

L2 *The ECAM procedure indicates the name of the affected DU:*
- *CAPT OUTER DU, or*
- *CAPT INNER DU, or*
- *F/O OUTER DU, or*
- *F/O INNER DU, or*
- *CENTER UPPER DU, or*
- *CENTER LOWER DU.*

If the CAPT(F/O) INNER DU is turned OFF, the CAPT(F/O) OUTER DU automatically displays the EFIS.
If the CENTER UPPER DU is turned OFF, the CENTER LOWER DU automatically displays the ECAM.
For more information about the automatic reconfiguration of the DUs, Refer to DSC-31-CDS-30-40 Automatic Reconfiguration.

L1 ● **If the CAPT(F/O) INNER(OUTER) DU is the affected DU:**
OIS ON CTR & DISPLAY CYCLE AS RQRD

● **If the CENTER UPPER(LOWER) DU is the affected DU:**
DISPLAY CYCLE AS RQRD

Continued on the following page

CDS DISPLAY DISAGREE (Cont'd)

Ident.: PRO-ABN-CDS-3160W050-00011871.0002001 / 08 NOV 18

STATUS

INOP SYS

ALL PHASES

OIS ON CENTER (If the CENTER UPPER DU or the CENTER LOWER DU is the affected DU)
CAPT HUD ◁ (If the CENTER UPPER DU is the affected DU)
F/O HUD ◁ (If the CENTER LOWER DU is the affected DU)
CAPT+F/O HUDs ◁ (If the CENTER UPPER DU and the CENTER LOWER DU are the affected)

APPR & LDG

CAPT ARPT NAV (If the CAPT OUTER DU or the CAPT INNER DU is the affected DU)
F/O ARPT NAV (If the F/O OUTER DU or the F/O INNER DU is the affected DU)

Intentionally left blank

CDS & AUTO FLT FCU SWITCHED OFF

Applicable to: ALL

Ident.: PRO-ABN-CDS_AFLT-2281W100-00003194.0001001 / 30 JUN 14

ANNUNCIATIONS

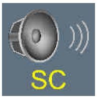
Triggering Conditions:

L2 The FCU is switched off.

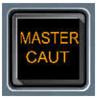
The EFIS CPs and the AFS CP are electrically shut off due to:
- A power supply failure
- A manual action on the FCU power supply button [D6] of the CKPT EQPT POWER SUPPLY panel.

Indications:

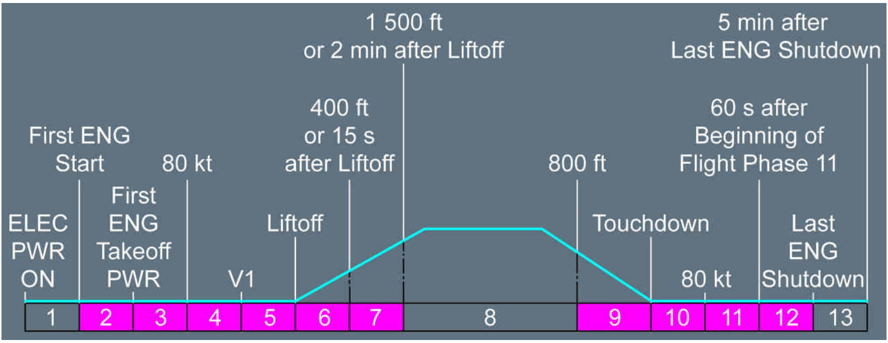
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
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Ident.: PRO-ABN-CDS_AFLT-2281W100-00007586.0002001 / 07 JUL 16

- **If RNP AR operation in progress:**

  Minimum LIMITED TO RNP 0.30

Continued on the following page

CDS & AUTO FLT FCU SWITCHED OFF (Cont'd)

Ident.: PRO-ABN-CDS_AFLT-2281W100-00023492.0001001 / 07 JUL 16

STATUS

INFO

FOR RNP AR : MINIMUM LIMITED TO RNP 0.30

COM ATC DATALINK FAULT

Applicable to: ALL

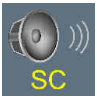
Ident.: PRO-ABN-COM-4620W010-00002664.0001001 / 06 MAY 15

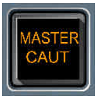
ANNUNCIATIONS

Triggering Conditions:

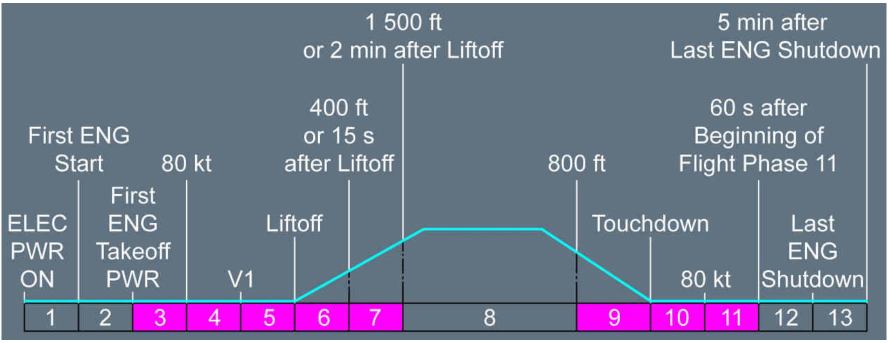
L2 The ATC datalink is failed because at least the CPDLC application is stopped.

Indications:


Audio


Master Light
MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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3
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12
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Ident.: PRO-ABN-COM-4620W010-00017009.0003001 / 09 JUL 15

Note: *If the failure is only due to an IMA module failure, the ECAM displays the DUE TO IMA MODULE FAULT subtitle.*

Ident.: PRO-ABN-COM-4620W010-00008494.0001001 / 06 MAY 15

ATC COM VOICE ONLY

Continued on the following page

COM ATC DATALINK FAULT (Cont'd)

Ident.: PRO-ABN-COM-4620W010-00008495.0001001 / 06 MAY 15

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

ATC COM VOICE ONLY

STATUS

INOP SYS

ALL PHASES

ATC DATALINK

INFO

- **If ADS-C is operative**
  ADS-C DATALINK AVAIL

COM ADS-C DATALINK FAULT

Applicable to: ALL

Ident.: PRO-ABN-COM-4620W020-00002663.0001001 / 06 MAY 15

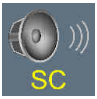
ANNUNCIATIONS

Triggering Conditions:

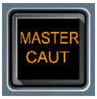
L2 The Automatic Dependance Surveillance - Contract (ADS-C) function is stopped.

Indications:

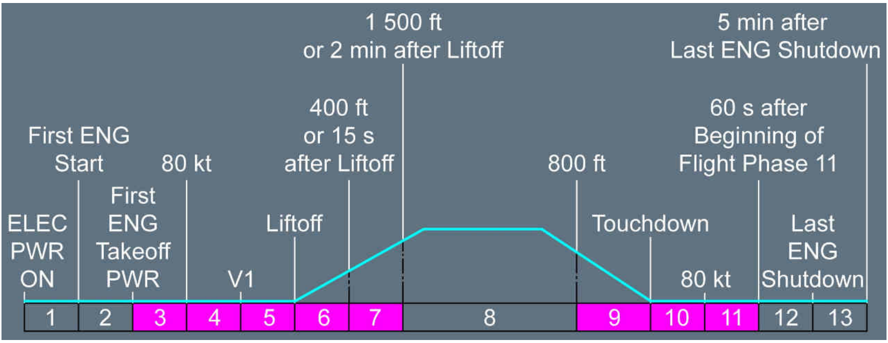
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Ident.: PRO-ABN-COM-4620W020-00008492.0001001 / 06 MAY 15

Crew awareness.

Continued on the following page

COM ADS-C DATALINK FAULT (Cont'd)

Ident.: PRO-ABN-COM-4620W020-00008493.0001001 / 06 MAY 15

STATUS

INOP SYS

ALL PHASES

ADS-C DATALINK

COM CAPT(F/O)(THIRD OCCUPANT)(FOURTH OCCUPANT) PTT STUCK

Applicable to: ALL

Ident.: PRO-ABN-COM-2351W040-00016966.0001001 / 08 NOV 18

ANNUNCIATIONS

Triggering Conditions:

L2 The CAPT(F/O)(Third Occupant)(Fourth Occupant) PTT sw is stuck in the transmit position for more than 40 s, and no transmission key is selected on the associated RMP.

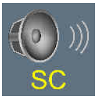
The CAPT(F/O) PTT refers to one of the following:
- The CAPT(F/O) sidestick PTT sw
- The CAPT(F/O) hand microphone PTT sw
- The INT/RAD sw on the RMP 1(2)
- The CAPT(F/O) glareshield PTT pb ◁ .

The THIRD OCCUPANT PTT refers to one of the following:
- The THIRD OCCUPANT hand microphone PTT sw
- The INT/RAD sw on the RMP 3.

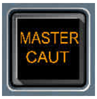
The FOURTH OCCUPANT PTT refers to the INT/RAD sw on the fourth occupant ACP ◁ .

Indications:

Audio



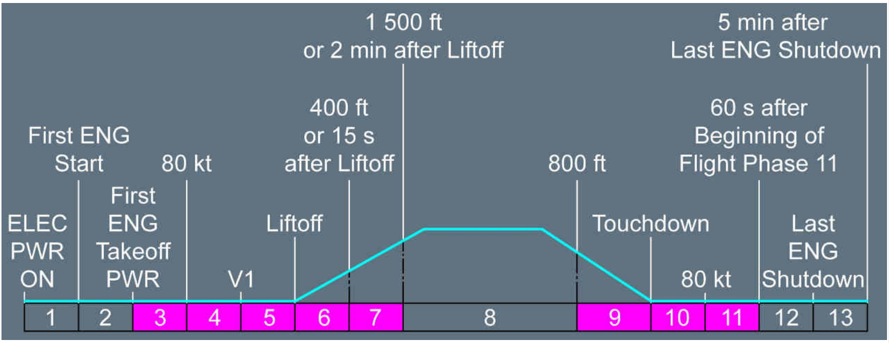
Master Light



Flight Phase Inhibition:

Continued on the following page

COM CAPT(F/O)(THIRD OCCUPANT)(FOURTH OCCUPANT) PTT STUCK (Cont'd)


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Ident.: PRO-ABN-COM-2351W040-00016968.0001001 / 06 MAY 15

Crew awareness.

L2 Try to release the stuck PTT sw to cancel the alert.

COM COMPANY COM FAULT

Applicable to: ALL

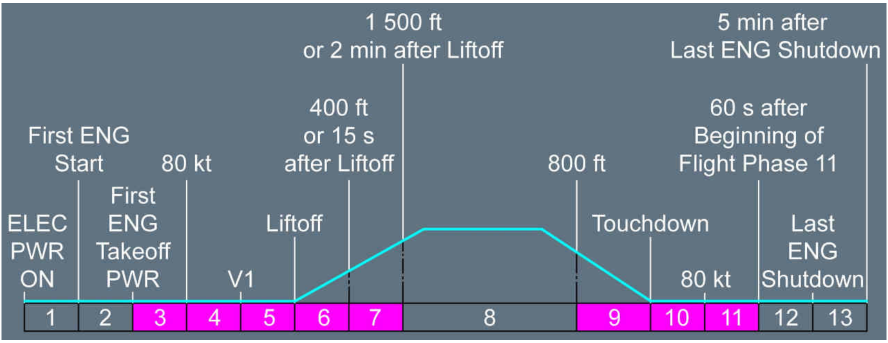
Ident.: PRO-ABN-COM-4625W100-00016256.0001001 / 06 NOV 14

ANNUNCIATIONS

Triggering Conditions:

L2 The COMPANY COM is failed.

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-COM-4625W100-00016260.0001001 / 06 NOV 14

CPNY COM VOICE ONLY

Continued on the following page

COM COMPANY COM FAULT (Cont'd)

Ident.: PRO-ABN-COM-4625W100-00016261.0001001 / 06 NOV 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

CPNY COM VOICE ONLY

STATUS

INOP SYS

ALL PHASES

COMPANY COM

COM DATALINK FAULT

Applicable to: ALL

Ident.: PRO-ABN-COM-2321W010-00000560.0001001 / 06 MAY 15

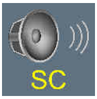
ANNUNCIATIONS

Triggering Conditions:

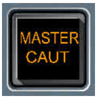
L2 The datalink communication function is failed.

Indications:

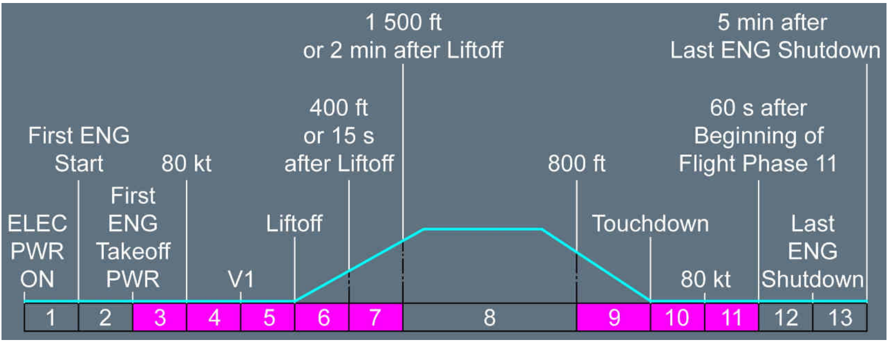
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-COM-2321W010-00007337.0001001 / 06 MAY 15

Note: *If the failure is only due to an IMA module failure, the ECAM displays the DUE TO IMA MODULE FAULT subtitle.*

Ident.: PRO-ABN-COM-2321W010-00007338.0001001 / 06 MAY 15

ATC COM VOICE ONLY
CPNY COM VOICE ONLY

Continued on the following page

COM DATALINK FAULT (Cont'd)

Ident.: PRO-ABN-COM-2321W010-00007339.0001001 / 06 MAY 15

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

ATC COM VOICE ONLY
CPNY COM VOICE ONLY

STATUS

INOP SYS

ALL PHASES

DATALINK

COM HF 1(HF 2 ◁) DATALINK FAULT ◁

Applicable to: ALL

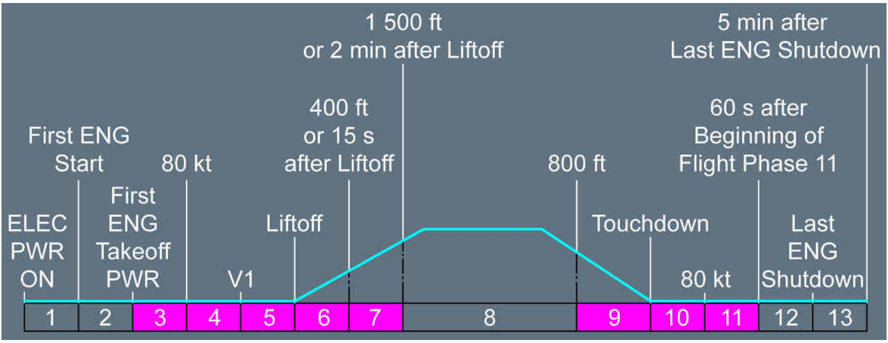
Ident.: PRO-ABN-COM-2311W110-00016301.0001001 / 07 JUL 16

ANNUNCIATIONS

Triggering Conditions:

L2 HF 1(HF 2 ◁) data mode ◁ is failed.

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-COM-2311W110-00016303.0001001 / 07 JUL 16

Crew awareness.

L2 The voice mode of HF 1(HF 2 ◁) is still available.

Ident.: PRO-ABN-COM-2311W110-00016304.0001001 / 07 JUL 16

STATUS

INOP SYS

ALL PHASES

HF 1(HF 2 ◁) DATALINK ◁

COM HF 1(HF 2 ◁) EMITTING

Applicable to: ALL

Ident.: PRO-ABN-COM-2311W020-00000562.0001001 / 14 APR 16

ANNUNCIATIONS

Triggering Conditions:

L2 HF 1(HF 2 ◁) transmits during more than 60 s.

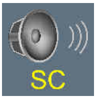
L3 Both of the following conditions occur:

- An INT/RAD PTT sw on an RMP, a PTT button on a cockpit handset, or a PTT sw on a sidestick is in the transmit position
- The associated transmission key is selected on the associated RMP.

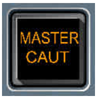
Indications:

L2

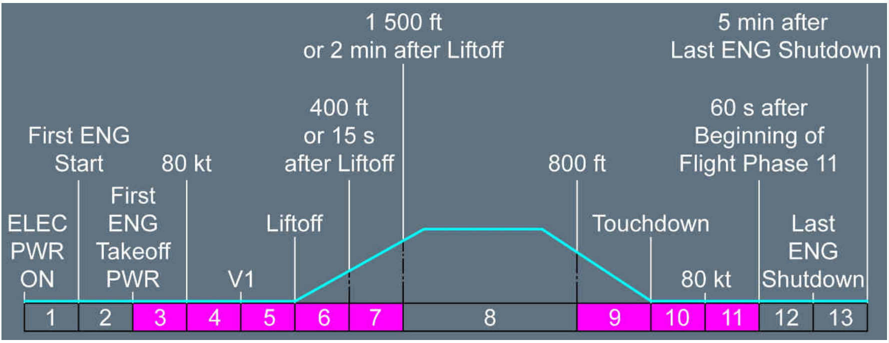
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
V1
Touchdown
80 kt
Last
ENG
Shutdown
1
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Ident.: PRO-ABN-COM-2311W020-00007341.0001001 / 14 APR 16

Crew awareness.

COM HF 1(HF 2 ◁) FAULT

Applicable to: ALL

Ident.: PRO-ABN-COM-2311W160-00016306.0001001 / 29 SEP 16

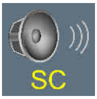
ANNUNCIATIONS

Triggering Conditions:

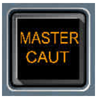
L2 HF 1(HF 2 ◁) is failed.

Indications:

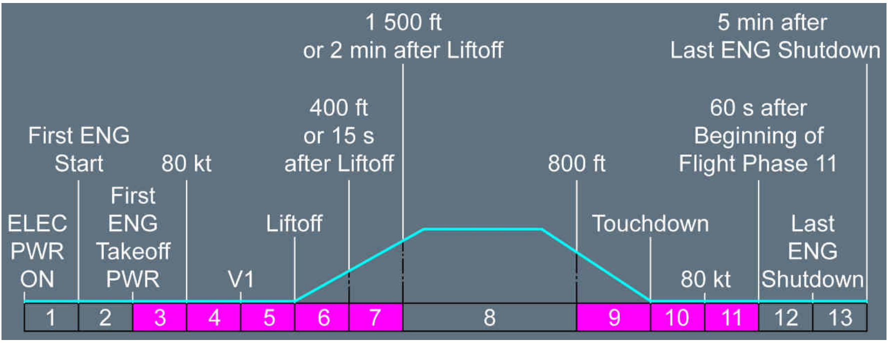
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-COM-2311W160-00016308.0001001 / 29 SEP 16

Crew awareness.

Continued on the following page

COM HF 1(HF 2 ◁✳) FAULT (Cont'd)

Ident.: PRO-ABN-COM-2311W160-00016309.0001001 / 29 SEP 16

STATUS

INOP SYS

ALL PHASES

HF 1(HF 2 ◁✳)
HF 1+2 (If both HF1 and HF 2 ◁✳ inoperative)

COM HF FAULT

Applicable to: ET-AYA, ET-AYB

Ident.: PRO-ABN-COM-2311W180-00016310.0001001 / 06 MAY 15

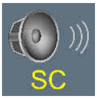
ANNUNCIATIONS

Triggering Conditions:

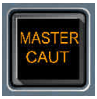
L2 The HF is failed.

Indications:

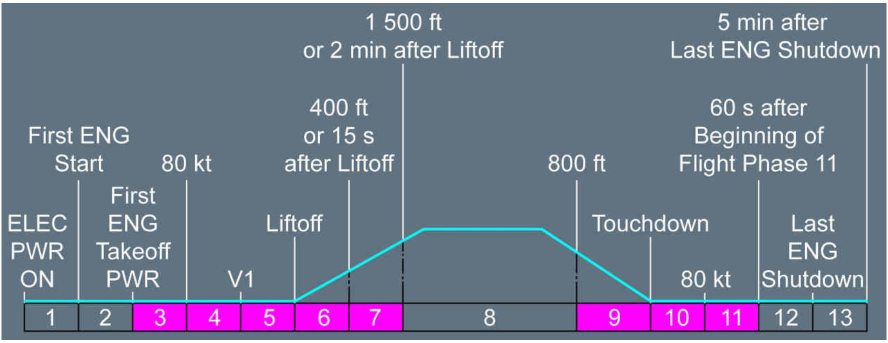
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-COM-2311W180-00016312.0001001 / 06 MAY 15

Crew awareness.

Continued on the following page

COM HF FAULT (Cont'd)

Ident.: PRO-ABN-COM-2311W180-00016313.0001001 / 06 MAY 15

STATUS

INOP SYS

ALL PHASES

HF

COM OIS/AVNCS DATA XFR FAULT

Applicable to: ALL

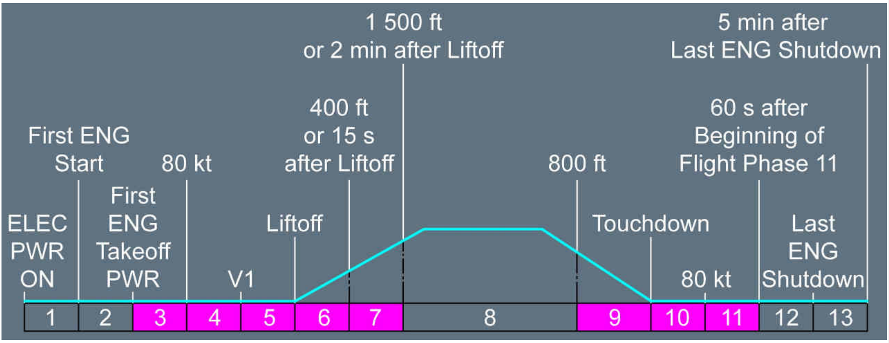
Ident.: PRO-ABN-COM-4611W010-00016204.0001001 / 06 NOV 14

ANNUNCIATIONS

Triggering Conditions:

L2 Both SCIs are lost, or the OIS AVNCS server is lost.

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
First ENG
Start
80 kt
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Continued on the following page

COM OIS/AVNCS DATA XFR FAULT (Cont'd)

Ident.: PRO-ABN-COM-4611W010-00016205.0001001 / 06 NOV 14

L2 If the alert is due to the loss of both SCIs, the following functions are lost:
- Print capabilities for FMS and ATC
- C/B status on C/B SD page
- Transmission and reception of COMPANY COM messages
- Avionics data input for EFB applications.

If the alert is due to the loss of the OIS AVNCS Server, the following functions are lost:
- C/B status on C/B SD page
- COMPANY COM

Ident.: PRO-ABN-COM-4611W010-00016206.0002001 / 07 JUL 16

CPNY COM VOICE ONLY

Ident.: PRO-ABN-COM-4611W010-00016252.0002001 / 07 JUL 16

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

CPNY COM VOICE ONLY

STATUS

INOP SYS

ALL PHASES

OIS/AVNCS DATA XFR
COMPANY COM DATALINK (If loss of both SCIs)
COMPANY COM (If loss of OIS AVNCS Server)

COM RMP 1(2)(3) FAULT

Applicable to: ALL

Ident.: PRO-ABN-COM-2351W100-00000563.0001001 / 06 MAY 15

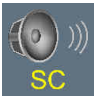
ANNUNCIATIONS

Triggering Conditions:

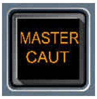
L2 RMP 1(2)(3) is failed.

Indications:

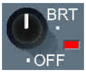
Audio



Master Light

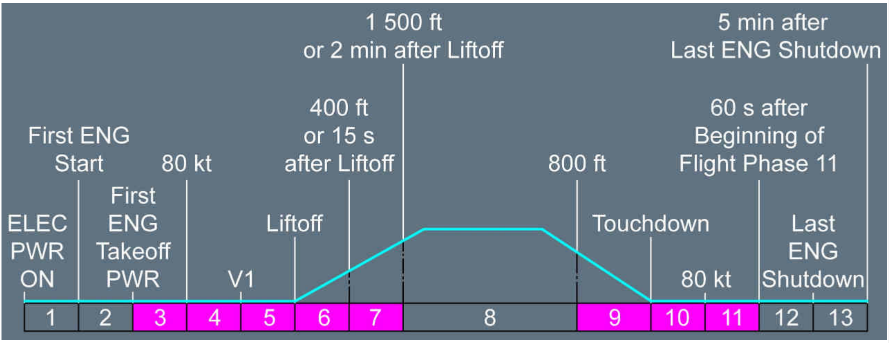

MASTER
CAUT

Local Light



BRT/OFF knob on RMP 1(2)(3)

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

COM RMP 1(2)(3) FAULT (Cont'd)

Ident.: PRO-ABN-COM-2351W100-00007343.0001001 / 06 MAY 15

RMP 1(2)(3)..OFF

L2 *When the flight crew sets the failed RMP(s) to OFF, the reconfiguration of the communication system occurs, and control is maintained via the remaining RMP(s).*

L1
- **If RMP 1, RMP 2 and RMP 3 are failed:**
  - **If SATCOM datalink is available:**

    NO VOICE COM AVAIL
    SATCOM DATALINK AVAIL

    L2 *The SATCOM datalink is available, only if the SATCOM was automatically logged on before the failure of all the RMPs.*

    L1
  - **If SATCOM datalink is not available:**

    NO COM AVAIL

Continued on the following page

COM RMP 1(2)(3) FAULT (Cont'd)

Ident.: PRO-ABN-COM-2351W100-00007344.0001001 / 14 APR 16

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

- **If all RMPs are failed, and SATCOM datalink is available:**
  NO VOICE COM AVAIL
- **If all RMPs are failed, and SATCOM datalink is not available:**
  NO COM AVAIL

STATUS

INOP SYS

ALL PHASES

RMP 1(2)(3)
RMP 1+2(1+3)(2+3) (If two RMPs are failed)
RMP 1+2+3 (If all RMPs are failed)
VHF 1+2+3 (If all RMPs are failed)
HF 1+2 (With HF 2 ◁* if all RMPs are failed)
HF (Without HF 2 ◁* if all RMPs are failed)
STBY RAD NAV (If RMP 1 and RMP 2 are failed)
DATALINK (If all RMPs are failed and SATCOM datalink is not available)
SATCOM (If all RMPs are failed and SATCOM datalink is not available)

INFO

- **If all RMPs are failed, and SATCOM datalink is available:**
  SATCOM DATALINK AVAIL

COM SATCOM DATALINK FAULT

Applicable to: ALL

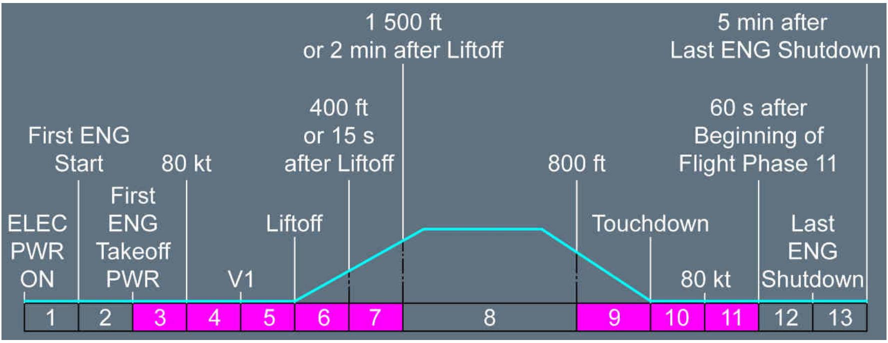
Ident.: PRO-ABN-COM-2328W030-00000566.0001001 / 06 MAY 15

ANNUNCIATIONS

Triggering Conditions:

L2 SATCOM data mode is failed.

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-COM-2328W030-00007352.0001001 / 06 MAY 15

Crew awareness.
L2 The voice mode of the SATCOM is still available.

Ident.: PRO-ABN-COM-2328W030-00007353.0001001 / 06 MAY 15

STATUS

INOP SYS

ALL PHASES

SATCOM DATALINK

COM SATCOM FAULT

Applicable to: ALL

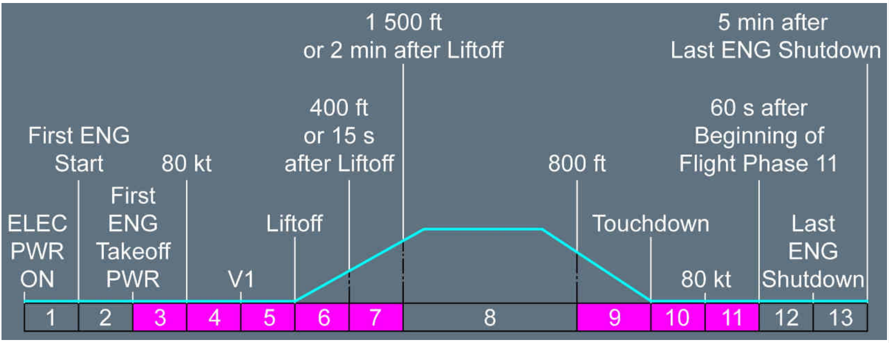
Ident.: PRO-ABN-COM-2328W010-00000567.0001001 / 06 MAY 15

ANNUNCIATIONS

Triggering Conditions:

L2 The SATCOM is failed.

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-COM-2328W010-00007355.0001001 / 06 MAY 15

Crew awareness.

L2 Voice and data communication are not available via SATCOM.

Ident.: PRO-ABN-COM-2328W010-00007356.0001001 / 06 MAY 15

STATUS

INOP SYS

ALL PHASES

SATCOM

COM SATCOM VOICE FAULT

Applicable to: ALL

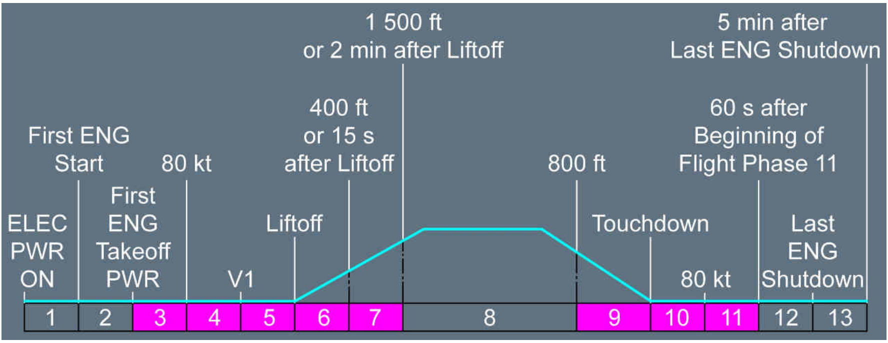
Ident.: PRO-ABN-COM-2328W020-00000568.0001001 / 06 MAY 15

ANNUNCIATIONS

Triggering Conditions:

L2 SATCOM voice mode is failed.

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-COM-2328W020-00007358.0001001 / 06 MAY 15

Crew awareness.

L2 The data mode of the SATCOM is still available.

COM VHF 1(2)(3) EMITTING

Applicable to: ALL

Ident.: PRO-ABN-COM-2312W010-00000569.0001001 / 06 MAY 15

ANNUNCIATIONS

Triggering Conditions:

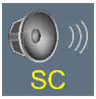
L2 VHF 1(2)(3) transmits during more than 35 s.

L3 Both of the following conditions occur:
- An INT/RAD PTT sw on an RMP, a PTT button on a cockpit handset, or a PTT sw on a sidestick is in the transmit position
- The associated internal transmission key is selected on the associated RMP.

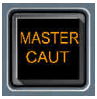
L2 After 60 s:
- A single chime sounds
- The master caution light comes on.

Indications:

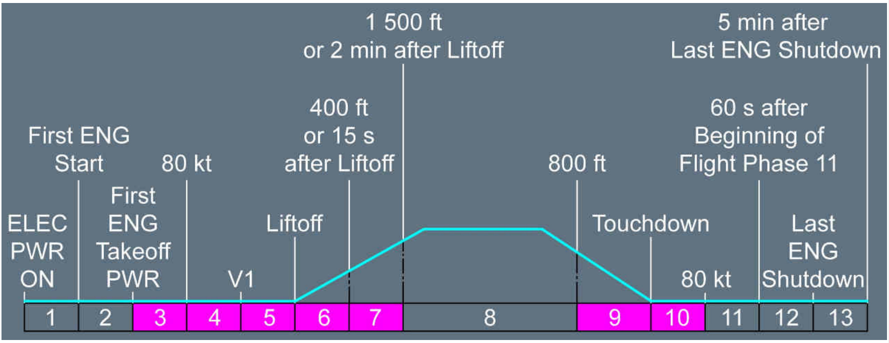
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Continued on the following page

COM VHF 1(2)(3) EMITTING (Cont'd)

Ident.: PRO-ABN-COM-2312W010-00007360.0001001 / 06 MAY 15

- **After 60 s of VHF emitting:**
  RMP TX KEY.......................................DESELECT

COM VHF 1(2)(3) FAULT

Applicable to: ALL

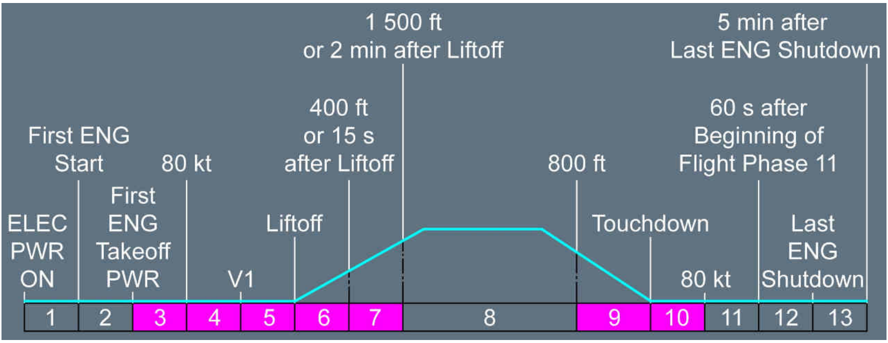
Ident.: PRO-ABN-COM-2312W210-00016324.0001001 / 06 MAY 15

ANNUNCIATIONS

Triggering Conditions:

L2 VHF 1(2)(3) is failed.

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Ident.: PRO-ABN-COM-2312W210-00016326.0001001 / 06 MAY 15

Crew awareness.

Continued on the following page

COM VHF 1(2)(3) FAULT (Cont'd)

Ident.: PRO-ABN-COM-2312W210-00016327.0001001 / 06 MAY 15

STATUS

INOP SYS

ALL PHASES

VHF 1(2)(3)
VHF 1+2(1+3)(2+3) (If two VHFs are inoperative)
VHF 1+2+3 (If all VHFs are inoperative)

COM VHF 3 DATALINK FAULT

Applicable to: ALL

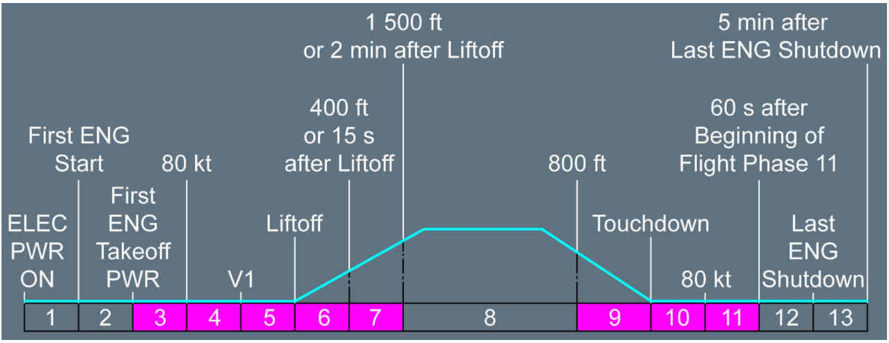
Ident.: PRO-ABN-COM-2312W060-00000570.0001001 / 02 OCT 14

ANNUNCIATIONS

Triggering Conditions:

L2 VHF 3 data mode is failed.

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

COM VHF 3 DATALINK FAULT (Cont'd)

Ident.: PRO-ABN-COM-2312W060-00007362.0001001 / 06 MAR 15

Crew awareness.

L2 The voice mode of VHF 3 is still available.

Ident.: PRO-ABN-COM-2312W060-00007363.0001001 / 06 MAR 15

STATUS

INOP SYS

ALL PHASES

VHF 3 DATALINK

Intentionally left blank

COND AFT CARGO ISOL FAULT ◁

Applicable to: ALL

Ident.: PRO-ABN-COND-2128W410-00004703.0001001 / 09 MAR 16

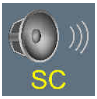
ANNUNCIATIONS

Triggering Conditions:

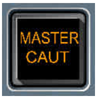
L2 At least one isolation valve of the aft cargo compartment ◁ is failed open. The isolation of the aft cargo compartment ◁ is no longer possible.

Indications:

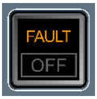
Audio



Master Light


MASTER
CAUT

Local Light

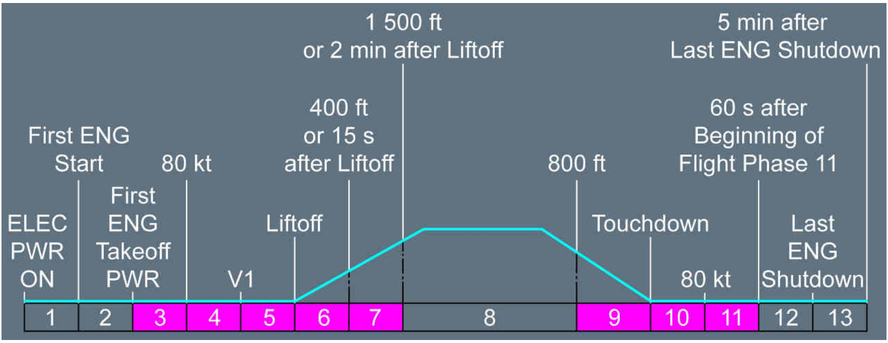


AFT ISOL VALVES pb-sw

SD page

COND SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
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ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-COND-2128W410-00007190.0001001 / 09 MAR 16

Note: *If the failure is only due to an IMA module failure, the ECAM displays the DUE TO IMA MODULE FAULT subtitle.*

Continued on the following page

COND AFT CARGO ISOL FAULT ❄ (Cont'd)

Ident.: PRO-ABN-COND-2128W410-00007191.0001001 / 09 MAR 16

CARGO AFT ISOL VALVES ❄ .... OFF

L2 *The operative isolation valve closes, and the extraction fan shuts down.*

Ident.: PRO-ABN-COND-2128W410-00007192.0001001 / 09 MAR 16

STATUS

INOP SYS

ALL PHASES

AFT CARGO ISOL ❄
AFT CARGO VENT ❄ (If the compartment ventilation is not possible)

COND AFT CARGO VENT FAULT ◁

Applicable to: ALL

Ident.: PRO-ABN-COND-2128W400-00004704.0001001 / 09 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 The Aft Cargo Compartment Ventilation ◁ is failed.

L3 One of the following conditions occurs:
- The extraction fan of the aft cargo compartment ◁ is failed, or
- At least one isolation valve of the aft cargo compartment ◁ is failed closed.

Indications:

L2

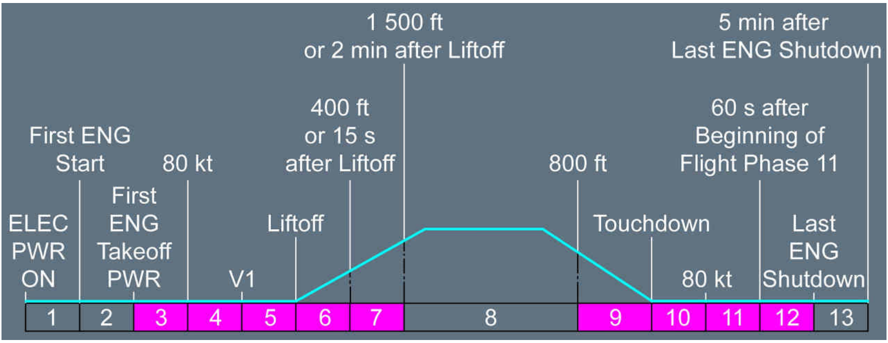
Local Light

AFT ISOL VALVES pb-sw

SD page

COND SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-COND-2128W400-00007193.0001001 / 09 MAR 16

Note: *If the failure is only due to an IMA module failure, the ECAM displays the DUE TO IMA MODULE FAULT subtitle.*

Continued on the following page

COND AFT CARGO VENT FAULT ◁✻ (Cont'd)

Ident.: PRO-ABN-COND-2128W400-00007194.0001001 / 09 MAR 16

Crew awareness.

Ident.: PRO-ABN-COND-2128W400-00007195.0001001 / 09 MAR 16

STATUS

INOP SYS

ALL PHASES

AFT CARGO VENT ◁✻ (If aft cargo ventilation is entirely lost)

INFO

- **If aft cargo ventilation can still operate**
  AFT CARGO VENT DEGRADED ◁✻

COND BULK CARGO DUCT OVHT

Applicable to: ALL

Ident.: PRO-ABN-COND-2162W050-00004706.0001001 / 03 JUL 14

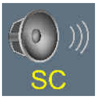
ANNUNCIATIONS

Triggering Conditions:

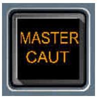
L2 A duct overheat occurs in the bulk cargo compartment.

Indications:

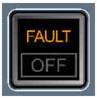
Audio



Master Light


MASTER
CAUT

Local Light

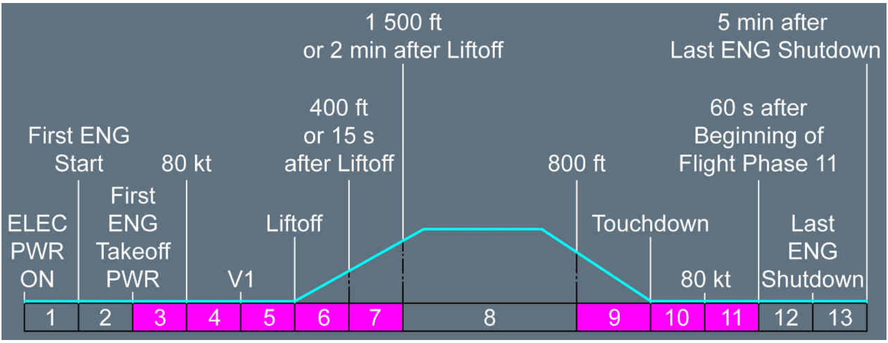


HEATER pb-sw

SD page

COND SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
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8
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10
11
12
13

Ident.: PRO-ABN-COND-2162W050-00007122.0001001 / 03 JUL 14

CARGO BULK HEATER..OFF

Continued on the following page

COND BULK CARGO DUCT OVHT (Cont'd)

Ident.: PRO-ABN-COND-2162W050-00007123.0001001 / 03 JUL 14

DEFERRED PROC

ALL PHASES

> WHEN BULK CARGO DUCT OVHT OUT

CARGO BULK HEATER... ON

STATUS

INOP SYS

ALL PHASES

BULK CARGO HEATER

COND BULK CARGO HEATER FAULT

Applicable to: ALL

Ident.: PRO-ABN-COND-2162W060-00004707.0001001 / 03 JUL 14

ANNUNCIATIONS

Triggering Conditions:

L2 The heater of the bulk cargo compartment is failed.

Indications:

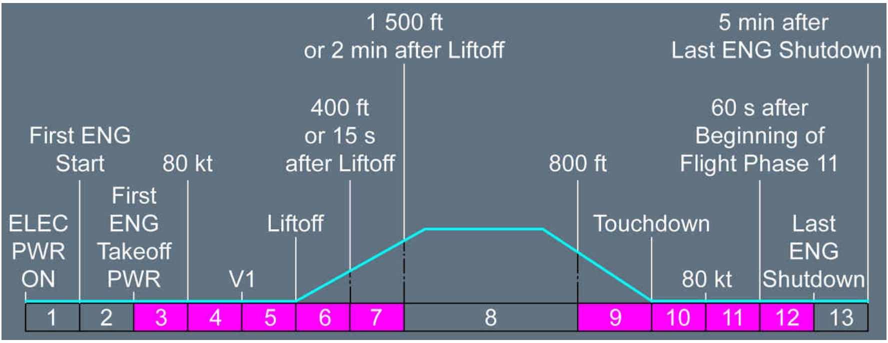
Local Light

HEATER pb-sw

SD page

COND SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
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4
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Ident.: PRO-ABN-COND-2162W060-00007125.0001001 / 03 JUL 14

Crew awareness.

L2 Temperature regulation of the bulk cargo compartment is lost.

Continued on the following page

COND BULK CARGO HEATER FAULT (Cont'd)

Ident.: PRO-ABN-COND-2162W060-00007126.0001001 / 03 JUL 14

STATUS

INOP SYS

ALL PHASES

BULK CARGO HEATER

COND BULK CARGO ISOL FAULT

Applicable to: ALL

Ident.: PRO-ABN-COND-2128W020-00004708.0001001 / 03 JUL 14

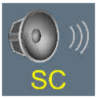
ANNUNCIATIONS

Triggering Conditions:

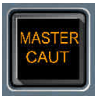
L2 At least one isolation valve of the bulk cargo compartment does not reach the fully closed position. The isolation of the bulk cargo compartment is no longer possible.

Indications:

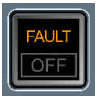
Audio



Master Light


MASTER
CAUT

Local Light

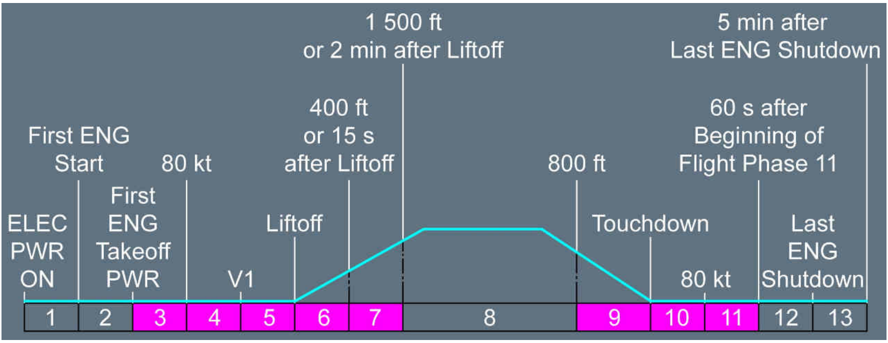


BULK ISOL VALVES pb-sw

SD page

COND SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
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Ident.: PRO-ABN-COND-2128W020-00007127.0001001 / 03 JUL 14

Note: *If the failure is only due to an IMA module failure, the ECAM displays the DUE TO IMA MODULE FAULT subtitle.*

Continued on the following page

COND BULK CARGO ISOL FAULT (Cont'd)

Ident.: PRO-ABN-COND-2128W020-00007128.0001001 / 03 JUL 14

CARGO BULK ISOL VALVES...OFF

L2 *The operative isolation valve closes, and the extraction fan shuts down.*

Ident.: PRO-ABN-COND-2128W020-00007129.0001001 / 03 JUL 14

STATUS

INOP SYS

ALL PHASES

BULK CARGO ISOL
BULK CARGO VENT (If the compartment ventilation is not possible)

COND BULK CARGO VENT FAULT

Applicable to: ALL

Ident.: PRO-ABN-COND-2128W010-00004709.0001001 / 03 JUL 14

ANNUNCIATIONS

Triggering Conditions:

L2 The ventilation of the bulk cargo compartment is failed.

L3 One of the following conditions occurs:

- The extraction fan of the bulk cargo compartment is failed, or
- At least one isolation valve of the bulk cargo compartment does not reach the fully open position.

Indications:

L2

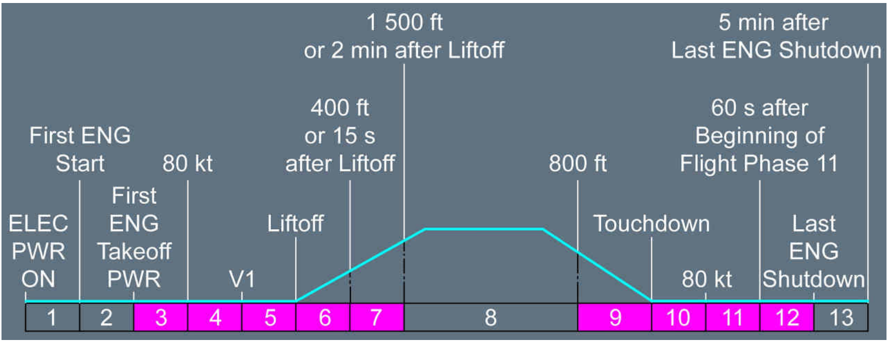
Local Light

BULK ISOL VALVES pb-sw

SD page

COND SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Continued on the following page

COND BULK CARGO VENT FAULT (Cont'd)

Ident.: PRO-ABN-COND-2128W010-00007130.0001001 / 03 JUL 14

Note: If the failure is only due to an IMA module failure, the ECAM displays the DUE TO IMA MODULE FAULT subtitle.

Ident.: PRO-ABN-COND-2128W010-00007131.0001001 / 03 JUL 14

Crew awareness.

Ident.: PRO-ABN-COND-2128W010-00007132.0001001 / 03 JUL 14

STATUS

INOP SYS

ALL PHASES

BULK CARGO VENT

COND CABIN FANS FAULT

Applicable to: ALL

Ident.: PRO-ABN-COND-2121W040-00004705.0001001 / 03 JUL 14

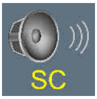
ANNUNCIATIONS

Triggering Conditions:

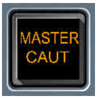
L2 At least three out of four recirculation fans are failed.

Indications:

Audio



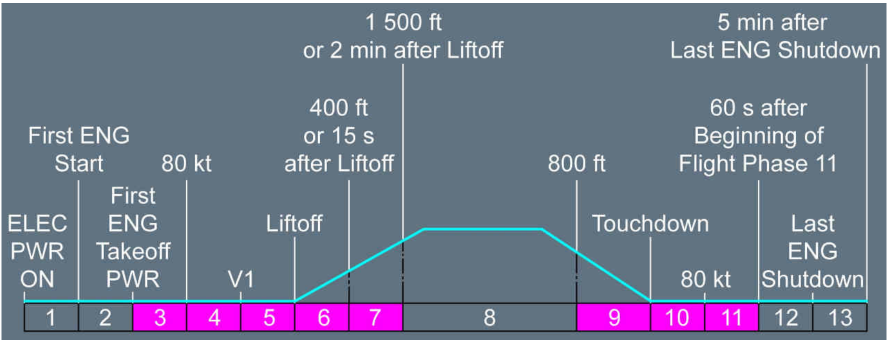
Master Light


MASTER
CAUT

SD page

COND SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-COND-2121W040-00007118.0001001 / 03 JUL 14

Note: *If the failure is only due to an IMA module failure, the ECAM displays the DUE TO IMA MODULE FAULT subtitle.*

Ident.: PRO-ABN-COND-2121W040-00007119.0001001 / 03 JUL 14

AIR FLOW...HI

Continued on the following page

COND CABIN FANS FAULT (Cont'd)

Ident.: PRO-ABN-COND-2121W040-00007120.0001001 / 03 JUL 14

L12

STATUS

INOP SYS

ALL PHASES

CAB FANS

INFO

CABIN TEMP REGUL DEGRADED

The temperature in some cabin zones may be abnormally low.

COND DUCT OVHT

Applicable to: ALL

Ident.: PRO-ABN-COND-2161W710-00004710.0001001 / 03 JUL 14

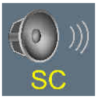
ANNUNCIATIONS

Triggering Conditions:

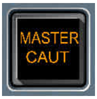
L2 A duct overheat occurs in the cockpit or the cabin.

Indications:

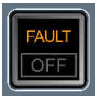
Audio



Master Light


MASTER
CAUT

Local Light

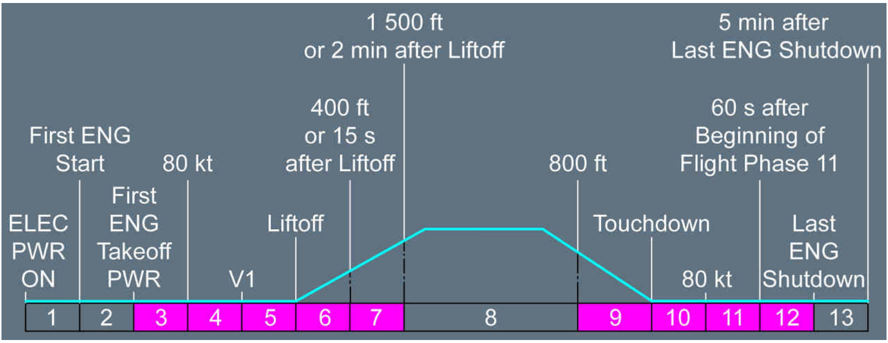


HOT AIR 1(2) pb-sw

SD page

COND SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Continued on the following page

COND DUCT OVHT (Cont'd)

Ident.: PRO-ABN-COND-2161W710-00007134.0001001 / 09 MAR 16

- **If the hot-air valve 1(2) is not automatically closed:**
  HOT AIR 1(2)....................OFF
  L2 *The hot-air valve of the affected duct must be closed.*

- L1 **If the temperature regulation of the forward cargo compartment ◁ is affected for more than 60 s:**
  PACK 1....................OFF
  CARGO FWD TEMP REGUL ◁ ....OFF
  L2 *The temperature regulation of the forward cargo compartment ◁ cannot operate with only one pack running.*

- L1 **If the temperature regulation of the forward cargo compartment ◁ is affected for more than 90 s:**
  PACK 2....................OFF

- **HOT AIR JAMMED OPEN ?**
  - **YES**
    PACK 1(2)....................OFF
    L2 *Close the pack on the side of the hot-air valve that is jammed. The remaining pack is automatically set to high.*
    L1 CARGO FWD TEMP REGUL ◁ ....OFF
    L2 *The temperature regulation of the forward cargo compartment ◁ cannot operate with only one pack running.*
    L1 FWD CARGO TEMP ◁ ....MONITOR
  - **NO**
    FWD CARGO TEMP ◁ ....MONITOR

- **If both packs are off:**
  DESCENT TO FL 100/MEA-MORA....................INITIATE
  MAX FL: 100/MEA-MORA
  - **WHEN DIFF PR <2 PSI & FL <100/MEA-MORA**
    RAM AIR....................ON
    CAB FANS....................OFF

Continued on the following page

COND DUCT OVHT (Cont'd)

Ident.: PRO-ABN-COND-2161W710-00007135.0003001 / 09 MAR 16

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

- **If both packs are off:**
  MAX FL: 100/MEA-MORA

LIMITATIONS ON PFD

ALL PHASES

- **If both packs are off:**
  MAX FL: 100/MEA-MORA

DEFERRED PROC

ALL PHASES

> WHEN DUCT OVHT OUT

HOT AIR 1(2)..OFF THEN ON
PACK 1(2).. ON

- **If both packs are running:**
  CARGO FWD TEMP REGUL ◁ .... ON

L12

STATUS

INOP SYS

ALL PHASES

PACK 1+2
PACK 1(2)
CKPT TEMP REGUL (If the temperature regulation in the cockpit is lost)
PART CAB TEMP REGUL (If the temperature regulation in some cabin zones is lost)

Continued on the following page

COND DUCT OVHT (Cont'd)

FWD CARGO TEMP REGUL ◁ (If the temperature regulation in the forward cargo is lost)

INFO

CABIN TEMP REGUL DEGRADED

Temperature regulation in some cabin zones is degraded.

- **If the temperature regulation of the forward cargo compartment ◁ is affected:**
  FWD CARGO TEMP REGUL DEGRADED ◁

COND FWD CARGO ISOL FAULT ◁

Applicable to: ALL

Ident.: PRO-ABN-COND-2128W210-00004711.0001001 / 09 MAR 16

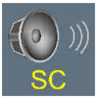
ANNUNCIATIONS

Triggering Conditions:

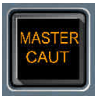
L2 At least one isolation valve of the forward cargo compartment ◁ does not reach the fully closed position. The isolation of the forward cargo compartment ◁ is no longer possible.

Indications:

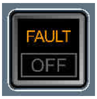
Audio



Master Light


MASTER
CAUT

Local Light

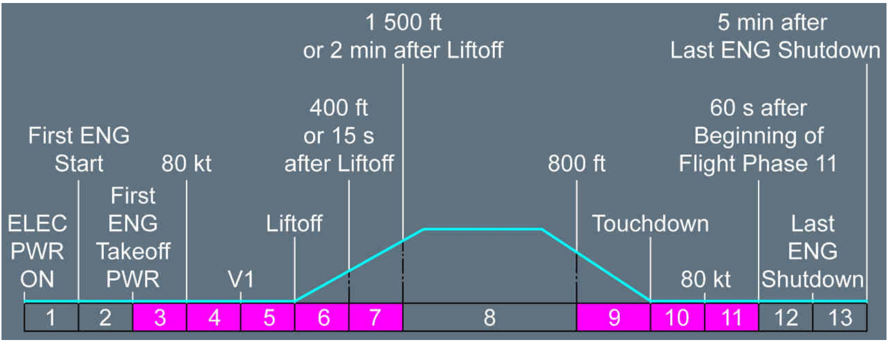


FWD ISOL VALVES pb-sw

SD page

COND SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
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Ident.: PRO-ABN-COND-2128W210-00007196.0001001 / 09 MAR 16

Note: *If the failure is only due to an IMA module failure, the ECAM displays the DUE TO IMA MODULE FAULT subtitle.*

Continued on the following page

COND FWD CARGO ISOL FAULT ◁✳ (Cont'd)

Ident.: PRO-ABN-COND-2128W210-00007197.0001001 / 09 MAR 16

CARGO FWD ISOL VALVES ◁✳ ....OFF

L2 *The operative isolation valves close, and the extraction fan shuts down.*

Ident.: PRO-ABN-COND-2128W210-00007198.0001001 / 09 MAR 16

STATUS

INOP SYS

ALL PHASES

FWD CARGO ISOL ◁✳
FWD CARGO VENT ◁✳ (If the compartment ventilation is not possible)

COND FWD CARGO TEMP REGUL FAULT ◁

Applicable to: ALL

Ident.: PRO-ABN-COND-2162W020-00014724.0001001 / 09 MAR 16

ANNUNCIATIONS

Triggering Conditions:

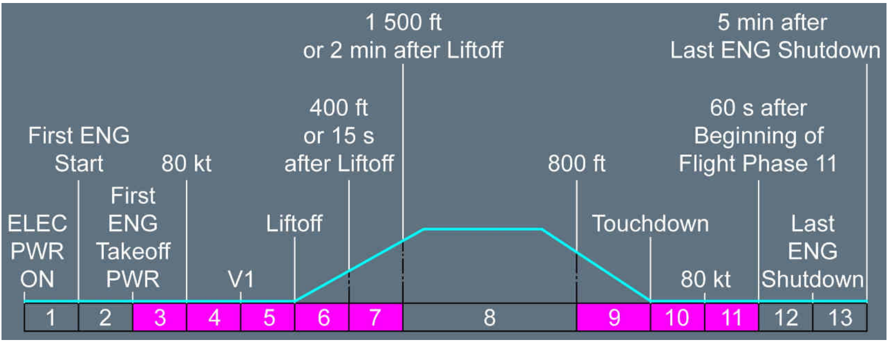
L2 The temperature control of the forward cargo compartment ◁ is failed.

Indications:

SD page

COND SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Ident.: PRO-ABN-COND-2162W020-00014725.0001001 / 09 MAR 16

Note: *If the failure is only due to an IMA module failure, the ECAM displays the DUE TO IMA MODULE FAULT subtitle.*

Ident.: PRO-ABN-COND-2162W020-00014726.0001001 / 09 MAR 16

FWD CARGO TEMP ◁ .... MONITOR

Continued on the following page

COND FWD CARGO TEMP REGUL FAULT ◁ (Cont'd)

Ident.: PRO-ABN-COND-2162W020-00014727.0001001 / 09 MAR 16

STATUS

INOP SYS

ALL PHASES

FWD CARGO TEMP REGUL ◁

INFO

FWD CARGO TEMP REGUL DEGRADED ◁

COND FWD CARGO VENT FAULT ◁

Applicable to: ALL

Ident.: PRO-ABN-COND-2128W200-00004712.0001001 / 09 MAR 16

ANNUNCIATIONS

Triggering Conditions:

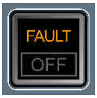
L2 The ventilation of the forward cargo compartment ◁ is failed.

L3 One of the following conditions occurs:
- The extraction fan of the forward cargo compartment ◁ is failed, or
- At least one isolation valve of the forward cargo compartment ◁ does not reach the fully open position.

Indications:

L2

Local Light

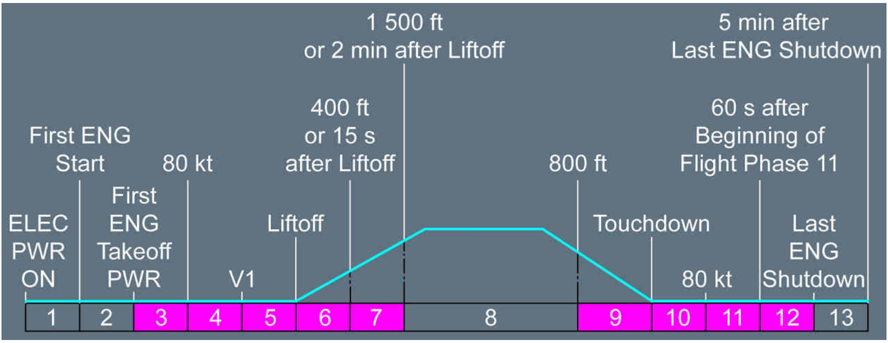


FWD ISOL VALVES pb-sw

SD page

COND SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

COND FWD CARGO VENT FAULT ◁ (Cont'd)

Ident.: PRO-ABN-COND-2128W200-00007199.0001001 / 09 MAR 16

Note: *If the failure is only due to an IMA module failure, the ECAM displays the DUE TO IMA MODULE FAULT subtitle.*

Ident.: PRO-ABN-COND-2128W200-00007200.0001001 / 09 MAR 16

Crew awareness.

Ident.: PRO-ABN-COND-2128W200-00007201.0001001 / 09 MAR 16

STATUS

INOP SYS

ALL PHASES

FWD CARGO VENT ◁ (If forward cargo ventilation is entirely lost)

INFO

- **If FWD Cargo Compartment Ventilation ◁ can still operate**
  FWD CARGO VENT DEGRADED ◁

COND HOT AIR 1(2) FAULT

Applicable to: ALL

Ident.: PRO-ABN-COND-2161W610-00004713.0001001 / 03 JUL 14

ANNUNCIATIONS

Triggering Conditions:

L2 The trim air system is partially supplied with hot bleed air.

One of the following conditions occurs:
- The HOT AIR pb-sw is abnormally set to OFF, or
- One side of the trim air system is failed.

Indications:

Audio

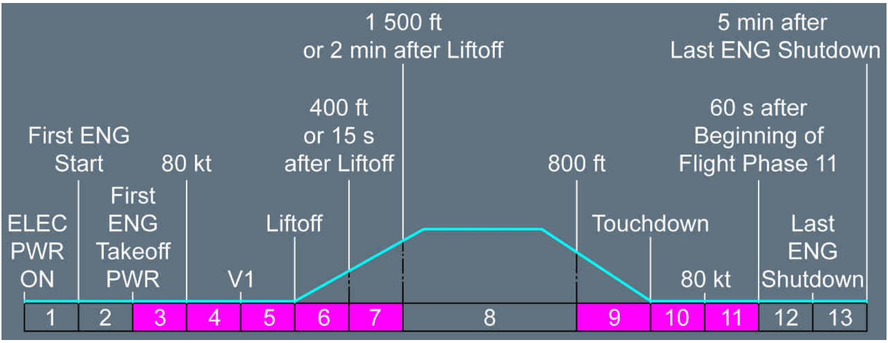
Master Light

MASTER
CAUT

SD page

COND SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
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ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-COND-2161W610-00007136.0001001 / 02 SEP 14

L2 When the ECAM does not require the flight crew to perform any action, no single chime and no master caution are triggered.

Continued on the following page

COND HOT AIR 1(2) FAULT (Cont'd)

Ident.: PRO-ABN-COND-2161W610-00007137.0001001 / 09 MAR 16

- **If the hot-air valve 1(2) is not failed closed:**
  HOT AIR 1(2).. ON
- **If the hot-air valve 1(2) cannot be closed:**
  PACK 1(2).. OFF
  CARGO FWD TEMP REGUL ◁ .... OFF
- **If the temperature regulation of the forward cargo compartment ◁ is affected:**
  FWD CARGO TEMP ◁ .... MONITOR

Ident.: PRO-ABN-COND-2161W610-00007138.0003001 / 09 MAR 16

STATUS

INOP SYS

ALL PHASES

PACK 1(2)
CKPT TEMP REGUL (If the temperature regulation in the cockpit is lost)
PART CAB TEMP REGUL (If the temperature regulation in some cabin zones is lost)
FWD CARGO TEMP REGUL ◁ (If the temperature regulation in the forward cargo is lost)

INFO

CABIN TEMP REGUL DEGRADED

- **If the temperature regulation in the forward cargo compartment ◁ is affected**
  FWD CARGO TEMP REGUL DEGRADED ◁

COND MIXER FLOW REGUL FAULT

Applicable to: ALL

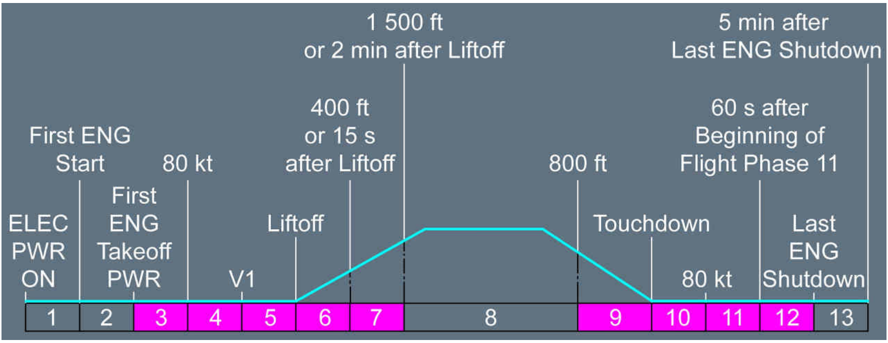
Ident.: PRO-ABN-COND-2121W150-00004714.0001001 / 03 JUL 14

ANNUNCIATIONS

Triggering Conditions:

L2 The air pressure in the mixer unit is too high, or too low.

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Ident.: PRO-ABN-COND-2121W150-00007140.0002001 / 07 JUL 20

1

- **When pressure in the mixer unit is too low:**
  AIR FLOW..HI

RISK OF REDUCED CABIN & CKPT AIR FLOW

Continued on the following page

COND MIXER FLOW REGUL FAULT (Cont'd)

Ident.: PRO-ABN-COND-2121W150-00007141.0002001 / 07 JUL 16

STATUS

INOP SYS

ALL PHASES

MIXER FLOW REGUL

INFO

RISK OF REDUCED CABIN & CKPT AIR FLOW

COND PURSER TEMP SEL FAULT

Applicable to: ALL

Ident.: PRO-ABN-COND-2161W050-00004716.0001001 / 03 JUL 14

ANNUNCIATIONS

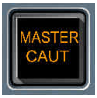
Triggering Conditions:

L2 Both of the following conditions occur:
- The AIR CABIN selector is set to PURS SEL position
- The cabin temperature selection through the FAP is failed.

Indications:

Audio

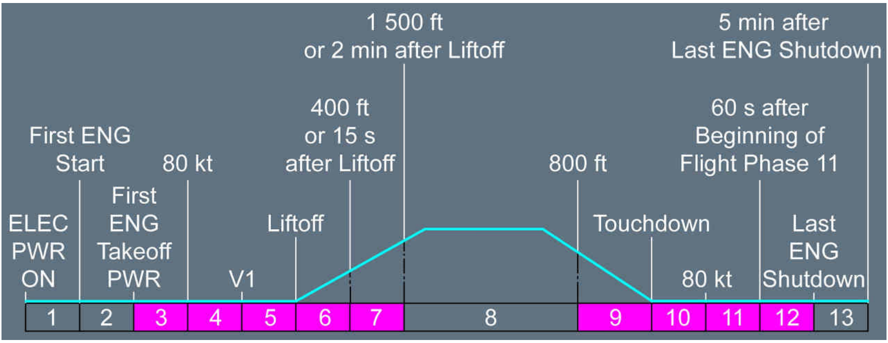
Master Light


MASTER
CAUT

SD page

COND SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Ident.: PRO-ABN-COND-2161W050-00007146.0001001 / 03 JUL 14

CABIN TEMP..ADJUST

L2 *The selected temperature is the same in all the cabin zones.*

COND RAM AIR FAULT

Applicable to: ALL

Ident.: PRO-ABN-COND-2131W400-00004717.0001001 / 03 JUL 14

ANNUNCIATIONS

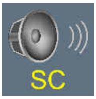
Triggering Conditions:

L2 After both packs are failed or set to OFF, one of the following occurs:

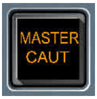
- The flight crew sets the RAM AIR pb-sw to ON, and the ram air inlet fails to open in the fully open position, or
- The RAM AIR pb-sw is set to OFF, and the ram air inlet is not fully closed.

Indications:

Audio



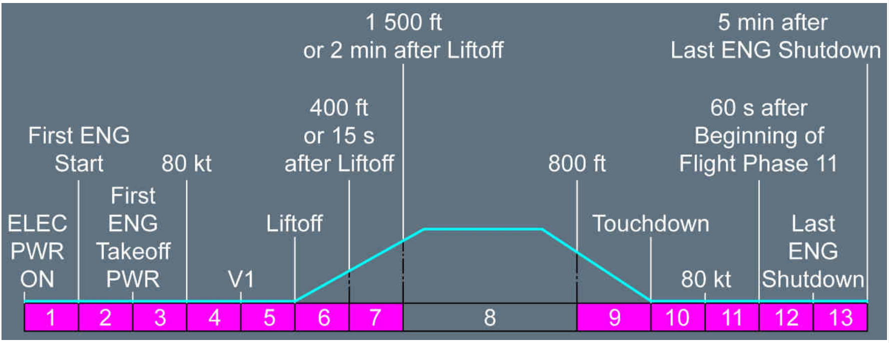
Master Light


MASTER
CAUT

SD page

COND SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Ident.: PRO-ABN-COND-2131W400-00007148.0001001 / 03 JUL 14

LAND ANSA

Continued on the following page

COND RAM AIR FAULT (Cont'd)

Ident.: PRO-ABN-COND-2131W400-00007149.0001001 / 03 JUL 14

STATUS

INOP SYS

ALL PHASES

RAM AIR

MEMOPAGE

MEMO ON ECAM

LAND ANSA

COND TEMP CTL FAULT

Applicable to: ALL

Ident.: PRO-ABN-COND-2161W010-00004720.0001001 / 03 JUL 14

ANNUNCIATIONS

Triggering Conditions:

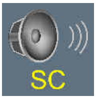
L2 The cockpit and cabin temperature control is failed.

L3 One of the following conditions occurs:
- The air conditioning system is lost
- The trim air system is lost.

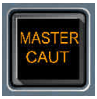
Indications:

L2

Audio



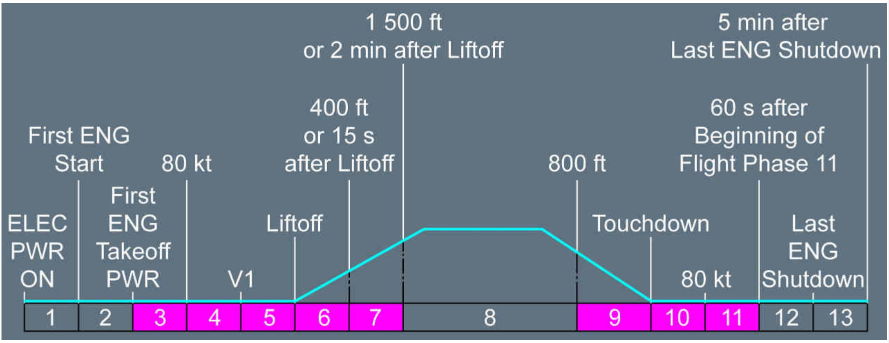
Master Light


MASTER
CAUT

SD page

COND SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-COND-2161W010-00007156.0001001 / 03 JUL 14

Note: *If the failure is only due to an IMA module failure, the ECAM displays the DUE TO IMA MODULE FAULT subtitle.*

Continued on the following page

Ident.: PRO-ABN-COND-2161W010-00007157.0001001 / 09 MAR 16

- **If the trim air system is lost:**
  FWD CARGO TEMP ◁ .... MONITOR

Crew awareness.

Ident.: PRO-ABN-COND-2161W010-00007158.0001001 / 09 MAR 16

L12

STATUS

INOP SYS

ALL PHASES

ALL ZONES TEMP REGUL

INFO

- **If both pack controllers are failed:**
  ENG IDLE HI
  PACKS 1+2 AT FIXED TEMP
  When the thrust levers are at idle, the engines are automatically set to idle high.
  The packs deliver a fixed 15 °C temperature.
- **If the temperature regulation of the forward cargo compartment ◁ is affected**
  FWD CARGO TEMP REGUL DEGRADED ◁

COND TWO CABIN FANS FAULT

Applicable to: ALL

Ident.: PRO-ABN-COND-2121W020-00004722.0001001 / 06 AUG 14

ANNUNCIATIONS

Triggering Conditions:

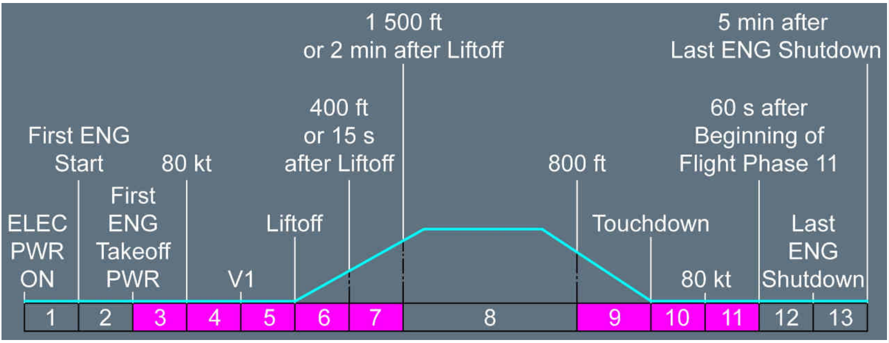
L2 Two out of four recirculation fans are failed.

Indications:

SD page

COND SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-COND-2121W020-00007162.0001001 / 03 JUL 14

Note: *If the failure is only due to an IMA module failure, the ECAM displays the DUE TO IMA MODULE FAULT subtitle.*

Ident.: PRO-ABN-COND-2121W020-00007163.0001001 / 03 JUL 14

Crew awareness.

Continued on the following page

COND TWO CABIN FANS FAULT (Cont'd)

Ident.: PRO-ABN-COND-2121W020-00007164.0001001 / 03 JUL 14

L12

STATUS

INOP SYS

ALL PHASES

TWO CAB FANS

INFO

CABIN TEMP REGUL DEGRADED

The temperature in some cabin zones may be abnormally low.

COND VENT CTL DEGRADED

Applicable to: ALL

Ident.: PRO-ABN-COND-2121W250-00005158.0001001 / 03 JUL 14

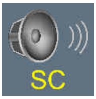
ANNUNCIATIONS

Triggering Conditions:

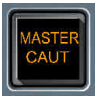
L2 Both ventilation control systems are lost.

Indications:

Audio



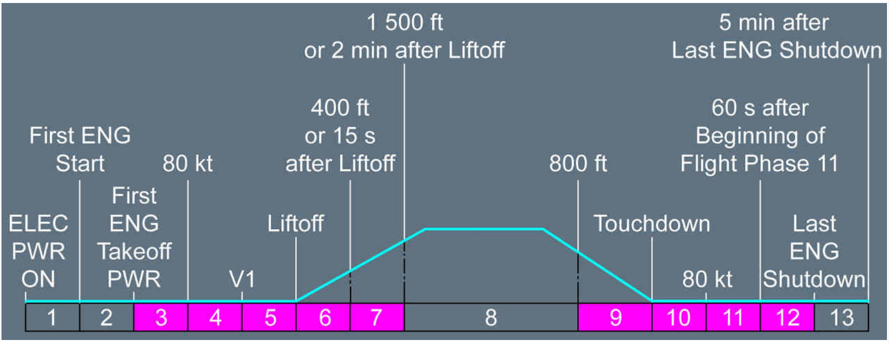
Master Light


MASTER
CAUT

SD page

COND SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Ident.: PRO-ABN-COND-2121W250-00007174.0001001 / 03 JUL 14

L2 The automatic control of the ventilation system is lost. The isolation valves remain in the positions they had before the failure.

L1 Note: *If the failure is only due to an IMA module failure, the ECAM displays the DUE TO IMA MODULE FAULT subtitle.*

Continued on the following page

COND VENT CTL DEGRADED (Cont'd)

Ident.: PRO-ABN-COND-2121W250-00007175.0004001 / 07 JUL 16

CARGO BULK ISOL VALVES..OFF
CARGO AFT ISOL VALVES..OFF
CARGO FWD ISOL VALVES..OFF
IFEC..OFF
PAX BBAND..OFF

Ident.: PRO-ABN-COND-2121W250-00007176.0001001 / 09 MAR 16

STATUS

INOP SYS

ALL PHASES

LAV & GALLEY EXTRACT
IFE BAY VENT
CAB FANS
FWD CARGO VENT
AFT CARGO VENT
BULK CARGO VENT
PAX BBAND VENT

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CONFIG L(R) SIDESTICK FAULT (BY TAKEOVER)

Applicable to: ALL

Ident.: PRO-ABN-CONFIG-2790W130-00004734.0001001 / 03 JUL 20

1

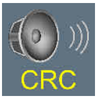
ANNUNCIATIONS

Triggering Conditions:

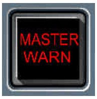
L2 The L(R) sidestick is deactivated and the flight crew performs one of the following actions:
- Press the T.O CONFIG pb on the ECP, or
- Set the thrust levers to FLEX or TOGA.

Indications:

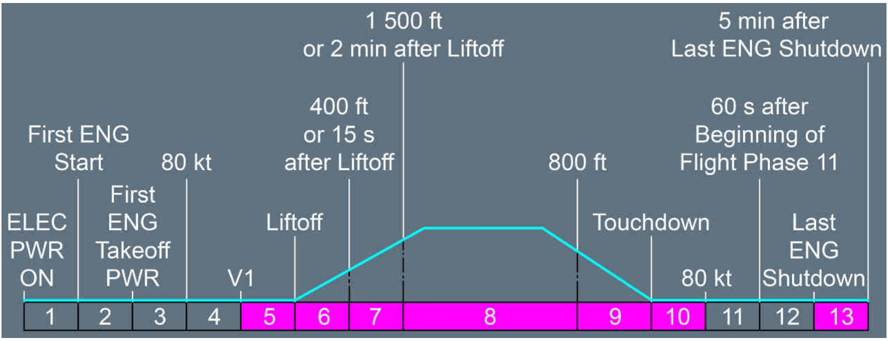
Audio



Master Light


MASTER
WARN

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-CONFIG-2790W130-00008107.0001001 / 04 SEP 14

L(R) TAKEOVER...DEPRESS

L2 *Press the sidestick pb of the affected sidestick, in order to recover sidestick operation*

Note: *Pressing on either sidestick pb reactivates the affected sidestick and releases the sidestick priority.*

CONFIG SPEED BRAKES NOT RETRACTED

Applicable to: ALL

Ident.: PRO-ABN-CONFIG-2760W080-00004737.0001001 / 03 JUL 20

ANNUNCIATIONS

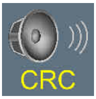
Triggering Conditions:

The speed brakes are not in the retracted position and the flight crew performs one of the following actions:

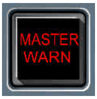
- Press the T.O CONFIG pb on the ECP, or
- Set the thrust levers to FLEX or TOGA.

Indications:

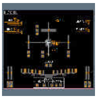
Audio



Master Light

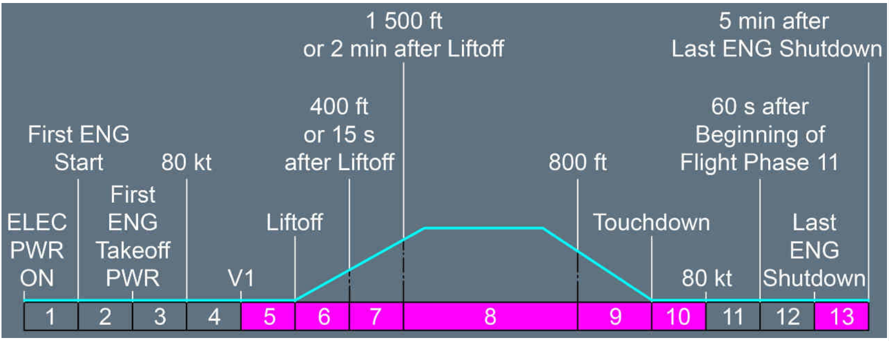

MASTER
WARN

SD page



F/CTL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
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Takeoff
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PWR
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Liftoff
Touchdown
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Shutdown
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80 kt
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Ident.: PRO-ABN-CONFIG-2760W080-00008110.0001001 / 03 JUL 14

Crew awareness.

CONFIG RUDDER TRIM NOT IN T.O RANGE

Applicable to: ALL

Ident.: PRO-ABN-CONFIG-2722W040-00004736.0001001 / 03 JUL 20

ANNUNCIATIONS

Triggering Conditions:

L2 The rudder trim is not in the takeoff range and the flight crew performs one of the following actions:

- Press the T.O CONFIG pb on the ECP, or
- Set the thrust levers to FLEX or TOGA.

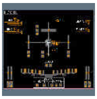
Indications:

Audio

Master Light

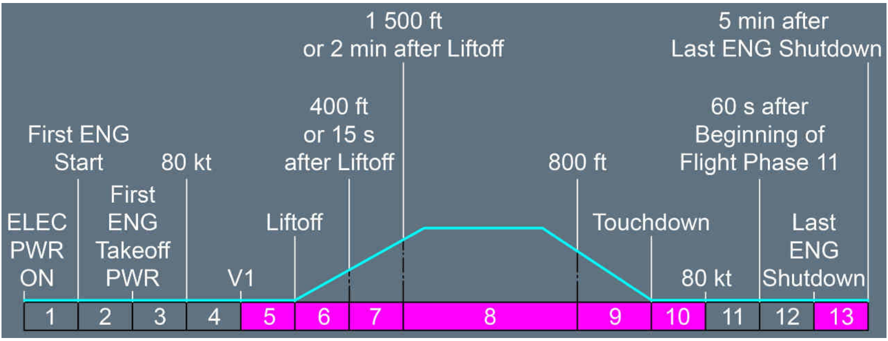
MASTER
WARN

SD page



F/CTL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
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Takeoff
PWR
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PWR
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Liftoff
Touchdown
Last
ENG
Shutdown
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80 kt
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Ident.: PRO-ABN-CONFIG-2722W040-00008109.0001001 / 03 JUL 14

Crew awareness.

CONFIG PITCH TRIM NOT IN T.O RANGE

Applicable to: ALL

Ident.: PRO-ABN-CONFIG-2740W030-00004735.0001001 / 03 JUL 20

ANNUNCIATIONS

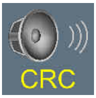
Triggering Conditions:

L2 The pitch trim is not in the green band and the flight crew performs one of the following actions:

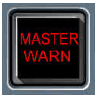
- Press the T.O CONFIG pb on the ECP, or
- Set the thrust levers to FLEX or TOGA.

Indications:

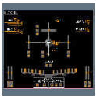
Audio



Master Light

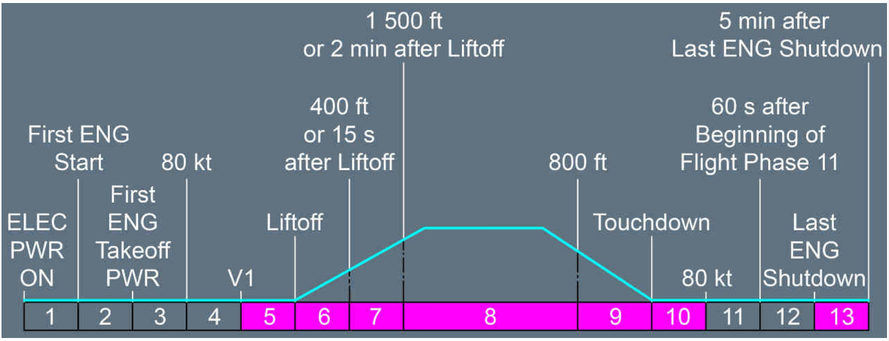

MASTER
WARN

SD page



F/CTL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
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Last ENG Shutdown
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after Liftoff
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Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
ELEC
PWR
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Takeoff
PWR
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Liftoff
Touchdown
80 kt
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Ident.: PRO-ABN-CONFIG-2740W030-00008108.0001001 / 03 JUL 14

Crew awareness.

CONFIG SLATS(FLAPS) NOT IN T.O CONFIG

Applicable to: ALL

Ident.: PRO-ABN-CONFIG-2780W090-00014176.0001001 / 03 JUL 20

5

ANNUNCIATIONS

Triggering Conditions:

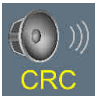
L2 The slats(flaps) are not in a takeoff configuration and the flight crew performs one of the following actions:

- Press the T.O CONFIG pb on the ECP, or
- Set the thrust levers to FLEX or TOGA.

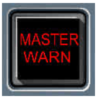
The takeoff configurations are:
- CONF 1+F
- CONF 2
- CONF 3

Indications:

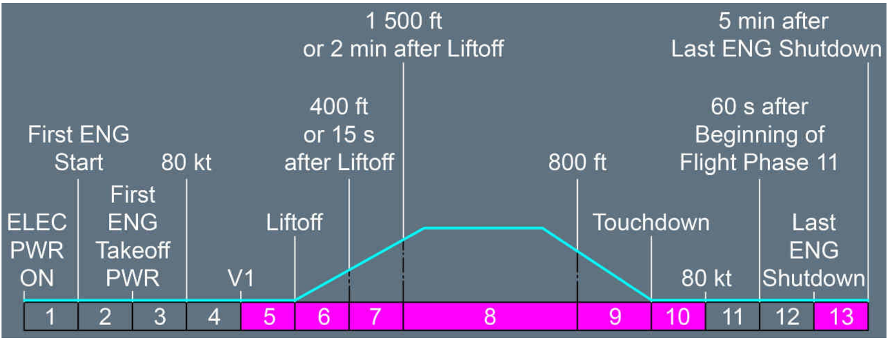
Audio



Master Light


MASTER
WARN

Flight Phase Inhibition:


1 500 ft
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5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
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PWR
ELEC
PWR
ON
Liftoff
Touchdown
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ENG
Shutdown
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80 kt
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Continued on the following page

CONFIG SLATS(FLAPS) NOT IN T.O CONFIG (Cont'd)

Ident.: PRO-ABN-CONFIG-2780W090-00014178.0001001 / 03 JUL 14

Crew awareness.

CONFIG AFT(FWD) CARGO DOOR NOT CLOSED

Applicable to: ALL

Ident.: PRO-ABN-CONFIG-5271W770-00012266.0001001 / 03 JUL 20

6

ANNUNCIATIONS

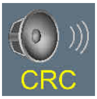
Triggering Conditions:

L2 The AFT(FWD) cargo door is open or unlocked and the flight crew performs one of the following actions:

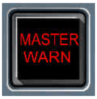
- Press the T.O CONFIG pb on the ECP, or
- Set the thrust levers to FLEX or TOGA.

Indications:

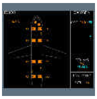
Audio



Master Light

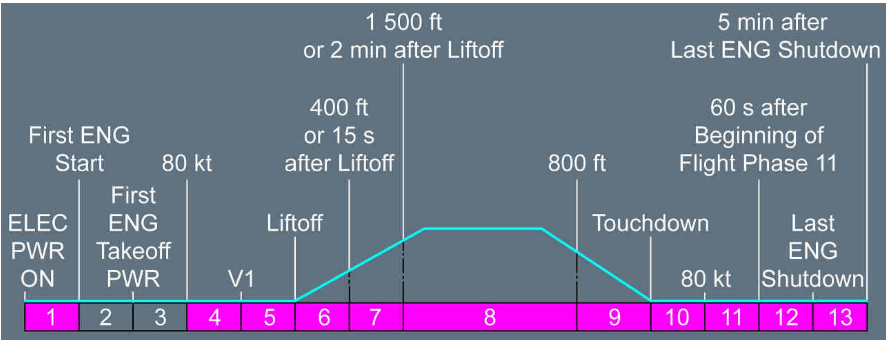

MASTER
WARN

SD page



DOOR/OXYGEN SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
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Ident.: PRO-ABN-CONFIG-5271W770-00012268.0001001 / 03 JUL 14

Crew awareness.

Continued on the following page

CONFIG AFT(FWD) CARGO DOOR NOT CLOSED (Cont'd)

Ident.: PRO-ABN-CONFIG-5271W770-00012269.0001001 / 03 JUL 14

STATUS

INOP SYS

ALL PHASES

CAB PRESS SYS

CONFIG PARK BRK ON

Applicable to: ALL

Ident.: PRO-ABN-CONFIG-3245W030-00014651.0001001 / 03 JUL 14

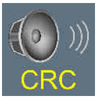
ANNUNCIATIONS

Triggering Conditions:

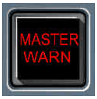
L2 The parking brake is set while takeoff power is set (Flight Phase 3).

Indications:

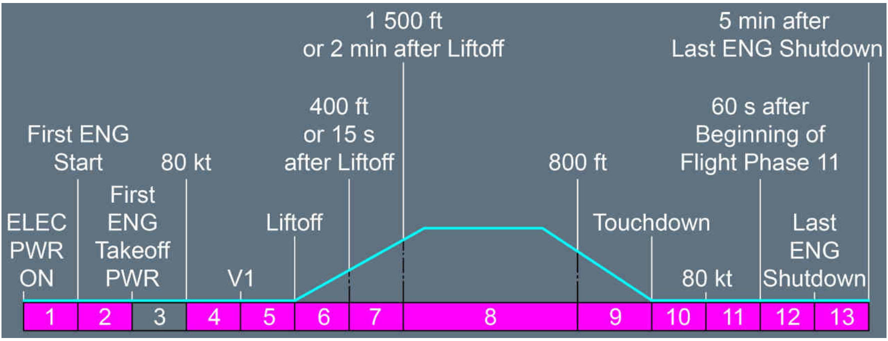
Audio



Master Light


MASTER
WARN

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Ident.: PRO-ABN-CONFIG-3245W030-00014653.0001001 / 03 JUL 14

Crew awareness.

L2 Check that the PARK BRK handle is in the OFF position.

If the PARK BRK handle is in the OFF position, on the WHEEL SD page check that the brakes pressure gauges indicate no pressure.

Intentionally left blank

DISPATCH PAGE UPDATE

Applicable to: ALL

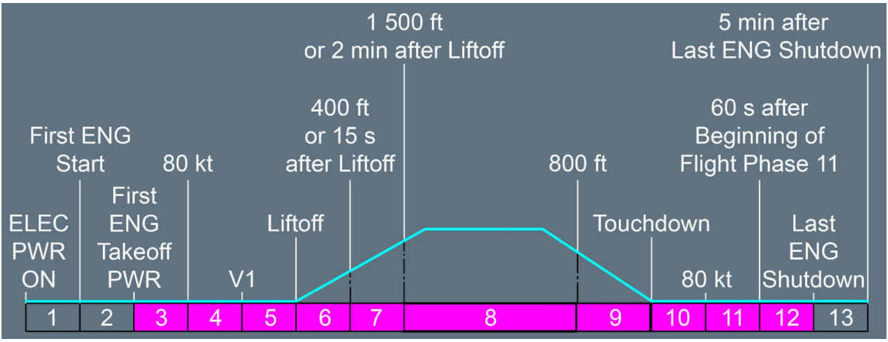
Ident.: PRO-ABN-DISPATCH-3150W100-00014341.0001001 / 01 JUL 14

ANNUNCIATIONS

Triggering Conditions:

L2 There is a new dispatch message on the DISPATCH page that is not associated with an ECAM alert.

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
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Ident.: PRO-ABN-DISPATCH-3150W100-00014342.0001001 / 01 JUL 14

Crew awareness.

Intentionally left blank

DOOR 1(2)(3)(4) L(R) NOT CLOSED

Applicable to: ALL

Ident.: PRO-ABN-DOOR-5271W600-00004814.0001001 / 24 JUN 14

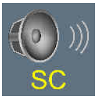
ANNUNCIATIONS

Triggering Conditions:

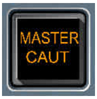
L2 The door is not locked.

Indications:

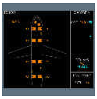
Audio



Master Light

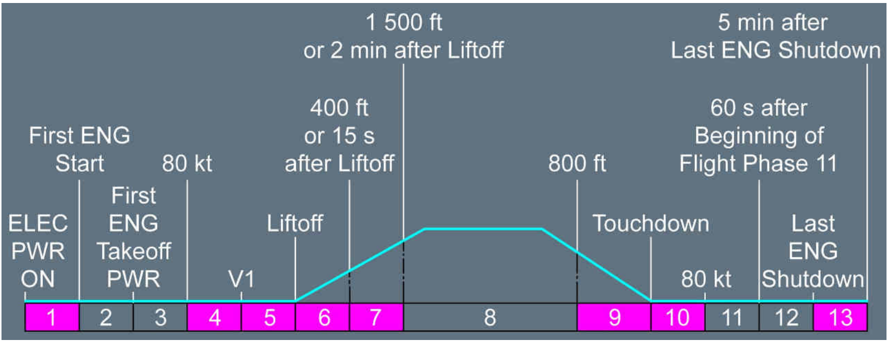

MASTER
CAUT

SD page



DOOR/OXYGEN SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Continued on the following page

DOOR 1(2)(3)(4) L(R) NOT CLOSED (Cont'd)

Ident.: PRO-ABN-DOOR-5271W600-00008532.0001001 / 24 JUN 14

- **In flight:**

L2 No flight crew action is required as long as cabin pressure is normal.

L1
- **ABNORM CAB V/S ?**
  - **YES**

    MAX FL : 100/MEA-MORA
    CABIN CREW..ADVISE
    ATC..NOTIFY
    DESCENT TO FL100/MEA-MORA..INITIATE

Ident.: PRO-ABN-DOOR-5271W600-00008533.0001001 / 24 JUN 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

- In flight
  and
  If the cabin V/S is abnormal:
  MAX FL: 100/MEA-MORA

LIMITATIONS ON PFD

ALL PHASES

- In flight
  and
  If the cabin V/S is abnormal:
  MAX FL: 100/MEA-MORA

STATUS

INOP SYS

ALL PHASES

CAB PRESS SYS (During taxi-out or initial takeoff roll)

DOOR 1(2)(3)(4) L(R) POS DET FAULT

Applicable to: ALL

Ident.: PRO-ABN-DOOR-5271W400-00004815.0001001 / 24 JUN 14

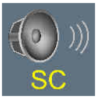
ANNUNCIATIONS

Triggering Conditions:

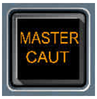
L2 The monitoring of the door is failed.

Indications:

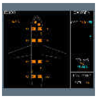
Audio



Master Light

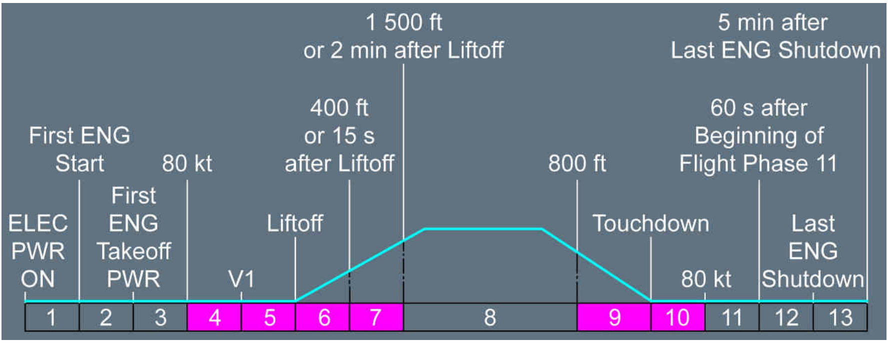

MASTER
CAUT

SD page



DOOR/OXYGEN SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
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Continued on the following page

DOOR 1(2)(3)(4) L(R) POS DET FAULT (Cont'd)

Ident.: PRO-ABN-DOOR-5271W400-00008535.0001001 / 24 JUN 14

- **In flight:**

L2 No flight crew action is required as long as cabin pressure is normal.

L1
  - **ABNORM CAB V/S ?**
    - **YES**

      MAX FL : 100/MEA-MORA
      CABIN CREW...ADVISE
      ATC...NOTIFY
      DESCENT TO FL100/MEA-MORA...INITIATE

Continued on the following page

DOOR 1(2)(3)(4) L(R) POS DET FAULT (Cont'd)

Ident.: PRO-ABN-DOOR-5271W400-00008536.0001001 / 24 JUN 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

- In flight
  and
  If the cabin V/S is abnormal:
  MAX FL: 100/MEA-MORA

LIMITATIONS ON PFD

ALL PHASES

- In flight
  and
  If the cabin V/S is abnormal:
  MAX FL: 100/MEA-MORA

STATUS

INOP SYS

ALL PHASES

CAB PRESS SYS (During taxi-out or initial takeoff roll)
DOOR 1(2)(3)(4)L(R)

DOOR 1(2)(3)(4) L(R) SLIDE FAULT

Applicable to: ALL

Ident.: PRO-ABN-DOOR-5271W900-00004816.0001001 / 24 JUN 14

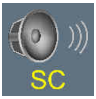
ANNUNCIATIONS

Triggering Conditions:

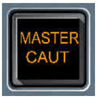
L2 The monitoring of the emergency escape slide is failed.

Indications:

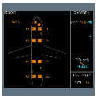
Audio



Master Light

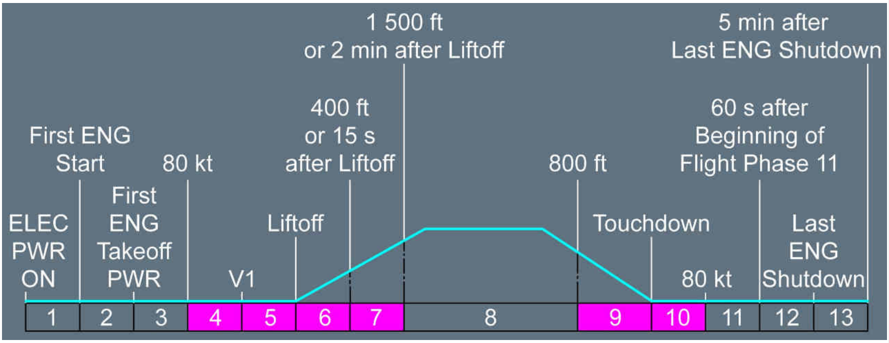

MASTER
CAUT

SD page



DOOR/OXYGEN SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
2
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Ident.: PRO-ABN-DOOR-5271W900-00008538.0001001 / 24 JUN 14

CABIN CREW...ADVISE

L2 *Advise the cabin crew, when any slide is inoperative for evacuation.*

Continued on the following page

DOOR 1(2)(3)(4) L(R) SLIDE FAULT (Cont'd)

Ident.: PRO-ABN-DOOR-5271W900-00008539.0001001 / 24 JUN 14

STATUS

INOP SYS

ALL PHASES

SLIDE 1(2)(3)(4)L(R)

DOOR AFT(BULK)(FWD) CARGO POS DET FAULT

Applicable to: ALL

Ident.: PRO-ABN-DOOR-5271W510-00012220.0001001 / 24 JUN 14

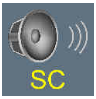
ANNUNCIATIONS

Triggering Conditions:

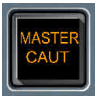
L2 The monitoring of the cargo door is failed.

Indications:

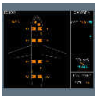
Audio



Master Light

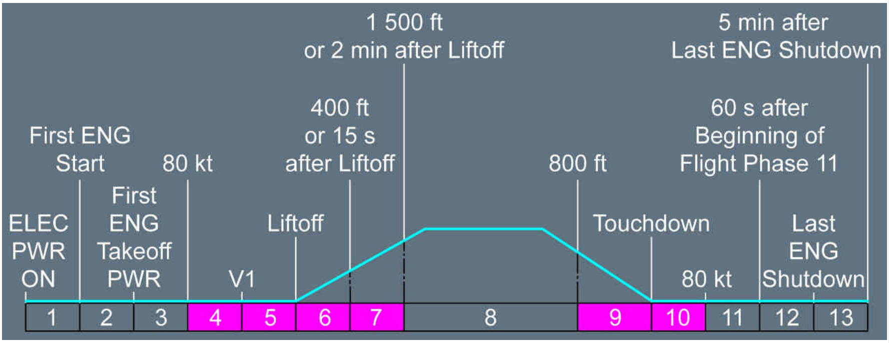

MASTER
CAUT

SD page



DOOR/OXYGEN SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Continued on the following page

DOOR AFT(BULK)(FWD) CARGO POS DET FAULT (Cont'd)

Ident.: PRO-ABN-DOOR-5271W510-00012224.0001001 / 24 JUN 14

- **In flight:**

L2 No flight crew action is required as long as cabin pressure is normal.

L1
- **ABNORM CAB V/S ?**
  - **YES**

    MAX FL : 100/MEA-MORA
    CABIN CREW.......................................ADVISE
    ATC.......................................NOTIFY
    DESCENT TO FL100/MEA-MORA.......................................INITIATE

Continued on the following page

DOOR AFT(BULK)(FWD) CARGO POS DET FAULT (Cont'd)

Ident.: PRO-ABN-DOOR-5271W510-00012225.0001001 / 08 OCT 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

- ● In flight
  and
  If the cabin V/S is abnormal:
  MAX FL: 100/MEA-MORA

LIMITATIONS ON PFD

ALL PHASES

- ● In flight
  and
  If the cabin V/S is abnormal:
  MAX FL: 100/MEA-MORA

STATUS

INOP SYS

ALL PHASES

CAB PRESS SYS (During taxi-out or initial takeoff roll)
DOOR AFT(BULK)(FWD) CARGO

DOOR AFT(FWD) CARGO NOT CLOSED

Applicable to: ALL

Ident.: PRO-ABN-DOOR-5271W710-00004809.0001001 / 24 JUN 14

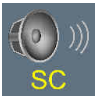
ANNUNCIATIONS

Triggering Conditions:

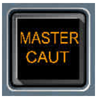
L2 The aft(forward) cargo door is not locked.

Indications:

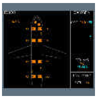
Audio



Master Light

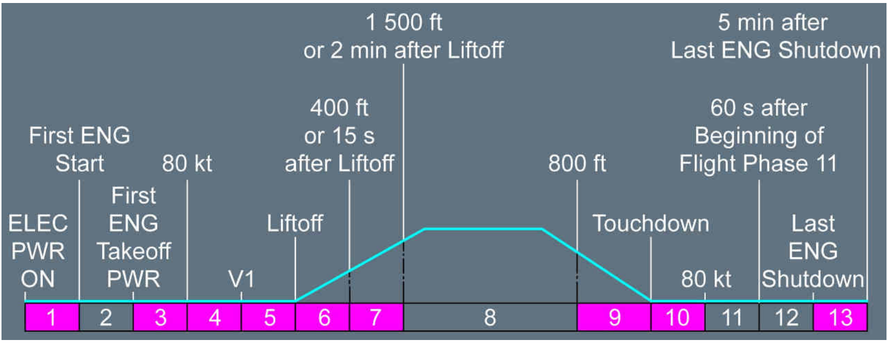

MASTER
CAUT

SD page



DOOR/OXYGEN SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

DOOR AFT(FWD) CARGO NOT CLOSED (Cont'd)

Ident.: PRO-ABN-DOOR-5271W710-00008519.0001001 / 24 JUN 14

- **In flight:**

L2 No flight crew action is required as long as cabin pressure is normal.

L1
  - **ABNORM CAB V/S ?**
    - **YES**

      MAX FL : 100/MEA-MORA
      CABIN CREW..ADVISE
      ATC..NOTIFY
      DESCENT TO FL100/MEA-MORA..INITIATE

Ident.: PRO-ABN-DOOR-5271W710-00008520.0001001 / 08 OCT 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

- In flight
  and
  If the cabin V/S is abnormal:
  MAX FL: 100/MEA-MORA

LIMITATIONS ON PFD

ALL PHASES

- In flight
  and
  If the cabin V/S is abnormal:
  MAX FL: 100/MEA-MORA

STATUS

INOP SYS

ALL PHASES

CAB PRESS SYS (during taxi-out)

DOOR ALL POS DET FAULT

Applicable to: ALL

Ident.: PRO-ABN-DOOR-5271W100-00004819.0001001 / 06 NOV 14

ANNUNCIATIONS

Triggering Conditions:

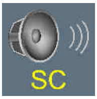
L2 The monitoring of all the doors and slides is failed due to either:

- The failure of two DSCS applications, or
  L3 For more information, *Refer to DSC-52-10 Doors and Slides Control System*
- L2 The failure of CPIOMs H31 and H32. In this case, the ECAM displays the ECAM subtitle DUE TO IMA MODULE FAULT.
  L3 For more information on CPIOM Group H3, *Refer to DSC-42-10 CPIOM Group H3*

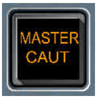
Indications:

L2

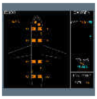
Audio



Master Light

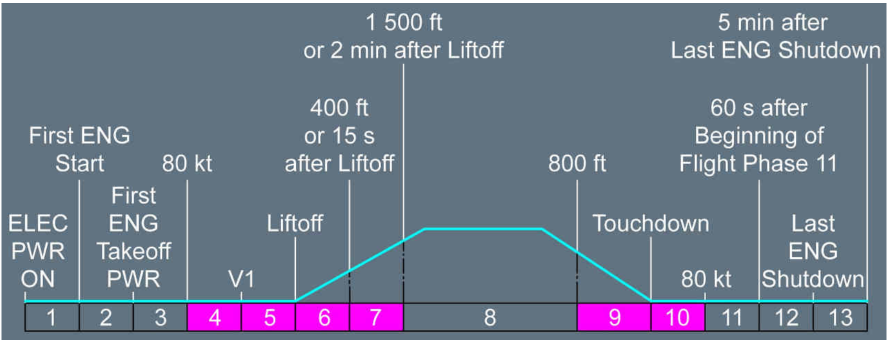

MASTER
CAUT

SD page



DOOR/OXYGEN SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

DOOR ALL POS DET FAULT (Cont'd)

Ident.: PRO-ABN-DOOR-5271W100-00022882.0001001 / 18 JUN 15

Note: If the failure is only due to an IMA module failure, the ECAM displays the DUE TO IMA MODULE FAULT subtitle.

Ident.: PRO-ABN-DOOR-5271W100-00008546.0001001 / 25 JUN 14

- **On ground:**
  - **BEFORE OPENING ANY CABIN DOOR**

    RESIDUAL DIFF PRESS..CHECK

    L2 *The cabin differential pressure is indicated on the CRUISE page, and on the CAB PRESS SD page.*
    Before opening any cabin door, the cabin differential pressure indication must be 0 PSI on the SD page.

    L1 CABIN CREW..ADVISE

    L2 *The flight crew must advise the cabin crew when the cabin differential pressure equals 0 PSI.*

- L1 **In flight:**

  L2 No flight crew action is required as long as cabin pressure is normal.

  - L1 **ABNORM CAB V/S ?**
    - **YES**

      MAX FL : 100/MEA-MORA
      CABIN CREW..ADVISE
      ATC..NOTIFY
      DESCENT TO FL100/MEA-MORA..INITIATE

Continued on the following page

DOOR ALL POS DET FAULT (Cont'd)

Ident.: PRO-ABN-DOOR-5271W100-00008547.0001001 / 24 JUN 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

- In flight
  and
  If the cabin V/S is abnormal:
  MAX FL: 100/MEA-MORA

LIMITATIONS ON PFD

ALL PHASES

- In flight
  and
  If the cabin V/S is abnormal:
  MAX FL: 100/MEA-MORA

STATUS

INOP SYS

ALL PHASES

CAB PRESS SYS (During taxi-out or initial takeoff roll)
ALL DOOR/SLIDE POS

DOOR AVNCS NOT CLOSED

Applicable to: ALL

Ident.: PRO-ABN-DOOR-5271W730-00004805.0001001 / 24 JUN 14

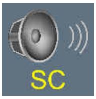
ANNUNCIATIONS

Triggering Conditions:

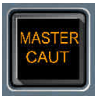
L2 The external access door to the forward avionics bay is not closed.

Indications:

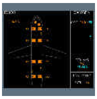
Audio



Master Light

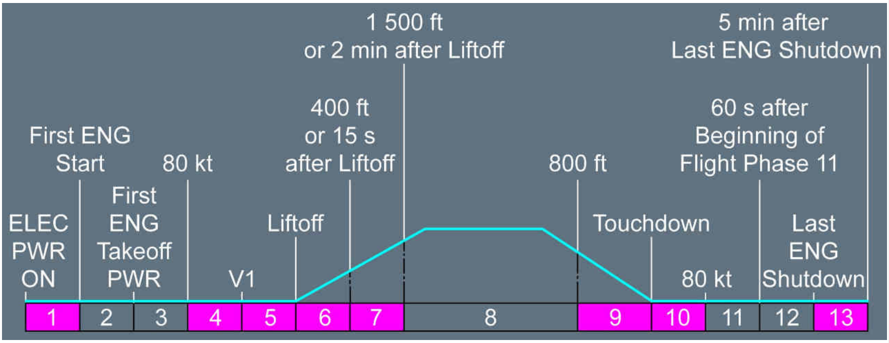

MASTER
CAUT

SD page



DOOR/OXYGEN SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
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Continued on the following page

DOOR AVNCS NOT CLOSED (Cont'd)

Ident.: PRO-ABN-DOOR-5271W730-00008509.0001001 / 24 JUN 14

- **In flight:**

L2

No flight crew action is required as long as cabin pressure is normal.

L1

- **ABNORM CAB V/S ?**
  - **YES**

    MAX FL : 100/MEA-MORA
    CABIN CREW....................ADVISE
    ATC....................NOTIFY
    DESCENT TO FL100/MEA-MORA....................INITIATE

Ident.: PRO-ABN-DOOR-5271W730-00008510.0001001 / 24 JUN 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

- In flight
  and
  If the cabin V/S is abnormal:
  MAX FL: 100/MEA-MORA

LIMITATIONS ON PFD

ALL PHASES

- In flight
  and
  If the cabin V/S is abnormal:
  MAX FL: 100/MEA-MORA

DOOR AVNCS POS DET FAULT

Applicable to: ALL

Ident.: PRO-ABN-DOOR-5271W530-00012238.0001001 / 24 JUN 14

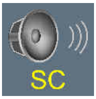
ANNUNCIATIONS

Triggering Conditions:

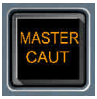
L2 The monitoring of the external access door to the forward avionics bay is failed.

Indications:

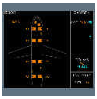
Audio



Master Light

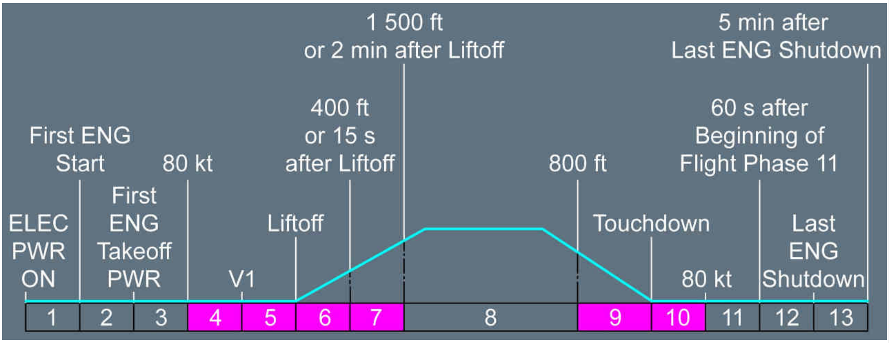

MASTER
CAUT

SD page



DOOR/OXYGEN SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Continued on the following page

DOOR AVNCS POS DET FAULT (Cont'd)

Ident.: PRO-ABN-DOOR-5271W530-00012242.0001001 / 24 JUN 14

- **In flight:**

L2 No flight crew action is required as long as cabin pressure is normal.

L1
  - **ABNORM CAB V/S ?**
    - **YES**

      MAX FL : 100/MEA-MORA
      CABIN CREW.......................................ADVISE
      ATC.......................................NOTIFY
      DESCENT TO FL100/MEA-MORA.......................................INITIATE

Ident.: PRO-ABN-DOOR-5271W530-00012244.0001001 / 24 JUN 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

- In flight
  and
  If the cabin V/S is abnormal:
  MAX FL: 100/MEA-MORA

LIMITATIONS ON PFD

ALL PHASES

- In flight
  and
  If the cabin V/S is abnormal:
  MAX FL: 100/MEA-MORA

STATUS

INOP SYS

ALL PHASES

DOOR AVNCS

DOOR BULK CARGO NOT CLOSED

Applicable to: ALL

Ident.: PRO-ABN-DOOR-5271W720-00012261.0001001 / 24 JUN 14

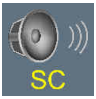
ANNUNCIATIONS

Triggering Conditions:

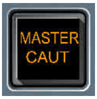
L2 The bulk cargo door is not locked.

Indications:

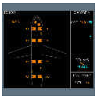
Audio



Master Light

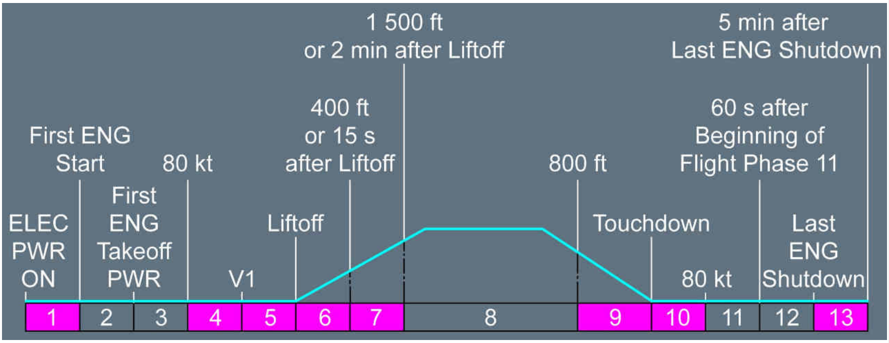

MASTER
CAUT

SD page



DOOR/OXYGEN SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

DOOR BULK CARGO NOT CLOSED (Cont'd)

Ident.: PRO-ABN-DOOR-5271W720-00012264.0001001 / 24 JUN 14

- **In flight:**

L2

No flight crew action is required as long as cabin pressure is normal.

L1

- **ABNORM CAB V/S ?**
  - **YES**

    MAX FL : 100/MEA-MORA
    CABIN CREW.......................................ADVISE
    ATC.......................................NOTIFY
    DESCENT TO FL100/MEA-MORA.......................................INITIATE

Ident.: PRO-ABN-DOOR-5271W720-00012265.0001001 / 24 JUN 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

- In flight
  and
  If the cabin V/S is abnormal:
  MAX FL: 100/MEA-MORA

LIMITATIONS ON PFD

ALL PHASES

- In flight
  and
  If the cabin V/S is abnormal:
  MAX FL: 100/MEA-MORA

STATUS

INOP SYS

ALL PHASES

CAB PRESS SYS (During taxi-out or initial takeoff roll)

DOOR CKPT DOOR EMER OPENING IN PROGRESS

Applicable to: ALL

Ident.: PRO-ABN-DOOR-5251W200-00004806.0001001 / 24 JUN 14

ANNUNCIATIONS

Triggering Conditions:

L2 The cabin crew has entered an emergency code on the keypad in order to request emergency access to the cockpit.

Indications:

Audio

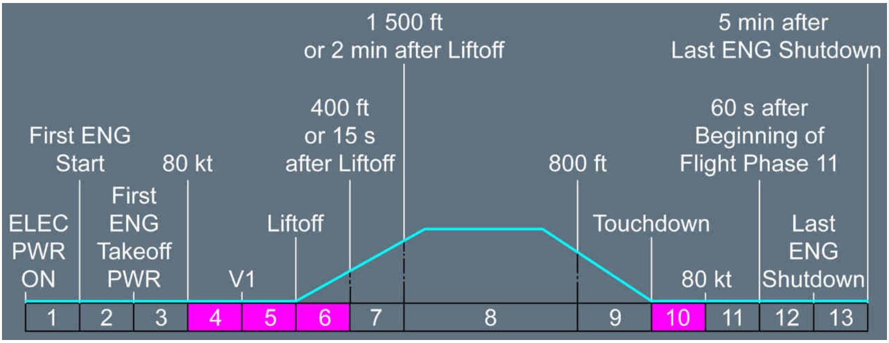
Local Light

CKPT DOOR light

SD page

VIDEO SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-DOOR-5251W200-00008512.0001001 / 24 JUN 14

CKPT DOOR..LOCK AS RQRD

L2 *Use the CKPT DOOR sw to lock the cockpit door, as required.*
If the flight crew does not lock the cockpit door within the defined period of time, the door automatically unlocks for 5 s.
The flight crew can also unlock the door by setting the CKPT DOOR sw to the UNLOCK position.

DOOR CKPT DOOR LOCK FAULT

Applicable to: ALL

Ident.: PRO-ABN-DOOR-5251W300-00004807.0001001 / 08 OCT 14

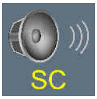
ANNUNCIATIONS

Triggering Conditions:

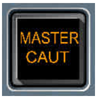
L2 The cockpit door locking system is failed due to the failure of two or three electrical latches.

Indications:

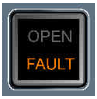
Audio



Master Light

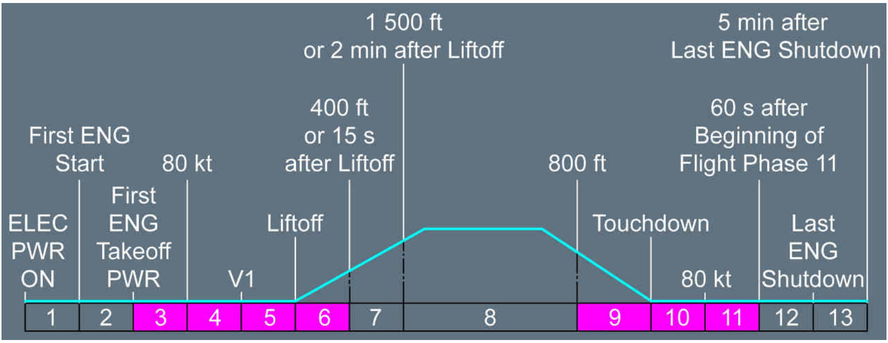

MASTER
CAUT

Local Light



CKPT DOOR light

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-DOOR-5251W300-00008514.0001001 / 08 OCT 14

CKPT DOOR...OPEN
CKPT DOOR SW.......................................UNLOCK 2S THEN NORM

L2 *This action will reset the CDLS.*

Continued on the following page

DOOR CKPT DOOR LOCK FAULT (Cont'd)

Ident.: PRO-ABN-DOOR-5251W300-00008515.0001001 / 08 OCT 14

STATUS

INOP SYS

ALL PHASES

CKPT DOOR LOCK

DOOR ESCAPE HATCH NOT CLOSED

Applicable to: ALL

Ident.: PRO-ABN-DOOR-5271W760-00012226.0001001 / 24 JUN 14

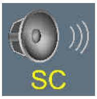
ANNUNCIATIONS

Triggering Conditions:

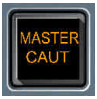
L2 The escape hatch is not closed.

Indications:

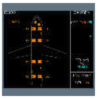
Audio



Master Light

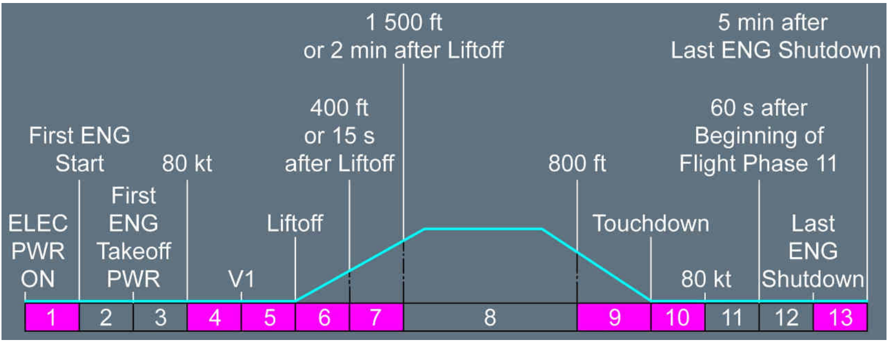

MASTER
CAUT

SD page



DOOR/OXYGEN SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

DOOR ESCAPE HATCH NOT CLOSED (Cont'd)

Ident.: PRO-ABN-DOOR-5271W760-00012230.0001001 / 24 JUN 14

- **In flight:**

L2 No flight crew action is required as long as cabin pressure is normal.

L1
  - **ABNORM CAB V/S ?**
    - **YES**

      MAX FL : 100/MEA-MORA
      CABIN CREW......ADVISE
      ATC......NOTIFY
      DESCENT TO FL100/MEA-MORA......INITIATE

Ident.: PRO-ABN-DOOR-5271W760-00012231.0001001 / 24 JUN 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

- In flight
  and
  If the cabin V/S is abnormal:
  MAX FL: 100/MEA-MORA

LIMITATIONS ON PFD

ALL PHASES

- In flight
  and
  If the cabin V/S is abnormal:
  MAX FL: 100/MEA-MORA

DOOR ESCAPE HATCH POS DET FAULT

Applicable to: ALL

Ident.: PRO-ABN-DOOR-5271W560-00012232.0001001 / 24 JUN 14

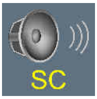
ANNUNCIATIONS

Triggering Conditions:

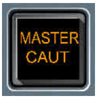
L2 The monitoring of the escape hatch is failed.

Indications:

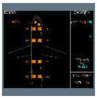
Audio



Master Light

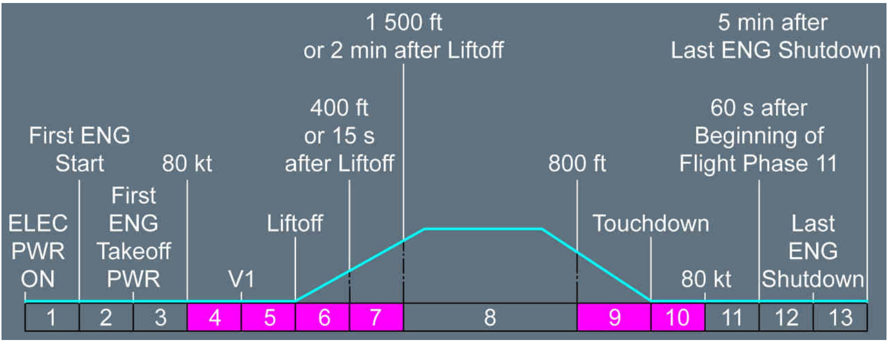

MASTER
CAUT

SD page



DOOR/OXYGEN SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
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Continued on the following page

DOOR ESCAPE HATCH POS DET FAULT (Cont'd)

Ident.: PRO-ABN-DOOR-5271W560-00012236.0001001 / 24 JUN 14

- **In flight:**

L2 No flight crew action is required as long as cabin pressure is normal.

L1
  - **ABNORM CAB V/S ?**
    - **YES**

      MAX FL : 100/MEA-MORA
      CABIN CREW.......................................ADVISE
      ATC.......................................NOTIFY
      DESCENT TO FL100/MEA-MORA.......................................INITIATE

Ident.: PRO-ABN-DOOR-5271W560-00012234.0001001 / 24 JUN 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

- In flight
  and
  If the cabin V/S is abnormal:
  MAX FL: 100/MEA-MORA

LIMITATIONS ON PFD

ALL PHASES

- In flight
  and
  If the cabin V/S is abnormal:
  MAX FL: 100/MEA-MORA

STATUS

INOP SYS

ALL PHASES

ESCAPE HATCH

DOOR INTERNAL AFT(FWD) AVNCS NOT CLOSED

Applicable to: ALL

Ident.: PRO-ABN-DOOR-5271W750-00023628.0002001 / 07 JUL 16

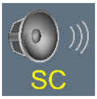
ANNUNCIATIONS

Triggering Conditions:

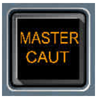
L2 The internal door close to the aft(forward) avionics bay is not closed.

Indications:

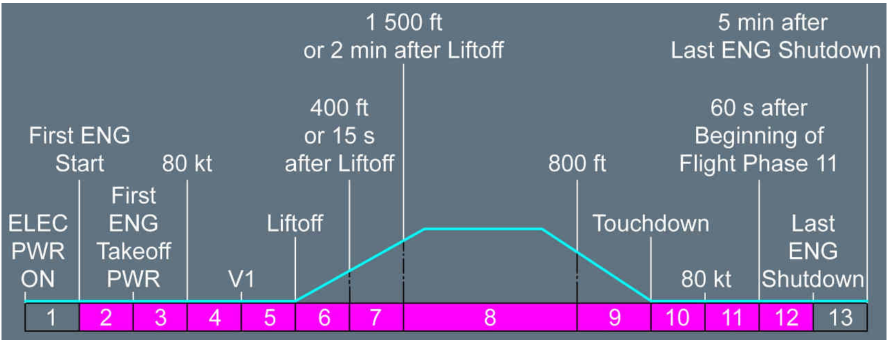
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Ident.: PRO-ABN-DOOR-5271W750-00023629.0003001 / 07 JUL 16

Crew awareness.

DOOR MULTIPLE POS DET FAULT

Applicable to: ALL

Ident.: PRO-ABN-DOOR-5271W300-00012553.0001001 / 06 NOV 14

ANNUNCIATIONS

Triggering Conditions:

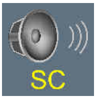
L2 The monitoring of several doors and slides is lost.

L3 For more information on DSCS, *Refer to DSC-52-10 Doors and Slides Control System*

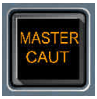
Indications:

L2

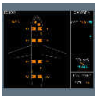
Audio



Master Light

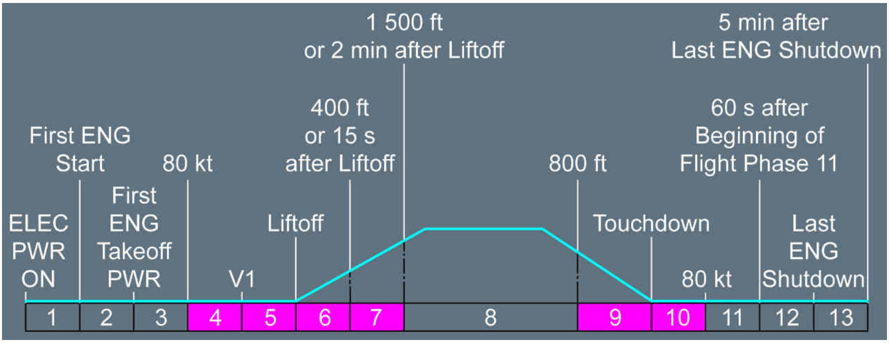

MASTER
CAUT

SD page



DOOR/OXYGEN SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-DOOR-5271W300-00022869.0001001 / 18 JUN 15

Note: *If the failure is only due to an IMA module failure, the ECAM displays the DUE TO IMA MODULE FAULT subtitle.*

Continued on the following page

DOOR MULTIPLE POS DET FAULT (Cont'd)

Ident.: PRO-ABN-DOOR-5271W300-00012556.0001001 / 24 JUN 14

- **In flight:**

L2

No flight crew action is required as long as cabin pressure is normal.

L1

- **ABNORM CAB V/S ?**
  - **YES**

MAX FL : 100/MEA-MORA
CABIN CREW...ADVISE
ATC...NOTIFY
DESCENT TO FL100/MEA-MORA...INITIATE

Continued on the following page

DOOR MULTIPLE POS DET FAULT (Cont'd)

Ident.: PRO-ABN-DOOR-5271W300-00012564.0001001 / 24 JUN 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

- In flight
  and
  If the cabin V/S is abnormal:
  MAX FL: 100/MEA-MORA

LIMITATIONS ON PFD

ALL PHASES

- In flight
  and
  If the cabin V/S is abnormal:
  MAX FL: 100/MEA-MORA

STATUS

INOP SYS

ALL PHASES

CAB PRESS SYS (During taxi-out or initial takeoff roll)
PART DOOR/SLIDE POS

DOOR RESIDUAL DIFF PRESS DET FAULT

Applicable to: ALL

Ident.: PRO-ABN-DOOR-5271W200-00004820.0001001 / 24 JUN 14

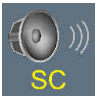
ANNUNCIATIONS

Triggering Conditions:

L2 The Autonomous Standby Power Supply Unit (ASPSU) is failed or the differential pressure sensors are failed. The detection and indication of cabin differential pressure are therefore not available on the cabin doors.

Indications:

Audio



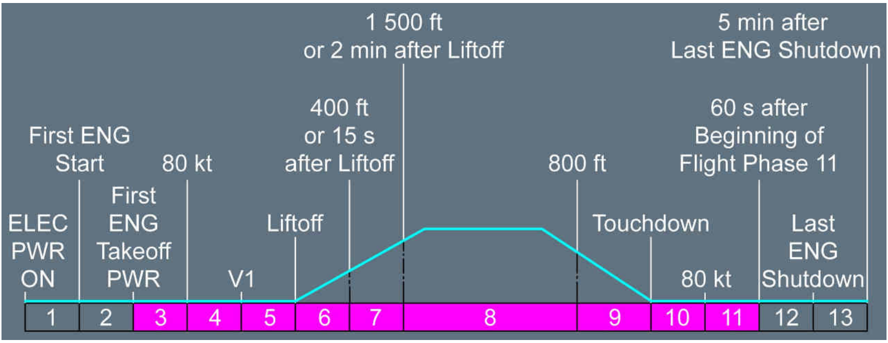
Master Light

MASTER
CAUT

SD page

CAB PRESS SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
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8
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10
11
12
13

Continued on the following page

DOOR RESIDUAL DIFF PRESS DET FAULT (Cont'd)

Ident.: PRO-ABN-DOOR-5271W200-00008549.0001001 / 25 JUN 14

- **BEFORE OPENING ANY CABIN DOOR**

RESIDUAL DIFF PRESS.. CHECK

L2 *The cabin differential pressure is indicated on the CRUISE page, and on the CAB PRESS SD page.*
Before opening any cabin door, the cabin differential pressure indication must be 0 PSI on the SD page.

L1 CABIN CREW.. ADVISE

L2 *The flight crew must advise the cabin crew when the cabin differential pressure equals 0 PSI.*

Ident.: PRO-ABN-DOOR-5271W200-00008550.0001001 / 24 JUN 14

STATUS

INOP SYS

ALL PHASES	
RESID DIFF PRESS DET	

ELEC AC 1A BUS 115V FAULT

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2452W010-00014045.0001001 / 02 JUL 14

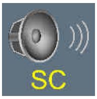
ANNUNCIATIONS

Triggering Conditions:

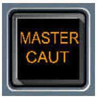
L2 The AC 1A 115 V busbar is lost. Therefore, the ETOPS 1 bus bar is also lost.

Indications:

Audio



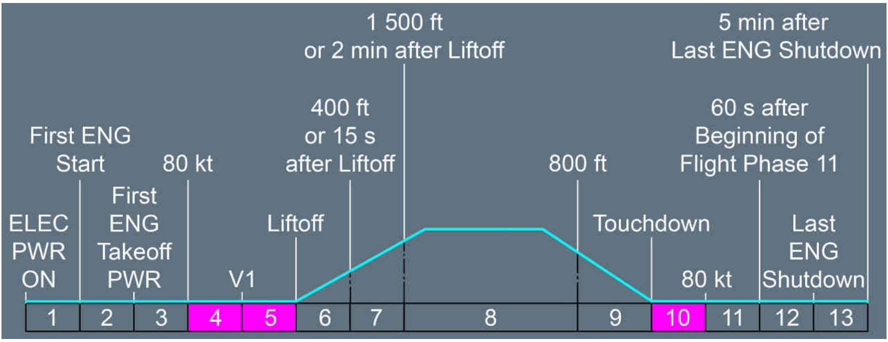
Master Light


MASTER
CAUT

SD page

ELEC AC SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

ELEC AC 1A BUS 115V FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2452W010-00014047.0001001 / 02 JUL 14

- **If WXR / TAWS 1 is selected:**
  WXR..............................SYS 2
  L2 *As the AESU 1 is inoperative, TAWS 1 and WXR 1 are inoperative. So these functions must be switched on the other side available.*

L1
- **If XPDR / TCAS 1 is selected:**
  XPDR & TCAS..............................SYS 2
  L2 *As the AESU 1 is inoperative, XPDR 1 and TCAS 1 are inoperative. So these functions must be switched on the other side available.*

L1 NAV LIGHT..............................2

L2 *As the NAV light 1 is no more powered, it must be switched to the NAV light 2.*

Ident.: PRO-ABN-ELEC-2452W010-00014048.0001001 / 04 SEP 14

STATUS

INOP SYS

ALL PHASES

XPDR 1
WXR 1
TCAS 1
ADS-B TRAFFIC 1 ◁
ADS-B RPTG 1
HF 1
SATCOM
PART GALLEY
AFT CARGO VENT ◁
NAV LT 1

ELEC AC 1A BUS 230V FAULT

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2451W100-00014039.0001001 / 02 JUL 14

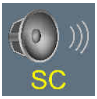
ANNUNCIATIONS

Triggering Conditions:

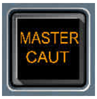
L2 The AC 1A 230 V busbar is lost.

Indications:

Audio



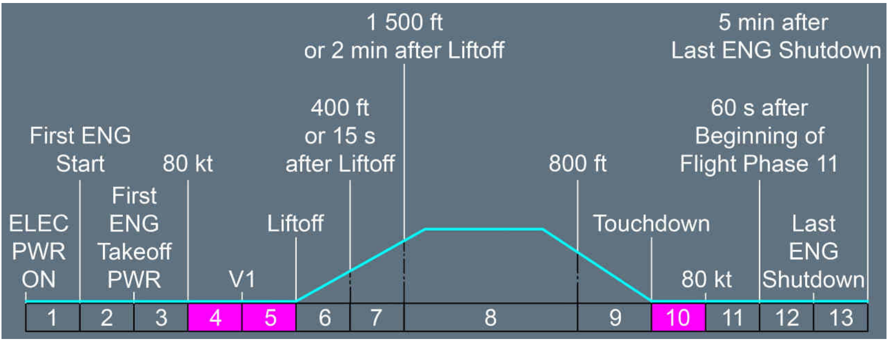
Master Light


MASTER
CAUT

SD page

ELEC AC SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
2
3
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Continued on the following page

ELEC AC 1A BUS 230V FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2451W100-00014041.0003001 / 03 JAN 19

- **In the case of multiple failures affecting fuel consumption:**

  FUEL CONSUMPT INCRSD

  FOR BETTER RANGE : REDUCE CRZ MACH/SPD

  FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

  The FMS predictions are not correct.

SECONDARY FAILURES

*F/CTL

Continued on the following page

ELEC AC 1A BUS 230V FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2451W100-00014042.0003001 / 03 JAN 19

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

- **In the case of multiple failures affecting fuel consumption:**
  FUEL CONSUMPT INCRSD

STATUS

INOP SYS

ALL PHASES

L TK STBY PMP

INFO

- **In the case of multiple failures affecting fuel consumption:**
  FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION
  The fuel consumption is increased. The FUEL PENALTY on the FMS DATA/STATUS page may be updated.
  For fuel penalty determination, Refer to PER-IFT-FP Fuel Penalty Tables - Fuel Consumption Increased.

LAND 3 SINGLE ONLY
FOR BETTER RANGE : REDUCE CRZ MACH/SPD

ELEC AC 1A BUS 230V+115V FAULT
AC 1B BUS 230V+115V FAULT

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2451W210-00016842.0001001 / 03 DEC 15

ANNUNCIATIONS

Triggering Conditions:

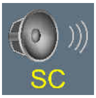
L2 The following busbars are lost:
- AC 1A 230 V
- AC 1A 115 V
- AC 1B 230 V
- AC 1B 115 V.

L3 This alert covers the case where both VFG are lost on side 1 (or ENG 1 is shutdown) and only one VFG is available on side 2.

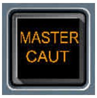
Indications:

L2

Audio



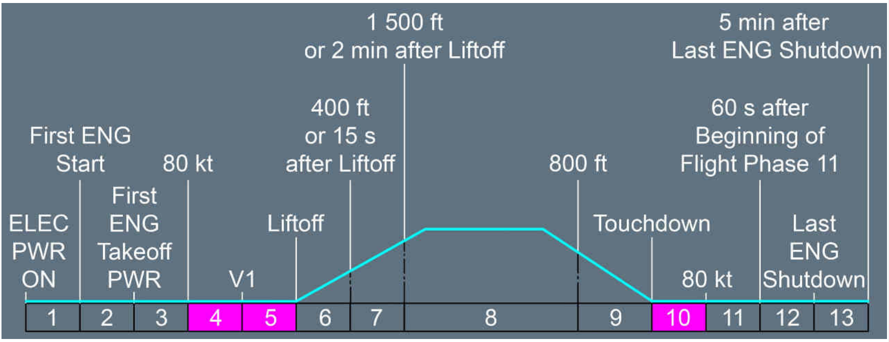
Master Light


MASTER
CAUT

SD page

ELEC AC SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
2
3
4
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6
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12
13

Continued on the following page

ELEC AC 1A BUS 230V+115V FAULT (Cont'd)
AC 1B BUS 230V+115V FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2451W210-00016844.0004001 / 03 JAN 19

- **If ENG 1 is running:**

  COMMERCIAL 1+2........OFF

  L2 *If this alert is not due to the loss of engine 1, the crew shall switch off the commercial loads because these busbars losses may be linked to commercial loads.*

L1 APU........CONSIDER

L2 *As only one power source remains for the whole aircraft, the crew shall consider the use of APU.*

L1 NAV LT........2

CPNY COM VOICE ONLY

L2 *As the CPNY DATALINK is lost, only the COM voice is available*

L1
- **If there is fuel in the center tank:**

  L2 As the CTR TK R PMP is inoperative, the fuel from the center tank is only usable by ENG 1. To avoid a fuel imbalance, both crossfeed valves must be opened to feed both engines from the center tank, except if a fuel leak is suspected.

  L1
  - **If FUEL LEAK SUSPECTED:**
    - ■ **YES**

      FUEL LEAK PROC........APPLY
    - ■ **NO**

      CROSSFEED A........ON

      CROSSFEED B........ON

      L2 *The remaining center tank pump is enough to feed both engines.*

L1
- **WHEN CTR TK EMPTY:**

  CROSSFEED A........OFF

  CROSSFEED B........OFF

- **In the case of multiple failures affecting fuel consumption:**

  FUEL CONSUMPT INCRSD

  FOR BETTER RANGE : REDUCE CRZ MACH/SPDN

  FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

  The FMS predictions are not correct.

ON DRY RWY ONLY : LDG DIST AFFECTED < 15%

Continued on the following page

ELEC AC 1A BUS 230V+115V FAULT **(Cont'd)**
AC 1B BUS 230V+115V FAULT **(Cont'd)**

LDG DIST AFFECTED

SECONDARY FAILURES

*F/CTL

*FUEL

Continued on the following page

ELEC AC 1A BUS 230V+115V FAULT **(Cont'd)**
AC 1B BUS 230V+115V FAULT **(Cont'd)**

Ident.: PRO-ABN-ELEC-2451W210-00016845.0004001 / 03 JAN 19

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

CPNY COM VOICE ONLY

- **In the case of multiple failures affecting fuel consumption:**
  FUEL CONSUMPT INCRSD

APPR & LDG

LDG DIST AFFECTED

STATUS

INOP SYS

ALL PHASES

OIS/AVNCS DATA XFR
COMPANY COM
PART GALLEY
L TK STBY PMP
CTR TK R PMP
G ELEC PMP
L AFT WINDOW HEATG
L LAT WINDOW HEATG
TWO CAB FANS
AFT CARGO VENT ◁✳
BULK CARGO HEATER
NAV LT 1

APPR & LDG

BTV
ENG 1 REVERSER

INFO

ON DRY RWY ONLY : LDG DIST AFFECTED < 15%

- **In the case of multiple failures affecting fuel consumption:**
  FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION
  The fuel consumption is increased. The FUEL PENALTY on the FMS DATA/STATUS page may be updated.

Continued on the following page

ELEC AC 1A BUS 230V+115V FAULT **(Cont'd)**
AC 1B BUS 230V+115V FAULT **(Cont'd)**

For fuel penalty determination, Refer to PER-IFT-FP Fuel Penalty Tables - Fuel Consumption Increased.

LAND 3 SINGLE ONLY

FOR BETTER RANGE : REDUCE CRZ MACH/SPD

ELEC AC 1A BUS 230V+115V FAULT
AC 1B BUS 230V+115V + DC 1 BUS FAULT

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2450W110-00014273.0001001 / 26 JUL 17

ANNUNCIATIONS

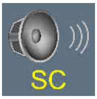
Triggering Conditions:

L2 EPDC 1 is lost.

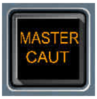
Therefore, the following busbars are lost:
- AC 1A 230 V
- AC 1A 115 V
- AC 1B 230 V
- AC 1B 115 V
- ETOPS 1
- DC 1
- DC SHED/GS 1.

Indications:

Audio



Master Light



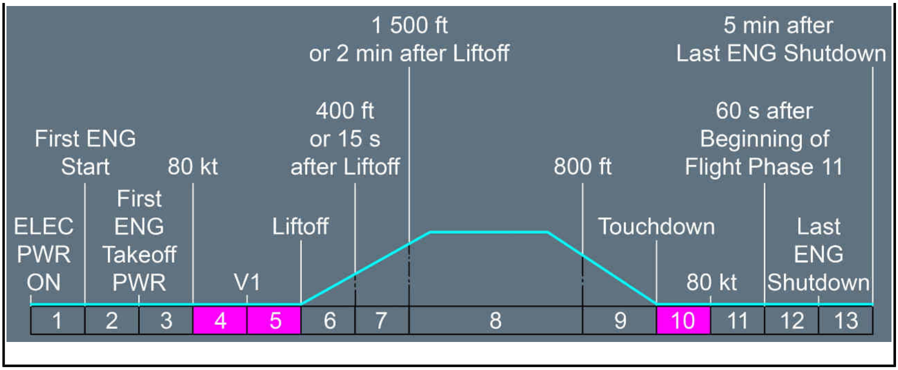
SD page

ELEC AC SD page

Flight Phase Inhibition:

Continued on the following page

ELEC AC 1A BUS 230V+115V FAULT **(Cont'd)**
AC 1B BUS 230V+115V + DC 1 BUS FAULT **(Cont'd)**


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

Ident.: PRO-ABN-ELEC-2450W110-00020856.0001001 / 02 JUL 14

Note: *If the failure occurs during an RNP AR operation, the ECAM displays the RNP AR CAPABILITY DOWNGRADED subtitle.*

Continued on the following page

ELEC AC 1A BUS 230V+115V FAULT **(Cont'd)**
AC 1B BUS 230V+115V + DC 1 BUS FAULT **(Cont'd)**

Ident.: PRO-ABN-ELEC-2450W110-00014275.0004001 / 03 JAN 19

- **During an RNP AR operation:**

  MINIMUM LIMITED TO RNP 0.30

ATC COM VOICE ONLY

L2 *As the ATC DATALINK is lost, only the COM voice is available*

L1 CPNY COM VOICE ONLY

L2 *As the CPNY DATALINK is lost, only the COM voice is available*

L1 CAPT SIDESTICK LOCKING DEVICE NOT AVAIL

L2 *As the CAPT sidestick locking device is no more powered, the crew shall be informed.*

L1 RUDDER PEDALS LOCKING DEVICE NOT AVAIL

L2 *As the rudder pedals locking device is no more powered, the crew shall be informed.*

L1
- **If jettison ◁ in progress:**

  JETTISON ACTIVE.......................................OFF
  JETTISON ARM.......................................OFF

L2 *If the JETTISON function is active or/and armed, it is asked to deselect both the JETTISON ACTIVE and JETTISON ARM pushbuttons.*

L1 WXR.......................................SYS 2
XPDR & TCAS.......................................SYS 2
NAV LT.......................................2

- **If there is fuel in the center tank:**

L2 As the CTR TK R PMP is inoperative, the fuel from the center tank is only usable by ENG 1. To avoid a fuel imbalance, both crossfeed valves must be opened to feed both engines from the center tank, except if a fuel leak is suspected.

L1
  - **If FUEL LEAK SUSPECTED:**
    - ■ **YES**

      FUEL LEAK PROC.......................................APPLY
    - ■ **NO**

      CROSSFEED A.......................................ON
      CROSSFEED B.......................................ON

L2 *The remaining center tank pump is enough to feed both engines.*

Continued on the following page

ELEC AC 1A BUS 230V+115V FAULT **(Cont'd)**
AC 1B BUS 230V+115V + DC 1 BUS FAULT **(Cont'd)**

L1 ● **WHEN CTR TK EMPTY, or after landing:**

CROSSFEED A.......... OFF
CROSSFEED B.......... OFF

DISPLAY CYCLE AS RQRD

L2 *As the CAPT OUTER display unit is no more available, a reconfiguration shall be performed.*

L1 EFB LAPTOP UNSTOW.......... CONSIDER

CKPT DOOR LOCKING DEVICE NOT AVAIL

L2 *As the cockpit door is automatically unlocked in case of loss of power supply, the crew shall be informed.*

L1 ● **In the case of multiple failures affecting fuel consumption:**

FUEL CONSUMPT INCRSD

FOR BETTER RANGE : REDUCE CRZ MACH/SPD

FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

The FMS predictions are not correct.

FLAPS SLOW
LDG DIST AFFECTED

SECONDARY FAILURES

*F/CTL

*FUEL

Continued on the following page

ELEC AC 1A BUS 230V+115V FAULT **(Cont'd)**
AC 1B BUS 230V+115V + DC 1 BUS FAULT **(Cont'd)**

Ident.: PRO-ABN-ELEC-2450W110-00014276.0004001 / 03 JAN 19

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

ATC COM VOICE ONLY
CPNY COM VOICE ONLY

- **In the case of multiple failures affecting fuel consumption:**
  FUEL CONSUMPT INCRSD

APPR & LDG

FLAPS SLOW
LDG DIST AFFECTED

STATUS

INOP SYS

ALL PHASES

PART SPLRs
PRIM 3
SEC 3
CAPT HUD ◁✳
XPDR 1
WXR 1
TCAS 1
ADS-B TRAFFIC 1 ◁✳
ADS-B RPTG 1
RMP 3
HF 1
DATALINK
SATCOM
COMPANY COM
JETTISON ◁✳
L TK STBY PMP
CTR TK R PMP
L AFT WINDOW HEATG
L LAT WINDOW HEATG
TWO CAB FANS
AFT CARGO VENT ◁✳
BULK CARGO HEATER

APPR & LDG

FLAP SYS 1
BTV
ENG 1 REVERSER
CAPT ARPT NAV

Continued on the following page

ELEC AC 1A BUS 230V+115V FAULT **(Cont'd)**
AC 1B BUS 230V+115V + DC 1 BUS FAULT **(Cont'd)**

CKPT DOOR LOCK
CAPT OUTER DU
CAPT OIS
AP/FD TCAS MODE (If XPDR/TCAS 1 selected)
FMC- C
NAV LT 1

INFO

CAPT SIDESTICK LOCKING DEVICE NOT AVAIL
RUDDER PEDALS LOCKING DEVICE NOT AVAIL

- **In the case of multiple failures affecting fuel consumption:**
  FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

  The fuel consumption is increased. The FUEL PENALTY on the FMS DATA/STATUS page may be updated.
  For fuel penalty determination, Refer to PER-IFT-FP Fuel Penalty Tables - Fuel Consumption Increased.

FOR RNP AR : MINIMUM LIMITED TO RNP 0.30
LAND 3 SINGLE ONLY
FOR BETTER RANGE : REDUCE CRZ MACH/SPD

ELEC AC 1A BUS 230V + AC 2A BUS 230V FAULT
DC 1 + DC 2 BUS FAULT

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2451W220-00013960.0001001 / 03 DEC 15

ANNUNCIATIONS

Triggering Conditions:

L2 The AC 1A 230 V and AC 2A 230 V busbars are lost. Therefore, the DC 1 and DC 2 busbars are also lost.

Indications:

Audio

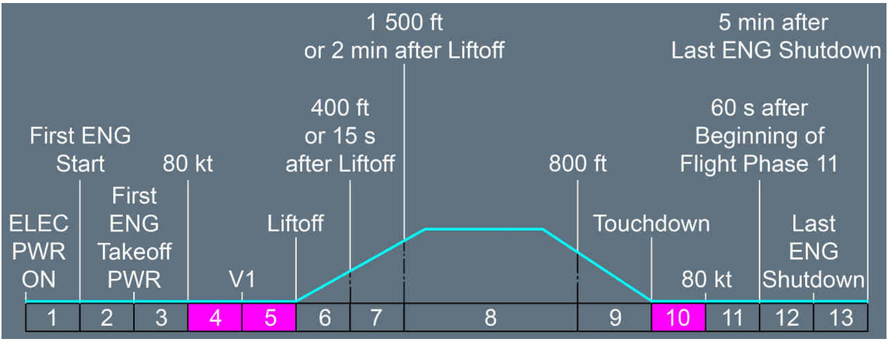
Master Light

MASTER
CAUT

SD page

ELEC AC SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Ident.: PRO-ABN-ELEC-2451W220-00020858.0001001 / 02 JUL 14

Note: *If the failure occurs during an RNP AR operation, the ECAM displays the RNP AR CAPABILITY LOST subtitle.*

Continued on the following page

ELEC AC 1A BUS 230V + AC 2A BUS 230V FAULT **(Cont'd)**
DC 1 + DC 2 BUS FAULT **(Cont'd)**

Ident.: PRO-ABN-ELEC-2451W220-00013962.0005001 / 03 JAN 19

RAT MAN ON....................PRESS
MIN RAT SPEED : 140 KT
FMS SWTG....................BOTH ON 1

L2 *As the FMC B+C are no more powered, it implies the loss of FMS 2 function. So a reconfiguration of the FMS shall be performed.*

L1 F/O BARO REF.................... STD ONLY

- **If L/G are already locked down when the alert is triggered:**

  NO L/G RETRACTION

- **If L/G not locked down when the alert is triggered:**

  L/G GRVTY EXTN ONLY

AVOID ICING CONDITIONs

L2 *As the wing anti-ice is not available, the aircraft is no more protected against ice damages. So the aircraft should not fly in icing conditions.*

L1 ATC COM VOICE ONLY

L2 *As the ATC DATALINK is lost, only the COM voice is available.*

L1 CPNY COM VOICE ONLY

L2 *As the CPNY DATALINK is lost, only the COM voice is available.*

L1 AP : SIDESTICK LOCKING DEVICE NOT AVAIL

L2 *As both sidesticks locking device are no more powered, flight crew shall be informed.*

L1 RUDDER PEDALS LOCKING DEVICE NOT AVAIL

L2 *As the rudder pedals locking device is no more powered, the crew shall be informed.*

L1
- **If jettison ◁ in progress:**

  JETTISON ACTIVE....................OFF
  JETTISON ARM....................OFF

L2 *If the JETTISON function is active, it is asked to deselect both the JETTISON ACTIVE and JETTISON ARM pushbuttons.*

L1 CTR TK NOT USABLE

L2 *As the left and right center tank fuel pump (CTR TK L PMP and CTR TK R PMP) are not powered, the center tank is not usable.*

Continued on the following page

ELEC AC 1A BUS 230V + AC 2A BUS 230V FAULT **(Cont'd)**
DC 1 + DC 2 BUS FAULT **(Cont'd)**

Expect the CG to move forward during the flight. The aircraft handling qualities are considered still acceptable for a safe continuation of the flight.

L1 XBLEED MAN CTL ONLY

DISPLAY CYCLE AS RQRD

L2 *As the CAPT OUTER display unit and the F/O OUTER display unit are no more available, a reconfiguration shall be performed.*

L1 EFB LAPTOP UNSTOW.. CONSIDER

CKPT DOOR LOCKING DEVICE NOT AVAIL

L2 *As the cockpit door is automatically unlocked in case of loss of power supply, the crew shall be informed.*

L1 ● **In the case of multiple failures affecting fuel consumption:**

FUEL CONSUMPT INCRSD

FOR BETTER RANGE : REDUCE CRZ MACH/SPD

FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

The FMS predictions are not correct.

SLATS SLOW (EXTN TIME 4 MIN)

L2 *As the SLAT system 2 is failed, slats are moving with half speed.*

L1 FLAPS SLOW

L2 *As the FLAP system 1 is failed, flaps are moving with half speed.*

L1 LDG DIST AFFECTED

TO VACATE RWY : CONSIDER TOWING

SECONDARY FAILURES

*F/CTL

*FUEL

*WHEEL

Continued on the following page

ELEC AC 1A BUS 230V + AC 2A BUS 230V FAULT **(Cont'd)**
DC 1 + DC 2 BUS FAULT **(Cont'd)**

Ident.: PRO-ABN-ELEC-2451W220-00013963.0005001 / 03 JUL 20

1

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES	APPR & LDG
NO L/G RETRACTION AVOID ICING CONDs CPNY COM VOICE ONLY ATC COM VOICE ONLY CTR TK NOT USABLE ● **In the case of multiple failures affecting fuel consumption:** FUEL CONSUMPT INCRSD	MIN RAT SPD : 140 kt SLATS/FLAPS SLOW L/G GRVTY EXTN ONLY LDG DIST AFFECTED

LIMITATIONS ON PFD

ALL PHASES	
AVOID ICING CONDs MIN RAT SPEED : 140 kt	

L12

DEFERRED PROC

FOR LANDING
> L/G GRVTY EXTN
FOR L/G GRVTY EXTN : MAX SPEED 220 KT
L/G LEVER.. UP
L/G GRVTY (EXTN MAX 90 S).. DOWN

- **WHEN L/G LOCKED DOWN OR AFTER 90 s :**
  L/G LEVER.. DOWN

  Note: *After a L/G gravity extension, a maintenance action is required to reset the LGERS (Refer to DSC-32-10-10-20 General).*

Continued on the following page

ELEC AC 1A BUS 230V + AC 2A BUS 230V FAULT **(Cont'd)**
DC 1 + DC 2 BUS FAULT **(Cont'd)**

STATUS

INOP SYS

ALL PHASES

PARTS SPLRs
PRIM 3
SEC 3
FMS 2
RNP AR
ADR 2
CAPT+F/O HUDs
GPWS
RMP 3
DATALINK
VHF 3
FQMS 2
JETTISON
L TK STBY PMP
R TK STBY PMP
CTR TK L+R PMPs
Y ELEC PMP
CARGO DOOR POWER
XBLEED AUTO CTL
WING A-ICE
ALL R WINDOWS HEATG
TWO CAB FANS
BULK CARGO HEATER
PART DOOR/SLIDE POS
CKPT DOOR LOCK
F/O EFIS CTL
CAPT+F/O OUTER DU
FLT(CABIN) REST SMOKE
CAPT OIS
FWS 2

APPR & LDG

FLAP SYS 1
SLAT SYS 2
L/G CTL 1+2
AUTO BRK
G BRK ACCU REINFLATE
Y BRK ACCU REINFLATE
N/W+BKUP STEER
ENG 2 REVERSER
ARPT NAV

INFO

AP : SIDESTICK LOCKING DEVICE NOT AVAIL
RUDDER PEDALS LOCKING DEVICE NOT AVAIL

Continued on the following page

ELEC AC 1A BUS 230V + AC 2A BUS 230V FAULT **(Cont'd)**
DC 1 + DC 2 BUS FAULT **(Cont'd)**

- **In the case of multiple failures affecting fuel consumption:**

  FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

  The fuel consumption is increased. The FUEL PENALTY on the FMS DATA/STATUS page may be updated.
  For fuel penalty determination, Refer to PER-IFT-FP Fuel Penalty Tables - Fuel Consumption Increased.

F/O BARO REF : STD ONLY
XBLEED MAN CTL ONLY
NO BRAKED PIVOT TURN
LAND 3 SINGLE ONLY
FOR BETTER RANGE : REDUCE CRZ MACH/SPD
TO VACATE RWY : CONSIDER TOWING

ELEC AC 1A PART BUS 115V FAULT

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2452W050-00014116.0001001 / 02 JUL 14

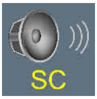
ANNUNCIATIONS

Triggering Conditions:

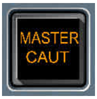
L2 The ETOPS 1 busbar is lost.

Indications:

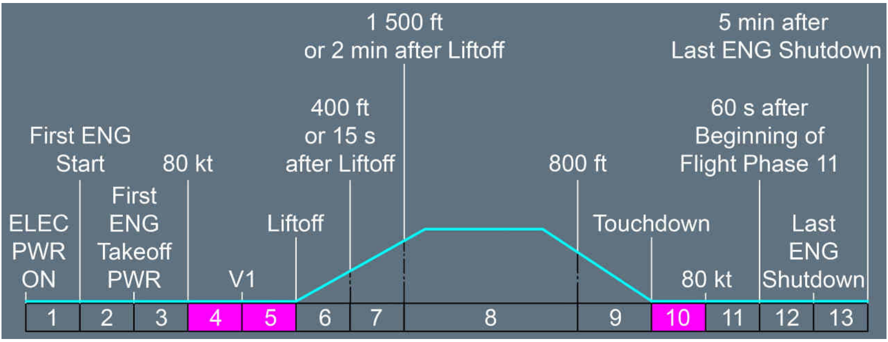
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
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12
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Continued on the following page

ELEC AC 1A PART BUS 115V FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2452W050-00014118.0001001 / 02 JUL 14

- **If the WXR / TAWS 1 is selected:**
  WXR....................SYS 2

L2 *As the AESU 1 is inoperative, TAWS 1 and WXR 1 are inoperative. So these functions must be switched on the other side available.*

L1
- **If XPDR / TCAS 1 is selected:**
  XPDR & TCAS....................SYS 2

L2 *As the AESU 1 is inoperative, XPDR 1 and TCAS 1 are inoperative. So these functions must be switched on the other side available.*

Ident.: PRO-ABN-ELEC-2452W050-00014119.0001001 / 04 SEP 14

STATUS

INOP SYS

ALL PHASES

XPDR 1
WXR 1
TCAS 1
ADS-B TRAFFIC 1 ◁✻
ADS-B RPGT 1
HF 1
SATCOM

ELEC AC 1B(2B) BUS 115V FAULT

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2452W020-00014204.0001001 / 02 JUL 14

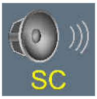
ANNUNCIATIONS

Triggering Conditions:

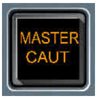
L2 The AC 1B(2B) 115 V busbar is lost.

Indications:

Audio



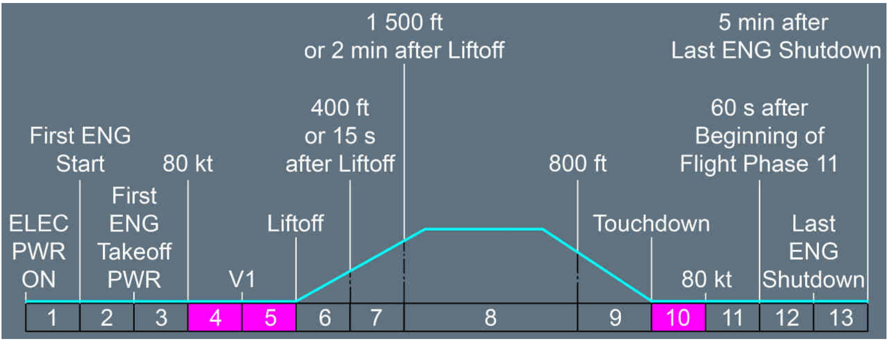
Master Light


MASTER
CAUT

SD page

ELEC AC SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
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8
9
10
11
12
13

Ident.: PRO-ABN-ELEC-2452W020-00014206.0001001 / 02 JUL 14

ON DRY RWY ONLY: LDG DIST AFFECTED<15%
LDG DIST AFFECTED

Continued on the following page

ELEC AC 1B(2B) BUS 115V FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2452W020-00014207.0001001 / 02 JUL 14

LIMITATIONS

LIMITATIONS ON ECAM

	APPR & LDG
	LDG DIST AFFECTED

STATUS

INOP SYS

ALL PHASES	APPR & LDG
PART GALLEY L(R) AFT WINDOW HEATG L(R) LAT WINDOW HEATG	BTV ENG 1(2) REVERSER

INFO

ON DRY RWY ONLY : LDG DIST AFFECTED < 15%

ELEC AC 1B BUS 230V FAULT

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2451W110-00016339.0001001 / 02 JUL 14

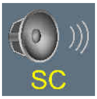
ANNUNCIATIONS

Triggering Conditions:

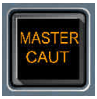
The AC 1B 230 V busbar is lost.

Indications:

Audio



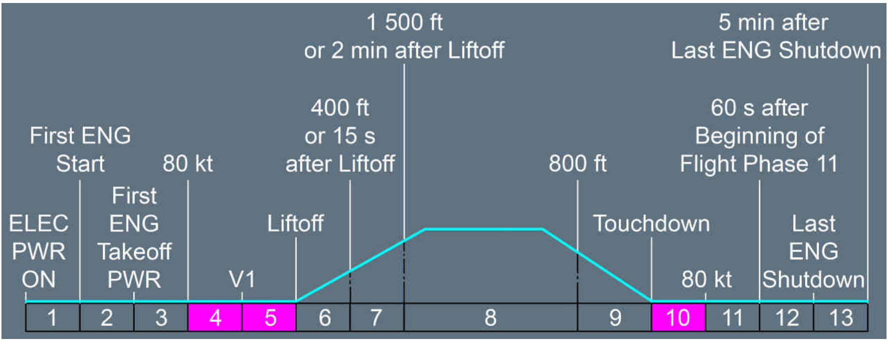
Master Light


MASTER
CAUT

SD page

ELEC AC SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
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Continued on the following page

ELEC AC 1B BUS 230V FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2451W110-00016341.0001001 / 02 JUL 14

- **If there is fuel in the center tank:**

L2 As the CTR TK R PMP is inoperative, the fuel from the center tank is only usable by ENG 1. To avoid a fuel imbalance, both crossfeed valves must be opened to feed both engines from the center tank, except if a fuel leak is suspected.

L1
  - **If FUEL LEAK SUSPECTED:**
    - **YES**
      FUEL LEAK PROC....................APPLY
    - **NO**
      CROSSFEED A....................ON
      CROSSFEED B....................ON

L2 *The remaining center tank pump is enough to feed both engines.*

L1
  - **WHEN CTR TK EMPTY, or after landing:**
    CROSSFEED A....................OFF
    CROSSFEED B....................OFF

ON DRY RWY ONLY : LDG DIST AFFECTED<15%
LDG DIST AFFECTED

SECONDARY FAILURES

*FUEL

Continued on the following page

ELEC AC 1B BUS 230V FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2451W110-00016342.0002001 / 26 JUL 17

LIMITATIONS

LIMITATIONS ON ECAM

APPR & LDG

LDG DIST AFFECTED

STATUS

INOP SYS

ALL PHASES	APPR & LDG
CTR TK R PMP G ELEC PMP BULK CARGO HEATER	BTV ENG 1 REVERSER

INFO

ON DRY RWY ONLY : LDG DIST AFFECTED < 15 %

ELEC AC 1B BUS 230V +AC 2B BUS 230V FAULT

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2451W230-00014226.0001001 / 02 JUL 14

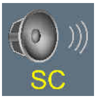
ANNUNCIATIONS

Triggering Conditions:

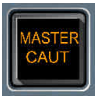
L2 The AC 1B 230 V and AC 2B 230 V busbars are lost.

Indications:

Audio



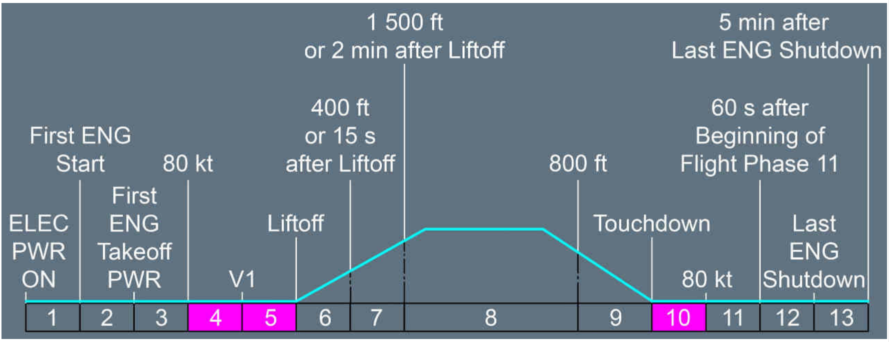
Master Light


MASTER
CAUT

SD page

ELEC AC SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
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11
12
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Continued on the following page

ELEC AC 1B BUS 230V +AC 2B BUS 230V FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2451W230-00014228.0003001 / 03 JAN 19

RAT MAN ON..PRESS
MIN RAT SPEED : 140 KT
CTR TK NOT USABLE

L2 *As the left and right center tank fuel pump (CTR TK L PMP and CTR TK R PMP) are not powered, the fuel contained in the center tank cannot be used.*
Expect the CG to move forward during the flight. The aircraft handling qualities are considered still acceptable for a safe continuation of the flight.

L1 ● **In the case of multiple failures affecting fuel consumption:**

FUEL CONSUMPT INCRSD

FOR BETTER RANGE : REDUCE CRZ MACH/SPD

FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

The FMS predictions are not correct.

SLATS SLOW
ON DRY RWY ONLY: LDG DIST AFFECTED<15%
LDG DIST AFFECTED

SECONDARY FAILURES

*FUEL

Continued on the following page

ELEC AC 1B BUS 230V +AC 2B BUS 230V FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2451W230-00014229.0003001 / 03 JAN 19

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

CTR TK NOT USABLE

- **In the case of multiple failures affecting fuel consumption:**
  FUEL CONSUMPT INCRSD

APPR & LDG

MIN RAT SPD : 140 KT
SLATS SLOW
LDG DIST AFFECTED

LIMITATIONS ON PFD

ALL PHASES

MIN RAT SPD : 140 KT

STATUS

INOP SYS

ALL PHASES

CTR TK L+R PMPs
G ELEC PMP
R WINDSHIELD HEATG
TWO CAB FANS
BULK CARGO HEATER

APPR & LDG

SLAT SYS 1
BTV
ENG 1+2 REVERSERS

INFO

ON DRY RWY ONLY : LDG DIST AFFECTED < 15 %

- **In the case of multiple failures affecting fuel consumption:**
  FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION
  The fuel consumption is increased. The FUEL PENALTY on the FMS DATA/STATUS page may be updated.
  For fuel penalty determination, Refer to PER-IFT-FP Fuel Penalty Tables - Fuel Consumption Increased.

FOR BETTER RANGE : REDUCE CRZ MACH / SPD

Continued on the following page

ELEC AC 1B BUS 230V +AC 2B BUS 230V FAULT (Cont'd)

LAND 3 SINGLE ONLY

ELEC AC 2A BUS 115V FAULT

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2452W040-00016847.0001001 / 02 JUL 14

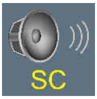
ANNUNCIATIONS

Triggering Conditions:

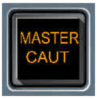
L2 The AC 2A 115 V busbar is lost. Therefore, the ETOPS 2 is also lost.

Indications:

Audio



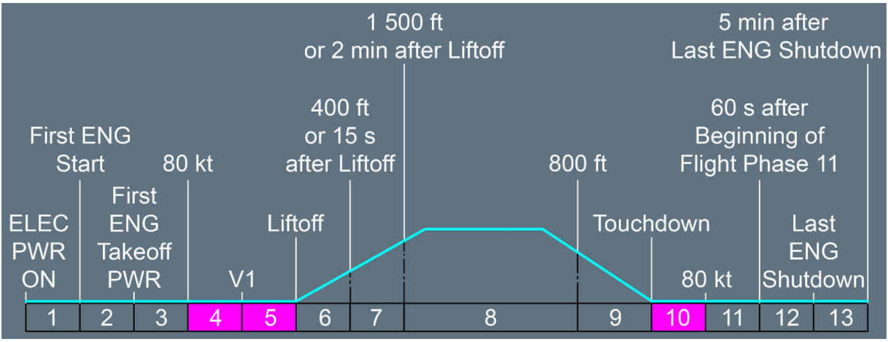
Master Light


MASTER
CAUT

SD page

ELEC AC SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
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8
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11
12
13

Ident.: PRO-ABN-ELEC-2452W040-00020859.0001001 / 02 JUL 14

Note: *If the failure occurs during an RNP AR operation, the ECAM displays the RNP AR CAPABILITY DOWNGRADED subtitle.*

Continued on the following page

ELEC AC 2A BUS 115V FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2452W040-00016849.0001001 / 02 OCT 14

- **During an RNP AR operation:**

  MINIMUM LIMITED TO RNP 0.30

- **If WXR / TAWS 2 is selected:**

  WXR..SYS 1

L2 *As the WXR/TAWS group 2 is inoperative, these functions must be switched on the other side available.*

Ident.: PRO-ABN-ELEC-2452W040-00016850.0001001 / 02 JUL 14

STATUS

INOP SYS

ALL PHASES	APPR & LDG
GNSS 2	AUTOLAND
WXR 2	LS 2
HF 2 ✻	
PART GALLEY	
FWD CARGO VENT ✻	
BULK CARGO VENT	

INFO

FOR RNP AR : MINIMUM TO RNP 0.30
APPR 1 ONLY

ELEC AC 2A BUS 230V FAULT

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2451W130-00016581.0001001 / 02 JUL 14

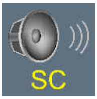
ANNUNCIATIONS

Triggering Conditions:

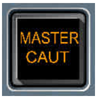
L2 The AC 2A 230 V busbar is lost.

Indications:

Audio



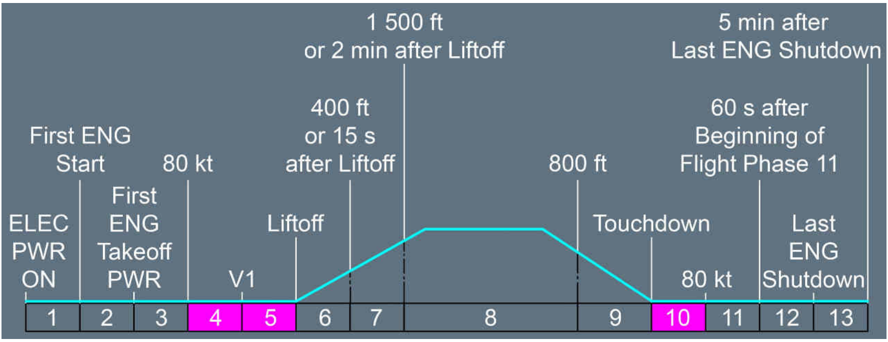
Master Light


MASTER
CAUT

SD page

ELEC AC SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
2
3
4
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Ident.: PRO-ABN-ELEC-2451W130-00016583.0001001 / 02 JUL 14

Crew awareness.

Continued on the following page

ELEC AC 2A BUS 230V FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2451W130-00016584.0002001 / 07 JUL 16

STATUS

INOP SYS

ALL PHASES

R TK STBY PMP
Y ELEC PMP
CARGO DOOR POWER

INFO

LAND 3 SINGLE ONLY

ELEC AC 2A BUS 230V+115V FAULT
AC 2B BUS 230V+115V FAULT

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2451W240-00014230.0001001 / 03 DEC 15

ANNUNCIATIONS

Triggering Conditions:

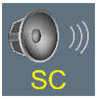
L2 The following busbars are lost:
- AC 2A 230 V
- AC 2A 115 V
- AC 2B 230 V
- AC 2B 115 V.

L3 This alert covers the case where the APU is started following an EMER CONFIG or the case where both VFG are lost on side 2 (or ENG 2 is shutdown) and only one VFG is available on side 1. Due to ELEC reconfiguration, only these four busbars are lost.

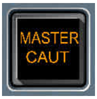
Indications:

L2

Audio



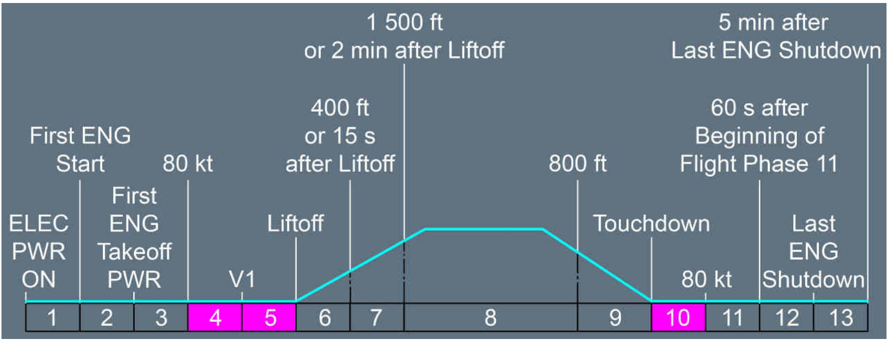
Master Light


MASTER
CAUT

SD page

ELEC AC SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

ELEC AC 2A BUS 230V+115V FAULT (Cont'd)
AC 2B BUS 230V+115V FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2451W240-00014232.0001001 / 06 NOV 14

- **If ENG 2 is running:**

  COMMERCIAL 1+2 .... OFF

  L2 *If this alert is not due to the loss of engine 2, the crew shall switch off the commercial loads because these busbars losses may be linked to commercial loads.*

L1 APU .... CONSIDER

L2 *As only one power source remains for the whole aircraft, the crew shall consider the use of APU.*

L1
- **If there is fuel in the center tank:**

  L2 As the CTR TK L PMP is inoperative, the fuel from the center tank is only usable by ENG 2. To avoid a fuel imbalance, both crossfeed valves must be opened to feed both engines from the center tank, except if a fuel leak is suspected.

  L1
  - **If FUEL LEAK SUSPECTED:**
    - **YES**

      FUEL LEAK PROC .... APPLY
    - **NO**

      CROSSFEED A .... ON

      CROSSFEED B .... ON

      L2 *The remaining center tank pump is enough to feed both engines.*

L1
- **WHEN CTR TK EMPTY, or after landing:**

  CROSSFEED A .... OFF

  CROSSFEED B .... OFF

ON DRY RWY ONLY : LDG DIST AFFECTED < 15%

LDG DIST AFFECTED

SECONDARY FAILURES

*FUEL

Continued on the following page

ELEC AC 2A BUS 230V+115V FAULT (Cont'd)
AC 2B BUS 230V+115V FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2451W240-00014233.0002001 / 07 JUL 16

LIMITATIONS

LIMITATIONS ON ECAM

APPR & LDG

LDG DIST AFFECTED

STATUS

INOP SYS

ALL PHASES

PART GALLEY
R TK STBY PMP
CTR TK L PMP
Y ELEC PMP
CARGO DOOR POWER
ALL R WINDOWS HEATG
TWO CAB FANS
FWD CARGO VENT ◁
BULK CARGO VENT

APPR & LDG

BTV
ENG 2 REVERSER

INFO

ON DRY RWY ONLY : LDG DIST AFFECTED < 15%
LAND 3 SINGLE ONLY

ELEC AC 2A BUS 230V+115V FAULT
AC 2B BUS 230V+115V + DC 2 BUS FAULT

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2450W120-00016837.0001001 / 03 DEC 15

ANNUNCIATIONS

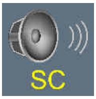
Triggering Conditions:

L2 EPDC 2 is lost.

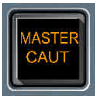
Therefore, the following busbars are lost:
- AC 2A 230 V
- AC 2A 115 V
- AC 2B 230 V
- AC 2B 115 V
- ETOPS 2
- DC 2
- DC SHED/GS 2.

Indications:

Audio



Master Light



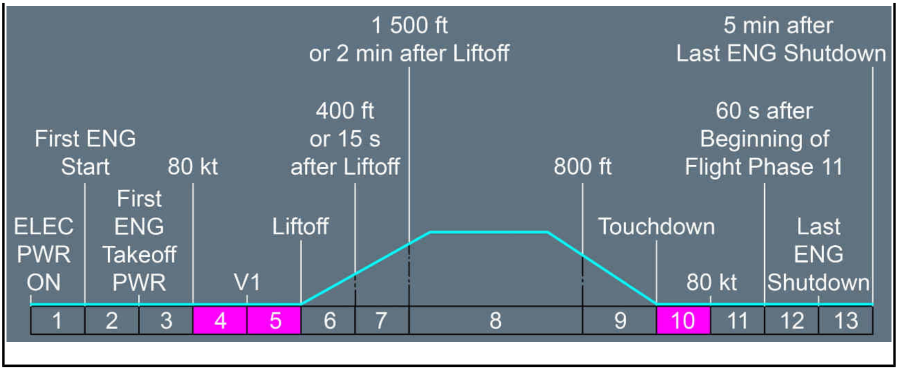
SD page

ELEC AC SD page

Flight Phase Inhibition:

Continued on the following page

ELEC AC 2A BUS 230V+115V FAULT **(Cont'd)**
AC 2B BUS 230V+115V + DC 2 BUS FAULT **(Cont'd)**


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
2
3
4
5
6
7
8
9
10
11
12
13

Ident.: PRO-ABN-ELEC-2450W120-00020857.0001001 / 02 JUL 14

Note: *If the failure occurs during an RNP AR operation, the ECAM displays the RNP AR CAPABILITY DOWNGRADED subtitle.*

Continued on the following page

ELEC AC 2A BUS 230V+115V FAULT **(Cont'd)**
AC 2B BUS 230V+115V + DC 2 BUS FAULT **(Cont'd)**

Ident.: PRO-ABN-ELEC-2450W120-00016839.0002001 / 10 NOV 17

- **During an RNP AR operation:**
  MINIMUM LIMITED TO RNP 0.30

F/O BARO REF : STD ONLY
F/O SIDESTICK LOCKING DEVICE NOT AVAIL

L2 *As the F/O sidestick locking device in no more powered, the crew shall be informed.*

L1 WXR.. SYS 1

- **If jettison ◁ in progress:**
  JETTISON ACTIVE.. OFF
  JETTISON ARM.. OFF

L2 *If the JETTISON function is active or/and armed, it is asked to deselect both the JETTISON ACTIVE and JETTISON ARM pushbuttons.*

L1
- **If there is fuel in the center tank:**

L2 As the CTR TK L PMP is inoperative, the fuel from the center tank is only usable by ENG 2. To avoid a fuel imbalance, both crossfeed valves must be opened to feed both engines from the center tank, except if a fuel leak is suspected.

L1
  - **FUEL LEAK SUSPECTED ?**
    - ■ **YES**
      FUEL LEAK PROC.. APPLY
    - ■ **NO**
      CROSSFEED A.. ON
      CROSSFEED B.. ON

L2 *The remaining center tank pump is enough to feed both engines.*

L1
- **WHEN CTR TK EMPTY, or after landing:**
  CROSSFEED A.. OFF
  CROSSFEED B.. OFF

OIS ON CTR & DISPLAY CYCLE AS RQRD

L2 *As the F/O OUTER display unit is no more available, a reconfiguration shall be performed.*

L1 ON DRY RWY ONLY: LDG DIST AFFECTED < 15%
LDG DIST AFFECTED

Continued on the following page

ELEC AC 2A BUS 230V+115V FAULT **(Cont'd)**
AC 2B BUS 230V+115V + DC 2 BUS FAULT **(Cont'd)**

SLATS SLOW

L2 *As the SLAT system 2 is failed, the slats are moving with half speed.*

L1

SECONDARY FAILURES

*FUEL

Continued on the following page

ELEC AC 2A BUS 230V+115V FAULT **(Cont'd)**
AC 2B BUS 230V+115V + DC 2 BUS FAULT **(Cont'd)**

Ident.: PRO-ABN-ELEC-2450W120-00016840.0002001 / 03 JUL 20

2

LIMITATIONS

LIMITATIONS ON ECAM

APPR & LDG

SLATS SLOW
LDG DIST AFFECTED

STATUS

INOP SYS

ALL PHASES

ADR 2
GNSS 2
F/O HUD ◁✳
WXR 2
HF 2 ◁✳
JETTISON ◁✳
R TK STBY PMP
CTR TK L PMP
ALL R WINDOWS HEATG
TWO CAB FANS
FWD CARGO VENT ◁✳
BULK CARGO VENT
F/O OUTER DU
FLT(CABIN) REST SMOKE ◁✳
FMC- B

APPR & LDG

SLAT SYS 2
BTV
ENG 2 REVERSER
AUTOLAND
LS 2
F/O ARPT NAV

INFO

ON DRY RWY ONLY : LDG DIST AFFECTED < 15%
F/O SIDESTICK LOCKING DEVICE NOT AVAIL
F/O BARO REF : STD ONLY
FOR RNP AR : MINIMUM LIMITED TO RNP 0.30
APPR 1 ONLY

ELEC AC 2A PART BUS 115V FAULT

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2452W060-00016154.0001001 / 02 JUL 14

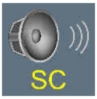
ANNUNCIATIONS

Triggering Conditions:

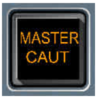
L2 The ETOPS 2 busbar is lost.

Indications:

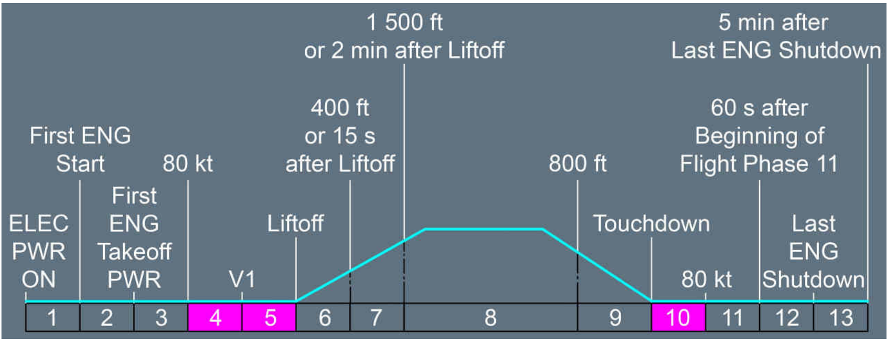
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
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8
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12
13

Ident.: PRO-ABN-ELEC-2452W060-00020861.0001001 / 02 JUL 14

Note: *If the failure occurs during an RNP AR operation, the ECAM displays the RNP AR CAPABILITY DOWNGRADED subtitle.*

Continued on the following page

ELEC AC 2A PART BUS 115V FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2452W060-00016719.0001001 / 02 OCT 14

- **During an RNP AR operation:**
  MINIMUM LIMITED TO RNP 0.30
- **If the WXR / TAWS 2 is selected:**
  WXR..SYS 1

L2 *As the WXR / TAWS group 2 is inoperative, it must be switched on the other side available.*

Ident.: PRO-ABN-ELEC-2452W060-00016720.0001001 / 02 JUL 14

STATUS

INOP SYS

ALL PHASES	APPR & LDG
GNSS 2	AUTOLAND
WXR 2	LS 2
HF 2 ◁	

INFO

FOR RNP AR : MINIMUM LIMITED TO RNP 0.30
APPR 1 ONLY

ELEC AC 2B BUS 230V FAULT

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2451W120-00017491.0001001 / 02 JUL 14

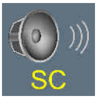
ANNUNCIATIONS

Triggering Conditions:

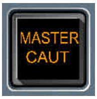
L2 The AC 2B 230 V busbar is lost.

Indications:

Audio



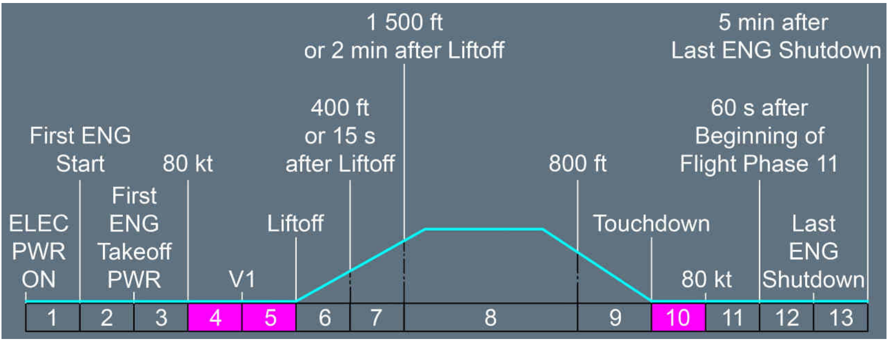
Master Light


MASTER
CAUT

SD page

ELEC AC SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

Continued on the following page

ELEC AC 2B BUS 230V FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2451W120-00017500.0001001 / 02 JUL 14

- **If there is fuel in the center tank:**

L2 As the CTR TK L PMP is inoperative, the fuel from the center tank is only usable by ENG 2. To avoid a fuel imbalance, both crossfeed valves must be opened to feed both engines from the center tank, except if a fuel leak is suspected.

L1
  - **If FUEL LEAK SUSPECTED:**
    - **YES**

      FUEL LEAK PROC.. APPLY
    - **NO**

      CROSSFEED A..ON
      CROSSFEED B..ON

L2 *The remaining center tank pump is enough to feed both engines.*

L1
  - **WHEN CTR TK EMPTY, or after landing:**

    CROSSFEED A..OFF
    CROSSFEED B..OFF

ON DRY RWY ONLY: LDG DIST AFFECTED<15%
LDG DIST AFFECTED

SECONDARY FAILURES

*FUEL

Continued on the following page

ELEC AC 2B BUS 230V FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2451W120-00017501.0001001 / 02 JUL 14

LIMITATIONS

LIMITATIONS ON ECAM

APPR & LDG

LDG DIST AFFECTED

STATUS

INOP SYS

ALL PHASES	APPR & LDG
CTR TK L PMP	BTV
R WINDSHIELD HEATG	ENG 2 REVERSER

INFO

ON DRY RWY ONLY : LDG DIST AFFECTED < 15%

ELEC AC EMER 1 BUS 115V FAULT

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2455W010-00013996.0001001 / 02 JUL 14

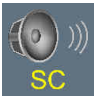
ANNUNCIATIONS

Triggering Conditions:

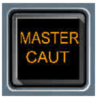
L2 The AC EMER 1 115 V busbar is lost.

Indications:

Audio



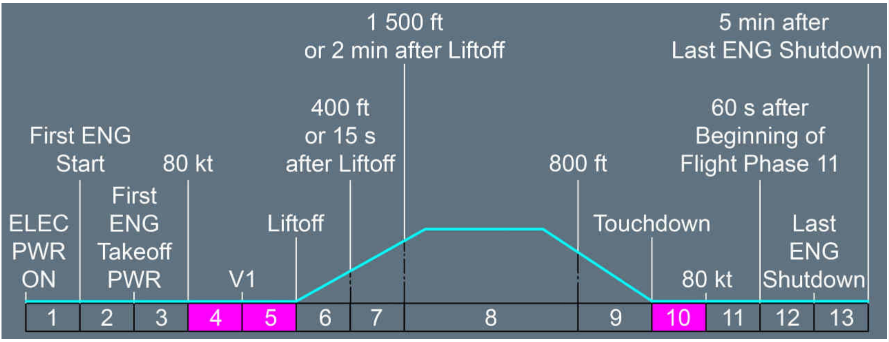
Master Light


MASTER
CAUT

SD page

ELEC AC SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

Ident.: PRO-ABN-ELEC-2455W010-00020863.0001001 / 02 JUL 14

Note: *If the failure occurs during an RNP AR operation, the ECAM displays the RNP AR CAPABILITY DOWNGRADED subtitle.*

Ident.: PRO-ABN-ELEC-2455W010-00013998.0001001 / 13 JAN 15

- **During an RNP AR operation:**
  MINIMUM LIMITED TO RNP 0.30

Continued on the following page

ELEC AC EMER 1 BUS 115V FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2455W010-00013999.0001001 / 04 SEP 14

STATUS

INOP SYS

ALL PHASES	APPR & LDG
GNSS 1	AUTOLAND
PAX OXY MASKS	LS 1

INFO

FOR RNP AR : MINIMUM LIMITED TO RNP 0.30
APPR 1 ONLY

ELEC AC EMER 1 BUS 230V+115V FAULT

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2454W010-00013992.0001001 / 02 JUL 14

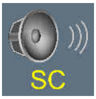
ANNUNCIATIONS

Triggering Conditions:

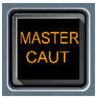
L2 The EMER AC 1 230 V busbar is lost. Therefore, the EMER AC 1 115 V busbar is also lost.

Indications:

Audio



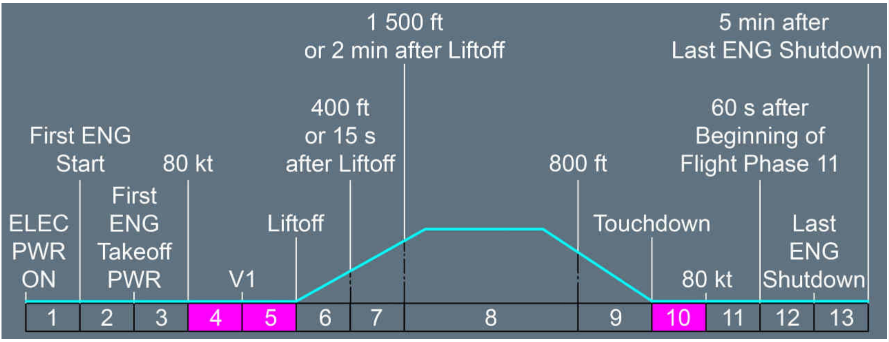
Master Light


MASTER
CAUT

SD page

ELEC AC SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
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7
8
9
10
11
12
13

Ident.: PRO-ABN-ELEC-2454W010-00020862.0001001 / 02 JUL 14

Note: *If the failure occurs during an RNP AR operation, the ECAM displays the RNP AR CAPABILITY DOWNGRADED subtitle.*

Continued on the following page

ELEC AC EMER 1 BUS 230V+115V FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2454W010-00013994.0003001 / 03 JAN 19

- **During an RNP AR operation:**
  MINIMUM LIMITED TO RNP 0.30
- **In the case of multiple failures affecting fuel consumption:**
  FUEL CONSUMPT INCRSD
  FOR BETTER RANGE : REDUCE CRZ MACH/SPD
  FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION
  The FMS predictions are not correct.

SLATS SLOW

L2 *As the slat system 1 is no more powered, slats are moving with half speed.*

L1

SECONDARY FAILURES

*F/CTL

Continued on the following page

ELEC AC EMER 1 BUS 230V+115V FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2454W010-00013995.0003001 / 03 JAN 19

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES	APPR & LDG
● **In the case of multiple failures affecting fuel consumption:** FUEL CONSUMPT INCRSD	SLATS SLOW

STATUS

INOP SYS

ALL PHASES	APPR & LDG
GNSS 1 PAX OXY MASKS R TK MAIN PMP L WINDSHIELD HEATG	SLAT SYS 1 AUTOLAND LS 1

INFO

- **In the case of multiple failures affecting fuel consumption:**
  FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION
  The fuel consumption is increased. The FUEL PENALTY on the FMS DATA/STATUS page may be updated.
  For fuel penalty determination, Refer to PER-IFT-FP Fuel Penalty Tables - Fuel Consumption Increased.

FOR RNP AR : MINIMUM LIMITED TO RNP 0.30
APPR 1 ONLY
FOR BETTER RANGE : REDUCE CRZ MACH/SPD

ELEC AC EMER 1 BUS 230V+115V FAULT
AC EMER 2 BUS 230V+115V FAULT

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2454W030-00022731.0001001 / 03 SEP 15

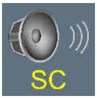
ANNUNCIATIONS

Triggering Conditions:

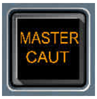
L2 The EMER AC 1 230 V and EMER AC 2 230 V busbars are lost. Therefore, the EMER AC 1 115 V and EMER AC 2 115 V busbars are also lost.

Indications:

Audio



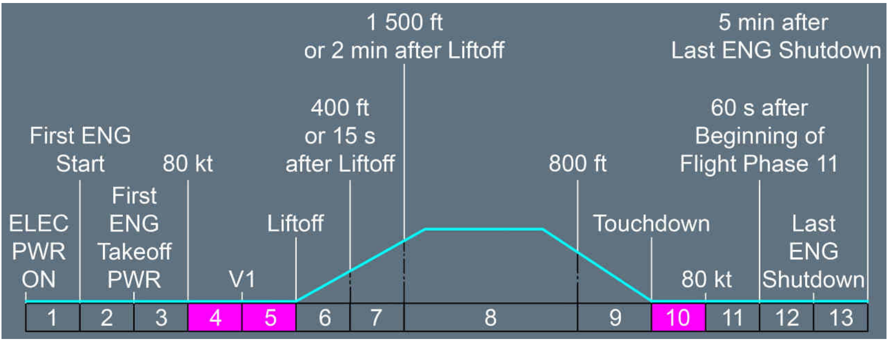
Master Light


MASTER
CAUT

SD page

ELEC AC SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
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9
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11
12
13

Ident.: PRO-ABN-ELEC-2454W030-00022735.0001001 / 09 JUL 15

Note: *If the failure occurs during an RNP AR operation, the ECAM displays the RNP AR CAPABILITY DOWNGRADED subtitle.*

Continued on the following page

ELEC AC EMER 1 BUS 230V+115V FAULT **(Cont'd)**
AC EMER 2 BUS 230V+115V FAULT **(Cont'd)**

Ident.: PRO-ABN-ELEC-2454W030-00022732.0003001 / 03 JAN 19

- **During an RNP AR operation:**

  MINIMUM LIMITED TO RNP 0.30

- **If XPDR/TCAS 2 is selected:**

  XPDR & TCAS...SYS 1

  L2 *Because the XPDR/TCAS 2 is inoperative, the flight crew must select SYS 1.*

  L1 IFEC...OFF

  PAX BBAND ◁ ....OFF

- **LIVESTOCK IN FWD CARGO ?**
  - **NO**

    CARGO FWD ISOL VALVES ◁ ....OFF

- **LIVESTOCK IN AFT/BULK CARGO ?**
  - **NO**

    CARGO AFT ISOL VALVES ◁ ....OFF

    CARGO BULK ISOL VALVES...OFF

BAT EMER 1...OFF

L2 *The flight crew switches off both the EMER BAT 1 and EMER BAT 2 batteries, for both of the following reasons:*

- *To prevent transient reversion to direct law when the charge of the EMER BAT 1 and EMER BAT 2 batteries reaches a low level*
- *To ensure that the EMER BAT 1 and EMER BAT 2 batteries supply only essential equipment (e.g. IRS 1 and IRS 3) via the EMER HOT busbars.*

L1 BAT EMER 2...OFF

L2 *The flight crew switches off both the EMER BAT 1 and EMER BAT 2 batteries, for both of the following reasons:*

- *To prevent transient reversion to direct law when the charge of the EMER BAT 1 and EMER BAT 2 batteries reaches a low level*
- *To ensure that the EMER BAT 1 and EMER BAT 2 batteries supply only essential equipment (e.g. IRS 1 and IRS 3) via the EMER HOT busbars.*

Continued on the following page

ELEC AC EMER 1 BUS 230V+115V FAULT **(Cont'd)**
AC EMER 2 BUS 230V+115V FAULT **(Cont'd)**

L1

- **In the case of multiple failures that affect the fuel consumption:**

FUEL CONSUMPT INCRSD

FOR BETTER RANGE : REDUCE CRZ MACH/SPD

FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

L2 *The FMS predictions are not correct.*

L1

SECONDARY FAILURES

*F/CTL

Continued on the following page

ELEC AC EMER 1 BUS 230V+115V FAULT **(Cont'd)**
AC EMER 2 BUS 230V+115V FAULT **(Cont'd)**

Ident.: PRO-ABN-ELEC-2454W030-00022733.0003001 / 03 JAN 19

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

- **In the case of multiple failures that affect the fuel consumption:**
  FUEL CONSUMPT INCRSD

STATUS

INOP SYS

ALL PHASES

GNSS 1
XPDR 2
TCAS 2
ADS-B TRAFFIC 2 ◁✱
ADS-B RPTG 2
PAX OXY MASKS
L TK MAIN PMP
R TK MAIN PMP
L WINDSHIELD HEATG
AP/FD TCAS MODE (If XPDR/TCAS 2 selected)

APPR & LDG

SLAT SYS 1
BTV
AUTOLAND
LS 1

INFO

- **In the case of multiple failures affecting fuel consumption:**
  FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION
  The fuel consumption is increased. The FUEL PENALTY on the FMS DATA/STATUS page may be updated.
  For fuel penalty determination, Refer to PER-IFT-FP Fuel Penalty Tables - Fuel Consumption Increased.
- **During an RNP AR operation:**
  FOR RNP AR : MINIMUM LIMITED TO RNP 0.30

APPR 1 ONLY

Continued on the following page

ELEC AC EMER 1 BUS 230V+115V FAULT **(Cont'd)**
AC EMER 2 BUS 230V+115V FAULT **(Cont'd)**

FOR BETTER RANGE : REDUCE CRZ MACH/SPD

ELEC AC EMER 2 BUS 115V FAULT

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2455W020-00016739.0001001 / 02 JUL 14

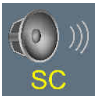
ANNUNCIATIONS

Triggering Conditions:

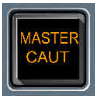
L2 The EMER AC 2 115 V busbar is lost.

Indications:

Audio



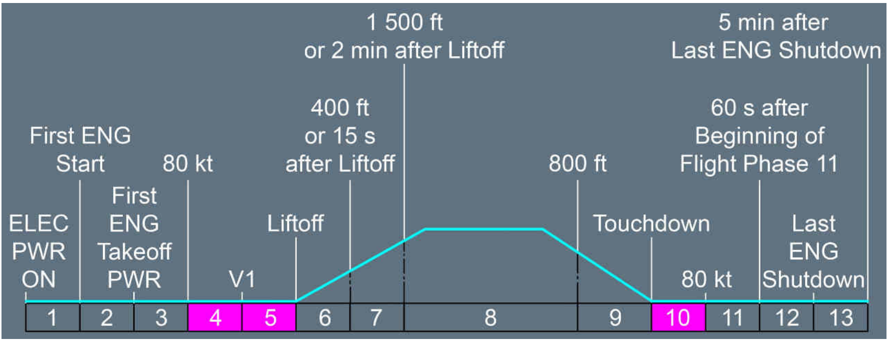
Master Light


MASTER
CAUT

SD page

ELEC AC SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

ELEC AC EMER 2 BUS 115V FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2455W020-00016741.0001001 / 02 JUL 14

- **If XPDR / TCAS 2 is selected:**

  XPDR & TCAS.. SYS 1

L2 *As the XPDR / TCAS group 2 is inoperative, it must be switched on the other side available.*

Ident.: PRO-ABN-ELEC-2455W020-00016742.0001001 / 04 SEP 14

STATUS

INOP SYS

ALL PHASES

XPDR 2
TCAS 2
ADS-B TRAFFIC 2 ⊲
ADS-B RPTG 2
PAX OXY MASKS

ELEC AC EMER 2 BUS 230V+115V FAULT

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2454W020-00016721.0001001 / 02 JUL 14

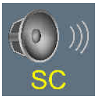
ANNUNCIATIONS

Triggering Conditions:

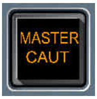
L2 The AC EMER 2 230 V busbar is lost. Therefore, the AC EMER 2 115 V busbar is also lost.

Indications:

Audio



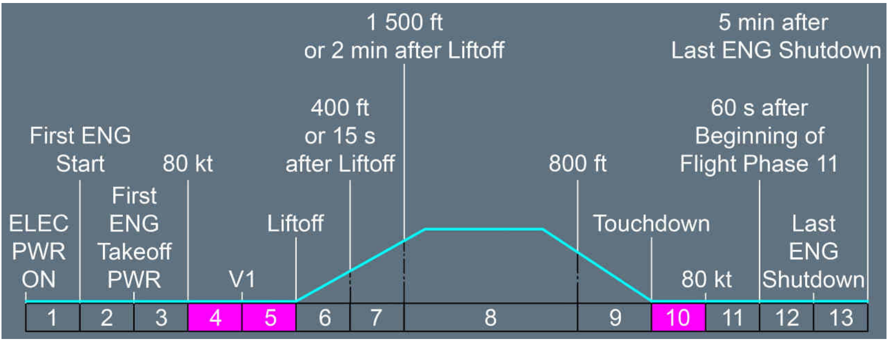
Master Light


MASTER
CAUT

SD page

ELEC AC SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
2
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11
12
13

Continued on the following page

ELEC AC EMER 2 BUS 230V+115V FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2454W020-00016723.0003001 / 03 JAN 19

- **If XPDR / TCAS 2 is selected:**

  XPDR & TCAS..SYS 1

  L2 *As the XPDR / TCAS group 2 is inoperative, it must be switched on the other side available.*

- L1 **In the case of multiple failures affecting fuel consumption:**

  FUEL CONSUMPT INCRSD

  FOR BETTER RANGE : REDUCE CRZ MACH/SPD

  FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

  The FMS predictions are not correct.

SECONDARY FAILURES

*F/CTL

Continued on the following page

ELEC AC EMER 2 BUS 230V+115V FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2454W020-00016724.0003001 / 03 JAN 19

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

- **In the case of multiple failures affecting fuel consumption:**
  FUEL CONSUMPT INCRSD

STATUS

INOP SYS

ALL PHASES

XPDR 2
TCAS 2
ADS-B TRAFFIC 2
ADS-B RPTG 2
PAX OXY MASKS
L TK MAIN PMP

INFO

- **In the case of multiple failures affecting fuel consumption:**
  FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION
  The fuel consumption is increased. The FUEL PENALTY on the FMS DATA/STATUS page may be updated.
  For fuel penalty determination, Refer to PER-IFT-FP Fuel Penalty Tables - Fuel Consumption Increased.

LAND 3 SINGLE ONLY
FOR BETTER RANGE : REDUCE CRZ MACH/SPD

ELEC APU GEN FAULT

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2423W120-00006002.0001001 / 02 JUL 14

ANNUNCIATIONS

Triggering Conditions:

L2 The APU GEN is failed.

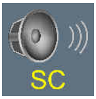
L3 The APU generator fails, in the case of:

- An overload (if load shedding is not sufficient)
- Abnormally low intensity of the current (lower than 2 A)
- Abnormally low APU generator voltage (lower than 206 V)
- Abnormally high APU generator voltage (higher than 257 V)
- A short-circuit
- A failure of the APU generator contactor
- An overheat.

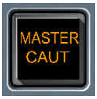
Indications:

L2

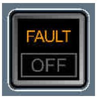
Audio



Master Light


MASTER
CAUT

Local Light

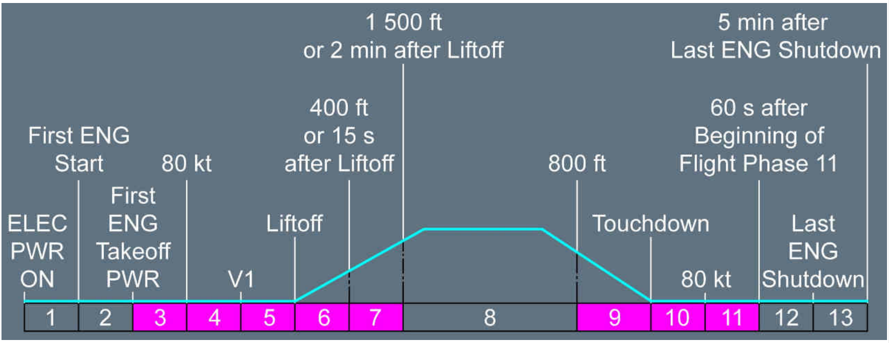


APU GEN pb-sw

SD page

ELEC AC SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Continued on the following page

ELEC APU GEN FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2423W120-00007393.0001001 / 07 JUL 16

APU GEN.. OFF THEN ON

- **RESET NOT SUCCESSFUL:**
  APU GEN.. OFF

Ident.: PRO-ABN-ELEC-2423W120-00007394.0001001 / 02 JUL 14

STATUS

INOP SYS

ALL PHASES	
APU GEN	

ELEC ATU 1A(1B)(2B)(2A) FAULT

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2451W010-00014120.0001001 / 02 JUL 14

ANNUNCIATIONS

Triggering Conditions:

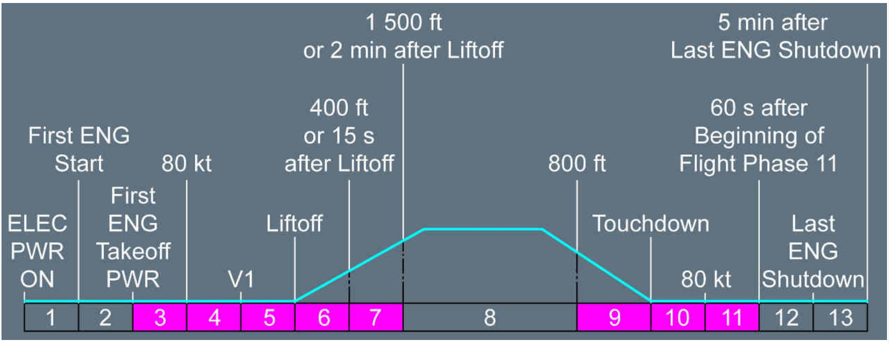
L2 ATU 1A(1B)(2B)(2A) is failed.
If a failure occurs on ATU 1A(1B)(2B)(2A), the ATU 1A(1B)(2B)(2A) will be disconnected by EPDC from the AC network and busbar AC 1A(1B)(2B)(2A) will be reconfigured to busbar AC 1B(1A)(2A)(2B).

Indications:

SD page

ELEC AC SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Ident.: PRO-ABN-ELEC-2451W010-00014122.0001001 / 28 MAY 14

Crew awareness.

Continued on the following page

ELEC ATU 1A(1B)(2B)(2A) FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2451W010-00014123.0001001 / 28 MAY 14

STATUS

INOP SYS

ALL PHASES

ATU 1A(1B)(2B)(2A)
PART GALLEY

ELEC BAT 1(2)(EMER 1)(EMER 2) FAULT

Applicable to: ALL

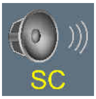
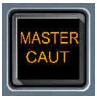
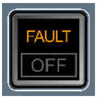
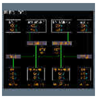
Ident.: PRO-ABN-ELEC-2436W010-00014053.0001001 / 28 MAY 14

ANNUNCIATIONS

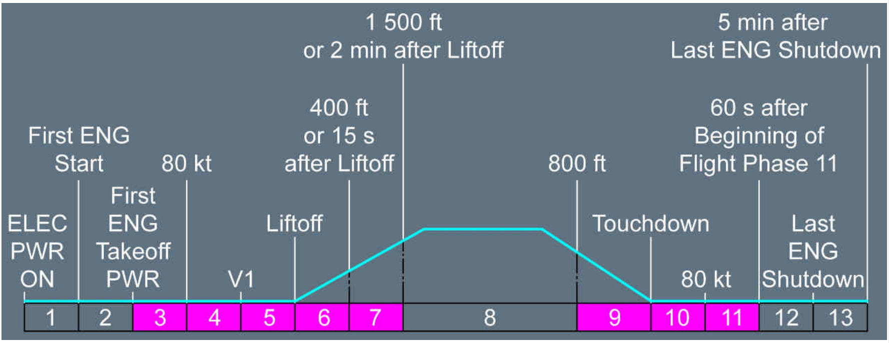
Triggering Conditions:

L2 The BAT 1(2)(EMER 1)(EMER 2) is failed.
L3 In case of BAT failure, the relevant unit will be disconnected from the network by the EPDC, except in EMER conditions where the BAT EMER1(2) will be kept connected to the network. If disconnected, the NBPT will not be ensured on the busbar associated to the battery failed.
Indications:

L2

Audio	Master Light	Local Light	SD page
	 MASTER CAUT		
		BAT 1(2)(EMER 1)(EMER 2) pb-sw	ELEC DC SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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4
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Ident.: PRO-ABN-ELEC-2436W010-00014055.0001001 / 28 MAY 14

BAT 1(2)(EMER 1)(EMER 2)..OFF

Continued on the following page

ELEC BAT 1(2)(EMER 1)(EMER 2) FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2436W010-00014056.0001001 / 28 MAY 14

STATUS

INOP SYS

ALL PHASES

BAT 1(2)(EMER 1)(EMER 2)

INFO

- **If BAT 1 or BAT 2**
  APU BAT START NOT AVAIL

ELEC BAT 1(2)(EMER 1)(EMER 2) OFF

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2436W100-00014057.0001001 / 28 MAY 14

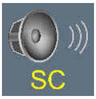
ANNUNCIATIONS

Triggering Conditions:

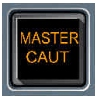
L2 The BAT 1(2)(EMER 1)(EMER 2) pb-sw is abnormally set to OFF.

Indications:

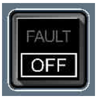
Audio



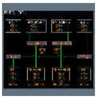
Master Light


MASTER
CAUT

Local Light

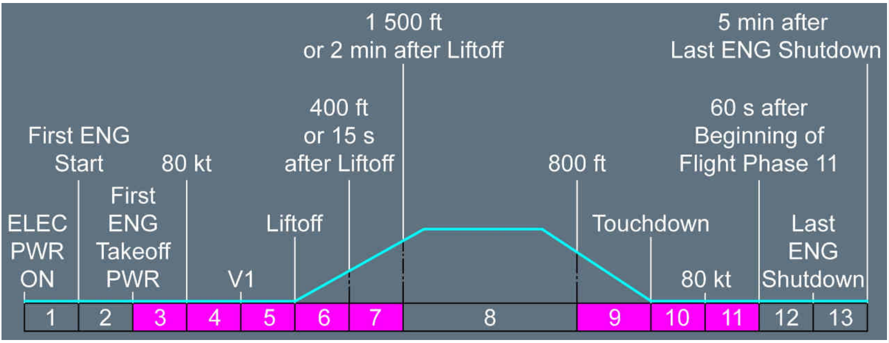


SD page



ELEC DC SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
2
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5
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12
13

Ident.: PRO-ABN-ELEC-2436W100-00014059.0001001 / 28 MAY 14

BAT 1(2)(EMER 1)(EMER 2)...ON

ELEC BAT 1(2)(EMER 1)(EMER 2) OVERCHARGE

Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD

Ident.: PRO-ABN-ELEC-2436W040_1-00023228.0001001 / 07 JUL 16

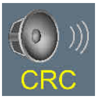
ANNUNCIATIONS

Triggering Conditions:

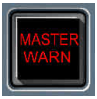
L2 The battery receives an abnormal high voltage from the electrical network.

Indications:

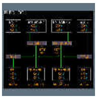
Audio



Master Light

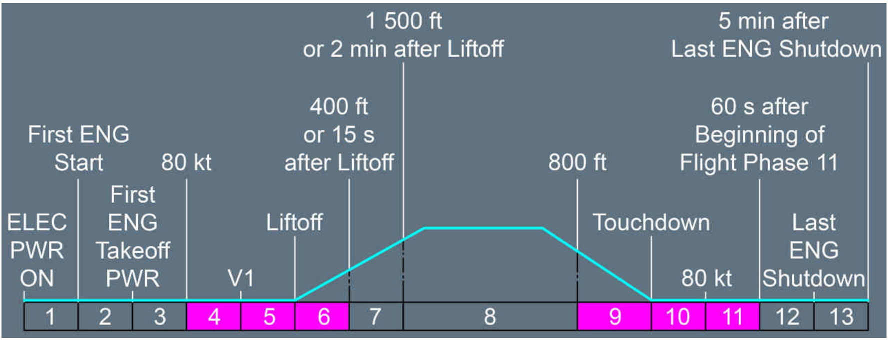

MASTER
WARN

SD page



ELEC DC SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Ident.: PRO-ABN-ELEC-2436W040_1-00023229.0001001 / 07 JUL 16

LAND ASAP

BAT 1(2)(EMER 1)(EMER 2).....................................OFF

Continued on the following page

ELEC BAT 1(2)(EMER 1)(EMER 2) OVERCHARGE (Cont'd)

Ident.: PRO-ABN-ELEC-2436W040_1-00023230.0001001 / 07 JUL 16

STATUS

INOP SYS

ALL PHASES

BAT 1(2)(EMER 1)(EMER 2)

INFO

● **If BAT 1 or BAT 2**
APU BAT START NOT AVAIL

MEMOPAGE

MEMO ON ECAM

LAND ASAP

ELEC BUS TIE OFF

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2471W030-00014061.0001001 / 28 MAY 14

ANNUNCIATIONS

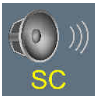
Triggering Conditions:

L2 The BUS TIE pb-sw is set to OFF.

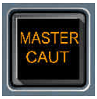
Therefore:
- The normal AC busbars are segregated from each other
- The normal DC busbars are segregated from each other.

Indications:

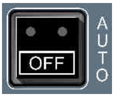
Audio



Master Light

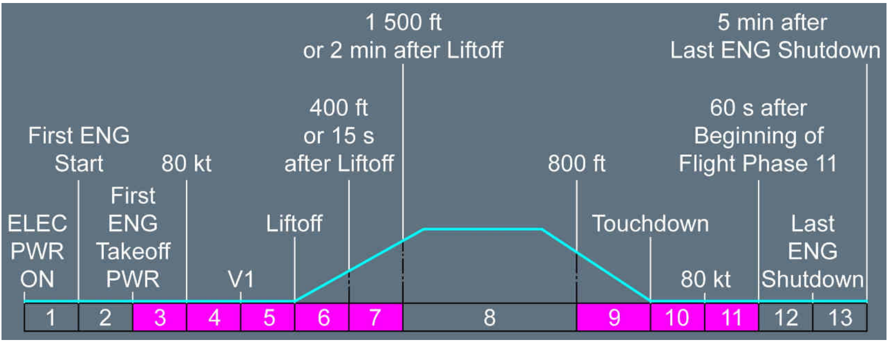

MASTER
CAUT

Local Light



BUS TIE pb-sw

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-ELEC-2471W030-00014063.0001001 / 28 MAY 14

Crew awareness.

ELEC C/B TRIPPED

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2471W020-00014065.0001001 / 28 MAY 14

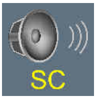
ANNUNCIATIONS

Triggering Conditions:

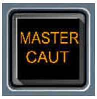
L2 At least one C/B is tripped.

Indications:

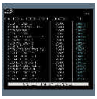
Audio



Master Light

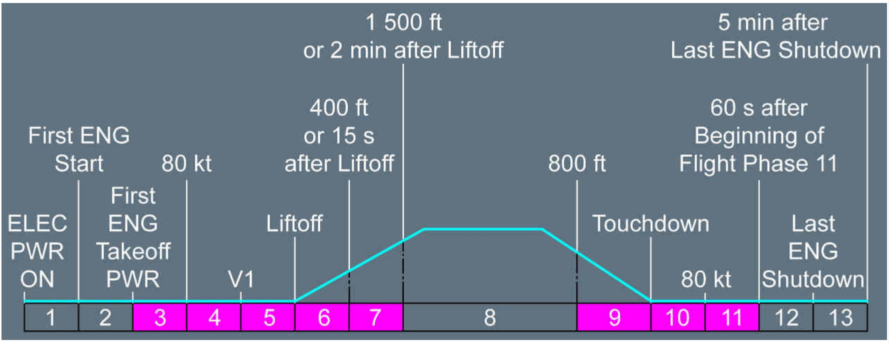

MASTER
CAUT

SD page



ELEC C/B SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Ident.: PRO-ABN-ELEC-2471W020-00014067.0001001 / 28 MAY 14

Crew awareness.

ELEC DC 1 BUS FAULT

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2461W010-00014069.0001001 / 02 JUL 14

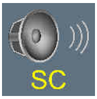
ANNUNCIATIONS

Triggering Conditions:

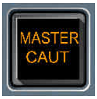
L2 The DC 1 busbar is lost. Therefore, sub-busbar DC SHED/GS 1 busbar is also lost.

Indications:

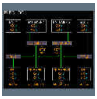
Audio



Master Light

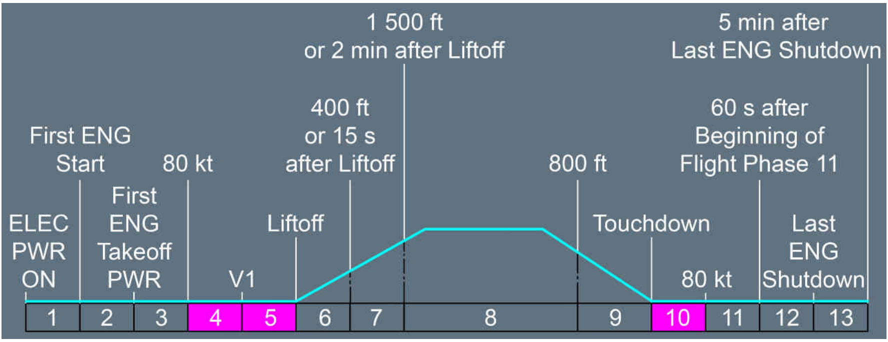

MASTER
CAUT

SD page



ELEC DC SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-ELEC-2461W010-00020864.0001001 / 02 JUL 14

Note: *If the failure occurs during an RNP AR operation, the ECAM displays the RNP AR CAPABILITY DOWNGRADED subtitle.*

Continued on the following page

ELEC DC 1 BUS FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2461W010-00014071.0004001 / 03 JAN 19

- **During an RNP AR operation:**
  MINIMUM LIMITED TO RNP 0.30

ATC COM VOICE ONLY

L2 *As the CPNY DATALINK is lost, only the COM voice is available.*

L1 CPNY COM VOICE ONLY

L2 *As the CPNY DATALINK is lost, only the COM voice is available.*

L1 CAPT SIDESTICK LOCKING DEVICE NOT AVAIL

L2 *As the CAPT sidestick locking device in no more powered, the crew shall be informed.*

L1 RUDDER PEDALS LOCKING DEVICE NOT AVAIL

L2 *As the rudder pedals locking device is no more powered, the crew shall be informed.*

L1
- **If jettison ◁ in progress:**
  JETTISON ACTIVE....................OFF
  JETTISON ARM....................OFF

L2 *If the JETTISON function is active or/and armed, it is asked to deselect both the JETTISON ACTIVE and JETTISON ARM pushbuttons.*

L1
- **If there is fuel in the center tank:**

L2 As the CTR TK R PMP is inoperative, the fuel from the center tank is only usable by ENG 1. To avoid a fuel imbalance, both crossfeed valves must be opened to feed both engines from the center tank, except if a fuel leak is suspected.

L1
  - **If FUEL LEAK SUSPECTED:**
    - ■ **YES**
      FUEL LEAK PROC....................APPLY
    - ■ **NO**
      CROSSFEED A....................ON
      CROSSFEED B....................ON

L2 *The remaining center tank pump is enough to feed both engines.*

L1
- **WHEN CTR TK EMPTY, or after landing:**
  CROSSFEED A....................OFF
  CROSSFEED B....................OFF

DISPLAY CYCLE AS RQRD

Continued on the following page

ELEC DC 1 BUS FAULT (Cont'd)

L2 *As the CAPT OUTER display unit is no more available, a reconfiguration shall be performed.*

L1 EFB LAPTOP UNSTOW.. CONSIDER

CKPT DOOR LOCKING DEVICE NOT AVAIL

L2 *As the cockpit door is automatically unlocked in case of loss of power supply, the crew shall be informed.*

L1 ● **In the case of multiple failures affecting fuel consumption:**

FUEL CONSUMPT INCRSD

FOR BETTER RANGE : RANGE CRZ MACH/ SPD

FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

The FMS predictions are not correct.

FLAPS SLOW

L2 *As the FLAP system 1 is failed, the flaps are moving with half speed.*

L1 LDG DIST AFFECTED

SECONDARY FAILURES

*F/CTL
*FUEL

Continued on the following page

ELEC DC 1 BUS FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2461W010-00014072.0004001 / 03 JAN 19

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

ATC COM VOICE ONLY
CPNY COM VOICE ONLY

- **In the case of multiple failures affecting fuel consumption:**
  FUEL CONSUMPT INCRSD

APPR & LDG

FLAPS SLOW
LDG DIST AFFECTED

STATUS

INOP SYS

ALL PHASES

PART SPLRs
PRIM 3
SEC 3
CAPT HUD ◁✳
RMP 3
DATALINK
JETTISON ◁✳
L TK STBY PMP
CTR TK R PMP
BULK CARGO HEATER
PART DOOR/SLIDE POS
CKPT DOOR LOCK
CAPT OUTER DU
CAPT OIS
FMC-C

APPR & LDG

FLAP SYS 1
BTV
CAPT ARPT NAV

INFO

CAPT SIDESTICK LOCKING DEVICE NOT AVAIL
RUDDER PEDALS LOCKING DEVICE NOT AVAIL

- **In the case of multiple failures affecting fuel consumption:**
  FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

Continued on the following page

ELEC DC 1 BUS FAULT (Cont'd)

The fuel consumption is increased. The FUEL PENALTY on the FMS DATA/STATUS page may be updated.
For fuel penalty determination, Refer to PER-IFT-FP Fuel Penalty Tables - Fuel Consumption Increased.

FOR RNP AR : MINIMUM LIMITED TO RNP 0.30
LAND 3 SINGLE ONLY
FOR BETTER RANGE : REDUCE CRZ MACH/ SPD

ELEC DC 1 PART BUS FAULT

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2461W030-00014086.0001001 / 02 JUL 14

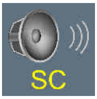
ANNUNCIATIONS

Triggering Conditions:

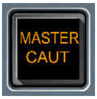
L2 The DC SHED/GS 1 busbar is lost.

Indications:

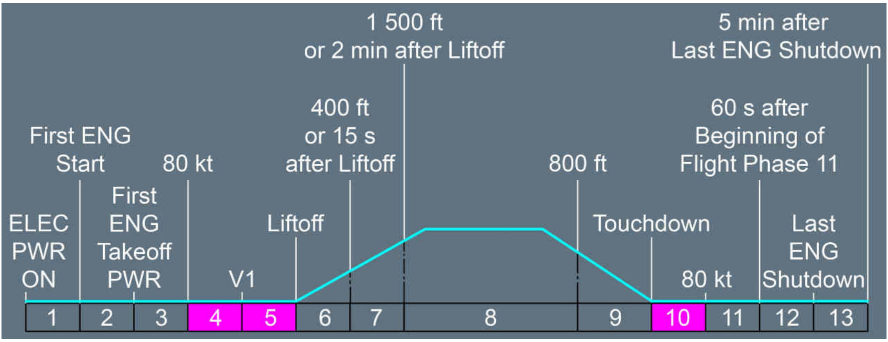
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

Continued on the following page

ELEC DC 1 PART BUS FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2461W030-00020867.0001001 / 02 JUL 14

Note: *If the failure occurs during an RNP AR operation, the ECAM displays the RNP AR CAPABILITY DOWNGRADED subtitle.*

Continued on the following page

ELEC DC 1 PART BUS FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2461W030-00014088.0002001 / 10 NOV 17

- **During an RNP AR operation:**
  MINIMUM LIMITED TO RNP 0.30

ATC COM VOICE ONLY

L2 *As the CPNY DATALINK is lost, only the COM voice is available*

L1 CPNY COM VOICE ONLY

L2 *As the CPNY DATALINK is lost, only the COM voice is available*

L1
- **If there is fuel in the center tank:**

L2 As the CTR TK R PMP is inoperative, the fuel from the center tank is only usable by ENG 1. To avoid a fuel imbalance, both crossfeed valves must be opened to feed both engines from the center tank, except if a fuel leak is suspected.

L1
  - **If FUEL LEAK SUSPECTED:**
    - ■ **YES**
      FUEL LEAK PROC.................... APPLY
    - ■ **NO**
      CROSSFEED A.................... ON
      CROSSFEED B.................... ON

L2 *The remaining center tank pump is enough to feed both engines.*

L1
- **WHEN CTR TK EMPTY, or after landing:**
  CROSSFEED A.................... OFF
  CROSSFEED B.................... OFF

OIS ON CTR & DISPLAY CYCLE AS RQRD

L2 *As the CAPT OUTER display unit is no more available, a reconfiguration shall be performed.*

L1 EFB LAPTOP UNSTOW.................... CONSIDER

CKPT DOOR LOCKING DEVICE NOT AVAIL

L2 *As the cockpit door is automatically unlocked in the case of loss of power supply, the crew shall be informed.*

L1 FLAPS SLOW

L2 *As the FLAP system 1 is failed, the flaps are moving with half speed.*

Continued on the following page

ELEC DC 1 PART BUS FAULT (Cont'd)

L1

SECONDARY FAILURES

*FUEL

Ident.: PRO-ABN-ELEC-2461W030-00014089.0002001 / 26 JUL 17

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES	APPR & LDG
ATC COM VOICE ONLY CPNY COM VOICE ONLY	FLAPS SLOW

STATUS

INOP SYS

ALL PHASES	APPR & LDG
DATALINK CTR TK R PMP BULK CARGO HEATER PART DOOR/SLIDE POS CKPT DOOR LOCK CAPT OUTER DU CAPT OIS FMC-C	FLAP SYS 1 CAPT ARPT NAV

INFO

FOR RNP AR : MINIMUM LIMITED TO RNP 0.30
LAND 3 SINGLE ONLY

ELEC DC 1 + DC 2 BUS FAULT

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2461W100-00014074.0001001 / 02 JUL 14

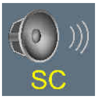
ANNUNCIATIONS

Triggering Conditions:

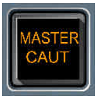
L2 The DC 1 and DC 2 busbars are lost.

Indications:

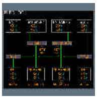
Audio



Master Light

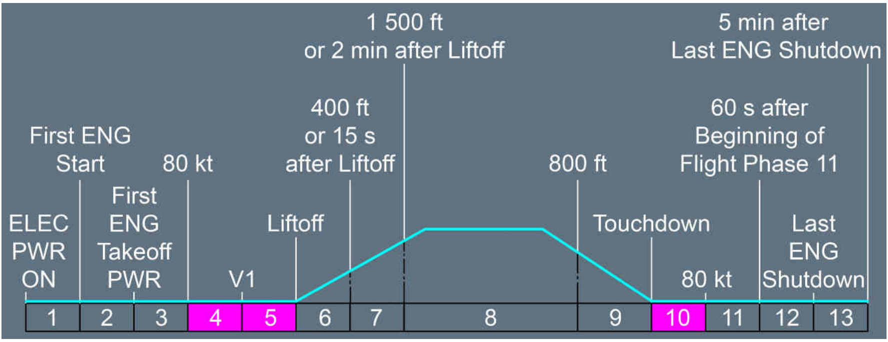

MASTER
CAUT

SD page



ELEC DC SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
2
3
4
5
6
7
8
9
10
11
12
13

Ident.: PRO-ABN-ELEC-2461W100-00020875.0001001 / 02 JUL 14

Note: *If the failure occurs during an RNP AR operation, the ECAM displays the RNP AR CAPABILITY LOST subtitle.*

Continued on the following page

ELEC DC 1 + DC 2 BUS FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2461W100-00014076.0005001 / 03 JAN 19

FMS SWTG....................BOTH ON 1
F/O BARO REF : STD ONLY

L2 *F/O EFIS controls are lost and F/O barometric reference is only standard.*

L1
- **If L/G are already locked down when the alert is triggered:**
  NO L/G RETRACTION
- **If L/G not locked down when the alert is triggered:**
  L/G GRVTY EXTN ONLY

AVOID ICING CONDs

L2 *As the wing anti-ice is not available, the aircraft is no more protected against ice damages. So the aircraft should not fly in icing conditions.*

L1 ATC COM VOICE ONLY

L2 *As the ATC DATALINK is lost, only the COM voice is available.*

L1 CPNY COM VOICE ONLY

L2 *As the CPNY DATALINK is lost, only the COM voice is available.*

L1 AP : SIDESTICK LOCKING DEVICE NOT AVAIL

L2 *As both sidesticks locking devices are no more powered, the crew shall be informed.*

L1 RUDDER PEDALS LOCKING DEVICE NOT AVAIL

L2 *As the rudder pedals locking device is no more powered, the crew shall be informed.*

L1
- **If jettison ◁ in progress:**
  JETTISON ACTIVE....................OFF
  JETTISON ARM....................OFF

L2 *If the JETTISON function is active or/and armed, it is asked to deselect both the JETTISON ACTIVE and JETTISON ARM pushbuttons.*

L1 CTR TK NOT USABLE

L2 *As the left and right center tank fuel pump (CTR TK L PMP and CTR TK R PMP) are not powered, the center tank is not usable.*
Expect the CG to move forward during the flight. The aircraft handling qualities are considered still acceptable for a safe continuation of the flight.

L1 XBLEED MAN CTL ONLY
DISPLAY CYCLE AS RQRD

Continued on the following page

ELEC DC 1 + DC 2 BUS FAULT (Cont'd)

L2 *As the CAPT OUTER display unit and F/O OUTER display unit are no more available, a reconfiguration shall be performed.*

L1 EFB LAPTOP UNSTOW.. CONSIDER

CKPT DOOR LOCKING DEVICE NOT AVAIL

L2 *As the cockpit door is automatically unlocked in case of loss of power supply, the crew shall be informed.*

L1 ● **In the case of multiple failures affecting fuel consumption:**

FUEL CONSUMPT INCRSD

FOR BETTER RANGE : REDUCE CRZ MACH/ SPD

FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

The FMS predictions are not correct.

SLATS/FLAPS SLOW

L2 *As the SLAT system 2 is failed, the slats are moving with half speed. As the FLAP system 1 is failed, the flaps are moving with half speed.*

L1 LDG DIST AFFECTED

TO VACATE RWY : CONSIDER TOWING

SECONDARY FAILURES

*F/CTL
*FUEL
*WHEEL

Continued on the following page

ELEC DC 1 + DC 2 BUS FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2461W100-00014077.0005001 / 03 JUL 20

3

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

NO L/G RETRACTION
AVOID ICING CONDs
ATC COM VOICE ONLY
CPNY COM VOICE ONLY
CTR TK NOT USABLE

- **In the case of multiple failures affecting fuel consumption:**
  FUEL CONSUMPT INCRSD

APPR & LDG

SLATS/FLAPS SLOW
L/G GRVTY EXTN ONLY
LDG DIST AFFECTED

LIMITATIONS ON PFD

ALL PHASES

AVOID ICING CONDs

L12

DEFERRED PROC

FOR LANDING

> L/G GRVTY EXTN
FOR L/G GRVTY EXTN : MAX SPEED 220 KT
L/G LEVER.. UP
L/G GRVTY (EXTN MAX 90 S).. DOWN

- **WHEN L/G LOCKED DOWN OR AFTER 90 s :**
  L/G LEVER.. DOWN

  Note: After a L/G gravity extension, a maintenance action is required to reset the LGERS (Refer to DSC-32-10-10-20 General).

STATUS

INOP SYS

Continued on the following page

ELEC DC 1 + DC 2 BUS FAULT (Cont'd)

ALL PHASES

PART SPLRs
PRIM 3
SEC 3
FMS 2
RNP AR
ADR 2
HUD ◁✻ (If HUD installed in single configuration)
CAPT+F/O HUDs ◁✻ (If HUD installed in dual configuration)
GPWS
RMP 3
DATALINK
VHF 3
FQMS 2
JETTISON ◁✻
L TK STBY PMP
R TK STBY PMP
CTR TK L+R PMPs
XBLEED AUTO CTL
WING A-ICE
ALL R WINDOWS HEATG
BULK CARGO HEATER
PART DOOR/SLIDE POS
CKPT DOOR LOCK
F/O EFIS CTL
CAPT+F/O OUTER DU
FLT(CABIN) REST SMOKE ◁✻
CAPT OIS
F/O OIS
FWS 2

APPR AND LDG

FLAP SYS 1
SLAT SYS 2
L/G CTL 1+2
AUTO BRK
G BRK ACCU REINFLATE
Y BRK ACCU REINFLATE
N/W+BKUP STEER
ARPT NAV

INFO

AP : SIDESTICK LOCKING DEVICE NOT AVAIL
RUDDER PEDALS LOCKING DEVICE NOT AVAIL

- **In the case of multiple failures affecting fuel consumption:**
  FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION
  The fuel consumption is increased. The FUEL PENALTY on the FMS DATA/STATUS page may be updated.

Continued on the following page

ELEC DC 1 + DC 2 BUS FAULT (Cont'd)

For fuel penalty determination, Refer to PER-IFT-FP Fuel Penalty Tables - Fuel Consumption Increased.

F/O BARO REF : STD ONLY
XBLEED MAN CTL ONLY
NO BRAKED PIVOT TURN
LAND 3 SINGLE ONLY
FOR BETTER RANGE : REDUCE CRZ MACH/ SPD
TO VACATE RWY : CONSIDER TOWING

ELEC DC 2 BUS FAULT

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2461W020-00016745.0001001 / 02 JUL 14

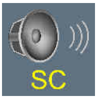
ANNUNCIATIONS

Triggering Conditions:

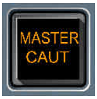
L2 The DC 2 busbar is lost. Therefore, sub-busbar DC SHED/GS 2 busbar is also lost.

Indications:

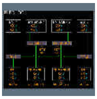
Audio



Master Light

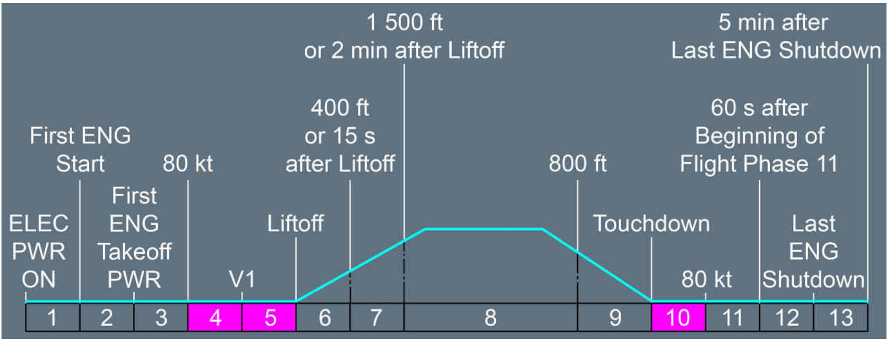

MASTER
CAUT

SD page



ELEC DC SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

Ident.: PRO-ABN-ELEC-2461W020-00020865.0001001 / 02 JUL 14

Note: *If the failure occurs during an RNP AR operation, the ECAM displays the RNP AR CAPABILITY DOWNGRADED subtitle.*

Continued on the following page

ELEC DC 2 BUS FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2461W020-00016748.0002001 / 10 NOV 17

- **During an RNP AR operation:**
  MINIMUM LIMITED TO RNP 0.30

F/O BARO REF : STD ONLY

L2 *F/O EFIS controls are lost and F/O barometric reference is only standard.*

L1 F/O SIDESTICK LOCKING DEVICE NOT AVAIL

L2 *As the F/O sidestick locking device is no more powered, the crew shall be informed.*

L1
- **If jettison ⋖ in progress:**
  JETTISON ACTIVE....................OFF
  JETTISON ARM....................OFF

L2 *If the JETTISON function is active or/and armed, it is asked to deselect both the JETTISON ACTIVE and JETTISON ARM pushbuttons.*

L1
- **If there is fuel in the center tank:**

L2 As the CTR TK L PMP is inoperative, the fuel from the center tank is only usable by ENG 2. To avoid a fuel imbalance, both crossfeed valves must be opened to feed both engines from the center tank, except if a fuel leak is suspected.

L1
  - **If FUEL LEAK SUSPECTED:**
    - ■ **YES**
      FUEL LEAK PROC....................APPLY
    - ■ **NO**
      CROSSFEED A....................ON
      CROSSFEED B....................ON

L2 *The remaining center tank pump is enough to feed both engines.*

L1
- **WHEN CTR TK EMPTY, or after landing:**
  CROSSFEED A....................OFF
  CROSSFEED B....................OFF

OIS ON CTR & DISPLAY CYCLE AS RQRD

L2 *As the F/O OUTER (OF) Display Unit is no more available, a reconfiguration shall be performed*

L1 SLATS SLOW

L2 *As the SLAT system 2 is failed, the slats are moving with half speed.*

Continued on the following page

ELEC DC 2 BUS FAULT (Cont'd)

L1

SECONDARY FAILURES

*FUEL

Ident.: PRO-ABN-ELEC-2461W020-00016749.0001001 / 03 JUL 20

4

LIMITATIONS

LIMITATIONS ON ECAM

APPR & LDG

SLATS SLOW

STATUS

INOP SYS

ALL PHASES

ADR 2
F/O HUD
FQMS 2
JETTISON
R TK STBY PMP
CTR TK L PMP
ALL R WINDOWS HEATG
PART DOOR/SLIDE POS
F/O EFIS CTL
F/O OUTER DU
FLT(CABIN) REST SMOKE
FWS 2
FMC-B

APPR & LDG

SLAT SYS 2
F/O ARPT NAV

INFO

F/O SIDESTICK LOCKING DEVICE NOT AVAIL
F/O BARO REF : STD ONLY
FOR RNP AR : MINIMUM LIMITED TO RNP 0.30
LAND 3 SINGLE ONLY

ELEC DC 2 PART BUS FAULT

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2461W040-00016769.0001001 / 02 JUL 14

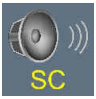
ANNUNCIATIONS

Triggering Conditions:

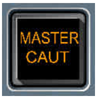
L2 The DC SHED/GS 2 busbar is lost.

Indications:

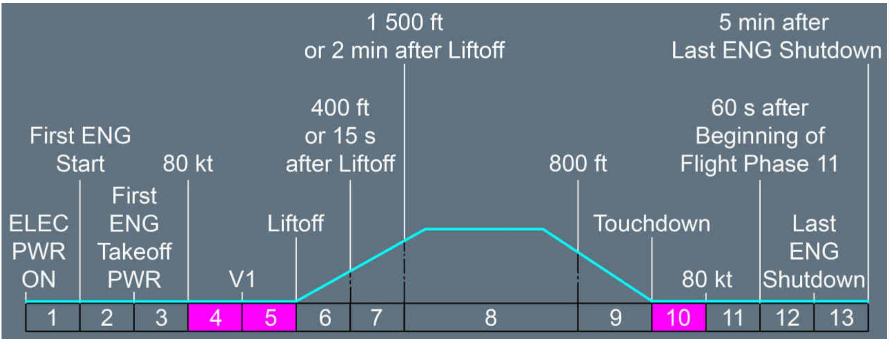
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
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11
12
13

Ident.: PRO-ABN-ELEC-2461W040-00020872.0001001 / 02 JUL 14

Note: *If the failure occurs during an RNP AR operation, the ECAM displays the RNP AR CAPABILITY DOWNGRADED subtitle.*

Continued on the following page

ELEC DC 2 PART BUS FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2461W040-00016771.0002001 / 10 NOV 17

- **During an RNP AR operation:**
  MINIMUM LIMITED TO RNP 0.30

F/O BARO REF : STD ONLY

L2 *F/O EFIS controls are lost and F/O barometric reference is only standard.*

L1
- **If there is fuel in the center tank:**

L2 As the CTR TK L PMP is inoperative, the fuel from the center tank is only usable by ENG 2. To avoid a fuel imbalance, both crossfeed valves must be opened to feed both engines from the center tank, except if a fuel leak is suspected.

L1
  - **If FUEL LEAK SUSPECTED:**
    - **YES**
      FUEL LEAK PROC.. APPLY
    - **NO**
      CROSSFEED A.. ON
      CROSSFEED B.. ON

L2 *The remaining center tank pump is enough to feed both engines.*

L1
- **WHEN CTR TK EMPTY, or after landing:**
  CROSSFEED A.. OFF
  CROSSFEED B.. OFF

OIS ON CTR & DISPLAY CYCLE AS RQRD

L2 *As the F/O OUTER display unit is no more available, a reconfiguration shall be performed.*

L1 EFB LAPTOP UNSTOW.. CONSIDER

SLATS SLOW

L2 *As the SLAT system 2 is failed, the slats are moving with half speed.*

L1

SECONDARY FAILURES

*FUEL

Continued on the following page

ELEC DC 2 PART BUS FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2461W040-00016772.0002001 / 03 JUL 20

5

LIMITATIONS

LIMITATIONS ON ECAM

	APPR & LDG
	SLATs SLOW

STATUS

INOP SYS

ALL PHASES	**APPR & LDG**
ADR 2	SLAT SYS 2
CTR TK L PMP	F/O ARPT NAV
ALL R WINDOWS HEATG	
F/O EFIS CTL	
F/O OUTER DU	
FLT(CABIN) REST SMOKE ◁	
F/O OIS	
FWS 2	
FMC-B	

INFO

F/O BARO REF : STD ONLY
FOR RNP AR : MINIMUM LIMITED TO RNP 0.30
LAND 3 SINGLE ONLY

ELEC DC 2 + DC EMER 1 BUS FAULT

Applicable to: ALL

Ident.: PRO-ABN-ELEC-24CDSMSG1-00021184.0001001 / 02 JUL 14

ANNUNCIATIONS

Triggering Conditions:

L2 Both DC 2 and DC EMER 1 busbars are lost.

As a consequence, FWS 1 and FWS 2 are failed, and one or more CPIOMs of the following CPIOM groups are failed:

- CPIOM group H3, or
- CPIOM group H4, or
- CPIOM group H6, or
- CPIOM group J2, or
- CPIOM group J5, or
- CPIOM group J7.

For more information about the CPIOM groups, *Refer to DSC-42-10 CPIOM*.

L3 The CDS, instead of the FWS, displays the ELEC DC 2 + DC EMER 1 BUS FAULT alert.

Other Inhibition:

L2 The ELEC DC 2 + DC EMER 1 BUS FAULT alert is displayed on ground, if the aircraft speed is less than 50 kt.

Continued on the following page

ELEC DC 2 + DC EMER 1 BUS FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-24CDSMSG1-00021185.0003001 / 26 JUL 17

L2 Due to the fact that FWS 1 and FWS 2 are failed:

- The ECAM will no longer trigger alerts and dispatch messages, audio indicators will no longer sound, and the MASTER lights will no longer come on
- The flight crew can no longer display the normal checklists
- The approach and landing capability is limited to APPR1.

During descent and approach preparation, the flight crew must regularly check the general status of all aircraft systems on:

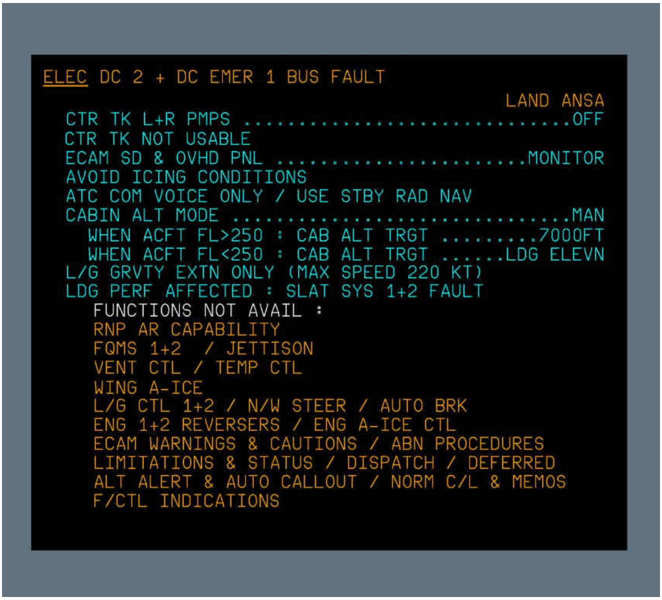
- The overhead panel
- The available SD pages.

The flight crew should use the FCOM on the OIS to display any necessary procedures.

Note: *FWS 1 and FWS 2 are failed. As a result, the FWS is not able to manage the space between the lines of text of the ELEC DC 2 + DC EMER 1 BUS FAULT procedure. Each line of text of the procedure is assigned to an action or information that results from the failure of a specific CPIOM. A line of text appears, only if this line of text is related to the failed CPIOM. The space between two displayed lines of text corresponds to the lines of text that are not displayed, because these lines of text are related to the CPIOMs that are not failed.*
The following illustration illustrates the entire alert display, in the case of the failure of CPIOM group J1 combined with all other CPIOM groups.

Continued on the following page

ELEC DC 2 + DC EMER 1 BUS FAULT (Cont'd)



```
ELEC DC 2 + DC EMER 1 BUS FAULT
                                            LAND ANSA
  CTR TK L+R PMPS .............................OFF
  CTR TK NOT USABLE
  ECAM SD & OVHD PNL ......................MONITOR
  AVOID ICING CONDITIONS
  ATC COM VOICE ONLY / USE STBY RAD NAV
  CABIN ALT MODE ..............................MAN
    WHEN ACFT FL>250 : CAB ALT TRGT .........7000FT
    WHEN ACFT FL<250 : CAB ALT TRGT ......LDG ELEVN
  L/G GRVTY EXTN ONLY (MAX SPEED 220 KT)
  LDG PERF AFFECTED : SLAT SYS 1+2 FAULT
     FUNCTIONS NOT AVAIL :
     RNP AR CAPABILITY
     FQMS 1+2  / JETTISON
     VENT CTL / TEMP CTL
     WING A-ICE
     L/G CTL 1+2 / N/W STEER / AUTO BRK
     ENG 1+2 REVERSERS / ENG A-ICE CTL
     ECAM WARNINGS & CAUTIONS / ABN PROCEDURES
     LIMITATIONS & STATUS / DISPATCH / DEFERRED
     ALT ALERT & AUTO CALLOUT / NORM C/L & MEMOS
     F/CTL INDICATIONS
```

Continued on the following page

ELEC DC 2 + DC EMER 1 BUS FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-24CDSMSG1-00019907.0006001 / 26 JUL 17

- **If CPIOM (H31 or H33) and (H32 or H34) are failed:**

LAND ANSA

CTR TK L+R PMPS...OFF

CTR TK NOT USABLE

L2 *Expect the CG to move forward during the flight. The aircraft handling qualities are considered still acceptable for a safe continuation of the flight.*

L1 ECAM SD & OVHD PNL...MONITOR

L2 *The SD pages are no longer available for the systems that the failed CPIOM group hosts. In addition, the failure of the CPIOM group can affect the information displayed on the SD pages of other systems.*
Regularly check the overhead panel for local warnings, and the SD pages for system checks.

L1
- **If CPIOMs (H43 and H44) are failed:**

AVOID ICING CONDITIONS

L2 *Depending on CPIOM failures, the engine anti-ice or the wing anti-ice are failed. Therefore, avoid icing conditions.*

L1
- **If CPIOM J51 is failed:**

ATC COM VOICE ONLY / USE STBY RAD NAV

L2 *All ATC datalink applications (ADS, CPDLC, digital ATIS, etc.) are failed.*

L1
- **If CPIOMs H41 and H42 is failed:**

CABIN ALT MODE...MAN

L2 *The automatic control mode of the cabin pressurization system is failed.*

L1 WHEN ACFT FL>250 : CAB ALT TRGT...7000FT
WHEN ACFT FL<250 : CAB ALT TRGT...LDG ELEVN

- **If CPIOMs (H61 or H63) and (H62 or H64) are failed:**

L/G GRVTY EXTN ONLY (MAX SPEED 220 KT)

L2 *The following systems and functions are failed:*
- *Autobrake*
- *Steering*
- *Normal landing gear extension/retraction.*

Continued on the following page

ELEC DC 2 + DC EMER 1 BUS FAULT (Cont'd)

As a result, the landing gear extension is available by gravity only. Use the L/G GRVTY EXTN sw to extend the landing gear by gravity. Refer to deferred proc.

L1 ECAM SD & OVHD PNL....................MONITOR

L2 *The SD pages are no longer available for the systems that the failed CPIOM group hosts. In addition, the failure of the CPIOM group can affect the information displayed on the SD pages of other systems.*
Regularly check the overhead panel for local warnings, and the SD pages for system checks.

L1 LDG PERF AFFECTED : SLAT SYS 1+2 FAULT

L2 *As both slat control units are failed, landing performance will be affected. For more information on F/CTL SLAT SYS 1+2 FAULT, Refer to procedure.*

L1 FUNCTIONS NOT AVAIL :
RNP AR CAPABILITY

- **If CPIOMs (H31 or H33) and (H32 or H34) are failed:**
  FQMS 1+2 / JETTISON

- **If CPIOMs (H41 and H42) are failed:**
  VENT CTL / TEMP CTL

  L2 *Temperature regulation in the cabin is degraded. The temperature in some zones can be abnormally low.*

L1
- **If CPIOMs (H43 and H44) are failed:**
  WING A-ICE

  L2 *Wing anti-ice is failed. Therefore, avoid icing conditions.*

L1
- **If CPIOMs group (H61 or H63) and (H62 or H64) are failed:**
  L/G CTL 1+2 / N/W STEER / AUTO BRK

  L2 *The emergency braking mode is active, and the landing distance is increased. Refer to the performance module.*
  For landing, use the rudder, the differential braking, or both the rudder and the differential braking to steer the aircraft on the runway, because the nose landing gear turns freely.
  After landing, the aircraft must be towed off the runway.

L1
- **If CPIOMs J21 and J23 (or J22 and J24) are failed:**
  ENG 1(2) REVERSER / ENG A-ICE CTL

- **If CPIOMs (J21 and J23) and (J22 and J24) are failed:**
  ENG 1+2 REVERSERS / ENG A-ICE CTL

Continued on the following page

ELEC DC 2 + DC EMER 1 BUS FAULT (Cont'd)

ECAM WARNINGS & CAUTIONS / ABN PROCEDURES
LIMITATIONS & STATUS / DISPATCH / DEFERRED
ALT ALERT & AUTO CALLOUT / NORM C/L & MEMOS

- **If CPIOMs (J71 and J72) are failed:**
  F/CTL INDICATIONS

Ident.: PRO-ABN-ELEC-24CDSMSG1-00019908.0001001 / 02 JUL 14

L12

DEFERRED PROC

FOR LANDING

> L/G GRVTY EXTN

FOR L/G GRVTY EXTN : MAX SPEED 220 KT

- **FOR L/G EXTN:**
  L/G LEVER....................UP
  L/G GRVTY (EXTN MAX 90 S)....................DOWN
  - **WHEN L/G LOCKED DOWN OR AFTER 90 s :**
    L/G LEVER....................DOWN

    Note: After a L/G gravity extension, a maintenance action is required to reset the LGERS (Refer to DSC-32-10-10-20 General).

ELEC DC EMER 1 BUS FAULT

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2464W010-00014082.0001001 / 02 JUL 14

ANNUNCIATIONS

Triggering Conditions:

L2 The DC EMER 1 busbar is lost.

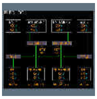
Indications:

Audio

Master Light

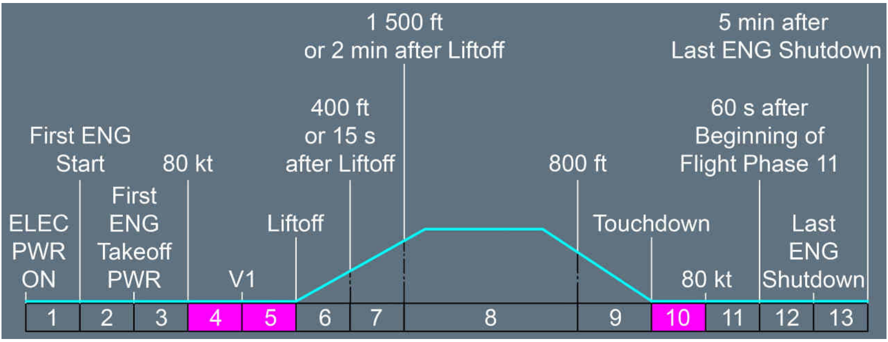
MASTER
CAUT

SD page



ELEC DC SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

Ident.: PRO-ABN-ELEC-2464W010-00020877.0001001 / 02 JUL 14

Note: *If the failure occurs during an RNP AR operation, the ECAM displays the RNP AR CAPABILITY DOWNGRADED subtitle.*

Continued on the following page

ELEC DC EMER 1 BUS FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2464W010-00014084.0003001 / 03 JAN 19

- **During an RNP AR operation:**

  MINIMUM LIMITED TO RNP 0.30

CAPT BARO REF : STD ONLY

L2 *CAPT EFIS controls are lost and CAPT barometric reference is only standard.*

L1
- **In the case of multiple failures affecting fuel consumption:**

  FUEL CONSUMPT INCRSD

  FOR BETTER RANGE : REDUCE CRZ MACH/ SPD

  FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

  The FMS predictions are not correct.

SLATS SLOW

L2 *As the SLAT system 1 is failed, the slats are moving with half speed.*

L1

SECONDARY FAILURES

*F/CTL

Continued on the following page

ELEC DC EMER 1 BUS FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2464W010-00014085.0003001 / 03 JAN 19

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES	APPR & LDG
● **In the case of multiple failures affecting fuel consumption:** FUEL CONSUMPT INCRSD	SLATS SLOW

STATUS

INOP SYS

ALL PHASES	APPR AND LDG
PRIM 1 ADR 1 FQMS 1 CROSSFEED VLV A ALL L WINDOWS HEATG CAPT EFIS CTL FWS 1 FMC-A	SLAT SYS 1

INFO

- **In the case of multiple failures affecting fuel consumption:**
  FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION
  The fuel consumption is increased. The FUEL PENALTY on the FMS DATA/STATUS page may be updated.
  For fuel penalty determination, Refer to PER-IFT-FP Fuel Penalty Tables - Fuel Consumption Increased.

CAPT BARO REF : STD ONLY
FOR RNP AR : MINIMUM LIMITED TO RNP 0.30
LAND 3 SINGLE ONLY
FOR BETTER RANGE : REDUCE CRZ MACH/ SPD

ELEC DC EMER 1 BUS ON BAT
DC 1 + DC 2 BUS FAULT

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2434W100-00021181.0001001 / 03 DEC 15

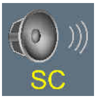
ANNUNCIATIONS

Triggering Conditions:

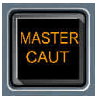
L2 The DC EMER 1 is supplied by BAT EMER 1 and, DC 1 and DC 2 busbars are lost.

Indications:

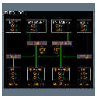
Audio



Master Light

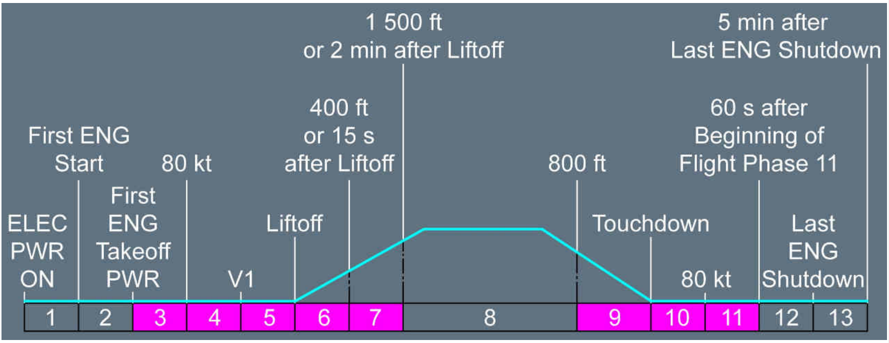

MASTER
CAUT

SD page



ELEC DC SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

Continued on the following page

ELEC DC EMER 1 BUS ON BAT **(Cont'd)**
DC 1 + DC 2 BUS FAULT **(Cont'd)**

Ident.: PRO-ABN-ELEC-2434W100-00021182.0002001 / 24 JUL 17

LAND ANSA

MAX FL : 340
MANEUVER WITH CARE
CTR TK NOT USABLE

L2 *Expect the CG to move forward during the flight. The aircraft handling qualities are considered still acceptable for a safe continuation of the flight.*

L1 FMS SWTG.. BOTH ON 1

- **WHEN BAT EMER 1 DEPLETED:**

  FUNCTIONS NOT AVAIL:

  STABILIZER & MOST SPLRs (5 PAIRS)

  SLAT SYS 1+2

  ENG 1 REVERSER

  FMS 1+2

L/G GRVTY EXTN ONLY
FOR LDG : FLAP LVR 3
LDG PERF AFFECTED
LDG STRATEGY..DETERMINE

Continued on the following page

ELEC DC EMER 1 BUS ON BAT **(Cont'd)**
DC 1 + DC 2 BUS FAULT **(Cont'd)**

Ident.: PRO-ABN-ELEC-2434W100-00021183.0002001 / 07 JUL 16

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES	APPR & LDG
MAX FL: 340 MANEUVER WITH CARE CTR TK NOT USABLE	L/G GRVTY EXTN ONLY LDG PERF AFFECTED FOR LDG : FLAP LVR 3

LIMITATIONS ON PFD

ALL PHASES	
MAX FL : 340 MANEUVER WITH CARE	

MEMOPAGE

MEMO ON ECAM

	LAND ANSA

ELEC DC EMER 1 PART BUS FAULT

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2464W030-00014234.0001001 / 02 JUL 14

ANNUNCIATIONS

Triggering Conditions:

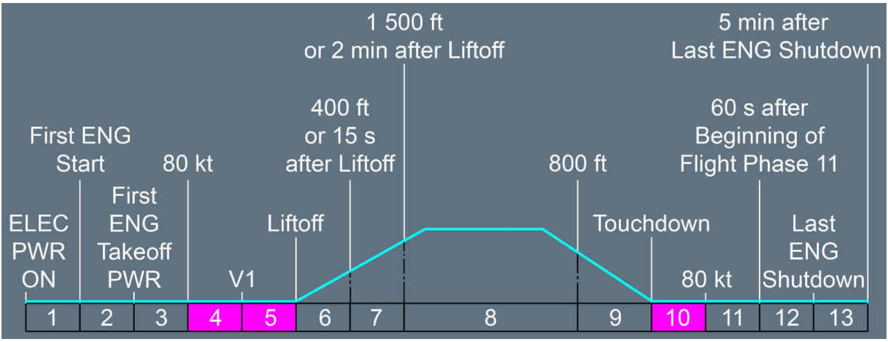
L2 The DC EMER 1 busbar is partly lost.

Indications:

Audio
SC

Master Light
MASTER CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

Ident.: PRO-ABN-ELEC-2464W030-00020880.0001001 / 02 JUL 14

Note: *If the failure occurs during an RNP AR operation, the ECAM displays the RNP AR CAPABILITY DOWNGRADED subtitle.*

Continued on the following page

ELEC DC EMER 1 PART BUS FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2464W030-00014236.0001001 / 02 OCT 14

- **During an RNP AR operation:**
  MINIMUM LIMITED TO RNP 0.30

SLATS SLOW

L2 *As the SLAT system 1 is failed, the slats are moving with half speed.*

Ident.: PRO-ABN-ELEC-2464W030-00014237.0001001 / 02 JUL 14

LIMITATIONS

LIMITATIONS ON ECAM

	APPR & LDG
	SLATS SLOW

STATUS

INOP SYS

ALL PHASES	APPR AND LDG
FQMS 1 ALL L WINDOWS HEATG FMC-A	SLAT SYS 1

INFO

FOR RNP AR : MINIMUM LIMITED TO RNP 0.30
LAND 3 SINGLE ONLY

ELEC DC EMER 1 + DC EMER 2 BUS FAULT

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2464W100-00014238.0001001 / 03 DEC 15

ANNUNCIATIONS

Triggering Conditions:

L2 The DC EMER 1 and DC EMER 2 busbars are lost.

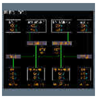
Indications:

Audio

Master Light

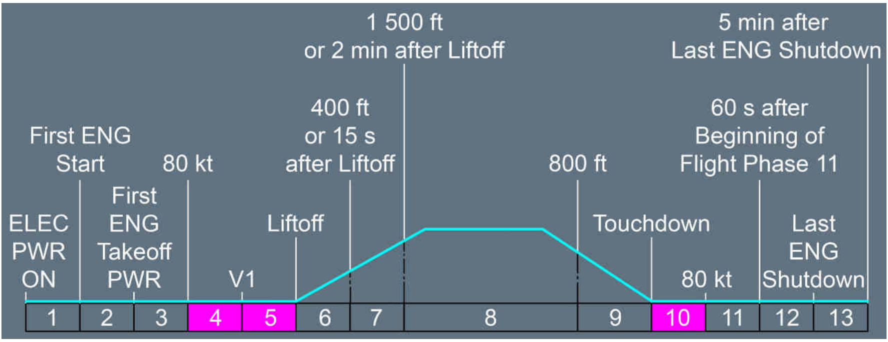
MASTER
CAUT

SD page



ELEC DC SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
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4
5
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10
11
12
13

Ident.: PRO-ABN-ELEC-2464W100-00020881.0001001 / 05 NOV 15

Note: *If the failure occurs during an RNP AR operation, the ECAM displays the RNP AR CAPABILITY LOST subtitle.*

L2 If the APU is running when this failure occurs, the APU remains operative. If the APU is not required, the flight crew shuts down the APU. When shut down, the APU cannot start again. If the APU is not running when this failure occurs, the flight crew cannot start the APU.

Continued on the following page

ELEC DC EMER 1 + DC EMER 2 BUS FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2464W100-00014240.0006001 / 03 JAN 19

- **During an RNP AR operation:**
  MINIMUM LIMITED TO RNP 0.30

ALT SINGLE SOURCE ON PFDs
CAPT BARO REF : STD ONLY

L2 *CAPT EFIS control is lost, so the CAPT barometric reference is only standard. F/O EFIS control remains operative, so the CAPT ND can be managed via the F/O EFIS CPwhen the flight crew sets the FMS selector to BOTH ON 2.*

L1 AVOID ICING CONDs
MOST CTLs & LTs INOP ON CKPT PNLs

- **LIVESTOCK IN FWD CARGO ?**
  - **NO**
    CARGO FWD ISOL VALVES ⧼✻ .... OFF
- **LIVESTOCK IN AFT/BULK CARGO ?**
  - **NO**
    CARGO AFT ISOL VALVES ⧼✻ .... OFF
    CARGO BULK ISOL VALVES........ OFF

CAB PRESS MAN MODES : DO NOT USE
EFB LAPTOP UNSTOW........ CONSIDER

- **In the case of multiple failures affecting fuel consumption:**
  FUEL CONSUMPT INCRSD
  FOR BETTER RANGE : REDUCE CRZ MACH/ SPD
  FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION
  The FMS predictions are not correct.

SLATS/FLAPS SLOW

L2 *As the SLAT system 1 is failed, the slats are moving with half speed. As the FLAP system 2 is failed, the flaps are moving with half speed.*

L1 GA THR : TOGA ONLY

SECONDARY FAILURES

*F/CTL

Continued on the following page

ELEC DC EMER 1 + DC EMER 2 BUS FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2464W100-00014241.0006001 / 03 JAN 19

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

AVOID ICING CONDs
MAN PRESS: DO NOT USE

APPR & LDG

GA THR : TOGA ONLY
SLATS/FLAPS SLOW

LIMITATIONS ON PFD

ALL PHASES

AVOID ICING CONDs

STATUS

INOP SYS

ALL PHASES

PRIM 1+2
ADR 1+3
RMP 2
VHF 2
APU (If the APU is off)
CROSSFEED VLV A+B
WING A-ICE
ENG 1 A-ICE
ENG 2 A-ICE
ALL L WINDOWS HEATG
FWD CARGO TEMP REGUL
BULK CARGO HEATER
APU+MLG BAY FIRE DET
ALL SMK DET
F/O OIS
FMC-A

APPR & LDG

FLAP SYS 2
SLAT SYS 1
BTV
ROW/ROP
ALTN BRK
AUTOLAND
GA SOFT

INFO

ALT SINGLE SOURCE ON PFDs

Continued on the following page

ELEC DC EMER 1 + DC EMER 2 BUS FAULT (Cont'd)

- **In the case of multiple failures affecting fuel consumption:**

  FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

  The fuel consumption is increased. The FUEL PENALTY on the FMS DATA/STATUS page may be updated.
  For fuel penalty determination, Refer to PER-IFT-FP Fuel Penalty Tables - Fuel Consumption Increased.

CAPT BARO REF : STD ONLY
FOR RNP AR : MINIMUM LIMITED TO RNP 0.30
APPR 1 ONLY
FOR BETTER RANGE : REDUCE CRZ MACH/ SPD

- **If the APU is running:**

  NO APU RESTART

ELEC DC EMER 2 BUS FAULT

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2464W020-00016807.0001001 / 02 JUL 14

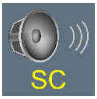
ANNUNCIATIONS

Triggering Conditions:

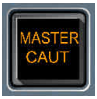
L2 The DC EMER 2 busbar is lost.

Indications:

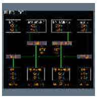
Audio



Master Light

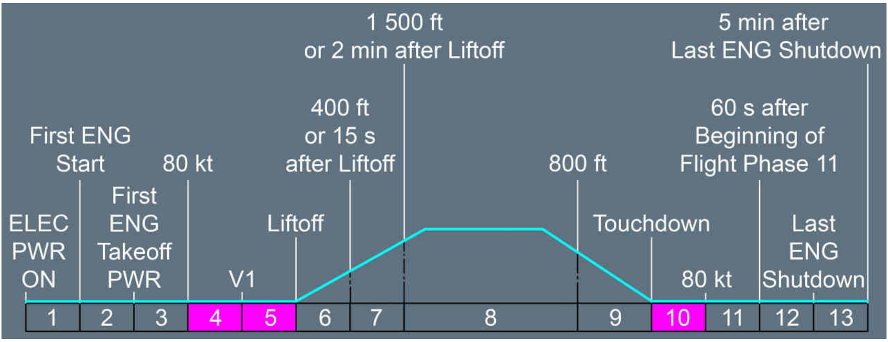

MASTER
CAUT

SD page



ELEC DC SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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3
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11
12
13

Ident.: PRO-ABN-ELEC-2464W020-00020879.0001001 / 05 NOV 15

Note: *If the failure occurs during an RNP AR operation, the ECAM displays the RNP AR CAPABILITY DOWNGRADED subtitle.*

L2 If the APU is running when this failure occurs, the APU remains operative. If the APU is not required, the flight crew shuts down the APU. When shut down, the APU cannot start again. If the APU is not running when this failure occurs, the flight crew cannot start the APU.

Continued on the following page

ELEC DC EMER 2 BUS FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2464W020-00016809.0003001 / 03 JAN 19

- **During an RNP AR operation:**

  MINIMUM LIMITED TO RNP 0.30

OIS ON CTR AS RQRD
EFB LAPTOP UNSTOW.. CONSIDER
CAB PRESS MAN MODES : DO NOT USE

- **In the case of multiple failures affecting fuel consumption:**

  FUEL CONSUMPT INCRSD

  FOR BETTER RANGE : REDUCE CRZ MACH/ SPD

  FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

  The FMS predictions are not correct.

FLAPS SLOW

L2 *As the FLAP system 2 is failed, the flaps are moving with half speed.*

L1

SECONDARY FAILURES

*F/CTL

Continued on the following page

ELEC DC EMER 2 BUS FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2464W020-00016810.0004001 / 03 JAN 19

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES	APPR & LDG
MAN PRESS : DO NOT USE ● **In the case of multiple failures affecting fuel consumption:** FUEL CONSUMPT INCRSD	FLAPS SLOW

STATUS

INOP SYS

ALL PHASES	APPR AND LDG
PRIM 2 ADR 3 RMP 2 APU (If the APU is off) CAB PRESS MAN CTL CROSSFEED VLV B F/O OIS	FLAP SYS 2

INFO

- **In the case of multiple failures affecting fuel consumption:**
  FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION
  The fuel consumption is increased. The FUEL PENALTY on the FMS DATA/STATUS page may be updated.
  For fuel penalty determination, Refer to PER-IFT-FP Fuel Penalty Tables - Fuel Consumption Increased.

FOR RNP AR : MINIMUM LIMITED to RNP 0.30
LAND 3 SINGLE ONLY
FOR BETTER RANGE : REDUCE CRZ MACH/ SPD

- **If the APU is running:**
  NO APU RESTART

ELEC DC EMER 2 PART BUS FAULT

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2464W040-00016812.0001001 / 02 JUL 14

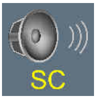
ANNUNCIATIONS

Triggering Conditions:

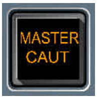
L2 The DC EMER 2 busbar is partly lost.

Indications:

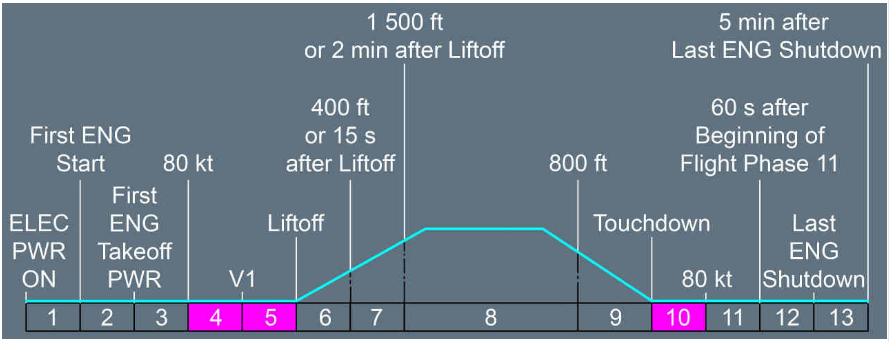
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft or 2 min after Liftoff
5 min after Last ENG Shutdown
400 ft or 15 s after Liftoff
60 s after Beginning of Flight Phase 11
First ENG Start
80 kt
800 ft
First ENG Takeoff PWR
ELEC PWR ON
Liftoff
Touchdown
Last ENG Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

Ident.: PRO-ABN-ELEC-2464W040-00016814.0001001 / 02 JUL 14

OIS ON CTR AS RQRD

EFB LAPTOP UNSTOW.. CONSIDER

FLAPS SLOW

L2 *As the FLAP system 2 is failed, the flaps are moving with half speed.*

Continued on the following page

ELEC DC EMER 2 PART BUS FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2464W040-00016815.0004001 / 03 JAN 19

LIMITATIONS

LIMITATIONS ON ECAM

APPR & LDG

FLAPS SLOW

STATUS

INOP SYS

ALL PHASES	APPR AND LDG
APU (If the APU MASTER SW pb-sw is switched off) F/O OIS	FLAP SYS 2

INFO

LAND 3 SINGLE ONLY

- **If the APU is running:**
  NO APU RESTART

ELEC DRIVE 1A(1B)(2B)(2A) DISCONNECTED

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2422W090-00020656.0001001 / 28 MAY 14

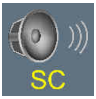
ANNUNCIATIONS

Triggering Conditions:

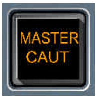
L2 The engine-driven generator is disconnected.
It could come from either manual disconnect or thermal disconnect or shear shaft calculation.

Indications:

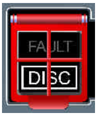
Audio



Master Light


MASTER
CAUT

Local Light

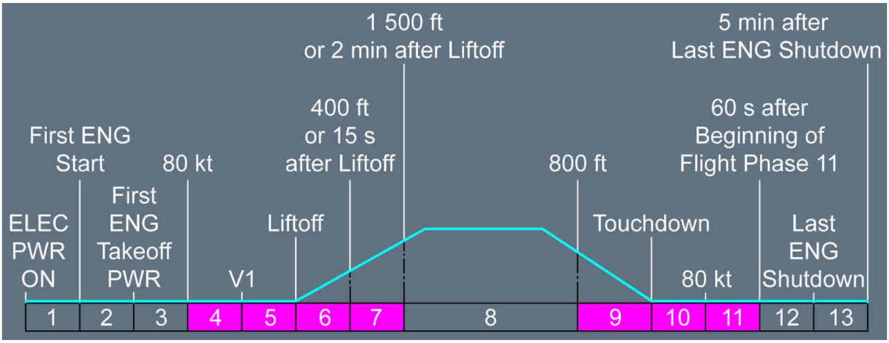


DRIVE 1A(2A)(2B)(1B) pb

SD page

ELEC AC SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Ident.: PRO-ABN-ELEC-2422W090-00020659.0001001 / 28 MAY 14

GEN 1A(1B)(2B)(2A) .... OFF

Continued on the following page

ELEC DRIVE 1A(1B)(2B)(2A) DISCONNECTED (Cont'd)

Ident.: PRO-ABN-ELEC-2422W090-00020662.0001001 / 28 MAY 14

STATUS

INOP SYS

ALL PHASES

GEN 1A(1B)(2B)(2A)

ELEC DRIVE 1A(1B)(2B)(2A) DISC SELECTED

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2422W640-00021590.0001001 / 04 SEP 14

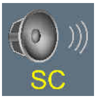
ANNUNCIATIONS

Triggering Conditions:

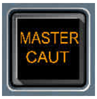
L2 The VFG disconnection was done through DRIVE pb while associated engine is not running.

Indications:

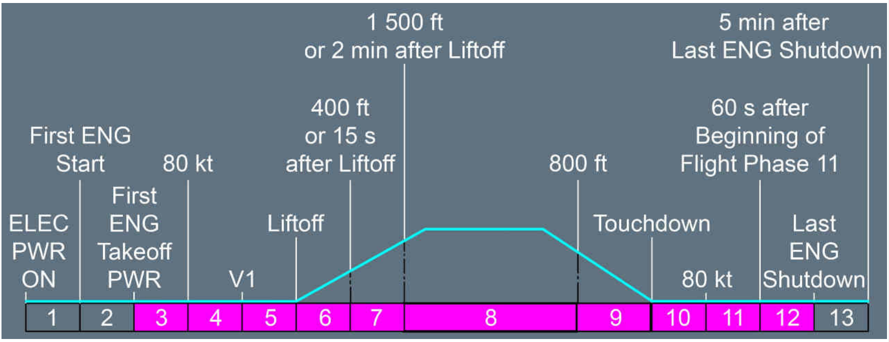
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
V1
Touchdown
80 kt
Last
ENG
Shutdown
1
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Ident.: PRO-ABN-ELEC-2422W640-00021591.0001001 / 04 SEP 14

AT ENG 1(2) START : EXPECT DRIVE 1A(1B)(2B)(2A) DISC

ELEC DRIVE 1A(1B)(2B)(2A) MECH FAULT

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2422W130-00014090.0001001 / 02 OCT 14

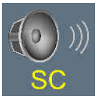
ANNUNCIATIONS

Triggering Conditions:

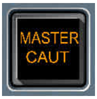
L2 A mechanical failure occurs on the VFG of the applicable engine generator.
It could come from either low oil pressure or Permanent Magnet Generator (PMG) loss. For these two conditions, the disconnection of the VFG will be requested.

Indications:

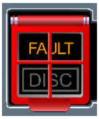
Audio



Master Light


MASTER
CAUT

Local Light

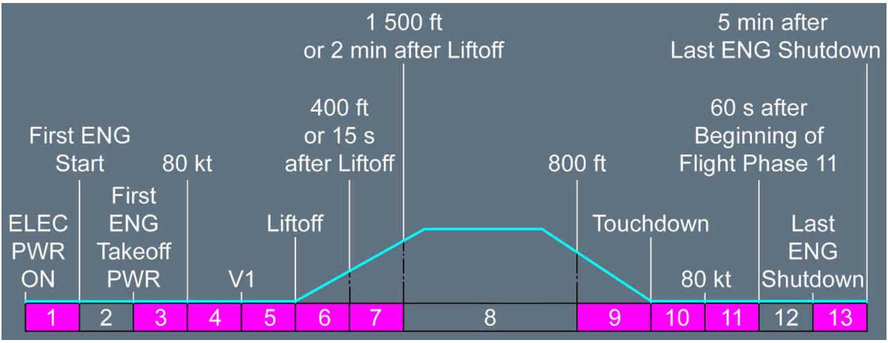


DRIVE 1A(2A)(2B)(1B) pb

SD page

ELEC AC SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-ELEC-2422W130-00014092.0001001 / 28 MAY 14

DRIVE 1A(1B)(2B)(2A).. DISC
GEN 1A(1B)(2B)(2A).. OFF

Continued on the following page

ELEC DRIVE 1A(1B)(2B)(2A) MECH FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2422W130-00014093.0001001 / 28 MAY 14

STATUS

INOP SYS

ALL PHASES

GEN 1A(1B)(2B)(2A)

ELEC DRIVE 1A(1B)(2B)(2A) OIL OVHT

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2422W170-00013778.0001001 / 02 JUL 14

ANNUNCIATIONS

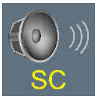
Triggering Conditions:

L2 The temperature, in the oil system that drives the applicable generator, is too high.
L3 The temperature in the oil system is higher than a specific threshold (- 4 / + 26 °C).

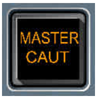
Indications:

L2

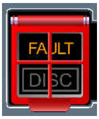
Audio



Master Light


MASTER
CAUT

Local Light

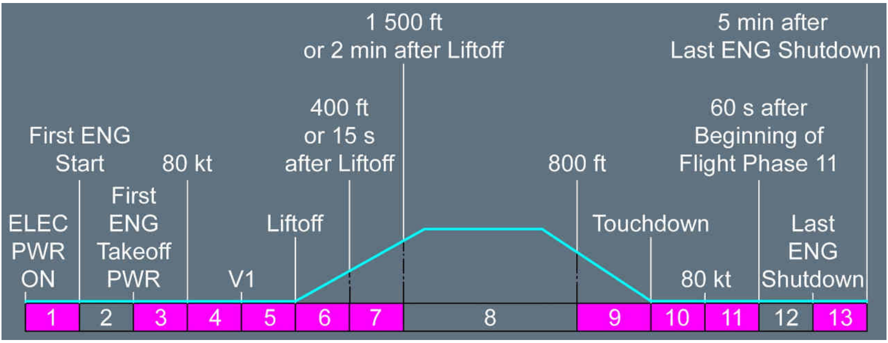


DRIVE 1A(2A)(2B)(1B) pb

SD page

ELEC AC SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-ELEC-2422W170-00013780.0001001 / 28 MAY 14

DRIVE 1A(1B)(2B)(2A)...DISC
GEN 1A(1B)(2B)(2A)...OFF

Continued on the following page

ELEC DRIVE 1A(1B)(2B)(2A) OIL OVHT (Cont'd)

Ident.: PRO-ABN-ELEC-2422W170-00013781.0001001 / 28 MAY 14

STATUS

INOP SYS

ALL PHASES

GEN 1A(1B)(2B)(2A)

ELEC EMER CONFIG

Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB

Ident.: PRO-ABN-ELEC-2450W200-00014819.0001001 / 02 JUL 14

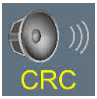
ANNUNCIATIONS

Triggering Conditions:

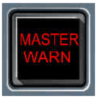
L2 The four busbars of the AC 230 V network are lost.

Indications:

Audio



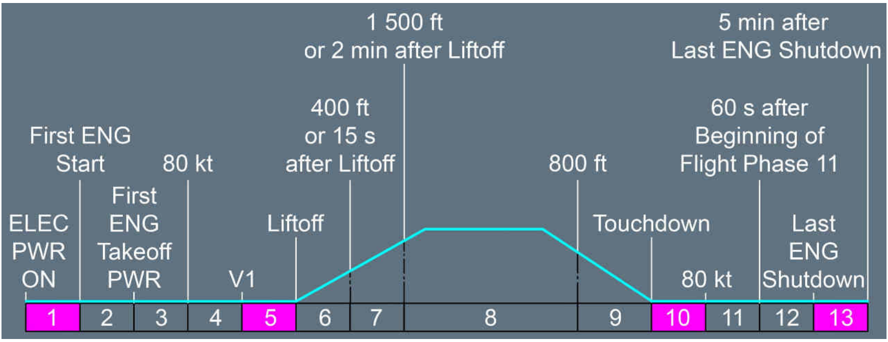
Master Light


MASTER
WARN

SD page

ELEC AC SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Continued on the following page

ELEC EMER CONFIG (Cont'd)

Ident.: PRO-ABN-ELEC-2450W200-00014818.0006001 / 03 JAN 19

6

LAND ASAP

RAT MAN ON..PRESS

L2 *Confirms the automatic deployment of the RAT. If the automatic deployment fails, this will manually extend the RAT.*
The deployment of the RAT takes between 2 s and 6 s depending on the aircraft speed.

L1 MIN RAT SPEED: 140 KT

- **If FUEL L(R) TK MAIN+STBY PMPs FAULT alert is activated:**
  CROSSFEED A..ON
  CROSSFEED B..ON

- **If the flight crew did not activate the FIRE SMOKE/FUMES alert:**

L2 The block of actions described below is not displayed in the case of the activation of the FIRE SMOKE / FUMES procedure.

L1 ALL GENs ....OFF THEN ON

L2 *If one (or more) generator(s) is (are) recovered, the emergency generator continues to supply the emergency network.*

L1
  - **RESET SUCCESSFUL ?**
    - **NO**
      BUS TIE..OFF

L2 *The segregation of the AC busbars (AC 1A, AC 1B, AC 2B, and AC 2A) from each others, and the DC 1 busbar from the DC 2 busbar limits the automatic electrical reconfiguration, and increase the chance of recovery.*

L1 ALL GENs ....OFF THEN ON
BUS TIE ....AUTO

APU ....CONSIDER

L2 *When available, the APU can supply the AC side 1 (AC 1A and AC 1B) busbars in 230 V.*

L1 AP/FD AVAIL (SIDESTICKS NOT LOCKED)

L2 *Even if both sidesticks locking device are no more powered, the crew shall be informed that AP/FD remain available.*

L1 RUDDER PEDALS LOCKING DEVICE NOT AVAIL

L2 *As the rudder pedals locking device is no more powered, the crew shall be informed.*

Continued on the following page

ELEC EMER CONFIG (Cont'd)

L1 [MFD SURV] WXR....................SYS 2

L2 *SURV panel on the pedestal is lost, the crew shall use the MFD SURV page.*
Even if WXR 2 is lost, flight crew shall switch to SYS 2 to get the AESU 2 master and so the XPDR & TCAS functions fully operative.

L1 [MFD SURV] XPDR & TCAS....................SYS 2

L2 *SURV panel on the pedestal is lost, the crew shall use the MFD SURV page.*

L1 FMS SWTG....................BOTH ON 1
AIR FLOW....................HI
VENT AVNCS EXTRACT....................OVRD
AVOID ICING CONDs

- **If L/G are already locked down when the alert is triggered:**

  NO L/G RETRACTION

- **If L/G not locked down when the alert is triggered:**

  L/G GRVTY EXTN ONLY

F/O BARO REF....................STD ONLY
CTR TK NOT USABLE

L2 *As the left and right center tank fuel pump (CTR TK L PMP and CTR TK R PMP) are not powered, the center tank is not usable.*
Expect the CG to move forward during the flight. The aircraft handling qualities are considered still acceptable for a safe continuation of the flight.

L1
- **If jettison ◁ in progress:**

  JETTISON ACTIVE....................OFF
  JETTISON ARM....................OFF

L2 *As the JETTISON function is active or/and armed, it is asked to deselect both the JETTISON ACTIVE and JETTISON ARM pushbuttons.*

L1 ATC COM VOICE ONLY

L2 *As the ATC DATALINK is lost, only the COM voice is available*

L1 CPNY COM VOICE ONLY

L2 *As the CPNY DATALINK is lost, only the COM voice is available*

L1 XBLEED MAN CTL ONLY
DISPLAY CYCLE AS RQRD

L2 *As the F/O OUTER display unit is no more available, a reconfiguration shall be performed.*

L1 EFB LAPTOP UNSTOW....................CONSIDER

Continued on the following page

ELEC EMER CONFIG (Cont'd)

FUEL CONSUMPT INCRSD
FOR BETTER RANGE : REDUCE CRZ MACH/SPD
FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

The FMS predictions are not correct.

SLATS SLOW (EXTN TIME 4 MIN)

L2 *As the SLAT system 2 is failed and SLAT system 1 reduces its consumption (emergency condition) slats are moving with slow speed.*

L1 FLAPS SLOW

L2 *As the FLAP system 1 is failed, flaps are moving with half speed.*

L1 LDG DIST AFFECTED
TO VACATE RWY : CONSIDER TOWING

L12

ASSOCIATED PROCEDURES

F/CTL ALTN LAW (PROT LOST)

The flight control laws revert to alternate. AP, FD and A/THR remain available.
Refer to procedure.

SECONDARY FAILURES

*F/CTL
*FUEL
*WHEEL

Continued on the following page

ELEC EMER CONFIG (Cont'd)

Ident.: PRO-ABN-ELEC-2450W200-00014825.0006001 / 03 JUL 20

7

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES	APPR & LDG
MAX SPEED : 310 KT NO L/G RETRACTION AVOID ICING CONDs ATC COM VOICE ONLY CPNY COM VOICE ONLY CTR TK NOT USABLE ● **In the case of multiple failures affecting fuel consumption:** FUEL CONSUMPT INCRSD	MIN RAT SPD : 140 KT SLATS/FLAPS SLOW L/G GRVTY EXTN ONLY LDG DIST AFFECTED

LIMITATIONS ON PFD

ALL PHASES	
MAX SPEED : 310 KT AVOID ICING CONDs MIN RAT SPD : 140 KT	

L12

DEFERRED PROC

FOR LANDING

> L/G GRVTY EXTN

PACK 1+2..OFF

FOR L/G GRVTY EXTN : MAX SPEED 220 KT

L/G LEVER..UP

L/G GRVTY (EXTN MAX 90 S)..DOWN

● **WHEN L/G LOCKED DOWN OR AFTER 90 s :**

L/G LEVER..DOWN

Note: *After a L/G gravity extension, a maintenance action is required to reset the LGERS (Refer to DSC-32-10-10-20 General).*

Continued on the following page

ELEC EMER CONFIG (Cont'd)

STATUS

INOP SYS

ALL PHASES

F/CTL PROT
PART SPLRs
PRIM 3
SEC 3
FMS 2
RNP AR
ADR 2
GNSS 2
CAPT+F/O HUDs ◁
XPDR 1
WXR 1+2
TCAS 1
TAWS
ADS-B TRAFFIC 1 ◁
ADS-B RPTG 1
HF 1+2 (If two HFs installed)
HF (If one HF installed)
RMP 3
DATALINK
VHF 3
SATCOM
JETTISON ◁
L TK STBY PMP
R TK STBY PMP
CTR TK L+R PMPs
WING A-ICE
ALL R WINDOWS HEATG
VENT AVNCS EXTRACT
VENT AVNCS BLOWING
CAB FANS
FLT(CABIN) REST SMOKE ◁
CAPT OIS
AP/FD TCAS MODE (If XPDR/TCAS 1 selected)

APPR & LDG

FLAP SYS 1
SLAT SYS 2
AUTO BRK
G BRK ACCU REINFLATE
Y BRK ACCU REINFLATE
N/W+BKUP STEER
ENG 1+2 REVERSERS
RA SYS B+C
AUTOLAND
LS 2
ARPT NAV
ROW/ROP

INFO

ALTN LAW : PROT LOST

Continued on the following page

ELEC EMER CONFIG (Cont'd)

- **In the case of multiple failures affecting fuel consumption:**
  FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION
  The fuel consumption is increased. The FUEL PENALTY on the FMS DATA/STATUS page may be updated.
  For fuel penalty determination, Refer to PER-IFT-FP Fuel Penalty Tables - Fuel Consumption Increased.

F/O BARO REF : STD ONLY
XBLEED MAN CTL ONLY
APPR 1 ONLY
AP/FD AVAIL (SIDESTICKS NOT LOCKED)
RUDDER PEDALS LOCKING DEVICE NOT AVAIL
NO BRAKED PIVOT TURN
TO VACATE RWY : CONSIDER TOWING
FOR BETTER RANGE : REDUCE CRZ MACH/SPD

MEMOPAGE

MEMO ON ECAM

LAND ASAP

ELEC EMER CONFIG

Applicable to: ET-AVC, ET-AVD, ET-AVE, ET-AWM

Ident.: PRO-ABN-ELEC-2450W200-00014819.0001001 / 02 JUL 14

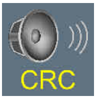
ANNUNCIATIONS

Triggering Conditions:

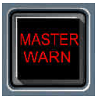
L2 The four busbars of the AC 230 V network are lost.

Indications:

Audio



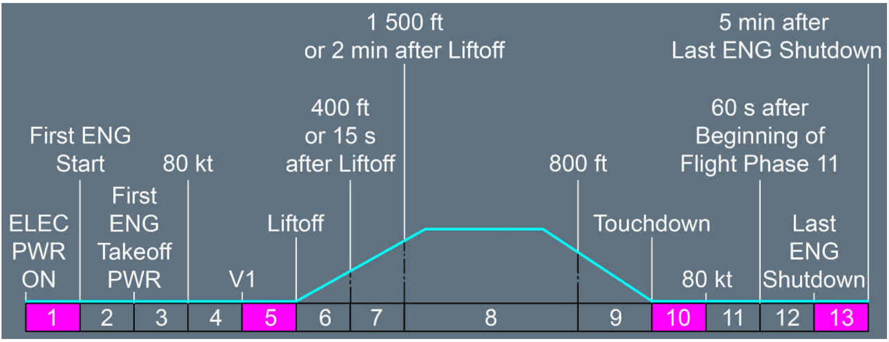
Master Light


MASTER
WARN

SD page

ELEC AC SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
ELEC
PWR
ON
First
ENG
Takeoff
PWR
Liftoff
V1
Touchdown
80 kt
Last
ENG
Shutdown
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Continued on the following page

ELEC EMER CONFIG (Cont'd)

8 Ident.: PRO-ABN-ELEC-2450W200-00014818.0008001 / 07 JUL 20

LAND ASAP

RAT MAN ON....................PRESS

L2 *Confirms the automatic deployment of the RAT. If the automatic deployment fails, this will manually extend the RAT.*

The deployment of the RAT takes between 2 s and 6 s depending on the aircraft speed.

L1 MIN RAT SPEED: 140 KT

- **If FUEL L(R) TK MAIN+STBY PMPs FAULT alert is activated:**

  CROSSFEED A....................ON
  CROSSFEED B....................ON

- **If the flight crew did not activate the FIRE SMOKE/FUMES alert:**

L2 The block of actions described below is not displayed in the case of the activation of the FIRE SMOKE / FUMES procedure.

L1 ALL GENs ....OFF THEN ON

L2 *If one (or more) generator(s) is (are) recovered, the emergency generator continues to supply the emergency network.*

L1
  - **RESET SUCCESSFUL ?**
    - **NO**

      BUS TIE....................OFF

L2 *The segregation of the AC busbars (AC 1A, AC 1B, AC 2B, and AC 2A) from each others, and the DC 1 busbar from the DC 2 busbar limits the automatic electrical reconfiguration, and increase the chance of recovery.*

L1 ALL GENs ....OFF THEN ON
BUS TIE ....AUTO

XBLEED....................OPEN

L2 *This line does not appear if the crossbleed valve is closed due to a bleed leak.*

L1
- **If the flight crew did not activate the FIRE SMOKE/FUMES alert:**

L2 The action described below is not displayed in the case of the activation of the FIRE SMOKE / FUMES procedure.

L1 APU ....CONSIDER

L2 *When available, the APU can supply the AC side 1 (AC 1A and AC 1B) busbars in 230 V.*

Continued on the following page

ELEC EMER CONFIG (Cont'd)

L1 AP/FD AVAIL (SIDESTICKS NOT LOCKED)

L2 *Even if both sidesticks locking device are no more powered, the crew shall be informed that AP/FD remain available.*

L1 RUDDER PEDALS LOCKING DEVICE NOT AVAIL

L2 *As the rudder pedals locking device is no more powered, the crew shall be informed.*

L1 [MFD SURV] WXR........SYS 2

L2 *SURV panel on the pedestal is lost, the crew shall use the MFD SURV page.*
Even if WXR 2 is lost, flight crew shall switch to SYS 2 to get the AESU 2 master and so the XPDR & TCAS functions fully operative.

L1 [MFD SURV] XPDR & TCAS........SYS 2

L2 *SURV panel on the pedestal is lost, the crew shall use the MFD SURV page.*

L1 FMS SWTG........BOTH ON 1
AIR FLOW........HI
VENT AVNCS EXTRACT........OVRD
AVOID ICING CONDs

- **If L/G are already locked down when the alert is triggered:**
  NO L/G RETRACTION

- **If L/G not locked down when the alert is triggered:**
  L/G GRVTY EXTN ONLY

F/O BARO REF........STD ONLY
CTR TK NOT USABLE

L2 *As the left and right center tank fuel pump (CTR TK L PMP and CTR TK R PMP) are not powered, the center tank is not usable.*
Expect the CG to move forward during the flight. The aircraft handling qualities are considered still acceptable for a safe continuation of the flight.

L1
- **If jettison ◁ in progress:**
  JETTISON ACTIVE........OFF
  JETTISON ARM........OFF

L2 *As the JETTISON function is active or/and armed, it is asked to deselect both the JETTISON ACTIVE and JETTISON ARM pushbuttons.*

L1 ATC COM VOICE ONLY

L2 *As the ATC DATALINK is lost, only the COM voice is available*

L1 CPNY COM VOICE ONLY

Continued on the following page

ELEC EMER CONFIG (Cont'd)

L2 *As the CPNY DATALINK is lost, only the COM voice is available*

L1 XBLEED MAN CTL ONLY
DISPLAY CYCLE AS RQRD

L2 *As the F/O OUTER display unit is no more available, a reconfiguration shall be performed.*

L1 EFB LAPTOP UNSTOW.......... CONSIDER
FUEL CONSUMPT INCRSD
FOR BETTER RANGE : REDUCE CRZ MACH/SPD
MIN CRZ SPD : GREEN DOT
FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

The FMS predictions are not correct.

FUEL CONSUMPT.......... MONITOR
SLATS SLOW (EXTN TIME 4 MIN)

L2 *As the SLAT system 2 is failed and SLAT system 1 reduces its consumption (emergency condition) slats are moving with slow speed.*

L1 FLAPS SLOW

L2 *As the FLAP system 1 is failed, flaps are moving with half speed.*

L1 LDG DIST AFFECTED
BKUP STEER NOT AVAIL
TO VACATE RWY : TOWING.......... CONSIDER

L12

ASSOCIATED PROCEDURES

F/CTL **ALTN LAW (PROT LOST)**

The flight control laws revert to alternate. AP, FD and A/THR remain available.
Refer to PRO-ABN-F_CTL F/CTL ALTN LAW (PROT LOST)

SECONDARY FAILURES

*F/CTL
*FUEL
*WHEEL

Continued on the following page

ELEC EMER CONFIG (Cont'd)

Ident.: PRO-ABN-ELEC-2450W200-00014825.0006001 / 03 JUL 20

9

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES	APPR & LDG
MAX SPEED : 310 KT	MIN RAT SPD : 140 KT
NO L/G RETRACTION	SLATS/FLAPS SLOW
AVOID ICING CONDs	L/G GRVTY EXTN ONLY
ATC COM VOICE ONLY	LDG DIST AFFECTED
CPNY COM VOICE ONLY	
CTR TK NOT USABLE	
● **In the case of multiple failures affecting fuel consumption:**	
FUEL CONSUMPT INCRSD	

LIMITATIONS ON PFD

ALL PHASES	
MAX SPEED : 310 KT	
AVOID ICING CONDs	
MIN RAT SPD : 140 KT	

L12

DEFERRED PROC

FOR LANDING

> L/G GRVTY EXTN

PACK 1+2 .... OFF

FOR L/G GRVTY EXTN : MAX SPEED 220 KT

L/G LEVER .... UP

L/G GRVTY (EXTN MAX 90 S) .... DOWN

● **WHEN L/G LOCKED DOWN OR AFTER 90 s :**

L/G LEVER .... DOWN

Note: After a L/G gravity extension, a maintenance action is required to reset the LGERS (Refer to DSC-32-10-10-20 General).

Continued on the following page

ELEC EMER CONFIG (Cont'd)

STATUS

INOP SYS

ALL PHASES

F/CTL PROT
PART SPLRs
PRIM 3
SEC 3
FMS 2
RNP AR
ADR 2
GNSS 2
CAPT+F/O HUDs ◁✳
XPDR 1
WXR 1+2
TCAS 1
TAWS
ADS-B TRAFFIC 1 ◁✳
ADS-B RPTG 1
HF 1+2 (If two HFs installed)
HF (If one HF installed)
RMP 3
DATALINK
VHF 3
SATCOM
JETTISON ◁✳
L TK STBY PMP
R TK STBY PMP
CTR TK L+R PMPs
WING A-ICE
ALL R WINDOWS HEATG
VENT AVNCS EXTRACT
VENT AVNCS BLOWING
CAB FANS
FLT(CABIN) REST SMOKE ◁✳
CAPT OIS
AP/FD TCAS MODE (If XPDR/TCAS 1 selected)

APPR & LDG

FLAP SYS 1
SLAT SYS 2
AUTO BRK
G BRK ACCU REINFLATE
Y BRK ACCU REINFLATE
N/W+BKUP STEER
ENG 1+2 REVERSERS
RA SYS B+C
AUTOLAND
LS 2
ARPT NAV
ROW/ROP

INFO

ALTN LAW : PROT LOST

Continued on the following page

ELEC EMER CONFIG (Cont'd)

- **In the case of multiple failures affecting fuel consumption:**

  FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

  The fuel consumption is increased. The FUEL PENALTY on the FMS DATA/STATUS page may be updated.
  For fuel penalty determination, Refer to PER-IFT-FP Fuel Penalty Tables - Fuel Consumption Increased.

F/O BARO REF : STD ONLY
XBLEED MAN CTL ONLY
APPR 1 ONLY
AP/FD AVAIL (SIDESTICKS NOT LOCKED)
RUDDER PEDALS LOCKING DEVICE NOT AVAIL
NO BRAKED PIVOT TURN
TO VACATE RWY : CONSIDER TOWING
FOR BETTER RANGE : REDUCE CRZ MACH/SPD

MEMOPAGE

MEMO ON ECAM

| LAND ASAP

ELEC EMER NETWORK MANAGEMENT 1(2) FAULT

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2471W220-00014212.0001001 / 28 MAY 14

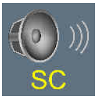
ANNUNCIATIONS

Triggering Conditions:

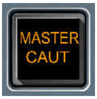
L2 The emergency network of EPDC side 1(2) lost its reconfiguration capability or its protection functions.

Indications:

Audio



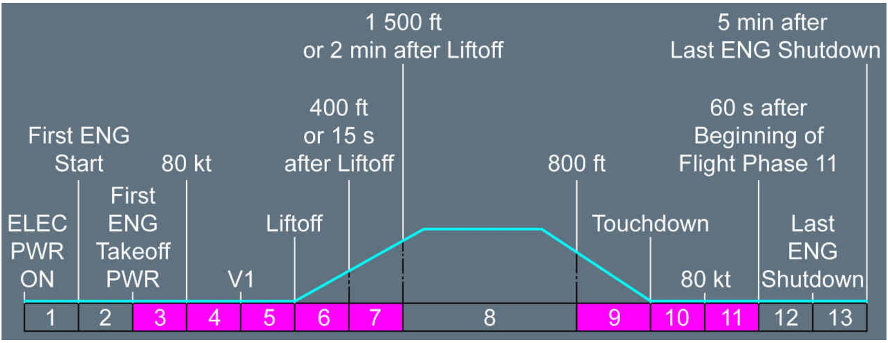
Master Light


MASTER
CAUT

SD page

ELEC AC SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Ident.: PRO-ABN-ELEC-2471W220-00014214.0001001 / 28 MAY 14

AT ENG 1(2) SHUTDOWN : EXPECT BUSBAR LOSS

Continued on the following page

ELEC EMER NETWORK MANAGEMENT 1(2) FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2471W220-00014215.0001001 / 28 MAY 14

STATUS

INOP SYS

ALL PHASES

EMER 1(2) NETWORK MANAGT

INFO

AT ENG 1(2) SHUTDOWN : EXPECT BUSBAR LOSS

ELEC EXT PWR 1(2) FAULT

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2440W010-00014098.0001001 / 28 MAY 14

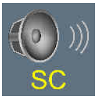
ANNUNCIATIONS

Triggering Conditions:

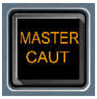
L2 The external power unit 1(2) is failed.

Indications:

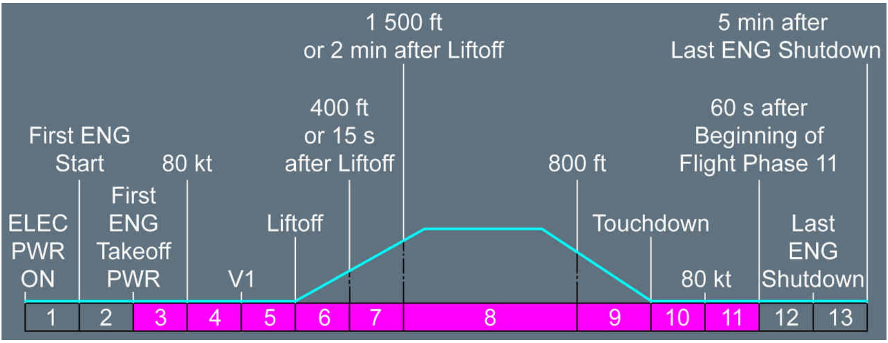
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
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4
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6
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Ident.: PRO-ABN-ELEC-2440W010-00014100.0001001 / 28 MAY 14

EXT PWR 1(2) P/B....................RECYCLE

Continued on the following page

ELEC EXT PWR 1(2) FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2440W010-00014101.0001001 / 28 MAY 14

STATUS

INOP SYS

ALL PHASES

EXT PWR 1(2)

ELEC GEN 1A(1B)(2B)(2A) FAULT

Applicable to: ALL

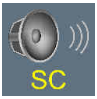
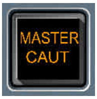
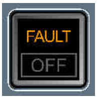
Ident.: PRO-ABN-ELEC-2422W010-00006025.0001001 / 28 MAY 14

ANNUNCIATIONS

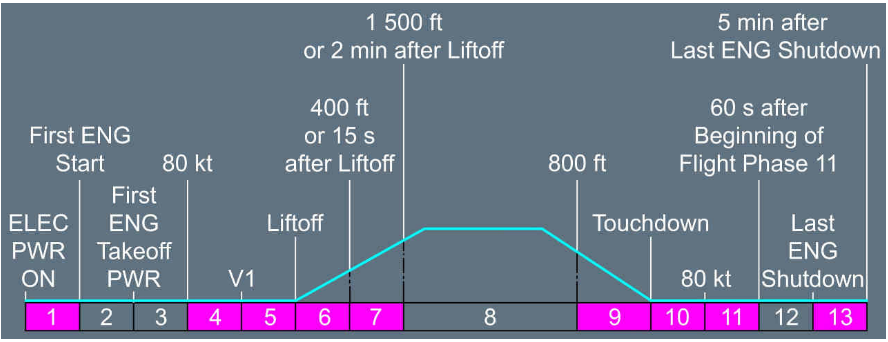
Triggering Conditions:

L2 The applicable engine generator is failed.
The alert appears when the characteristics of the electrical power supplied to the aircraft network are outside their defined limitations or when a DRIVE protective function trips the channel OFF.

Indications:

Audio	Master Light	Local Light	SD page
	 MASTER CAUT		
		GEN 1A(1B)(2B)(2A) pb-sw	ELEC AC SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

ELEC GEN 1A(1B)(2B)(2A) FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2422W010-00007450.0001001 / 05 NOV 18

GEN 1A(1B)(2B)(2A).. OFF THEN ON

- **RESET SUCCESSFUL ?**
  - **NO**

    GEN 1A(1B)(2B)(2A).. OFF

    L2 *The electrical network will automatically reconfigure to supply the electrical network (for more information on electrical reconfigurations, Refer to DSC-24-40 Reconfigurations Overview).*

    Both wing tank standby pumps are not running. In the case of a failure of a wing tank main pump, the associated standby pump will automatically run.

Ident.: PRO-ABN-ELEC-2422W010-00007451.0001001 / 28 MAY 14

STATUS

INOP SYS

ALL PHASES

GEN 1A(1B)(2B)(2A)

ELEC GEN 1A(1B)(2B)(2A) OFF

Applicable to: ALL

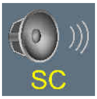
Ident.: PRO-ABN-ELEC-2422W050-00013774.0001001 / 28 MAY 14

ANNUNCIATIONS

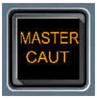
Triggering Conditions:

L2 The GEN 1A(1B)(2B)(2A) pb-sw is abnormally set to OFF.
The alert warns the crew of the GEN 1A(1B)(2B)(2A) electrical disconnection while the associated engine 1(2) is running. This alert does not appear if a fault has occurred on the relevant generator and if the flight crew has put off this generator via procedure.
Indications:

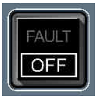
Audio



Master Light


MASTER
CAUT

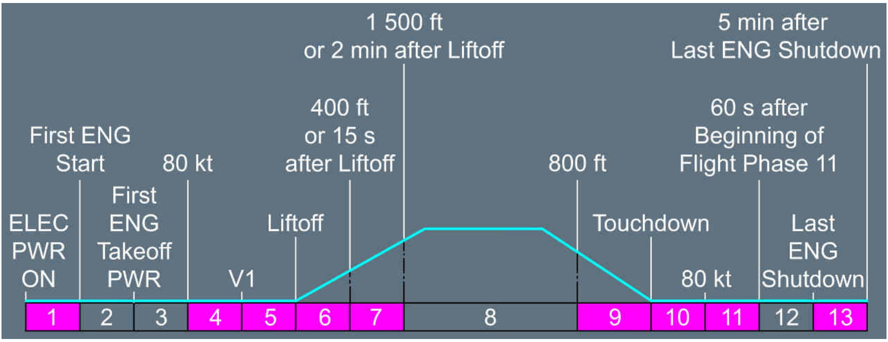
Local Light



SD page

ELEC AC SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Ident.: PRO-ABN-ELEC-2422W050-00013776.0001001 / 05 NOV 18

GEN 1A(1B)(2B)(2A)..ON

L2 *Both wing tank standby pumps are not running. In the case of a failure of a wing tank main pump, the associated standby pump will automatically run.*

ELEC LOAD MANAGEMENT FAULT

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2471W040-00014104.0001001 / 28 MAY 14

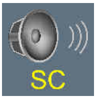
ANNUNCIATIONS

Triggering Conditions:

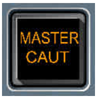
L2 The ELMF is failed.

Indications:

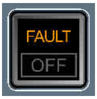
Audio



Master Light


MASTER
CAUT

Local Light

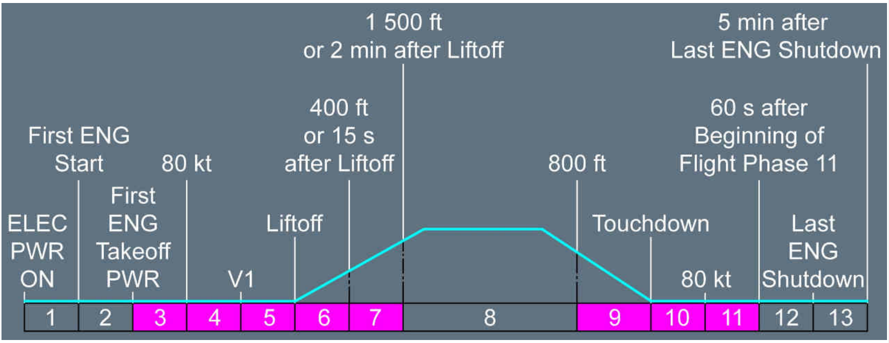


ELM pb-sw

SD page

ELEC AC SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
ELEC
PWR
ON
First
ENG
Takeoff
PWR
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Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Ident.: PRO-ABN-ELEC-2471W040-00021300.0001001 / 02 JUL 14

Note: *If the failure is only due to an IMA module failure, the ECAM displays the DUE TO IMA MODULE FAULT subtitle.*

Ident.: PRO-ABN-ELEC-2471W040-00014106.0001001 / 06 NOV 14

ELM...OFF

Continued on the following page

ELEC LOAD MANAGEMENT FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2471W040-00014107.0001001 / 28 MAY 14

STATUS

INOP SYS

ALL PHASES

ELEC LOAD MANAGT

ELEC NORMAL NETWORK MANAGEMENT 1(2) FAULT

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2471W200-00014208.0001001 / 28 MAY 14

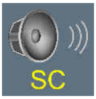
ANNUNCIATIONS

Triggering Conditions:

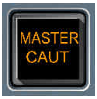
L2 The normal network of EPDC side 1(2) lost its reconfiguration capability or its protection functions.

Indications:

Audio



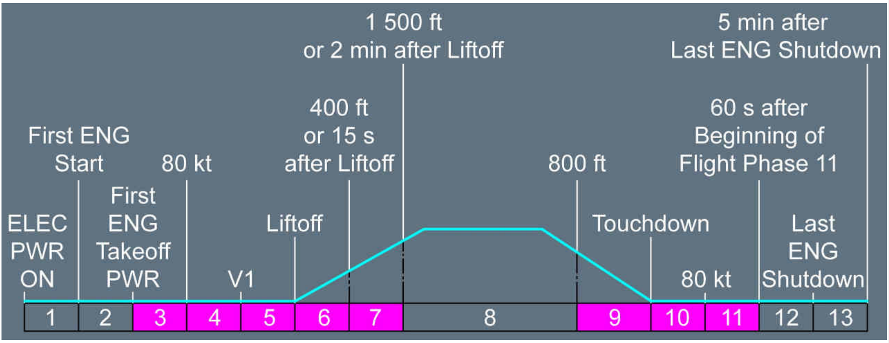
Master Light


MASTER
CAUT

SD page

ELEC AC SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
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First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Ident.: PRO-ABN-ELEC-2471W200-00014210.0001001 / 28 MAY 14

AT ENG 1(2) SHUTDOWN : EXPECT BUSBAR LOSS

- **If REVERSE capability is lost:**

  ON DRY RWY ONLY : LDG DIST AFFECTED < 15%

LDG DIST AFFECTED

Continued on the following page

ELEC NORMAL NETWORK MANAGEMENT 1(2) FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2471W200-00014211.0001001 / 28 MAY 14

LIMITATIONS

LIMITATIONS ON ECAM

APPR & LDG

LDG DIST AFFECTED

STATUS

INOP SYS

ALL PHASES

APU GEN (If normal network management 1 fault)
NORM 1(2) NETWORK MANAGT
EXT PWR 1(2)

INFO

ON DRY RWY ONLY : LDG DIST AFFECTED < 15%
AT ENG 1(2) SHUTDOWN : EXPECT BUSBAR LOSS

ELEC RAT NOT LOCKED UP

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2424W010-00014108.0001001 / 28 MAY 14

ANNUNCIATIONS

Triggering Conditions:

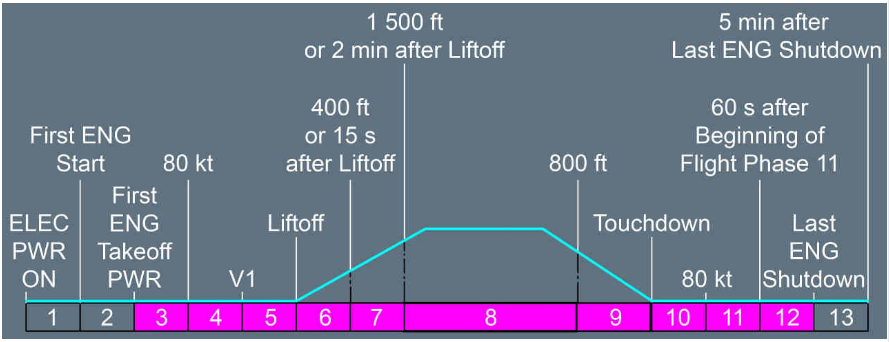
L2 The RAT is stowed but not locked-up.

Indications:

SD page

ELEC AC SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Ident.: PRO-ABN-ELEC-2424W010-00014110.0001001 / 28 MAY 14

Crew awareness.

Continued on the following page

ELEC RAT NOT LOCKED UP (Cont'd)

Ident.: PRO-ABN-ELEC-2424W010-00014111.0001001 / 28 MAY 14

STATUS

INOP SYS

ALL PHASES

RAT

ELEC REMOTE C/B CTL ACTIVE

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2471W100-00014112.0001001 / 28 MAY 14

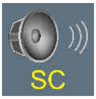
ANNUNCIATIONS

Triggering Conditions:

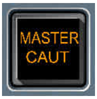
L2 The maintenance personnel left the REMOTE C/B CTL pb-sw set to ON. Therefore, the electrical network is not correctly supplied.

Indications:

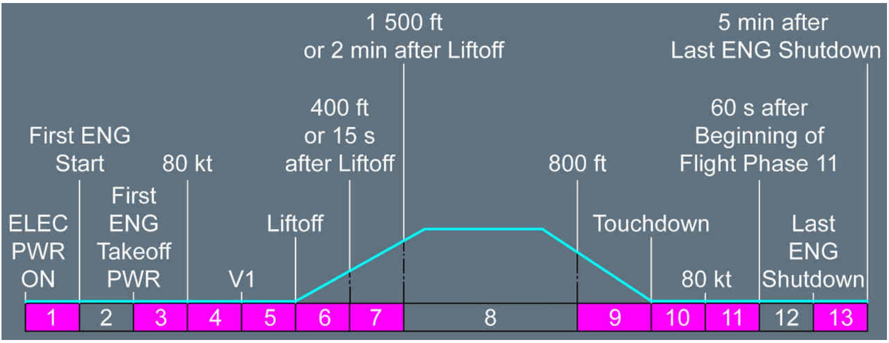
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-ELEC-2471W100-00014114.0001001 / 28 MAY 14

REMOTE C/B CTL..OFF

ELEC SIDE 1&2 ISOL ON

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2471W060_1-00022719.0001001 / 09 JUL 15

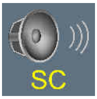
ANNUNCIATIONS

Triggering Conditions:

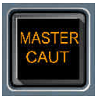
L2 The flight crew or maintenance personnel left the SIDE 1&2 ISOL pb-sw set to ON. Therefore, the electrical network is not correctly supplied.

Indications:

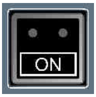
Audio



Master Light

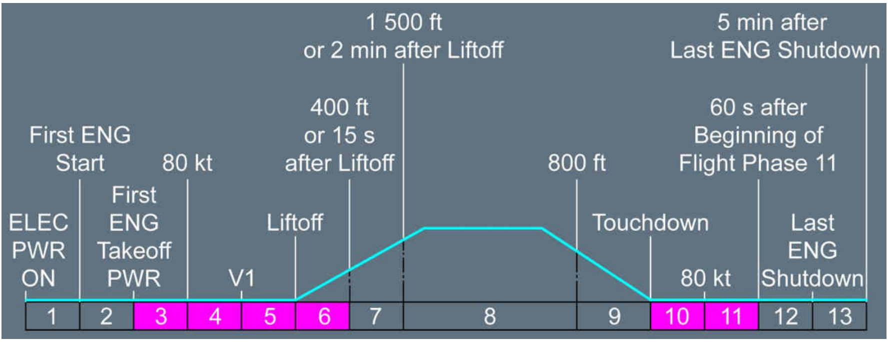

MASTER
CAUT

Local Light



SIDE 1&2 pb-sw

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-ELEC-2471W060_1-00022720.0002001 / 07 JUL 16

- **If no SMOKE/FUMES event:**
  ELEC SIDE 1&2 ISOL...OFF

ELEC SIDE 1 OFF (SMOKE CONFIG)

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2450W130_1-00022713.0001001 / 09 JUL 15

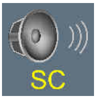
ANNUNCIATIONS

Triggering Conditions:

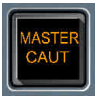
L2 This alert warns the crew of the loss of the whole NORM side 1 and some busbars on EMER side 1 due to the QRH smoke procedure.

Indications:

Audio



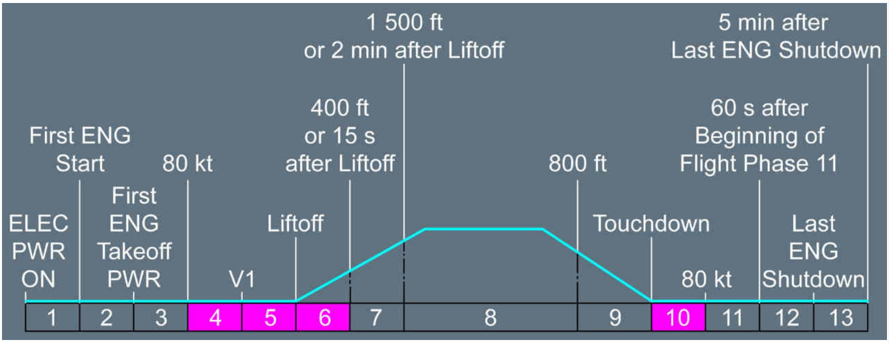
Master Light


MASTER
CAUT

SD page

ELEC AC SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
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Continued on the following page

ELEC SIDE 1 OFF (SMOKE CONFIG) (Cont'd)

Ident.: PRO-ABN-ELEC-2450W130_1-00022714.0006001 / 03 JAN 19

- **If the WXR / TAWS 1 is selected:**
  WXR....................SYS 2

L2 *As the AESU 1 is inoperative, TAWS 1 and WXR 1 are inoperative. So these functions must be switched on the other side available.*

L1
- **If XPDR / TCAS 1 is selected:**
  XPDR & TCAS....................SYS 2

L2 *As the AESU 1 is inoperative, XPDR 1 and TCAS 1 are inoperative. So these functions must be switched on the other side available.*

L1 FMS SWTG....................BOTH ON 2
SPD BRK : DO NOT USE
PITCH TRIM STILL AVAILABLE
ATC COM VOICE ONLY

L2 *As the ATC DATALINK is lost, only the COM voice is available.*

L1 CPNY COM VOICE ONLY

L2 *As the CPNY DATALINK is lost, only the COM voice is available.*

L1 CAPT SIDESTICK LOCKING DEVICE NOT AVAIL

L2 *As the CAPT sidestick locking device is no more powered, the crew shall be informed.*

L1 RUDDER PEDALS LOCKING DEVICE NOT AVAIL

L2 *As the rudder pedals locking device is no more powered, the crew shall be informed.*

L1 ENG 1 IDLE HI

L2 *As the ENG 1 EIM is lost, the crew shall be informed.*

L1
- **If jettison ◁ in progress:**
  JETTISON ACTIVE....................OFF
  JETTISON ARM....................OFF

L2 *If the JETTISON function is active or/and armed, it is asked to deselect both the JETTISON ACTIVE and JETTISON ARM pushbuttons.*

L1 NAV LT....................2

- **WHEN CTR TK EMPTY:**
  CROSSFEED A....................OFF
  CROSSFEED B....................OFF

DISPLAY CYCLE AS RQRD

Continued on the following page

ELEC SIDE 1 OFF (SMOKE CONFIG) (Cont'd)

L2 *As the CENTER UPPER display unit is no more available, a reconfiguration shall be performed.*

L1 EFB LAPTOP UNSTOW.. CONSIDER

- **In the case of multiple failures affecting fuel consumption:**

  FUEL CONSUMPT INCRSD

  FOR BETTER RANGE : REDUCE CRZ MACH/SPD

  FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

  The FMS predictions are not correct.

SLATS/FLAPS SLOW

L2 *As the SLAT system 1 is failed, slats are moving with half speed. As the FLAP system 1 is failed, flaps are moving with half speed.*

L1
- **If the stabilizer position is above 10 ° UP**

  or

  If the stabilizer position is not available with a speed below 250 kt:

  FOR LDG : FLAP LVR 3

AUTO BRK.. CONSIDER
ON ACCU : BRK AS RQRD WITHOUT RELEASING
LDG PERF AFFECTED

SECONDARY FAILURES

*F/CTL
*FUEL
*WHEEL

Continued on the following page

ELEC SIDE 1 OFF (SMOKE CONFIG) (Cont'd)

Ident.: PRO-ABN-ELEC-2450W130_1-00022715.0006001 / 03 JAN 19

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

SPD BRK : DO NOT USE
ATC COM VOICE ONLY
CPNY COM VOICE ONLY

- **In the case of multiple failures affecting fuel consumption:**
  FUEL CONSUMPT INCRSD

APPR & LDG

SLATS/FLAPS SLOW
LDG PERF AFFECTED

- **If the stabilizer position is above 10 ° UP or If the stabilizer position is not available with a speed below 250 kt:**
  FOR LDG : FLAP LVR 3

LIMITATIONS ON PFD

ALL PHASES

SPD BRK : DO NOT USE

L12

DEFERRED PROC

ALL PHASES

> LDG PERF OR LS RECOVERY

Recovering a landing system may be useful if the weather is difficult at the diversion airport (e.g. low visibility).
Recovering the slat actuation enables the flight crew to extend the slats and reduce the approach speed.
Setting the GENs of the isolated side to ON, before landing, enables the systems recovery. However, it may also reignite the smoke source.

- **IF RECOVERY ABSOLUTELY RQRD**
  - **3 MIN BEFORE LANDING OR AT 2000 FT AGL**
    GEN 1B.. ON
    GEN 1A.. ON
  - **WHEN AIRCRAFT STOPPED**
    GEN 1A.. OFF

Continued on the following page

ELEC SIDE 1 OFF (SMOKE CONFIG) (Cont'd)

GEN 1B.. OFF

STATUS

INOP SYS

ALL PHASES

APU (If the APU is OFF)
APU GEN (If the APU is ON)
STABILIZER
PART SPLRs
PRIM 3
SEC 3
FMS 1
RNP AR
GNSS 1
CAPT HUD ◁
XPDR 1
WXR 1
TCAS 1
ADS-B TRAFFIC 1 ◁
ADS-B RPTG 1
RMP 3
HF 1
SATCOM
GEN 1A+1B
PAX OXY MASKS
JETTISON ◁
R TK MAIN PMP
L TK STBY PMP
CTR TK R PMP
ALL L WINDOWS HEATG
TWO CAB FANS
CKPT DOOR LOCK
CAPT KCCU CCD + KBD
AP/FD TCAS MODE (If XPDR/TCAS 1 selected)

APPR & LDG

FLAP SYS 1
SLAT SYS 1
BTV
ENG 1 REVERSER
PART NORM BRK
RA SYS A+C
AUTOLAND
LS 1
CAPT ARPT NAV

INFO

PITCH TRIM STILL AVAILABLE
CAPT SIDESTICK LOCKING DEVICE NOT AVAIL

Continued on the following page

ELEC SIDE 1 OFF (SMOKE CONFIG) (Cont'd)

RUDDER PEDALS LOCKING DEVICE NOT AVAIL

- **In the case of multiple failures affecting fuel consumption:**

  FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

  The fuel consumption is increased. The FUEL PENALTY on the FMS DATA/STATUS page may be updated.
  For fuel penalty determination, Refer to PER-IFT-FP Fuel Penalty Tables - Fuel Consumption Increased.

ENG 1 IDLE HI
BLEED SYS & TEMP STATUS DEGRADED
APPR 1 ONLY
ON ACCU : BRK AS RQRD WITHOUT RELEASING
FOR BETTER RANGE : REDUCE CRZ MACH/SPD

- **If the APU is running:**

  NO APU RESTART

ELEC SIDE 2 OFF (SMOKE CONFIG)

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2450W140_1-00022716.0001001 / 09 JUL 15

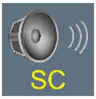
ANNUNCIATIONS

Triggering Conditions:

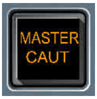
L2 This alert warns the crew of the loss of the whole NORM side 2 and some busbars on EMER side 2 due to the QRH smoke procedure.

Indications:

Audio



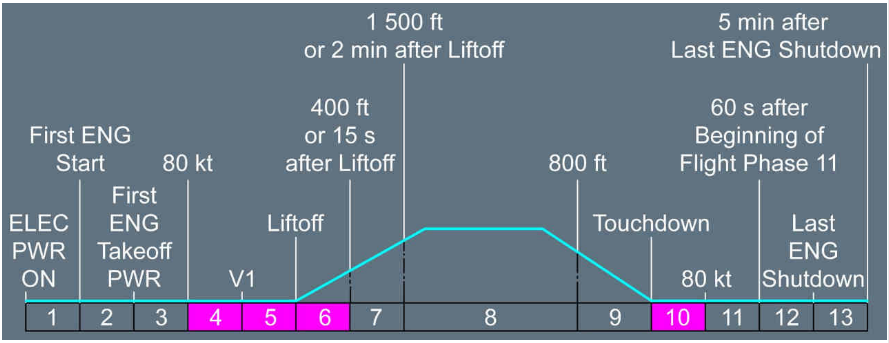
Master Light


MASTER
CAUT

SD page

ELEC AC SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Continued on the following page

ELEC SIDE 2 OFF (SMOKE CONFIG) (Cont'd)

Ident.: PRO-ABN-ELEC-2450W140_1-00022717.0005001 / 03 JAN 19

- **If the WXR / TAWS 2 is selected:**

  WXR..SYS 1

L2 *As the AESU 2 is inoperative, TAWS 2 and WXR 2 are inoperative. So these functions must be switched on the other side available.*

L1
- **If XPDR / TCAS 2 is selected:**

  XPDR & TCAS..SYS 1

L2 *As the AESU 2 is inoperative, XPDR 2 and TCAS 2 are inoperative. So these functions must be switched on the other side available.*

L1 SPD BRK : DO NOT USE
F/O BARO REF : STD ONLY
F/O SIDESTICK LOCKING DEVICE NOT AVAIL

L2 *As the F/O sidestick locking device is no more powered, the crew shall be informed.*

L1 ENG 2 IDLE HI

L2 *As the ENG 2 EIM is lost, the crew shall be informed.*

L1
- **If jettison ◁ in progress :**

  JETTISON ACTIVE..OFF
  JETTISON ARM..OFF

L2 *If the JETTISON function is active or/and armed, it is asked to deselect both the JETTISON ACTIVE and JETTISON ARM pushbuttons.*

L1
- **WHEN CTR TK EMPTY:**

  CROSSFEED A..OFF
  CROSSFEED B..OFF

DISPLAY CYCLE AS RQRD

L2 *As the CENTER LOWER display Unit is no more available, a reconfiguration shall be performed.*

L1 FEFB LAPTOP UNSTOW..CONSIDER

- **In the case of multiple failures affecting fuel consumption:**

  FUEL CONSUMPT INCRSD

  FOR BETTER RANGE : REDUCE CRZ MACH/SPD

  FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

  The FMS predictions are not correct.

Continued on the following page

ELEC SIDE 2 OFF (SMOKE CONFIG) (Cont'd)

SLATS/FLAPS SLOW

L2 *As the SLAT system 2 is failed, slats are moving with half speed. As the FLAP system 2 is failed, flaps are moving with half speed.*

L1 AUTO BRK.. CONSIDER
ON ACCU : BRK AS RQRD WITHOUT RELEASING
LDG DIST AFFECTED

SECONDARY FAILURES

*F/CTL

*FUEL

*WHEEL

Continued on the following page

ELEC SIDE 2 OFF (SMOKE CONFIG) (Cont'd)

Ident.: PRO-ABN-ELEC-2450W140_1-00022718.0006001 / 03 JUL 20

10

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES	APPR & LDG
SPD BRK : DO NOT USE ● **In the case of multiple failures affecting fuel consumption:** FUEL CONSUMPT INCRSD	SLATS/FLAPS SLOW LDG DIST AFFECTED FOR LDG : FLAP LVR 3

LIMITATIONS ON PFD

ALL PHASES	
SPD BRK : DO NOT USE	

L12

DEFERRED PROC

ALL PHASES

> LDG PERF OR LS RECOVERY

Recovering a landing system may be useful if the weather is difficult at the diversion airport (e.g. low visibility).

Recovering the slat actuation enables the flight crew to extend the slats and reduce the approach speed.

Setting the GENs of the isolated side to ON, before landing, enables the systems recovery. However, it may also reignite the smoke source.

- **IF RECOVERY ABSOLUTELY RQRD**
  - **3 MIN BEFORE LANDING OR AT 2000 FT AGL**
    GEN 2B.. ON
    GEN 2A.. ON
  - **WHEN AIRCRAFT STOPPED**
    GEN 2B.. OFF
    GEN 2A.. OFF

Continued on the following page

ELEC SIDE 2 OFF (SMOKE CONFIG) (Cont'd)

STATUS

INOP SYS

ALL PHASES

ADR 2
GNSS 2
F/O HUD ◁
XPDR 2
WXR 2
TCAS 2
ADS-B TRAFFIC 2 ◁
ADS-B RPTG 2
VHF 2
HF 2 ◁
GEN 2B+2A
APU (If the APU is OFF)
PAX OXY MASKS
JETTISON ◁
L TK MAIN PMP
R TK STBY PMP
CTR TK L PMP
ALL R WINDOWS HEATG
TWO CAB FANS
CENTER LOWER DU
F/O OUTER DU
FLT(CABIN) REST SMOKE ◁
CAPT+F/O OIS
AP/FD TCAS MODE (If XPDR/TCAS 2 selected)
FMC-B

APPR & LDG

FLAP SYS 2
SLAT SYS 2
BTV
PART NORM BRK
ENG 2 REVERSER
AUTOLAND
LS 2
F/O ARPT NAV

INFO

F/O SIDESTICK DEVICE NOT AVAIL

- **In the case of multiple failures affecting fuel consumption:**

  FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

  The fuel consumption is increased. The FUEL PENALTY on the FMS DATA/STATUS page may be updated.

  For fuel penalty determination, Refer to PER-IFT-FP Fuel Penalty Tables - Fuel Consumption Increased

Continued on the following page

ELEC SIDE 2 OFF (SMOKE CONFIG) (Cont'd)

ENG 2 IDLE HI
F/O BARO REF : STD ONLY
BLEED SYS & TEMP STATUS DEGRADED
FOR RNP AR : MINIMUM LIMITED TO RNP 0.30
APPR 1 ONLY
ON ACCU : BRK AS RQRD WITHOUT RELEASING
FOR BETTER RANGE : REDUCE CRZ MACH/SPD

- **If the APU is running:**
  NO APU RESTART

ELEC STATIC INV FAULT

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2428W010-00013782.0001001 / 28 MAY 14

ANNUNCIATIONS

Triggering Conditions:

L2 The static inverter is failed.

L3 The static inverter fails, in the case of:
- An overload
- An external short-circuit
- An internal failure
- An overheat.
- An abnormally high output voltage (V>127 V AC ± 2 V AC)
- An abnormally low output voltage (V<103 V AC ± 2 V AC)
- An abnormally over frequency (f>425 Hz ± 10 Hz)
- An abnormally lower frequency (f<375 Hz ± 10 Hz)
- C/B 2001XB tripped (for static inverter 1) or C/B 2002XB tripped (for static inverter 2).

Indications:

L2

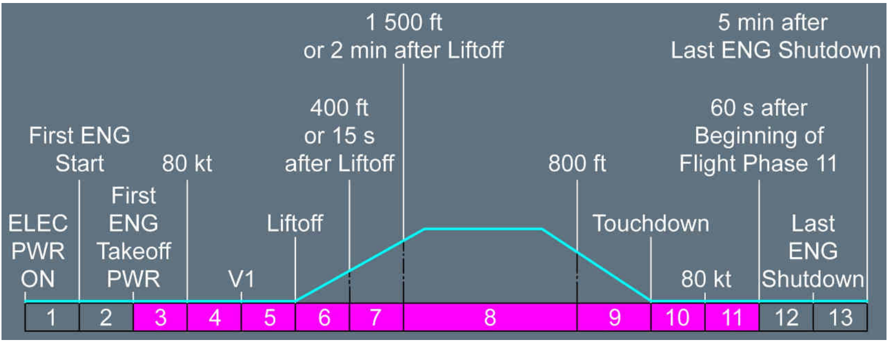
SD page

ELEC AC SD page

Flight Phase Inhibition:

Continued on the following page

ELEC STATIC INV FAULT (Cont'd)


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
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Ident.: PRO-ABN-ELEC-2428W010-00013784.0001001 / 28 MAY 14

Crew awareness.

ELEC TR 1(2)(EMER 1)(EMER 2) FAULT

Applicable to: ALL

Ident.: PRO-ABN-ELEC-2432W010-00013786.0001001 / 28 MAY 14

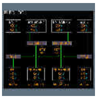
ANNUNCIATIONS

Triggering Conditions:

L2 The TR 1(2)(EMER 1)(EMER 2) is failed.

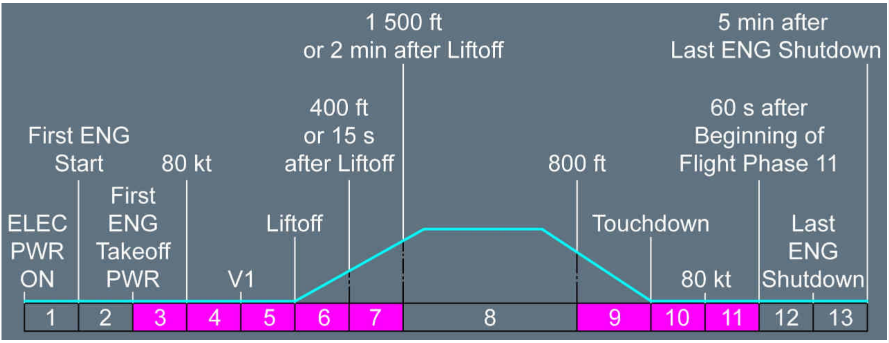
Indications:

SD page



ELEC DC SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
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Ident.: PRO-ABN-ELEC-2432W010-00013788.0001001 / 28 MAY 14

Crew awareness.

Continued on the following page

ELEC TR 1(2)(EMER 1)(EMER 2) FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-2432W010-00013789.0001001 / 28 MAY 14

STATUS

INOP SYS

ALL PHASES

TR 1(2)(EMER1)(EMER2)

Intentionally left blank

[ABN] ENG RELIGHT IN FLT

Applicable to: ALL

Ident.: PRO-ABN-ENG-9070W110-00006373.0001001 / 06 NOV 14

ANNUNCIATIONS

Triggering Conditions:

L2 To display this procedure, the flight crew must press the ABN pb on the ECP, and then select the RELIGHT IN FLT in the ENG section.

Indications:

SD page

ENG SD page

Continued on the following page

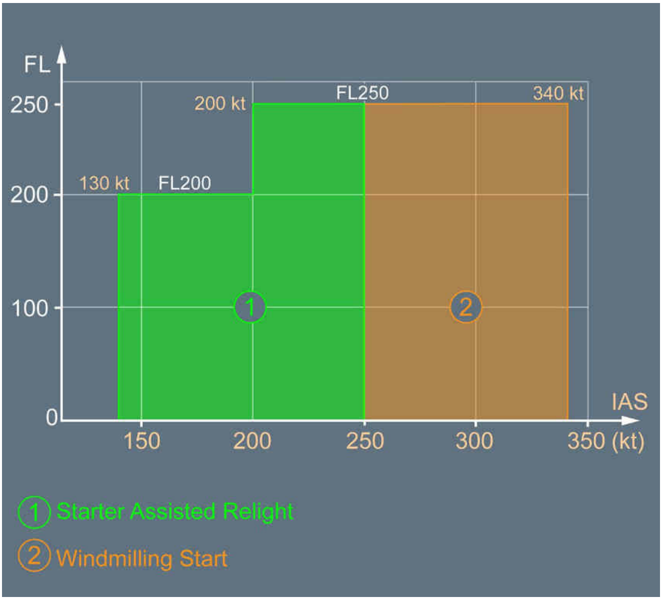
[ABN] ENG RELIGHT IN FLT **(Cont'd)**

Ident.: PRO-ABN-ENG-9070W110-00008659.0006001 / 03 JUL 20

1 MAX GUARANTEED ALTITUDE : 25000 FT
MIN SPEED FOR WINDML RELIGHT : 250 KT
THRUST LEVER (AFFECTED)....................IDLE
ENG (AFFECTED) MASTER....................OFF
XBLEED....................OPEN
WING A-ICE....................OFF
ENG START SEL....................IGN START

L2
- *The FADEC selects a starter assisted (i.e. start valve automatically open), when N3 is below 6 % or the airspeed is below 250 kt*
- *The FADEC selects a windmilling start when the airspeed is at or above 250 kt*
- *In flight, automatic start abort does not operate. The flight crew must perform the start sequence and initiate corrective actions, if necessary. For more information on engine start abort, Refer to DSC-70-40 Start Abort During Automatic Start.*

Engine Relight Envelope



Continued on the following page

[ABN] ENG RELIGHT IN FLT **(Cont'd)**

Note: *Refer to DSC-70-10-80-20 Windmilling Quick Relight Function for Quick Relight capability.*

L1 ENG (AFFECTED) MASTER....................ON

L2 *Engine must relight within 30 s after fuel flow increases.*

L1 MAX EGT : 850 °C

L2 *The FADEC computes the maximum EGT permitted.*

L1 ENG RELIGHT....................MONITOR (FF, EGT, N3)

- **IDLE REACHED (ENG AVAIL) ?**
  - **YES**
    ENG START SEL....................NORM
    XBLEED....................AUTO
    A-ICE....................AS RQRD

DEACTIVATE

[ABN] ENG TAIL PIPE FIRE

Applicable to: ALL

Ident.: PRO-ABN-ENG-9070W100-00014964.0001001 / 06 NOV 14

ANNUNCIATIONS

Triggering Conditions:

L2 To display this procedure, the flight crew must press the ABN pb on the ECP, and then select the TAIL PIPE FIRE in the ENG section.

Indications:

SD page

ENG SD page

Ident.: PRO-ABN-ENG-9070W100-00008665.0001001 / 06 NOV 14

L2 Internal engine fire may be encountered during engine start or engine shutdown. It may be seen by the ground crew, or the EGT may fail to decrease after the MASTER LEVER is turned off.

Continued on the following page

[ABN] ENG TAIL PIPE FIRE **(Cont'd)**

Ident.: PRO-ABN-ENG-9070W100-00017427.0001001 / 06 NOV 14

ENG (AFFECTED) MASTER .... OFF

L2 *Note: Do not press the engine fire pushbutton, since this would cut off the FADEC power supply, which would prevent motoring sequence*

L1
- **If at least one engine is running**

  XBLEED .... OPEN

- **If no engine is running**

  APU .... START

  APU BLEED .... ON

L2 If APU BLEED is not available, and the other engine is shut down, connect external pneumatic power (if rapidly available).

L1
- **WHEN N3 BELOW 30 %**

  ENG START SEL .... CRANK

  ENG (AFFECTED) MAN START .... ON

- **WHEN FIRE STOPPED**

  ENG (AFFECTED) MAN START .... OFF

  ENG START SEL .... NORM

  XBLEED .... AUTO

DEACTIVATE

L2 Maintenance action is due.

L1

CAUTION	External fire agents can cause severe corrosive damage and should, therefore, only be considered when the above ECAM procedure is completed.

ENG ALL ENGINES FAILURE

Applicable to: ALL

Ident.: PRO-ABN-ENG-7100W651-00023896.0001001 / 30 NOV 17

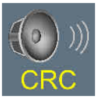
ANNUNCIATIONS

Triggering Conditions:

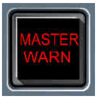
L2 Both engines are shutdown or failed in flight.

Indications:

Audio



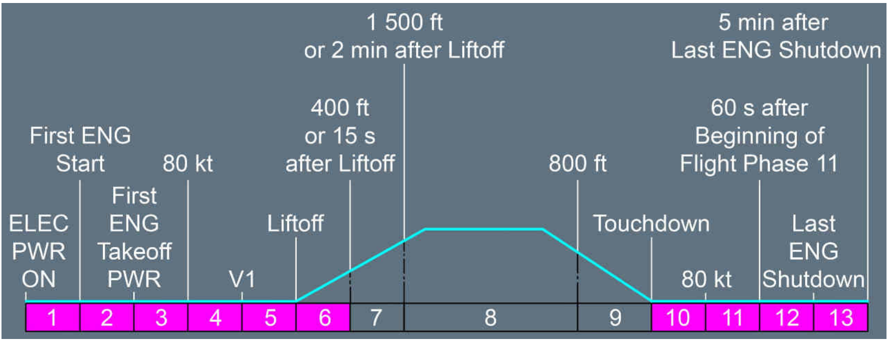
Master Light


MASTER
WARN

SD page

ENG SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-ENG-7100W651-00023899.0001001 / 30 NOV 17

L2 For more information, *Refer to FCTM/the introduction of the FCTM "ALL ENGINES FAILURE" section*.

Continued on the following page

ENG ALL ENGINES FAILURE (Cont'd)

Ident.: PRO-ABN-ENG-7100W651-00023900.0010001 / 03 JAN 19

MAX GLIDING DIST (NO WIND) :
- CLEAN : 2.5 NM / 1000 FT
- LDG CONF : 1.5 NM / 1000 FT

APU AUTOSTART IN PROGRESS
ENGs AUTO RELIGHT IN PROGRESS

- **TIME PERMITS FOR FULL PROCEDURE ?**
  - **YES**
    RAT MAN ON....................PRESS
    FUEL SD PAGE....................CHECK
    OPTIMUM RELIGHT SPEED : 250 KT
    ALL THR LEVERS.................... IDLE
    AP/FD AVAIL
    DIVERSION....................INITIATE
    FMS SWTG.................... BOTH ON 1
    USE VHF1
    - **If VHF 1 is not available:**
      USE VHF 2

    ATC....................NOTIFY
    CABIN CREW....................ADVISE
    [MFD SURV] WXR....................SYS 2
    [MFD SURV] XPDR & TCAS....................SYS 2
    - **ENGINE RELIGHT CAN BE ATTEMPTED ?**
      - **YES**
        - **If APU is not started:**
          APU.................... START
        - **If APU is available:**
          APU AVAIL
        - **AS AUTO RELIGHT NOT SUCCESSFUL**
          ALL ENG MASTERS....................OFF
        - **APPROACHING OR BELOW FL 250 : WINDMILL START**
          ENG START SEL....................IGN START
          ALL ENG MASTERS....................OFF 30 S THEN ON

Continued on the following page

ENG ALL ENGINES FAILURE (Cont'd)

L2 *This action allows ventilation of the combustion chamber of the engines.*

L1 ENGs RELIGHT.....TRY REGULARLY

L2 *Unassisted start attempts can be repeated until successful, or until APU bleed is available.*

L1 ● **WINDMILL RELIGHT SUCCESSFUL ?**

● **NO**

ALL ENG MASTERS.....OFF

OPTIMUM SPEED : GREEN DOT

L2 *Green dot speed is the optimum speed for starter-assisted relight with APU bleed, or for gliding as far as possible in the event of an all engine inoperative condition.*

L1 APU BLEED.....ON

ENG MASTER (ONE AT A TIME).....ON

L2 *Only one engine must be started at a time. The other non-running ENG MASTER lever must be selected OFF.*

L1 ● **BELOW 10000 FT AGL**

CABIN & CKPT.....PREPARE

L2
- *Secure loose equipment,*
- *Prepare survival equipment,*
- *Fasten belts and shoulder harnesses.*

L1 RAM AIR.....ON

L2 *Switch ON the RAM AIR to ensure complete depressurization and to provide fresh air to the cabin. Fresh air ventilates the cockpit and cabin only when the differential pressure is below 2 PSI.*

L1 BARO REF (IF AVAIL).....SET

■ **NO**

OPTIMUM SPEED : GREEN DOT

● **BELOW 10000 FT AGL**

CABIN & CKPT.....PREPARE

L2
- *Secure loose equipment,*
- *Prepare survival equipment,*
- *Fasten belts and shoulder harnesses.*

Continued on the following page

ENG ALL ENGINES FAILURE (Cont'd)

L1 RAM AIR...ON

L2 *Switch ON the RAM AIR to ensure complete depressurization and to provide fresh air to the cabin. Fresh air ventilates the cockpit and cabin only when the differential pressure is below 2 PSI.*

L1 BARO REF (IF AVAIL)...SET

- **TYPE OF LDG ANTICIPATED ?**

  ■ **DITCHING**

  MIN RAT SPEED : 140 KT
  [MFD SURV] TERR SYS...OFF

  L2 *The flight crew sets the TERR button to off on the SURV page of the MFD in order to avoid a permanent audio warning/caution.*

  L1 [MFD SURV] GPWS...OFF

  L2 *The flight crew sets the GPWS button to off on the SURV page of the MFD in order to avoid a permanent audio warning/caution.*

  L1 FLAP LVR 2 (EXTN 3 MIN)...SELECT
  L/G LEVER : KEEP UP
  SPEED BRAKES AVAIL

  L2 *Speed brakes remain actuated and may be extended to increase descent rate if needed.*

  L1 MIN APPROACH SPEED : VLS + 15KT

  L2 *Below 1 000 ft and DITCHING pb-sw pressed, the VLS decreases and the flight crew must adjust the VAPP for touchdown.*

  L1
  - **AT 2000 FT AGL**

    DITCHING P/B...ON
    ATC...NOTIFY

    L2 *Notify ATC of the nature of the emergency, and state intentions.*

    L1 ELT...ON
    CABIN CREW...ADVISE
    MIN APPR SPD:VLS+15KT...CHECK

    L2

    In case of strong crosswind, ditch face to the wind. In the absence of strong crosswind, prefer ditching parallel to the swell.

    All the valves of the pressurization system that are below the flotation line close.

Continued on the following page

ENG ALL ENGINES FAILURE (Cont'd)

Additionally, when the DITCHING pb-sw is pressed, the VLS also decrease below 1 000 ft.

L1

- **AT 500 FT AGL**

BRACE FOR IMPACT....................ORDER
INCREASE FLARE HEIGHT
OPTIMUM PITCH ATT : 7.5 ° & MIN V/S
MAX PITCH ATT : 9 °

- **AT TOUCHDOWN**

ALL MASTERS (ENG & APU)....................OFF

- **AFTER DITCHING**

ALL FIRE P/Bs (ENG & APU).................... PUSH
ALL AGENTS (ENG & APU)....................DISCH
EVAC (PA)....................ANNOUNCE

L2 *Make a short and precise announcement to order the emergency evacuation.*

L1 EVAC COMMAND ....ON
ALL 4 BATs .... OFF

L2 *Only PA announcement and CAB communications are available, via the handset.*

L1

■ FORCED LANDING

MAX GLIDING DIST (LDG CONF) : 1.5 NM/1000 FT (650 FT/NM)

- **FOR APPROACH & LDG**

MIN RAT SPEED ....SEE BELOW

The MIN RAT SPEED value changes depending on the current aircraft configuration.

L/G	*CONF*	*MIN RAT SPEED (kt)*
UP	*0, 1, 2, 3 or FULL*	*150*
DOWN (gravity extension)	*0 or 1*	*150*
	2, 3 or FULL	*140*
DOWN (normal extension)	*0, 1, 2, 3 or FULL*	*140*

[MFD SURV] TERR SYS....................OFF

L2 *The flight crew sets the TERR button to off on the SURV page of the MFD in order to avoid a permanent audio warning/caution.*

Continued on the following page

ENG ALL ENGINES FAILURE (Cont'd)

L1 [MFD SURV] GPWS ....OFF

L2 *The flight crew sets the GPWS button to off on the SURV page of the MFD in order to avoid a permanent audio warning/caution.*

L1 FOR LDG : FLAPS 1 (EXTN TIME : 2 MIN)

IF MORE DRAG RQRD : FLAPS 2 (1 ADDITIONAL MIN)

IF FLAPS LEVER IN CONF 2 OR ABOVE: KEEP S/F CONF

SPEED BRAKES AVAIL

L2 *Speed brakes remain actuated and may be extended to increase descent rate if needed.*

L1 L/G GRVTY (EXTN 1 MIN)..DOWN

- **WHEN L/G DOWN OR AFTER 60 S**

  L/G LEVER..DOWN

  MIN RAT SPEED : SEE BELOW

  The MIN RAT SPEED value changes depending on the current aircraft configuration.

L/G	*CONF*	*MIN RAT SPEED (kt)*
DOWN (gravity extension)	*0 or 1*	*150*
	2, 3 or FULL	*140*

  MIN APPROACH SPEED : VLS

  USE DIFF BRAKING..AS RQRD

  BRK AS RQRD WITHOUT RELEASING

  GND SPLRs .... ARM

- **AT 2000 FT AGL**

  ELT.. ON

  CABIN CREW...ADVISE

- **AT 500 FT AGL**

  BRACE FOR IMPACT.. ORDER

  INCREASE FLARE HEIGHT

- **AT TOUCHDOWN**

  ALL MASTERS (ENG & APU).. OFF

- **WHEN AIRCRAFT STOPPED**

  PARK BRK.. ON

  ATC..NOTIFY

Continued on the following page

ENG ALL ENGINES FAILURE (Cont'd)

L2 *Notify ATC of the nature of the emergency, and state intentions.*

L1 CABIN CREW..ALERT

L2 *Make a short and precise announcement to warn that an emergency evacuation is required.*

L1 ALL FIRE P/Bs (ENG & APU)..PUSH
ALL AGENTS (ENG & APU)..DISCH
EVAC (PA)..ANNOUNCE

L2 *Make a short and precise announcement to order the emergency evacuation.*

L1 EVAC COMMAND ....ON
ALL 4 BATs ....OFF

L2 *Only PA announcement and CAB communications are available, via the handset).*

L1 ■ **NO**

● **TYPE OF LDG ANTICIPATED ?**

■ **DITCHING**

FLAP LVR 2 (EXTN 3 MIN)..SELECT

L/G LEVER : KEEP UP

MIN APPROACH SPEED : VLS + 15KT
[MFD SURV] TERR SYS..OFF
[MFD SURV] GPWS ....OFF

● **AT 2000 FT AGL**
DITCHING P/B..ON
ELT..ON
CABIN CREW..ADVISE
MIN APPR SPD:VLS+15KT..CHECK

L2 In case of strong crosswind, ditch face to the wind. In the absence of strong crosswind, prefer ditching parallel to the swell.

L1 ● **AT 500 FT AGL**
BRACE FOR IMPACT..ORDER

INCREASE FLARE HEIGHT

OPTIMUM PITCH ATT : 7.5 ° & MIN V/S

MAX PITCH ATT : 9 °

Continued on the following page

ENG ALL ENGINES FAILURE (Cont'd)

- **AT TOUCHDOWN**
  ALL MASTERS (ENG & APU)....................OFF

- **AFTER DITCHING**
  ALL FIRE P/Bs (ENG & APU)....................PUSH
  ALL AGENTS (ENG & APU)....................DISCH
  EVAC (PA)....................ANNOUNCE
  L2 *Make a short and precise announcement to order the emergency evacuation.*
  L1 EVAC COMMAND ....ON
  ALL 4 BATs ....OFF
  L2 *Only PA announcement and CAB communications are available, via the handset.*

L1 ■ **FORCED LANDING**

FOR LDG : FLAPS 2

IF FLAPS LEVER ABOVE CONF 2: KEEP S/F CONF

MIN APPROACH SPEED : VLS

GND SPLRs ....ARM
L/G GRVTY (EXTN 1 MIN)....................DOWN
ELT....................ON
CABIN CREW....................ADVISE
[MFD SURV] TERR SYS....................OFF
[MFD SURV] GPWS ....OFF

- **AT 500 FT AGL**
  BRACE FOR IMPACT....................ORDER

  INCREASE FLARE HEIGHT

- **AT TOUCHDOWN**
  ALL MASTERS (ENG & APU)....................OFF

- **WHEN AIRCRAFT STOPPED**
  PARK BRK....................ON
  ATC....................NOTIFY
  L2 *Notify ATC of the nature of the emergency, and state intentions.*
  L1 CABIN CREW....................ALERT
  L2 *Make a short and precise announcement to warn that an emergency evacuation is required.*

Continued on the following page

ENG ALL ENGINES FAILURE (Cont'd)

L1 ALL FIRE P/Bs (ENG & APU).....PUSH
ALL AGENTS (ENG & APU).....DISCH
EVAC (PA).....ANNOUNCE

L2 *Make a short and precise announcement to order the emergency evacuation.*

L1 EVAC COMMAND ⊲ .....ON
ALL 4 BATs .....OFF

L2 *Only PA announcement and CAB communications are available, via the handset).*

L12

ASSOCIATED PROCEDURES

F/CTL ALTN LAW (PROT LOST)

The flight control laws revert to alternate. AP, FD and A/THR remain available.

Refer to procedure.

L1 MAX SPEED : 310 KT

Continued on the following page

ENG ALL ENGINES FAILURE (Cont'd)

Ident.: PRO-ABN-ENG-7100W651-00023901.0006001 / 30 NOV 17

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

MAX SPEED : 310 KT

APPR & LDG

- **If ditching or L/G down (normal extension) or L/G down (gravity extension) with flaps in conf 2 or above:**
  MIN RAT SPD : 140 KT
- **If L/G down (gravity extension) and conf 2 or below:**
  MIN RAT SPD : 150 KT

LIMITATIONS ON PFD

ALL PHASES

MAX SPEED : 310 KT

- **If ditching or L/G down (normal extension) or L/G down (gravity extension) with flaps in conf 2 or above:**
  MIN RAT SPD : 140 KT
- **If L/G down (gravity extension) and conf 2 or below:**
  MIN RAT SPD : 150 KT

STATUS

INOP SYS

ALL PHASES

F/CTL PROT
A/THR
G HYD SYS
Y HYD SYS

APPR & LDG

INR FLAPS
SLAT SYS 2

Continued on the following page

ENG ALL ENGINES FAILURE (Cont'd)

INFO

ALTN LAW : PROT LOST

ENG REVERSER SELECTED

Applicable to: ALL

Ident.: PRO-ABN-ENG-7830W600-00015340.0001001 / 06 NOV 14

ANNUNCIATIONS

Triggering Conditions:

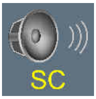
L2 Any thrust reverser is selected in flight.

The thrust reverser system has two types of protection:
- Three lines of defense,
- An idle protection function.

For more information on the protection of the thrust reverser system, *Refer to DSC-70-10-70-20 Protection of the Thrust Reverser System*.

Indications:

Audio



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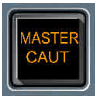
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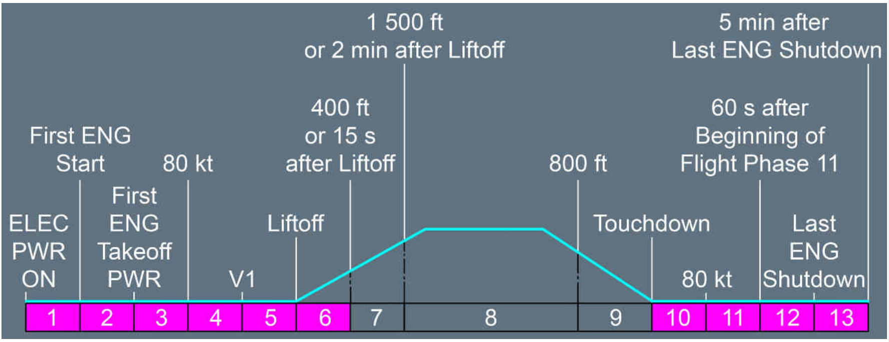
Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
V1
Touchdown
80 kt
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Shutdown
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Ident.: PRO-ABN-ENG-7830W600-00008661.0001001 / 06 NOV 14

THR LEVER 1(2)(1+2)..........FWD THR

ENG SAT ABOVE FLEX TEMP

Applicable to: ALL

Ident.: PRO-ABN-ENG-7100W510-00015312.0001001 / 06 NOV 14

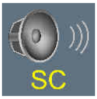
ANNUNCIATIONS

Triggering Conditions:

L2 The flex temperature entered in the T.O panel of the FMS PERF page is below the Static Air Temperature (SAT).

Indications:

Audio



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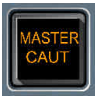
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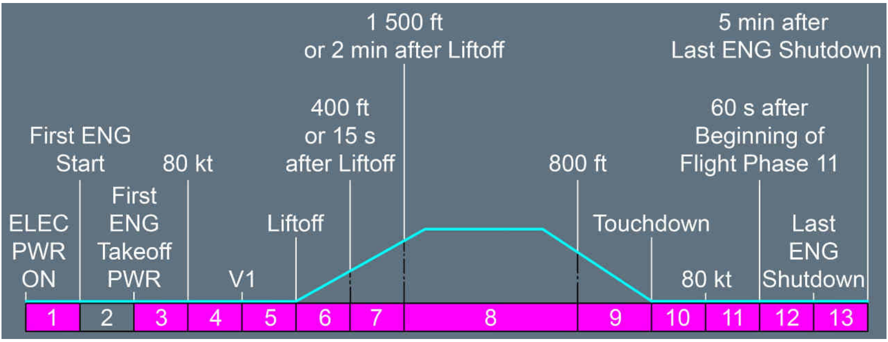
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Last ENG Shutdown
First ENG
Start
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400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
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Shutdown
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Ident.: PRO-ABN-ENG-7100W510-00015314.0001001 / 06 NOV 14

T.O DATA..CHECK

ENG START FAULT
[THR LEVERS NOT AT IDLE]

Applicable to: ALL

Ident.: PRO-ABN-ENG-8000W600-00015356.0001001 / 06 NOV 14

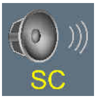
ANNUNCIATIONS

Triggering Conditions:

L2 The thrust levers are not at IDLE detent during the engine start.

Indications:

Audio



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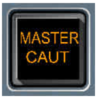
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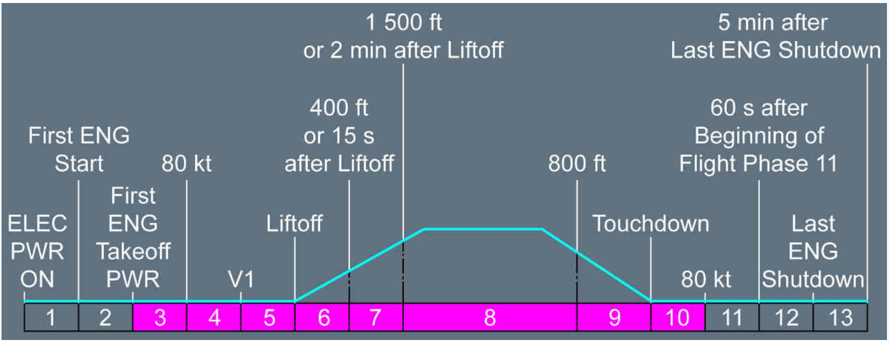
Flight Phase Inhibition: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Last ENG Shutdown
First ENG
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after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
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Takeoff
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Liftoff
Touchdown
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Ident.: PRO-ABN-ENG-8000W600-00008619.0001001 / 06 NOV 14

ALL THR LEVERS.. IDLE

ENG T.O THRUST DISAGREE

Applicable to: ALL

Ident.: PRO-ABN-ENG-7100W550-00015316.0001001 / 06 NOV 14

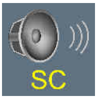
ANNUNCIATIONS

Triggering Conditions:

L2 Both FADECs do not have the same thrust takeoff mode, and therefore the same corresponding thrust limit value.

Indications:

Audio



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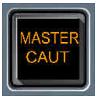
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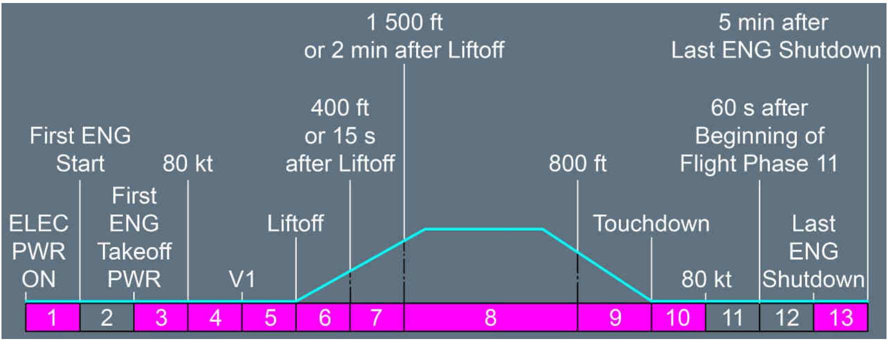
Flight Phase Inhibition: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Last ENG Shutdown
First ENG
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Beginning of
Flight Phase 11
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Ident.: PRO-ABN-ENG-7100W550-00008663.0001001 / 06 NOV 14

Crew awareness.

ENG THR LEVERS NOT SET (AT TAKEOFF)

Applicable to: ALL

Ident.: PRO-ABN-ENG-7100W500-00015308.0001001 / 07 JUL 16

ANNUNCIATIONS

Triggering Conditions:

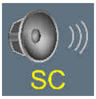
L2 There is a discrepancy between the position of the thrust levers and the takeoff thrust mode that the FADECs select.

One of the following occurs:

- The TOGA mode is selected, the thrust levers are not set in the TOGA detent but are set at or below MCT / FLEX detent, or
- The flexible takeoff mode is selected and the thrust levers are set below the MCT / FLEX detent, or
- The derated takeoff mode is selected and the thrust levers are set below or above the MCT/FLEX detent.

Indications:

Audio



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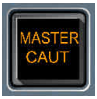
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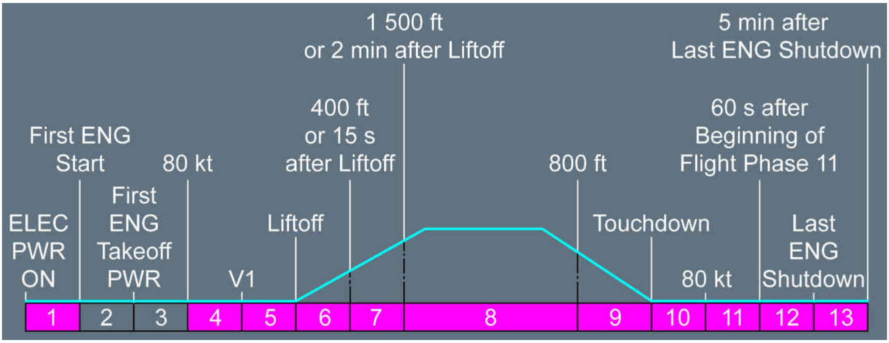
Flight Phase Inhibition:


1 500 ft
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Last ENG Shutdown
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after Liftoff
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Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
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Takeoff
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Liftoff
Touchdown
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Continued on the following page

ENG THR LEVERS NOT SET (AT TAKEOFF) (Cont'd)

Ident.: PRO-ABN-ENG-7100W500-00008666.0001001 / 06 NOV 14

■ **If TOGA is selected in the FMS,**
and
If the thrust levers are not set in TOGA detent:
ALL THR LEVERS....................TOGA

■ **If FLX is selected in the FMS,**
and
If the thrust levers are set below MCT/FLX detent:
ALL THR LEVERS....................MCT/FLX

■ **If DTO is selected in the FMS,**
and
If the thrust levers are not set in MCT/FLX detent:
ALL THR LEVERS....................MCT/FLX

L2 *TOGA thrust rating is not allowed when a derated takeoff is performed.*

ENG THR LEVERS NOT SET (AT GO-AROUND)

Applicable to: ALL

Ident.: PRO-ABN-ENG-7100W520-00020387.0001001 / 06 NOV 14

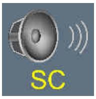
ANNUNCIATIONS

Triggering Conditions:

L2 During go-around initiation with the SOFT go-around technique, the soft go-around mode is lost or not available. Consequently, the thrust levers are not set at the right detent.

Indications:

Audio



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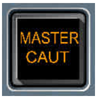
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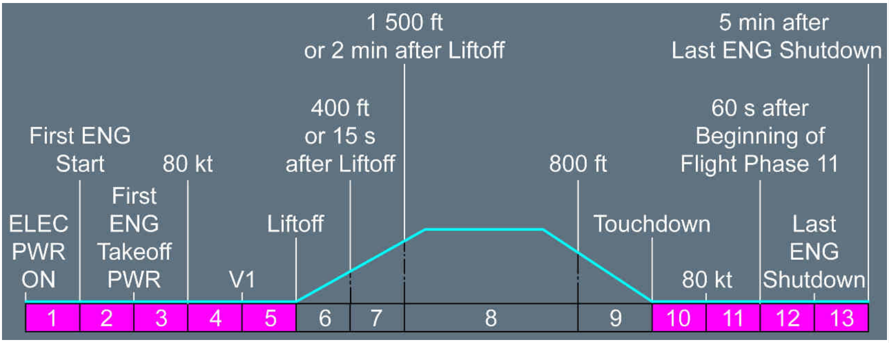
Flight Phase Inhibition:


1 500 ft
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5 min after
Last ENG Shutdown
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or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
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Ident.: PRO-ABN-ENG-7100W520-00020388.0002001 / 07 JUL 16

THR LEVER.. TOGA

L2 *If the SOFT GA mode is lost or not available (associated with ENG GA SOFT FAULT alert), the thrust lever(s) must be set to TOGA.*

ENG THRUST LOCKED

Applicable to: ALL

Ident.: PRO-ABN-ENG-7100W600-00015320.0001001 / 06 NOV 14

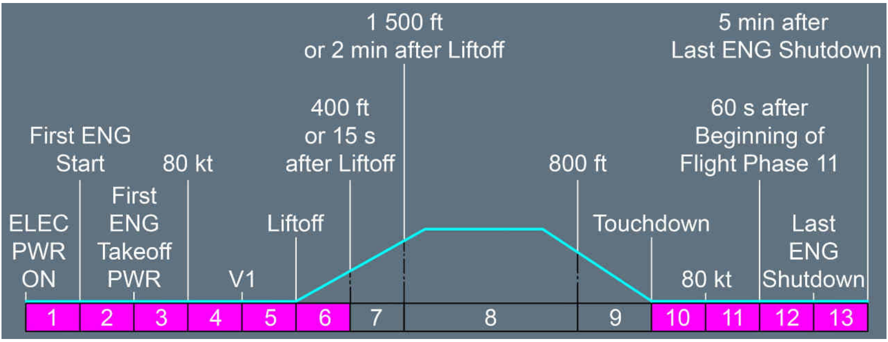
ANNUNCIATIONS

Triggering Conditions:

L2 The thrust is frozen on one or both engines, after a failure or an involuntary A/THR disconnection.
This alert is recalled every 5 s, until the flight crew moves the thrust levers.
Indications:

Audio	Master Light
SC	MASTER CAUT

Flight Phase Inhibition:


1 500 ft
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Last ENG Shutdown
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after Liftoff
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Beginning of
Flight Phase 11
First ENG
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Ident.: PRO-ABN-ENG-7100W600-00008667.0001001 / 06 NOV 14

ALL THR LEVERS...MOVE

ENG TYPE DISAGREE

Applicable to: ALL

Ident.: PRO-ABN-ENG-7100W700-00006381.0002001 / 07 JUL 16

ANNUNCIATIONS

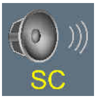
Triggering Conditions:

L2 One of the following conditions is not satisfied:

- The thrust rating is consistent on each engine, or
- The N1, N2, N3 or ENG red limits are consistent on both engines, or
- Both engines are consistent with the aircraft type (A350-900 or A350-1000).

Indications:

Audio



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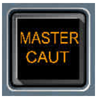
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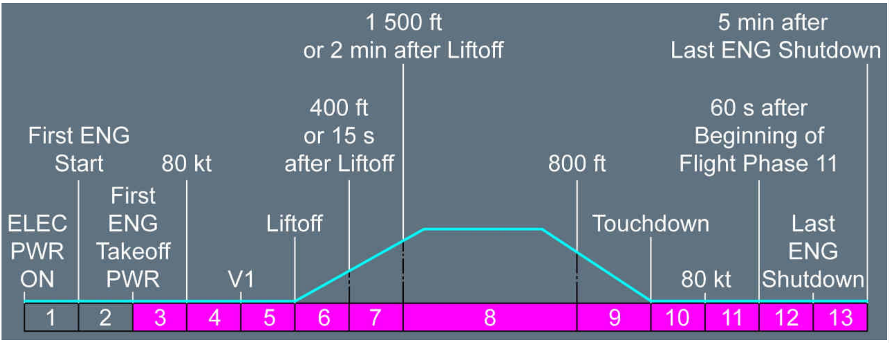
SD page

ENG SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
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ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
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Shutdown
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Ident.: PRO-ABN-ENG-7100W700-00008669.0001001 / 06 NOV 14

Crew awareness.

ENG 1+2 FUEL FILTER CLOGGED

Applicable to: ALL

Ident.: PRO-ABN-ENG-7331W170-00021640.0001001 / 06 NOV 14

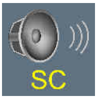
ANNUNCIATIONS

Triggering Conditions:

L2 The LP fuel filter of engines 1 and 2 are clogged. This is the intermediary clogging threshold of the LP fuel filter. The associated LP fuel filter bypasses are still closed.

Indications:

Audio



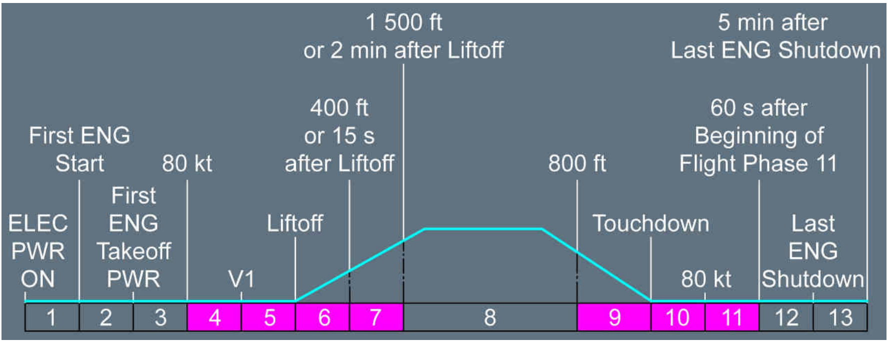
Master Light

MASTER
CAUT

SD page

ENG SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Continued on the following page

ENG 1+2 FUEL FILTER CLOGGED (Cont'd)

Ident.: PRO-ABN-ENG-7331W170-00021641.0001001 / 24 JUL 17

LAND ANSA

- **On ground:**
  ALL THR LEVERS...IDLE

CROSSFEED A+B...OFF

L2 *In order to avoid potential fuel tanks contamination, the crossfeed valves are set to OFF.*

L1 CTR TK L+R PMP...OFF

L2 *The center fuel tank supplies both engines. Consequently in order to avoid both engines contamination, center fuel tank pumps are set to off*

L1 CTR TK NOT USABLE

L2 *Expect the CG to move forward during the flight. The aircraft handling qualities are considered still acceptable for a safe continuation of the flight.*

Ident.: PRO-ABN-ENG-7331W170-00021642.0001001 / 06 NOV 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES	
CTR TK NOT USABLE	

MEMOPAGE

MEMO ON ECAM

	LAND ANSA

ENG 1+2 FUEL FILTER IN BYPASS

Applicable to: ALL

Ident.: PRO-ABN-ENG-7331W230-00015192.0001001 / 06 NOV 14

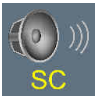
ANNUNCIATIONS

Triggering Conditions:

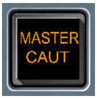
L2 The LP fuel filter of engines 1 and 2 are clogged. The associated bypasses are open.

Indications:

Audio



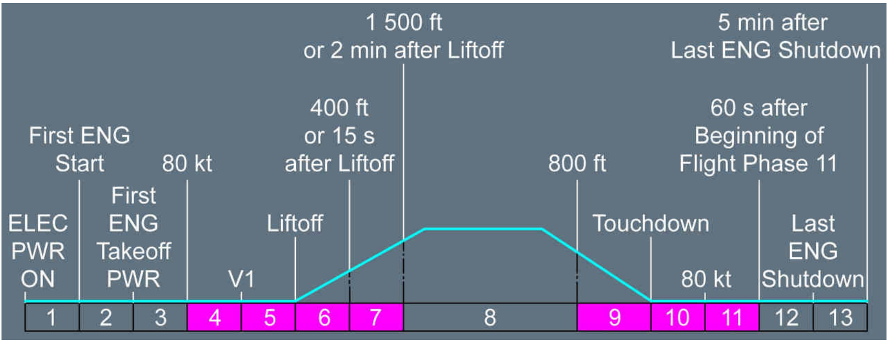
Master Light


MASTER
CAUT

SD page

ENG SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

ENG 1+2 FUEL FILTER IN BYPASS (Cont'd)

Ident.: PRO-ABN-ENG-7331W230-00008578.0001001 / 24 JUL 17

LAND ANSA

- **On ground**

  ALL THR LEVERS.......IDLE

CROSSFEED A+B.......OFF

L2 *In order to avoid fuel tanks contamination, the crossfeed valves are set to OFF.*

L1 CTR TK L+R PMP.......OFF

CTR TK NOT USABLE

L2 *In order to isolate the common source of contamination if any, the fuel center tank is not usable. Expect the CG to move forward during the flight. The aircraft handling qualities are considered still acceptable for a safe continuation of the flight.*

L1 A/THR.......OFF

AVOID RAPID THR CHANGES

Ident.: PRO-ABN-ENG-7331W230-00019322.0001001 / 06 NOV 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

AVOID RAPID THR CHG
CTR TK NOT USABLE

LIMITATIONS ON PFD

ALL PHASES

AVOID RAPID THR CHG

MEMOPAGE

MEMO ON ECAM

LAND ANSA

ENG 1+2 FUEL HEAT EXCHANGER IN BYPASS - FUEL CONTAMINATED

Applicable to: ALL

Ident.: PRO-ABN-ENG-7921W070-00021643.0001001 / 06 NOV 14

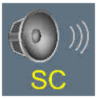
ANNUNCIATIONS

Triggering Conditions:

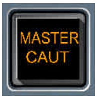
L2 The Fuel Heat Oil Exchanger (FOHE) of both engines are blocked and the associated bypass valves are open. The Fuel on board is contaminated.

Indications:

Audio



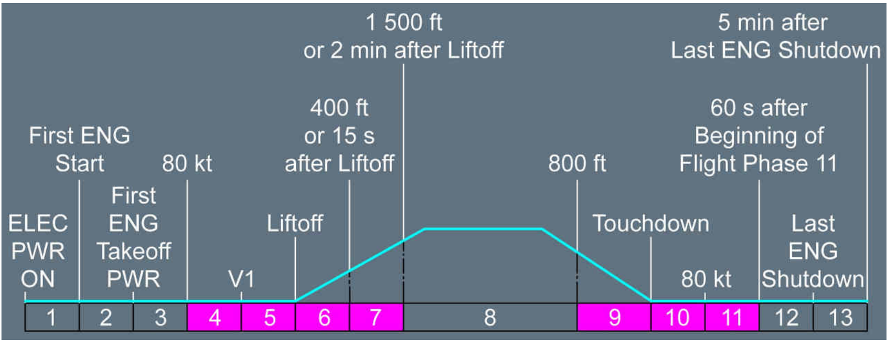
Master Light


MASTER
CAUT

SD page

ENG SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Continued on the following page

ENG 1+2 FUEL HEAT EXCHANGER IN BYPASS - (Cont'd)
FUEL CONTAMINATED

Ident.: PRO-ABN-ENG-7921W070-00021646.0001001 / 06 NOV 14

L2 The fuel is contaminated and both FOHEs are blocked. The associated bypass valves are open and the heat transfer between oil and fuel is no more active.
The control of both engines is ensured and the following stages may occur after the triggering of this ECAM alert.

If the Low Pressure (LP) fuel filter starts to clog:
- The ENG 1(2) FUEL FILTER PARTLY CLOGGED message may be displayed on the DISPATCH page,
- If the fuel contamination continues, the ENG 1(2) FUEL FILTER IN BYPASS alert associated with the ENG 1(2) FUEL FILTER IN BYPASS message may be displayed ,

As the LP fuel filter is bypassed:
- If the fuel contamination continues, the HP fuel filter starts to clog,
- If the Hydro-mechanical Monitoring Unit (HMU) is affected, the engine control is degraded and the ENG 1(2) CTL SYS FAULT alert is triggered on the WD (*Refer to procedure*).

If the engine oil temperature increases after blockage of the FOHE, the ENG 1(2) OIL TEMP HI alert may appear on the WD (*Refer to procedure*).

Ident.: PRO-ABN-ENG-7921W070-00021644.0001001 / 24 JUL 17

LAND ANSA

- **On ground**
  ALL THR LEVERS.......................................IDLE

CROSSFEED A+B.......................................OFF

L2 *In order to avoid fuel tanks contamination, the crossfeed valves are set to OFF.*

L1 CTR TK L+R PMP.......................................OFF
CTR TK NOT USABLE

L2 *In order to isolate the common source of contamination if any, the fuel center tank is not usable. Expect the CG to move forward during the flight. The aircraft handling qualities are considered still acceptable for a safe continuation of the flight.*

L1 A/THR.......................................OFF
AVOID RAPID THR CHANGES

Continued on the following page

ENG 1+2 FUEL HEAT EXCHANGER IN BYPASS - (Cont'd)
FUEL CONTAMINATED

Ident.: PRO-ABN-ENG-7921W070-00021645.0001001 / 06 NOV 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

AVOID RAPID THR CHG
CTR TK NOT USABLE

LIMITATIONS ON PFD

ALL PHASES

AVOID RAPID THR CHG

MEMOPAGE

MEMO ON ECAM

LAND ANSA

ENG 1(2) CTL SYS FAULT

Applicable to: ALL

Ident.: PRO-ABN-ENG-7100W110-00015170.0001001 / 06 NOV 14

ANNUNCIATIONS

Triggering Conditions:

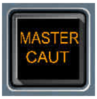
L2 The FADEC can no longer correctly control the engine.

This alert is triggered when the FADEC:
- Loses the N1 or N2 parameter, or
- Detects a fuel regulation failure, or
- Detects an overthrust, or
- Detects a degradation the control of the engine air system.

Indications:

Audio

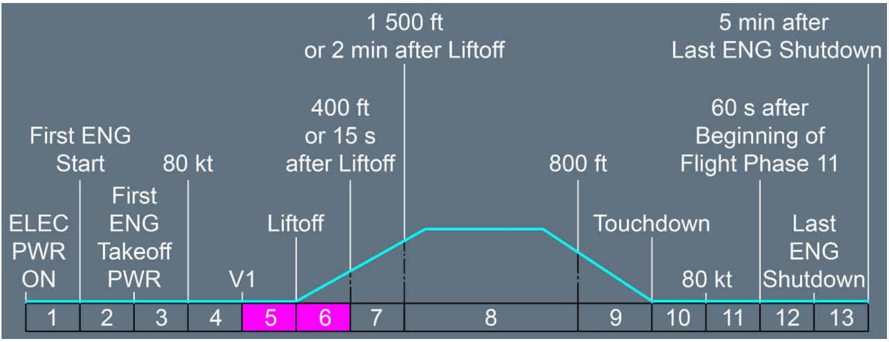
Master Light


MASTER
CAUT

SD page

ENG SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

ENG 1(2) CTL SYS FAULT (Cont'd)

■ In flight:

● If engine control is degraded:

L2 Engine control (air system) can be degraded due to:
- HP compressor outlet pressure sensor failure (P30), or
- HP or IP bleed valve failure, or
- VSV failure.

L1 NO RAPID THR CHANGES

L2 *The flight crew must avoid rapid thrust changes.Refer to DSC-70-10-30-20 Stall*

L1 **● In the case of N1 or N2 sensor failure:**

ENG 1(2) IDLE ONLY
THR LEVER 1(2)..IDLE
LDG DIST AFFECTED
ON DRY RWY ONLY: LDG DIST AFFECTED<15 %

L2 *Landing distance computation on dry runways does not take into account the effect of the thrust reversers.*

L1 **● In the case of fuel regulation failure:**

ENG 1(2) SLOW RESPONSE

L2 *The Fuel Metering Valve (FMV) is detected jammed.*

L1 **● In the case of overthrust detection:**

L2 The FADEC automatically reduces the thrust. *Refer to DSC-70-10-30-20 Overthrust* for overthrust protection.

The overthrust protection is active when:
- The aircraft is below 16 600 ft, and
- The aircraft speed is below M 0.45.

L1 THR LEVER 1(2)..IDLE
ENG 1(2) MASTER ....OFF

ASSOCIATED PROCEDURES

ENG 1(2) SHUTDOWN

Refer to procedure.

Continued on the following page

ENG 1(2) CTL SYS FAULT (Cont'd)

GA THR : TOGA ONLY

L2 *The flight crew must set the thrust levers to the TOGA detent during the go-around to ensure the airport missed approach gradient.*

L1 ■ **On ground:**

THR LEVER 1(2) .... IDLE
ENG 1(2) MASTER .... OFF

Continued on the following page

ENG 1(2) CTL SYS FAULT (Cont'd)

Ident.: PRO-ABN-ENG-7100W110-00008558.0002001 / 07 JUL 16

L12

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

- **If the engine control is degraded:**
  NO RAPID THR CHANGES
  The display of this limitation is inhibited on ground.

APPR & LDG

LDG DIST AFFECTED
GA THR : TOGA ONLY

LIMITATIONS ON PFD

ALL PHASES

- **If the engine control is degraded:**
  NO RAPID THR CHANGES
  The display of this limitation is inhibited on ground.

STATUS

INOP SYS

APPR & LDG

BTV
ENG 1(2) REVERSER
GA SOFT

INFO

ON DRY RWY ONLY: LDG DIST AFFECTED < 15 %

- **In the case of N1 or N2 sensor failure:**
  ENG 1(2) IDLE ONLY
- **In the case of fuel regulation failure:**
  ENG 1(2) SLOW RESPONSE

ENG 1(2) EGT OVER LIMIT

Applicable to: ALL

Ident.: PRO-ABN-ENG-7720W110-00015175.0001001 / 06 NOV 14

ANNUNCIATIONS

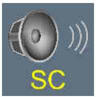
Triggering Conditions:

L2 The EGT is:

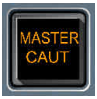
- Above the amber line (i.e. EGT limit: 700 °C during ground start sequence, then 850 °C), or
- Above the red line (i.e. 900 °C):
  - During takeoff, or
  - When the associated thrust lever is at the MCT detent, or
  - When the associated thrust reverser is selected, or
  - When the alpha floor protection is activated.

Indications:

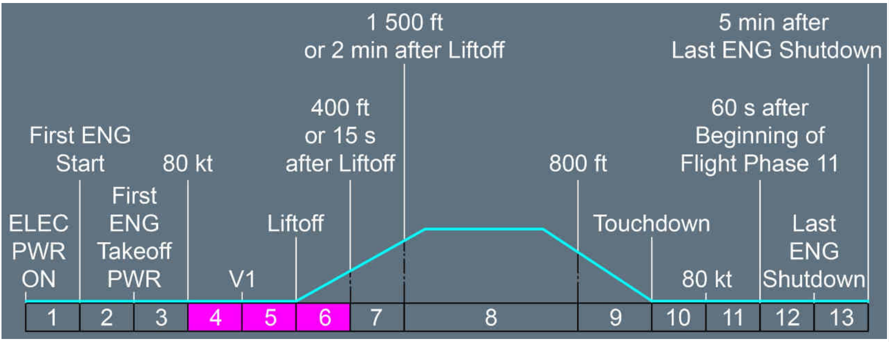
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Continued on the following page

ENG 1(2) EGT OVER LIMIT (Cont'd)

Ident.: PRO-ABN-ENG-7720W110-00008560.0001001 / 06 NOV 14

THR LEVER 1(2)..REDUCE BELOW EGT LIMIT

L2 *Normal operation may be resumed until the end of the flight if the over limit does not persist.*

L1 ● **OVER LIMIT PERSISTS ?**

- ● **YES**

  ENG 1(2) MASTER ....OFF

  ASSOCIATED PROCEDURES

  ENG 1(2) SHUTDOWN

  Refer to procedure.

ENG 1(2) EIM FAULT

Applicable to: ALL

Ident.: PRO-ABN-ENG-7325W110-00006374.0001001 / 06 NOV 14

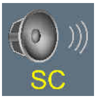
ANNUNCIATIONS

Triggering Conditions:

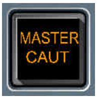
L2 Both Engine Interface Functions (EIF) of the associated engine are failed.
The word EIM is used in the ECAM alert because the reset button on the overhead panel is named EIM.

Indications:

Audio



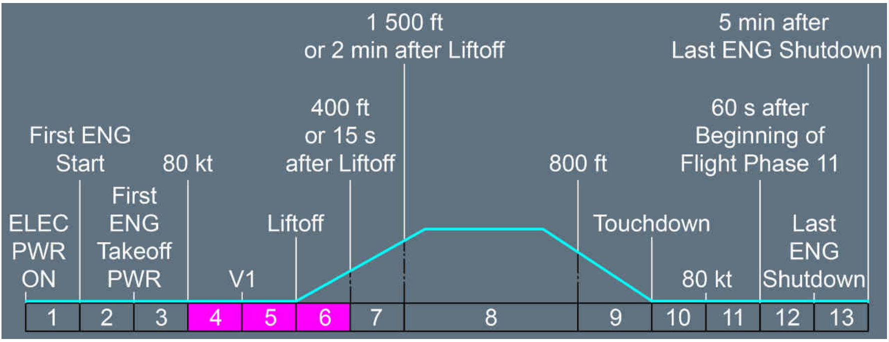
Master Light


MASTER
CAUT

SD page

ENG SD Page

Flight Phase Inhibition: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5 min after
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400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
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Takeoff
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Liftoff
Touchdown
Last
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Shutdown
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80 kt
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Ident.: PRO-ABN-ENG-7325W110-00019385.0001001 / 06 NOV 14

Note: *If the failure is only due to an IMA module failure, the ECAM displays the DUE TO IMA MODULE FAULT subtitle.*

Continued on the following page

ENG 1(2) EIM FAULT (Cont'd)

Ident.: PRO-ABN-ENG-7325W110-00015342.0002001 / 03 JAN 19

ENG 1(2) IDLE HI

- **On ground:**
  THR LEVER 1(2).. IDLE
- **In flight:**
  LDG DIST AFFECTED
  ON DRY RWY ONLY: LDG DIST AFFECTED<15 %

L2 *Landing distance computation on dry runways does not take into account the effect of the thrust reversers.*

Ident.: PRO-ABN-ENG-7325W110-00016576.0001001 / 06 NOV 14

LIMITATIONS

LIMITATIONS ON ECAM

APPR & LDG

LDG DIST AFFECTED

STATUS

INOP SYS

APPR & LDG

ENG 1(2) REVERSER
BTV

INFO

ON DRY RWY ONLY: LDG DIST AFFECTED < 15 %
ENG 1(2) IDLE HI

ENG 1(2) FADEC FAULT

Applicable to: ALL

Ident.: PRO-ABN-ENG-7325W310-00015179.0001001 / 03 DEC 15

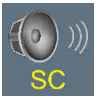
ANNUNCIATIONS

Triggering Conditions:

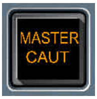
L2 The FADEC is partially or totally lost. The communication between the FADEC and the FWS is lost.

Indications:

Audio



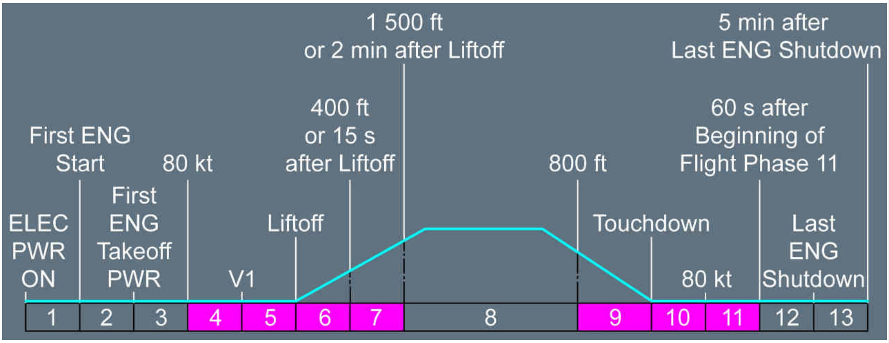
Master Light


MASTER
CAUT

SD page

ENG SD page

Flight Phase Inhibition:


1 500 ft
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First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
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Takeoff
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Liftoff
Touchdown
80 kt
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Continued on the following page

ENG 1(2) FADEC FAULT (Cont'd)

Ident.: PRO-ABN-ENG-7325W310-00008561.0001001 / 03 DEC 15

L2 When the FADEC of the ENG 1(2) failed, the FADEC is partially or totally lost.

- Either the FADEC is partially lost and still able to control the engine, and transmits the primary engine parameters to the ED (N1, current THR, maximum THR, thrust lever position, and EGT).
- Or the FADEC is totally lost. In this case the engine is automatically shutdown and the primary engine parameters are displayed **XX**.

In both cases, ENG 1(2) secondary parameters are lost on the ENG SD page (except the N1 vibrations, N2 vibrations and N3 vibrations).

Continued on the following page

ENG 1(2) FADEC FAULT (Cont'd)

Ident.: PRO-ABN-ENG-7325W310-00008562.0002001 / 30 NOV 17

- **If A/THR engaged and the affected engine is still running:**

  THR LEVER 1(2)....................MAN ADJUST

  L2 *When the A/THR is used, the flight crew disconnects the A/THR and manually adjust THR LEVER 1(2) in order to confirm that the FADEC is inoperative.*

L1 ENG 1(2) PARAMETERS....................MONITOR

L2 *If the FADEC is partially lost, the main ENG 1(2) parameters are still displayed on the ED. Monitor these parameters in a standard way.*
The EGT is still normally displayed. However, the ENG 1(2) EGT OVER LIMIT alert will not trigger in the case of EGT exceedance. Therefore, the flight crew must closely monitor the EGT parameter of the ENG 1(2).

L1
- **ABNORM PARAMETERS ?**
  - **YES**

    L2 All primary engine parameters are displayed **XX** or are not consistent.

    L1 THR LEVER 1(2)....................IDLE
    ENG 1(2) MASTER....................OFF

GA THR : TOGA ONLY

L2 *The flight crew must set the thrust levers to the TOGA detent during the go-around to ensure the airport missed approach gradient.*

L1

ASSOCIATED PROCEDURES

ENG 1(2) SHUTDOWN

Refer to procedure.

Continued on the following page

ENG 1(2) FADEC FAULT (Cont'd)

Ident.: PRO-ABN-ENG-7325W310-00024155.0001001 / 30 NOV 17

LIMITATIONS

LIMITATIONS ON ECAM

	APPR & LDG
	GA THR : TOGA ONLY

STATUS

INOP SYS

ALL PHASES	APPR & LDG
A/THR	GA SOFT

ENG 1(2) FADEC SYS FAULT

Applicable to: ALL

Ident.: PRO-ABN-ENG-7325W210-00015183.0001001 / 06 NOV 14

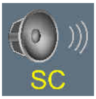
ANNUNCIATIONS

Triggering Conditions:

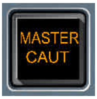
L2 A FADEC failure affects the control of the associated engine.

Indications:

Audio



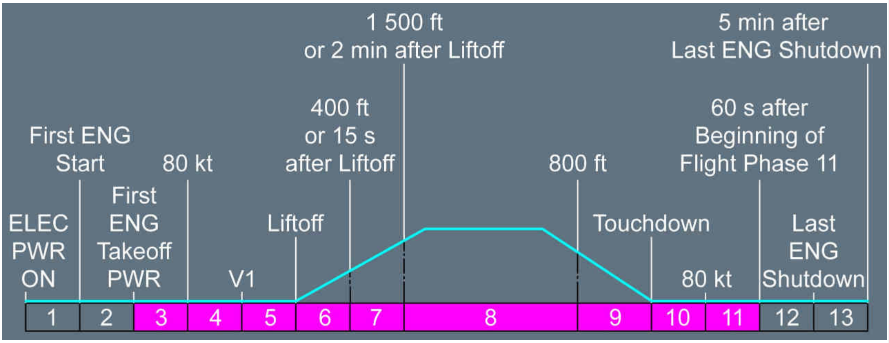
Master Light


MASTER
CAUT

SD page

ENG SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
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400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-ENG-7325W210-00008567.0001001 / 06 NOV 14

Crew awareness.

ENG 1(2) FADEC TEMP HI

Applicable to: ALL

Ident.: PRO-ABN-ENG-7321W110-00019319.0001001 / 06 NOV 14

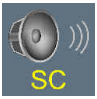
ANNUNCIATIONS

Triggering Conditions:

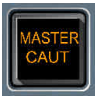
L2 The FADEC reaches a significant high temperature.

Indications:

Audio



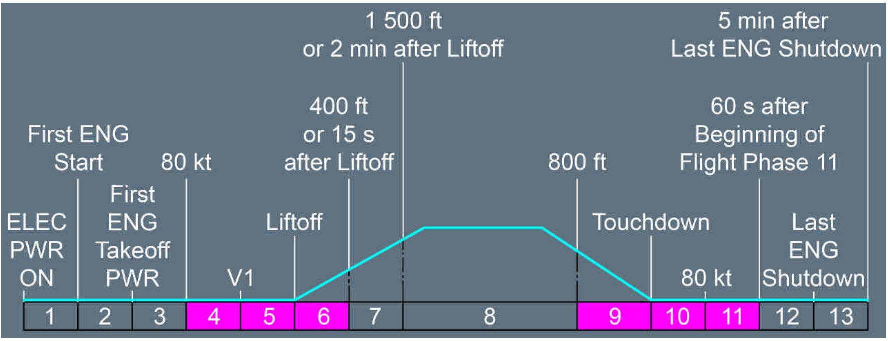
Master Light


MASTER
CAUT

SD page

BLEED SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

ENG 1(2) FADEC TEMP HI (Cont'd)

Ident.: PRO-ABN-ENG-7321W110-00019323.0001001 / 06 NOV 14

- **On ground:**
  THR LEVER 1(2)........ IDLE
- **In flight:**
  ENG 1(2) BLEED........ OFF

ASSOCIATED PROCEDURES

AIR ABNORM BLEED CONFIG

Refer to procedure.

Ident.: PRO-ABN-ENG-7321W110-00019324.0001001 / 06 NOV 14

STATUS

INOP SYS

ALL PHASES

ENG 1(2) BLEED (In flight only)

ENG 1(2) FAIL

Applicable to: ALL

Ident.: PRO-ABN-ENG-7100W220-00015188.0001001 / 06 NOV 14

ANNUNCIATIONS

Triggering Conditions:

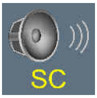
L2 The alert is triggered when N3 goes below 50 % and the ENG MASTER lever is set to on.

The FADEC automatically shuts down the engine when one of the following failures occurs:
- A shaft failure, or
- A FADEC overheat, or
- A thrust control malfunction, or
- An engine failure with a root cause not identified by the FADEC.

Note: *In that case the failure is not due to a shaft failure, a FADEC overheat, a thrust control malfunction, nor an engine stall.*

Indications:

Audio



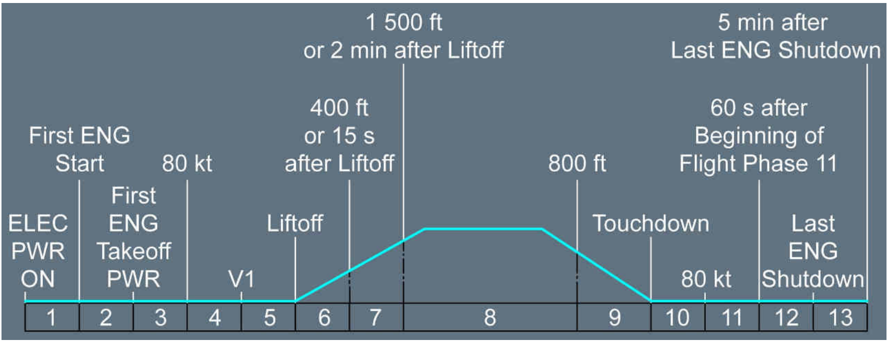
Master Light

MASTER
CAUT

SD page

ENG SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

ENG 1(2) FAIL (Cont'd)

Ident.: PRO-ABN-ENG-7100W220-00008569.0001001 / 06 NOV 14

L2 The flight crew must apply the standard strategy unless the flight crew establishes the obstacle strategy or ETOPS strategy before dispatch.

Continued on the following page

ENG 1(2) FAIL (Cont'd)

Ident.: PRO-ABN-ENG-7100W220-00008570.0002001 / 09 JUL 15

- **If the FADEC does not identify the failure:**

  No subtitle is displayed.

- **If the FADEC identifies the failure, one of the following subtitles appears:**

  SHAFT FAILURE

  FADEC OVHT

  THRUST CTL LOST

LAND ANSA

- **If the L/G is down during takeoff and initial climb:**

  L/G LEVER..........UP

- **If the FADEC identifies the failure** (SHAFT FAILURE, FADEC OVHT, THRUST CTL LOST)**:**

  L2 In the case of SHAFT FAILURE, the FADEC automatically shuts down the engine.

  L1 THR LEVER 1(2)..........IDLE

  ENG 1(2) MASTER..........OFF

  - **In the case of SHAFT FAILURE:**

    ENG 1(2) FIRE P/B..........PUSH

    ENG 1(2) AGENT 1 (AFTER 10 S IN FLIGHT ONLY) ....DISCH

    L2 *An automatic countdown starts on the ECAM when the ENG 1(2) FIRE pushbutton is pushed.*

    L1 *Note: This time delay is displayed and applicable in flight only.*

    - **If the bottle 1 is already discharged when the ECAM alert occurs:**

      ENG 1(2) AGENT 2 (AFTER 10 S IN FLIGHT ONLY) ....DISCH

      L2 *An automatic countdown starts on the ECAM when the ENG 1(2) FIRE pushbutton is pushed.*

      L1 *Note: This time delay is displayed and applicable in flight only.*

- **If the FADEC does not identify the failure:**

  THR LEVER 1(2)..........IDLE

  AUTO RELIGHT IN PROGRESS

  - **AS AUTO RELIGHT NOT SUCCESSFUL**

    ENG 1(2) MASTER..........OFF

Continued on the following page

ENG 1(2) FAIL (Cont'd)

■ **As no auto relight attempted:**
ENG 1(2) MASTER....................................OFF

● **ENGINE DAMAGED ?**

■ **YES**
ENG 1(2) FIRE P/B....................................PUSH
ENG 1(2) AGENT 1 (AFTER 10 S IN FLIGHT ONLY) ....DISCH

L2 *An automatic countdown starts on the ECAM when the ENG 1(2) FIRE pushbutton is pushed.*

L1 *Note: This time delay is displayed and applicable in flight only.*

● **If the bottle 1 is already discharged, when the ECAM alert occurs:**
ENG 1(2) AGENT 2 (AFTER 10 S IN FLIGHT ONLY) .... DISCH

L2 *An automatic countdown starts on the ECAM when the ENG 1(2) FIRE pushbutton is pushed.*

L1 *Note: This time delay is displayed and applicable in flight only.*

■ **NO**
ENG 1(2) RELIGHT PROC (ONLY IN FLIGHT) ....CONSIDER

L2 *Engine relight is at flight crew discretion. If the flight crew must activate the ENG RELIGHT IN FLT not-sensed procedure, Refer to (procedure).*
If engine parameters are normal after engine relight, consider to switch on wing anti-ice and nacelle anti-ice of the affected engine. This action increases the stall margin, with a trade-off on EGT increase.

L1

ASSOCIATED PROCEDURES

ENG 1(2) SHUTDOWN
Refer to procedure.

Continued on the following page

ENG 1(2) FAIL (Cont'd)

Ident.: PRO-ABN-ENG-7100W220-00008571.0001001 / 06 NOV 14

STATUS

INOP SYS

APPR & LDG

ENG 1(2) REVERSER

MEMOPAGE

MEMO ON ECAM

LAND ANSA

ENG 1(2) FIRE DET FAULT

Applicable to: ALL

Ident.: PRO-ABN-ENG-2612W200-00017192.0001001 / 02 JUL 14

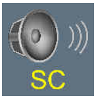
ANNUNCIATIONS

Triggering Conditions:

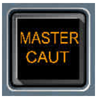
L2 The engine 1(2) fire detection loops are failed.
For more information about the detection logic in the engines, *Refer to DSC-26-30-10 Detection Logic*.

Indications:

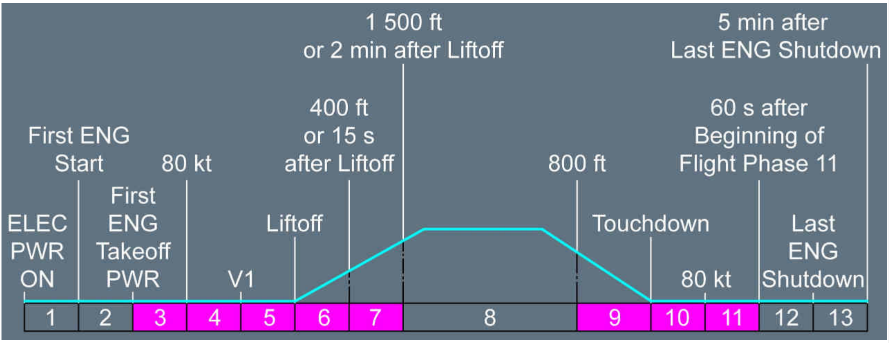
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
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Shutdown
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Ident.: PRO-ABN-ENG-2612W200-00019404.0001001 / 02 JUL 14

Note: *If the failure is only due to an IMA module failure, the ECAM displays the DUE TO IMA MODULE FAULT subtitle.*

Continued on the following page

ENG 1(2) FIRE DET FAULT (Cont'd)

Ident.: PRO-ABN-ENG-2612W200-00017195.0001001 / 02 JUL 14

Crew awareness.

Ident.: PRO-ABN-ENG-2612W200-00017197.0001001 / 02 JUL 14

STATUS

INOP SYS

ALL PHASES

ENG 1(2) FIRE DET

ENG 1(2) FUEL LEAK SUSPECTED

Applicable to: ALL

Ident.: PRO-ABN-ENG-7330W110-00015281.0001001 / 06 NOV 14

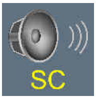
ANNUNCIATIONS

Triggering Conditions:

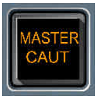
L2 A fuel leak between the fuel flow meter and the combustion chamber is detected.

Indications:

Audio



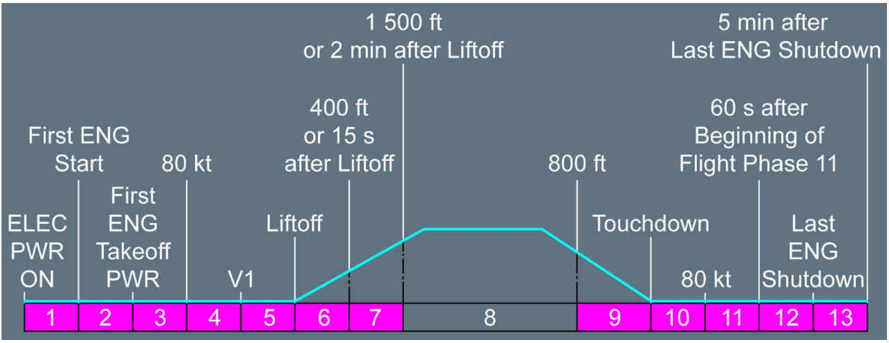
Master Light


MASTER
CAUT

SD page

ENG SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
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Continued on the following page

ENG 1(2) FUEL LEAK SUSPECTED (Cont'd)

Ident.: PRO-ABN-ENG-7330W110-00008574.0002001 / 28 MAY 20

2 ENG FUEL FLOW.. CHECK

L2 *The flight crew should check engine and fuel parameters to confirm the fuel leak.*
Check parameters like FOB, FU, fuel flow, fuel distribution, fuel imbalance to confirm the fuel leak.
A low N1 indication may indicate a fuel leak.

L1
- **FUEL LEAK CONFIRMED ?**
  - **YES**

    THR LEVER 1(2)..IDLE
    ENG 1(2) MASTER ....OFF

L2 *When set to OFF, the ENG MASTER lever closes both HP and LP fuel valves. This action isolates the fuel leak from the fuel tanks.*

L1

ASSOCIATED PROCEDURES

ENG 1(2) SHUTDOWN
Refer to procedure.

ENG 1(2) FUEL FILTER CLOGGED

Applicable to: ALL

Ident.: PRO-ABN-ENG-7331W150-00021633.0001001 / 06 NOV 14

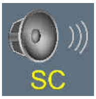
ANNUNCIATIONS

Triggering Conditions:

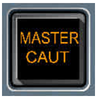
L2 The LP fuel filter is clogged. This is the intermediary clogging threshold of the LP fuel filter. The associated LP fuel filter bypass is still closed. This alert is triggered only when the ENG 2(1) FAIL ECAM alert is triggered on the opposite engine.

Indications:

Audio



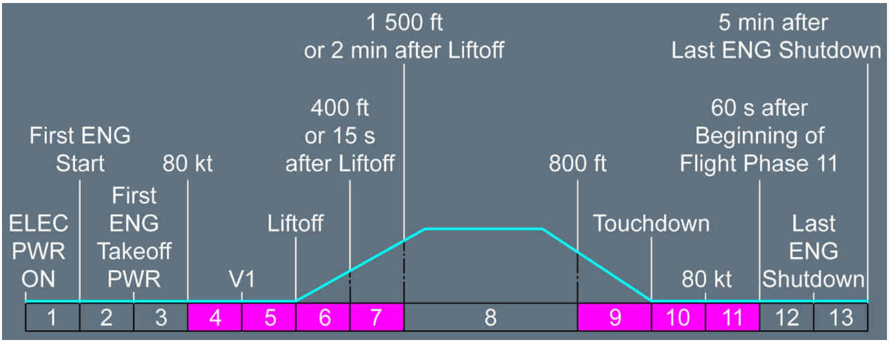
Master Light


MASTER
CAUT

SD page

ENG SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

ENG 1(2) FUEL FILTER CLOGGED (Cont'd)

Ident.: PRO-ABN-ENG-7331W150-00021634.0001001 / 24 JUL 17

LAND ANSA

- **On ground:**

  ALL THR LEVERS.......IDLE

CROSSFEED A+B.......OFF

L2 *In order to avoid potential fuel tanks contamination, the crossfeed valves are set to OFF.*

L1 CTR TK L+R PMP.......OFF

L2 *The center fuel tank supplies both engines. Consequently in order to avoid both engines contamination, center fuel tank pumps are set to off*

L1 CTR TK NOT USABLE

L2 *Expect the CG to move forward during the flight. The aircraft handling qualities are considered still acceptable for a safe continuation of the flight.*

Ident.: PRO-ABN-ENG-7331W150-00021635.0001001 / 06 NOV 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES	
CTR TK NOT USABLE	

MEMOPAGE

MEMO ON ECAM

	LAND ANSA

ENG 1(2) FUEL FILTER IN BYPASS

Applicable to: ALL

Ident.: PRO-ABN-ENG-7331W210-00020172.0001001 / 06 NOV 14

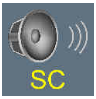
ANNUNCIATIONS

Triggering Conditions:

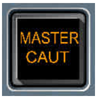
L2 The LP fuel filter of engine 1 or 2 is clogged. The associated fuel filter bypass is open.

Indications:

Audio



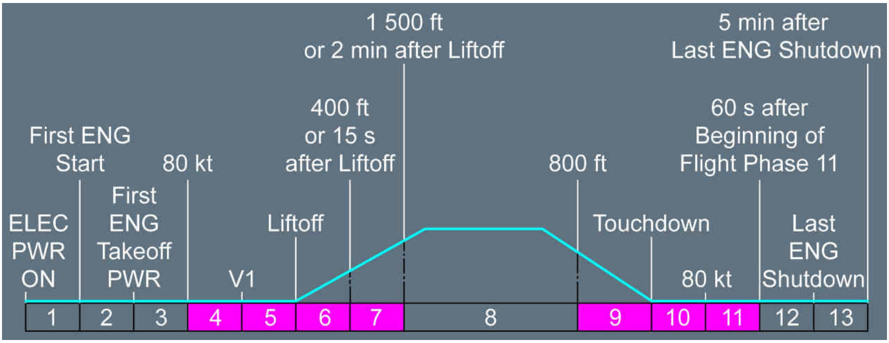
Master Light


MASTER
CAUT

SD page

ENG SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
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Takeoff
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Liftoff
Touchdown
Last
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V1
80 kt
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Ident.: PRO-ABN-ENG-7331W210-00020173.0001001 / 06 NOV 14

CROSSFEED A+B.. OFF

L2 *In order to avoid fuel tanks contamination, crossfeed valves are set to OFF.*

L1 CROSSFEED A+B : DO NOT OPEN

ENG 1(2) FUEL HEAT EXCHANGER IN BYPASS -
FUEL CONTAMINATED

Applicable to: ALL

Ident.: PRO-ABN-ENG-7921W080-00021649.0001001 / 02 APR 15

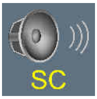
ANNUNCIATIONS

Triggering Conditions:

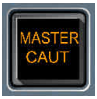
L2 The Fuel Oil Heat Exchanger (FOHE) of engine 1 or 2 is clogged. The associated FOHE bypass is open. This alert is triggered only when the ENG 2(1) FAIL ECAM alert is triggered on the opposite engine.

Indications:

Audio



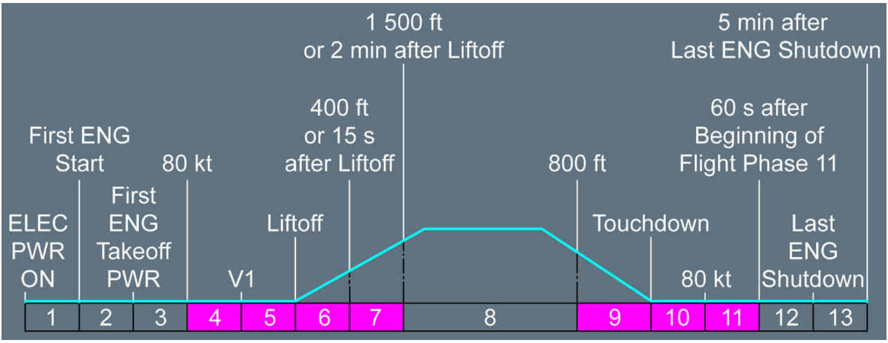
Master Light


MASTER
CAUT

SD page

ENG SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
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Continued on the following page

ENG 1(2) FUEL HEAT EXCHANGER IN BYPASS - (Cont'd)
FUEL CONTAMINATED

Ident.: PRO-ABN-ENG-7921W080-00021650.0001001 / 24 JUL 17

LAND ANSA

- **On ground**
  ALL THR LEVERS.........IDLE

CROSSFEED A+B.........OFF

L2 *In order to avoid fuel tanks contamination, the crossfeed valves are set to OFF.*

L1 CTR TK L+R PMP.........OFF

CTR TK NOT USABLE

L2 *In order to isolate the common source of contamination if any, the fuel center tank is not usable. Expect the CG to move forward during the flight. The aircraft handling qualities are considered still acceptable for a safe continuation of the flight.*

L1 A/THR.........OFF

AVOID RAPID THR CHANGES

Ident.: PRO-ABN-ENG-7921W080-00021651.0001001 / 02 APR 15

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

AVOID RAPID THR CHG
CTR TK NOT USABLE

LIMITATIONS ON PFD

ALL PHASES

AVOID RAPID THR CHG

MEMOPAGE

MEMO ON ECAM

LAND ANSA

ENG GA SOFT FAULT

Applicable to: ALL

Ident.: PRO-ABN-ENG-2230W120-00020599.0002001 / 06 NOV 14

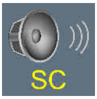
ANNUNCIATIONS

Triggering Conditions:

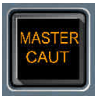
L2 The soft go-around function is lost.

Indications:

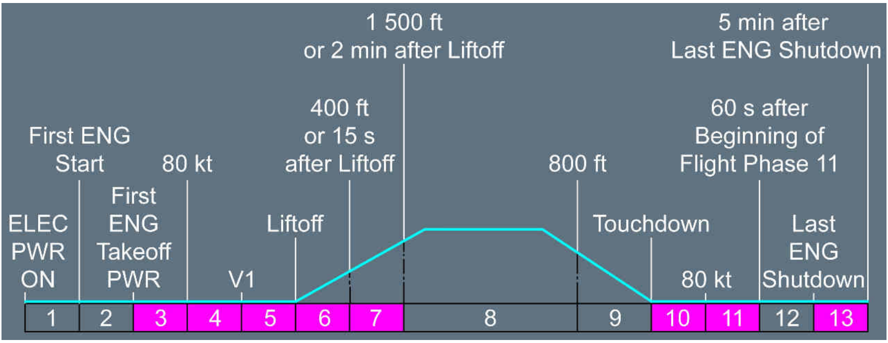
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
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Takeoff
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Liftoff
Touchdown
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Ident.: PRO-ABN-ENG-2230W120-00020600.0001001 / 06 MAY 15

GA THR : TOGA ONLY

L2 *The flight crew must set the thrust levers to the TOGA detent during the go-around to ensure the airport missed approach gradient.*

Continued on the following page

ENG GA SOFT FAULT (Cont'd)

Ident.: PRO-ABN-ENG-2230W120-00020601.0001001 / 06 NOV 14

LIMITATIONS

LIMITATIONS ON ECAM

APPR & LDG

GA THR: TOGA ONLY

STATUS

INOP SYS

APPR & LDG

GA SOFT

ENG 1(2) HP FUEL VLV NOT CLOSED

Applicable to: ALL

Ident.: PRO-ABN-ENG-7310W110-00015196.0001001 / 06 NOV 14

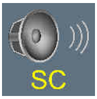
ANNUNCIATIONS

Triggering Conditions:

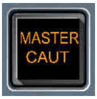
L2 The HP fuel valve is commanded closed, but remains open.

Indications:

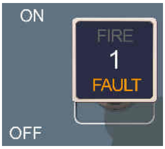
Audio



Master Light


MASTER
CAUT

Local Light

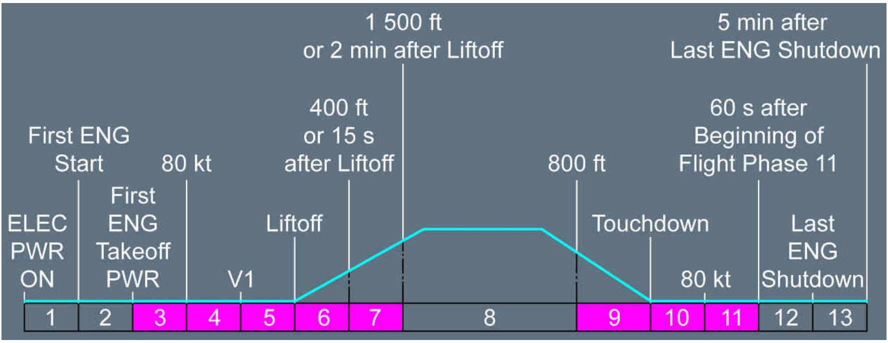

ON
FIRE
1
FAULT
OFF

ENG 1(2) Master light

SD page

ENG SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
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Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
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Takeoff
PWR
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PWR
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Liftoff
Touchdown
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Shutdown
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Continued on the following page

ENG 1(2) HP FUEL VLV NOT CLOSED (Cont'd)

Ident.: PRO-ABN-ENG-7310W110-00015198.0002001 / 03 JAN 19

ENG 1(2) MASTER .... OFF

L2 *The engine will shutdown by closure of the LP fuel valve.*

L1
- **In the case of manual engine start:**
  ENG 1(2) MAN START .... OFF
- **On ground, if the engine is still running 10 s after the ENG MASTER lever is set to OFF:**
  ENG 1(2) FIRE P/B .... PUSH

L2 *This action ensures the closure of the LP fuel valve.*

L1

ASSOCIATED PROCEDURES

ENG 1(2) SHUTDOWN

Refer to procedure.

ENG 1(2) HP FUEL VLV NOT OPEN

Applicable to: ALL

Ident.: PRO-ABN-ENG-7310W140-00015201.0001001 / 06 NOV 14

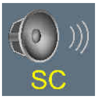
ANNUNCIATIONS

Triggering Conditions:

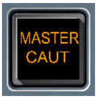
L2 The HP fuel valve is commanded open, but remains closed.

Indications:

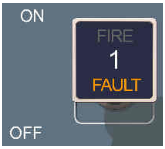
Audio



Master Light


MASTER
CAUT

Local Light

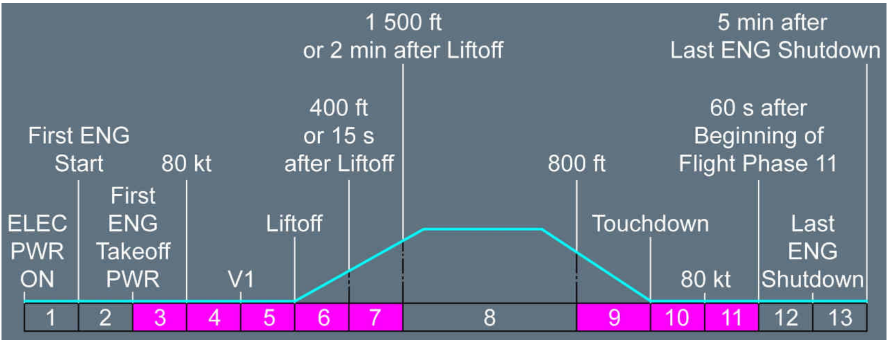

ON
FIRE
1
FAULT
OFF

ENG 1(2) Master light

SD page

ENG SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Continued on the following page

ENG 1(2) HP FUEL VLV NOT OPEN (Cont'd)

Ident.: PRO-ABN-ENG-7310W140-00015203.0002001 / 03 JAN 19

ENG 1(2) MASTER ....OFF

- **In the case of manual engine start:**

  ENG 1(2) MAN START... OFF

ASSOCIATED PROCEDURES

ENG 1(2) SHUTDOWN

Refer to procedure.

ENG 1(2) IGN A+B FAULT

Applicable to: ALL

Ident.: PRO-ABN-ENG-7400W010-00015205.0001001 / 06 NOV 14

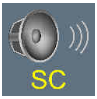
ANNUNCIATIONS

Triggering Conditions:

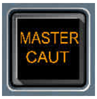
L2 Both igniters of the associated engine are failed.

Indications:

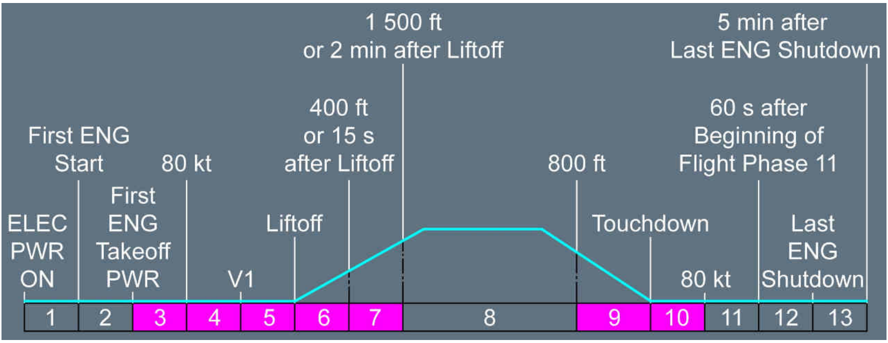
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Ident.: PRO-ABN-ENG-7400W010-00008584.0001001 / 06 NOV 14

Crew awareness.

Continued on the following page

ENG 1(2) IGN A+B FAULT (Cont'd)

Ident.: PRO-ABN-ENG-7400W010-00008585.0001001 / 06 NOV 14

STATUS

INOP SYS

ALL PHASES

ENG 1(2) IGN A+B

ENG 1(2) N1 DEGRADED MODE

Applicable to: ALL

Ident.: PRO-ABN-ENG-7325W470-00006357.0001001 / 06 NOV 14

ANNUNCIATIONS

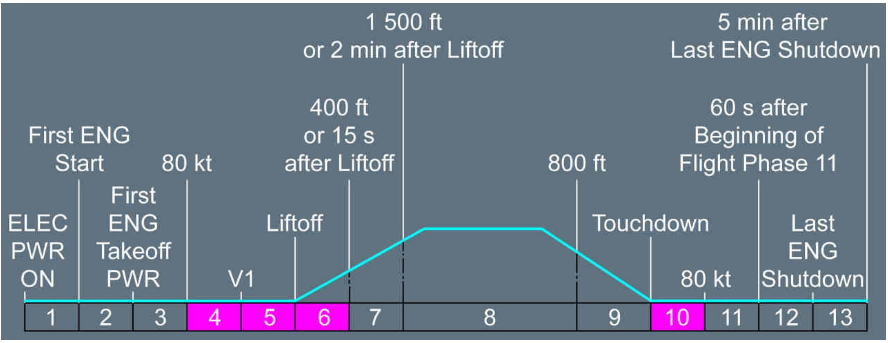
Triggering Conditions:

L2 The engine cannot be regulated in normal mode.
For more information on engine N1 degraded mode, *Refer to DSC-70-10-30-30 Degraded Mode*.

Indications:

Audio	Master Light	SD page
SC	MASTER CAUT	ENG SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

ENG 1(2) N1 DEGRADED MODE (Cont'd)

Ident.: PRO-ABN-ENG-7325W470-00015299.0001001 / 06 NOV 14

- **Before take-off thrust is applied:**
  THR LEVER 1(2).. IDLE
- **After take-off thrust is applied:**
  DO NOT EXCEED N1 LIM

  L2 *As there is no N1 rating limit, an N1 overspeed can occur at the full forward thrust lever position.*

  L1
  - **If A/THR inoperative:**
    THR LEVER 1(2)..MAN ADJUST
  - **If A/THR operative and not engaged:**
    A/THR.. AS RQRD

    L2 *A/THR is operative in N1 degraded mode if only one engine is affected.*

Ident.: PRO-ABN-ENG-7325W470-00016544.0002001 / 07 JUL 16

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

T.O THRUST LIMITED

LIMITATIONS ON PFD

ALL PHASES

T.O THRUST LIMITED

ENG 1(2) N1 HIGH VIBRATIONS

Applicable to: ALL

Ident.: PRO-ABN-ENG-7734W010-00015285.0001001 / 06 NOV 14

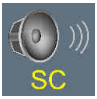
ANNUNCIATIONS

Triggering Conditions:

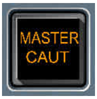
L2 The EMU detects abnormal high vibrations of the LP rotor (N1 vibrations).

Indications:

Audio



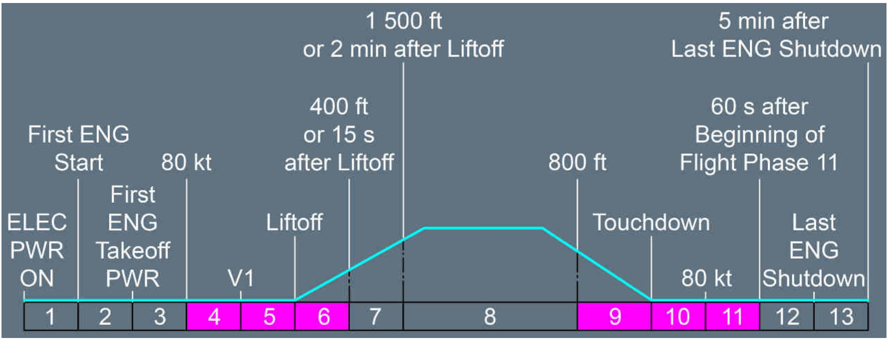
Master Light


MASTER
CAUT

SD page

ENG SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

ENG 1(2) N1 HIGH VIBRATIONS (Cont'd)

Ident.: PRO-ABN-ENG-7734W010-00015286.0001001 / 06 NOV 14

L2 The engine vibration (N1 greater than 5 units for 8 s or N1 greater than 8 units for 2 s) is mainly a guideline for the flight crew to more closely monitor engine parameters.
The ECAM vibration advisory does not necessarily require any engine shutdown.

Note: *High N1 vibrations are generally associated with airframe vibrations.*

Note: *High N1 vibrations may be associated with cockpit and cabin smoke, and/or the smell of burning. This may be due to the contact of the compressor blade tip with associated seals or due to ice ingestion by the engine.*

Ident.: PRO-ABN-ENG-7734W010-00015287.0002001 / 30 NOV 17

- **ENG 1(2) ICING SUSPECTED ?**
  - **YES**

L2

An increase of N1 vibration in icing conditions, with or without engine anti-ice, may be due to fan blades and/or spinner icing.

Ice accretion on engine fan may result in a temporary increase of the EGT.

L1 A/THR..OFF
ENG 1(2)..IDLE THEN INCREASE

L2 *To shed ice, it may be necessary to perform several engine rate changes.*
During each engine run-up, increase thrust up to an appropriate setting for the flight phase.
After each engine run-up, vibrations should decrease indicating the progress of the ice shedding.
When the ice is shed, vibrations should return to normal and the flight crew can resume normal engine operation.

L1 N1 VIB VALUE..CHECK
ENG 1(2) THRUST..REDUCE AS RQRD

ENG 1(2) N1 OVER LIMIT

Applicable to: ALL

Ident.: PRO-ABN-ENG-7711W050-00015209.0001001 / 05 NOV 15

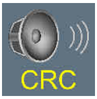
ANNUNCIATIONS

Triggering Conditions:

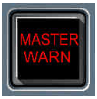
L2 The rotation speed of the LP rotor is abnormally high and N1 is above the red limit. *Refer to LIM-ENG Shaft Speeds* for red limit value.

Indications:

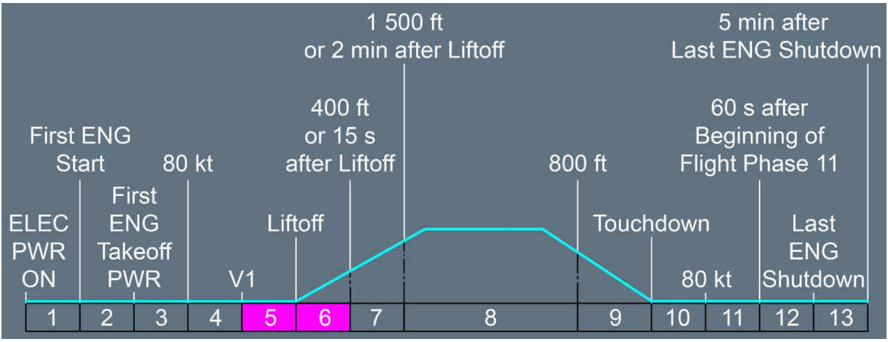
Audio



Master Light


MASTER
WARN

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

ENG 1(2) N1 OVER LIMIT (Cont'd)

Ident.: PRO-ABN-ENG-7711W050-00015211.0001001 / 06 NOV 14

THR LEVER 1(2).. REDUCE BELOW N1 LIMIT

- **IF OVER LIMIT PERSISTS**

  ENG 1(2) MASTER .... OFF

ASSOCIATED PROCEDURES

ENG 1(2) SHUTDOWN

Refer to procedure.

ENG 1(2) N2(N3) HIGH VIBRATIONS

Applicable to: ALL

Ident.: PRO-ABN-ENG-7734W030-00015289.0001001 / 06 NOV 14

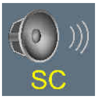
ANNUNCIATIONS

Triggering Conditions:

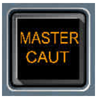
L2 The EMU detects abnormal high vibrations of the IP rotor (N2 vibrations) or HP rotor (N3 vibrations).

Indications:

Audio



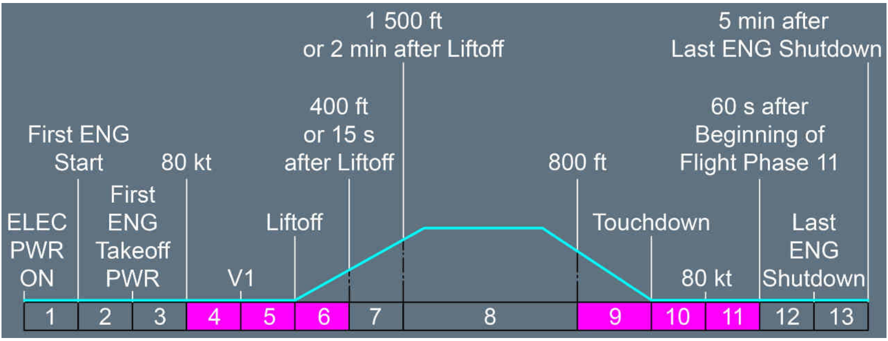
Master Light


MASTER
CAUT

SD page

ENG SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Continued on the following page

ENG 1(2) N2(N3) HIGH VIBRATIONS (Cont'd)

Ident.: PRO-ABN-ENG-7734W030-00015290.0001001 / 06 NOV 14

L2 The engine vibration (N2, N3 greater than 5 units for 8 s or N2, N3 greater than 8 units for 2 s) is mainly a guideline for the flight crew to more closely monitor engine parameters.
The ECAM vibration advisory does not necessarily require any engine shutdown.

Note: *High N2, N3 vibrations can occur without airframe vibrations.*

Note: *High N2, N3 vibrations may be associated with cockpit and cabin smoke, and/or the smell of burning. This may be due to the contact of the compressor blade tip with associated seals.*

Ident.: PRO-ABN-ENG-7734W030-00015291.0002001 / 30 NOV 17

N2(N3) VIB VALUE....................CHECK
ENG 1(2) THRUST....................REDUCE AS RQRD

ENG 1(2) N2 OVER LIMIT

Applicable to: ALL

Ident.: PRO-ABN-ENG-7711W090-00015213.0001001 / 06 NOV 14

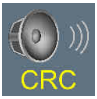
ANNUNCIATIONS

Triggering Conditions:

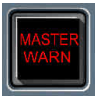
L2 The rotation speed of the IP rotor is abnormally high and N2 is above the red limit. *Refer to DSC-70-20 N2* for red limit value.

Indications:

Audio



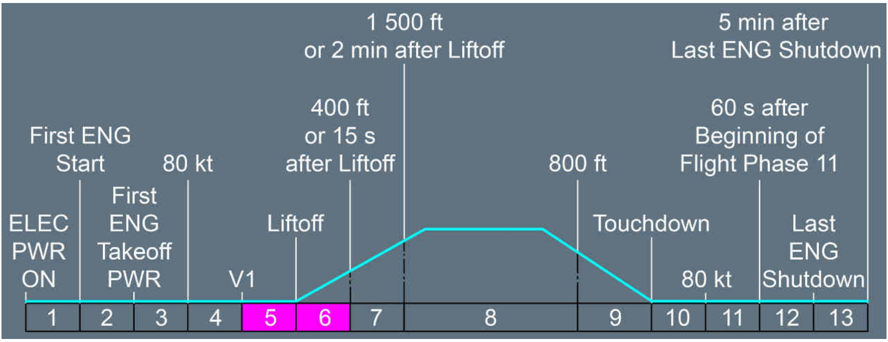
Master Light


MASTER
WARN

SD page

ENG SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
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ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
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Shutdown
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Continued on the following page

🟥 ENG 1(2) N2 OVER LIMIT (Cont'd) 🟥

Ident.: PRO-ABN-ENG-7711W090-00015215.0001001 / 06 NOV 14

THR LEVER 1(2)... REDUCE BELOW N2 LIMIT

- **IF OVER LIMIT PERSISTS**
  ENG 1(2) MASTER .... OFF

ASSOCIATED PROCEDURES

ENG 1(2) SHUTDOWN
Refer to procedure.

ENG 1(2) N3 OVER LIMIT

Applicable to: ALL

Ident.: PRO-ABN-ENG-7711W130-00015217.0001001 / 06 NOV 14

ANNUNCIATIONS

Triggering Conditions:

L2 The rotation speed of the HP rotor is abnormally high and N3 is above the red limit. *Refer to DSC-70-20 N3* for red limit value.

Indications:

Audio

CRC

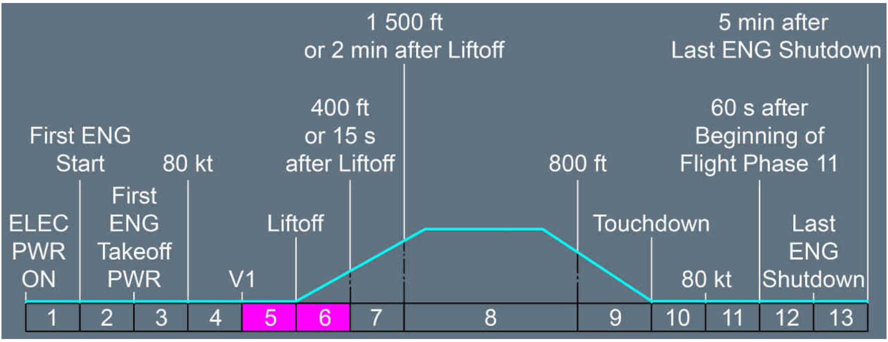
Master Light

MASTER WARN

SD page

ENG SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
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ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

ENG 1(2) N3 OVER LIMIT (Cont'd)

Ident.: PRO-ABN-ENG-7711W130-00015219.0001001 / 06 NOV 14

THR LEVER 1(2) .... REDUCE BELOW N3 LIMIT

- **IF OVER LIMIT PERSISTS**

  ENG 1(2) MASTER .... OFF

ASSOCIATED PROCEDURES

ENG 1(2) SHUTDOWN

Refer to procedure.

ENG 1(2) OIL PRESS LO (AMBER ALERT)

Applicable to: ALL

Ident.: PRO-ABN-ENG-7933W210-00015225.0001001 / 06 NOV 14

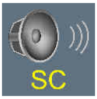
ANNUNCIATIONS

Triggering Conditions:

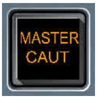
L2 The engine oil pressure is abnormally low. The oil pressure is between 40 PSI and 25 PSI.

Indications:

Audio



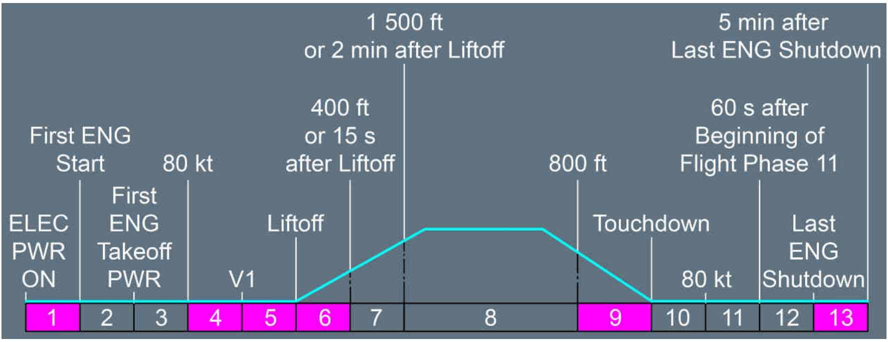
Master Light


MASTER
CAUT

SD page

ENG SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
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First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
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Shutdown
V1
80 kt
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Ident.: PRO-ABN-ENG-7933W210-00008600.0001001 / 07 JUN 19

ENG 1(2) THR..REDUCE BELOW LIMIT

L2 *Gradually reduce thrust on the affected engine, in order to increase the oil pressure until the ECAM alert disappear.*

ENG 1(2) OIL PRESS LO (RED ALERT)

Applicable to: ALL

Ident.: PRO-ABN-ENG-7933W110-00015221.0001001 / 06 NOV 14

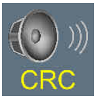
ANNUNCIATIONS

Triggering Conditions:

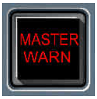
L2 The engine oil pressure is abnormally low. The oil pressure is below 25 PSI.

Indications:

Audio



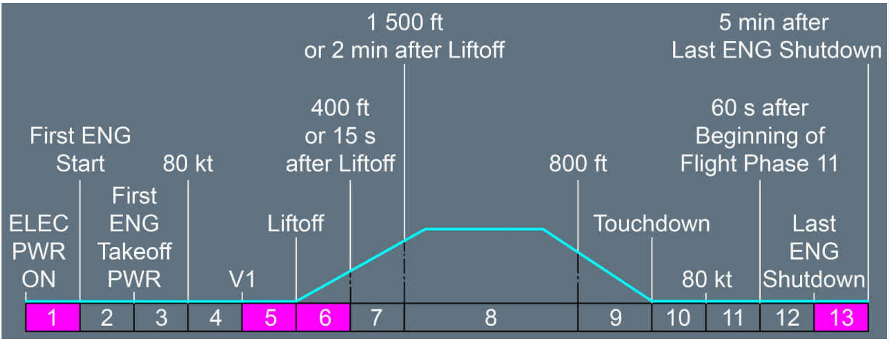
Master Light


MASTER
WARN

SD page

ENG SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
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Liftoff
Touchdown
Last
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Shutdown
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Ident.: PRO-ABN-ENG-7933W110-00008601.0001001 / 06 NOV 14

THR LEVER 1(2)....................IDLE
ENG 1(2) MASTER ....OFF

ASSOCIATED PROCEDURES

ENG 1(2) SHUTDOWN

Refer to procedure.

ENG 1(2) OIL TEMP HI

Applicable to: ALL

Ident.: PRO-ABN-ENG-7931W210-00015229.0001001 / 06 NOV 14

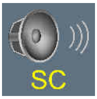
ANNUNCIATIONS

Triggering Conditions:

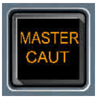
L2 The engine oil temperature is above (180 °C).

Indications:

Audio



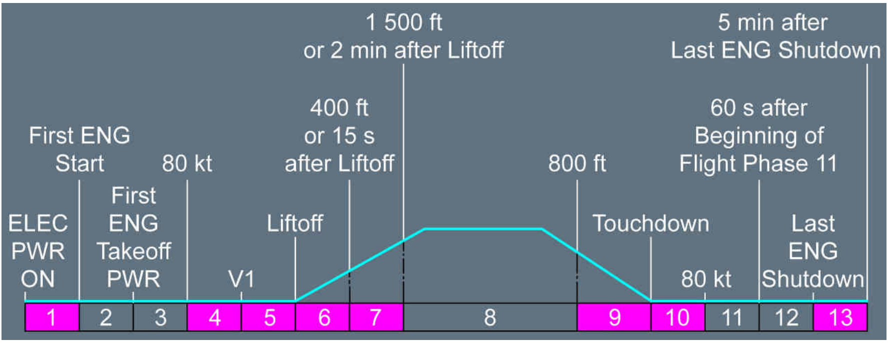
Master Light


MASTER
CAUT

SD page

ENG SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
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Continued on the following page

ENG 1(2) OIL TEMP HI (Cont'd)

Ident.: PRO-ABN-ENG-7931W210-00008602.0001001 / 06 NOV 14

THR LVR 1(2)..REDUCE BELOW OIL TEMP LIMIT

L2 *Gradually reduce thrust on the affected engine, to decrease the oil temperature below limit.*

L1 ● **OIL TEMP HI PERSISTS ?**

- ● **YES**

  ENG 1(2) MASTER ....OFF

  ASSOCIATED PROCEDURES

  ENG 1(2) SHUTDOWN

  Refer to procedure.

ENG 1(2) OIL TEMP LO

Applicable to: ALL

Ident.: PRO-ABN-ENG-7931W110-00015344.0001001 / 06 NOV 14

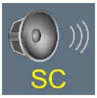
ANNUNCIATIONS

Triggering Conditions:

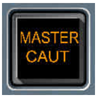
L2 The engine oil temperature is below 50 °C, and:
- The flight crew presses the T.O CONFIG pb, or
- The flight crew sets the takeoff power.

Indications:

Audio



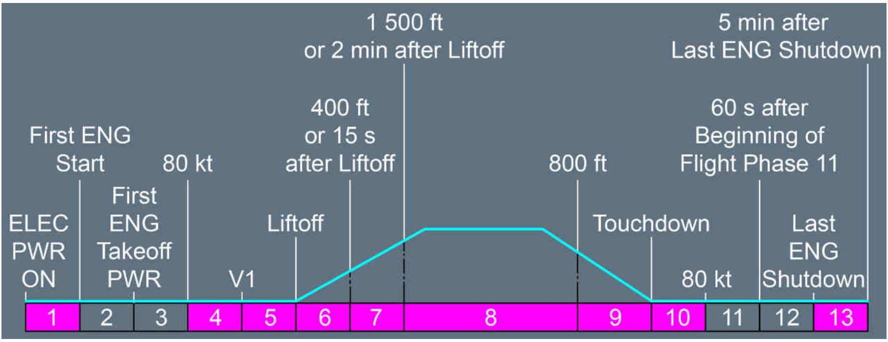
Master Light


MASTER
CAUT

SD page

ENG SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Ident.: PRO-ABN-ENG-7931W110-00008603.0001001 / 06 NOV 14

THR LEVER 1(2)..IDLE
DELAY T.O FOR WARM UP

ENG 1(2) REVERSER CTL FAULT

Applicable to: ALL

Ident.: PRO-ABN-ENG-7830W310-00015336.0001001 / 06 NOV 14

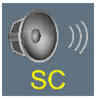
ANNUNCIATIONS

Triggering Conditions:

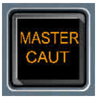
L2 The actuation control system of a thrust reverser is detected inoperative.

Indications:

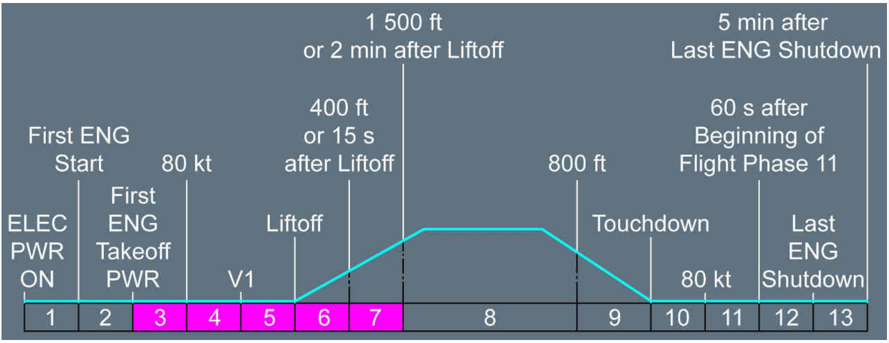
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-ENG-7830W310-00008627.0002001 / 03 JAN 19

- **Before takeoff:**
  T.O PERF...CHECK

LDG DIST AFFECTED
ON DRY RWY ONLY: LDG DIST AFFECTED<15 %

L2 *Landing distance computation on dry runways does not take into account the effect of the thrust reversers.*

Continued on the following page

ENG 1(2) REVERSER CTL FAULT (Cont'd)

Ident.: PRO-ABN-ENG-7830W310-00008628.0001001 / 06 NOV 14

LIMITATIONS

LIMITATIONS ON ECAM

APPR & LDG

LDG DIST AFFECTED

L12

STATUS

INOP SYS

APPR & LDG

BTV

The BTV and the ROW/ROP bars displays are lost but the ROW/ROP warnings (PFD and audio) remain active.

ENG 1+2 REVERSERS (If both thrust reversers inhibited)
ENG 1(2) REVERSER

INFO

ON DRY RWY ONLY: LDG DIST AFFECTED < 15 %

ENG 1(2) REVERSER ENERGIZED

Applicable to: ALL

Ident.: PRO-ABN-ENG-7830W810-00015265.0001001 / 06 NOV 14

ANNUNCIATIONS

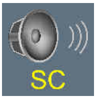
Triggering Conditions:

L2 One of the following conditions occurs:

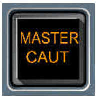
- On ground, the thrust reverser system is electrically supplied, even if the EIF did not send the deploy command to the ETRAC,
- In flight, the thrust reverser system is electrically supplied, even if the EIF did not send the deploy command to the ETRAC, and the track lock is abnormally unlocked.

Indications:

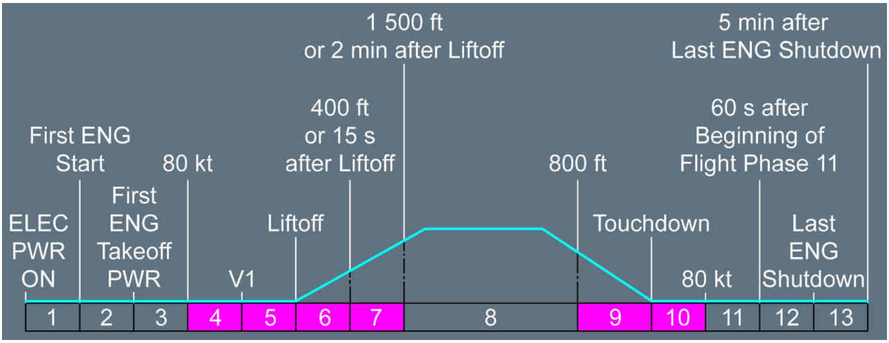
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
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Ident.: PRO-ABN-ENG-7830W810-00008632.0001001 / 06 NOV 14

THR LEVER 1(2)...IDLE

L2 *The FADEC automatically limits to idle the thrust of the associated engine in order to minimize inadvertent reverser deployment effect*

ENG 1(2) REVERSER FAULT

Applicable to: ALL

Ident.: PRO-ABN-ENG-7830W510-00015269.0001001 / 06 NOV 14

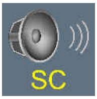
ANNUNCIATIONS

Triggering Conditions:

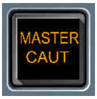
L2 The thrust reverser system is failed.

Indications:

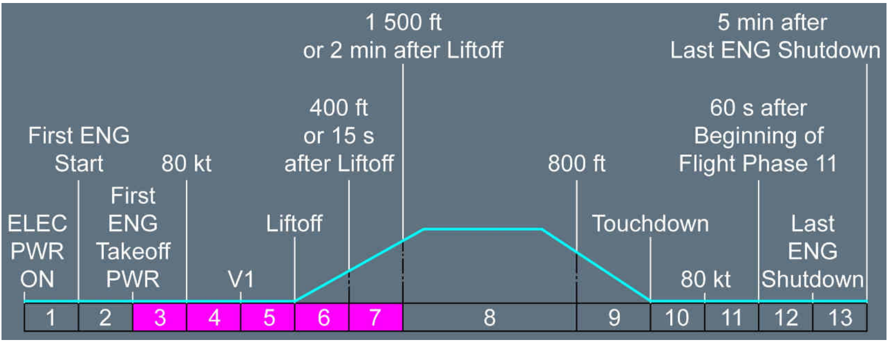
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-ENG-7830W510-00008634.0002001 / 03 JAN 19

- **Before takeoff:**
  T.O PERF..CHECK

LDG DIST AFFECTED

ON DRY RWY ONLY: LDG DIST AFFECTED<15 %

L2 *Landing distance computation on dry runways does not take into account the effect of the thrust reversers.*

Continued on the following page

ENG 1(2) REVERSER FAULT (Cont'd)

Ident.: PRO-ABN-ENG-7830W510-00008635.0001001 / 06 NOV 14

LIMITATIONS

LIMITATIONS ON ECAM

APPR & LDG

LDG DIST AFFECTED

L12

STATUS

INOP SYS

APPR & LDG

BTV

The BTV and the ROW/ROP bars display are lost but the ROW/ROP warnings (PFD and audio) remain active.

ENG 1+2 REVERSERS (If both thrust reversers inoperative)
ENG 1(2) REVERSER

INFO

ON DRY RWY ONLY: LDG DIST AFFECTED < 15 %

ENG 1(2) REVERSER INHIBITED

Applicable to: ALL

Ident.: PRO-ABN-ENG-7830W110-00015332.0001001 / 06 NOV 14

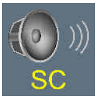
ANNUNCIATIONS

Triggering Conditions:

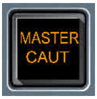
L2 The thrust reverser system is mechanically inhibited due to a maintenance action.

Indications:

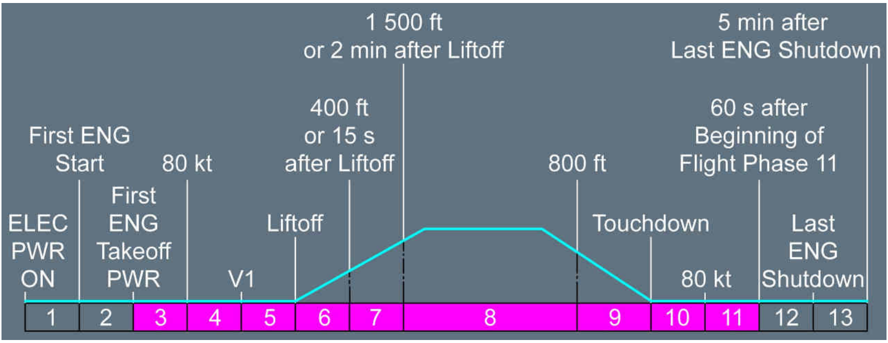
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-ENG-7830W110-00008636.0001001 / 06 NOV 14

L2 The engine 1(2) thrust reverser is inhibited as per MMEL.

The associated thrust reverser is inoperative.

- *Refer to MMEL/MI-78-30 Engine 1 Reverser*
- *Refer to MMEL/MI-78-30 Engine 2 Reverser*

Continued on the following page

ENG 1(2) REVERSER INHIBITED (Cont'd)

Ident.: PRO-ABN-ENG-7830W110-00008637.0002001 / 03 JAN 19

- **Before takeoff:**
  T.O PERF...CHECK

LDG DIST AFFECTED
ON DRY RWY ONLY: LDG DIST AFFECTED<15 %

L2 *Landing distance computation on dry runways does not take into account the effect of the thrust reversers.*

Ident.: PRO-ABN-ENG-7830W110-00008638.0001001 / 06 NOV 14

LIMITATIONS

LIMITATIONS ON ECAM

APPR & LDG

LDG DIST AFFECTED

STATUS

INOP SYS

APPR & LDG

BTV
ENG 1+2 REVERSERS (If both thrust reversers inhibited)
ENG 1(2) REVERSER

INFO

ON DRY RWY ONLY: LDG DIST AFFECTED < 15 %

ENG 1(2) REVERSER LOCKED

Applicable to: ALL

Ident.: PRO-ABN-ENG-7830W410-00015273.0001001 / 06 NOV 14

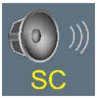
ANNUNCIATIONS

Triggering Conditions:

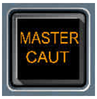
L2 The locking actuator of the left translating cowl or right translating cowl (first line of defense), or the track lock (third line of defense) are detected failed in locked position.

Indications:

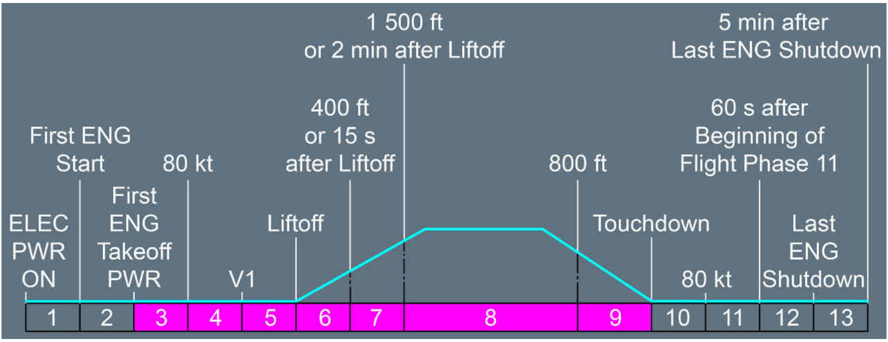
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Ident.: PRO-ABN-ENG-7830W410-00008640.0002001 / 03 JAN 19

- **Before takeoff:**
  T.O PERF...CHECK

LDG DIST AFFECTED

ON DRY RWY ONLY: LDG DIST AFFECTED<15 %

L2 *Landing distance computation on dry runways does not take into account the effect of the thrust reversers.*

Continued on the following page

ENG 1(2) REVERSER LOCKED (Cont'd)

Ident.: PRO-ABN-ENG-7830W410-00008641.0001001 / 06 NOV 14

LIMITATIONS

LIMITATIONS ON ECAM

APPR & LDG

LDG DIST AFFECTED

L12

STATUS

INOP SYS

APPR & LDG

BTV

The BTV and the ROW/ROP bars displays are lost but the ROW/ROP warnings (PFD and audio) remain active.

ENG 1+2 REVERSERS (If both thrust reversers inoperative)
ENG 1(2) REVERSER

INFO

ON DRY RWY ONLY: LDG DIST AFFECTED < 15 %

ENG 1(2) REVERSER UNLOCKED

Applicable to: ALL

Ident.: PRO-ABN-ENG-7830W210-00015277.0001001 / 06 NOV 14

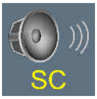
ANNUNCIATIONS

Triggering Conditions:

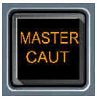
L2 The EIF does not send a deploy command to the ETRAC but detects two out of three locking devices (locking actuator, locking feedback actuator and track lock) abnormally unlocked *Refer to DSC-70-10-70-10 Thrust Reverser Control*.

Indications:

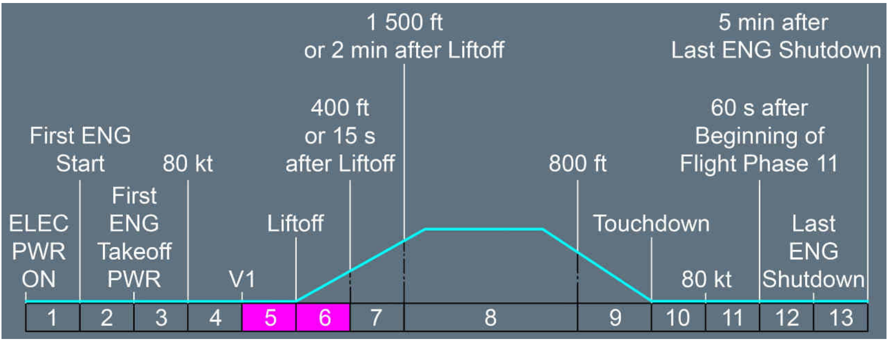
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

ENG 1(2) REVERSER UNLOCKED (Cont'd)

- **When the FADEC detects an inadvertent deployment of the thrust reverser:**
  ENG 1(2) IDLE ONLY

■ **On ground:**

THR LEVER 1(2) .... IDLE

L2 *Select thrust lever at idle, even if idle is automatically selected by the FADEC.*

L1 ENG 1(2) MASTER .... OFF

■ **In flight:**

THR LEVER 1(2) .... IDLE

L2 *Select thrust lever at idle, even if idle is automatically selected by the FADEC.*

L1 GA THR : TOGA ONLY

L2 *The flight crew must set the non-affected thrust lever to the TOGA detent during the go-around to ensure the airport missed approach gradient.*

L1
- **BUFFET ?**
  - **YES**
    ENG 1(2) MASTER .... OFF

L2 *The warning alone without buffet or vibration may be a false warning.*

L1

ASSOCIATED PROCEDURES

ENG 1(2) SHUTDOWN

Refer to procedure.

Continued on the following page

ENG 1(2) REVERSER UNLOCKED (Cont'd)

Ident.: PRO-ABN-ENG-7830W210-00008646.0002001 / 07 JUL 16

LIMITATIONS

LIMITATIONS ON ECAM

APPR & LDG

GA THR : TOGA ONLY

STATUS

INOP SYS

APPR & LDG

GA SOFT

INFO

- **When the FADEC detects an inadvertent deployment of the thrust reverser:**
  ENG 1(2) IDLE ONLY

ENG 1(2) SHUTDOWN

Applicable to: ALL

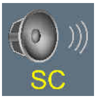
Ident.: PRO-ABN-ENG-7100W310-00015304.0002001 / 30 NOV 17

ANNUNCIATIONS

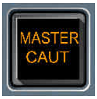
Triggering Conditions:

This alert appears only when the ENG MASTER lever is set to OFF from takeoff to landing (80 kt).
This alert is inhibited in case of ALL ENGINES FAILURE condition.
Indications:

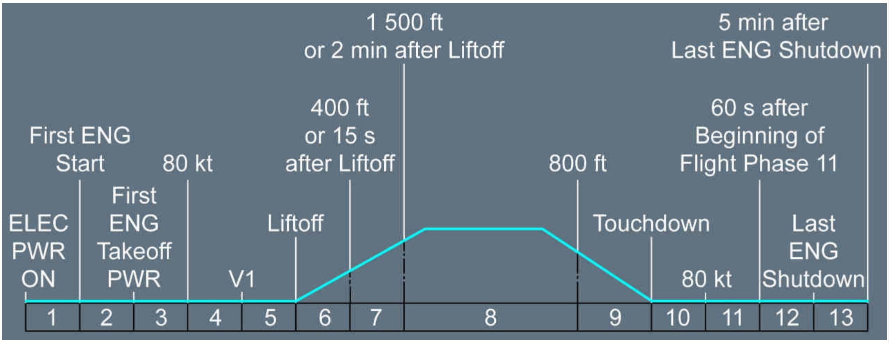
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
ELEC
PWR
ON
First
ENG
Takeoff
PWR
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

ENG 1(2) SHUTDOWN (Cont'd)

Ident.: PRO-ABN-ENG-7100W310-00008608.0009001 / 05 SEP 19

LAND ANSA

- **During takeoff:**
  L/G LEVER...UP
- **In flight:**
  - **If wing anti-ice on or icing conditions at takeoff and crossbleed not closed due to a leakage:**
    XBLEED (IF NO ENG FIRE)...OPEN
    WING A-ICE...OFF 15S THEN ON

FUEL IMBALANCE : MONITOR

L2 *For manual fuel balancing, apply the [ABN] FUEL WINGS MAN BALANCING ECAM not-sensed procedure (Refer to Procedure).*

L1 LDG DIST AFFECTED

L2 *Failure affecting landing distance above 15% whatever the runway condition.*

L1 ON DRY RWY ONLY : LDG DIST AFFECTED<15%

GA THR : TOGA ONLY

L2 *The flight crew must set the thrust levers to the TOGA detent during the go-around to ensure the airport missed approach gradient.*

L1
- **If spoilers are partly extended:**
  FOR LDG: FLAP LVR 3
  FOR GA: FLAP LVR 1

L12

ASSOCIATED PROCEDURES

AIR ABNORMAL BLEED CONFIG

This alert is only displayed if the XBLEED valve did not open.Refer to procedure.

SECONDARY FAILURES

* ELEC
* BLEED
* HYD

Continued on the following page

ENG 1(2) SHUTDOWN (Cont'd)

Ident.: PRO-ABN-ENG-7100W310-00008609.0006001 / 04 DEC 18

LIMITATIONS

LIMITATIONS ON ECAM

APPR & LDG

LDG DIST AFFECTED
GA THR : TOGA ONLY

- **If spoilers are partly extended:**
  FOR LDG: FLAP LVR 3
  FOR GA: FLAP LVR 1

STATUS

INOP SYS

ALL PHASES

GEN 1A+1B (If ENG 1 is shutdown)
GEN 2B+2A (If ENG 2 is shutdown)
ENG 1(2) BLEED

APPR & LDG

BTV
ENG 1(2) REVERSER
GA SOFT

INFO

ON DRY RWY ONLY : LDG DIST AFFECTED < 15 %

MEMOPAGE

MEMO ON ECAM

LAND ANSA

ENG 1(2) STALL

Applicable to: ALL

Ident.: PRO-ABN-ENG-7100W410-00015233.0001001 / 06 NOV 14

ANNUNCIATIONS

Triggering Conditions:

L2 The FADEC detects an engine stall.

The engine stall occurs when the control of the airflow through the IP and the HP compressors is abnormal. The engine stall can be due to:
- Objects ingestion or,
- Shaft damages or,
- Adverse weather.

Refer to DSC-70-10-60 Engine Stability for engine airflow control.
The alert is inhibited during the takeoff phase from V1 to 400 ft except if the other engine is in stall condition or has failed.
Indications:

Audio

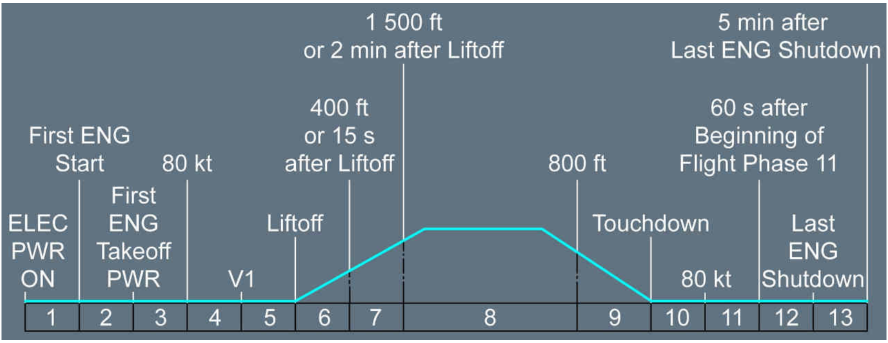
Master Light

MASTER
CAUT

SD page

ENG SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

ENG 1(2) STALL (Cont'd)

Ident.: PRO-ABN-ENG-7100W410-00015234.0001001 / 06 NOV 14

L2 The flight crew can identify an engine stall by:
- Sudden engine thrust dissymmetry,
- Abnormal engine noises,
- Flame out of the engine exhaust or engine inlet (for severe cases).

The flight crew can also observe:
- Fluctuating performance parameters,
- Slow or no thrust lever response,
- High EGT,
- Rapid EGT increase when the thrust lever is moved forward.

Engine stalls must be reported for maintenance action.

Ident.: PRO-ABN-ENG-7100W410-00008610.0001001 / 06 NOV 14

THR LEVER 1(2)....................IDLE
ENG 1(2) A-ICE....................ON
ENG 1(2) PARAMETERS....................CHECK

● **ABNORMAL PARAMETERS ?**

■ **YES**

ENG 1(2) MASTER ....OFF
ENG 1(2) RELIGHT PROC....................CONSIDER

L2 *ENG 1(2) RELIGHT apply, Refer to PRO-ABN-ENG [ABN] ENG RELIGHT IN FLT.*
Engine relight is at flight crew discretion.
If engine parameters are normal after engine relight, consider to switch on wing anti-ice and nacelle anti-ice of the affected engine. This action increases the stall margin, with a trade-off on EGT increase.
If stall does not occur again, continue normal engine operation.

L1 ● **If engine relight is not successful:**

ASSOCIATED PROCEDURES

ENG 1(2) SHUTDOWN

Refer to procedure.

■ **NO**

ENG 1(2) THRUST ....INCREASE SLOWLY

ENG 1(2) START FAULT

Applicable to: ALL

Ident.: PRO-ABN-ENG-8000W410-00015237.0001001 / 09 MAR 16

ANNUNCIATIONS

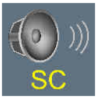
Triggering Conditions:

L2 The engine start, manual or automatic, is not successful due to:
- EGT overlimit, or
- No light up, or
- ENG stall, or
- Hung start.

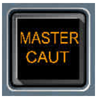
Note: *The EEC tries a second automatic start when the first automatic start is aborted. In the case of EGT overlimit, the EEC tries a second automatic start only if the EGT did not exceed 700 °C.*

Indications:

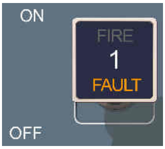
Audio



Master Light



Local Light



ENG 1(2) Master light

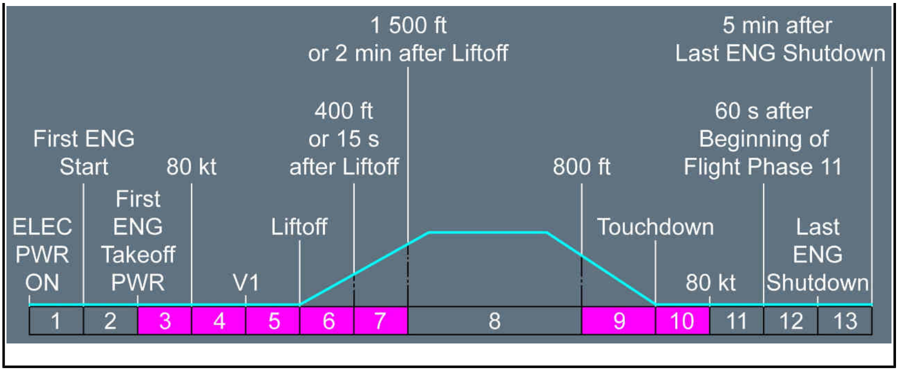
SD page

ENG SD page

Flight Phase Inhibition:

Continued on the following page

ENG 1(2) START FAULT (Cont'd)


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
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12
13

Continued on the following page

ENG 1(2) START FAULT (Cont'd)

Ident.: PRO-ABN-ENG-8000W410-00015239.0003001 / 03 JAN 19

- **Depending on the failure case, one of the following subtitles appears:**
  EGT OVERLIMIT
  NO LIGHT UP
  ENG STALL
  STARTER MOTOR

■ **In the case of NO LIGHT UP or ENG STALL:**

  ■ **In the case of automatic engine start:**
  CRANK IN PROGRESS

L2 *When a first automatic engine start fails, the FADEC turns off fuel supply and ignition. The FADEC motors the engine during sufficient time to clear fuel vapors and then attempts a second and last automatic engine start.*

L1 NEW START IN PROGRESS

If new engine start is attempted after dry crank.

  - **If start is not successful:**
    ENG 1(2) MASTER.................................... OFF

  ■ **In the case of manual engine start :**
  ENG 1(2) MASTER.................................... OFF
  ENG START SEL.................................... CRANK

L2 *To remove fuel vapors, it is necessary to dry crank the engine for 65 s.*

L1
  - **AFTER 65 S**
    ENG START SEL.................................... NORM
    ENG 1(2) MAN START.................................... OFF

L2 *Note:* *The flight crew must decide whether to attempt a new start as per starter limitation (Refer to starter limitation) or report the no start condition for further maintenance action.*

L1 ■ **In the case of EGT OVERLIMIT:**

  ■ **In the case of automatic engine start:**
  CRANK IN PROGRESS

L2 *When a first automatic engine start fails, the FADEC turns off fuel supply and ignition. The FADEC motors the engine during sufficient time to clear fuel vapors and then attempts or not a second and last automatic engine start.*

Continued on the following page

ENG 1(2) START FAULT (Cont'd)

L1

- **If the EGT did not exceed 700 °C:**
  NEW START IN PROGRESS

- **If start is not successful:**
  ENG 1(2) MASTER..OFF

■ **In the case of manual engine start :**
ENG 1(2) MASTER..OFF
ENG START SEL..CRANK

L2 *To remove fuel vapors, it is necessary to dry crank the engine for 65 s.*

L1

- **AFTER 65 S**
  ENG START SEL..NORM
  ENG 1(2) MAN START..OFF

L2 *Note: A second engine start attempt is not permitted. The flight crew reports the no start condition for further maintenance action.*

L1 ■ **In the case of STARTER MOTOR:**

■ **In the case of automatic engine start:**
CRANK IN PROGRESS

L2 *When a first automatic engine start fails, the FADEC turns off fuel supply and ignition. The FADEC motors the engine during sufficient time to clear fuel vapors and then attempts or not a second and last automatic engine start.*

L1

- **If the EGT did not exceed 700 °C:**
  NEW START IN PROGRESS

- **If start is not successful:**
  ENG 1(2) MASTER..OFF

■ **In the case of manual engine start :**
ENG 1(2) MASTER..OFF
ENG 1(2) MAN START..OFF

L2 *Note: A second engine start attempt is not permitted. The flight crew reports the no start condition for further maintenance action.*

L1

- **If the N3 was above 20%:**
  RISK OF TAILE PIPE FIRE

ENG 1(2) START FAULT
LOW N1

Applicable to: ALL

Ident.: PRO-ABN-ENG-8000W510-00015241.0001001 / 06 NOV 14

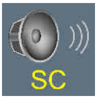
ANNUNCIATIONS

Triggering Conditions:

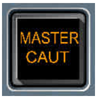
L2 N1 is abnormally low. The LP compressor (fan) is jammed.

Indications:

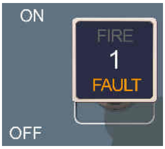
Audio



Master Light


MASTER
CAUT

Local Light

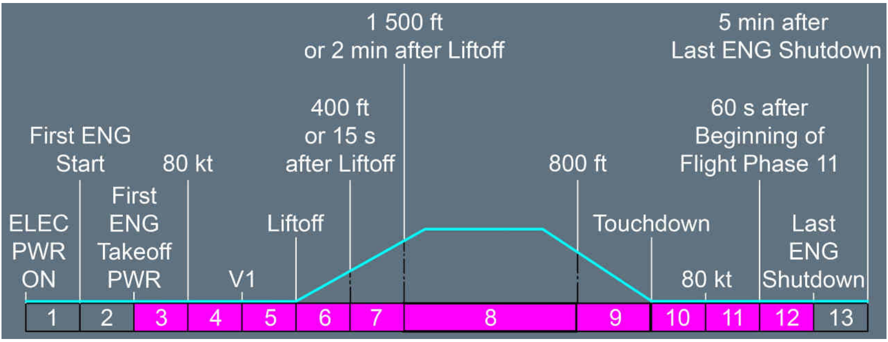

ON
FIRE
1
FAULT
OFF

ENG 1(2) Master light

SD page

ENG SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Continued on the following page

ENG 1(2) START FAULT (Cont'd)

LOW N1

Ident.: PRO-ABN-ENG-8000W510-00015243.0002001 / 07 JUL 16

THR LEVER 1(2)....................IDLE
ENG 1(2) MASTER....................OFF

L2 *COOLING indication may be displayed on the ENG SD page meaning that a dry crank is in progress.*

L1 ● **In the case of manual engine start:**

ENG START SEL....................CRANK

L2 *To clear fuel vapors, it is necessary to dry crank the engine for 65 s.*

L1 ● **AFTER 65 S**

ENG START SEL....................NORM
ENG 1(2) MAN START....................OFF

ENG 1(2) START FAULT
[STARTER TIME EXCEEDED]

Applicable to: ALL

Ident.: PRO-ABN-ENG-8000W310-00015245.0001001 / 06 NOV 14

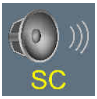
ANNUNCIATIONS

Triggering Conditions:

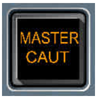
L2 The maximum time to start the engine expired because the use of the pneumatic starter is limited in time.

Indications:

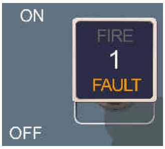
Audio



Master Light


MASTER
CAUT

Local Light

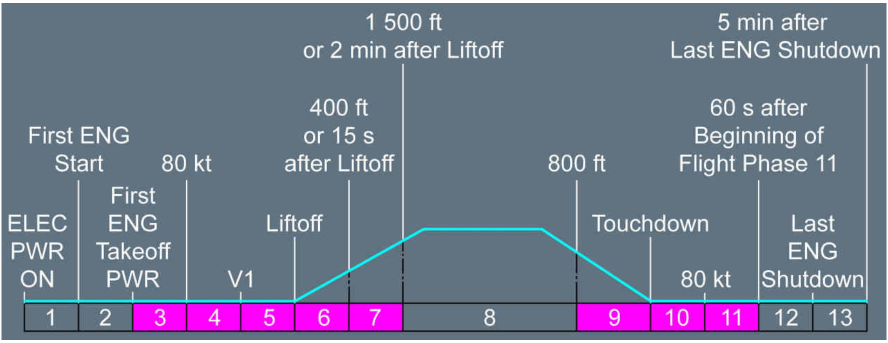

ON
FIRE
1
FAULT
OFF

ENG 1(2) Master light

SD page

ENG SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Ident.: PRO-ABN-ENG-8000W310-00015247.0001001 / 06 NOV 14

- **In the case of manual engine start:**
  ENG 1(2) MAN START..OFF

ENG 1(2) MASTER LEVER..OFF

ENG 1(2) START VLV NO AIR PRESSURE

Applicable to: ALL

Ident.: PRO-ABN-ENG-8000W130-00015352.0001001 / 06 NOV 14

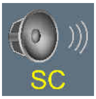
ANNUNCIATIONS

Triggering Conditions:

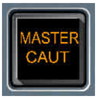
L2 The pressure of the bleed air is not sufficient to start the engine.

Indications:

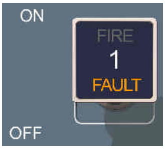
Audio



Master Light


MASTER
CAUT

Local Light

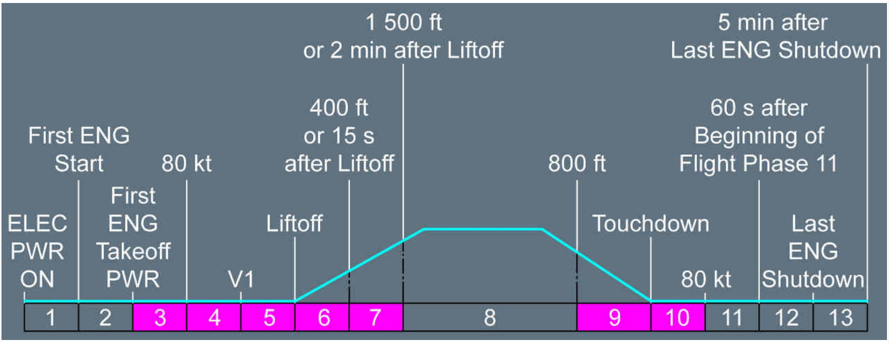

ON
FIRE
1
FAULT
OFF

ENG 1(2) Master light

SD page

ENG SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

ENG 1(2) START VLV NO AIR PRESSURE (Cont'd)

Ident.: PRO-ABN-ENG-8000W130-00015354.0002001 / 03 JAN 19

- **In flight:**
  - **If bleed of the other engine is available,**
    and
    If the crossbleed valve is not commanded close:

L2 *Note: The crossbleed valve is commanded close in case of bleed leak.*

L1 XBLEED....OPEN

  - **If only APU bleed is available,**
    and
    If the crossbleed valve is not commanded close (for ENG 2 alert only):

L2 *Note: The crossbleed valve is commanded close in case of bleed leak.*

L1 APU BLEED....ON

L2 In flight, the FADEC may attempt a windmill start even if the aircraft's speed is below the minimum speed for windmilling. As a consequence the flight crew must closely monitor engine parameters during engine restart.

L1
● **If the FADEC commands an emergency windmill start:**
START IN PROGRESS
ENG 1(2) PARAMETERS....MONITOR

MIN SPEED FOR WINDML RELIGHT : 250 KT

● **ENG 1(2) PARAMETERS NORMAL ?**

  ● **NO**

    ● **In the case of manual engine start :**
    ENG 1(2) MAN START....OFF

  ENG 1(2) MASTER ....OFF

ASSOCIATED PROCEDURES

ENG 1(2) SHUTDOWN
Refer to procedure.

Continued on the following page

ENG 1(2) START VLV NO AIR PRESSURE (Cont'd)

- **On ground:**
  - **In the case of manual engine start:**
    ENG 1(2) MAN START....................OFF

  ENG 1(2) MASTER....................OFF
  - **BEFORE NEXT ENGINE START/CRANK**
    AIR SUPPLY TO ENG 1(2)....................CHECK

ENG 1(2) START VLV NOT CLOSED

Applicable to: ALL

Ident.: PRO-ABN-ENG-8000W210-00015249.0001001 / 06 NOV 14

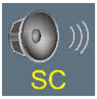
ANNUNCIATIONS

Triggering Conditions:

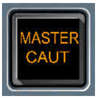
L2 The engine start valve in open although the EEC commands the engine start valve to close.

Indications:

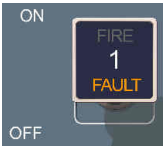
Audio



Master Light


MASTER
CAUT

Local Light

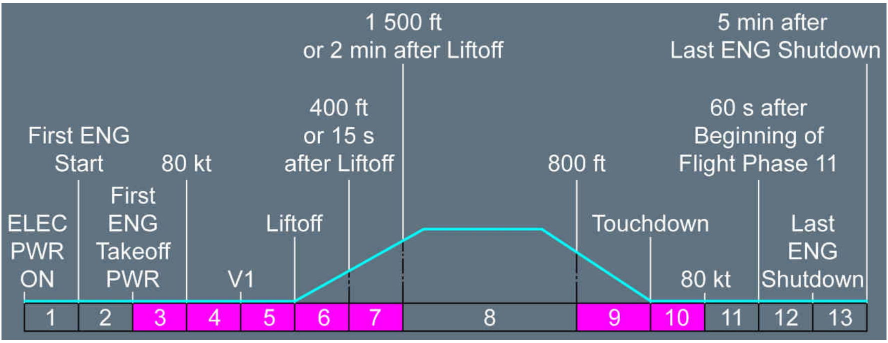

ON
FIRE
1
FAULT
OFF

ENG 1(2) Master light

SD page

ENG SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
V1
Touchdown
80 kt
Last
ENG
Shutdown
1
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Continued on the following page

ENG 1(2) START VLV NOT CLOSED (Cont'd)

Ident.: PRO-ABN-ENG-8000W210-00008612.0001001 / 29 SEP 16

- **On ground:**

  ENG 1(2) MASTER .... OFF

  - **In the case of manual engine start:**

    ENG 1(2) MAN START.. OFF

ASSOCIATED PROCEDURES

ENG 1(2) SHUTDOWN

Refer to procedure

AIR ABNORMAL BLEED CONFIG

Refer to procedure.

- **In flight:**

  ENG 1(2) BLEED.. OFF

ASSOCIATED PROCEDURES

AIR ABNORMAL BLEED CONFIG

Refer to procedure.

SECONDARY FAILURES

*BLEED

Ident.: PRO-ABN-ENG-8000W210-00008613.0001001 / 29 SEP 16

STATUS

INOP SYS

ALL PHASES

ENG 1(2) BLEED

ENG 1(2) START VLV NOT OPEN

Applicable to: ALL

Ident.: PRO-ABN-ENG-8000W110-00015348.0001001 / 06 NOV 14

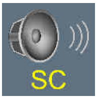
ANNUNCIATIONS

Triggering Conditions:

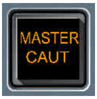
L2 Bleed air pressure is available but the engine start valve is failed closed. The pneumatic starter is not supplied with air and cannot start the engine.

Indications:

Audio



Master Light


MASTER
CAUT

Local Light

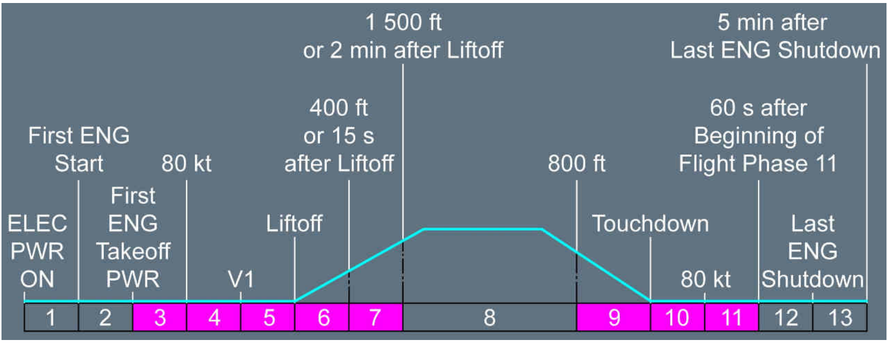
ON
FIRE
1
FAULT
OFF

ENG 1(2) Master light

SD page

ENG SD page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Continued on the following page

ENG 1(2) START VLV NOT OPEN (Cont'd)

Ident.: PRO-ABN-ENG-8000W110-00015350.0002001 / 03 JAN 19

- **In flight:**

L2

In flight, the FADEC may attempt a windmill start even if the aircraft's speed is below the minimum speed for windmilling. As a consequence the flight crew must closely monitor engine parameters during engine restart.

L1

MIN SPEED FOR WINDML RELIGHT : 250 KT

- **If the FADEC commands an emergency windmill relight:**
  START IN PROGRESS
  ENG 1(2) PARAMETERS.....MONITOR
- **ENG 1(2) PARAMETERS NORMAL ?**
  - **NO...**
    - **In the case of manual engine start:**
      ENG 1(2) MAN START.....OFF

    ENG 1(2) MASTER .....OFF

ASSOCIATED PROCEDURES

ENG 1(2) SHUTDOWN
Refer to procedure.

- **On ground:**
  - **In the case of manual engine start:**
    ENG 1(2) MAN START.....OFF

  ENG 1(2) MASTER.....OFF

L2

Consider application of “ENGINE START VALVE MANUAL OPERATION” , *Refer to PRO-NOR-SUP-SUP-ENG Engine Start Valve Manual Operation*.

L1

ASSOCIATED PROCEDURES

ENG 1(2) SHUTDOWN
Refer to procedure.

ENG 1(2) STATOR A-ICE VLV CLOSED

Applicable to: ALL

Ident.: PRO-ABN-ENG-7510W050-00020175.0002001 / 03 JUL 20

3

ANNUNCIATIONS

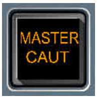
Triggering Conditions:

L2 The engine stator section anti-Ice valve is failed in the closed position. Hot air bled from intermediary pressure compressor is no more available to warn aerofoil surfaces to prevent ice accretion.

Indications:

Audio

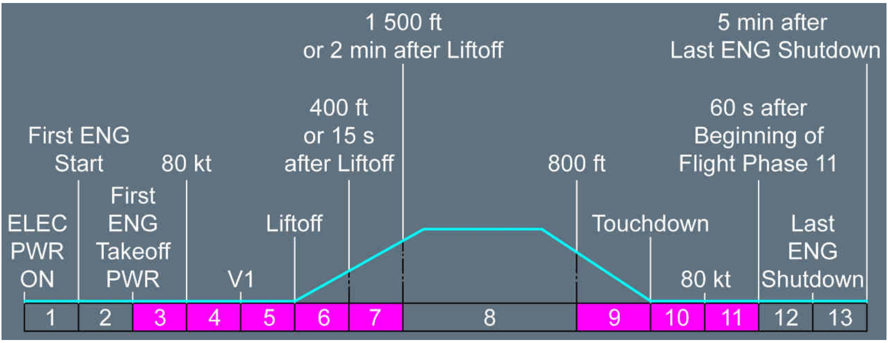
Master Light


MASTER
CAUT

SD page

ENG SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

ENG 1(2) STATOR A-ICE VLV CLOSED (Cont'd)

Ident.: PRO-ABN-ENG-7510W050-00020176.0011001 / 03 JAN 19

- **On ground, before the application of takeoff thrust:**
  THR LEVER 1(2).. IDLE
  ENG 1(2) MASTER..OFF
- **In flight:**
  AVOID ICING CONDs

Ident.: PRO-ABN-ENG-7510W050-00023302.0001001 / 07 JUL 16

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

- **In flight:**
  AVOID ICING CONDs

LIMITATIONS ON PFD

ALL PHASES

- **In flight:**
  AVOID ICING CONDs

ENG 1(2) THR LEVER ABOVE IDLE

Applicable to: ALL

Ident.: PRO-ABN-ENG-3150W320-00022307.0002001 / 09 JUL 15

ANNUNCIATIONS

Triggering Conditions:

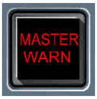
L2 One thrust lever is above idle and:

- The other thrust lever is in reverse detent, or
- The other thrust lever is at idle.
  This condition covers the inadvertent selection of an engine thrust lever above idle during thrust reversers de-selection.

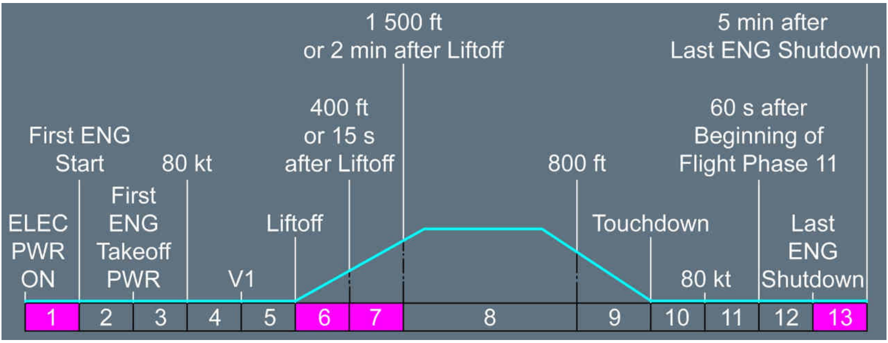
Indications:

Audio
"Retard, Retard"

Master Light


MASTER
WARN

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-ENG-3150W320-00018051.0001001 / 06 NOV 14

- **On ground above 40 kt:**
  THR LEVER 1(2).. IDLE

ENG 1(2) THR LEVER FAULT

Applicable to: ALL

Ident.: PRO-ABN-ENG-7611W110-00015253.0001001 / 06 NOV 14

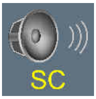
ANNUNCIATIONS

Triggering Conditions:

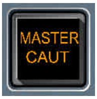
L2 The FADEC has lost the thrust lever position.

Indications:

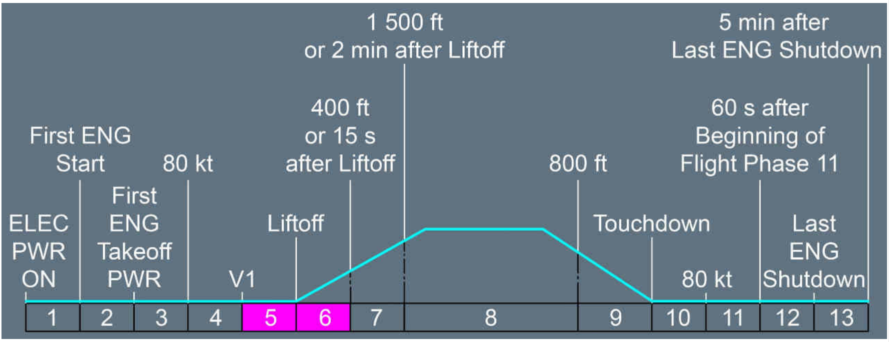
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
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8
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10
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12
13

Ident.: PRO-ABN-ENG-7611W110-00008616.0001001 / 06 NOV 14

L2 When the FADEC loses the thrust lever position, the FADEC automatically sets the engine thrust to idle or climb (MCL).
The FADEC sets idle or climb thrust according to the Mach number.
If 0.35<MACH<0.45, the FADEC adjusts to the last known valid setting.
The pilot must confirm and manually set the thrust lever in the detent corresponding to the thrust automatically set by the FADEC. This action prevents a thrust surge if the thrust lever position is recovered.
There is an alert auto recall each time the FADEC changes the thrust setting.

Continued on the following page

ENG 1(2) THR LEVER FAULT (Cont'd)

Ident.: PRO-ABN-ENG-7611W110-00008617.0003001 / 03 JAN 19

- **When FADEC sets ENG 1(2) thrust to idle (auto recall):**
  ENG 1(2) IDLE ONLY
  THR LEVER 1(2).. IDLE
  WHEN MACH ABOVE .45 : ENG 1(2) CLB ONLY
- **When FADEC sets ENG 1(2) thrust to maximum climb (auto recall):**
  ENG 1(2) CLB ONLY
  THR LEVER 1(2).. CLB
  WHEN MACH BELOW .35 : ENG 1(2) IDLE ONLY

LDG DIST AFFECTED
ON DRY RWY ONLY: LDG DIST AFFECTED<15 %

L2 *Landing distance computation on dry runways does not take into account the effect of the thrust reversers.*

L1 GA THR : TOGA ONLY

L2 *The flight crew must set the thrust levers to the TOGA detent during the go-around to ensure the airport missed approach gradient.*

Continued on the following page

ENG 1(2) THR LEVER FAULT (Cont'd)

Ident.: PRO-ABN-ENG-7611W110-00008618.0002001 / 26 JUL 17

LIMITATIONS

LIMITATIONS ON ECAM

APPR & LDG

LDG DIST AFFECTED
GA THR : TOGA ONLY

STATUS

INOP SYS

ALL PHASES	APPR & LDG
ENG 1 (2) THR LEVER	BTV ENG 1(2) REVERSER GA SOFT

INFO

ON DRY RWY ONLY: LDG DIST AFFECTED < 15 %

- **When FADEC sets ENG 1(2) thrust to idle:**
  ENG 1(2) IDLE ONLY
  WHEN MACH ABOVE .45 : ENG 1(2) CLB ONLY
- **When FADEC sets ENG 1(2) thrust to maximum climb:**
  ENG 1(2) CLB ONLY
  WHEN MACH BELOW .35 : ENG 1(2) IDLE ONLY

ENG 1(2) THRUST LOSS

Applicable to: ALL

Ident.: PRO-ABN-ENG-7100W910-00015297.0001001 / 06 NOV 14

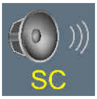
ANNUNCIATIONS

Triggering Conditions:

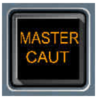
L2 When takeoff power is set, the EEC 1(2) detects an erroneous but valid computation of the maximum THR parameter, that is not noticeable on the ED.
Refer to DSC-70-10-30-30 Engine Power Settings for maximum THR calculation.

Indications:

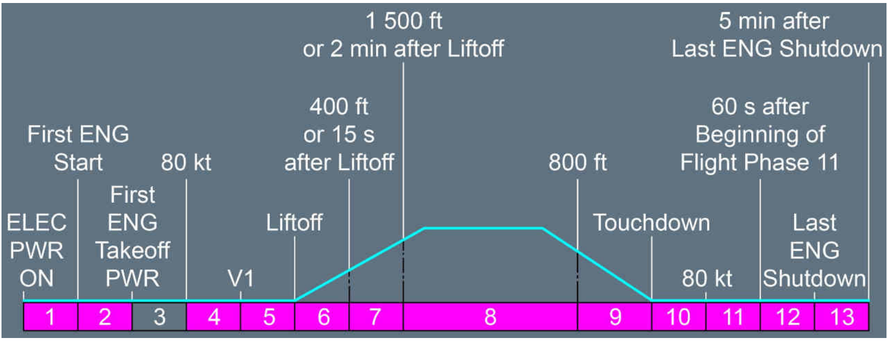
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-ENG-7100W910-00008622.0002001 / 30 NOV 17

THR LEVER 1(2)..IDLE

ENG 1(2) TURBINE OVHT

Applicable to: ALL

Ident.: PRO-ABN-ENG-7722W120-00015257.0001001 / 06 NOV 14

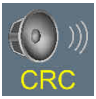
ANNUNCIATIONS

Triggering Conditions:

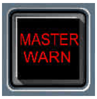
L2 The HP turbine of the associated engine overheats.

Indications:

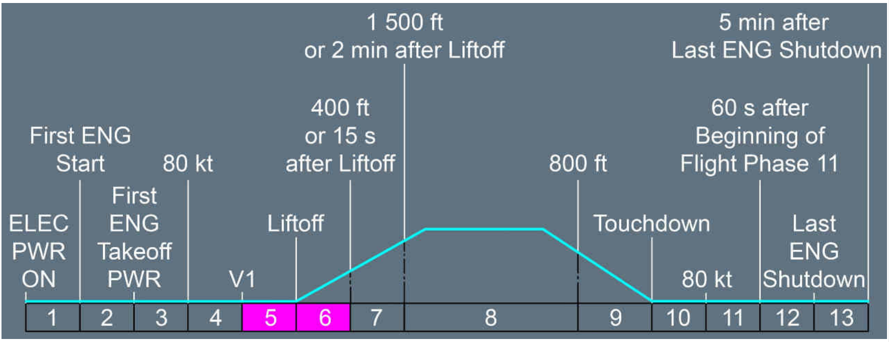
Audio



Master Light


MASTER
WARN

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Ident.: PRO-ABN-ENG-7722W120-00008625.0001001 / 06 NOV 14

THR LEVER 1(2)...IDLE

- **IF OVHT PERSISTS AFTER 30 S**
  ENG 1(2) MASTER ....OFF

ASSOCIATED PROCEDURES

ENG 1(2) SHUTDOWN
Refer to procedure.

ENG 1(2) FIRE

Applicable to: ALL

Ident.: PRO-ABN-ENGF-2621W100_F-00017031.0001001 / 02 JUL 14

ANNUNCIATIONS

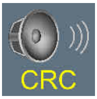
Triggering Conditions:

L2 A fire is detected in engine 1(2) when:
- Both loops A and B detect a fire, or
- One loop detects a fire and the other loop is failed, or
- Both loops fail within 5 s.

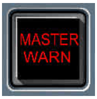
For more information about the fire detection logic of the engines, *Refer to DSC-26-30-10 Detection Logic*.

Indications:

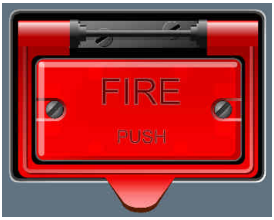
Audio



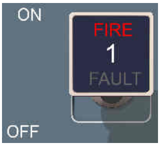
Master Light



Local Light



ENG 1(2) FIRE pb-sw



ENG 1(2) MASTER lever

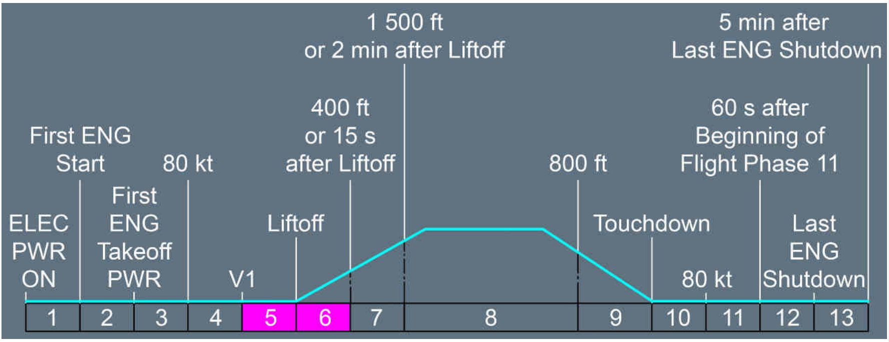
SD page

ENG SD Page

Flight Phase Inhibition:

Continued on the following page

ENG 1(2) FIRE (Cont'd)


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

ENG 1(2) FIRE (Cont'd)

Ident.: PRO-ABN-ENGF-2621W100_F-00017033.0002001 / 26 JUL 17

- **In flight:**

LAND ASAP

THR LEVER 1(2).. IDLE
ENG 1(2) MASTER.. OFF

Associated LP and HP valves close.

ENG 1(2) FIRE P/B.. PUSH

When pushed:

- *Aural warning stops*
- *The light remains on, until the fire is extinguished, regardless of the position of the ENG FIRE pb-sw*
- *FADEC is no longer supplied. The THR LEVER 1(2)...IDLE line reappears, even if the thrust lever is at idle.*

● **IF STILL FIRE AFTER 10 s:**

The 10-second delay allows the airflow to decrease, which increases the effect of the agent. An automatic countdown starts on the ECAM when the ENG 1(2) MASTER lever is switched to off.

ENG 1(2) AGENT 1.. DISCH

ATC.. NOTIFY

● **IF STILL FIRE AFTER 30 s:**

An automatic countdown starts on the ECAM when the pressure of the agent 1 bottle is low.

ENG 1(2) AGENT 2.. DISCH

ASSOCIATED PROCEDURES

ENG 1(2) SHUTDOWN

Refer to PRO-ABN-ENG ENG 1(2) SHUTDOWN

Do not attempt to restart the engine.

- **On ground:**

ALL THR LEVERS.. IDLE

Continued on the following page

ENG 1(2) FIRE (Cont'd)

L2 *Full reverse may be used to stop the aircraft.*

L1 ● **WHEN AIRCRAFT STOPPED:**

PARK BRK .... ON

ATC .... NOTIFY

L2 *Notify ATC of the nature of the emergency, and state intentions.*

L1 CABIN CREW .... ALERT

ENG 1(2) MASTER .... OFF

L2 *Associated HP and LP valves close.*

L1 ENG 1(2) FIRE P/B .... PUSH

L2 *When pushed:*

- *Aural warning stops*
- *The light remains on, until the fire is extinguished, regardless of the position of the ENG FIRE pb-sw*
- *FADEC is no longer supplied, so the THR LEVER 1(2) ... IDLE line reappears, even if the thrust lever is at idle.*

L1 ENG 1(2) AGENT 1+2 .... DISCH

ALL ENG MASTERS .... OFF

ALL FIRE P/Bs (ENGs & APU) .... PUSH

● **EVAC RQRD?**

■ **YES**

EVAC (PA) .... ANNOUNCE

L2 *Make a short and precise announcement to order the emergency evacuation.*

L1 EVAC COMMAND ◁✻ .... ON

ALL 4 BATS .... OFF

L2 *Only PA announcement and CAB communication are available, via the handset.*

L1 ■ **NO**

CABIN CREW & PAX (PA) .... ADVISE

Continued on the following page

ENG 1(2) FIRE (Cont'd)

Ident.: PRO-ABN-ENGF-2621W100_F-00017034.0001001 / 02 JUL 14

STATUS

INOP SYS

ALL PHASES

ENG 1(2) BLEED

MEMOPAGE

MEMO ON ECAM

LAND ASAP

Intentionally left blank

EXT LT NAV LT 1 FAULT

Applicable to: ALL

Ident.: PRO-ABN-EXT_LT-3341W010-00002516.0001001 / 03 JUL 14

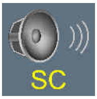
ANNUNCIATIONS

Triggering Conditions:

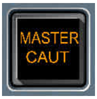
L2 The NAV LT 1 is failed.

Indications:

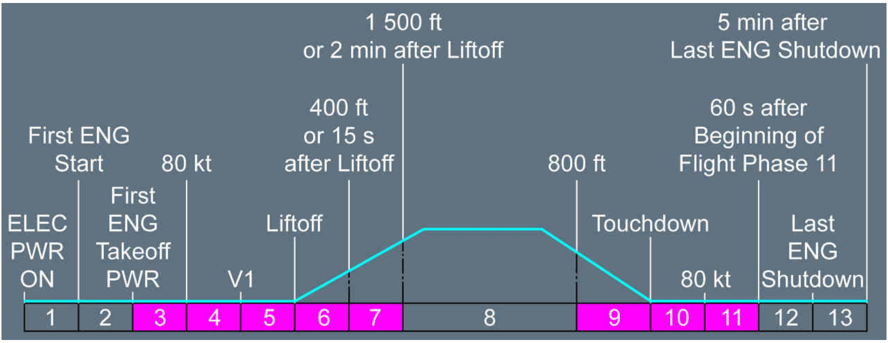
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-EXT_LT-3341W010-00008271.0001001 / 03 JUL 14

NAV LT.. 2

Continued on the following page

EXT LT NAV LT 1 FAULT (Cont'd)

Ident.: PRO-ABN-EXT_LT-3341W010-00008272.0001001 / 03 JUL 14

STATUS

INOP SYS

ALL PHASES

NAV LT 1

[ABN] F/CTL LDG WITH FLAPS LEVER JAMMED

Applicable to: ALL

Ident.: PRO-ABN-F_CTL-9027W130-00015851.0001001 / 06 NOV 14

ANNUNCIATIONS

Triggering Conditions:

L2 To display this procedure, the flight crew must press the ABN pb on the ECP, and then select the LDG WITH FLAPS LEVER JAMMED procedure, in the F/CTL section.
The flight crew must apply this procedure when the FLAPS lever is jammed and cannot be used to extend the slats and flaps for landing.

Ident.: PRO-ABN-F_CTL-9027W130-00008225.0003001 / 03 JAN 19

■ **If the FLAPS lever is jammed at 0, 1 or 2**

FLAPS LEVER.. FORCE ONE STEP DOWN

L2 *The FLAPS lever has an override mechanism that the flight crew can use, if the FLAPS lever is jammed. The override mechanism allows to extend the slats/flaps one step (for example from 0 to 1, from 2 to 3).*
To use the override mechanism, the flight crew should apply a strong force to the lever, without pulling the lever out of detent.
The override mechanism is reversible.

L1 ● **If the FLAPS lever is jammed at 0 or 1**

[MFD SURV] TAWS FLAP MODE...OFF

NO AUTOLAND

■ **If the FLAPS lever is jammed at 3**

FOR LDG : FLAP LVR 3

L2 *The slats/flaps configuration is maintained in the case of a go-around, therefore the approach should not be performed in CONF FULL.*

L1 FOR GA : KEEP S/F CONF
FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

The FMS predictions are not correct.

LDG PERF AFFECTED

Continued on the following page

[ABN] F/CTL LDG WITH FLAPS LEVER JAMMED **(Cont'd)**

Ident.: PRO-ABN-F_CTL-9027W130-00008226.0001001 / 06 NOV 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES	APPR & LDG
FUEL CONSUMPT INCRSD	LDG PERF AFFECTED ● **If the FLAPS lever is jammed at 0 or 1:** NO AUTOLAND ● **If the FLAPS lever is jammed at 3:** FOR LDG : FLAP LVR 3 FOR GA : KEEP S/F CONF

STATUS

INOP SYS

	APPR & LDG
	BTV

INFO

FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

The fuel consumption is increased. The FUEL PENALTY on the FMS DATA/STATUS page may be updated.
For fuel penalty determination, Refer to PER-IFT-FP Fuel Penalty Tables - Fuel Consumption Increased.

[ABN] F/CTL LDG WITH NO SLATS & NO FLAPS

Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYB

Ident.: PRO-ABN-F_CTL-9027W120-00015852.0001001 / 06 NOV 14

ANNUNCIATIONS

Triggering Conditions:

L2 To display this procedure, the flight crew must press the ABN pb on the ECP, and then select the LDG WITH NO SLATS & NO FLAPS procedure, in the F/CTL section.

L3 The flight crew must apply this procedure when neither flaps nor slats are extended for landing.

Ident.: PRO-ABN-F_CTL-9027W120-00008236.0002001 / 03 JUL 20

1

- **FLAPS LEVER JAMMED?**
  - **YES**

    LDG WITH FLAP LVR JAMMED PROC.......APPLY

    L2 *For more information, Refer to procedure.*

    L1 DEACTIVATE
  - **NO**

    FLAPS LEVER 1.......SELECT

    L2 *Set the FLAPS lever to 1 in order to enable engagement of the SRS guidance mode in the case of a go-around.*

    L1
    - **If the flaps are in a position less than 3:**

      [MFD SURV] TAWS FLAP MODE.......OFF

    USE SELECTED SPEED

    L2 *For some abnormal flaps and slats configuration, the FMS does not receive the position of the flaps. Therefore, the managed speed can be erroneous.*

    L1 NO AUTOLAND

    FOR GA : KEEP S/F CONF

    LDG PERF AFFECTED

Continued on the following page

[ABN] F/CTL LDG WITH NO SLATS & NO FLAPS (Cont'd)

Ident.: PRO-ABN-F_CTL-9027W120-00008237.0001001 / 06 NOV 14

LIMITATIONS

LIMITATIONS ON ECAM

APPR & LDG

LDG PERF AFFECTED
NO AUTOLAND
- **If FLAPS lever is not jammed**
FOR LDG : FLAP LVR 1
FOR GA : KEEP S/F CONF

STATUS

INOP SYS

APPR & LDG

BTV

[ABN] F/CTL LDG WITH NO SLATS & NO FLAPS

Applicable to: ET-AYA

Ident.: PRO-ABN-F_CTL-9027W120-00015852.0001001 / 06 NOV 14

ANNUNCIATIONS

Triggering Conditions:

L2 To display this procedure, the flight crew must press the ABN pb on the ECP, and then select the LDG WITH NO SLATS & NO FLAPS procedure, in the F/CTL section.

L3 The flight crew must apply this procedure when neither flaps nor slats are extended for landing.

Continued on the following page

[ABN] F/CTL LDG WITH NO SLATS & NO FLAPS **(Cont'd)**

Ident.: PRO-ABN-F_CTL-9027W120-00008236.0003001 / 03 APR 20

- **FLAPS LEVER JAMMED?**
  - **YES**

    LDG WITH FLAP LVR JAMMED PROC........ APPLY

    L2 *For more information, Refer to procedure.*

    L1

    DEACTIVATE

    DEACTIVATE
  - **NO**

    FLAPS LEVER 1........ SELECT

    L2 *Set the FLAPS lever to 1 in order to enable engagement of the approach logic in the PRIMs.*

    L1
    - **If the flaps are in a position less than 3:**

      [MFD SURV] TAWS FLAP MODE........ OFF

    USE SELECTED SPEED

    L2 *For some abnormal flaps and slats configuration, the FMS does not receive the position of the flaps. Therefore, the managed speed can be erroneous.*

    L1 NO AUTOLAND

    FOR GA : KEEP S/F CONF

    LDG PERF AFFECTED

Continued on the following page

[ABN] F/CTL LDG WITH NO SLATS & NO FLAPS **(Cont'd)**

Ident.: PRO-ABN-F_CTL-9027W120-00008237.0001001 / 06 NOV 14

LIMITATIONS

LIMITATIONS ON ECAM

APPR & LDG

LDG PERF AFFECTED
NO AUTOLAND

- **If FLAPS lever is not jammed**
  FOR LDG : FLAP LVR 1
  FOR GA : KEEP S/F CONF

STATUS

INOP SYS

APPR & LDG

BTV

[ABN] F/CTL RUDDER PEDAL JAMMED

Applicable to: ALL

Ident.: PRO-ABN-F_CTL-9027W100-00014906.0001001 / 06 NOV 14

ANNUNCIATIONS

Triggering Conditions:

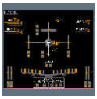
L2 To display this procedure, the flight crew must press the ABN pb on the ECP, and then select the RUDDER PEDAL JAMMED procedure in the F/CTL section.

L3 The flight crew must apply this procedure when the rudder pedal is not available.

Indications:

L2

SD page



F/CTL SD Page

Ident.: PRO-ABN-F_CTL-9027W100-00004762.0001001 / 08 JUL 19

L2 When the rudder pedal is jammed, rudder trim control is lost with both rudder pedals and rudder trim selector, but rudder trim function remains available with autopilot. The yaw damping and the turn coordination remain available.
The control of the nose wheel steering via the rudder pedals is lost. Nevertheless, the flight crew can control the nose wheel via the steering handwheel.

Continued on the following page

[ABN] F/CTL RUDDER PEDAL JAMMED **(Cont'd)**

Ident.: PRO-ABN-F_CTL-9027W100-00008167.0003001 / 03 JAN 19

■ **If the AP is available:**

AP : KEEP ON

L2 *The rudder operates normally and can be controlled by the autopilot.*

L1 AUTOLAND RECOMMENDED

L2 *Because the rudder operates normally with the AP engaged, an autoland is recommended.*

L1 ■ **If the AP is not available:**

FUEL CONSUMPT INCRSD

FOR BETTER RANGE : REDUCE CRZ MACH/SPD

FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

The FMS predictions are not correct.

MINIMIZE XWIND FOR LANDING

L2 *Landing has been demonstrated with crosswind up to 20 kt. This value was not found limiting.*

L1 AUTO BRK : DO NOT USE

FOR LDG : USE DIFF BRAKING AS RQRD

L2 *Rudder and nose wheel steering control via the rudder pedals is lost. However, in the case of differential braking, the automatic rudder deflection remains operative. For more information: Refer to DSC-27-10-30 Ground Law.*

L1 REVERSER : SYMMETRIC USE ONLY

LDG DIST AFFECTED

L2 *The landing distance increases because the flight crew uses differential braking to control the aircraft on the runway.*

Continued on the following page

[ABN] F/CTL RUDDER PEDAL JAMMED **(Cont'd)**

Ident.: PRO-ABN-F_CTL-9027W100-00008168.0003001 / 03 JAN 19

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES	APPR & LDG
● **If the AP is not available:** FUEL CONSUMPT INCRSD	LDG DIST AFFECTED AUTO BRK: DO NOT USE REV : SYM USE ONLY

STATUS

INOP SYS

	APPR & LDG
	BTV

INFO

AUTOLAND RECOMMENDED
MINIMIZE XWIND FOR LANDING

- **If the AP is not available:**
  FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION
  The fuel consumption is increased. The FUEL PENALTY on the FMS DATA/STATUS page may be updated.
  For fuel penalty determination, Refer to PER-IFT-FP Fuel Penalty Tables - Fuel Consumption Increased.

FOR LDG : USE DIFF BRAKING AS RQRD
FOR BETTER RANGE : REDUCE CRZ MACH/SPD

[ABN] F/CTL RUDDER TRIM RUNAWAY

Applicable to: ALL

Ident.: PRO-ABN-F_CTL-9027W110-00014907.0001001 / 06 NOV 14

ANNUNCIATIONS

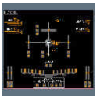
Triggering Conditions:

L2 To display this procedure, the flight crew must press the ABN pb on the ECP, and then select the RUDDER TRIM RUNAWAY procedure, in the F/CTL section.

L3 The flight crew must apply this procedure when the rudder trim is not available.

L2 Indications:

SD page



F/CTL SD Page

Continued on the following page

[ABN] F/CTL RUDDER TRIM RUNAWAY **(Cont'd)**

Ident.: PRO-ABN-F_CTL-9027W110-00008179.0003001 / 03 JUL 20

2 USE RUDDER WITH CARE
USE RUDDER PEDALS TO CENTER RUDDER
RUDDER TRIM.......................................RESET

- **RESET SUCCESSFUL ?**
  - **YES**

    L2 The flight crew can use the rudder trim as required.

    L1 DEACTIVATE

  - **NO**

    AP USE.......................................CONSIDER

    - **If AP is not available:**

      FUEL CONSUMPT INCRSD
      FOR BETTER RANGE : REDUCE CRZ MACH/SPD
      FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION
      The FMS predictions are not correct.

    AUTOLAND RECOMMENDED

Continued on the following page

[ABN] F/CTL RUDDER TRIM RUNAWAY **(Cont'd)**

Ident.: PRO-ABN-F_CTL-9027W110-00008180.0003001 / 03 JAN 19

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

USE RUDDER WITH CARE
FUEL CONSUMPT INCRSD

LIMITATIONS ON PFD

ALL PHASES

USE RUDDER WITH CARE

DEFERRED PROC

FOR APPROACH

> FOR LANDING (RUDDER TRIM RUNAWAY)

- **MANUAL LANDING ANTICIPATED?**
  - **YES**

    HOLD RUDDER PEDALS BEFORE AP OFF
    KEEP RUDDER PEDALS CENTERED
    USE PEDALS AS RQRD FOR DECRAB & LDG

STATUS

INFO

AUTOLAND RECOMMENDED
FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

The fuel consumption is increased. The FUEL PENALTY on the FMS DATA/STATUS page may be updated.
For fuel penalty determination, Refer to PER-IFT-FP Fuel Penalty Tables - Fuel Consumption Increased.

FOR BETTER RANGE : REDUCE CRZ MACH/SPD

[ABN] F/CTL SPEED BRAKES LEVER JAMMED

Applicable to: ALL

Ident.: PRO-ABN-F_CTL-9027W150-00015853.0001001 / 06 NOV 14

ANNUNCIATIONS

Triggering Conditions:

L2 To display this procedure, the flight crew must press the ABN pb on the ECP, and then select the SPEED BRAKES LEVER JAMMED procedure, in the F/CTL section.

L3 The flight crew must apply this procedure when the SPEED BRAKE lever is not available.

Ident.: PRO-ABN-F_CTL-9027W150-00014908.0001001 / 06 NOV 14

L2 When the speed brakes lever is jammed, the manual control of the speed brakes is lost. However, the flight crew can retract the speed brakes in flight and the ground spoilers can deploy after landing.

Ident.: PRO-ABN-F_CTL-9027W150-00014909.0003001 / 03 JAN 19

- **If the speed brakes are deflected:**

  FOR AUTO RETRACT : THR LVRs TOGA

  L2 *The TOGA thrust lever position automatically retracts the speed brakes.*

  L1 EXPECT AP/FD GA MODE ENGAGEMENT

  L2 *If the flaps and slats are not retracted the SRS mode will engage at the FMA.*

  L1 GND SPLRs WILL EXTEND NORMALLY

  L2 *For landing, the PRIMs will consider the ground spoilers as armed in the case of speed brakes lever jammed in the deflected position.*

L1
- **If the speed brakes are retracted and the ground spoilers are not armed:**

  GND SPLRs WILL EXTEND AT REV SELECTION

  L2 *At 500 ft the F/CTL GND SPLRS NOT ARMED will appear.*
  However, the ground spoilers will deploy if the flight crew uses the reversers after landing. As a consequence the autobrake will activate, if the autobrake is selected.

L1
- **If the ground spoilers are already armed:**

  FOR LDG : KEEP GND SPLRs ARMED

  L2 *Ground spoilers will deploy after landing.*

Continued on the following page

[ABN] F/CTL SPEED BRAKES LEVER JAMMED **(Cont'd)**

Ident.: PRO-ABN-F_CTL-9027W150-00020582.0001001 / 06 NOV 14

STATUS

INFO

- **If the speed brakes are deflected:**
  GND SPLRs WILL EXTEND NORMALLY
- **If the speed brakes are retracted and the ground spoilers are not armed:**
  GND SPLRs WILL EXTEND AT REV SELECTION

F/CTL ALTN LAW (PROT LOST)

Applicable to: ALL

Ident.: PRO-ABN-F_CTL-2790W410-00004740.0002001 / 06 NOV 14

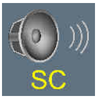
ANNUNCIATIONS

Triggering Conditions:

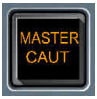
The alternate law is active.

Indications:

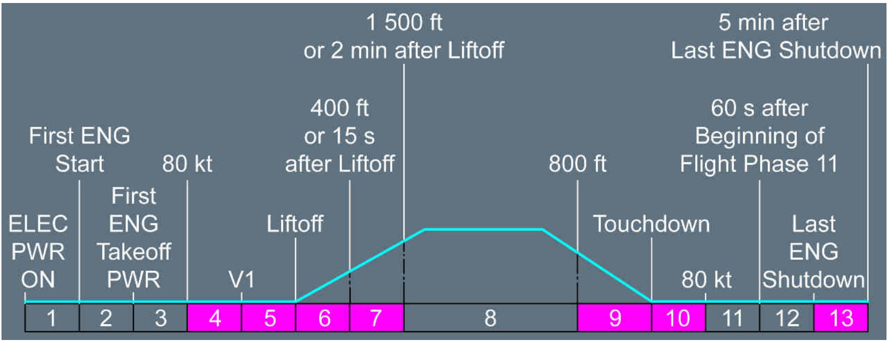
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Ident.: PRO-ABN-F_CTL-2790W410-00008116.0001001 / 03 JUL 14

L2 For the list of failures leading to alternate law: *Refer to DSC-27-10-40 Reconfiguration Control Laws*.
For information on the alternate law's characteristics: *Refer to DSC-27-10-40 Alternate Law*.

Ident.: PRO-ABN-F_CTL-2790W410-00008117.0001001 / 03 JUL 14

MAX SPEED : 310 KT

L2 *Speed is limited due to the degraded high speed protection.*

Continued on the following page

F/CTL ALTN LAW (PROT LOST) (Cont'd)

Ident.: PRO-ABN-F_CTL-2790W410-00008118.0001001 / 03 JUL 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

MAX SPEED : 310 KT

LIMITATIONS ON PFD

ALL PHASES

MAX SPEED : 310 KT

STATUS

INOP SYS

ALL PHASES

F/CTL PROT
F/CTL REDUNDANCY (If the failure that leads to the reversion in alternate law has no associated alert)

INFO

ALTN LAW : PROT LOST

F/CTL CAPT(F/O) RUDDER PEDAL FAULT

Applicable to: ALL

Ident.: PRO-ABN-F_CTL-2790W030-00024172.0001001 / 26 JUL 17

ANNUNCIATIONS

Triggering Conditions:

L2 The CAPT or the F/O rudder pedals are failed.

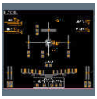
Indications:

Audio

Master Light

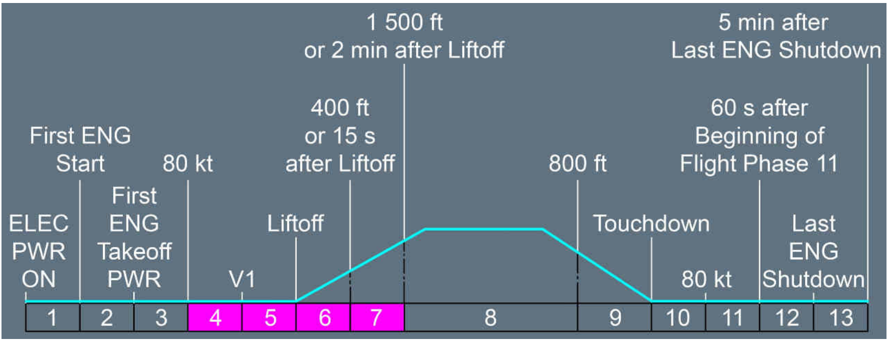
MASTER
CAUT

SD page



F/CTL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-F_CTL-2790W030-00024173.0001001 / 26 JUL 17

Crew awareness.

Continued on the following page

F/CTL CAPT(F/O) RUDDER PEDAL FAULT (Cont'd)

Ident.: PRO-ABN-F_CTL-2790W030-00024174.0001001 / 26 JUL 17

STATUS

INOP SYS

ALL PHASES

CAPT(F/O) RUDDER PEDAL

F/CTL CAPT+F/O RUDDER PEDALS FAULT

Applicable to: ALL

Ident.: PRO-ABN-F_CTL-2790W170B-00024175.0001001 / 26 JUL 17

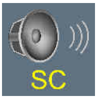
ANNUNCIATIONS

Triggering Conditions:

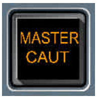
L2 The CAPT and the F/O rudder pedals are failed.

Indications:

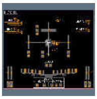
Audio



Master Light

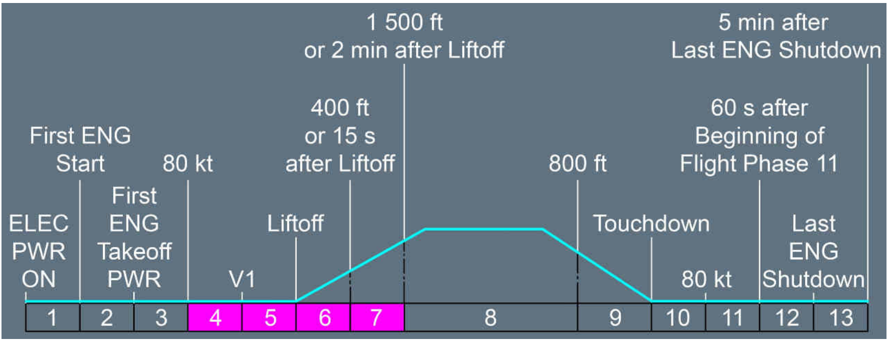

MASTER
CAUT

SD page



F/CTL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Continued on the following page

F/CTL CAPT+F/O RUDDER PEDALS FAULT (Cont'd)

Ident.: PRO-ABN-F_CTL-2790W170B-00024176.0001001 / 26 JUL 17

L2 When the AP is not engaged:

- The pedals are easy to move but do not command the rudders
- The manual rudder trim is lost

Note: For some failure cases, the rudder pedals may reflect the manual rudder trim setting but do not command the rudders.

- Yaw damping and turn coordination remain available.

When the AP is engaged, for some failure cases, the rudder pedals no longer reflect the AP orders. NWS control via the rudder pedals is lost. The steering handwheel remains available for NWS control.

Ident.: PRO-ABN-F_CTL-2790W170B-00024177.0001001 / 26 JUL 17

AP : KEEP ON

L2 *The autopilot normally controls the rudder.*

L1 AUTOLAND : RECOMMENDED

L2 *Because the rudder operates normally with the AP engaged, an autoland is recommended.*

L1 AUTO BRK : DO NOT USE
FOR LDG : USE DIFF BRAKING AS RQRD
REVERSER : SYMMETRIC USE ONLY
LDG DIST AFFECTED

Continued on the following page

F/CTL CAPT+F/O RUDDER PEDALS FAULT (Cont'd)

Ident.: PRO-ABN-F_CTL-2790W170B-00024178.0001001 / 26 JUL 17

LIMITATIONS

LIMITATIONS ON ECAM

APPR & LDG

LDG DIST AFFECTED
AUTO BRK : DO NOT USE
REV : SYM USE ONLY

STATUS

INOP SYS

ALL PHASES	APPR & LDG
CAPT+F/O RUDDER PEDALs RUDDER TRIM 1+2 (If both PFTUs are failed)	BTV

INFO

AUTOLAND RECOMMENDED
FOR LDG : USE DIFF BRAKING AS RQRD

F/CTL DIFF FLAP SETTING FAULT

Applicable to: ALL

Ident.: PRO-ABN-F_CTL-2750W400-00016791.0001001 / 03 JUL 14

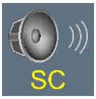
ANNUNCIATIONS

Triggering Conditions:

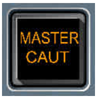
L2 One or both Active Differential Gearbox (ADGB) is failed.

Indications:

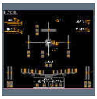
Audio



Master Light

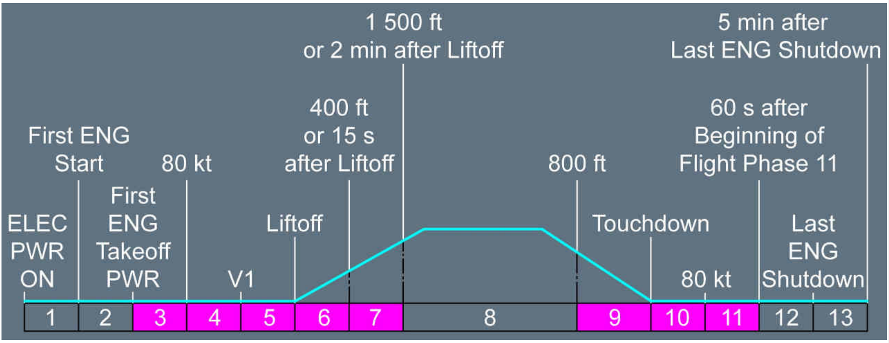

MASTER
CAUT

SD page



F/CTL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Ident.: PRO-ABN-F_CTL-2750W400-00020267.0001001 / 03 JUL 14

L2 In the case of failure in flight of the ADGB while the flap cruise deployment function is active, the flap system launches an automatic recovery procedure to realign the flaps to the 0 ° position.
This ECAM alert and associated procedure is displayed when the automatic recovery procedure is not successful and the position of the flaps leads an increase of the fuel consumption.

Continued on the following page

F/CTL DIFF FLAP SETTING FAULT (Cont'd)

Ident.: PRO-ABN-F_CTL-2750W400-00016794.0005001 / 03 JAN 19

[MFD SURV] TAWS FLAP MODE..OFF

FUEL CONSUMPT INCRSD

FOR BETTER RANGE : REDUCE CRZ MACH/SPD

FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

The FMS predictions are not correct.

Ident.: PRO-ABN-F_CTL-2750W400-00016795.0003001 / 03 JAN 19

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

FUEL CONSUMPT INCRSD

STATUS

INOP SYS

ALL PHASES

DIFF FLAP SETTING

INFO

FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

The fuel consumption is increased. The FUEL PENALTY on the FMS DATA/STATUS page may be updated.

For fuel penalty determination, Refer to PER-IFT-FP Fuel Penalty Tables - Fuel Consumption Increased.

FOR BETTER RANGE : REDUCE CRZ MACH/SPD

F/CTL DIRECT LAW (PROT LOST)

Applicable to: ALL

Ident.: PRO-ABN-F_CTL-2790W400-00004741.0002001 / 02 MAR 18

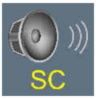
ANNUNCIATIONS

Triggering Conditions:

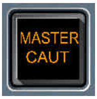
L2 The direct law is active.
For the list of failures leading to direct law: *Refer to DSC-27-10-40 Reconfiguration Control Laws*.

Indications:

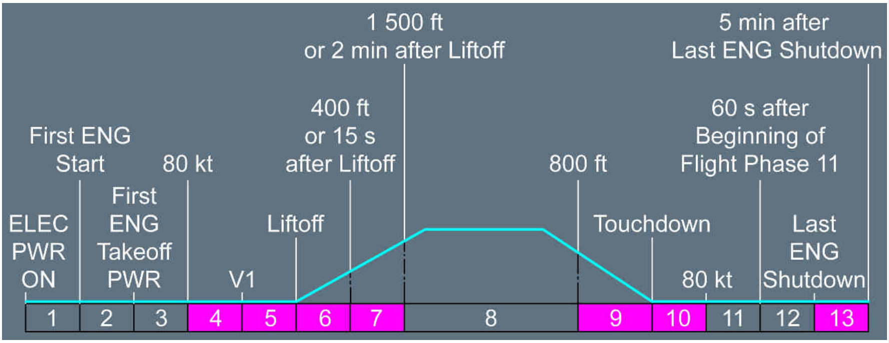
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-F_CTL-2790W400-00008119.0001001 / 02 MAR 18

L2 For information on the direct law's characteristics: *Refer to DSC-27-10-40 Direct Law*.

Continued on the following page

F/CTL DIRECT LAW (PROT LOST) (Cont'd)

Ident.: PRO-ABN-F_CTL-2790W400-00008120.0004001 / 03 JAN 19

- **On ground only, if the weight data is not received by PRIMs:**
  FMS ZFW & ZFWCG VALUES.. REENTER

USE SPD BRK WITH CARE
MAX SPEED : 310/.86
MANEUVER WITH CARE

- **If all PRIMs and all SECs are failed:**
  F/CTL BKUP CTL ACTIVE
- **If A/THR remains available:**
  A/THR AVAILABLE
- **If all PRIMs are failed:**
  AFS CTL PNL KNOB AVAIL FOR BUG SETTING

L2 *The indications on the AFS CP become blank. However, the SPD/MACH knob, the HDG/TRK knob and the ALT knob remain available. The flight crew can select speed target, heading target, and altitude target with the AFS CP, or with the AFS CP backup (after activation).*

Continued on the following page

F/CTL DIRECT LAW (PROT LOST) (Cont'd)

Ident.: PRO-ABN-F_CTL-2790W400-00008121.0005001 / 26 JUL 17

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

MAX SPEED : 310/.86
USE SPD BRK WITH CARE
MANEUVER WITH CARE

LIMITATIONS ON PFD

ALL PHASES

MAX SPEED : 310/.86
USE SPD BRK WITH CARE
MANEUVER WITH CARE

STATUS

INOP SYS

ALL PHASES

F/CTL PROT
AP
A/THR (If A/THR is no more available)
FD
AUTO EMER DES ◁
F/CTL REDUNDANCY (If there is no other alert that explains the degradation to direct law)

APPR & LDG

BTV
AUTOLAND

INFO

DIRECT LAW : PROT LOST

- **If all the flight control computers are failed**
  F/CTL BKUP CTL ACTIVE

APPR 1 ONLY

- **If all PRIMs are failed**
  TO DISCONNECT AUTO BRK : USE BRK PEDAL

Continued on the following page

F/CTL FCDC 1+2 FAULT

Applicable to: ALL

Ident.: PRO-ABN-F_CTL-2796W030-00004747.0001001 / 03 JUL 14

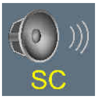
ANNUNCIATIONS

Triggering Conditions:

L2 Both FCDCs are failed.

Indications:

Audio



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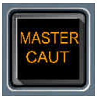
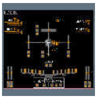
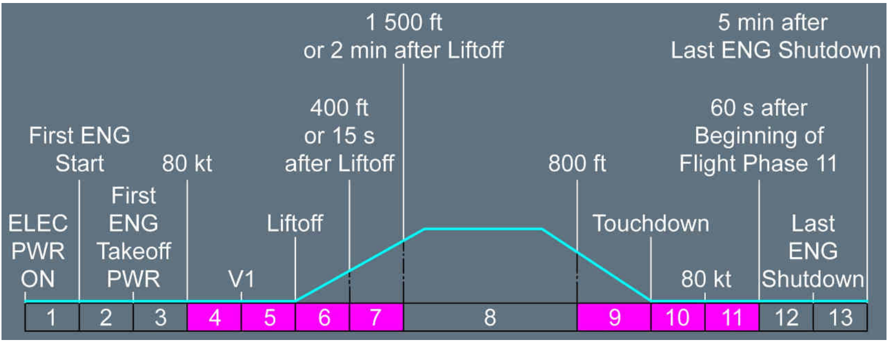

MASTER
CAUT

SD page



F/CTL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

F/CTL FCDC 1+2 FAULT (Cont'd)

Ident.: PRO-ABN-F_CTL-2796W030-00008132.0001001 / 03 JUL 14

Note:
- *If the failure is only due to an IMA module failure, the ECAM displays the DUE TO IMA MODULE FAULT subtitle.*
- *If the failure occurs when an RNP AR approach procedure is engaged, the ECAM displays the RNP AR CAPABILITY LOST subtitle.*

L2 The FCDCs acquire data from the PRIMs and SECs for:
- The Flight Warning System (FWS)
- The F/CTL SD page.

Therefore, if both FCDCs are failed:
- All the F/CTL and AUTO FLT alerts can no longer be triggered

  Note: OVERSPEED, STALL and AUTO FLT AP OFF warnings remain available.

- All indications on the F/CTL SD page are lost (replaced by amber crosses). Only the status of the slats/flaps control units remain available.

Ident.: PRO-ABN-F_CTL-2796W030-00008133.0001001 / 03 JUL 14

Crew awareness.

Ident.: PRO-ABN-F_CTL-2796W030-00008134.0002001 / 26 JUL 17

STATUS

INOP SYS

ALL PHASES	APPR & LDG
STALL AUDIO WARNING	AUTOLAND
FCDC 1+2	BTV
WBBC	ROW/ROP
RNP AR	

INFO

F/CTL INDICATIONS LOST
APPR 1 ONLY

F/CTL FCDC 1(2) FAULT

Applicable to: ALL

Ident.: PRO-ABN-F_CTL-2796W010-00004746.0001001 / 03 JUL 14

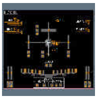
ANNUNCIATIONS

Triggering Conditions:

L2 The FCDC 1(2) is failed.

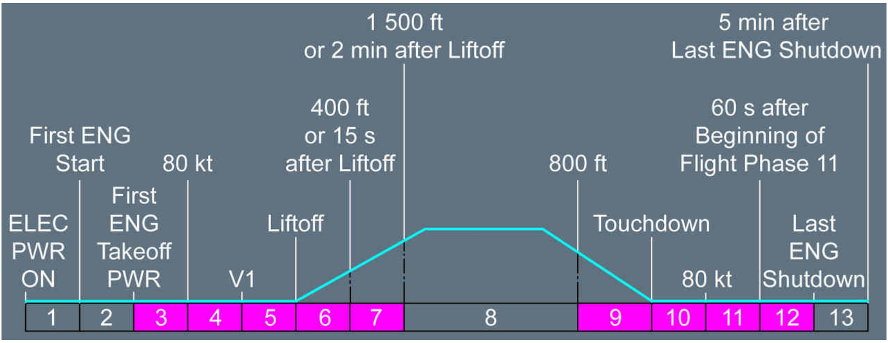
Indications:

SD page



F/CTL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-F_CTL-2796W010-00008129.0001001 / 03 JUL 14

Note: *If the failure is only due to an IMA module failure, the ECAM displays the DUE TO IMA MODULE FAULT subtitle.*

Ident.: PRO-ABN-F_CTL-2796W010-00008130.0001001 / 03 JUL 14

Crew awareness.

Continued on the following page

F/CTL FCDC 1(2) FAULT (Cont'd)

Ident.: PRO-ABN-F_CTL-2796W010-00008131.0001001 / 03 JUL 14

STATUS

INOP SYS

ALL PHASES

FCDC 1(2)

INFO

LAND 3 SINGLE ONLY

F/CTL FLAP RETRACTION INHIBITED

Applicable to: ALL

Ident.: PRO-ABN-F_CTL-2760W310-00021233.0001001 / 03 JUL 14

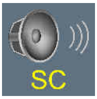
ANNUNCIATIONS

Triggering Conditions:

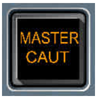
L2 The PRIMs have inhibited the retraction of the flaps to prevent a damage to the spoilers.

Indications:

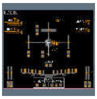
Audio



Master Light

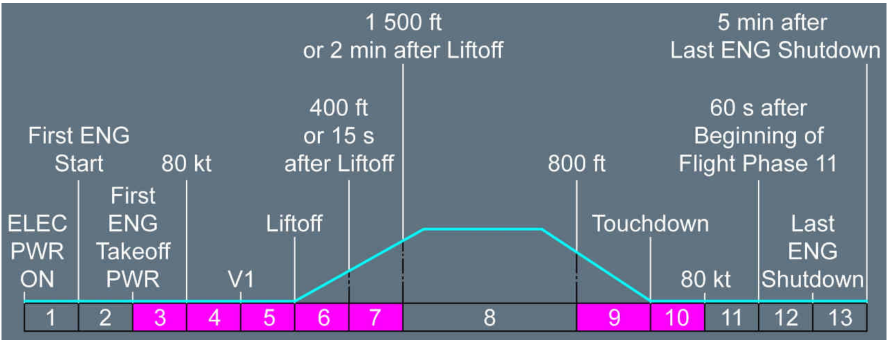

MASTER
CAUT

SD page



F/CTL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
2
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Continued on the following page

F/CTL FLAP RETRACTION INHIBITED (Cont'd)

Ident.: PRO-ABN-F_CTL-2760W310-00021235.0003001 / 03 JAN 19

FLAP RETRACTION INHIBITED
SLATS AVAIL

L2 *The slats operate normally when the FLAPS lever is used.*

L1 USE SELECTED SPEED

L2 *To prepare the aircraft for landing, the managed speed is not adapted in the case of abnormal slats/flaps configuration. Therefore, the flight crew must use the selected speed to decelerate the aircraft to the approach speed, as follows:*

- *Decelerate the aircraft toward the VFE NEXT-5 kt. In the case of turbulence, to avoid VFE exceedance, the flight crew may decide to decelerate to a lower speed but above the VLS.*
- *When the aircraft reaches the selected speed, the FLAPS lever can be set one step down.*

The above steps are repeated until the FLAPS lever is set to 3.
When the landing configuration is established, aircraft can be decelerated to the computed approach speed.

Note: The VFE NEXT displayed on the PFD takes into account the abnormal slats/flaps configuration.

L1 FOR VFE : USE PFD

L2 *The ECAM and the PFD speed scale display the VFE that is associated with the current abnormal configuration. For more information, Refer to DSC-27-20-20 Configurations.*

L1 FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

The FMS predictions are not correct.

- **If the flaps are in CONF 3 or lower when the retraction of the flaps is inhibited:**

  FOR LDG : FLAP LVR 3

  L2 *The slats/flaps configuration is maintained in the case of a go-around. Therefore the approach should not be performed in CONF FULL.*

  L1 FOR GA : KEEP S/F CONF

  L2 *In the case of a diversion, the slats can be retracted after a go-around.*

Continued on the following page

F/CTL FLAP RETRACTION INHIBITED (Cont'd)

Ident.: PRO-ABN-F_CTL-2760W310-00021236.0001001 / 03 JUL 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES	APPR & LDG
FLAP RETRACTN INHIBD FUEL CONSUMPT INCRSD	● **If the flaps are in CONF 3 or lower when the retraction of the flaps is inhibited:** FOR LDG : FLAP LVR 3 FOR GA : KEEP S/F CONF

STATUS

INFO

FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

The fuel consumption is increased. The FUEL PENALTY on the FMS DATA/STATUS page may be updated.

For fuel penalty determination, Refer to PER-IFT-FP Fuel Penalty Tables - Fuel Consumption Increased.

F/CTL FLAP SYS 1+2 FAULT

Applicable to: ALL

Ident.: PRO-ABN-F_CTL-2750W030-00004575.0001001 / 03 JUL 14

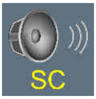
ANNUNCIATIONS

Triggering Conditions:

L2 Both flap control units are failed, or the flaps are jammed.

Indications:

Audio



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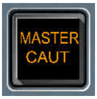
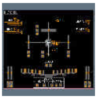
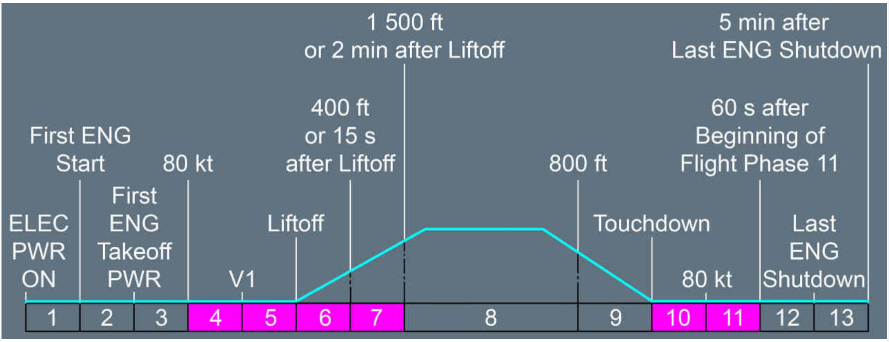

MASTER
CAUT

SD page



F/CTL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
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Ident.: PRO-ABN-F_CTL-2750W030-00008220.0001001 / 17 NOV 17

L2 The Flap Load Relief System (FLRS), the Auto Retraction System (ARS) and Auto Extension System (AES) are lost.
The slats cruise baulk and slats alpha-lock functions remain available.
If both slats systems are also inoperative (indicated through the F/CTL SLAT SYS 1+2 FAULT alert) the flight control laws degrade to direct law when the aircraft is below 22 000 ft (F/CTL DIRECT LAW (PROT LOST) alert is displayed on the WD).

Continued on the following page

F/CTL FLAP SYS 1+2 FAULT (Cont'd)

Ident.: PRO-ABN-F_CTL-2750W030-00008221.0005001 / 03 JAN 19

RNP AR CAPABILITY DOWNGRADED

L2 *The line is only displayed during RNP AR operations.*

L1 [RESET PNL : E2] FLAPS 1 .... RESET
[RESET PNL : V2] FLAPS 2 .... RESET

- **If two FLAP systems are failed during an RNP approach:**
  MINIMUM LIMITED TO RNP 0.30

USE SELECTED SPEED

L2 *To prepare the aircraft for landing, the managed speed is not adapted in the case of abnormal slats/flaps configuration. Therefore, the flight crew must use the selected speed to decelerate the aircraft to the approach speed, as follows:*

- *Decelerate the aircraft toward the VFE NEXT-5 kt. In the case of turbulence, to avoid VFE exceedance, the flight crew may decide to decelerate to a lower speed but above the VLS.*
- *When the aircraft reaches the selected speed, the FLAPS lever can be set one step down.*

The above steps are repeated until the FLAPS lever is set to 3.
When the landing configuration is established, aircraft can be decelerated to the computed approach speed.

Note: The VFE NEXT displayed on the PFD takes into account the abnormal slats/flaps configuration.

L1 FOR VFE : USE PFD

L2 *The ECAM and the PFD speed scale display the VFE that is associated with the current abnormal configuration. For more information, Refer to DSC-27-20-20 Configurations.*

L1
- **If the aircraft is below 22 000 ft and the speed is below 265 kt:**
  - **WHEN SPEED BELOW VFE**
    FLAPS LEVER .... RECYCLE

L3 *The line is only displayed when the aircraft is below 22 000 ft and the speed is below 265 kt to prevent a recycle of the FLAPS lever during the cruise.*
To recycle, set the FLAPS lever to 0. Then, immediately set the FLAPS lever to the position at the time the failure occurred.
In the case of high friction or a jam (e.g. ice accretion), the movement of the flaps is automatically stopped to prevent overload. Recycling the FLAPS lever restores the movement of the flaps if the reason for the overload is no longer present

Continued on the following page

F/CTL FLAP SYS 1+2 FAULT (Cont'd)

L1
- **If flaps position less than 3:**
  [MFD SURV] TAWS FLAP MODE..OFF
- **If the position of the flaps leads to an increase of the fuel consumption:**
  FUEL CONSUMPT INCRSD
  FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION
  The FMS predictions are not correct.

FOR LDG : FLAP LVR 3

L2 *Note: The reduced drag causes the aircraft to decelerate more slowly. Therefore, it is recommended that the aircraft is at the landing configuration and approach speed before starting the final approach.*

L1 FOR GA : KEEP S/F CONF

L2 *In the case of a diversion, the slats can be retracted after a go-around.*

L1 LDG PERF AFFECTED

L12

ASSOCIATED PROCEDURES

F/CTL ALTN LAW (PROT LOST)

The flight control laws revert to Alternate. AP, FD and A/THR remain available. Refer to PRO-ABN-F_CTL F/CTL ALTN LAW (PROT LOST)

Continued on the following page

F/CTL FLAP SYS 1+2 FAULT (Cont'd)

Ident.: PRO-ABN-F_CTL-2750W030-00008222.0002001 / 07 JUL 16

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES	APPR & LDG
● **If the position of the flaps leads to an increase of the fuel consumption:** FUEL CONSUMPT INCRSD	LDG PERF AFFECTED FOR LDG : FLAP LVR 3 FOR GA : KEEP S/F CONF

STATUS

INOP SYS

ALL PHASES	APPR & LDG
F/CTL PROT GPWS (If the position of the outer flaps is not available)	FLAPS BTV AUTOLAND

INFO

ALTN LAW : PROT LOST

- **If the position of the flaps leads to an increase of the fuel consumption:**
  FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

  The fuel consumption is increased. The FUEL PENALTY on the FMS DATA/STATUS page may be updated.
  For fuel penalty determination, Refer to PER-IFT-FP Fuel Penalty Tables - Fuel Consumption Increased.

FOR RNP AR : MINIMUM LIMITED TO RNP 0.30
APPR1 ONLY

F/CTL FLAP SYS 1 FAULT

Applicable to: ALL

Ident.: PRO-ABN-F_CTL-2750W060-00004574.0001001 / 03 JUL 14

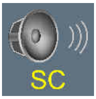
ANNUNCIATIONS

Triggering Conditions:

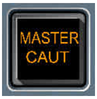
L2 The flap system 1 is failed.

Indications:

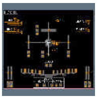
Audio



Master Light

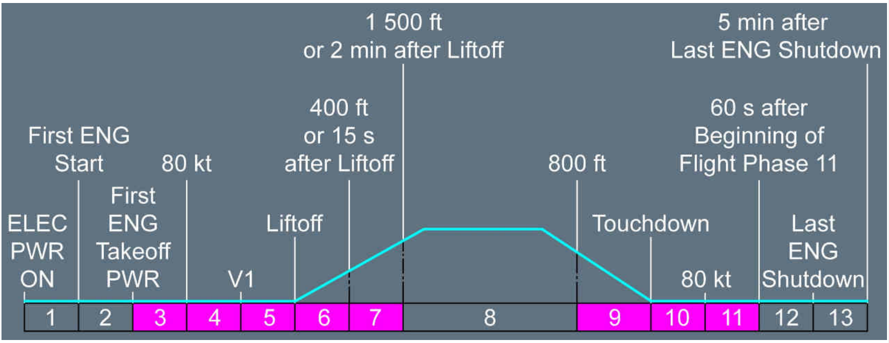

MASTER
CAUT

SD page



F/CTL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
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Ident.: PRO-ABN-F_CTL-2750W060-00008217.0001001 / 03 JUL 14

L2 Only one flap motor remains available. Flaps operate at half speed.

Ident.: PRO-ABN-F_CTL-2750W060-00008218.0001001 / 03 JUL 14

FLAPS SLOW

Continued on the following page

F/CTL FLAP SYS 1 FAULT (Cont'd)

Ident.: PRO-ABN-F_CTL-2750W060-00008219.0001001 / 06 MAY 15

LIMITATIONS

LIMITATIONS ON ECAM

APPR & LDG

FLAPS SLOW

STATUS

INOP SYS

APPR & LDG

FLAP SYS 1

F/CTL FLAP SYS 2 FAULT

Applicable to: ALL

Ident.: PRO-ABN-F_CTL-2750W070-00019040.0001001 / 03 JUL 14

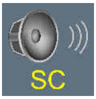
ANNUNCIATIONS

Triggering Conditions:

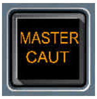
L2 The flap system 2 is failed.

Indications:

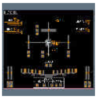
Audio



Master Light

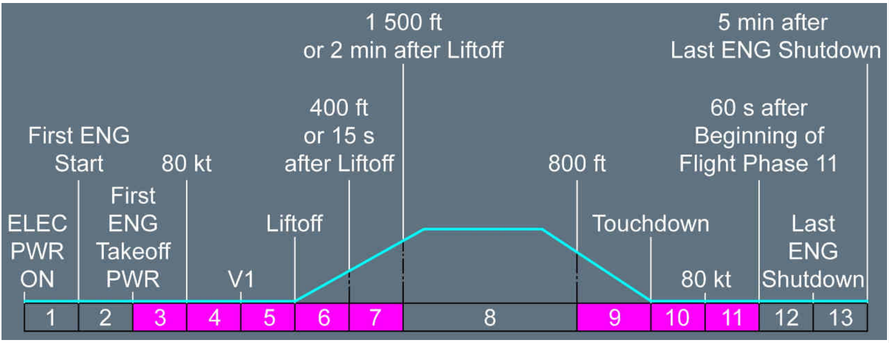

MASTER
CAUT

SD page



F/CTL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
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Ident.: PRO-ABN-F_CTL-2750W070-00019042.0001001 / 03 JUL 14

L2 Only one flap motor remains available. Flaps operate at half speed.
Only the flap system 2 enables the Differential Flap Setting (DFS) function. Therefore, when the flap system 2 is failed, the DFS is lost.

Ident.: PRO-ABN-F_CTL-2750W070-00019041.0001001 / 03 JUL 14

FLAPS SLOW

Continued on the following page

F/CTL FLAP SYS 2 FAULT (Cont'd)

Ident.: PRO-ABN-F_CTL-2750W070-00019043.0001001 / 06 MAY 15

LIMITATIONS

LIMITATIONS ON ECAM

APPR & LDG

FLAPS SLOW

STATUS

INOP SYS

APPR & LDG

FLAP SYS 2

F/CTL FLAPS LEVER NOT ZERO

Applicable to: ALL

Ident.: PRO-ABN-F_CTL-2750W300-00004578.0001001 / 03 JUL 14

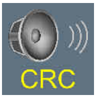
ANNUNCIATIONS

Triggering Conditions:

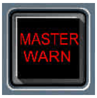
L2 The FLAPS lever is not at zero and:
- The aircraft altitude is above 22 000 ft, or
- The indicated airspeed is above 265 kt.

Indications:

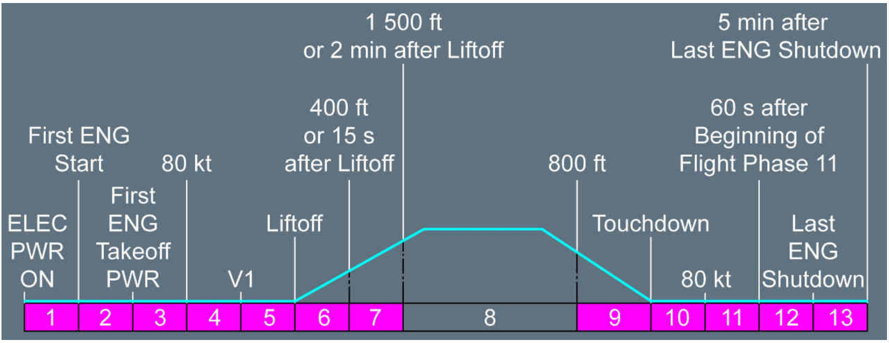
Audio



Master Light


MASTER
WARN

Flight Phase Inhibition:


1 500 ft or 2 min after Liftoff
5 min after Last ENG Shutdown
400 ft or 15 s after Liftoff
60 s after Beginning of Flight Phase 11
First ENG Start
80 kt
800 ft
ELEC PWR ON
First ENG Takeoff PWR
V1
Liftoff
Touchdown
80 kt
Last ENG Shutdown
1
2
3
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Ident.: PRO-ABN-F_CTL-2750W300-00008227.0001001 / 03 JUL 14

L2 If the slats and flaps are retracted when the warning is triggered, the slats/flaps cruise baulk function will maintain the slats and flaps in their fully retracted position. *Refer to DSC-27-20-20 Slats/Flaps Cruise Baulk Function*

Continued on the following page

F/CTL FLAPS LEVER NOT ZERO (Cont'd)

Ident.: PRO-ABN-F_CTL-2750W300-00008228.0001001 / 03 JUL 14

Crew awareness.

F/CTL FLAPS LEVER OUT OF DETENT

Applicable to: ALL

Ident.: PRO-ABN-F_CTL-2750W110-00004579.0001001 / 03 JUL 14

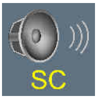
ANNUNCIATIONS

Triggering Conditions:

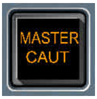
L2 The FLAPS lever is between two detents.

Indications:

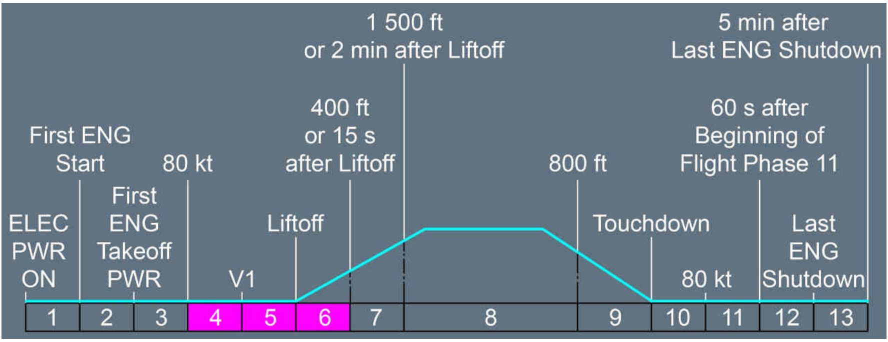
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Ident.: PRO-ABN-F_CTL-2750W110-00008229.0001001 / 03 JUL 14

Crew awareness.

F/CTL FLAPS LEVER SYS 1(2) FAULT

Applicable to: ALL

Ident.: PRO-ABN-F_CTL-2750W130-00006058.0001001 / 03 JUL 14

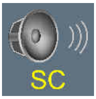
ANNUNCIATIONS

Triggering Conditions:

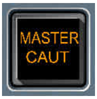
L2 The communication between the FLAPS lever and SFCC 1(2) is lost.

Indications:

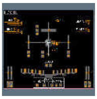
Audio



Master Light

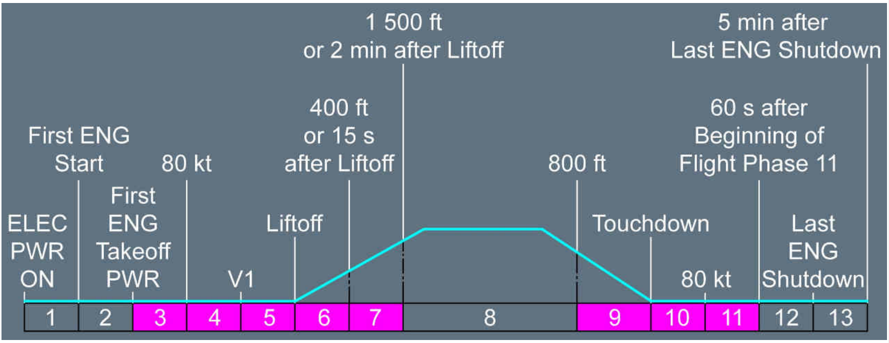

MASTER
CAUT

SD page



F/CTL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-F_CTL-2750W130-00008230.0001001 / 03 JUL 14

L2 The SFCC 1(2) does not receive inputs from the FLAPS lever, therefore SLATS SYS 1(2) and FLAPS SYS 1(2) cannot move the slats and flaps respectively. SLATS SYS 1(2) and FLAPS SYS 1(2) are considered as inoperative.
The slats and flaps are operated via the remaining systems, at half speed.

Continued on the following page

F/CTL FLAPS LEVER SYS 1(2) FAULT (Cont'd)

Ident.: PRO-ABN-F_CTL-2750W130-00008231.0001001 / 03 JUL 14

- **If slats and flaps are operative:**
  SLATS/FLAPS SLOW
- **If flaps are inoperative:**
  SLATS SLOW
- **If slats are inoperative:**
  FLAPS SLOW

Ident.: PRO-ABN-F_CTL-2750W130-00008232.0001001 / 03 JUL 14

LIMITATIONS

LIMITATIONS ON ECAM

APPR & LDG

- **If slats and flaps are operative:**
  SLATS/FLAPS SLOW
- **If flaps are inoperative:**
  SLATS SLOW
- **If slats are inoperative:**
  FLAPS SLOW

STATUS

INOP SYS

APPR & LDG

FLAP SYS 1(2)
SLAT SYS 1(2)

F/CTL FLAPS LOAD TEST REQUIRED

Applicable to: ALL

Ident.: PRO-ABN-F_CTL-2750W550-00024179.0001001 / 26 JUL 17

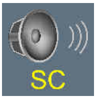
ANNUNCIATIONS

Triggering Conditions:

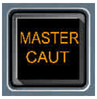
L2 The flaps are retracted too early during landing (above 60 kt).

Indications:

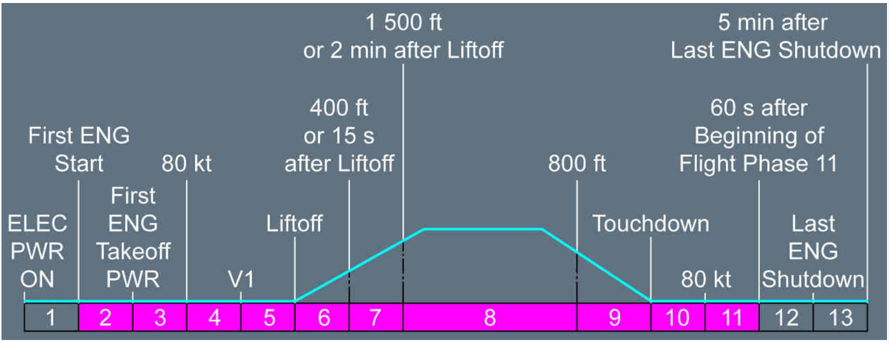
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
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3
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Ident.: PRO-ABN-F_CTL-2750W550-00024182.0001001 / 26 JUL 17

- **BEFORE ENG SHUTDOWN:**
  - **If landing in CONF 3:**
    FLAPS LV 3..SELECT
  - **If landing in CONF FULL:**
    FLAPS LVR FULL..SELECT
- **FLAPS LOAD TEST IN PROGRESS:**
  FLAPS LVR 0..SELECT

F/CTL FLAPS LOCKED

Applicable to: ALL

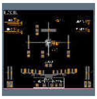
Ident.: PRO-ABN-F_CTL-2750W040-00004580.0001001 / 03 JUL 14

ANNUNCIATIONS

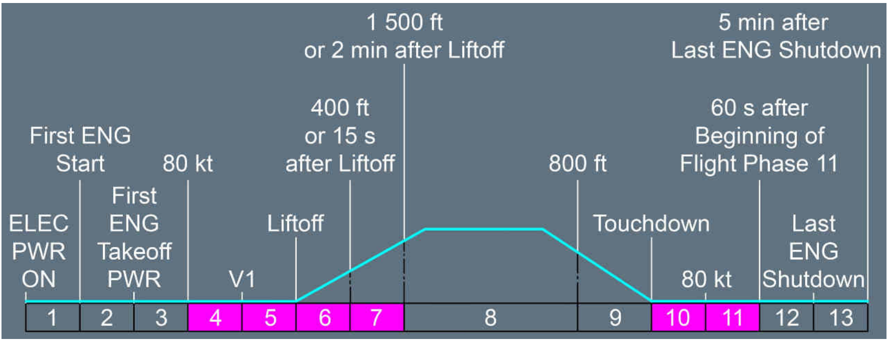
Triggering Conditions:

L2 The wing-tip brakes have locked the flaps to avoid surface runaway, overspeed or asymmetry. Once locked, the wing-tip brakes cannot be unlocked in flight.

Indications:

Audio	Master Light	SD page
SC	MASTER CAUT	 F/CTL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
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Ident.: PRO-ABN-F_CTL-2750W040-00008233.0001001 / 17 NOV 17

L2 Once locked, the wing-tip brakes cannot be unlocked in flight. Therefore the procedure is the same as the F/CTL FLAP SYS 1+2 FAULT, without recycling the FLAPS lever.
The Flap Load Relief System (FLRS), the Auto Retraction System (ARS) and Auto Extension System (AES) are lost.
The slats cruise baulk and slats alpha-lock functions remain available.

Continued on the following page

F/CTL FLAPS LOCKED (Cont'd)

Ident.: PRO-ABN-F_CTL-2750W040-00008234.0003001 / 03 JAN 19

USE SELECTED SPEED

L2 *To prepare the aircraft for landing, the managed speed is not adapted in the case of abnormal slats/flaps configuration. Therefore, the flight crew must use the selected speed to decelerate the aircraft to the approach speed, as follows:*

- *Decelerate the aircraft toward the VFE NEXT-5 kt. In the case of turbulence, to avoid VFE exceedance, the flight crew may decide to decelerate to a lower speed but above the VLS.*
- *When the aircraft reaches the selected speed, the FLAPS lever can be set one step down.*

The above steps are repeated until the FLAPS lever is set to 3.
When the landing configuration is established, aircraft can be decelerated to the computed approach speed.

Note: The VFE NEXT displayed on the PFD takes into account the abnormal slats/flaps configuration.

L1 FOR VFE : USE PFD

L2 *The ECAM and the PFD speed scale display the VFE that is associated with the current abnormal configuration. For more information, Refer to DSC-27-20-20 Configurations.*

L1 ● **If flaps position is less than 3:**
[MFD SURV] TAWS FLAP MODE...OFF

● **If the position of the flaps leads to an increase of the fuel consumption:**
FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION
The FMS predictions are not correct.

FOR LDG : FLAP LVR 3

L2 *Note: The reduced drag causes the aircraft to decelerate more slowly. Therefore, it is recommended that the aircraft is at the landing configuration and approach speed before starting the final approach.*

L1 FOR GA : KEEP S/F CONF

L2 *In the case of a diversion, the slats can be retracted after a go-around.*

L1 LDG PERF AFFECTED

Continued on the following page

F/CTL FLAPS LOCKED (Cont'd)

L12

ASSOCIATED PROCEDURES

F/CTL ALTN LAW (PROT LOST)

The flight control laws revert to Alternate. AP, FD and A/THR remain available. Refer to PRO-ABN-F_CTL F/CTL ALTN LAW (PROT LOST).

Ident.: PRO-ABN-F_CTL-2750W040-00008235.0001001 / 03 JUL 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES	APPR
● **If the position of the flaps leads to an increase of the fuel consumption:** FUEL CONSUMPT INCRSD	LDG PERF AFFECTED FOR LDG : FLAP LVR 3 FOR GA : KEEP S/F CONF

STATUS

INOP SYS

ALL PHASES	APPR & LDG
F/CTL PROT	FLAPS BTV AUTOLAND

INFO

ALTN LAW : PROT LOST

- **If the position of the flaps leads to an increase of the fuel consumption:**

  FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

  The fuel consumption is increased. The FUEL PENALTY on the FMS DATA/STATUS page may be updated.

  For fuel penalty determination, Refer to PER-IFT-FP Fuel Penalty Tables - Fuel Consumption Increased.

APPR1 ONLY

F/CTL GND SPLRS FAULT

Applicable to: ALL

Ident.: PRO-ABN-F_CTL-2760W090-00004748.0001001 / 03 JUL 14

ANNUNCIATIONS

Triggering Conditions:

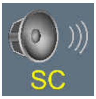
L2 The ground spoiler function is lost.

Note: The speed brake function remains available.

The caution is triggered when the PRIMs do not have enough information (e.g. wheel speed) to extend the ground spoilers (*Refer to DSC-27-10-10 Ground Spoiler Control*).

Indications:

Audio



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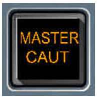
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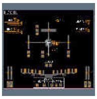
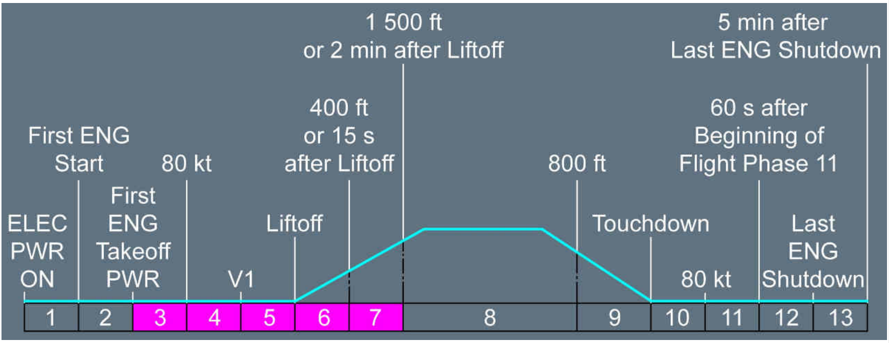
SD page



F/CTL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-F_CTL-2760W090-00008136.0001001 / 07 NOV 16

LDG DIST AFFECTED

Continued on the following page

F/CTL GND SPLRS FAULT **(Cont'd)**

Ident.: PRO-ABN-F_CTL-2760W090-00008137.0001001 / 07 NOV 16

LIMITATIONS

LIMITATIONS ON ECAM

APPR & LDG

LDG DIST AFFECTED

STATUS

INOP SYS

APPR & LDG

GND SPLRs
AUTO BRK
AUTOLAND

INFO

APPR 1 ONLY

F/CTL GND SPLRS NOT ARMED

Applicable to: ALL

Ident.: PRO-ABN-F_CTL-2760W140-00014296.0001001 / 03 JUL 14

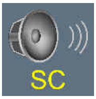
ANNUNCIATIONS

Triggering Conditions:

L2 The aircraft is below 500 ft RA for landing, and the ground spoilers are not armed.

Indications:

Audio



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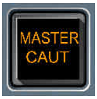
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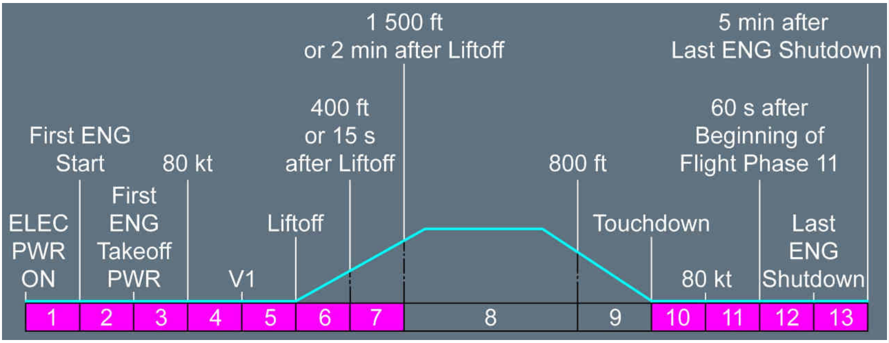
Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
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First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
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Ident.: PRO-ABN-F_CTL-2760W140-00014297.0001001 / 03 JUL 14

Crew awareness.

F/CTL INR FLAPS FAULT

Applicable to: ALL

Ident.: PRO-ABN-F_CTL-2750W500-00016785.0001001 / 03 JUL 14

ANNUNCIATIONS

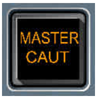
Triggering Conditions:

L2 The inner flaps are failed.

Indications:

Audio

Master Light


MASTER
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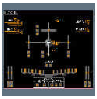
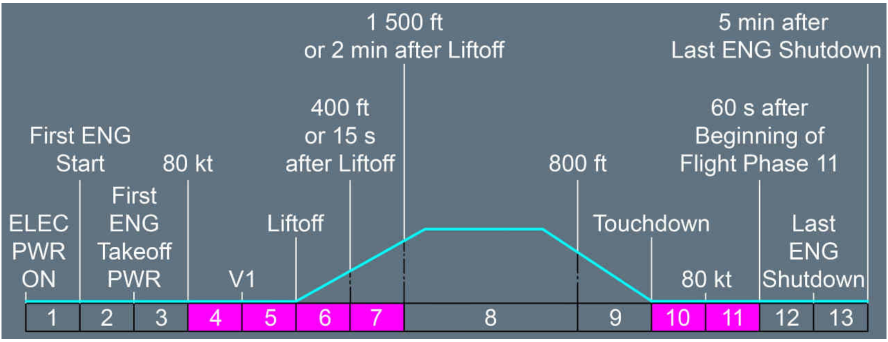
SD page



F/CTL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
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Continued on the following page

F/CTL INR FLAPS FAULT (Cont'd)

Ident.: PRO-ABN-F_CTL-2750W500-00016788.0003001 / 03 JAN 20

- **If the spoiler 2 is also failed:**

  FLAP RETRACTION INHIBITED

L2 *The retraction of the flaps is inhibited to prevent a clash between the spoiler 2 and the outer flap at retraction.*

L1
- **If the aircraft is below 22 000 ft**

  and

  If the speed is below 265 kt

  USE SELECTED SPEED

  FOR VFE : USE PFD

L2 *The PFD speed scale displays the VFE that is associated with the current abnormal configuration considering the most extended flap (inner or outer). For more information, Refer to DSC-27-20-20 Configurations.*

L1
- **If the position of the inner flaps leads to an increase of the fuel consumption:**

  FUEL CONSUMPT INCRSD

  FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

  The FMS predictions are not correct.

OUTR FLAPS SLOW

L2 *The ADGBs control the outer flaps.*

L1 FOR LDG : FLAP LVR 3

L2 *Note: The reduced drag causes the aircraft to decelerate more slowly. Therefore, it is recommended that the aircraft is at the landing configuration and approach speed before starting the final approach.*

L1 FOR GA : KEEP S/F CONF

L2 *In the case of a diversion, the flaps can be retracted after a go-around.*

L1 LDG PERF AFFECTED

L12

ASSOCIATED PROCEDURES

F/CTL ALTN LAW (PROT LOST)

The flight control laws revert to Alternate. AP, FD, and A/THR remain available (Refer to PRO-ABN-F_CTL F/CTL ALTN LAW (PROT LOST)).

Continued on the following page

F/CTL INR FLAPS FAULT (Cont'd)

Ident.: PRO-ABN-F_CTL-2750W500-00016789.0001001 / 03 JAN 20

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES	APPR & LDG
● **If the spoiler 2 is also failed:** FLAP RETRACTN INHIBD ● **If the position of the inner flaps leads to an increase of the fuel consumption:** FUEL CONSUMPT INCRSD	OUTR FLAPS SLOW LDG PERF AFFECTED FOR LDG : FLAP LVR 3 FOR GA : KEEP S/F CONF

STATUS

INOP SYS

ALL PHASES	APPR & LDG
F/CTL PROT	INR FLAPS BTV

INFO

ALTN LAW : PROT LOST

- **If the position of the flaps leads to an increase of the fuel consumption:**
  FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

  The fuel consumption is increased. The FUEL PENALTY on the FMS DATA/STATUS page may be updated.
  For fuel penalty determination, Refer to PER-IFT-FP Fuel Penalty Tables - Fuel Consumption Increased.

F/CTL L(R) ELEVATOR FAULT
PITCH CONTROL DEGRADED FOR FLARE

Applicable to: ALL

Ident.: PRO-ABN-F_CTL-2730W020-00004742.0001001 / 03 JUL 14

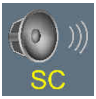
ANNUNCIATIONS

Triggering Conditions:

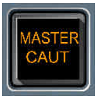
L2 One elevator is failed.

Indications:

Audio



Master Light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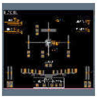
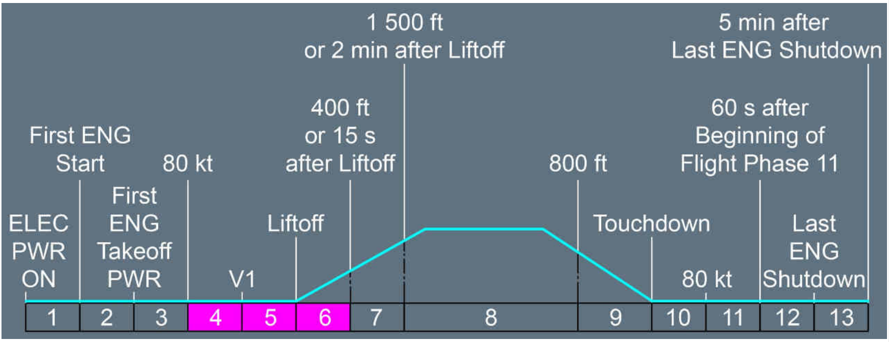
SD page



F/CTL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

F/CTL L(R) ELEVATOR FAULT (Cont'd)
PITCH CONTROL DEGRADED FOR FLARE

Ident.: PRO-ABN-F_CTL-2730W020-00008123.0005001 / 03 JAN 19

SPD BRK : DO NOT USE

- ■ **If the affected elevator is jammed above 8 ° nose up, or above 8 ° nose down:**

  CLEAN CONF : DO NOT USE

  MAX SPEED : 190 KT

  L2 *The speed is limited to prevent overload of the elevator when it is jammed.*
  In the case of nose up jam of an elevator leading to a significant reduction of the pitch down authority, the flight control system will deploy spoilers 1 and 2 at 15 °, and droop the ailerons at 10 ° to restore an acceptable pitch down authority.

- L1 ■ **If the affected elevator is jammed between 5 ° and 8 ° nose up, or between 4.5 ° and 8 ° nose down and below FL150:**

  MAX SPEED : 250 KT

  L2 *The speed is limited to prevent overload of the elevator when it is jammed.*

  L1 ABOVE FL150 : EXPECT MAX SPEED 280 KT

- ■ **If the affected elevator is jammed between 5 ° and 8 ° nose up, or between 4.5 ° and 8 ° nose down and above FL150:**

  MAX SPEED : 280 KT

  L2 *The speed is limited to prevent overload of the elevator when it is jammed.*

  L1 BELOW FL150 : EXPECT MAX SPEED 250 KT

- ● **If the stabilizer is inoperative:**

  [MFD SURV] TAWS FLAP MODE..OFF

FUEL CONSUMPT INCRSD
FOR BETTER RANGE : REDUCE CRZ MACH/SPD
FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

The FMS predictions are not correct.

- ■ **If the affected elevator is jammed above 8 ° nose up, or above 8 ° nose down:**

  FOR LDG : FLAP LVR 3

- ■ **If the stabilizer is inoperative:**

  FOR LDG : FLAP LVR 2

Continued on the following page

F/CTL L(R) ELEVATOR FAULT (Cont'd)

PITCH CONTROL DEGRADED FOR FLARE

L2 *Depending on the position of the stabilizer at the moment of the failure, and depending on the CG of the aircraft, the PRIMs will command the ailerons upward or downward to improve the longitudinal stability.*

L1 LDG PERF AFFECTED

L2 *The approach speed is increased to compensate for the degraded pitch control.*

L12

ASSOCIATED PROCEDURES

F/CTL ALTN LAW (PROT LOST)

The flight control laws revert to alternate. AP, FD and A/THR remain available.Refer to PRO-ABN-F_CTL F/CTL ALTN LAW (PROT LOST).
Pitch manoeuvrability is significantly reduced but remains sufficient.

Continued on the following page

F/CTL L(R) ELEVATOR FAULT (Cont'd)

PITCH CONTROL DEGRADED FOR FLARE

Ident.: PRO-ABN-F_CTL-2730W020-00008124.0004001 / 03 JAN 19

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

SPD BRK : DO NOT USE

- **If the elevator is jammed above 8 ° nose up, or above 8 ° nose down:**
  MAX SPEED : 190 KT
  NO CLEAN CONF
- **If the elevator is jammed between 5 ° and 8 ° nose up, or between 4.5 ° and 8 ° nose down and below FL150:**
  MAX SPEED : 250 KT
- **If the elevator is jammed between 5 ° and 8 ° nose up, or between 4.5 ° and 8 ° nose down and above FL150:**
  MAX SPEED : 280 KT
  FUEL CONSUMPT INCRSD

APPR & LDG

LDG PERF AFFECTED

- **If the elevator is jammed above 8 ° nose up, or above 8 ° nose down:**
  FOR LDG : FLAP LVR 3
- **If the stabilizer is inoperative:**
  FOR LDG : FLAP LVR 2

LIMITATIONS ON PFD

ALL PHASES

SPD BRK : DO NOT USE

- **If the elevator is jammed above 8 ° nose up, or above 8 ° nose down:**
  MAX SPEED : 190 KT
  NO CLEAN CONF
- **If the elevator is jammed between 5 ° and 8 ° nose up, or between 4.5 ° and 8 ° nose down and below FL150:**

Continued on the following page

F/CTL L(R) ELEVATOR FAULT (Cont'd)
PITCH CONTROL DEGRADED FOR FLARE

MAX SPEED : 250 KT
- **If the elevator is jammed between 5 ° and 8 ° nose up, or between 4.5 ° and 8 ° nose down and above FL150:**
  MAX SPEED : 280 KT

STATUS

INOP SYS

ALL PHASES	**APPR & LDG**
F/CTL PROT L(R) ELEVATOR	BTV

INFO

ALTN LAW : PROT LOST
- **If the elevator is jammed between 5 ° and 8 ° nose up, or between 4.5 ° and 8 ° nose down and above FL150:**
  BELOW FL150 : EXPECT MAX SPEED 250 KT
- **If the elevator is jammed between 5 ° and 8 ° nose up, or between 4.5 ° and 8 ° nose down and below FL150:**
  ABOVE FL150 : EXPECT MAX SPEED 280 KT

FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

The fuel consumption is increased. The FUEL PENALTY on the FMS DATA/STATUS page may be updated.
For fuel penalty determination, Refer to PER-IFT-FP Fuel Penalty Tables - Fuel Consumption Increased

FOR BETTER RANGE : REDUCE CRZ MACH/SPEED

F/CTL L(R) INR(OUTR) AILERON FAULT

Applicable to: ALL

Ident.: PRO-ABN-F_CTL-2710W010-00004750.0001001 / 03 JUL 14

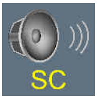
ANNUNCIATIONS

Triggering Conditions:

L2 An aileron is failed.

Indications:

Audio



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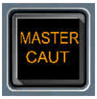
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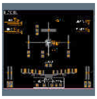
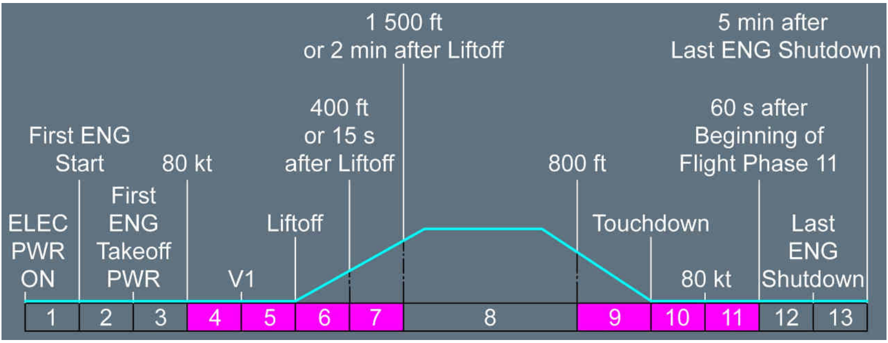
SD page



F/CTL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-F_CTL-2710W010-00008141.0001001 / 03 JUL 14

L2 In the case of the loss of two pairs of ailerons, the flight control laws revert to Alternate. AP, FD and A/THR remain available.

Continued on the following page

F/CTL L(R) INR(OUTR) AILERON FAULT (Cont'd)

3 Ident.: PRO-ABN-F_CTL-2710W010-00008142.0006001 / 07 JUL 20

- **In the case of L(R) INR AILERON failure:**
  - **If first occurrence of the alert:**
    PRIM 2 (IF AVAIL).. OFF THEN ON
    - **If PRIM 2 is inoperative:**
      SEC 2 (IF AVAIL).. OFF THEN ON

FUEL CONSUMPT INCREASED
FOR BETTER RANGE : REDUCE CRZ MACH/SPD
FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

The FMS predictions are not correct.

LDG DIST AFFECTED

Continued on the following page

F/CTL L(R) INR(OUTR) AILERON FAULT (Cont'd)

Ident.: PRO-ABN-F_CTL-2710W010-00008143.0003001 / 03 JAN 19

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES	APPR & LDG
FUEL CONSUMPT INCRSD	LDG DIST AFFECTED

STATUS

INOP SYS

ALL PHASES	APPR & LDG
L(R) INR(OUTR) AILERON	BTV

INFO

FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

The fuel consumption is increased. The FUEL PENALTY on the FMS DATA/STATUS page may be updated.

For fuel penalty determination, Refer to PER-IFT-FP Fuel Penalty Tables - Fuel Consumption Increased.

FOR BETTER RANGE : REDUCE CRZ MACH/SPD

F/CTL L(R) SIDESTICK FAULT

Applicable to: ALL

Ident.: PRO-ABN-F_CTL-2790W110-00004751.0001001 / 03 JUL 14

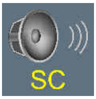
ANNUNCIATIONS

Triggering Conditions:

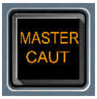
L2 The left (right) sidestick is failed.

Indications:

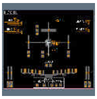
Audio



Master Light

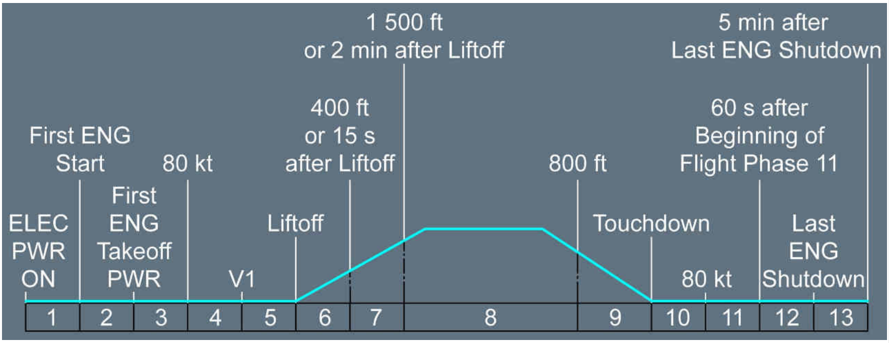

MASTER
CAUT

SD page



F/CTL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
2
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Ident.: PRO-ABN-F_CTL-2790W110-00008145.0001001 / 03 JUL 14

Crew awareness.

Continued on the following page

F/CTL L(R) SIDESTICK FAULT (Cont'd)

Ident.: PRO-ABN-F_CTL-2790W110-00014295.0001001 / 03 JUL 14

STATUS

INOP SYS

ALL PHASES

L(R) SIDESTICK

F/CTL PART(MOST) SPLRS FAULT

Applicable to: ALL

Ident.: PRO-ABN-F_CTL-2760W250-00004752.0001001 / 03 JUL 14

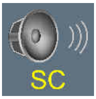
ANNUNCIATIONS

Triggering Conditions:

L2 - PART SPLRs : Between one and eight spoilers are failed.
- MOST SPLRs : More than eight spoilers are failed.

Indications:

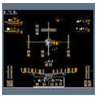
Audio



Master Light

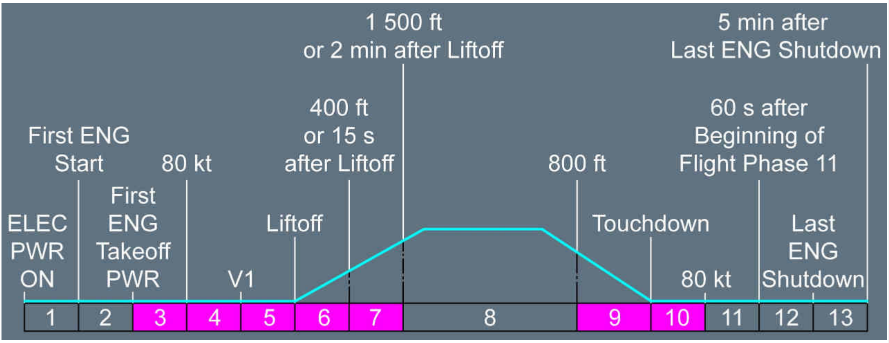
MASTER
CAUT

SD page



F/CTL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Continued on the following page

F/CTL PART(MOST) SPLRS FAULT **(Cont'd)**

Ident.: PRO-ABN-F_CTL-2760W250-00008146.0001001 / 02 OCT 14

L2 When a spoiler is failed, the symmetric spoiler:
- Is inhibited for ground spoiler and speed brakes function
- Remains available for roll control.

For more information on the behavior of a spoiler in the case of failure, *Refer to Spoilers*.
In case of the loss of four pairs of roll spoilers (spoilers 3 to 7), the flight control laws revert to Alternate. AP, FD and A/THR remain available.

Continued on the following page

F/CTL PART(MOST) SPLRS FAULT (Cont'd)

Ident.: PRO-ABN-F_CTL-2760W250-00008147.0008001 / 03 JAN 19

- **If flaps retraction is inhibited by the PRIMs:**

FLAP RETRACTION INHIBITED

L2 *When a spoiler is failed in the downward position, flaps retraction may damage the spoiler's structure. In that case, the PRIMs inhibit the flaps retraction.*

L1 SLATS AVAIL

L2 *The slats operate normally when the FLAPS lever is used.*

L1 USE SELECTED SPEED

L2 *To prepare the aircraft for landing, the managed speed is not adapted in the case of abnormal slats/flaps configuration. Therefore, the flight crew must use the selected speed to decelerate the aircraft to the approach speed, as follows:*

- *Decelerate the aircraft toward the VFE NEXT-5 kt. In the case of turbulence, to avoid VFE exceedance, the flight crew may decide to decelerate to a lower speed but above the VLS.*
- *When the aircraft reaches the selected speed, the FLAPS lever can be set one step down.*

The above steps are repeated until the FLAPS lever is set to 3.
When the landing configuration is established, aircraft can be decelerated to the computed approach speed.

Note: The VFE NEXT displayed on the PFD takes into account the abnormal slats/flaps configuration.

L1 FOR VFE : USE PFD

L2 *The ECAM and the PFD speed scale display the VFE that is associated with the current abnormal configuration. For more information, Refer to DSC-27-20-20 Configurations.*

L1
- **If the position of the failed spoiler(s) is(are) lost:**

FUEL CONSUMPT INCRSD
FOR BETTER RANGE : REDUCE CRZ MACH/SPD
FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

The FMS predictions are not correct.

L2 *If the PRIMs still know the position of the failed spoilers, this line is not displayed. Instead, if the position of the failed spoilers impact the fuel consumption, the F/CTL SPLRS PARTLY EXTENDED alert is displayed on the WD.*

L1 EXPECT FUEL PENALTY VARIATIONS

Continued on the following page

F/CTL PART(MOST) SPLRS FAULT **(Cont'd)**

- **If flaps retraction is inhibited by the PRIMs and the aircraft is not in CONF FULL:**

  FOR LDG : FLAP LVR 3

  L2 *The slats/flaps configuration is maintained in the case of a go-around. Therefore the approach should not be performed in CONF FULL.*

  L1 FOR GA : KEEP S/F CONF

  L2 *In the case of diversion, the slats can be retracted after a go-around.*

L1 LDG DIST AFFECTED

- **If the position of the failed spoiler(s) is(are) not lost and the failed spoiler(s) impact(s) the fuel consumption:**

L12

ASSOCIATED PROCEDURES

F/CTL SPLRs PARTLY EXTENDED

This alert is displayed only when the failure of the spoiler(s) affect(s) the fuel consumption. It may be displayed immediately or some time after the failure once the drift (if any) is established (Refer to PRO-ABN-F_CTL F/CTL SPLRs PARTLY EXTENDED).

- **If at least four pairs of roll spoilers (spoilers 3 to 7) are failed:**

L12

ASSOCIATED PROCEDURES

F/CTL ALTN LAW (PROT LOST)

The flight control laws revert to Alternate. AP, FD and A/THR remain available. Refer to PRO-ABN-F_CTL F/CTL ALTN LAW (PROT LOST)

Continued on the following page

F/CTL PART(MOST) SPLRS FAULT **(Cont'd)**

Ident.: PRO-ABN-F_CTL-2760W250-00008148.0008001 / 03 JAN 19

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES	APPR & LDG
● **If at least four pair of roll spoilers (spoilers 3 to 7) are failed:** MAX SPEED : 310 KT ● **If flaps retraction is inhibited by the PRIMs:** FLAP RETRACTN INHIBD ● **If the position of the affected spoiler(s) is(are) lost:** FUEL CONSUMPT INCRSD	LDG DIST AFFECTED ● **If flaps retraction is inhibited by the PRIMs and the aircraft is not in CONF FULL:** FOR LDG : FLAP LVR 3 FOR GA : KEEP S/F CONF

LIMITATIONS ON PFD

ALL PHASES	
● **If at least four pair of roll spoilers (spoilers 3 to 7) are failed:** MAX SPEED : 310 KT	

STATUS

INOP SYS

ALL PHASES	APPR & LDG
F/CTL PROT (If at least four pair of roll spoilers (spoilers 3 to 7) are failed) PART(MOST) SPLRs	BTV

INFO

- **If at least four pairs of roll spoilers (spoilers 3 to 7) are failed:**
  ALTN LAW : PROT LOST
- **If the position of the affected spoiler(s) is(are) lost:**

Continued on the following page

F/CTL PART(MOST) SPLRS FAULT **(Cont'd)**

FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION
FOR BETTER RANGE : REDUCE CRZ MACH/SPD
EXPECT FUEL PENALTY VARIATIONS

The fuel consumption is increased. The FUEL PENALTY on the FMS DATA/STATUS page may be updated.
For fuel penalty determination, Refer to PER-IFT-FP Fuel Penalty Tables - Fuel Consumption Increased.

F/CTL PITCH TRIM/FMS/CG DISAGREE

Applicable to: ALL

Ident.: PRO-ABN-F_CTL-2740W100-00004753.0001001 / 03 JUL 14

ANNUNCIATIONS

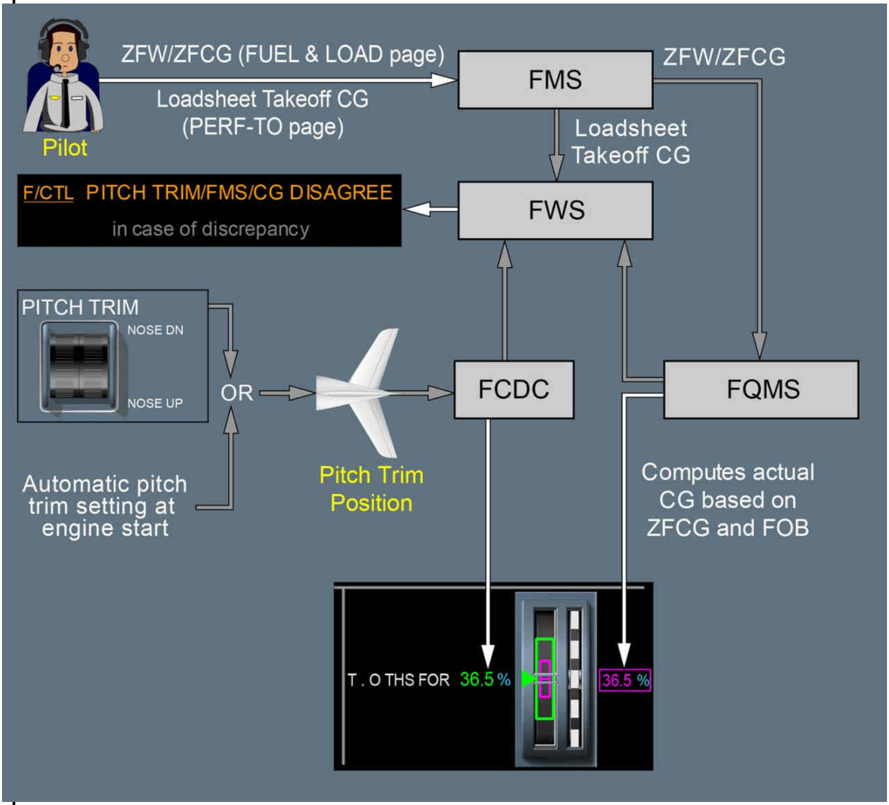
Triggering Conditions:

L2 When the T.O CONFIG pb on the ECP is pressed, or when the thrust levers are set to FLEX or TOGA, there is a discrepancy between:
- The position of the pitch trim for takeoff, displayed on the Pitch Trim Display, at the bottom of the PFD
- The takeoff CG of the load and trim sheet, entered in the FMS (*Refer to DSC-22-FMS-20-20-20 THS FOR Entry Field*)
- The actual CG, computed by the FQMS, displayed in the permanent data of the System Display, and also displayed on the Pitch Trim Display, at the bottom of the PFD.

Continued on the following page

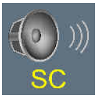
F/CTL PITCH TRIM/FMS/CG DISAGREE (Cont'd)

Pitch Trim / FMS / CG Disagree

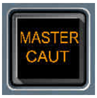

Pilot
ZFW/ZFCG (FUEL & LOAD page)
Loadsheet Takeoff CG
(PERF-TO page)
FMS
ZFW/ZFCG
Loadsheet
Takeoff CG
F/CTL PITCH TRIM/FMS/CG DISAGREE
in case of discrepancy
FWS
PITCH TRIM
NOSE DN
NOSE UP
OR
FCDC
FQMS
Automatic pitch
trim setting at
engine start
Pitch Trim
Position
Computes actual
CG based on
ZFCG and FOB
T . O THS FOR 36.5 %
36.5 %

Indications:

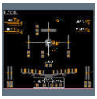
Audio



Master Light


MASTER
CAUT

SD page

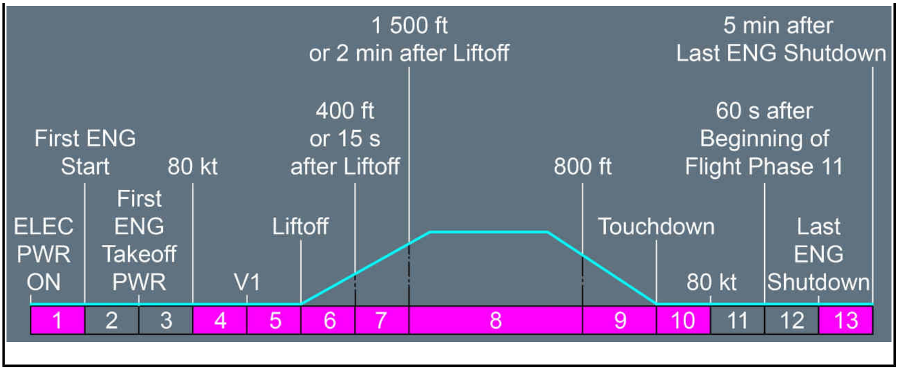


F/CTL SD Page

Flight Phase Inhibition:

Continued on the following page

F/CTL PITCH TRIM/FMS/CG DISAGREE (Cont'd)


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

Ident.: PRO-ABN-F_CTL-2740W100-00008150.0001001 / 06 FEB 18

Crew awareness.

L2 *Note: The flight crew checks the LOADSHEET data, the FMS entries and the trim setting.*

F/CTL PRIM 1(2)(3) FAULT

Applicable to: ALL

Ident.: PRO-ABN-F_CTL-2793W010-00004754.0001001 / 03 JUL 14

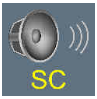
ANNUNCIATIONS

Triggering Conditions:

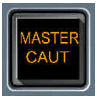
L2 PRIM 1(2)(3) is failed.

Indications:

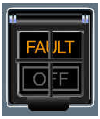
Audio



Master Light

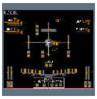

MASTER
CAUT

Local Light



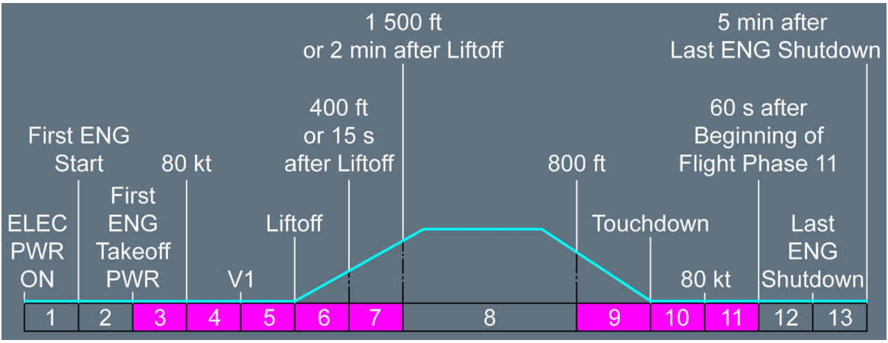
PRIM 1(2)(3) pb-sw

SD page



F/CTL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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13

Ident.: PRO-ABN-F_CTL-2793W010-00019321.0001001 / 03 JUL 14

Note:
- *If two PRIMs are failed during an RNP approach, the ECAM displays the RNP AR CAPABILITY DOWNGRADED subtitle.*
- *If the three PRIMs are failed during an RNP approach, the ECAM displays the RNP AR CAPABILITY LOST subtitle.*

Continued on the following page

F/CTL PRIM 1(2)(3) FAULT (Cont'd)

Ident.: PRO-ABN-F_CTL-2793W010-00008152.0005001 / 03 JAN 19

PRIM 1(2)(3)....................OFF THEN ON

- **IF NOT SUCCESSFUL:**
  PRIM 1(2)(3)....................OFF
- **If two PRIMs are failed during an RNP approach:**
  MINIMUM LIMITED TO RNP 0.30
- **If all PRIMs and one SEC are failed:**
  SPD BRK : DO NOT USE
- **In the case of multiple failures leading to the loss of flight control surfaces:**
  FUEL CONSUMPT INCRSD
  FOR BETTER RANGE : REDUCE CRZ MACH/SPD
  FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION
  The FMS predictions are not correct.
  EXPECT FUEL PENALTY VARIATIONS
  - **If all PRIMs are failed:**
    GA THR : TOGA ONLY

  LDG DIST AFFECTED
- **If all PRIMs are failed:**

ASSOCIATED PROCEDURES

F/CTL DIRECT LAW (PROT LOST)

Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW (PROT LOST)

Continued on the following page

F/CTL PRIM 1(2)(3) FAULT (Cont'd)

Ident.: PRO-ABN-F_CTL-2793W010-00008153.0010001 / 03 JAN 19

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

- **If all PRIMs and one SEC are failed:**
  SPD BRK : DO NOT USE
- **In the case of multiple failures leading to the loss of flight control surfaces:**
  FUEL CONSUMPT INCRSD

APPR & LDG

- **If all PRIMs are failed:**
  GA THR : TOGA ONLY
- **In the case of multiple failures leading to the loss of flight control surfaces:**
  LDG DIST AFFECTED

LIMITATIONS ON PFD

ALL PHASES

- **If all PRIMs and one SEC are failed:**
  SPD BRK : DO NOT USE

STATUS

INOP SYS

ALL PHASES

PRIM 1(2)(3) (If one PRIM is failed)
PRIM 1+2(1+3)(2+3) (If two PRIMs are failed)
PRIM 1+2+3 (If all PRIMs are failed)
AP (If all PRIMs are failed)
FD (If all PRIMs are failed)
A/THR (If all PRIMs are failed)
AUTO EMER DES (If PRIMs 1+2 are failed)

APPR & LDG

BTV (If two PRIMs are failed)
ROW/ROP (If two PRIMs are failed)
GA SOFT (If all PRIMs are failed)
AUTOLAND (If all PRIMs are failed)

INFO

- **In the case of multiple failures leading to the loss of flight control surfaces:**
  FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

Continued on the following page

F/CTL PRIM 1(2)(3) FAULT (Cont'd)

The fuel consumption is increased. The FUEL PENALTY on the FMS DATA/STATUS page may be updated.
For fuel penalty determination, Refer to PER-IFT-FP Fuel Penalty Tables - Fuel Consumption Increased.

- **If two PRIMs are failed during an RNP approach:**
  FOR RNP AR : MINIMUM LIMITED TO RNP 0.30
- **If all PRIMs are failed:**
  APPR 1 ONLY
- **If two PRIMs are failed:**
  LAND 3 SINGLE ONLY
- **In the case of multiple failures leading to the loss of flight control surfaces:**
  FOR BETTER RANGE : REDUCE CRZ MACH/SPD
  EXPECT FUEL PENALTY VARIATIONS

F/CTL RUDDER FAULT

Applicable to: ALL

Ident.: PRO-ABN-F_CTL-2720W020-00015556.0001001 / 03 JUL 14

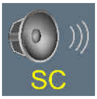
ANNUNCIATIONS

Triggering Conditions:

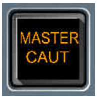
L2 The rudder is failed.

Indications:

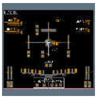
Audio



Master Light

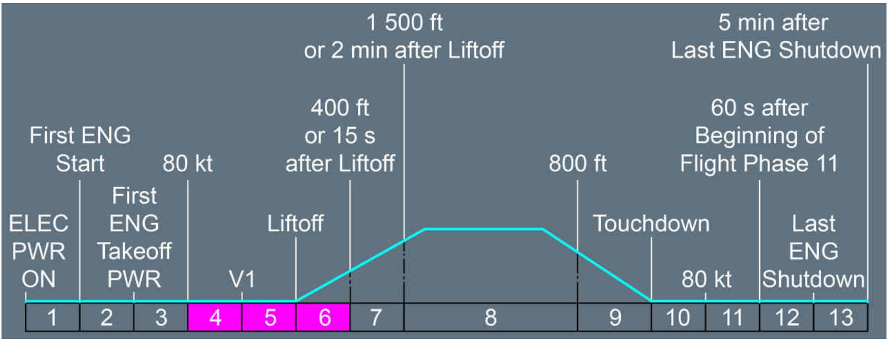

MASTER
CAUT

SD page



F/CTL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Continued on the following page

F/CTL RUDDER FAULT (Cont'd)

Ident.: PRO-ABN-F_CTL-2720W020-00015558.0003001 / 03 JAN 19

MANEUVER WITH CARE
FUEL CONSUMPT INCRSD
FOR BETTER RANGE : REDUCE CRZ MACH/SPD
FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

The FMS predictions are not correct.

- **RUDDER:**

L2 To identify a jam and the direction of the jam, check the position of the rudder on the F/CTL SD page with the wings level.

L1 ■ **JAMMED DEFLECTED LEFT SIDE**
AVOID XWIND FROM LEFT SIDE

L2 *Landing has been demonstrated with crosswind up to 15 kt from the right side. This value was not found limiting.*

L1 ■ **JAMMED DEFLECTED RIGHT SIDE**
AVOID XWIND FROM RIGHT SIDE

L2 *Landing has been demonstrated with crosswind up to 15 kt from the left side. This value was not found limiting.*

L1 ■ **NEUTRAL**
MINIMIZE XWIND FOR LANDING

L2 *Landing has been demonstrated with crosswind up to 10 kt from either side. This value was not found limiting.*

L1 AUTO BRK : DO NOT USE
FOR LDG : USE DIFF BRAKING AS RQRD
LDG PERF AFFECTED

L12

ASSOCIATED PROCEDURES

F/CTL ALTN LAW (PROT LOST)

The flight control laws revert to Alternate. AP, FD, and A/THR remain available (Refer to PRO-ABN-F_CTL F/CTL ALTN LAW (PROT LOST)).

Continued on the following page

F/CTL RUDDER FAULT (Cont'd)

Ident.: PRO-ABN-F_CTL-2720W020-00015559.0003001 / 03 JAN 19

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES	APR & LDG
MAX SPEED : 310 KT MANEUVER WITH CARE FUEL CONSUMPT INCRSD	AUTO BRK : DO NOT USE ● **If rudder jammed on right side:** AVOID RIGHT XWIND ● **If rudder jammed on left side:** AVOID LEFT XWIND LDG PERF AFFECTED

LIMITATIONS ON PFD

ALL PHASES	
MAX SPEED : 310 KT MANEUVER WITH CARE	

STATUS

INOP SYS

ALL PHASES	APPR & LDG
F/CTL PROT RUDDER	BTV AUTOLAND

INFO

ALTN LAW : PROT LOST

- **If rudder in neutral position:**
  MINIMIZE XWIND FOR LANDING

FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

The fuel consumption is increased. The FUEL PENALTY on the FMS DATA/STATUS page may be updated.

For fuel penalty determination, Refer to PER-IFT-FP Fuel Penalty Tables - Fuel Consumption Increased.

Continued on the following page

F/CTL RUDDER FAULT (Cont'd)

APPR 1 ONLY
FOR LDG : USE DIFF BRAKING AS RQRD
FOR BETTER RANGE : REDUCE CRZ MACH/SPD

F/CTL RUDDER DOUBLE ACTUATOR FAULT

Applicable to: ALL

Ident.: PRO-ABN-F_CTL-2720W040-00016802.0001001 / 03 JUL 14

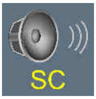
ANNUNCIATIONS

Triggering Conditions:

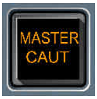
L2 Two actuators of the rudder are failed.

Indications:

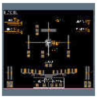
Audio



Master Light

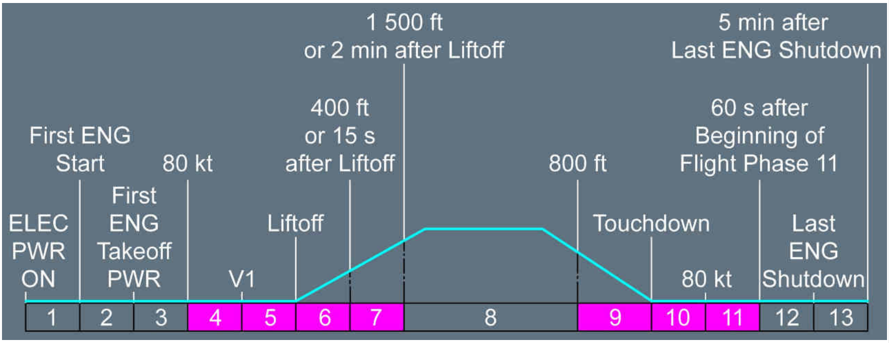

MASTER
CAUT

SD page



F/CTL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
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3
4
5
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Ident.: PRO-ABN-F_CTL-2720W040-00016805.0001001 / 03 JUL 14

LDG PERF AFFECTED

Continued on the following page

F/CTL RUDDER DOUBLE ACTUATOR FAULT (Cont'd)

Ident.: PRO-ABN-F_CTL-2720W040-00016806.0001001 / 03 JUL 14

LIMITATIONS

LIMITATIONS ON ECAM

APPR & LDG

LDG PERF AFFECTED

STATUS

INOP SYS

APPR&LDG

BTV

F/CTL RUDDER TRIM 1+2 FAULT

Applicable to: ALL

Ident.: PRO-ABN-F_CTL-2722W030-00004766.0001001 / 03 JUL 14

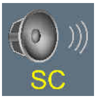
ANNUNCIATIONS

Triggering Conditions:

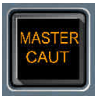
L2 Both rudder trim motors are failed. The rudder trim is lost.

Indications:

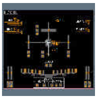
Audio



Master Light

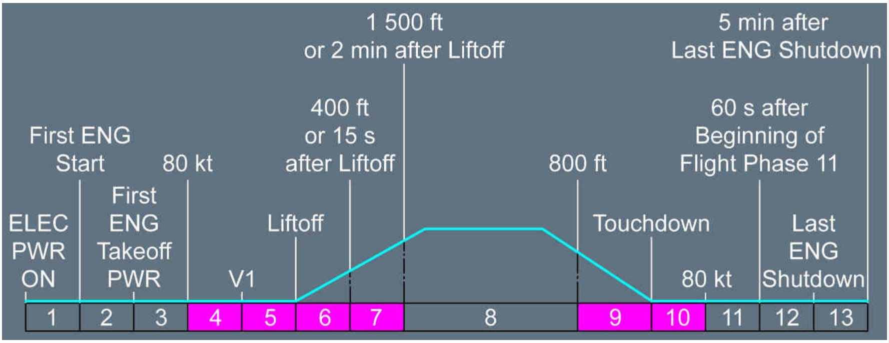

MASTER
CAUT

SD page



F/CTL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

Ident.: PRO-ABN-F_CTL-2722W030-00008176.0001001 / 03 JUL 14

L2 The rudder trim is lost. The neutral point of the rudder pedals remains at the last rudder trim selection.

When the AP is engaged, the rudder movements are not reflected in the pedal movement. This means that the rudder position and the rudder pedals position may differ. This can result in a jerk at AP disconnection.

Continued on the following page

F/CTL RUDDER TRIM 1+2 FAULT (Cont'd)

Ident.: PRO-ABN-F_CTL-2722W030-00008177.0001001 / 03 JUL 14

Crew awareness.

Ident.: PRO-ABN-F_CTL-2722W030-00008178.0001001 / 04 SEP 14

STATUS

INOP SYS

ALL PHASES	APPR & LDG
RUDDER TRIM 1+2	AUTOLAND (If rudder trim is jammed above 8 °)

INFO

- **If rudder trim is jammed above 8 °**
  APPR 1 ONLY

F/CTL SEC 1(2)(3) FAULT

Applicable to: ALL

Ident.: PRO-ABN-F_CTL-2794W010-00004768.0001001 / 03 JUL 14

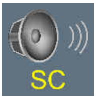
ANNUNCIATIONS

Triggering Conditions:

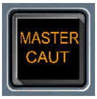
L2 SEC 1(2)(3) is failed.

Indications:

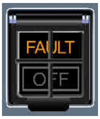
Audio



Master Light

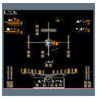

MASTER
CAUT

Local Light



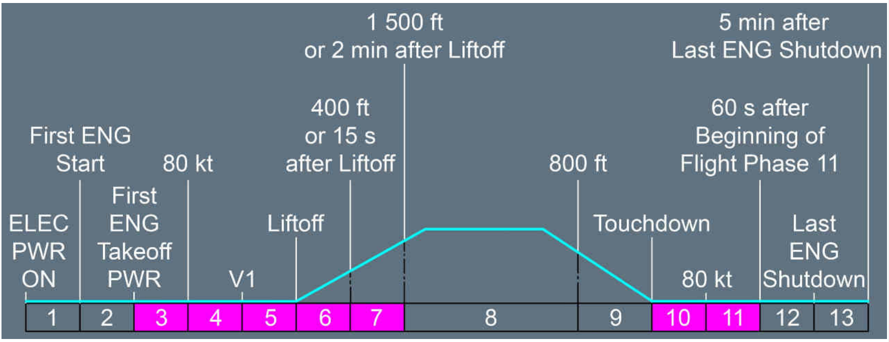
SEC 1(2)(3) pb-sw

SD page



F/CTL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
2
3
4
5
6
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10
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12
13

Continued on the following page

F/CTL SEC 1(2)(3) FAULT (Cont'd)

Ident.: PRO-ABN-F_CTL-2794W010-00008182.0008001 / 03 JAN 19

SEC 1(2)(3)....................OFF THEN ON

- **IF NOT SUCCESSFUL:**
  SEC 1(2)(3)....................OFF
  - **If all PRIMs and one SEC are failed:**
    SPD BRK : DO NOT USE
  - **In the case of multiple failures leading to the loss of flight control surfaces:**
    FUEL CONSUMPT INCRSD
    FOR BETTER RANGE : REDUCE CRZ MACH/SPD
    FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION
    The FMS predictions are not correct.
    EXPECT FUEL PENALTY VARIATIONS
    LDG DIST AFFECTED

Continued on the following page

F/CTL SEC 1(2)(3) FAULT (Cont'd)

Ident.: PRO-ABN-F_CTL-2794W010-00008183.0008001 / 03 JAN 19

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

- **If all PRIMs are also failed:**
  SPD BRK : DO NOT USE
- **In the case of multiple failures leading to the loss of flight control surfaces:**
  FUEL CONSUMPT INCRSD

APPR&LDG

- **In the case of multiple failures leading to the loss of flight control surfaces:**
  LDG DIST AFFECTED

LIMITATIONS ON PFD

ALL PHASES

- **If all PRIMs are also failed:**
  SPD BRK : DO NOT USE

STATUS

INOP SYS

ALL PHASES

SEC 1(2)(3) (In the case of single SEC failure)
SEC 1+2(1+3)(2+3)(1+2+3) (In the case of multiple SEC failure)
RUDDER TRIM 1+2 (In the case of failure of SEC 2 and SEC 3)

INFO

- **In the case of multiple failures leading to the loss of flight control surfaces:**
  FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION
  FOR BETTER RANGE : REDUCE CRZ MACH/SPD
  EXPECT FUEL PENALTY VARIATIONS

Continued on the following page

F/CTL SEC 1(2)(3) FAULT (Cont'd)

The fuel consumption is increased. The FUEL PENALTY on the FMS DATA/STATUS page may be updated.
For fuel penalty determination, Refer to PER-IFT-FP Fuel Penalty Tables - Fuel Consumption Increased.

F/CTL SLAT SYS 1+2 FAULT

Applicable to: ALL

Ident.: PRO-ABN-F_CTL-2780W030-00004584.0001001 / 03 JUL 14

ANNUNCIATIONS

Triggering Conditions:

L2 Both slat control units are failed, or the slats are jammed.

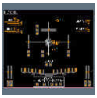
Indications:

Audio

Master Light

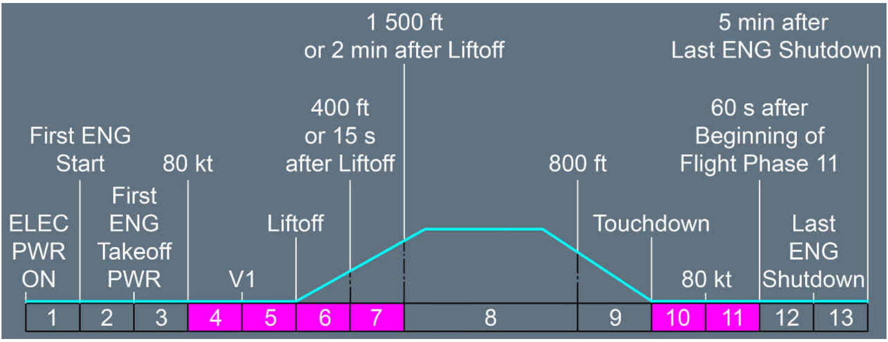
MASTER
CAUT

SD page



F/CTL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
2
3
4
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13

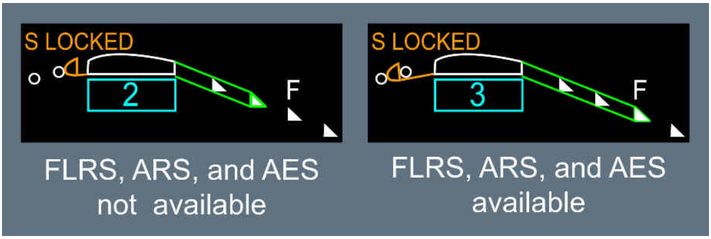
Continued on the following page

F/CTL SLAT SYS 1+2 FAULT (Cont'd)

Ident.: PRO-ABN-F_CTL-2780W030-00008244.0001001 / 17 NOV 17

L2 The alpha/speed lock function is lost.
The Flaps Load Relief System (FLRS), the Auto Retraction System (ARS) and Auto Extension System (AES) remain available, if the slats are more extended than their position at the first dot of the slats/flaps position indexes.

FLRS, ARS, and AES availability


S LOCKED
2
F
FLRS, ARS, and AES not available
S LOCKED
3
F
FLRS, ARS, and AES available

The cruise baulk function remains available for the flaps.
If both flaps systems are also inoperative (indicated through the F/CTL FLAP SYS 1+2 FAULT alert) the flight control laws degrade to direct law when the aircraft is below 22 000 ft (F/CTL DIRECT LAW (PROT LOST) alert is displayed on the WD).

Continued on the following page

F/CTL SLAT SYS 1+2 FAULT (Cont'd)

Ident.: PRO-ABN-F_CTL-2780W030-00008245.0005001 / 03 JAN 19

RNP AR CAPABILITY DOWNGRADED

L2 *The line is only displayed during RNP AR operations.*

L1 [RESET PNL : D2] SLATS 1 .... RESET
[RESET PNL : U2] SLATS 2 .... RESET

- **If two SLAT systems are failed during an RNP approach:**
  MINIMUM LIMITED TO RNP 0.30
- **If the aircraft is below 22 000 ft and the speed is below 265 kt:**
  FOR VFE : USE PFD

L2 *The ECAM and the PFD speed scale display the VFE that is associated with the current abnormal configuration. For more information, Refer to DSC-27-20-20 Configurations.*

L1 USE SELECTED SPEED

L2 *To prepare the aircraft for landing, the managed speed is not adapted in the case of abnormal slats/flaps configuration. Therefore, the flight crew must use the selected speed to decelerate the aircraft to the approach speed, as follows:*
- *Decelerate the aircraft toward the VFE NEXT-5 kt. In the case of turbulence, to avoid VFE exceedance, the flight crew may decide to decelerate to a lower speed but above the VLS.*
- *When the aircraft reaches the selected speed, the FLAPS lever can be set one step down.*

The above steps are repeated until the FLAPS lever is set to 3.
When the landing configuration is established, aircraft can be decelerated to the computed approach speed.

Note: The VFE NEXT displayed on the PFD takes into account the abnormal slats/flaps configuration.

L1
- **WHEN SPEED BELOW VFE**
  FLAPS lever .... RECYCLE

L3 *For recycling, set the FLAPS lever to 0. Then, immediately set the FLAPS lever to the position at the time the failure occurred.*
In the case of high friction or a jam (e.g. ice accretion), the movement of the slaps is automatically stopped to prevent overload. Recycling the FLAPS lever restores the movement of the slaps if the reason for the overload is no longer present

L1
- **If the slats are in CONF 2 or lower:**
  [MFD SURV] TAWS FLAP MODE .... OFF

Continued on the following page

F/CTL SLAT SYS 1+2 FAULT (Cont'd)

- **If the position of the slats leads to an increase of the fuel consumption:**

  FUEL CONSUMPT INCRSD
  FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

  The FMS predictions are not correct.

LDG PERF AFFECTED

L12

ASSOCIATED PROCEDURES

F/CTL ALTN LAW (PROT LOST)

The flight control laws revert to Alternate. AP, FD and A/THR remain available. Refer to PRO-ABN-F_CTL F/CTL ALTN LAW (PROT LOST)

Continued on the following page

F/CTL SLAT SYS 1+2 FAULT (Cont'd)

Ident.: PRO-ABN-F_CTL-2780W030-00008246.0002001 / 07 JUL 16

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES	APPR & LDG
● **If the position of the slats leads to an increase of the fuel consumption:** FUEL CONSUMPT INCRSD	LDG PERF AFFECTED

STATUS

INOP SYS

ALL PHASES	APPR & LDG
F/CTL PROT	SLATS BTV AUTOLAND

INFO

ALTN LAW : PROT LOST

- **If the position of the slats leads to an increase of the fuel consumption:**
  FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

  The fuel consumption is increased. The FUEL PENALTY on the FMS DATA/STATUS page may be updated.
  For fuel penalty determination, Refer to PER-IFT-FP Fuel Penalty Tables - Fuel Consumption Increased.

FOR RNP AR : MINIMUM LIMITED TO RNP 0.30
APPR 1 ONLY

F/CTL SLAT SYS 1(2) FAULT

Applicable to: ALL

Ident.: PRO-ABN-F_CTL-2780W060-00004583.0001001 / 03 JUL 14

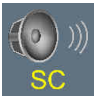
ANNUNCIATIONS

Triggering Conditions:

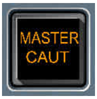
L2 The slat system 1(2) is failed.

Indications:

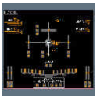
Audio



Master Light

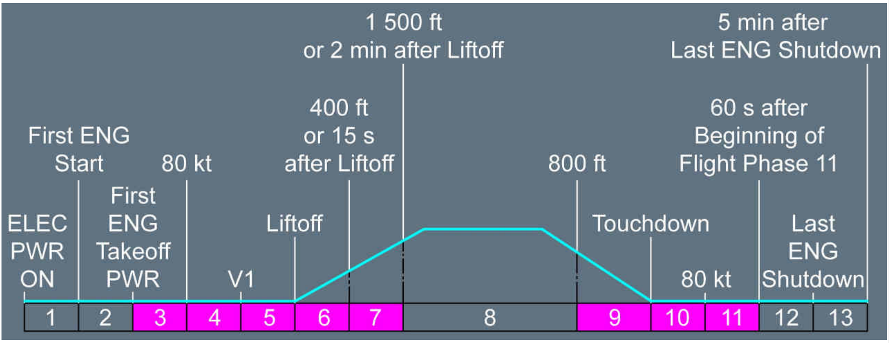

MASTER
CAUT

SD page



F/CTL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
800 ft
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
2
3
4
5
6
7
8
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12
13

Ident.: PRO-ABN-F_CTL-2780W060-00008241.0001001 / 03 JUL 14

L2 Only one slat motor remains available. Slats operate at half speed.

Ident.: PRO-ABN-F_CTL-2780W060-00008242.0001001 / 03 JUL 14

SLATS SLOW

Continued on the following page

F/CTL SLAT SYS 1(2) FAULT (Cont'd)

Ident.: PRO-ABN-F_CTL-2780W060-00008243.0001001 / 06 MAY 15

LIMITATIONS

LIMITATIONS ON ECAM

	APPR & LDG
	SLATS SLOW

STATUS

INOP SYS

	APPR & LDG
	SLAT SYS 1(2)

F/CTL SLATS LOCKED

Applicable to: ALL

Ident.: PRO-ABN-F_CTL-2780W040-00004585.0001001 / 03 JUL 14

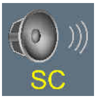
ANNUNCIATIONS

Triggering Conditions:

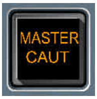
L2 The wing-tip brakes have locked the slats to avoid surface runaway, overspeed, or asymmetry. Once locked, the wing-tip brakes cannot be unlocked in flight.

Indications:

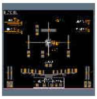
Audio



Master Light

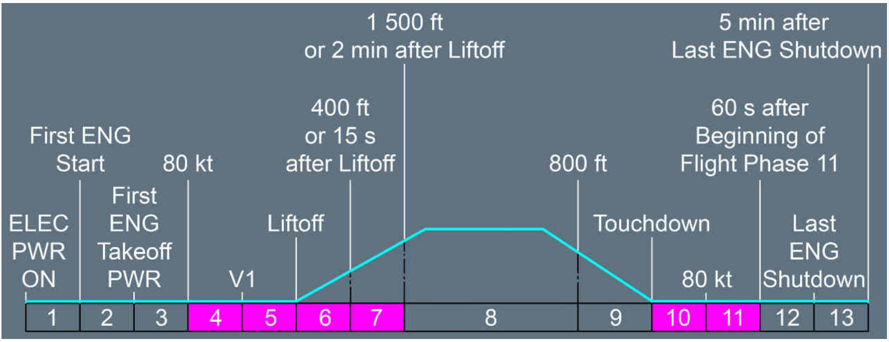

MASTER
CAUT

SD page



F/CTL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
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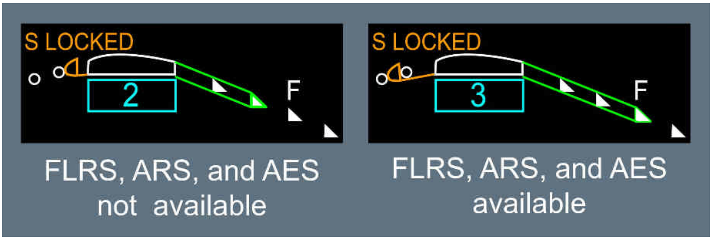
Continued on the following page

F/CTL SLATS LOCKED (Cont'd)

Ident.: PRO-ABN-F_CTL-2780W040-00008247.0001001 / 17 NOV 17

L2 Once locked, the wing-tip brakes cannot be unlocked in flight. Therefore the procedure is the same as the F/CTL SLAT SYS 1+2 FAULT, without recycling the FLAPS lever.
The alpha/speed lock function is lost.
The Flaps Load Relief System (FLRS), the Auto Retraction System (ARS) and Auto Extension System (AES) remain available, if the slats are more extended than their position at the first dot of the slats/flaps position indexes.

Slats Locked - FLRS, ARS, AES Availability



The cruise baulk function remains available for the flaps.

Continued on the following page

F/CTL SLATS LOCKED (Cont'd)

Ident.: PRO-ABN-F_CTL-2780W040-00008248.0003001 / 03 JAN 19

● **If the aircraft is below 22 000 ft and the speed is below 265 kt:**

USE SELECTED SPEED

L2 *To prepare the aircraft for landing, the managed speed is not adapted in the case of abnormal slats/flaps configuration. Therefore, the flight crew must use the selected speed to decelerate the aircraft to the approach speed, as follows:*

- *Decelerate the aircraft toward the VFE NEXT-5 kt. In the case of turbulence, to avoid VFE exceedance, the flight crew may decide to decelerate to a lower speed but above the VLS.*
- *When the aircraft reaches the selected speed, the FLAPS lever can be set one step down.*

The above steps are repeated until the FLAPS lever is set to 3.
When the landing configuration is established, aircraft can be decelerated to the computed approach speed.

Note: The VFE NEXT displayed on the PFD takes into account the abnormal slats/flaps configuration.

L1 FOR VFE : USE PFD

L2 *The ECAM and the PFD speed scale display the VFE that is associated with the current abnormal configuration. For more information, Refer to DSC-27-20-20 Configurations.*

L1 ● **If the slats are in CONF 2 position or lower:**

[MFD SURV] TAWS FLAP MODE..OFF

● **If the position of the slats leads to an increase of the fuel consumption:**

FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

The FMS predictions are not correct.

LDG PERF AFFECTED

L12

ASSOCIATED PROCEDURES

F/CTL ALTN LAW (PROT LOST)

The flight control laws revert to Alternate. AP, FD and A/THR remain available. (Refer to PRO-ABN-F_CTL F/CTL ALTN LAW (PROT LOST))

Continued on the following page

F/CTL SLATS LOCKED (Cont'd)

Ident.: PRO-ABN-F_CTL-2780W040-00008249.0001001 / 04 SEP 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES	APPR & LDG
● **If the position of the slats leads to an increase of the fuel consumption:** FUEL CONSUMPT INCRSD	LDG PERF AFFECTED

STATUS

INOP SYS

ALL PHASES	APPR & LDG
F/CTL PROT	SLATS BTV AUTOLAND

INFO

ALTN LAW : PROT LOST

- **If the position of the slats leads to an increase of the fuel consumption:**
  FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

  The fuel consumption is increased. The FUEL PENALTY on the FMS DATA/STATUS page may be updated.
  For fuel penalty determination, Refer to PER-IFT-FP Fuel Penalty Tables - Fuel Consumption Increased.

APPR1 ONLY

F/CTL SPEED BRAKES FAULT

Applicable to: ALL

Ident.: PRO-ABN-F_CTL-2760W060-00004772.0001001 / 03 JUL 14

ANNUNCIATIONS

Triggering Conditions:

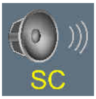
L2 The speed brake function is lost.

Note: The ground spoiler function remains available.

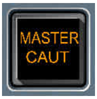
The loss of the SPEED BRAKES lever triggers this failure. In that case, the ground spoilers will extend when the reversers are selected (*Refer to DSC-27-10-10 Speedbrakes Control*).

Indications:

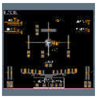
Audio



Master Light

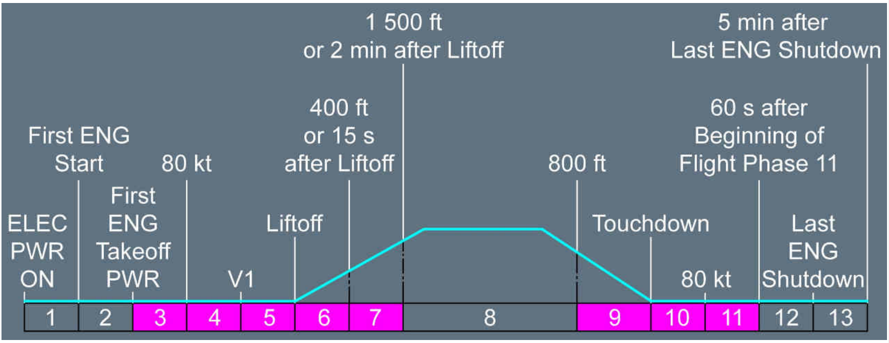

MASTER
CAUT

SD page



F/CTL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Ident.: PRO-ABN-F_CTL-2760W060-00008193.0001001 / 03 JUL 14

Crew awareness.

Continued on the following page

F/CTL SPEED BRAKES FAULT (Cont'd)

Ident.: PRO-ABN-F_CTL-2760W060-00008194.0002001 / 26 JUL 17

STATUS

INOP SYS

ALL PHASES

SPEED BRAKES
AUTO EMER DES ◁

F/CTL SPEED BRAKES POS/LEVER DISAGREE

Applicable to: ALL

Ident.: PRO-ABN-F_CTL-2760W070-00006057.0001001 / 03 JUL 14

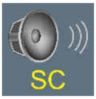
ANNUNCIATIONS

Triggering Conditions:

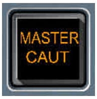
L2 There is a disagree between the position of the speed brakes and the position of the SPEED BRAKE lever.

Indications:

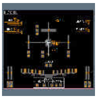
Audio



Master Light

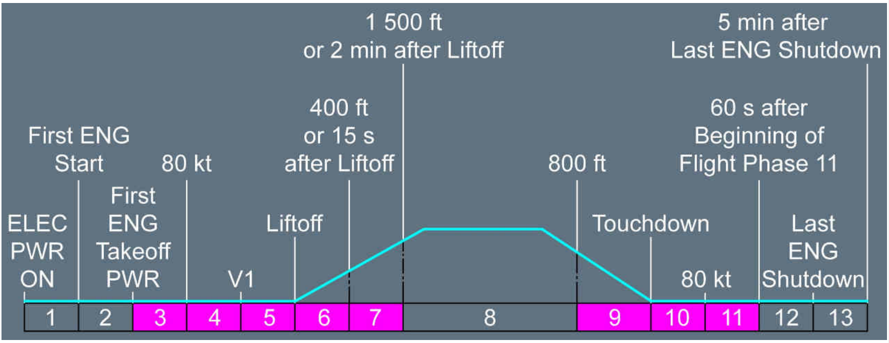

MASTER
CAUT

SD page



F/CTL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
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Shutdown
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Ident.: PRO-ABN-F_CTL-2760W070-00008196.0001001 / 03 JUL 14

SPEED BRAKES LEVER..RETRACT

F/CTL SPEED BRAKES STILL EXTENDED

Applicable to: ALL

Ident.: PRO-ABN-F_CTL-2760W120-00004773.0001001 / 03 JUL 14

ANNUNCIATIONS

Triggering Conditions:

L2

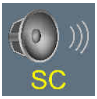
In cruise:

- 80 s after speed brakes have been extended, at least one engine is not at idle, or
- 7 s after a nose-up TCAS resolution advisory, at least one engine is not at idle.

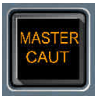
Below 800 ft, 5 s after speed brakes are extended.

Indications:

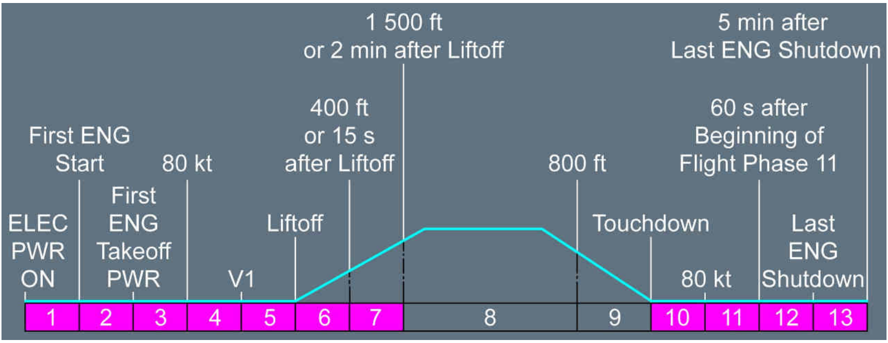
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition: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or 2 min after Liftoff
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Ident.: PRO-ABN-F_CTL-2760W120-00008198.0001001 / 03 JUL 14

Crew awareness.

F/CTL SPLRS PARTLY EXTENDED

Applicable to: ALL

Ident.: PRO-ABN-F_CTL-2760W300-00019015.0001001 / 03 JUL 14

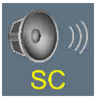
ANNUNCIATIONS

Triggering Conditions:

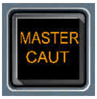
L2 One or more spoilers are failed and have an impact on the fuel consumption.

Indications:

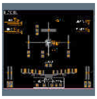
Audio



Master Light

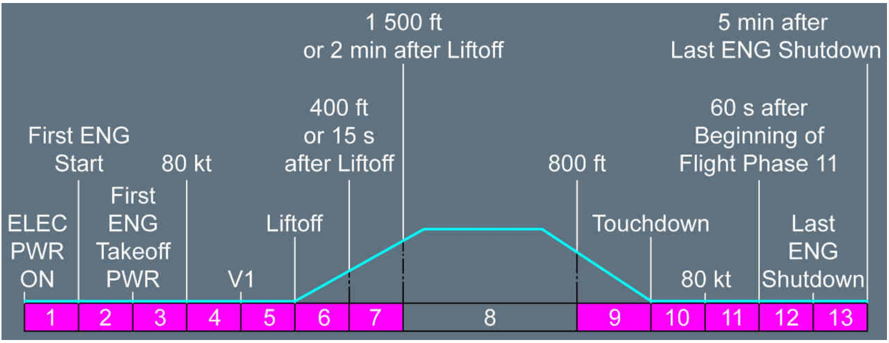

MASTER
CAUT

SD page



F/CTL SD Page

Flight Phase Inhibition: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or 2 min after Liftoff
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Last ENG Shutdown
First ENG
Start
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Flight Phase 11
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Liftoff
Touchdown
80 kt
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Continued on the following page

F/CTL SPLRS PARTLY EXTENDED (Cont'd)

Ident.: PRO-ABN-F_CTL-2760W300-00019012.0003001 / 03 JAN 19

FUEL CONSUMPT INCRSD
FOR BETTER RANGE : REDUCE CRZ MACH/SPD
FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

The FMS predictions are not correct.

CAUTION	*In the case of upward drift of the affected spoilers, the fuel consumption may evolve and further increase. As a consequence, the fuel consumption should be closely monitored.*

EXPECT FUEL PENALTY VARIATIONS

- **If the affected spoilers have drifted up because of an hydraulic failure:**

  LDG PERF AFFECTED

  L2 *When the spoilers have drifted up above a defined threshold, a VAPP increase is needed to ensure a sufficient pitch authority during flare.*

Continued on the following page

F/CTL SPLRS PARTLY EXTENDED (Cont'd)

Ident.: PRO-ABN-F_CTL-2760W300-00019014.0003001 / 03 JAN 19

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES	APPR & LDG
FUEL CONSUMPT INCRSD	● **If the affected spoilers have drifted up because of an hydraulic failure:** LDG PERF AFFECTED

STATUS

INFO

FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

The fuel consumption is increased. The FUEL PENALTY on the FMS DATA/STATUS page may be updated.

For fuel penalty determination, Refer to PER-IFT-FP Fuel Penalty Tables - Fuel Consumption Increased.

FOR BETTER RANGE : REDUCE CRZ MACH/SPD
EXPECT FUEL PENALTY VARIATIONS

F/CTL STABILIZER FAULT

Applicable to: ALL

Ident.: PRO-ABN-F_CTL-2740W010-00004775.0001001 / 03 JUL 14

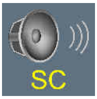
ANNUNCIATIONS

Triggering Conditions:

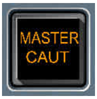
L2 The stabilizer is failed. The pitch trim is locked.

Indications:

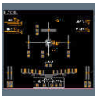
Audio



Master Light

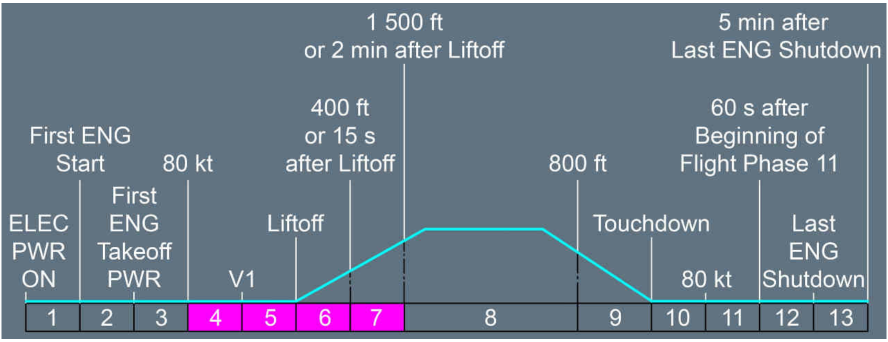

MASTER
CAUT

SD page



F/CTL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
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Continued on the following page

F/CTL STABILIZER FAULT (Cont'd)

SPD BRK : DO NOT USE

● **If the stabilizer has failed during climb, cruise, or descent**

Pitch control is degraded for flare.

■ **If the stabilizer position is above 10 ° UP**
or
If the stabilizer position is not available with a speed below 250 kt:

MAX SPEED : 190 KT

L2 *The maximum speed is limited to maintain sufficient pitch down authority.*
L3 *When the trim is locked, autotrim is performed using the elevators. Flying at high speed, with the trim locked in a pitch up position, requires significant elevator deflections, and reduces pitch down authority.*

L1 ■ **If there is a mechanical failure in the THS:**
L3 The THS is attached to the primary aircraft structure and to the secondary aircraft structure. In the case of failure in the attachment to the primary structure, all the loads are driven to the secondary aircraft structure. This leads to a limitation of the maximum speed.

L1 MAX SPEED : 250 KT

■ **If the stabilizer position is between 6 ° UP and 10 ° UP:**

MAX SPEED : 260 KT

MAX FL 250/MEA-MORA

PITCH TRIM STILL AVAILABLE

● **If left or right elevator is inoperative:**
[MFD SURV] TAWS FLAP MODE.. OFF

● **If the speed is below 250 kt:**
FUEL CONSUMPT INCRSD
FOR BETTER RANGE : REDUCE CRZ MACH/SPD
FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

The FMS predictions are not correct.

Continued on the following page

F/CTL STABILIZER FAULT (Cont'd)

- **If the stabilizer position is above 10 ° UP**
  or
  If the stabilizer position is not available with speed below 250 kt:
  FOR LDG : FLAP LVR 3
- **If left or right elevator is inoperative:**
  FOR LDG : FLAP LVR 2

L2 *Depending on the position of the stabilizer at the moment of the failure, and depending on the CG of the aircraft, the PRIMs will command the ailerons upward or downward to improve the longitudinal stability.*

L1 LDG PERF : AFFECTED

L12

ASSOCIATED PROCEDURES

F/CTL ALTN LAW (PROT LOST)

The flight control laws revert to Alternate. AP, FD and A/THR remain available. Refer to PRO-ABN-F_CTL F/CTL ALTN LAW (PROT LOST).

Continued on the following page

F/CTL STABILIZER FAULT (Cont'd)

Ident.: PRO-ABN-F_CTL-2740W010-00008203.0004001 / 03 JAN 19

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

SPD BRK : DO NOT USE

- **If the stabilizer position is above 10 ° UP or if the stabilizer position is not available with a speed below 250 kt :**
  MAX SPEED : 190KT
- **If there is a mechanical failure in the THS:**
  MAX SPEED : 250KT
- **If the stabilizer position is between 6 ° UP and 10 ° UP:**
  MAX SPEED : 260KT
  MAX FL : 250/MEA-MORA
- **In all other cases:**
  MAX SPEED : 310KT
- **If the speed is below 250 kt:**
  FUEL CONSUMPT INCRSD

APPR & LDG

- **If the stabilizer position is above 10 ° UP or if the stabilizer position is not available with a speed below 250 kt :**
  FOR LDG : FLAP LVR 3
- **If left or right elevator is inoperative:**
  FOR LDG : FLAP LVR 2
  LDG PERF AFFECTED

LIMITATIONS ON PFD

ALL PHASES

SPD BRK : DO NOT USE

- **If the stabilizer position is above 10 ° UP or if the stabilizer position is not available with a speed below 250 kt :**
  MAX SPEED : 190KT
- **If there is a mechanical failure in the THS:**
  MAX SPEED : 250KT

Continued on the following page

F/CTL STABILIZER FAULT (Cont'd)

- **If the stabilizer position is between 6 ° UP and 10 ° UP:**
  MAX SPEED : 260KT
  MAX FL : 250/MEA-MORA
- **In all other cases:**
  MAX SPEED : 310KT

STATUS

INOP SYS

ALL PHASES	APPR & LDG
STABILIZER F/CTL PROT	BTV

INFO

ALTN LAW : PROT LOST
PITCH TRIM STILL AVAILABLE
FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

The fuel consumption is increased. The FUEL PENALTY on the FMS DATA/STATUS page may be updated.
For fuel penalty determination, Refer to PER-IFT-FP Fuel Penalty Tables - Fuel Consumption Increased.

FOR BETTER RANGE : REDUCE CRZ MACH/SPD

F/CTL T.O FLAPS/FMS DISAGREE

Applicable to: ALL

Ident.: PRO-ABN-F_CTL-2750W210-00004587.0001001 / 03 JUL 14

ANNUNCIATIONS

Triggering Conditions:

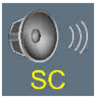
L2 When the T.O CONFIG pb of the ECP is pressed, or when the engines are set to takeoff power, there is a difference between:

- The FLAPS lever position
- The takeoff flaps configuration entered in the FMS (*Refer to DSC-22-FMS-20-20-20 FLAPS List*),

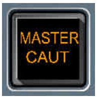
The caution will not trigger, if the flight crew has not entered the takeoff configuration on the T.O panel of the MFD PERF page.

Indications:

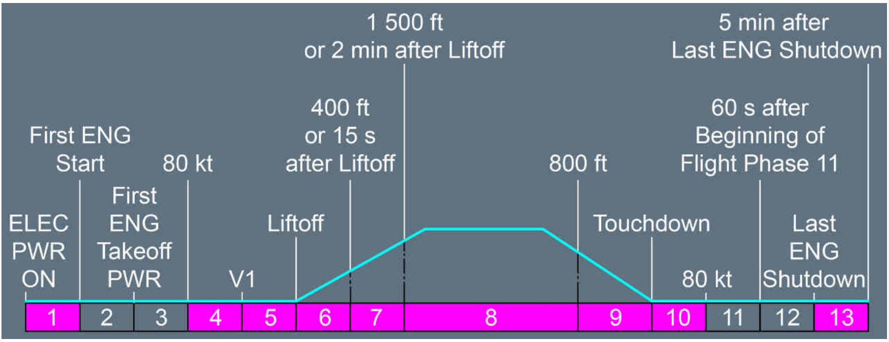
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-F_CTL-2750W210-00008253.0001001 / 03 JUL 14

Crew awareness.

[ABN] FIRE SMOKE/FUMES

Applicable to: ALL

Ident.: PRO-ABN-FIRE-9026W100-00014303.0001001 / 06 NOV 14

ANNUNCIATIONS

Triggering Conditions:

L2 To display this procedure, the flight crew must press the ABN pb on the ECP, and then select the SMOKE/FUMES procedure.

Ident.: PRO-ABN-FIRE-9026W100-00014304.0006001 / 09 MAR 16

LAND ASAP

CREW OXY MASKS (IF RQRD)..........USE/100%/EMER
CAB FANS..........OFF
VENT AVNCS EXTRACT..........OVRD
AIR FLOW..........HI
PAX SYS..........OFF
GALLEY..........OFF
CARGO FWD ISOL VALVES ◁✳ ....OFF
CARGO AFT ISOL VALVES ◁✳ ....OFF
CARGO BULK ISOL VALVES..........OFF
SIGNS..........ON
CKPT / CABIN COM..........ESTABLISH
[QRH] SMOKE/FUMES PROC.......... *REFER TO PROC APPLY*

Continued on the following page

[ABN] FIRE SMOKE/FUMES **(Cont'd)**

Ident.: PRO-ABN-FIRE-9026W100-00014305.0006001 / 09 MAR 16

STATUS

INOP SYS

ALL PHASES

CAB FANS
FWD CARGO VENT ◁*
AFT CARGO VENT ◁*
BULK CARGO VENT
FWD CARGO TEMP REGUL

MEMOPAGE

MEMO ON ECAM

LAND ASAP

[QRH] FIRE SMOKE / FUMES

Applicable to: ALL

Ident.: PRO-ABN-FIRE-QRH20-00020379.0001001 / 15 APR 19

L2 PURPOSE OF THE QRH SMOKE / FUMES PROCEDURE

The QRH SMOKE / FUMES procedure includes the following steps:
- Immediate actions

  The following ECAM procedures include the same immediate actions and then ask the flight crew to apply the QRH SMOKE / FUMES procedure:
  - SMOKE L(R) AVNCS SMOKE (*Refer to procedure*)
  - FIRE SMOKE / FUMES ABN not-sensed procedure (*Refer to procedure*).
- Rapid solution and/or diversion
- Investigate the source of smoke.

WHEN TO APPLY THE QRH SMOKE / FUMES PROCEDURE?

Apply the QRH procedure when :
- Requested by an ECAM procedure, or
- The flight crew or the cabin crew suspect that smoke is coming from the avionics, or the air conditioning, or the cabin equipment, or
- There is a smell of smoke:
  - If the smell is similar to that of orange peels, suspect a toxic leak of rain repellent fluid
  - If the smell is similar to that of pine needles, suspect a non-toxic leak.

In the case of the ECAM triggers any other smoke alert (e.g. SMOKE FWD CARGO SMOKE):
- The flight crew must first apply the associated ECAM procedure
- Then, the flight crew can consider applying the QRH procedure because detected smoke alerts may be due to another source of smoke.

Continued on the following page

[QRH] FIRE SMOKE / FUMES (Cont'd)

Ident.: PRO-ABN-FIRE-QRH20-00016192.0006001 / 15 APR 19

L2 The following actions are the immediate actions.

These actions are also included in:
- The FIRE SMOKE/FUMES ABN not-sensed procedure
- The SMOKE L(R) AVNCS SMOKE ECAM procedure.

L1 **LAND ASAP**

APPLY IMMEDIATELY
- CREW OXY MASKS (if required)........................ USE/100%/EMER

L2 *Ensure crew communication is established. Avoid continuous use of the interphone to minimize interference from the oxygen mask breathing noise.*

L1 - CAB FANS.. OFF

L2 *This action prevents smoke from moving from an area to another one, via the mixer unit (e.g. air from below cabin to cockpit)*

L1 - VENT AVNCS EXTRACT.. OVRD

L2 *The overboard valve partly opens together with the inboard valve in order to evacuate the air from the avionics to the outside air and to the bilge area of the aircraft.*

L1 - AIR FLOW .... HI
- ELEC PAX SYS.. OFF
- GALLEY.. OFF
- CARGO FWD ISOL VALVES ◁✻ .... OFF
- CARGO AFT ISOL VALVES ◁✻ .... OFF
- CARGO BULK ISOL VALVES .... OFF
- SIGNS.. ON
- CKPT / CABIN COM.. ESTABLISH

Continued on the following page

[QRH] FIRE SMOKE / FUMES (Cont'd)

Ident.: PRO-ABN-FIRE-QRH20-00021196.0001001 / 15 APR 19

L2 The following actions are the rapid solution and diversion part of the procedure.

L1 ● **If smoke source immediately obvious, accessible, and extinguishable:**

SMOKE SOURCE....................ISOLATE

L2 *The crew can isolate the power supply of some cockpit or cabin equipment via:*

- *A control directly on the equipment (e.g. the RMPs), or*
- *A power supply button on the left or right CKPT EQPT POWER SUPPLY panels (e.g. the FCU)*
- *A circuit breaker.*

L1 ● **If smoke source not immediately isolated:**

DIVERSION....................INITIATE

DESCENT TO FL 100 / MEA-MORA....................INITIATE

● **At ANY TIME of the procedure, if situation becomes UNMANAGEABLE:**

IMMEDIATE LANDING....................CONSIDER

L2 *Depending on the situation, the Captain can consider an overweight landing, a tailwind landing, a ditching, a forced landing, etc...*

Continued on the following page

[QRH] FIRE SMOKE / FUMES (Cont'd)

Ident.: PRO-ABN-FIRE-QRH20-00016211.0001001 / 15 APR 19

L2 The following part of the procedure is the investigation and isolation of the smoke source.

L1

MENU **ISOLATION OF SMOKE SOURCE**	
Smoke suspected from AIR COND or CABIN	To isolate AIR COND: *Refer to 03 - AIR COND / CABIN EQPT ISOL*
	To isolate CABIN EQPT: *Refer to 03 - AIR COND / CABIN EQPT ISOL*
Smoke detected from AVNCS with ECAM alert	SMOKE L AVNCS SMOKE: *Refer to 04 - ELEC ISOL SIDE 1 THEN SIDE 2*
	SMOKE R AVNCS SMOKE: *Refer to 05 - ELEC ISOL SIDE 2 THEN SIDE 1*
Source of smoke not determined	To isolate AIR COND and CABIN EQPT: *Refer to 03 - AIR COND / CABIN EQPT ISOL*
	• **If smoke continues:** To isolate ELEC SIDE 1 then SIDE 2: *Refer to 04 - ELEC ISOL SIDE 1 THEN SIDE 2*

Continued on the following page

[QRH] FIRE SMOKE / FUMES (Cont'd)

Ident.: PRO-ABN-FIRE-QRH20-00016212.0001001 / 15 APR 19

03 - AIR COND / CABIN EQPT ISOL

- **If AIR COND smoke suspected, or smoke source not determined:**
  APU BLEED.....OFF
  XBLEED.....CLOSE
  PACK 1.....OFF
  - **If smoke continues:**
    PACK 1.....ON
    PACK 2.....OFF
    - **If smoke persists:**
      PACK 2.....ON
      XBLEED.....AUTO
- **If CABIN EQPT smoke suspected, or smoke source not determined:**
  EMER EXIT LT.....ON
  COMMERCIAL 1+2.....OFF
  SMOKE DISSIPATION.....CHECK
  FAULTY EQUIPMENT.....SEARCH / ISOLATE
  - **If smoke continues or when faulty equipment confirmed isolated:**
    COMMERCIAL 1+2.....NORM

Continued on the following page

[QRH] FIRE SMOKE / FUMES (Cont'd)

Ident.: PRO-ABN-FIRE-QRH20-00016213.0001001 / 15 APR 19

04 - ELEC ISOL SIDE 1 THEN SIDE 2

- **If smoke source cannot be determined and still continues or** SMOKE L AVNCS SMOKE **ECAM alert:**

  VHF 1 or VHF 2 .... USE
  GEN 2A+2B .... CHECK ON
  WXR .... SYS 2
  XPDR/TCAS .... SYS 2
  FMS .... BOTH ON 2
  APU GEN .... OFF
  ELEC SIDE 1&2 ISOL .... ON

  - **If no fuel leak:**

    CROSSFEED A+B .... ON

  When GEN 1A+1B are set to OFF:
  - F/CTL law degrades to alternate law
  - Stabilizer is locked
  - CAPT AP sidestick locking device, and rudder pedal locking device are lost
  - AVNCS smoke light is lost

  L2 Smoke detection can be confirmed with the COND SD page.

  - L1 Cockpit lights are partially lost.

  MACH/SPD REF SEL .... SPD

  L2 *In descent, setting the MACH/SPD reference to SPD permits a descent at constant IAS speed. A descent at constant IAS speed helps the flight crew to respect the max speed limit.*

  L1 MAX SPEED : CURRENT SPEED
  GEN 1A+1B .... OFF
  SMOKE DISSIPATION .... CHECK

  - **If smoke continues:**

    GEN 1A+1B (one by one) .... ON
    VHF 1 .... USE
    FMS .... BOTH ON 1
    WXR .... SYS 1
    XPDR/TCAS .... SYS 1

    When GEN 2A+2B are set to OFF:
    - F/O AP sidestick locking device is lost

Continued on the following page

[QRH] FIRE SMOKE / FUMES (Cont'd)

- Cockpit lights are partially lost.

GEN 2A+2B........OFF
SMOKE DISSIPATION........CHECK

- **If smoke persists:**
  GEN 2A+2B (one by one)........ON
  ELEC SIDE 1&2 ISOL........OFF
  APU GEN........ON
  FMS........NORM
  VHF 1/2/3........USE
  CROSSFEED A+B........OFF
  AIR COND or CABIN EQPT ISOL........CONSIDER
  Refer to 03 - AIR COND / CABIN EQPT ISOL

- **If smoke stops:**

ECAM ACTIONS........PERFORM

DEFERRED FOR APPROACH

To recover Landing System (LS1(2)) or landing performances (if required).

L2 *Recovering a landing system may be useful if the weather is difficult at the diversion airport (e.g. low visibility).*
Recovering the slat actuation enables the flight crew to extend the slats and reduce the approach speed.
Setting the GENs of the isolated side to ON, before landing, enables the systems recovery. However, it may also reignite the smoke source.

L1
- **At 3 min or 2 000 ft AGL before landing:**
  All GENs (one by one)........ON
- **When aircraft stopped:**
  GENs (affected side)........OFF

Continued on the following page

[QRH] FIRE SMOKE / FUMES (Cont'd)

Ident.: PRO-ABN-FIRE-QRH20-00016214.0001001 / 15 APR 19

05 - ELEC ISOL SIDE 2 THEN SIDE 1

● **If** SMOKE R AVNCS SMOKE **ECAM alert:**

VHF 1 .... USE
GEN 1A+1B .... CHECK ON
WXR .... SYS 1
XPDR/TCAS .... SYS 1
FMS .... BOTH ON 1
APU GEN .... OFF
ELEC SIDE 1&2 ISOL .... ON

● **If no fuel leak:**

CROSSFEED A+B .... ON

When GEN 2A+2B are set to OFF:

- F/O AP sidestick locking device is lost
- Cockpit lights are partially lost.

GEN 2A+2B .... OFF
SMOKE DISSIPATION .... CHECK

● **If smoke continues:**

GEN 2A+2B (one by one) .... ON
VHF 1 or VHF 2 .... USE
WXR .... SYS 2
XPDR/TCAS .... SYS 2
FMS .... BOTH ON 2

When GEN 1A+1B are set to OFF:

- F/CTL law degrades to alternate law
- Stabilizer is locked
- CAPT AP sidestick locking device, and rudder pedal locking device are lost
- AVNCS smoke light is lost
  L2 Smoke detection can be confirmed with the COND SD page.
- L1 Cockpit lights are partially lost.

MACH/SPD REF SEL .... SPD

L2 *In descent, setting the MACH/SPD reference to SPD permits a descent at constant IAS speed. A descent at constant IAS speed helps the flight crew to respect the max speed limit.*

Continued on the following page

[QRH] FIRE SMOKE / FUMES (Cont'd)

L1

MAX SPEED : CURRENT SPEED
GEN 1A+1B....................OFF
SMOKE DISSIPATION....................CHECK

- **If smoke persists:**
  GEN 1A+1B (one by one)....................ON
  ELEC SIDE 1&2 ISOL....................OFF
  APU GEN....................ON
  FMS....................NORM
  VHF 1/2/3....................USE
  CROSSFEED A+B....................OFF
  AIR COND or CABIN EQPT ISOL....................CONSIDER
  Refer to 03 - AIR COND / CABIN EQPT ISOL

- **If smoke stops:**

ECAM ACTIONS....................PERFORM

DEFERRED FOR APPROACH

To recover Landing System (LS1(2)) or landing performances (if required).

L2

Recovering a landing system may be useful if the weather is difficult at the diversion airport (e.g. low visibility).
Recovering the slat actuation enables the flight crew to extend the slats and reduce the approach speed.
Setting the GENs of the isolated side to ON, before landing, enables the systems recovery. However, it may also reignite the smoke source.

L1

- **At 3 min or 2 000 ft AGL before landing:**
  All GENs (one by one)....................ON
- **When aircraft stopped:**
  GENs (affected side)....................OFF

[QRH] FIRE SMOKE / FIRE FROM LITHIUM BATTERY

Applicable to: ALL

Ident.: PRO-ABN-FIRE-QRH26-00022542.0001001 / 15 APR 19

L2 Lithium batteries can be found in several devices such as:
- Laptops (including EFBs)
- Flashlights
- Tablets
- Phones.

L1 If necessary, transfer control to the flight crewmember seated on the opposite side of the fire.

CKPT / CABIN COM..ESTABLISH
STORAGE AFTER Li BAT FIRE cabin procedure..REQUEST INITIATION

L2 *The cabin crew initiates the STORAGE PROCEDURE AFTER LITHIUM BATTERY FIRE.*
For more information on the STORAGE PROCEDURE AFTER LITHIUM BATTERY FIRE, Refer to CCOM/CCOM procedure.

L1 ● **If flames:**

CREW OXY MASK (PF)..USE
PBE (PM)..USE

L2 *The PM uses the Protective Breathing Equipment (PBE).*

L1 FIRE EXTINGUISHER (PM)..USE

● **If no flames or when flames extinguished:**

■ **If not possible to remove device from cockpit:**

WATER or NON-ALCOHOLIC LIQUID..POUR ON DEVICE
DEVICE..MONITOR

■ **If possible to remove device from cockpit:**

DEVICE..TRANSFER TO CABIN

● **At ANY TIME of the procedure, if SMOKE becomes the GREATEST THREAT:**

L2 The following actions will reduce the quantity of smoke in the cockpit.

L1 CAB FANS..OFF
VENT AVNCS EXTRACT..OVRD
AIR FLOW..HI
CARGO FWD ISOL VALVES ◁ ....OFF

Continued on the following page

[QRH] FIRE SMOKE / FIRE FROM LITHIUM BATTERY (Cont'd)

- **At ANY TIME of the procedure, if situation becomes UNMANAGEABLE:**

  IMMEDIATE LANDING...CONSIDER

  L2 *Depending on the situation, the Captain can consider an overweight landing, a tailwind landing, a ditching, a forced landing, etc...*

Intentionally left blank

[ABN] FUEL LEAK

Applicable to: ALL

Ident.: PRO-ABN-FUEL-9028W100-00014891.0001001 / 03 DEC 15

ANNUNCIATIONS

Triggering Conditions:

L2 To display this procedure, the flight crew must press the ABN pb on the ECP, and then select the LEAK procedure, in the FUEL section.
This procedure must be applied if the sum of the FOB and the fuel used is abnormally less than the block fuel.
For more information about the fuel leak detection, *Refer to FCTM/PR-AEP-FUEL Fuel Leak*.

Indications:

SD page

FUEL SD Page

Continued on the following page

[ABN] FUEL LEAK (Cont'd)

Ident.: PRO-ABN-FUEL-9028W100-00014893.0004001 / 03 JAN 20

LAND ANSA

L2 To identify the source of the fuel leak, the flight crew must stop all fuel transfers, and isolate each tank. Therefore, each wing tank feeds the associated engine.

L1 CROSSFEED A....................OFF
CROSSFEED B....................OFF
CTR TK L PMP....................OFF
CTR TK R PMP....................OFF
APU MASTER SW....................OFF
ALL TKS QTY....................MONITOR

- **FUEL QTY :**

  L2 The flight crew may suspect a leak in left(right) wing tank, if the fuel quantity in a wing tank decreases faster than the fuel quantity in the other wing tank.
  If the fuel quantity similarly decreases between the wing tanks, and the fuel quantity in the CTR TK decreases, the flight crew may suspect a fuel leak from the CTR TK.

  L1 ■ **DECREASES FASTER IN L TK**

  L2 As the fuel quantity decreases faster in the L TK, a fuel leak is suspected from the L TK or the ENG 1.
  To identify if the leak is due to the engine fuel system, the flight crew must shut down the associated engine.

  L1 APU....................AS RQRD
  THR LEVER 1....................IDLE
  ENG 1 MASTER....................OFF
  L TK QTY....................MONITOR

  - **L TK QTY STILL DECREASES ?**

    ■ **YES**

    L2 As the fuel quantity still decreases after the engine shut down, this confirms fuel leak comes from the L TK.
    The flight crew can restart the engine.

    L1 LEAK FROM L TK

    L TK FUEL MAYBE LOST

Continued on the following page

[ABN] FUEL LEAK (Cont'd)

- **FOR ENG 1 RELIGHT**

  ENG RELIGHT IN FLT PROC................................ *REFER TO PROC APPLY*

  L2 *The ECAM displays the complete ENG RELIGHT IN FLT abnormal not sensed procedure.*

L1 WINGS : DO NOT BALANCE

L2 *Do not balance wings, to not feed the fuel leak. Expect a FUEL L WING TK LEVEL LO (Refer to procedure).*

L1 ■ **NO**

L2 As the leak stops after engine shutdown, this confirms that the fuel leak is in the engine fuel system.

L3 The leak is downstream of the ENG 1 LP valve.

L2 The engine must remain shutdown with the associated LP valve closed.

L1 LEAK FROM ENG 1

ENG 1 MASTER : KEEP OFF
CTR TK L PMP...ON
CTR TK R PMP...ON

REVERSERS : DO NOT USE

BTV : DO NOT USE

■ **DECREASES FASTER IN R TK ?**

L2 As the fuel quantity decreases faster in the R TK, a fuel leak is suspected from the R TK or the ENG 2.
To identify if the leak is due to the engine fuel system, the flight crew must shut down the associated engine.

L1 APU .... AS RQRD
THR LEVER 2... IDLE
ENG 2 MASTER... OFF
R TK QTY...MONITOR

- **R TK QTY STILL DECREASES ?**

  ■ **YES**

  L2 As the fuel quantity still decreases after the engine shut down, this confirms the fuel leak comes from in the R TK.
  The flight crew can restart the engine.

Continued on the following page

[ABN] FUEL LEAK (Cont'd)

L1 LEAK FROM R TK

R TK FUEL MAYBE LOST

- **FOR ENG 2 RELIGHT**

  ENG RELIGHT IN FLT PROC.................................. *REFER TO PROC APPLY*

L2 *The ECAM displays the complete ENG RELIGHT IN FLT abnormal not sensed procedure.*

L1 WINGS : DO NOT BALANCE

L2 *Do not balance wings, to not feed the fuel leak. Expect a FUEL R WING TK LEVEL LO (Refer to procedure).*

L1 ■ **NO**

L2 As the leak stops after engine shutdown, this confirms that the leak is in the engine fuel system.

L3 The leak is downstream of the ENG 2 LP valve.

L2 The engine must remain shutdown with the associated LP valve closed.

L1 LEAK FROM ENG 2

ENG 2 MASTER : KEEP OFF

CTR TK L PMP..ON

CTR TK R PMP..ON

REVERSERS : DO NOT USE

BTV : DO NOT USE

■ **SYMMETRICAL AFTER 30 MIN**

- **CTR TK QTY DECREASES ?**

■ **YES**

L2 As the fuel quantity decreases in the CTR TK with all fuel pumps off in the CTR TK, this confirms fuel leak comes from the CTR TK.

L1 LEAK FROM CTR TK

CTR TK FUEL MAYBE LOST

APU...AS RQRD

CTR TK L PMP..ON

CTR TK R PMP..ON

REVERSERS : DO NOT USE

BTV : DO NOT USE

Continued on the following page

[ABN] FUEL LEAK (Cont'd)

- **NO**

  LEAK SUSPECTED IN APU
  CTR TK L PMP....................ON
  CTR TK R PMP....................ON
  DEACTIVATE

Ident.: PRO-ABN-FUEL-9028W100-00014900.0002001 / 26 JUL 17

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES	APPR & LDG
FUEL PARTLY UNUSABLE ● **In the case of leak from a wing tank:** WINGS:DO NOT BALANCE	REVERSERS:DO NOT USE BTV : DO NOT USE

STATUS

INFO

- **If leak from left wing tank**
  L TK FUEL MAYBE LOST
- **If leak from right wing tank**
  R TK FUEL MAYBE LOST
- **If leak from center tank**
  CTR TK FUEL MAYBE LOST

MEMOPAGE

MEMO ON ECAM

LAND ANSA

[ABN] FUEL JETTISON ⩤

Applicable to: ALL

Ident.: PRO-ABN-FUEL-9028W110-00016355.0001001 / 09 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 To display this procedure, the flight must press the ABN pb on the ECP, and then select the FUEL JETTISON procedure in the FUEL section.

Indications:

SD page

FUEL SD Page

Ident.: PRO-ABN-FUEL-9028W110-00023213.0001001 / 03 DEC 15

L2 When jettison is performed, the flight crew:

- Must not fly next to a thunderstorm,
- Should not fly into the jettisoned flow (which descends at approximately 500 ft/min),
- Should fly at a sufficient height to avoid contamination on the ground (5 000 ft AGL is considered acceptable).

There is no restriction in speed and slats/flaps configuration to perform jettison.

Continued on the following page

[ABN] FUEL **JETTISON** ⪡ (Cont'd)

Ident.: PRO-ABN-FUEL-9028W110-00016357.0003001 / 03 JUL 20

1 FOR JETTISON : DO NOT USE SPD BRK

L2 *The use of speed brakes is not permitted because it would create a fuel backflow on the spoilers during jettison operation.*

L1 FMS FUEL & LOAD PAGE....................SELECT
JETTISON GW....................ENTER
JETTISON ARM....................ON
JETTISON ACTIVE....................ON
JETTISON....................MONITOR

- **WHEN JETTISON COMPLETED (AUTO RCL)**
  JETTISON ACTIVE....................OFF
  JETTISON ARM....................OFF

- **JETTISON MANUAL STOP RQRD ?**
  - **YES**
    JETTISON ACTIVE....................OFF
    JETTISON ARM....................OFF

DEACTIVATE

[ABN] FUEL WINGS MAN BALANCING

Applicable to: ALL

Ident.: PRO-ABN-FUEL-9028W120-00004690.0001001 / 06 NOV 14

ANNUNCIATIONS

Triggering Conditions:

L2 To display this procedure, the flight crew must press the ABN pb on the ECP, and then select the WINGS MAN BALANCING FUEL section.
The flight crew must apply this procedure to manually correct a fuel imbalance.
Indications:

SD page

FUEL SD Page

Ident.: PRO-ABN-FUEL-9028W120-00020915.0001001 / 06 NOV 14

L2 When active, this procedure inhibits the following ECAM sensed procedures :

- FUEL WINGS NOT BALANCED(*Refer to procedure*),
- FUEL IMBALANCE CORRECTED (*Refer to procedure*).

Continued on the following page

[ABN] FUEL WINGS MAN BALANCING **(Cont'd)**

Ident.: PRO-ABN-FUEL-9028W120-00008019.0004001 / 03 JUL 20

2

- **FUEL LEAK SUSPECTED ?**
  - **YES**
    FUEL LEAK PROC....................APPLY
    L2 *To apply the FUEL LEAK procedure, Refer to procedure.*
  - L1 **NO**
    - **On ground**
      USE REFUEL PNL FOR WINGS BALANCING
    - **In flight**
      FUEL CONSUMPT INCRSD
      FOR BETTER RANGE : REDUCE CRZ MACH/SPD
      FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION
      The FMS predictions are not correct.
      L2 *The flight control laws extend control surfaces in order to counter the lateral moment due to the high wings imbalance. The extension of the flight control surfaces increases the fuel consumption.*
      L1 CROSSFEED A....................ON
      CROSSFEED B....................ON
      CTR TK L PMP....................OFF
      CTR TK R PMP....................OFF
      - **WHICH WING TANK IS LIGHTER ?**
        - **L TK**
          L TK MAIN PMP....................OFF
          L TK STBY PMP....................OFF
          - **WHEN TKs BALANCED**
            L TK MAIN PMP....................ON
            L TK STBY PMP....................ON
            CTR TK L PMP....................ON
            CTR TK R PMP....................ON
            CROSSFEED A....................OFF
            CROSSFEED B....................OFF

Continued on the following page

[ABN] FUEL WINGS MAN BALANCING **(Cont'd)**

L2 *Note: Consider the update of the FMS fuel penalty as required.*

L1

■ R TK

R TK MAIN PMP........OFF
R TK STBY PMP........OFF

● WHEN TKs BALANCED

R TK MAIN PMP........ON
R TK STBY PMP........ON
CTR TK L PMP........ON
CTR TK R PMP........ON
CROSSFEED A........OFF
CROSSFEED B........OFF

L2 *Note: Consider the update of the FMS fuel penalty as required.*

L1

DEACTIVATE

Continued on the following page

[ABN] FUEL WINGS MAN BALANCING **(Cont'd)**

Ident.: PRO-ABN-FUEL-9028W120-00008020.0003001 / 03 JAN 19

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

- **In flight, in the case of multiple failures affecting fuel consumption:**
  FUEL CONSUMPT INCRSD

L12

STATUS

INFO

- **In flight, in the case of multiple failures affecting fuel consumption:**
  FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION
  The fuel consumption is increased. The FUEL PENALTY on the FMS DATA/STATUS page may be updated.
  For fuel penalty determination, Refer to PER-IFT-FP Fuel Penalty Tables - Fuel Consumption Increased.
  The flight control laws extend control surfaces in order to counter the lateral moment due to the high wings imbalance. The extension of the flight control surfaces increases the fuel consumption.

FOR BETTER RANGE : REDUCE CRZ MACH/SPD

FUEL ABNORM DISTRIBUTION

Applicable to: ALL

Ident.: PRO-ABN-FUEL-2820W400-00012022.0001001 / 09 JAN 18

ANNUNCIATIONS

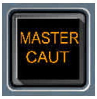
Triggering Conditions:

L2 The fuel distribution in the tanks does not correspond to the standard fuel distribution after refueling: There is less than 18 000 kg (39 600 lb) of fuel in one wing tank and more than 1 850 kg (4 080 lb) in the center tank.

Indications:

Audio

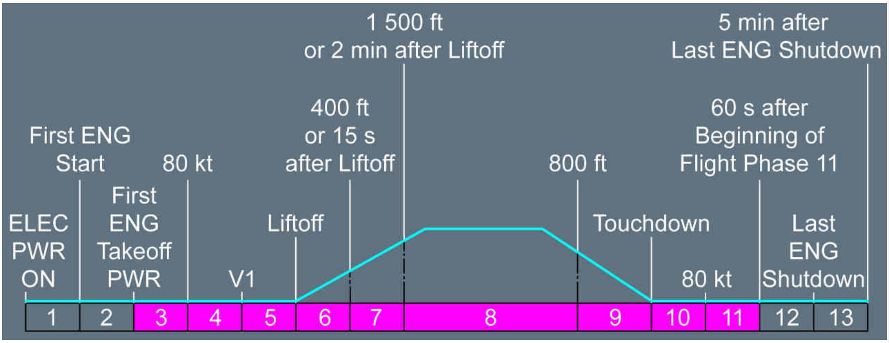
Master Light


MASTER
CAUT

SD page

FUEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Ident.: PRO-ABN-FUEL-2820W400-00012024.0001001 / 06 NOV 14

USE REFUEL PNL FOR GND XFR

L2 *Request for manual ground fuel transfer via the External Refuel Panel, in order to recover a standard fuel distribution. If necessary, apply the GROUND FUEL TRANSFER supplementary procedure (Refer to procedure).*

FUEL APU FEED FAULT

Applicable to: ALL

Ident.: PRO-ABN-FUEL-2822W010-00004628.0001001 / 02 OCT 14

ANNUNCIATIONS

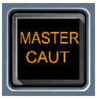
Triggering Conditions:

L2 The APU isolation valve, or the APU LP valve is abnormally closed.

Indications:

Audio

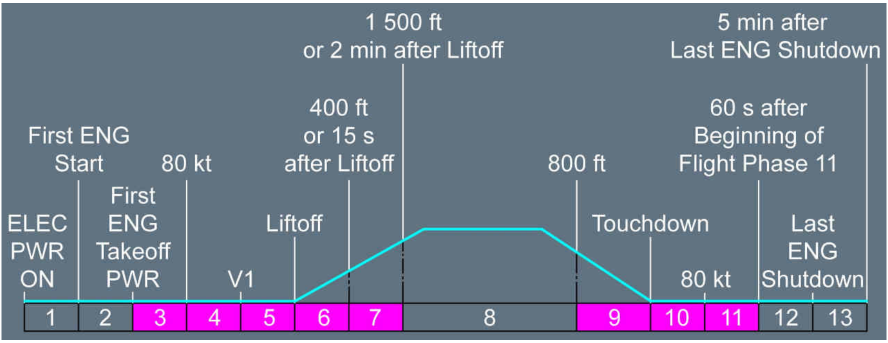
Master Light


MASTER
CAUT

SD page

FUEL SD Page

Flight Phase Inhibition: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Flight Phase 11
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Ident.: PRO-ABN-FUEL-2822W010-00007864.0001001 / 02 OCT 14

APU MASTER SW...OFF

Continued on the following page

FUEL APU FEED FAULT (Cont'd)

Ident.: PRO-ABN-FUEL-2822W010-00007865.0001001 / 02 OCT 14

STATUS

INOP SYS

ALL PHASES

APU

FUEL APU LINE FAULT

Applicable to: ALL

Ident.: PRO-ABN-FUEL-2822W020-00004629.0001001 / 03 JUL 14

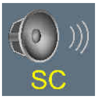
ANNUNCIATIONS

Triggering Conditions:

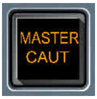
L2 The APU feed line is burst.

Indications:

Audio



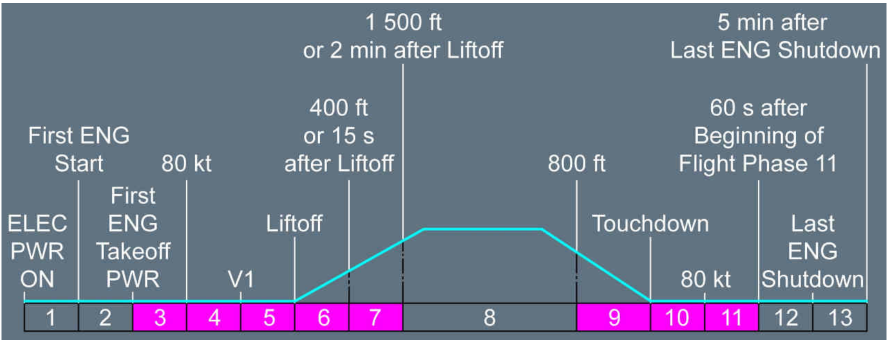
Master Light


MASTER
CAUT

SD page

FUEL SD Page

Flight Phase Inhibition: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5 min after
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400 ft
or 15 s
after Liftoff
60 s after
Beginning of
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First ENG
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Ident.: PRO-ABN-FUEL-2822W020-00007867.0001001 / 03 JUL 14

APU MASTER SW..OFF

Continued on the following page

FUEL APU LINE FAULT (Cont'd)

Ident.: PRO-ABN-FUEL-2822W020-00012016.0001001 / 03 JUL 14

STATUS

INOP SYS

ALL PHASES	
APU	

FUEL AUTO FEED FAULT

Applicable to: ALL

Ident.: PRO-ABN-FUEL-2820W010-00012030.0001001 / 02 OCT 14

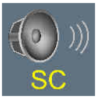
ANNUNCIATIONS

Triggering Conditions:

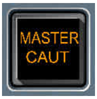
L2 The fuel distribution between the center tank and the wing tanks is not correct: The fuel level in a wing tank decreased below 18 000 kg (39 600 lb) before the center tank emptied.

Indications:

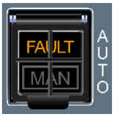
Audio



Master Light


MASTER
CAUT

Local Light

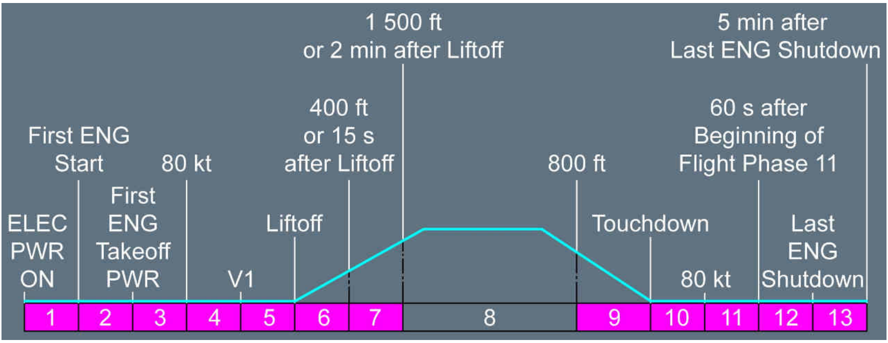

FAULT
MAN
AUTO

CTR TK FEED pb-sw

SD page

FUEL SD Page

Flight Phase Inhibition: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Continued on the following page

FUEL AUTO FEED FAULT (Cont'd)

Ident.: PRO-ABN-FUEL-2820W010-00012032.0001001 / 03 JUL 14

CTR TK FEED..MAN

L2 *Manual control of the center tank pumps enables to reactivate the fuel pumps.*

L1 CTR TK L PMP..ON

CTR TK R PMP..ON

- **WHEN CTR TK EMPTY:**

  CTR TK L PMP..OFF

  CTR TK R PMP..OFF

Ident.: PRO-ABN-FUEL-2820W010-00012033.0001001 / 03 JUL 14

STATUS

INFO

CTR TK FEED : MAN ONLY

FUEL CG DATA DISAGREE

Applicable to: ALL

Ident.: PRO-ABN-FUEL-2262W110-00017561.0001001 / 02 OCT 14

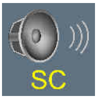
ANNUNCIATIONS

Triggering Conditions:

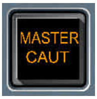
L2 There is a discrepancy between the aircraft CG computed from the FQMS and the aircraft CG computed from the WBBC.

Indications:

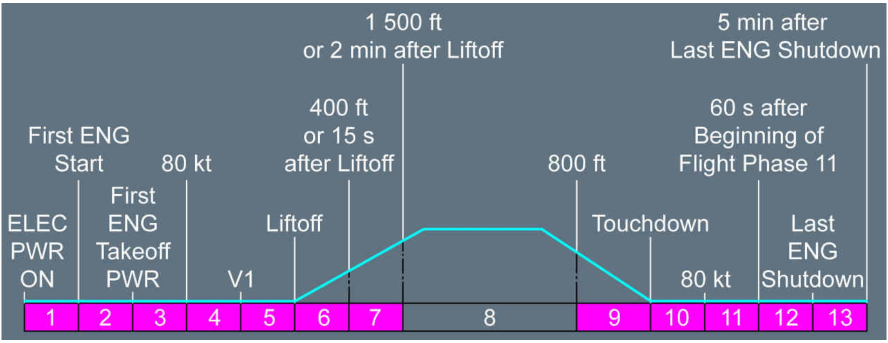
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
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Flight Phase 11
ELEC
PWR
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Touchdown
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Continued on the following page

FUEL CG DATA DISAGREE (Cont'd)

Ident.: PRO-ABN-FUEL-2262W110-00017563.0001001 / 03 JUL 14

- **If the CG disagree is above 8 %, the following subtitle appears:**
  ERROR > 8% DETECTED BY F/CTL
- **If the CG disagree is above 13 %, the following subtitle appears:**
  ERROR > 13% DETECTED BY F/CTL

FMS ZFWCG VALUE..CONFIRM

L2 *The CG disagree can be due to an incorrect ZFWCG entry in the FMS. When a correct ZFWCG is entered in the FMS, the alert disappears.*

Ident.: PRO-ABN-FUEL-2262W110-00017565.0001001 / 03 JUL 14

STATUS

INOP SYS

APPR & LDG

AUTOLAND (If the CG disagree is above 13 %)

INFO

- **If the CG disagree is above 13 %:**
  APPR 1 ONLY

FUEL CROSSFEED VLV A(B) FAULT

Applicable to: ALL

Ident.: PRO-ABN-FUEL-2823W010-00004636.0001001 / 02 OCT 14

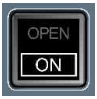
ANNUNCIATIONS

Triggering Conditions:

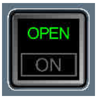
L2 The crossfeed valve A(B) is:
- Abnormally closed, or
- Abnormally open.

Indications:

Local Light



CROSSFEED A(B) pb-sw (Crossfeed valve abnormally closed).



CROSSFEED A(B) pb-sw (Crossfeed valve abnormally open).

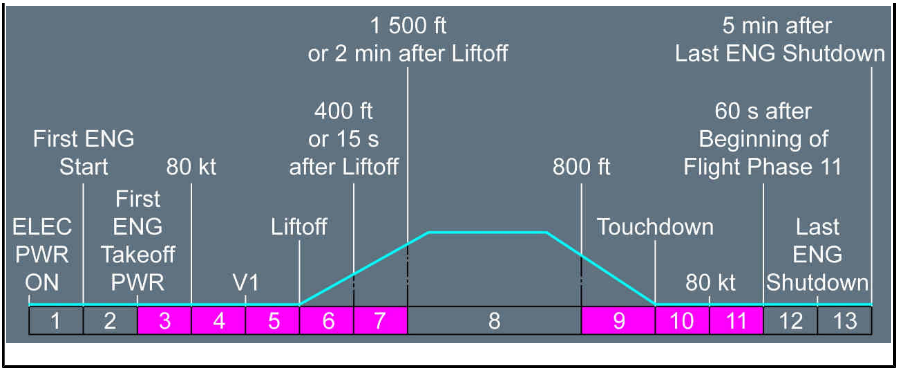
SD page

FUEL SD Page

Flight Phase Inhibition:

Continued on the following page

FUEL CROSSFEED VLV A(B) FAULT (Cont'd)


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
2
3
4
5
6
7
8
9
10
11
12
13

Ident.: PRO-ABN-FUEL-2823W010-00007884.0001001 / 02 OCT 14

Crew awareness.

Ident.: PRO-ABN-FUEL-2823W010-00007885.0001001 / 02 OCT 14

STATUS

INOP SYS

ALL PHASES

CROSSFEED VLV A(B)

FUEL CROSSFEED VLV A+B FAULT

Applicable to: ALL

Ident.: PRO-ABN-FUEL-2823W030-00012019.0001001 / 03 JUL 14

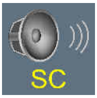
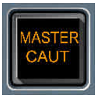
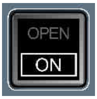
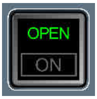
ANNUNCIATIONS

Triggering Conditions:

L2 The two crossfeed valves A and B are:

- Abnormally closed, or
- Abnormally open.

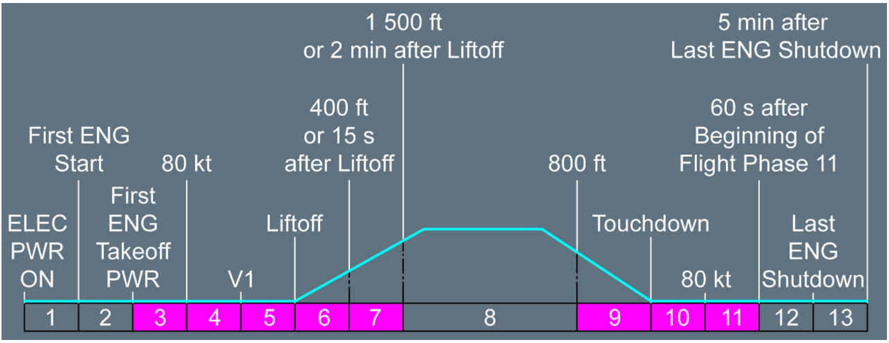
Indications:

Audio	Master Light	Local Light	SD page
		 CROSSFEED A & B pb-sw (Crossfeed valves abnormally closed).  CROSSFEED A & B pb-sw (Crossfeed valves abnormally open).	 FUEL SD Page

Flight Phase Inhibition:

Continued on the following page

FUEL CROSSFEED VLV A+B FAULT (Cont'd)


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
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Ident.: PRO-ABN-FUEL-2823W030-00012027.0001001 / 03 JUL 14

- **If the crossfeed valves are abnormally closed and ENG 1(2) is not running:**

  L(R) TK XFR..ON

  L2 *This transfer ensures that the fuel of the left (right) wing tank is available to feed the right (left) engine.*

L1
- **Otherwise:**

  Crew awareness.

Ident.: PRO-ABN-FUEL-2823W030-00012029.0001001 / 03 JUL 14

STATUS

INOP SYS

ALL PHASES

CROSSFEED VLV A+B

FUEL CTR TK L(R) PMP FAULT

Applicable to: ALL

Ident.: PRO-ABN-FUEL-2821W070-00012039.0001001 / 03 JUL 14

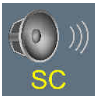
ANNUNCIATIONS

Triggering Conditions:

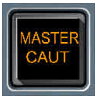
L2 The left (right) center tank pump is:
- Operating at Low Pressure, or
- Abnormally not running, or
- Abnormally running.

Indications:

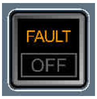
Audio



Master Light


MASTER
CAUT

Local Light

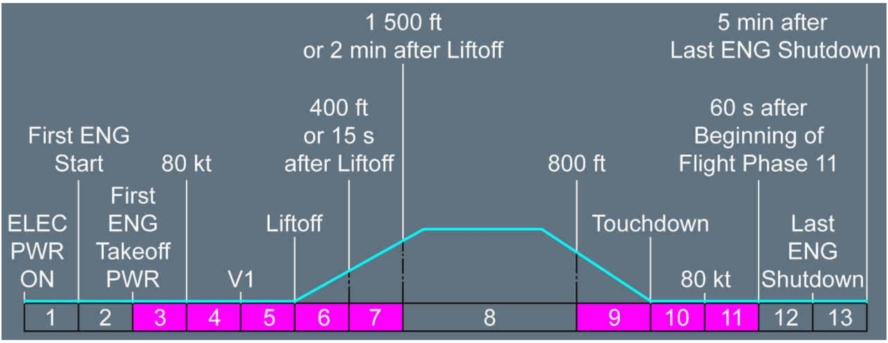


CTR TK L(R) pb-sw

SD page

FUEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Continued on the following page

FUEL CTR TK L(R) PMP FAULT (Cont'd)

Ident.: PRO-ABN-FUEL-2821W070-00012041.0001001 / 03 JUL 14

CTR TK L(R) PMP .... OFF

- ■ **In cruise, if the center tank contains fuel:**
  - ● **FUEL LEAK SUSPECTED ?**
    - ■ **YES**

      FUEL LEAK PROC .... APPLY

      L2 *To apply the FUEL LEAK procedure, Refer to procedure.*

    - L1 ■ **NO**

      CROSSFEED A .... ON
      CROSSFEED B .... ON

      L2 *Due to the fuel pump performance, the remaining center tank pump feeds the two engines.*

      - L1 ● **WHEN CTR TK EMPTY:**

        CROSSFEED A .... OFF
        CROSSFEED B .... OFF
- ■ **When the aircraft is not in cruise**

  CROSSFEED A .... OFF
  CROSSFEED B .... OFF

Ident.: PRO-ABN-FUEL-2821W070-00012042.0001001 / 03 JUL 14

STATUS

INOP SYS

ALL PHASES

CTR TK L(R) PMP

FUEL CTR TK L+R PMPS FAULT

Applicable to: ALL

Ident.: PRO-ABN-FUEL-2821W330-00004681.0002001 / 07 JUL 16

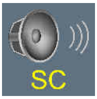
ANNUNCIATIONS

Triggering Conditions:

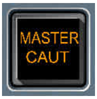
L2 Both left and right centre tank pumps :
- Operate at low pressure, or
- Are abnormally not running, or
- Are abnormally running, or
- Are abnormally turned off by the flight crew.

Indications:

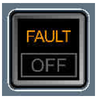
Audio



Master Light


MASTER
CAUT

Local Light

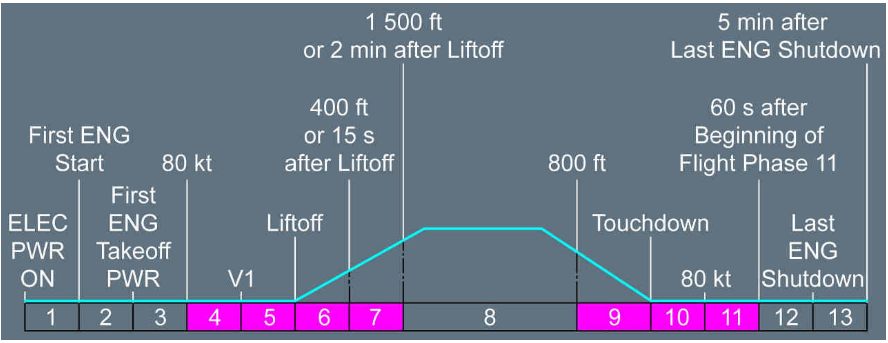


CTR TK L pb-sw and CTR TK R pb-sw

SD page

FUEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
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Continued on the following page

FUEL CTR TK L+R PMPS FAULT (Cont'd)

Ident.: PRO-ABN-FUEL-2821W330-00007998.0002001 / 24 JUL 17

- **If the center tank pumps are abnormally off :**

  CTR TK L PMP OFF

  CTR TK R PMP OFF

- **If the center tank pumps are not abnormally off:**
  - **If the center tank is not empty:**

    CTR TK FEED.....MAN
    - **IF CTR TK PMPs STILL FAULTY AFTER 40 s:**

      CTR TK FEED.....AUTO
      CROSSFEED A.....OFF
      CROSSFEED B.....OFF
      CTR TK L PMP.....OFF
      CTR TK R PMP.....OFF

      CTR TK NOT USABLE

      L2 *Expect the CG to move forward during the flight. The aircraft handling qualities are considered still acceptable for a safe continuation of the flight.*

  - L1 **If the center tank is empty:**

    CTR TK L PMP.....OFF
    CTR TK R PMP.....OFF

Continued on the following page

FUEL CTR TK L+R PMPS FAULT (Cont'd)

Ident.: PRO-ABN-FUEL-2821W330-00007999.0001001 / 02 OCT 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

- **If the pumps are failed:**
  CTR TK NOT USABLE

STATUS

INOP SYS

ALL PHASES

CTR TK L+R PMPs

FUEL CTR TK LEVEL LO

Applicable to: ALL

Ident.: PRO-ABN-FUEL-2846W600-00019740.0001001 / 03 DEC 15

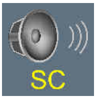
ANNUNCIATIONS

Triggering Conditions:

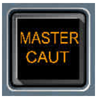
L2 The fuel quantity indication of the center tank is degraded, and the center tank contains less than 1 850 kg (4 080 lb) of fuel.
The triggering of the FUEL CTR TK LEVEL LO is totally independent from the fuel quantity that is displayed on the FUEL SD page.

Indications:

Audio



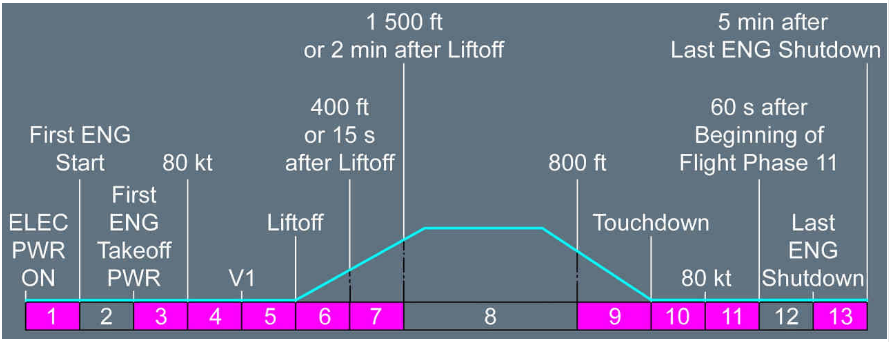
Master Light


MASTER
CAUT

SD page

FUEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Ident.: PRO-ABN-FUEL-2846W600-00019741.0001001 / 02 OCT 14

Crew awareness.

FUEL ENG 1(2) LP VLV FAULT

Applicable to: ALL

Ident.: PRO-ABN-FUEL-2824W010-00004637.0001001 / 03 JUL 14

ANNUNCIATIONS

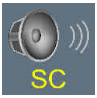
Triggering Conditions:

L2 Engine 1(2) LP valve is:

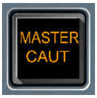
- Abnormally closed on ground, before takeoff, or
- Abnormally open on ground, after engine 1(2) shutdown.

Indications:

Audio



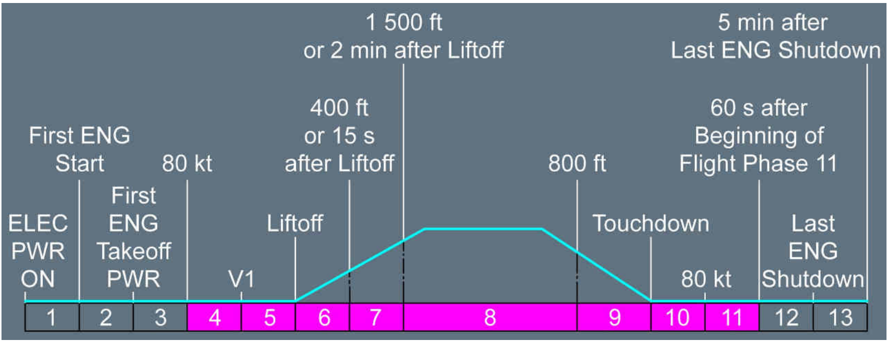
Master Light


MASTER
CAUT

SD page

FUEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Ident.: PRO-ABN-FUEL-2824W010-00007887.0001001 / 03 JUL 14

- **If the ENG 1(2) LP valve is abnormally open:**

  Crew awareness

- **If the ENG 1(2) LP valve is abnormally closed:**

  ENG 1(2) MASTER..OFF

Continued on the following page

FUEL ENG 1(2) LP VLV FAULT (Cont'd)

Ident.: PRO-ABN-FUEL-2824W010-00012021.0001001 / 03 JUL 14

STATUS

INOP SYS

ALL PHASES

ENG 1(2) LP VLV

FUEL FQI FAULT

Applicable to: ALL

Ident.: PRO-ABN-FUEL-2842W100-00004646.0001001 / 17 NOV 17

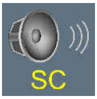
ANNUNCIATIONS

Triggering Conditions:

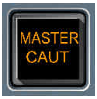
L2 The accuracy of the FQI of at least one tank is failed, or the integrity of the FQI is failed.

Indications:

Audio



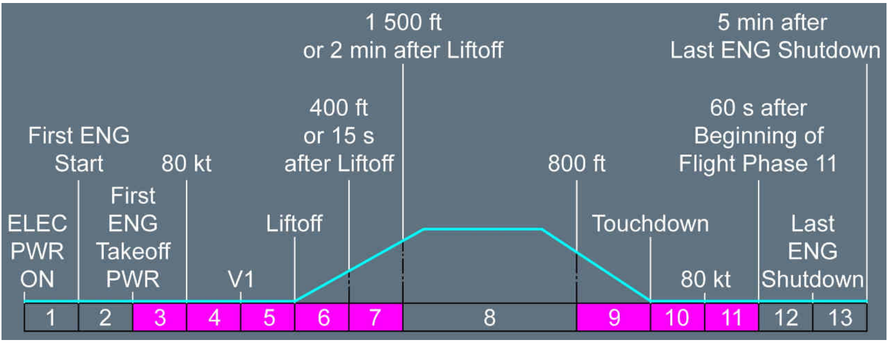
Master Light


MASTER
CAUT

SD page

FUEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Continued on the following page

FUEL FQI FAULT (Cont'd)

Ident.: PRO-ABN-FUEL-2842W100-00007912.0003001 / 08 JUL 19

- **Depending on the failure**

LAND ANSA

FQMS : DO NOT RESET

L2 *A reset of the FQMS can not solve a FQI failure. If the flight crew resets the FQMS, the FQI may be spuriously detected operative.*

L1 ● **If more than 23 500 l (6 200 US Gal) of fuel remains in the L(R) tank when the FQI fails:**

L2 The point level sensors detect the minimum volume of fuel that is in the tank.

L1 L(R) TK 17000 KG (37400 LBS) MIN AVAIL

L2 *The minimum mass of fuel is computed from the minimum density, and the minimum volume of fuel.*

L1 ● **If less than 23 500 l (6 200 US Gal) and more than 7 200 l (1 900 US Gal) of fuel remains in the L(R) tank when the FQI fails:**

L2 The point level sensors detect the minimum volume of fuel that is in the tank.

L1 L(R) TK 4500 KG (9900 LBS) MIN AVAIL

L2 *The minimum mass of fuel is computed from the minimum density, and the minimum volume of fuel.*

L1 ■ **If the CDS computation is available:**

L2 The CDS uses the FU to compute the FOB and GW.

L1 FOB COMPUTED FROM FU

GW COMPUTED FROM FU

■ **If the CDS computation is not available:**

GW FROM WBBC

● **If at least one WBBC is valid:**

GWCG FROM WBBC

● **If a jettison ◁ is in progress:**

JETTISON ACTIVE....................OFF
JETTISON ARM....................OFF

● **If a cockpit refuel is in progress:**

CKPT REFUEL....................OFF

Continued on the following page

FUEL FQI FAULT (Cont'd)

FMS & OIS FUEL DATA UNRELIABLE

Ident.: PRO-ABN-FUEL-2842W100-00007913.0002001 / 07 JUL 16

STATUS

INOP SYS

ALL PHASES

FUEL GAUGING
JETTISON ◁✱
FUEL LEAK DET
REFUEL

INFO

FMS & OIS FUEL DATA UNRELIABLE

- **Depending on the failure case, the following may appear:**
  FOB COMPUTED FROM FU
  GW FROM WBBC
  GW COMPUTED FROM FU
  GWCG FROM WBBC

FUEL FQMS 1(2) FAULT

Applicable to: ALL

Ident.: PRO-ABN-FUEL-2851W010-00004647.0001001 / 06 NOV 14

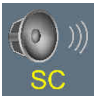
ANNUNCIATIONS

Triggering Conditions:

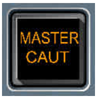
L2 The FQMS 1(2) is failed.

Indications:

Audio



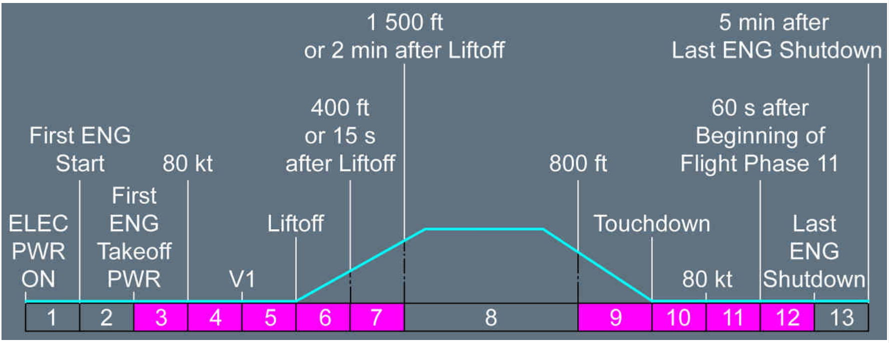
Master Light


MASTER
CAUT

SD page

FUEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Continued on the following page

FUEL FQMS 1(2) FAULT (Cont'd)

Ident.: PRO-ABN-FUEL-2851W010-00007915.0002001 / 03 JUL 20

3

Note: *If the failure is only due to an IMA module failure, the ECAM displays the DUE TO IMA MODULE FAULT subtitle.*

Crew awareness.

- **If FQMS 1(2) failure is not** DUE TO IMA MODULE FAULT :
  [RESET PNL : F2] FQMS 1 ([RESET PNL : W2] FQMS 2).. RESET

L2 *The FQMS 1 reset button is on the left RESET panel, position F2.*
The FQMS 2 reset button is on the right RESET panel, position W2

Ident.: PRO-ABN-FUEL-2851W010-00007916.0001001 / 02 OCT 14

STATUS

INOP SYS

ALL PHASES	
FQMS 1(2)	

FUEL FQMS 1+2 FAULT

Applicable to: ALL

Ident.: PRO-ABN-FUEL-2851W100-00004648.0001001 / 02 OCT 14

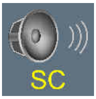
ANNUNCIATIONS

Triggering Conditions:

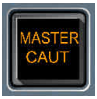
L2 Both FQMS are failed.

Indications:

Audio



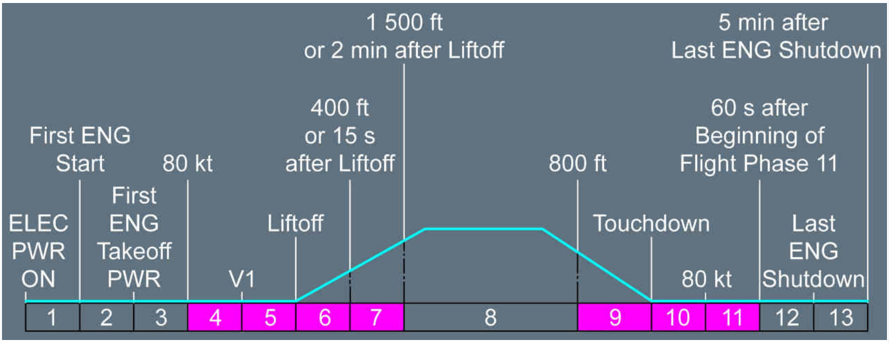
Master Light


MASTER
CAUT

SD page

FUEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

FUEL FQMS 1+2 FAULT (Cont'd)

Ident.: PRO-ABN-FUEL-2851W100-00007918.0004001 / 03 JUL 20

4

Note: If the failure is only due to an IMA module failure, the ECAM displays the DUE TO IMA MODULE FAULT subtitle.

● **If the failure is not DUE TO IMA MODULE FAULT or avionics network switches failure:**

[RESET PNL : F2] FQMS 1 .... RESET

L2 *The FQMS 1 reset button is on the left RESET panel.*

L1 [RESET PNL : W2] FQMS 2 .... RESET

L2 *The FQMS 2 reset button is on the right RESET panel.*

L1 CTR TK FEED .... MAN

■ **If the CDS computation is available:**

L2 The CDS uses the FU to compute the FOB and GW.

L1 FOB COMPUTED FROM FU

GW COMPUTED FROM FU

■ **If the CDS computation is not available:**

GW FROM WBBC

● **If at least one WBBC is valid:**

GWCG FROM WBBC

FMS & OIS FUEL DATA UNRELIABLE

Continued on the following page

FUEL FQMS 1+2 FAULT (Cont'd)

Ident.: PRO-ABN-FUEL-2851W100-00007920.0002001 / 07 JUL 16

L12

STATUS

INOP SYS

ALL PHASES

FQMS 1+2
FUEL GAUGING
JETTISON ◁✳
FUEL LEAK DET

INFO

FMS & OIS FUEL DATA UNRELIABLE

- **Depending on the failure case, the following may appear:**

  GW FROM WBBC
  GW COMPUTED FROM FU
  GWCG FROM WBBC
  FOB COMPUTED FROM FU

  The ECAM displays the Fuel On Board (FOB) with amber dashes. The CDS computes the FOB, based on the FOB at departure and the fuel used.

FUEL IMBALANCE CORRECTED

Applicable to: ALL

Ident.: PRO-ABN-FUEL-2820W910-00004689.0001001 / 02 OCT 14

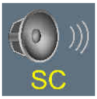
ANNUNCIATIONS

Triggering Conditions:

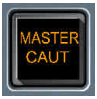
L2 This alert inform the crew that the corrective actions following the FUEL WINGS NOT BALANCED alert have been successful, and shall be stopped to have the fuel system returning to its normal configuration.

Indications:

Audio



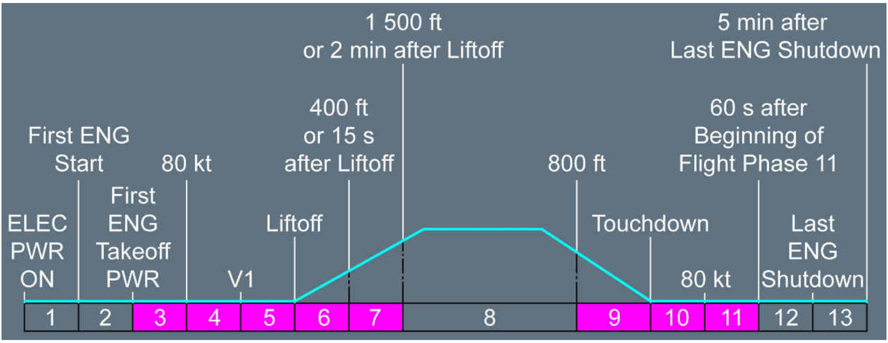
Master Light


MASTER
CAUT

SD page

FUEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
2
3
4
5
6
7
8
9
10
11
12
13

Continued on the following page

FUEL IMBALANCE CORRECTED (Cont'd)

Ident.: PRO-ABN-FUEL-2820W910-00008017.0002001 / 09 JUL 15

- **After a strong imbalance (more than 3 000 kg (6 600 lb)):**
  WINGS BALANCED WITHIN LIMITS
- **Depending on the pumps switched OFF due to the imbalance:**
  L(R) TK MAIN PMP....................ON
  L(R) TK STBY PMP....................ON

CTR TK L PMP....................ON
CTR TK R PMP....................ON
CROSSFEED A....................OFF
CROSSFEED B....................OFF

L2 *Note: Consider the update of the FMS fuel penalty as required.*

Ident.: PRO-ABN-FUEL-2820W910-00016167.0001001 / 02 OCT 14

STATUS

INFO

- **After a strong imbalance (more than 3 000 kg (6 600 lb))**
  WINGS BALANCED WITHIN LIMITS
- **After a light imbalance (less than 3 000 kg (6 600 lb))**
  WINGS BALANCED

FUEL JETTISON COMPLETED ⋞

Applicable to: ALL

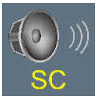
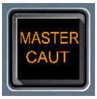
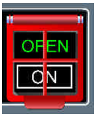
Ident.: PRO-ABN-FUEL-2831W200-00004653.0001001 / 09 MAR 16

ANNUNCIATIONS

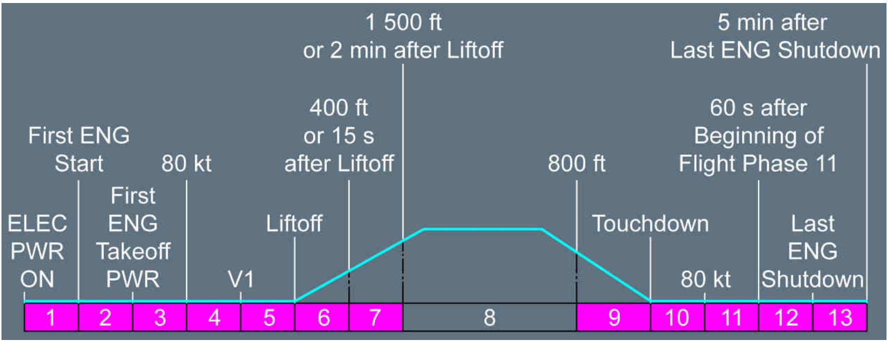
Triggering Conditions:

L2 Jettison is completed: The jettison final Gross Weight (GW) is reached, or all usable fuel has been jettisoned.

Indications:

Audio	Master Light	Local Light	SD page
	 MASTER CAUT		FUEL SD Page

Flight Phase Inhibition:


1 500 ft or 2 min after Liftoff
5 min after Last ENG Shutdown
First ENG Start
80 kt
400 ft or 15 s after Liftoff
800 ft
60 s after Beginning of Flight Phase 11
ELEC PWR ON
First ENG Takeoff PWR
V1
Liftoff
Touchdown
80 kt
Last ENG Shutdown
1
2
3
4
5
6
7
8
9
10
11
12
13

Ident.: PRO-ABN-FUEL-2831W200-00007928.0001001 / 02 OCT 14

- ■ **If the** FUEL JETTISON **alert is active**

  Crew Awareness

- ■ **Otherwise:**

  JETTISON ACTIVE...OFF
  JETTISON ARM...OFF

FUEL JETTISON FAULT ⩤

Applicable to: ALL

Ident.: PRO-ABN-FUEL-2831W100-00004654.0001001 / 09 MAR 16

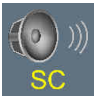
ANNUNCIATIONS

Triggering Conditions:

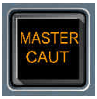
L2 Jettison has failed, or is not available.

Indications:

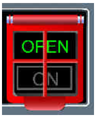
Audio



Master Light


MASTER
CAUT

Local Light

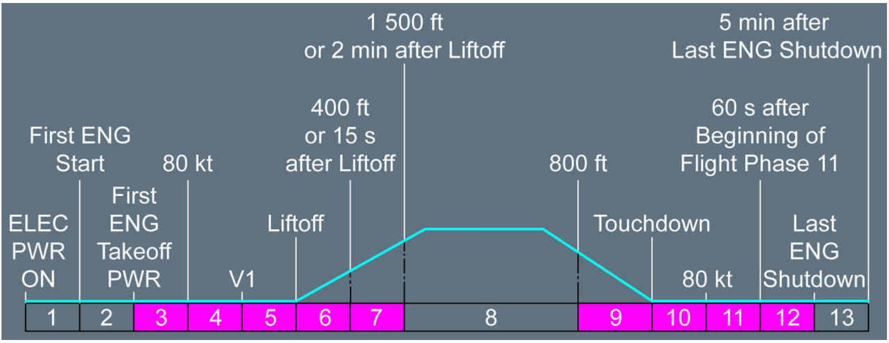


JETTISON ACTIVE pb-sw

SD page

FUEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
2
3
4
5
6
7
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13

Ident.: PRO-ABN-FUEL-2831W100-00007930.0001001 / 02 OCT 14

JETTISON ACTIVE..OFF
JETTISON ARM...OFF

Continued on the following page

FUEL JETTISON FAULT ⩤ (Cont'd)

Ident.: PRO-ABN-FUEL-2831W100-00007931.0001001 / 09 MAR 16

STATUS

INOP SYS

ALL PHASES	
JETTISON	

FUEL LEAK DET FAULT

Applicable to: ALL

Ident.: PRO-ABN-FUEL-2842W020-00021493.0001001 / 02 OCT 14

ANNUNCIATIONS

Triggering Conditions:

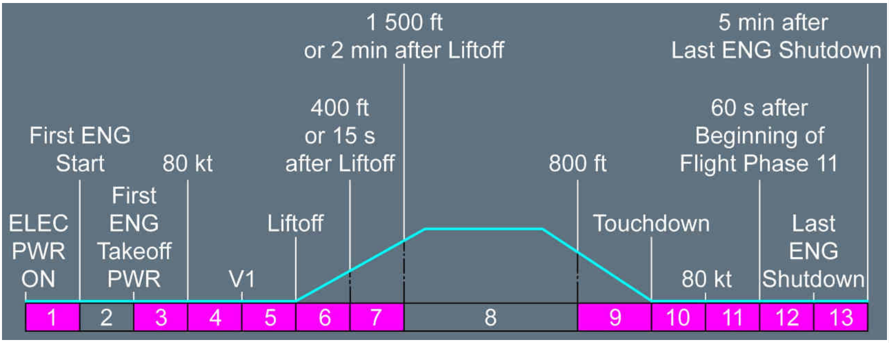
L2 The FUEL LEAK SUSPECTED ECAM caution cannot be triggered.

Indications:

SD page

FUEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Ident.: PRO-ABN-FUEL-2842W020-00021494.0002001 / 07 JUL 16

Crew Awareness

Note: *The flight crew must continue to check the absence of fuel leak as per FCOM Standard Operating Procedures.*

Continued on the following page

FUEL LEAK DET FAULT (Cont'd)

Ident.: PRO-ABN-FUEL-2842W020-00021496.0001001 / 02 OCT 14

STATUS

INOP SYS

ALL PHASES

FUEL LEAK DET

FUEL LEAK SUSPECTED

Applicable to: ALL

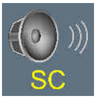
Ident.: PRO-ABN-FUEL-2842W010-00004663.0001001 / 07 NOV 16

ANNUNCIATIONS

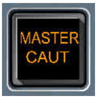
Triggering Conditions:

L2 The difference between FU and FOB is more than the leak detection threshold (2 500 kg to 4 000 kg (5 500 lb to 8 800 lb) depending of initial FOB. For more information on the fuel leak detection logic, *Refer to DSC-28-40 Fuel System Leak Detection*.
The flight crew could detect the fuel leak before the ECAM caution is triggered (e.g. visual detection or periodic fuel check). To display the associated not-sensed procedure, the flight crew must press the ABN pb on the ECP, and then select the FUEL LEAK procedure, in the FUEL section. For more information on the FUEL LEAK procedure, *Refer to PRO-ABN-FUEL [ABN] FUEL LEAK*.
For more information about the fuel leak detection, *Refer to FCTM/PR-AEP-FUEL Fuel Leak*.
Indications:

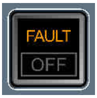
Audio



Master Light


MASTER
CAUT

Local Light

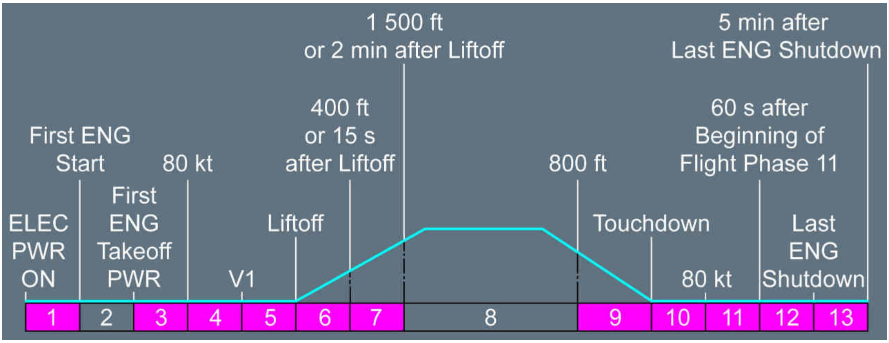


all pumps pb-sw

SD page

FUEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

FUEL LEAK SUSPECTED (Cont'd)

Ident.: PRO-ABN-FUEL-2842W010-00007957.0006001 / 03 JAN 20

LAND ANSA

ALL TKS QTY & FOB & FU....................CHECK

- **FOB + FU / BLOCK DISAGREE ?**
  - **YES**

    L2 To identify the source of the fuel leak, the flight crew must stop all fuel transfers, and isolate each tank. Therefore, each wing tank feeds the associated engine.

    L1 CROSSFEED A....................OFF
    CROSSFEED B....................OFF
    CTR TK L PMP....................OFF
    CTR TK R PMP....................OFF

    - **If both engines are running when the alert is triggered:**
      APU MASTER SW....................OFF

    ALL TKS QTY....................MONITOR

    - **If both engines are running when the alert is triggered:**
      - **FUEL QTY :**

        L2 The flight crew may suspect a leak in left(right) wing tanks, if the fuel quantity in a wing tank decreases faster than the fuel quantity in the other wing tank.
        If the fuel quantity similarly decreases between the wing tanks, and the fuel quantity in the CTR TK decreases, the flight crew may suspect a fuel leak from the CTR TK.

        L1
        - ■ **DECREASES FASTER IN L TK...**

          L2 As the fuel quantity decreases faster in the L TK, a fuel leak is suspected from the L TK or the ENG 1.
          To identify if the leak is due to the engine fuel system, the flight crew must shut down the associated engine.

          L1 APU....................AS RQRD
          THR LEVER 1....................IDLE
          ENG 1 MASTER....................OFF
          L TK QTY....................MONITOR

Continued on the following page

FUEL LEAK SUSPECTED (Cont'd)

- **L TK QTY STILL DECREASES ?**
  - **YES**

    L2 As the fuel quantity still decreases after the engine shut down, this confirms fuel leak comes from the L TK.
    The flight crew can restart the engine.

    L1 LEAK FROM L TK

    L TK FUEL MAYBE LOST

    - **FOR ENG 1 RELIGHT**

      ENG RELIGHT IN FLT PROC............. *REFER TO PROC APPLY*

      L2 *The ECAM displays the complete ENG RELIGHT IN FLT abnormal not sensed procedure.*

    L1 WINGS : DO NOT BALANCE

    L2 *Do not balance wings, to not feed the fuel leak. Expect a FUEL L WING TK LEVEL LO (Refer to procedure).*

  - L1 **NO**

    L2 As the leak stops after engine shutdown, this confirms that the fuel leak is in the engine fuel system.
    L3 The leak is downstream of the ENG 1 LP valve.
    L2 The engine must remain shutdown with the associated LP valve closed.

    L1 LEAK FROM ENG 1

    ENG 1 MASTER : KEEP OFF
    CTR TK L PMP.. ON
    CTR TK R PMP.. ON

  REVERSERS : DO NOT USE

  BTV : DO NOT USE

- **DECREASES FASTER IN R TK...**

  L2 As the fuel quantity decreases faster in the R TK, a fuel leak is suspected from the R TK or the ENG 2.
  To identify if the leak is due to the engine fuel system, the flight crew must shut down the associated engine.

  L1 APU... AS RQRD

Continued on the following page

FUEL LEAK SUSPECTED (Cont'd)

THR LEVER 2..IDLE
ENG 2 MASTER..OFF
R TK QTY..MONITOR

- **R TK QTY STILL DECREASES ?**
  - **YES**

    L2 As the fuel quantity still decreases after the engine shut down, this confirms the fuel leak comes from in the R TK.
    The flight crew can restart the engine.

    L1 LEAK FROM R TK

    R TK FUEL MAYBE LOST

    - **FOR ENG 2 RELIGHT**

      ENG RELIGHT IN FLT PROC.............. *REFER TO PROC APPLY*

      L2 *The ECAM displays the complete ENG RELIGHT IN FLT procedure.*

    L1 WINGS : DO NOT BALANCE

    L2 *Do not balance wings, to not feed the fuel leak. Expect a FUEL R WING TK LEVEL LO (Refer to procedure).*

  - L1 **NO**

    L2 As the leak stops after engine shutdown, this confirms that the leak is in the engine fuel system.
    L3 The leak is downstream of the ENG 2 LP valve.
    L2 The engine must remain shutdown with the associated LP valve closed.

    L1 LEAK FROM ENG 2

    ENG 2 MASTER : KEEP OFF
    CTR TK L PMP..ON
    CTR TK R PMP..ON

REVERSERS : DO NOT USE

BTV : DO NOT USE

Continued on the following page

FUEL LEAK SUSPECTED (Cont'd)

- ■ **SYMMETRICAL AFTER 30 MIN...**
  - ● **CTR TK QTY DECREASES ?**
    - ■ **YES**

      L2 As the fuel quantity decreases in the CTR TK with all fuel pumps off in the CTR TK, this confirms fuel leak comes from the CTR TK.

      L1 LEAK FROM CTR TK

      CTR TK FUEL MAYBE LOST
      APU...AS RQRD
      CTR TK L PMP...ON
      CTR TK R PMP...ON

      REVERSERS : DO NOT USE

      BTV : DO NOT USE

    - ■ **NO**

      LEAK SUSPECTED IN APU
      CTR TK L PMP...ON
      CTR TK R PMP...ON

Continued on the following page

FUEL LEAK SUSPECTED (Cont'd)

Ident.: PRO-ABN-FUEL-2842W010-00007958.0002001 / 17 NOV 17

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES	APPR & LDG
FUEL PARTLY UNUSABLE ● **In the case of leak from a wing tank:** WINGS : DO NOT BALANCE	REVERSERS : DO NOT USE BTV : DO NOT USE

STATUS

INFO

- **If leak from left wing tank**
  L TK FUEL MAYBE LOST
- **If leak from right wing tank**
  R TK FUEL MAYBE LOST
- **If leak from center tank**
  CTR TK FUEL MAYBE LOST

MEMOPAGE

MEMO ON ECAM

LAND ANSA

FUEL L(R) FEEDLINE BURST

Applicable to: ALL

Ident.: PRO-ABN-FUEL-2821W340-00021165.0001001 / 02 OCT 14

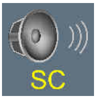
ANNUNCIATIONS

Triggering Conditions:

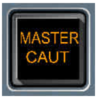
L2 A feedline burst is detected if both the main pump and the standby pump in the L(R) wing tank are fail within 30 seconds.

Indications:

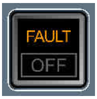
Audio



Master Light


MASTER
CAUT

Local Light

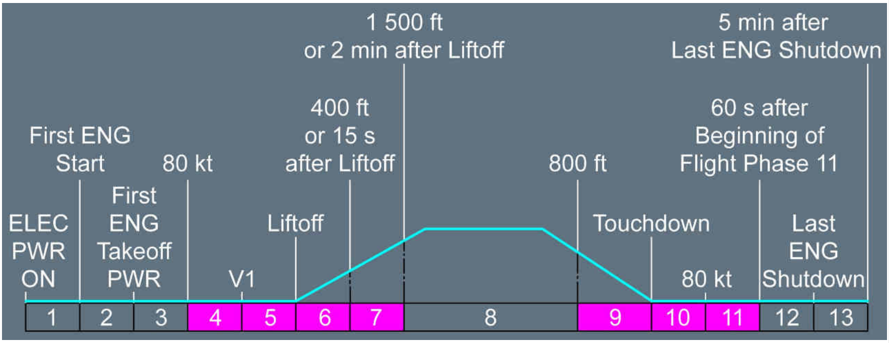


L(R) TK MAIN pb-sw and L(R) TK STBY pb-sw

SD page

FUEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Continued on the following page

FUEL L(R) FEEDLINE BURST (Cont'd)

Ident.: PRO-ABN-FUEL-2821W340-00021166.0004001 / 03 JAN 19

LAND ANSA

- **If the R(L) TK pumps are off:**
  R(L) TK MAIN PMP....ON
  R(L) TK STBY PMP....ON

L(R) TK MAIN PMP....OFF
L(R) TK STBY PMP....OFF

CTR TK L PMP....OFF
CTR TK R PMP....OFF

CROSSFEED A....OFF
CROSSFEED B....OFF

DO NOT OPEN CROSSFEED A+B
ENG1(2) BY GRVTY ONLY

- ■ **If flight time above FL 300 since departure is more than 30 min:**

  MAX FL : 200/MEA-MORA

- ■ **If flight time above FL 300 since departure is less than 30 min:**

  MAX FL : 80/MEA-MORA

AVOID NEG G LOAD
EXPECT ENG1(2) FLAME OUT
ENG1(2) : DO NOT RESTART

- **If the R(L) wing tank contains less than 18 000 kg (39 600 lbs) of fuel:**
  - **WHEN ENG1(2) OUT DUE TO FEEDLINE BURST**
    L(R) TK XFR....ON
    CTR TK R(L) PMP....ON
    L(R) TK : 3000 KG (6600 LBS) MAX NOT USABLE

    WINGS MAN BALANCING PROC : DO NOT APPLY

Continued on the following page

FUEL L(R) FEEDLINE BURST (Cont'd)

Ident.: PRO-ABN-FUEL-2821W340-00021167.0001001 / 02 OCT 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

- **If the flight time above FL 300 since departure is more than 30 min:**
  MAX FL: 200/MEA-MORA
- **If the flight time above FL 300 since departure is less than 30 min:**
  MAX FL: 80/MEA-MORA
- **As long as ENG 1(2) is fed by gravity:**
  AVOID NEG G LOAD

LIMITATIONS ON PFD

ALL PHASES

- **If the flight time above FL 300 since departure is more than 30 min:**
  MAX FL: 200/MEA-MORA
- **If the flight time above FL 300 since departure is less than 30 min:**
  MAX FL: 80/MEA-MORA

STATUS

INOP SYS

ALL PHASES

L(R) TK MAIN+STBY PMPs

Continued on the following page

FUEL L(R) FEEDLINE BURST (Cont'd)

INFO

ENG 1(2) BY GRVTY ONLY
EXPECT ENG 1(2) FLAME OUT

- **If ENG 1(2) is out due to feedline burst and the right(left) wing tank contains less than 18 000 kg (39 700 lb) of fuel:**
  L(R) TK : 3000 KG (6600 LBS) MAX NOT USABLE

MEMOPAGE

MEMO ON ECAM

LAND ANSA

FUEL L(R) TK MAIN PMP FAULT

Applicable to: ALL

Ident.: PRO-ABN-FUEL-2821W010-00004641.0001001 / 02 OCT 14

ANNUNCIATIONS

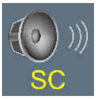
Triggering Conditions:

L2 The main pump of the left (right) wing tank is:

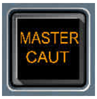
- Operating at low pressure, or
- Abnormally not running, or
- Abnormally running, or
- Abnormally turned off by the flight crew.

Indications:

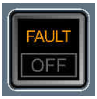
Audio



Master Light


MASTER
CAUT

Local Light

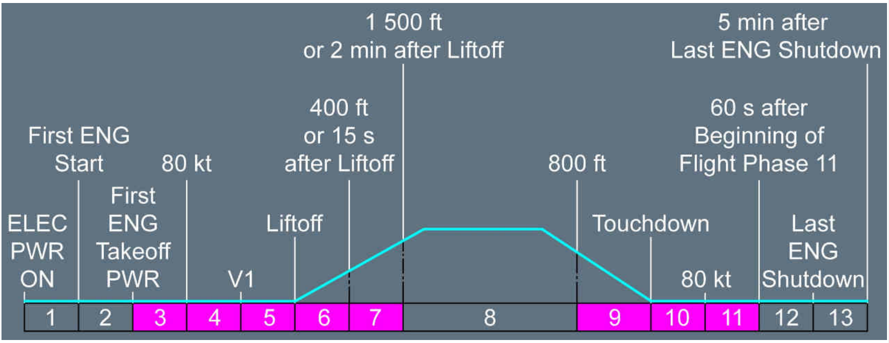


L(R) TK MAIN pb-sw

SD page

FUEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
V1
Touchdown
80 kt
Last
ENG
Shutdown
1
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Ident.: PRO-ABN-FUEL-2821W010-00007898.0001001 / 02 OCT 14

L(R) TK MAIN PMP.. OFF

Continued on the following page

FUEL L(R) TK MAIN PMP FAULT (Cont'd)

Ident.: PRO-ABN-FUEL-2821W010-00007899.0001001 / 02 OCT 14

STATUS

INOP SYS

ALL PHASES

L(R) TK MAIN PMP

FUEL L(R) TK MAIN+STBY PMPs FAULT

Applicable to: ALL

Ident.: PRO-ABN-FUEL-2821W310-00004640.0001001 / 02 OCT 14

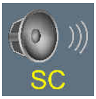
ANNUNCIATIONS

Triggering Conditions:

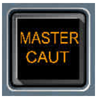
L2 The main and standby pumps of left(right) tank are faulty or abnormally selected off.

Indications:

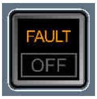
Audio



Master Light


MASTER
CAUT

Local Light

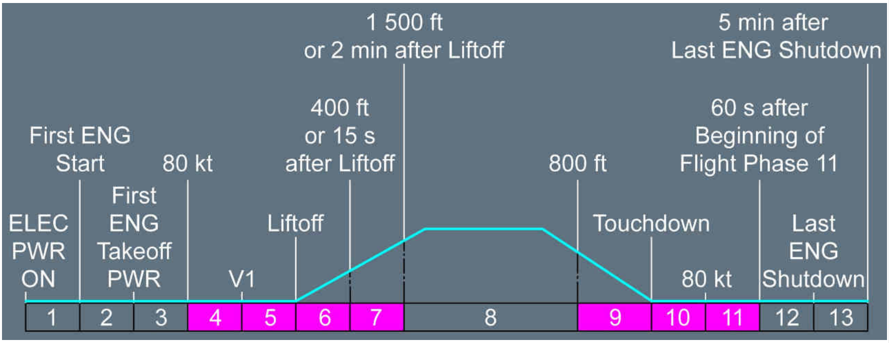


L(R) TK MAIN and STBY PMP pb-sw

SD page

FUEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

FUEL L(R) TK MAIN+STBY PMPs FAULT (Cont'd)

Ident.: PRO-ABN-FUEL-2821W310-00007895.0003001 / 03 JAN 19

L(R) TK MAIN PMP........OFF
L(R) TK STBY PMP........OFF

- **If both pumps are not abnormally off:**
  - **WHEN CTR TK EMPTY:**
    CROSSFEED A........ON
    CROSSFEED B........ON
    - **FUEL LEAK SUSPECTED?**
      - ■ **YES**
        CROSSFEED A........OFF
        CROSSFEED B........OFF
        FUEL LEAK PROC........APPLY
        L2 *To apply the FUEL LEAK procedure, Refer to procedure.*
      - L1 ■ **NO**
        CTR TK L PMP........OFF
        CTR TK R PMP........OFF
        L(R) TK XFR........ON
        EXPECT FUEL IMBALANCE
        WINGS MAN BALANCG PROC : DO NOT APPLY
        L(R) TK: 3000 KG (6600 LBS) MAX NOT USABLE
  - **WHEN CTR TK NOT EMPTY:**
    CTR TK L(R) PMP........ON
    CTR TK FEED........MAN
    CROSSFEED A........OFF
    CROSSFEED B........OFF

Continued on the following page

FUEL L(R) TK MAIN+STBY PMPs FAULT (Cont'd)

Ident.: PRO-ABN-FUEL-2821W310-00007896.0001001 / 02 OCT 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

FUEL PARTLY UNUSABLE

STATUS

INOP SYS

ALL PHASES

L(R) TK MAIN+STBY PMPs

INFO

L(R) TK : 3000 KG (6600 LBS) MAX NOT USABLE
EXPECT FUEL IMBALANCE

FUEL L(R) TK STBY PMP FAULT

Applicable to: ALL

Ident.: PRO-ABN-FUEL-2821W050-00004642.0001001 / 02 OCT 14

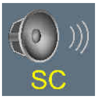
ANNUNCIATIONS

Triggering Conditions:

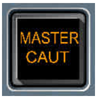
L2 The standby pump of the left (right) wing tank is:
- Operating at low pressure, or
- Abnormally not running, or
- Abnormally running, or
- Abnormally turned off by the flight crew.

Indications:

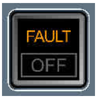
Audio



Master Light


MASTER
CAUT

Local Light

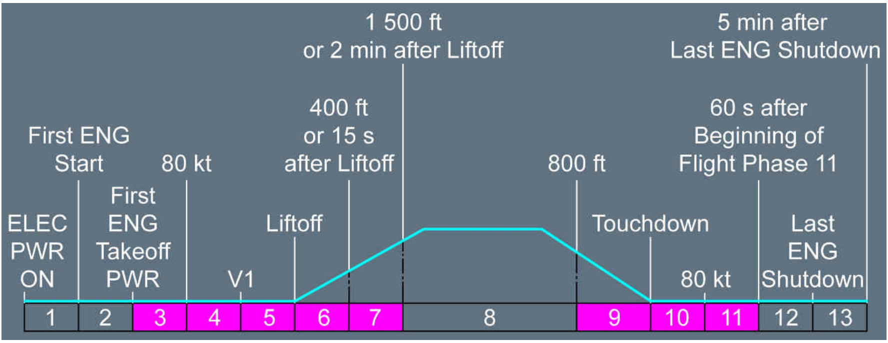


L(R) TK STBY pb-sw

SD page

FUEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-FUEL-2821W050-00007901.0001001 / 02 OCT 14

L(R) TK STBY PMP..OFF

Continued on the following page

FUEL L(R) TK STBY PMP FAULT (Cont'd)

Ident.: PRO-ABN-FUEL-2821W050-00007902.0001001 / 02 OCT 14

STATUS

INOP SYS

ALL PHASES

L(R) TK STBY PMP

FUEL L(R) WING TK OVERFLOW

Applicable to: ALL

Ident.: PRO-ABN-FUEL-2846W700-00004688.0001001 / 02 OCT 14

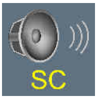
ANNUNCIATIONS

Triggering Conditions:

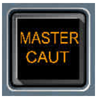
L2 There is a significant quantity of fuel in the left (right) wing surge tank.

Indications:

Audio



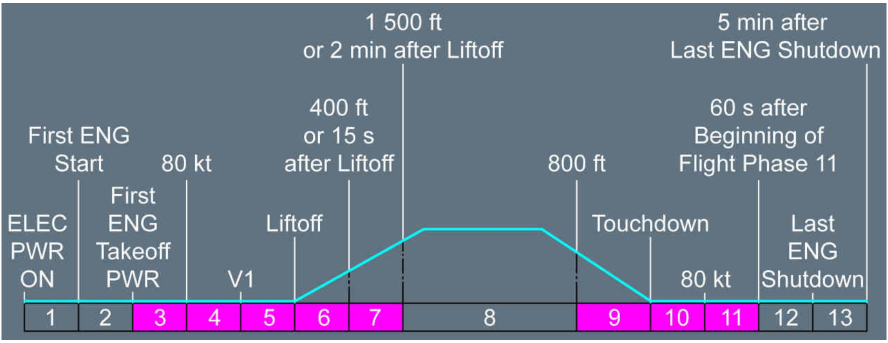
Master Light


MASTER
CAUT

SD page

FUEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

FUEL L(R) WING TK OVERFLOW (Cont'd)

Ident.: PRO-ABN-FUEL-2846W700-00008015.0002001 / 07 JUL 16

- **On ground, before takeoff:**
  DELAY T.O
- **In flight, or on ground after landing:**
  CROSSFEED A.......... OFF
  CROSSFEED B.......... OFF
  CTR TK L(R) PMP.......... OFF

L2 *Switch off the left(right) center tank pump in order to burn fuel from the left(right) wing tank.*

Ident.: PRO-ABN-FUEL-2846W700-00008016.0001001 / 02 OCT 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

- **On ground, before takeoff:**
  DELAY T.O

FUEL L(R) WING TK TEMP HI

Applicable to: ALL

Ident.: PRO-ABN-FUEL-2849W110-00004643.0001001 / 02 OCT 14

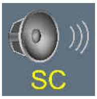
ANNUNCIATIONS

Triggering Conditions:

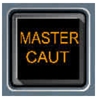
L2 The fuel temperature in the left (right) wing tank is above 50 °C.

Indications:

Audio



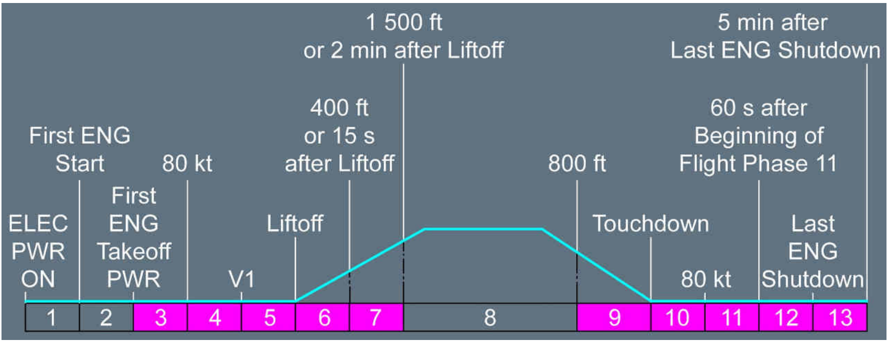
Master Light


MASTER
CAUT

SD page

FUEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
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Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
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80 kt
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Ident.: PRO-ABN-FUEL-2849W110-00007904.0001001 / 02 OCT 14

- **Before takeoff:**

  DELAY T.O

- **In flight:**

LAND ANSA

Continued on the following page

FUEL L(R) WING TK TEMP HI (Cont'd)

Ident.: PRO-ABN-FUEL-2849W110-00007905.0001001 / 02 OCT 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

- **Before takeoff:**
  DELAY T.O
- **In flight:**
  LAND ANSA

FUEL L(R) WING TK LEVEL LO

Applicable to: ALL

Ident.: PRO-ABN-FUEL-2846W410-00004639.0001001 / 03 DEC 15

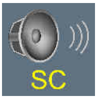
ANNUNCIATIONS

Triggering Conditions:

L2 There is less than 1 600 kg (3 500 lb) of fuel in the left (right) wing tank.
The triggering of the FUEL L(R) WING TK LEVEL LO is totally independent from the fuel quantity that is displayed on the FUEL SD page.

Indications:

Audio



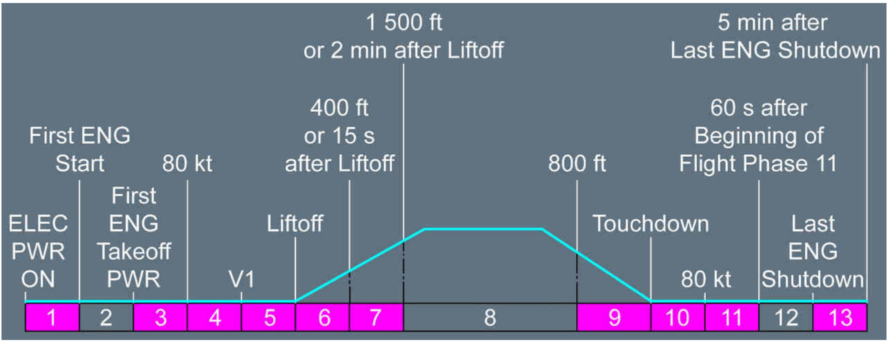
Master Light

MASTER
CAUT

SD page

FUEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
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First
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Takeoff
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Liftoff
Touchdown
80 kt
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Continued on the following page

FUEL L(R) WING TK LEVEL LO (Cont'd)

Ident.: PRO-ABN-FUEL-2846W410-00007892.0001001 / 02 OCT 14

- ■ **If the** FUEL LEAK SUSPECTED **alert is not already triggered:**
  - ● **FUEL LEAK SUSPECTED ?**
    - ■ **YES**

      FUEL LEAK PROC.. APPLY

      L2 *To apply the FUEL LEAK procedure, Refer to procedure.*
    - L1 ■ **NO**

      CROSSFEED A..ON

      CROSSFEED B..ON
- ■ **If a L(R) wing leak is confirmed:**

  L2 The flight crew has previously confirmed a L(R) wing leak after the application of the FUEL LEAK SUSPECTED procedure, or the FUEL LEAK abnormal not sensed procedure.
  - L1 ■ **If the L(R) wing leak is due to an engine 2(1) rotor burst:**

    L2 The L(R) wing leak is due to an uncontained engine rotor burst from the engine 2(1).The R(L) wing is not affected. Open the crossfeed valves in order to supply the remaining engine with the fuel from the opposite wing.

    For more information about the ENG 1(2) FAIL [SHAFT FAILURE], *Refer to procedure*.

    L1 CROSSFEED A..ON

    CROSSFEED B..ON
  - ■ **Other cases of the L(R) wing leak:**
    - ● **WHEN LEAK FROM L(R) TK**

      L2 If the wing leak previously confirmed was not due to an engine rotor burst, maintain the crossfeed valves closed as required by the fuel leak procedures, and feed manually the engine 1(2) with fuel from the center tank.

      L1 CTR TK L(R) PMP.. ON

      CTR TK FEED.. MAN

FUEL L+R WING TK LEVEL LO

Applicable to: ALL

Ident.: PRO-ABN-FUEL-2846W500-00004644.0001001 / 03 DEC 15

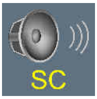
ANNUNCIATIONS

Triggering Conditions:

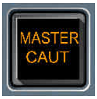
L2 There is less than 1 600 kg (3 500 lb) of fuel in each wing tank.
The triggering of the FUEL L+R WING TK LEVEL LO is totally independent from the fuel quantity that is displayed on the FUEL SD page.

Indications:

Audio



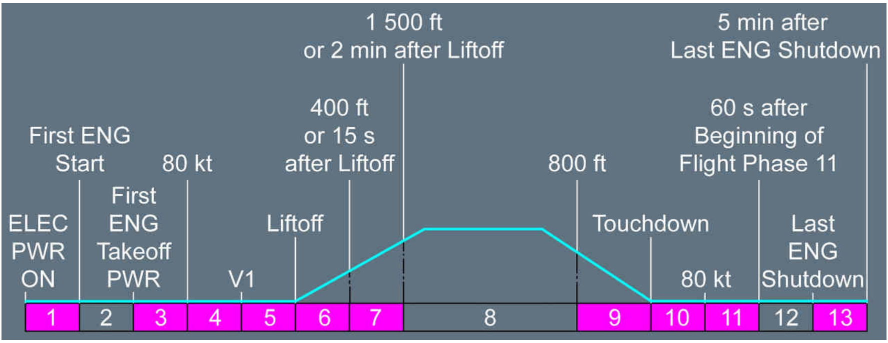
Master Light


MASTER
CAUT

SD page

FUEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
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Takeoff
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Touchdown
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Continued on the following page

FUEL L+R WING TK LEVEL LO (Cont'd)

Ident.: PRO-ABN-FUEL-2846W500-00007907.0001001 / 02 OCT 14

LAND ANSA

CROSSFEED A........ON
CROSSFEED B........ON

- **If fuel remains in the CTR TK:**
  CTR TK FEED........MAN

CTR TK L PMP........ON
CTR TK R PMP........ON

Ident.: PRO-ABN-FUEL-2846W500-00016195.0001001 / 02 OCT 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

- **In flight:**
  LAND ANSA

FUEL NO ZFW OR ZFWCG DATA

Applicable to: ALL

Ident.: PRO-ABN-FUEL-2840W100-00004667.0001001 / 02 OCT 14

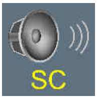
ANNUNCIATIONS

Triggering Conditions:

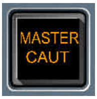
L2 The FQMS did not receive a valid Zero Fuel Weight (ZFW) and/or Zero Fuel Center of Gravity (ZFCG) information, from the FMS.

Indications:

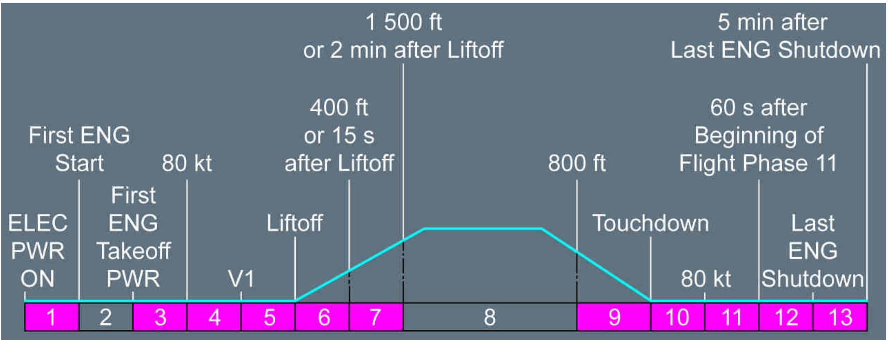
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
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Last ENG Shutdown
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after Liftoff
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60 s after
Beginning of
Flight Phase 11
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Touchdown
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Ident.: PRO-ABN-FUEL-2840W100-00007963.0001001 / 02 OCT 14

FMS ZFW OR ZFWCG VALUES.. INITIALIZE

FUEL OVERFLOW CORRECTED

Applicable to: ALL

Ident.: PRO-ABN-FUEL-2846W720-00004683.0001001 / 02 OCT 14

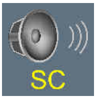
ANNUNCIATIONS

Triggering Conditions:

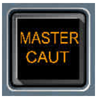
L2 Following the FUEL L(R) WING TK OVERFLOW alert, the corrective actions are successful.

Indications:

Audio



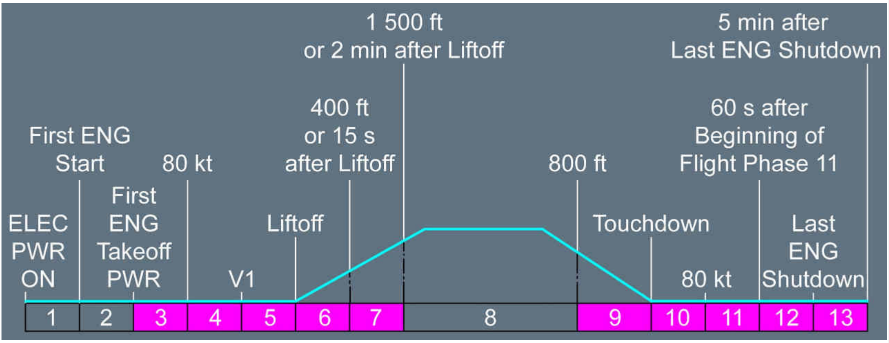
Master Light


MASTER
CAUT

SD page

FUEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
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Last ENG Shutdown
400 ft
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after Liftoff
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Flight Phase 11
First ENG
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Liftoff
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Shutdown
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80 kt
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Ident.: PRO-ABN-FUEL-2846W720-00008002.0001001 / 02 OCT 14

CTR TK L PMP...ON
CTR TK R PMP...ON

FUEL REFUEL FAULT

Applicable to: ALL

Ident.: PRO-ABN-FUEL-2825W100-00004675.0001001 / 01 OCT 15

ANNUNCIATIONS

Triggering Conditions:

L2 A failure prevents the start or completion of automatic or manual refueling.

Indications:

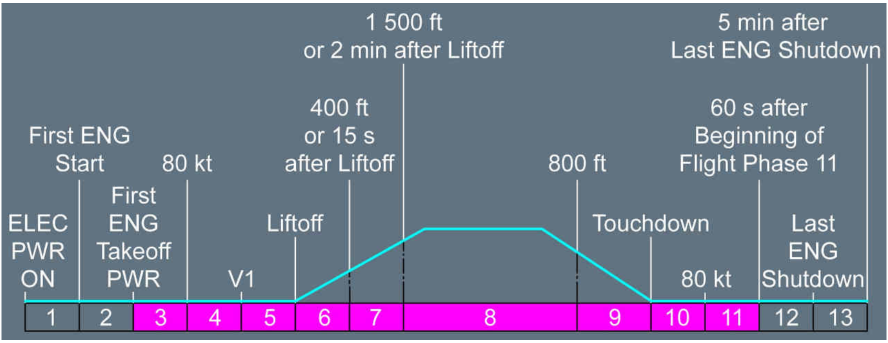
Local Light

REFUEL pb-sw (END light)

SD page

FUEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
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Last ENG Shutdown
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after Liftoff
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Beginning of
Flight Phase 11
First ENG
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Ident.: PRO-ABN-FUEL-2825W100-00007981.0001001 / 02 OCT 14

- **If cockpit refuel is selected:**

  CKPT REFUEL..OFF

- **Otherwise:**

  Crew Awareness.

Continued on the following page

FUEL REFUEL FAULT (Cont'd)

Ident.: PRO-ABN-FUEL-2825W100-00007982.0001001 / 02 OCT 14

STATUS

INOP SYS

ALL PHASES

REFUEL

FUEL TEMP LO

Applicable to: ALL

Ident.: PRO-ABN-FUEL-2849W050-00004677.0001001 / 02 OCT 14

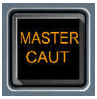
ANNUNCIATIONS

Triggering Conditions:

L2 The fuel temperature in a wing tank is below -40 °C. At this threshold, crew action is required for JET A fuel only. For other fuel types, this caution is automatically recalled when the fuel temperature reaches -47 °C.
If both FQMS are failed, the alert is triggered when the Total Air Temperature (TAT) is below -40 °C for 6 h.
Indications:

Audio

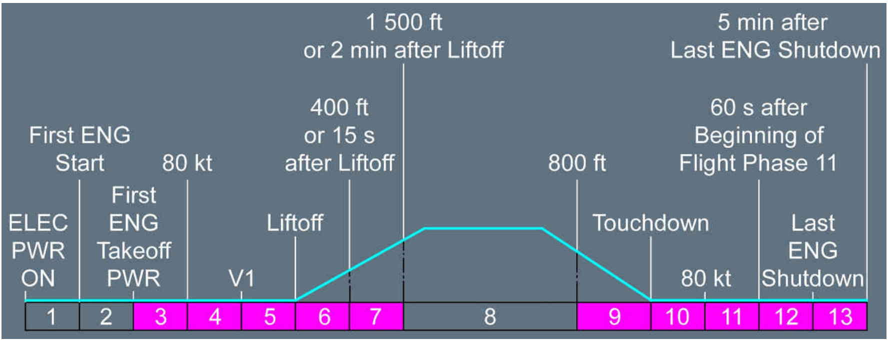
Master Light


MASTER
CAUT

SD page

FUEL SD Page

Flight Phase Inhibition:


1 500 ft
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First ENG
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80 kt
Last
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Shutdown
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Ident.: PRO-ABN-FUEL-2849W050-00021813.0001001 / 02 OCT 14

L2 The flight crew may consider delaying the application of the procedure until the minimum fuel temperature that corresponds to the fuel type is reached. (For the fuel temperature limitation, *Refer to LIM-FUEL Fuel Temperature*.)

Continued on the following page

FUEL TEMP LO (Cont'd)

Ident.: PRO-ABN-FUEL-2849W050-00007986.0001001 / 02 OCT 14

- **The fuel temperature is between -40 °C and -47 °C:**
  - **FUEL TYPE JET A ?**
    - **YES**
      - **Before takeoff:**

        DELAY T.O
      - **In flight:**

        TAT....................INCREASE

        L2 *To increase the TAT, the flight crew must consider:*
        - *Descending to a lower altitude, and/or*
        - *Increasing Mach number.*

L1
- **The fuel temperature is at or below -47 °C (auto recall)**
  - **Before takeoff:**

    DELAY T.O
  - **In flight:**

    TAT....................INCREASE

    L2 *To increase the TAT, the flight crew must consider:*
    - *Descending to a lower altitude, and/or*
    - *Increasing Mach number.*

Ident.: PRO-ABN-FUEL-2849W050-00007987.0001001 / 02 OCT 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

- **Before takeoff:**
  DELAY T.O

FUEL T.O FUEL TEMP HI

Applicable to: ALL

Ident.: PRO-ABN-FUEL-2849W130-00012047.0002001 / 28 APR 17

ANNUNCIATIONS

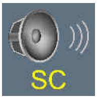
Triggering Conditions:

L2 All of the following apply:

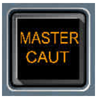
- The fuel temperature in a wing tank is above 30 °C
- The SAT is above 45 °C
- The FOB is below 15 800 kg (34 800 lb).

Indications:

Audio



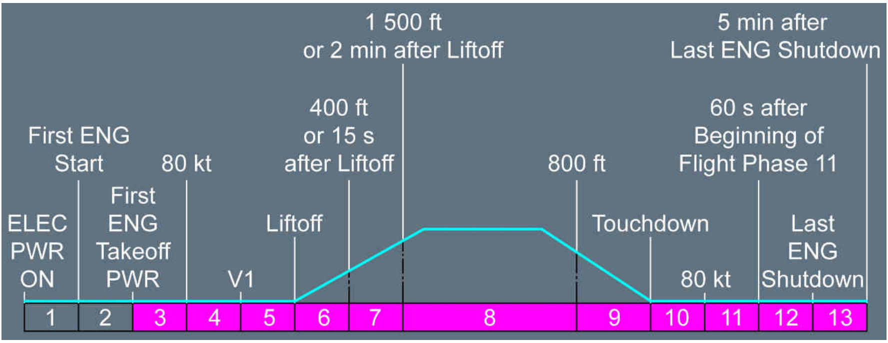
Master Light


MASTER
CAUT

SD page

FUEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
V1
Touchdown
80 kt
Last
ENG
Shutdown
1
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Continued on the following page

FUEL T.O FUEL TEMP HI (Cont'd)

Ident.: PRO-ABN-FUEL-2849W130-00012049.0001001 / 02 APR 15

L2 The flight crew should uplift additional fuel to ensure that, for all types of flights, the fuel temperature in the wing tanks remains below 50 °C during the entire flight.

L1 RISK OF FUEL WING TK TEMP HI IN FLIGHT
DELAY T.O
CONSIDER REFUELING
MIN QTY : 9000 KG (20000 LBS) (EACH WING TK)

Ident.: PRO-ABN-FUEL-2849W130-00012051.0001001 / 02 OCT 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES	
DELAY T.O	

FUEL WINGS NOT BALANCED

Applicable to: ALL

Ident.: PRO-ABN-FUEL-2820W900-00004692.0001001 / 02 OCT 14

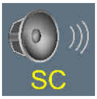
ANNUNCIATIONS

Triggering Conditions:

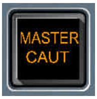
L2 The FQMS detect an imbalance of more than 3 000 kg (6 600 lb) between the left and the right wing tank.

Indications:

Audio



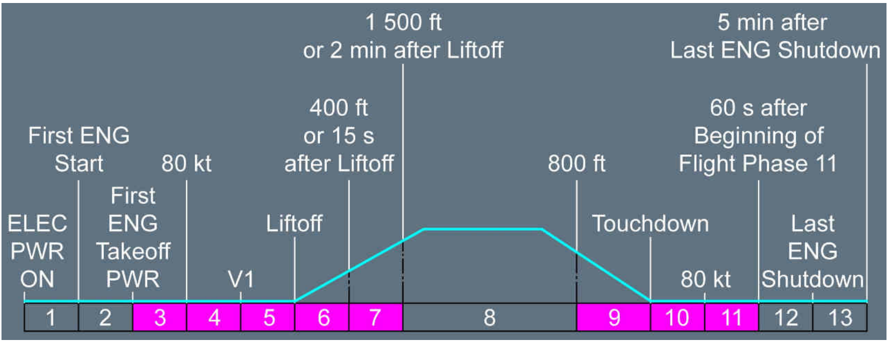
Master Light


MASTER
CAUT

SD page

FUEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

FUEL WINGS NOT BALANCED (Cont'd)

Ident.: PRO-ABN-FUEL-2820W900-00008022.0003001 / 03 JAN 19

- **FUEL LEAK SUSPECTED ?**
  - **YES**

    FUEL LEAK PROC.......................................APPLY

    L2 *To apply the FUEL LEAK procedure, Refer to procedure.*
  - L1 **NO**
    - **On ground:**

      USE REFUEL PNL FOR WINGS BALANCING
    - **In flight:**

      CROSSFEED A.......................................ON

      CROSSFEED B.......................................ON
      - **If left (right) wing tank contains more fuel than right (left) wing tank:**

        R (L) TK STBY PMP.......................................OFF

        R (L) TK MAIN PMP.......................................OFF
      - **If there is fuel in the center tank:**

        CTR TK L PMP.......................................OFF

        CTR TK R PMP.......................................OFF

FUEL CONSUMPT INCRSD

FOR BETTER RANGE : REDUCE CRZ MACH/SPD

FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

The FMS predictions are not correct.

- **If one wing tank contains more than 18 000 kg (39 700 lb) of fuel, and the other wing tank contains less than 5 000 kg (11 000 lb) of fuel:**

  LDG PERF AFFECTED

L2 *Note: When the tanks are balanced, the FUEL IMBALANCE CORRECTED alert triggers (Refer to procedure).*

Continued on the following page

FUEL WINGS NOT BALANCED (Cont'd)

Ident.: PRO-ABN-FUEL-2820W900-00008023.0003001 / 03 JAN 19

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

FUEL CONSUMPT INCRSD

APPR & LDG

- **If one wing tank contains more than 18 000 kg (39 700 lb) of fuel, and the other wing tank contains less than 5 000 kg (11 000 lb) of fuel:**
  LDG PERF AFFECTED

STATUS

INOP SYS

APPR &AMP LDG

BTV (If one wing tank contains more than 18 000 kg (39 700 lb) of fuel, and the other wing tank contains less than 5 000 kg (11 000 lb) of fuel)

INFO

FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

The fuel consumption is increased. The FUEL PENALTY on the FMS DATA/STATUS page may be updated.

For fuel penalty determination, Refer to PER-IFT-FP Fuel Penalty Tables - Fuel Consumption Increased.

FOR BETTER RANGE : REDUCE CRZ MACH/SPD

FUEL WEIGHT DATA DISAGREE

Applicable to: ALL

Ident.: PRO-ABN-FUEL-2262W100-00017555.0001001 / 02 OCT 14

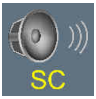
ANNUNCIATIONS

Triggering Conditions:

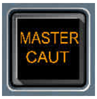
L2 There is a discrepancy of more than 30 000 kg (66 000 lb) between the aircraft gross weight computed from the FQMS and the gross weight computed from the WBBC.

Indications:

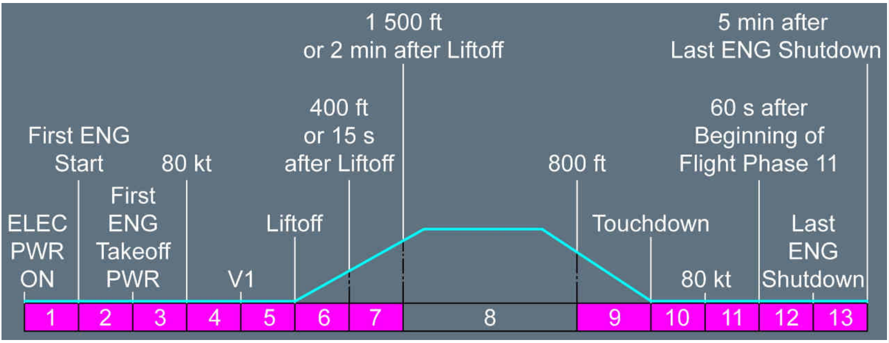
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

FUEL WEIGHT DATA DISAGREE (Cont'd)

Ident.: PRO-ABN-FUEL-2262W100-00017557.0009001 / 08 JUL 19

- **If the weight disagree is above 30 000 kg (66 000 lb), the following subtitle appears:**
  ERROR > 30000 KG (66000 LBS) DETECTED BY F/CTL
- **If the weight disagree is above 60 000 kg(132 000 lb), the following subtitle appears:**
  ERROR > 60000 KG (132000 LBS) DETECTED BY F/CTL

FMS ZFW VALUE.....CONFIRM

L2 *The weight disagree can be due to an incorrect ZFW entry in the FMS. When a correct ZFW is entered in the FMS, the alert disappears.*

L1 ECAM GW.....CHECK

- **ECAM GW CORRECT?**
  - **NO**

    L2 If the ECAM GW is not correct, the characteristic speeds (Green Dot, F, S, and VLS) displayed on the ECAM and FMS, and the fuel predictions of the FMS are not correct. Characteristic speeds are also available in the PERFORMANCE section, *Refer to PER-OPS Operating Speeds During Approach*.

    L1 FMS DATA NOT CORRECT : VLS, GREEN DOT, S, F, VAPP, EFOB

LDG PERF AFFECTED

Continued on the following page

FUEL WEIGHT DATA DISAGREE (Cont'd)

Ident.: PRO-ABN-FUEL-2262W100-00017558.0009001 / 03 JAN 19

LIMITATIONS

LIMITATIONS ON ECAM

APPR & LDG

LDG PERF AFFECTED

STATUS

INOP SYS

APPR & LDG

BTV
ROW/ROP
AUTOLAND (If the weight disagree is above 60 000 kg (132 000 lbs))

INFO

- **If ECAM GW not correct:**
  FMS DATA NOT CORRECT : VLS, GREEN DOT, S, F, VAPP, EFOB
- **If the weight disagree is above 60 000 kg (132 000 lbs):**
  APPR 1 ONLY

FUEL ZFW OR ZFWCG FMS DISAGREE

Applicable to: ALL

Ident.: PRO-ABN-FUEL-2840W010-00004693.0001001 / 02 OCT 14

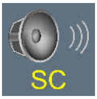
ANNUNCIATIONS

Triggering Conditions:

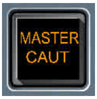
L2 The FMS 1 and FMS 2 do not provide the same Zero Fuel Weight (ZFW) and/or Zero Fuel Weight Center of Gravity (ZFWCG) information to the FQMS.

Indications:

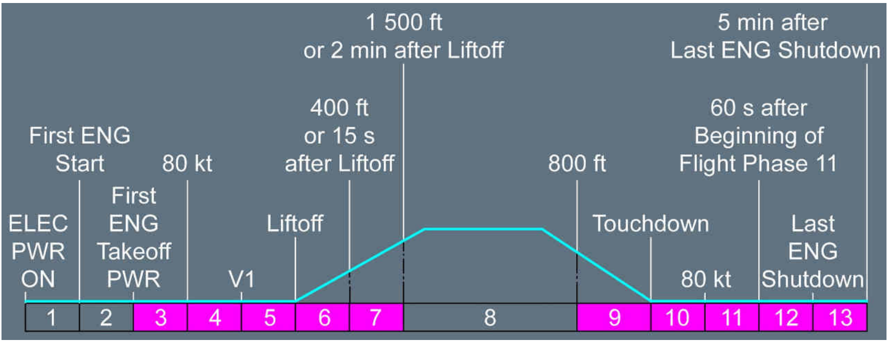
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-FUEL-2840W010-00008025.0001001 / 02 OCT 14

FMS ZFW OR ZFWCG VALUES..REENTER

Intentionally left blank

FWS AUDIO FUNCTION LOST

RNP AR CAPABILITY LOST

Applicable to: ALL

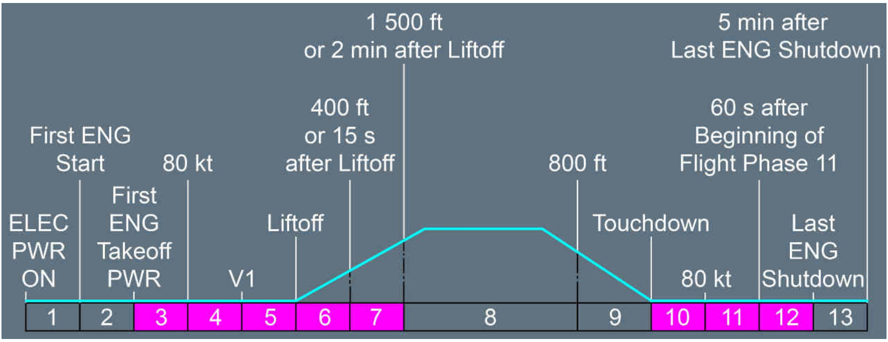
Ident.: PRO-ABN-FWS-3150W050-00014224.0002001 / 04 FEB 19

ANNUNCIATIONS

Triggering Conditions:

L2 The FWS cannot trigger any aural alerts.
The RNP AR CAPABILITY LOST subtitle is displayed only during RNP AR operations.

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-FWS-3150W050-00014270.0001001 / 03 DEC 15

AUDIOS NOT AVAIL :

ALTITUDE ALERT

AUTO CALLOUT

AURAL ATTENTION-GETTERS

Continued on the following page

FWS AUDIO FUNCTION LOST (Cont'd)

RNP AR CAPABILITY LOST

Ident.: PRO-ABN-FWS-3150W050-00014271.0001001 / 17 NOV 17

STATUS

INOP SYS

ALL PHASES	APPR & LDG
RNP AR	BTV ROW/ROP AUTOLAND

INFO

APPR 1 ONLY

FWS ECP FAULT

Applicable to: ALL

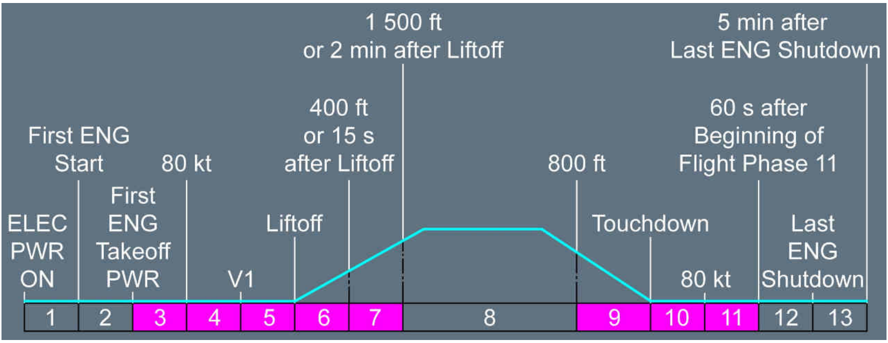
Ident.: PRO-ABN-FWS-3150W040-00014286.0001001 / 30 JUN 14

ANNUNCIATIONS

Triggering Conditions:

L2 There is no communication between the ECP and both FWS.

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-FWS-3150W040-00021301.0001001 / 30 JUN 14

L2 In the case of alerts, the ECAM displays the alert that has the highest level of priority, and the flight crew can perform the actions that are requested by the ECAM. However, the flight crew cannot complete not-sensed actions with a tick, and cannot scroll the procedure in case of overflow.

Ident.: PRO-ABN-FWS-3150W040-00014288.0001001 / 18 JUN 15

FOR SYS PAGES : "ALL" AVAIL

L2 *The ECP is inoperative, except the ALL pb that has a direct link to the CDS in order to cycle the SD pages.*

FWS FWS 1(2) FAULT

Applicable to: ALL

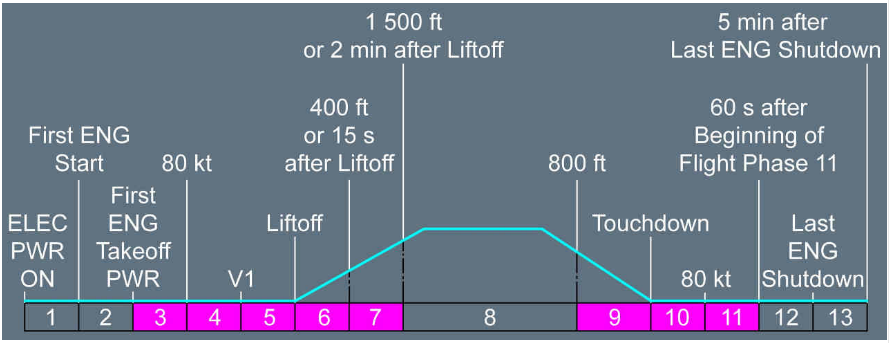
Ident.: PRO-ABN-FWS-3150W010-00014220.0001001 / 30 JUN 14

ANNUNCIATIONS

Triggering Conditions:

L2 FWS 1(2) is failed.

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Ident.: PRO-ABN-FWS-3150W010-00014221.0001001 / 30 JUN 14

L2 Each attention getter is divided in two parts. Each part is associated with a FWS. Therefore, in the case of a FWS failure, only half of the attention getter remains available. For more information, *Refer to DSC-31-CDS-60-40 FWS Redundancy*.

L1 *Note:* *If the failure is only due to an IMA module failure, the ECAM displays the DUE TO IMA MODULE FAULT subtitle.*

Ident.: PRO-ABN-FWS-3150W010-00014222.0001001 / 30 JUN 14

Crew awareness.

Continued on the following page

FWS FWS 1(2) FAULT (Cont'd)

Ident.: PRO-ABN-FWS-3150W010-00014223.0001001 / 30 JUN 14

STATUS

INOP SYS

ALL PHASES

FWS 1(2)

INFO

LAND 3 SINGLE ONLY

FWS FWS 1+2 FAULT

Applicable to: ALL

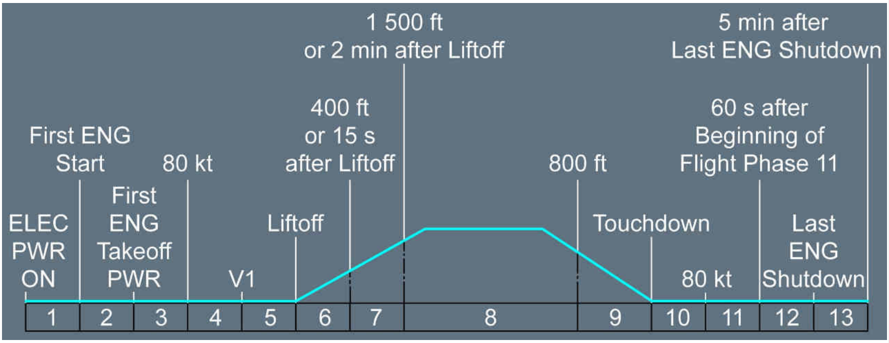
Ident.: PRO-ABN-FWS-31CDSMSG1-00003209.0001001 / 30 JUN 14

ANNUNCIATIONS

Triggering Conditions:

L2 Both FWS 1+2 are failed, or the communication between the FWS and the Control and Display System (CDS) is lost.
The CDS displays the FWS FWS 1+2 FAULT alert instead of the FWS.

Flight Phase Inhibition:


1 500 ft or 2 min after Liftoff
5 min after Last ENG Shutdown
First ENG Start
80 kt
400 ft or 15 s after Liftoff
800 ft
60 s after Beginning of Flight Phase 11
ELEC PWR ON
First ENG Takeoff PWR
V1
Liftoff
Touchdown
80 kt
Last ENG Shutdown
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Other Inhibition:

The FWS FWS 1+2 FAULT alert is displayed on ground, if the ground speed is less than 50 kt.

Continued on the following page

FWS FWS 1+2 FAULT (Cont'd)

Ident.: PRO-ABN-FWS-31CDSMSG1-00017609.0001001 / 30 JUN 14

L2 Note: *If the FWS FWS 1+2 FAULT alert is triggered, while neither the FWS FWS 1 FAULT alert nor the FWS FWS 2 FAULT alert was previously triggered, the FWS FWS 1+2 FAULT alert may be due to a spurious failure of the CDS display. In the case of a spurious failure of the CDS display, the ECAM may still be available (normal checklist, audio indicators, master caution, master warning, memos and limitations on the PFD, and automatic display of SD pages are still available), but the ECAM can no longer display any subsequent alerts and procedures on the WD. The spurious failure of the CDS display may be due to the Display Unit (DU). Therefore, ECAM display may recover, if the flight crew resets the CENTER UPPER DU (OFF during 5 s, then ON), or the flight crew performs a DU reconfiguration in order to display the WD on another DU.*

During descent and approach preparation, the flight crew must regularly check the general status of all aircraft systems on:
- The overhead panel
- The available SD pages.

The flight crew should use the FCOM on the OIS to display any necessary procedures.
In the case of failure of both FWS, the aircraft approach and landing capability is limited to APPR1.

Continued on the following page

FWS FWS 1+2 FAULT (Cont'd)

Ident.: PRO-ABN-FWS-31CDSMSG1-00007628.0002001 / 26 JUL 17

ECAM SD & OVHD PNL..MONITOR

- **If the L or R CTR TK PMP is abnormally off.**

  IF NO FUEL LEAK : OPEN CROSSFEED A+B UNTIL CTR TK EMPTY

L2 ECAM SD pages remain available. Regularly check the cockpit panels for local warnings, and ECAM SD pages for system checks.

Notify the cabin crew that the FAP functionality is affected due to the ECAM failure.

L1 FUNCTIONS NOT AVAIL :
RNP AR CAPABILITY
ECAM WARNINGS & CAUTIONS
ABN PROCEDURES
LIMITATIONS & STATUS
DISPATCH
ALTITUDE ALERT
AUTO CALLOUT
NORM C/L & MEMOS

FWS FWS 1+2 & CPIOM FAULT

Applicable to: ALL

Ident.: PRO-ABN-FWS-31CDSMSG2-00003207.0001001 / 30 JUN 14

ANNUNCIATIONS

Triggering Conditions:

L2 Both FWS 1 and FWS 2 are failed, and one or more CPIOMs of the following CPIOM groups are failed:

- CPIOM group H3, or
- CPIOM group H4, or
- CPIOM group H6, or
- CPIOM group J2, or
- CPIOM group J5, or
- CPIOM group J7.

For more information about the CPIOM groups, *Refer to DSC-42-10 CPIOM*.

L3 The CDS, instead of the FWS, displays the FWS FWS 1+2 & CPIOM FAULT alert.

Other Inhibition:

L2 The FWS FWS 1+2 & CPIOM FAULT alert is displayed on ground, if the aircraft speed is less than 50 kt.

Continued on the following page

FWS FWS 1+2 & CPIOM FAULT (Cont'd)

Ident.: PRO-ABN-FWS-31CDSMSG2-00007623.0004001 / 26 JUL 17

L2 Note: *If the FWS FWS 1+2 & CPIOM FAULT is triggered, and neither the FWS FWS 1 FAULT alert nor the FWS FWS 2 FAULT alert was previously triggered, the FWS FWS 1+2 & CPIOM FAULT alert may be due to a spurious failure of the CDS display. In the case of a spurious failure of the CDS display, the ECAM may still be available (audio indicators, master caution, master warning, memos and limitations on the PFD, and automatic display of SD pages are still available), but can no longer display any subsequent alerts and associated procedures on the WD. The spurious failure of the CDS display may be due to the Display Unit (DU). Therefore, the flight crew may recover all ECAM functions, if the flight crew resets the CENTER UPPER DU (OFF for 5 s, then ON), or if the flight crew performs a DU reconfiguration to display the WD on another DU.*

Due to the fact that FWS 1 and FWS 2 are failed:
- The ECAM will no longer trigger alerts and dispatch messages, audio indicators will no longer sound, and the MASTER lights will no longer come on
- The flight crew can no longer display the normal checklists
- The approach and landing capability is limited to APPR1.

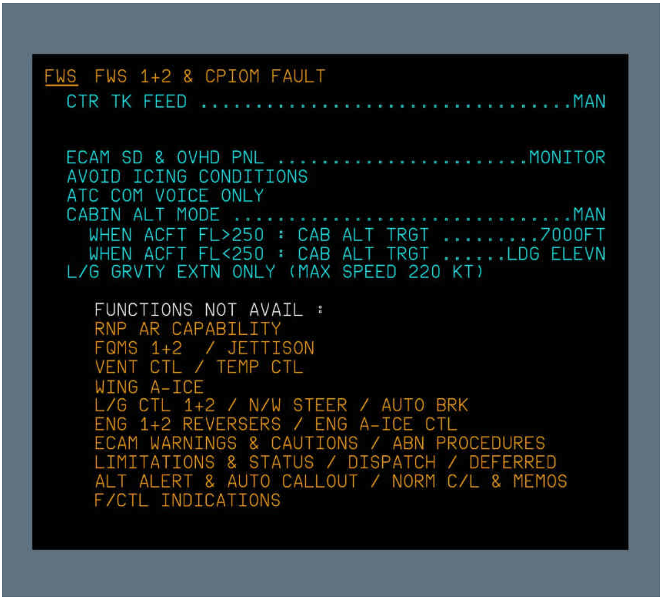
During descent and approach preparation, the flight crew must regularly check the general status of all aircraft systems on:
- The overhead panel
- The available SD pages.

The flight crew should use the FCOM on the OIS to display any necessary procedures.

Note: *FWS 1 and FWS 2 are failed. As a result, the FWS is not able to manage the space between the lines of text of the FWS FWS 1+2 & CPIOM FAULT procedure. Each line of text of the procedure is assigned to an action or information that results from the failure of a specific CPIOM. A line of text appears, only if this line of text is related to the failed CPIOM. The space between two displayed lines of text corresponds to the lines of text that are not displayed, because these lines of text are related to the CPIOMs that are not failed.*
The following illustration illustrates the entire alert display, in the case of the failure of CPIOM group J1 combined with all other CPIOM groups.

Continued on the following page

FWS FWS 1+2 & CPIOM FAULT (Cont'd)



```
FWS  FWS 1+2 & CPIOM FAULT
  CTR TK FEED ...................................MAN


  ECAM SD & OVHD PNL .......................MONITOR
  AVOID ICING CONDITIONS
  ATC COM VOICE ONLY
  CABIN ALT MODE ...............................MAN
    WHEN ACFT FL>250 : CAB ALT TRGT .........7000FT
    WHEN ACFT FL<250 : CAB ALT TRGT ......LDG ELEVN
  L/G GRVTY EXTN ONLY (MAX SPEED 220 KT)

     FUNCTIONS NOT AVAIL :
     RNP AR CAPABILITY
     FQMS 1+2  / JETTISON
     VENT CTL / TEMP CTL
     WING A-ICE
     L/G CTL 1+2 / N/W STEER / AUTO BRK
     ENG 1+2 REVERSERS / ENG A-ICE CTL
     ECAM WARNINGS & CAUTIONS / ABN PROCEDURES
     LIMITATIONS & STATUS / DISPATCH / DEFERRED
     ALT ALERT & AUTO CALLOUT / NORM C/L & MEMOS
     F/CTL INDICATIONS
```

Continued on the following page

FWS FWS 1+2 & CPIOM FAULT (Cont'd)

Ident.: PRO-ABN-FWS-31CDSMSG2-00007624.0003001 / 26 JUL 17

- **If CPIOMs (H31 or H33) and (H32 or H34) are failed:**
  CTR TK FEED..MAN

ECAM SD & OVHD PNL..MONITOR

L2 *The SD pages are no longer available for the systems that the failed CPIOM group hosts. In addition, the failure of the CPIOM group can affect the information displayed on the SD pages of other systems.*
Regularly check the overhead panel for local warnings, and the SD pages for system checks.

L1
- **If CPIOMs (H43 and H44) are failed:**
  AVOID ICING CONDITIONS

L2 *The wing anti-ice is failed.*

L1
- **If CPIOM J51 is failed:**
  ATC COM VOICE ONLY

L2 *All ATC datalink applications (ADS, CPDLC, digital ATIS, etc.) are failed.*

L1
- **If CPIOMs H41 and H42 are failed:**
  CABIN ALT MODE..MAN

L2 *The automatic control mode of the cabin pressurization system is failed.*

L1 WHEN ACFT FL>250 : CAB ALT TRGT..7000FT
WHEN ACFT FL<250 : CAB ALT TRGT..LDG ELEVN

- **If CPIOMs (H61 or H63) and (H62 or H64) are failed:**
  L/G GRVTY EXTN ONLY (MAX SPEED 220 KT)

L2 *The following systems and functions are failed:*
- *Autobrake*
- *Steering*
- *Normal landing gear extension/retraction.*
  As a result, the landing gear extension is available by gravity only. Use the L/G GRVTY EXTN sw to extend the landing gear by gravity. *Refer to deferred proc.*

L1 FUNCTIONS NOT AVAIL :
RNP AR CAPABILITY

- **If CPIOMs (H31 or H33) and (H32 or H34) are failed:**
  FQMS 1+2 / JETTISON

Continued on the following page

FWS FWS 1+2 & CPIOM FAULT (Cont'd)

L2 *JETTISON is only displayed if jettison is installed.*

L1
- **If CPIOMs (H41 and H42) are failed:**
  VENT CTL / TEMP CTL

L2 *Temperature regulation in the cabin is degraded. The temperature in some zones can be abnormally low.*

L1
- **If CPIOMs (H43 and H44) are failed:**
  WING A-ICE

L2 *Wing anti-ice is failed. Therefore, avoid icing conditions.*

L1
- **If CPIOMs group (H61 or H63) and (H62 or H64) are failed:**
  L/G CTL 1+2 / N/W STEER / AUTO BRK

L2 *The emergency braking mode is active, and the landing distance is increased. Refer to the performance module.*
For landing, use the rudder, the differential braking, or both the rudder and the differential braking to steer the aircraft on the runway, because the nose landing gear turns freely.
After landing, the aircraft must be towed off the runway.

L1
- **If CPIOMs J21 and J23 (or J22 and J24) are failed:**
  ENG 1(2) REVERSER / ENG A-ICE CTL
- **If CPIOMs (J21 and J23) and (J22 and J24) are failed:**
  ENG 1+2 REVERSERS / ENG A-ICE CTL

ECAM WARNINGS & CAUTIONS / ABN PROCEDURES
LIMITATIONS & STATUS / DISPATCH / DEFERRED
ALT ALERT & AUTO CALLOUT / NORM C/L & MEMOS

- **If CPIOMs (J71 and J72) are failed:**
  F/CTL INDICATIONS

Continued on the following page

FWS FWS 1+2 & CPIOM FAULT (Cont'd)

Ident.: PRO-ABN-FWS-31CDSMSG2-00021071.0001001 / 01 JUL 14

L12

DEFERRED PROC

FOR LANDING

> L/G GRVTY EXTN

FOR L/G GRVTY EXTN : MAX SPEED 220 KT

- **FOR L/G EXTN:**

  L/G LEVER......................UP

  L/G GRVTY (EXTN MAX 90 S)......................DOWN

  - **WHEN L/G LOCKED DOWN OR AFTER 90 s :**

    L/G LEVER......................DOWN

    Note: *After a L/G gravity extension, a maintenance action is required to reset the LGERS (Refer to DSC-32-10-10-20 General).*

HYD G(Y) ELEC PMP FAULT

Applicable to: ALL

Ident.: PRO-ABN-HYD-2920W050-00012213.0001001 / 03 JUL 14

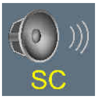
ANNUNCIATIONS

Triggering Conditions:

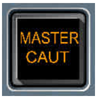
L2 The electric pump is:
- Failed, or
- The temperature of the electric pump is above 190 °C, or
- The pressure through the electric pump is below 2 755 PSI.

Indications:

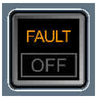
Audio



Master Light

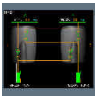

MASTER
CAUT

Local Light



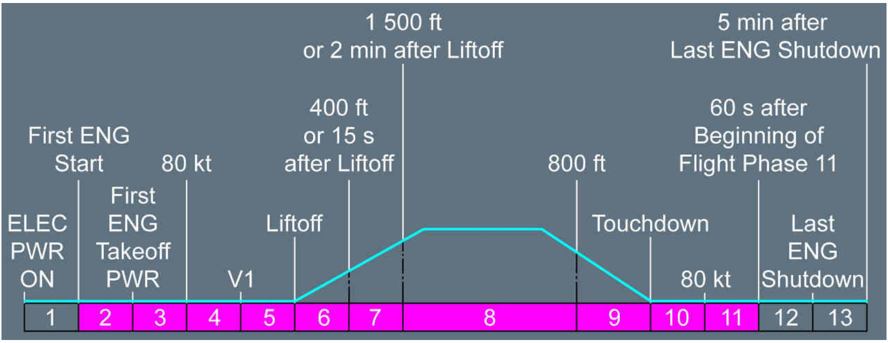
GREEN(YELLOW)
ELEC PMP pb-sw

SD page



HYD SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
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Ident.: PRO-ABN-HYD-2920W050-00012215.0001001 / 03 JUL 14

G (Y) ELEC PMP..OFF

Continued on the following page

HYD G(Y) ELEC PMP FAULT (Cont'd)

Ident.: PRO-ABN-HYD-2920W050-00012216.0001001 / 03 JUL 14

STATUS

INOP SYS

ALL PHASES

G(Y) ELEC PMP
CARGO DOOR POWER (If yellow electric pump is failed)

HYD ENG 1(2) G(Y) PMP FAULT

Applicable to: ET-AWP, ET-AYA, ET-AYB

Ident.: PRO-ABN-HYD-2910W150-00025268.0001001 / 06 NOV 19

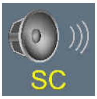
ANNUNCIATIONS

Triggering Conditions:

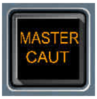
L2 The ENG 1(2) G(Y) pump is failed.

Indications:

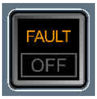
Audio



Master Light

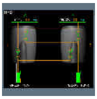

MASTER
CAUT

Local Light



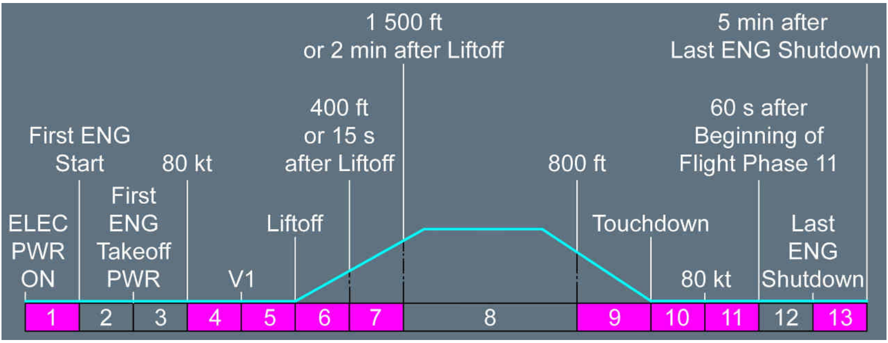
GREEN(YELLOW) PMP pb-sw

SD page



HYD SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
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11
12
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Continued on the following page

HYD ENG 1(2) G(Y) PMP FAULT (Cont'd)

Ident.: PRO-ABN-HYD-2910W150-00025271.0001001 / 06 NOV 19

Note:
1. *If the alert is due to EDP temperature exceeding the TEMP HI threshold, the ECAM displays the DUE TO PMP TEMP HI*
2. *If the alert is due to EDP temperature exceeding the OVHT threshold, the ECAM displays the DUE TO PMP OVHT*
3. *If the alert is due to EDP overpressure condition, the ECAM displays the DUE TO PMP PRESS HI.*

Ident.: PRO-ABN-HYD-2910W150-00025269.0002001 / 06 NOV 19

ENG 1(2) G(Y) PMP...OFF

- **If auto isolation is successful:**
  ENG 1(2) G(Y) PMP AUTO ISOLATED

Ident.: PRO-ABN-HYD-2910W150-00025270.0002001 / 06 NOV 19

STATUS

INOP SYS

ALL PHASES

ENG 1(2) G(Y) PMP

HYD ENG 1(2) G(Y) PMP ISOL FAULT

Applicable to: ALL

Ident.: PRO-ABN-HYD-2910W250-00012209.0001001 / 03 JUL 14

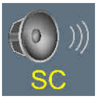
ANNUNCIATIONS

Triggering Conditions:

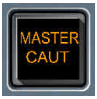
L2 The Fire Shut-Off Valve (FSOV) associated with the Engine Driven Pump (EDP) is failed open and there is no means to shut down the system in the case of overheat situation.

Indications:

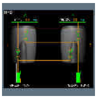
Audio



Master Light

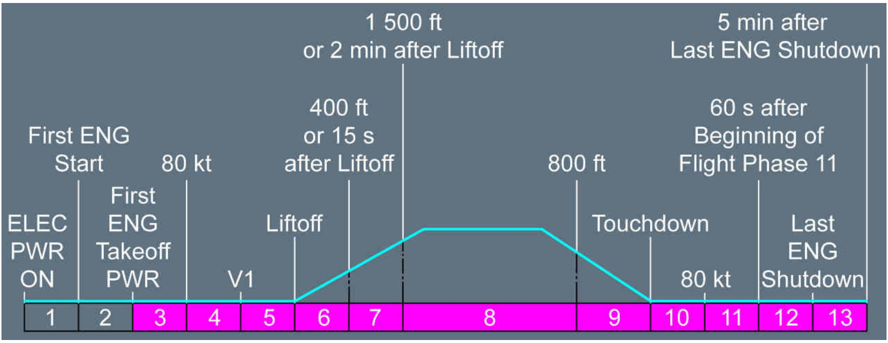

MASTER
CAUT

SD page



HYD SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Ident.: PRO-ABN-HYD-2910W250-00012211.0001001 / 03 JUL 14

Crew awareness

HYD ENG 1(2) G(Y) PMP PRESS LO

Applicable to: ALL

Ident.: PRO-ABN-HYD-2910W140-00012201.0001001 / 07 NOV 16

ANNUNCIATIONS

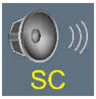
Triggering Conditions:

L2 Engine 1(2) pump pressure is below 3 335 PSI. The failures of the pump as depressurization function or pressure regulation function are also covered by this ECAM alert.

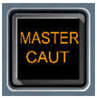
Note: The EDP is automatically depressurized in the low fuel level condition to minimize heat rejection into the hydraulic system. In that case the ECAM alert is not displayed on the Warning Display (WD).

Indications:

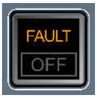
Audio



Master Light

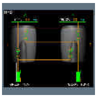

MASTER
CAUT

Local Light



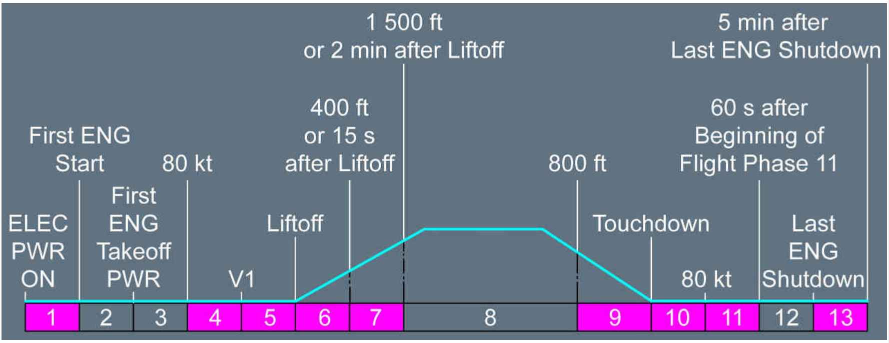
GREEN(YELLOW) PMP pb-sw

SD page



HYD SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-HYD-2910W140-00012203.0003001 / 07 JUL 16

ENG 1(2) G(Y) PMP...OFF

Continued on the following page

HYD ENG 1(2) G(Y) PMP PRESS LO (Cont'd)

Ident.: PRO-ABN-HYD-2910W140-00012204.0003001 / 07 JUL 16

STATUS

INOP SYS

ALL PHASES

ENG 1(2) G(Y) PMP (If the remaining pump on the same hydraulic circuit is not failed)

HYD G(Y) RSVR LEVEL LO

Applicable to: ALL

Ident.: PRO-ABN-HYD-2910W060-00012189.0001001 / 03 JUL 14

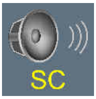
ANNUNCIATIONS

Triggering Conditions:

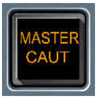
L2 The hydraulic fluid level in the green(yellow) reservoir is below the low level limit.

Indications:

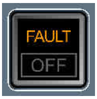
Audio



Master Light

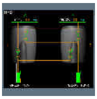

MASTER
CAUT

Local Light



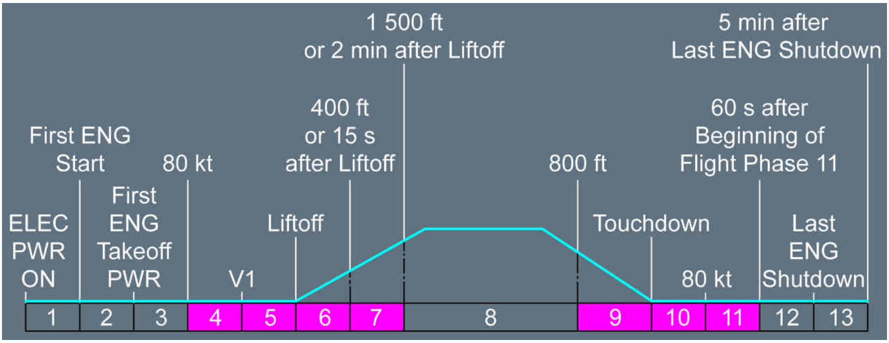
Both GREEN PMP pb-sw or both YELLOW PMP pb-sw

SD page



HYD SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
V1
Touchdown
80 kt
Last
ENG
Shutdown
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Continued on the following page

HYD G(Y) RSVR LEVEL LO (Cont'd)

Ident.: PRO-ABN-HYD-2910W060-00012191.0001001 / 03 JUL 14

ENG 1 G(Y) PMP........OFF
ENG 2 G(Y) PMP........OFF

- **If on ground and all engines are off:**
  G(Y) ELEC PMP........OFF

L12

ASSOCIATED PROCEDURES

HYD G(Y) SYS PRESS LO

This alert is displayed only when the green or yellow hydraulic system is lost (Refer to PRO-ABN-HYD HYD G(Y) SYS PRESS LO).

HYD G(Y) RSVR OVHT

Applicable to: ET-AWP, ET-AYA, ET-AYB

Ident.: PRO-ABN-HYD-2910W420-00025265.0001001 / 06 NOV 19

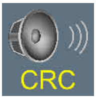
ANNUNCIATIONS

Triggering Conditions:

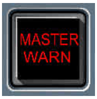
L2 The temperature of the hydraulic fluid in the green or yellow reservoir is over 120 °C.

Indications:

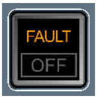
Audio



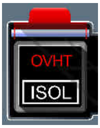
Master Light


MASTER
WARN

Local Light

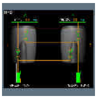


All engine driven pump pb-sw



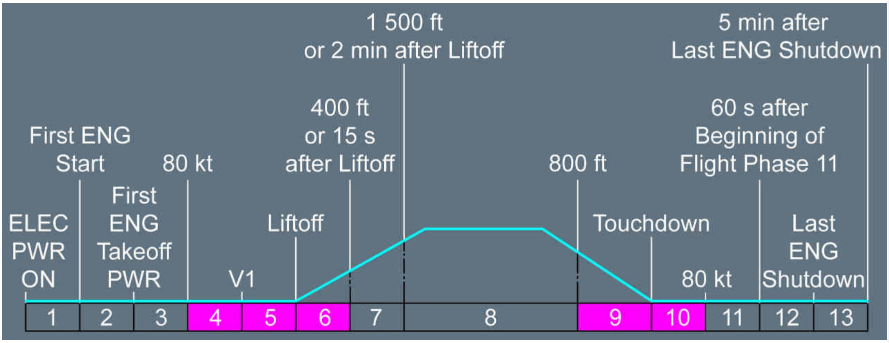
Both GREEN (both YELLOW) SUPPLY pb-sw

SD page



HYD SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
ELEC
PWR
ON
First
ENG
Takeoff
PWR
Liftoff
V1
Touchdown
80 kt
Last
ENG
Shutdown
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Continued on the following page

HYD G(Y) RSVR OVHT (Cont'd)

Ident.: PRO-ABN-HYD-2910W420-00025266.0001001 / 06 NOV 19

ENG 1 G(Y) PMP.....OFF
ENG 2 G(Y) PMP.....OFF
ENG 1 G(Y) SUPPLY.....ISOL
ENG 2 G(Y) SUPPLY.....ISOL

- **If on ground, and all engines are off:**
  G(Y) ELEC PMP.....OFF

HYD G(Y) RSVR PRESS LO

Applicable to: ALL

Ident.: PRO-ABN-HYD-2910W040-00012185.0001001 / 07 MAY 18

ANNUNCIATIONS

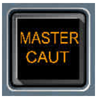
Triggering Conditions:

L2 On ground with all engines shut-down, the pressure in the green or yellow reservoir is below 22 PSI (1.5 bar).

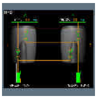
Indications:

Audio

Master Light

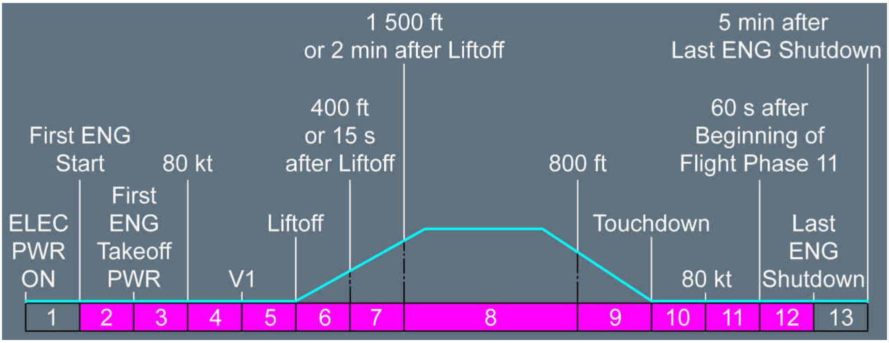

MASTER
CAUT

SD page



HYD SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-HYD-2910W040-00012187.0002001 / 07 JUL 16

CAUTION	When the pump is manually-selected, the hydraulic system is fully pressurized. Do not pressurize the hydraulic system without clearance from the ground crew.

G(Y) ELEC PMP...ON 30 S THEN AUTO

HYD G(Y) RSVR TEMP HI

Applicable to: ET-AWP, ET-AYA, ET-AYB

Ident.: PRO-ABN-HYD-2910W400-00025258.0001001 / 07 NOV 19

ANNUNCIATIONS

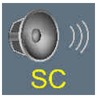
Triggering Conditions:

L2 The temperature of the hydraulic fluid in the green or yellow reservoir is:

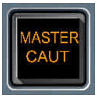
- Above 95 °C when the fluid is not at low level, or
- Above 115 °C when the fluid is at low level.

Indications:

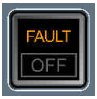
Audio



Master Light

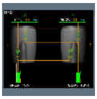


Local Light



Both GREEN PMP pb-sw or both YELLOW PMP pb-sw

SD page



HYD SD Page

Ident.: PRO-ABN-HYD-2910W400-00025259.0001001 / 06 NOV 19

ENG 1 G(Y) PMP..........OFF
ENG 2 G(Y) PMP..........OFF

- **If on ground, and all engines are off:**
  G(Y) ELEC PMP..........OFF

ASSOCIATED PROCEDURES

HYD G(Y) SYS PRESS LO
Refer to procedure.

Continued on the following page

HYD G(Y) RSVR TEMP HI (Cont'd)

Ident.: PRO-ABN-HYD-2910W400-00025260.0001001 / 06 NOV 19

DEFERRED PROC

ALL PHASES

> WHEN G(Y) RSVR TEMP HI OUT

ENG 1 G(Y) PMP..........ON

ENG 2 G(Y) PMP..........ON

HYD G(Y) SYS MONITORING FAULT

Applicable to: ALL

Ident.: PRO-ABN-HYD-2910W220-00012205.0002001 / 07 MAY 18

ANNUNCIATIONS

Triggering Conditions:

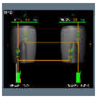
L2 The monitoring of the green or yellow hydraulic system is lost or degraded.

L3 The monitoring is degraded when there is a discrepancy between both HMCAs of the green (yellow) hydraulic system. This occurs when an automatic depressurization of an EDP is commanded after an abnormal temperature is detected.

Indications:

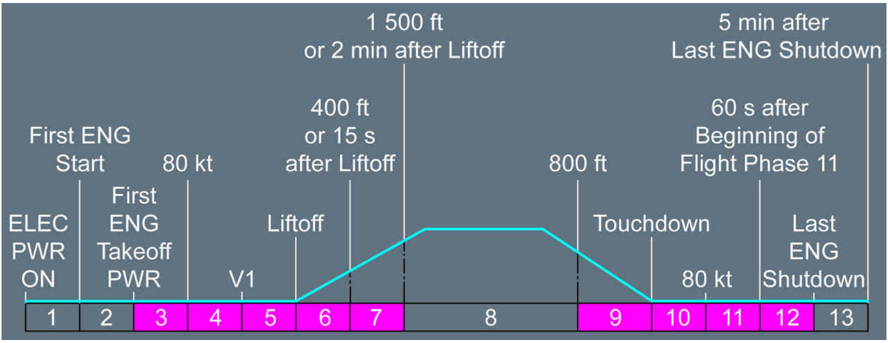
L2

SD page



HYD SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
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12
13

Continued on the following page

HYD G(Y) SYS MONITORING FAULT (Cont'd)

Ident.: PRO-ABN-HYD-2910W220-00012208.0001001 / 02 OCT 14

Note: If the failure is only due to an IMA module failure, the ECAM displays the DUE TO IMA MODULE FAULT subtitle.

L2 If both HMCAs or two HMCRFs of the green(yellow) hydraulic system fail:

- The hydraulic system continues to operate.
- Most of the indications on the HYD SD page are lost.
- System overheat detection is still available.
- System pressure, reservoir pressure, and pumps pressure remain monitored, and the associated ECAM alerts can trigger if necessary except if SYS pressure transducers, RSVR temperature transducers or EDP pressure transducers are inoperative.
- The automatic electric pumps operations are lost (Cargo doors and brake accumulators reinflation). The cargo doors must be operated manually.

For more information: *Refer to DSC-29-10 Hydraulic Monitoring and Control (HMC)*

Ident.: PRO-ABN-HYD-2910W220-00012206.0001001 / 03 JUL 14

Crew awareness.

Ident.: PRO-ABN-HYD-2910W220-00012207.0001001 / 03 JUL 14

STATUS

INOP SYS

ALL PHASES	
G(Y) HYD SYS MONITORING	

HYD G(Y) SYS PRESS LO

Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO

Ident.: PRO-ABN-HYD-2910W020-00012183.0001001 / 01 JUL 14

ANNUNCIATIONS

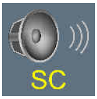
Triggering Conditions:

L2 The pressure of the green (yellow) hydraulic system is below 2 900 PSI.

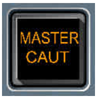
The HYD G(Y) SYS PRESS LO alert is triggered after one of the following ECAM alerts:
- HYD G(Y) RSVR LEVEL LO, *Refer to procedure*
- HYD G(Y) RSVR PRESS LO, *Refer to procedure*
- HYD G(Y) SYS OVHT, *Refer to procedure*
- HYD G(Y) SYS TEMP HI, *Refer to procedure*.

Indications:

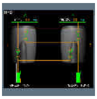
Audio



Master Light

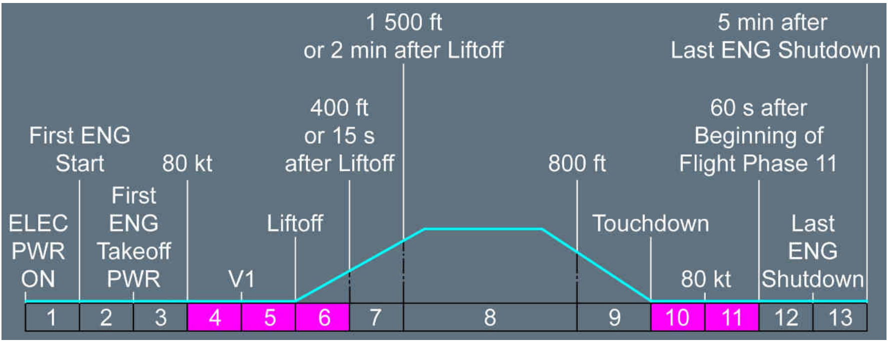

MASTER
CAUT

SD page



HYD SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Continued on the following page

HYD G(Y) SYS PRESS LO (Cont'd)

Ident.: PRO-ABN-HYD-2910W020-00012153.0001001 / 07 JUL 20

1

L2 *Note:*
1. *On the WHEEL SD page, a time indication for the loss of the A-SKID is displayed. This time indication may be erroneous (underestimated) during initial climb up to the first hour of cruise in the case of hydraulic failure. Disregard "TIME TO A-SKID LOSS INFO" during initial climb and the first hour of cruise.*
2. *After landing gear extension, NORM indication may be displayed in the box on the WHEEL SD page. Disregard NORM indication on the WHEEL SD page if the alert is triggered after landing gear extension.*

In the case of a green (yellow) hydraulic system failure:
- The flight controls are actuated by the remaining hydraulic system, or by the Electrical-Hydrostatic Actuators (EHA) and the Electrical Backup Hydraulic Actuators (EBHA)
- The flaps operate at half-speed.
- The slats operate at half-speed if the yellow hydraulic system is failed.
- The Nose Wheel Steering (NWS) is lost if the yellow hydraulic system is failed.
- The BTV function is lost but the autobrake function is still available.
- The display of the Runway Overrun Warning / Runway Overrun Protection (ROW/ROP) bars is lost but the warnings (PFD and audio) remain available.
- The normal braking is partially lost, but the affected brakes are reconfigured in alternate braking mode.
- The antiskid is available including brakes that are reconfigured in alternate mode.
- If the failure of the green (yellow) hydraulic system occurs before landing gear retraction:
  - When commanded, the Main Landing Gear (MLG) retracts, if the yellow hydraulic system is failed
  - When commanded, the Nose Landing Gear (NLG) retracts, if the green hydraulic system is failed.
- Landing gear extension is performed by gravity.

Continued on the following page

HYD G(Y) SYS PRESS LO (Cont'd)

Ident.: PRO-ABN-HYD-2910W020-00012155.0012001 / 03 JAN 19

- **On ground and** HYD Y SYS PRESS LO **alert :**
  - **During taxi-out:**

    BKUP STEER INHIBITED
    TOWING...CONSIDER

    L2 *Loss of the Y HYD system leads to the loss of nose wheel steering function. Towing is required during taxi out.*

  - L1 **During taxi-in:**

    BKUP STEER AVAIL BELOW 30KT & A/BRK OFF

    TO VACATE CONTAM RWY : USE TOWING

- **In flight:**

  FLAPS SLOW

  L2 *Due to the failure of the green hydraulic system, only the remaining hydraulic system is available to move the flaps. As a result, the flaps operate at half-speed.*

  L1 L/G GRVTY EXTN ONLY
  AUTO BRK...CONSIDER

  - **If** HYD Y SYS PRESS LO **alert**

    SLATS/FLAPS SLOW

    L2 *Due to the failure of the yellow hydraulic system, only the remaining hydraulic system is available to move the flaps. As a result, the flaps operate at half-speed. Due to the failure of the yellow hydraulic system, only the electric motor is available to move the slats. As a result, the slats operate at half-speed.*

    L1 TO VACATE RWY : CONSIDER TOWING

  LDG DIST AFFECTED

  L2 *Landing distance is increased due to the loss of 3 pairs of ground spoilers.*

L12

ASSOCIATED PROCEDURES

F/CTL SPLRS PARTLY EXTENDED

This alert is displayed only after the loss of 3 pairs of spoilers and the position of those spoilers affects the fuel consumption. It may be displayed immediately or some time after

Continued on the following page

HYD G(Y) SYS PRESS LO (Cont'd)

the failure once the drift (if any) is established (Refer to PRO-ABN-F_CTL F/CTL SPLRs PARTLY EXTENDED).

L1

SECONDARY FAILURES

*F/CTL

*WHEEL

Continued on the following page

HYD G(Y) SYS PRESS LO (Cont'd)

Ident.: PRO-ABN-HYD-2910W020-00012156.0007001 / 03 JUL 20

2

LIMITATIONS

LIMITATIONS ON ECAM

APPR & LDG

FLAPS SLOW
- **If** HYD Y SYS PRESS LO **alert**

  SLATS SLOW
- **If the L/G is not extended:**

  L/G GRVTY EXTN ONLY

  LANDING DIST AFFECTED

L12

DEFERRED PROC

FOR LANDING

> L/G GRVTY EXTN

FOR L/G GRVTY EXTN : MAX SPEED 220 KT

L/G LEVER... UP

L/G GRVTY (EXTN MAX 90 S)... DOWN

- **WHEN L/G LOCKED DOWN OR AFTER 90 s :**

  L/G LEVER... DOWN

  Note: *After a L/G gravity extension, a maintenance action is required to reset the LGERS (Refer to DSC-32-10-10-20 General).*

STATUS

INOP SYS

ALL PHASES	APPR & LDG
PART SPLRs	FLAPS SYS 1 (2)
L/G RETRACTION	SLATS SYS 2 (If Y SYS PRESS LO)
HYD G(Y) SYS	N/W STEER (If Y SYS PRESS LO)
MOST SPLRs (If 4 pairs of spoilers or more are inoperative)	BTV
	PART NORM BRK
	G(Y) BRK ACCU REINFLATE

Continued on the following page

HYD G(Y) SYS PRESS LO (Cont'd)

LDG DIST AFFECTED

INFO

ON ACCU : BRK AS RQRD WITHOUT RELEASING
LAND 3 SINGLE ONLY

- **If** HYD G SYS PRESS LO **alert:**
  AT LDG IF ACCU PRESS BELOW 1 600 PSI : A-SKID LOST ON AFT BRK
- **If** HYD Y SYS PRESS LO **alert:**
  AT LDG IF ACCU PRESS BELOW 1 600 PSI : A-SKID LOST ON FWD BRK
  BKUP STEER AVAIL BELOW 30 KT & A/BRK OFF
  TO VACATE CONTAM RWY : USE TOWING

HYD G(Y) SYS PRESS LO

Applicable to: ET-AWP, ET-AYA, ET-AYB

Ident.: PRO-ABN-HYD-2910W020-00012183.0002001 / 07 NOV 19

ANNUNCIATIONS

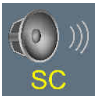
Triggering Conditions:

L2 The pressure of the green (yellow) hydraulic system is below 2 900 PSI.

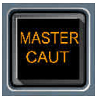
The HYD G(Y) SYS PRESS LO alert is triggered after one of the following ECAM alerts:
- HYD G(Y) RSVR LEVEL LO, *Refer to procedure*
- HYD G(Y) RSVR PRESS LO, *Refer to procedure*
- HYD G(Y) RSVR OVHT, *Refer to procedure*
- HYD G(Y) RSVR TEMP HI, *Refer to procedure*.

Indications:

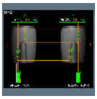
Audio



Master Light

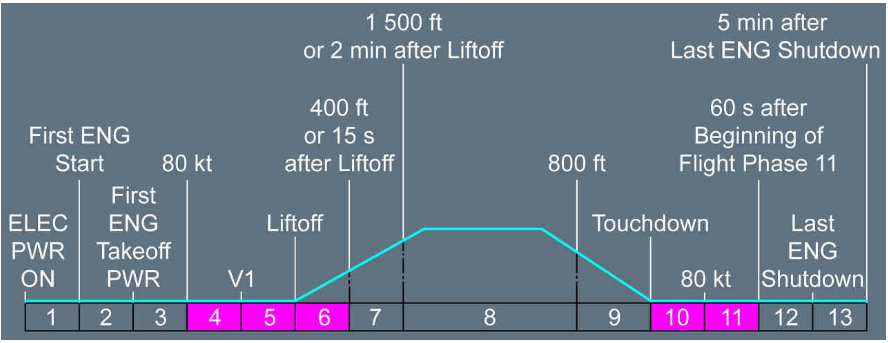

MASTER
CAUT

SD page



HYD SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
V1
Touchdown
80 kt
Last
ENG
Shutdown
1
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Continued on the following page

HYD G(Y) SYS PRESS LO (Cont'd)

Ident.: PRO-ABN-HYD-2910W020-00012153.0001001 / 07 JUL 20

3

L2 *Note:*

1. *On the WHEEL SD page, a time indication for the loss of the A-SKID is displayed. This time indication may be erroneous (underestimated) during initial climb up to the first hour of cruise in the case of hydraulic failure. Disregard "TIME TO A-SKID LOSS INFO" during initial climb and the first hour of cruise.*
2. *After landing gear extension, NORM indication may be displayed in the box on the WHEEL SD page. Disregard NORM indication on the WHEEL SD page if the alert is triggered after landing gear extension.*

In the case of a green (yellow) hydraulic system failure:

- The flight controls are actuated by the remaining hydraulic system, or by the Electrical-Hydrostatic Actuators (EHA) and the Electrical Backup Hydraulic Actuators (EBHA)
- The flaps operate at half-speed.
- The slats operate at half-speed if the yellow hydraulic system is failed.
- The Nose Wheel Steering (NWS) is lost if the yellow hydraulic system is failed.
- The BTV function is lost but the autobrake function is still available.
- The display of the Runway Overrun Warning / Runway Overrun Protection (ROW/ROP) bars is lost but the warnings (PFD and audio) remain available.
- The normal braking is partially lost, but the affected brakes are reconfigured in alternate braking mode.
- The antiskid is available including brakes that are reconfigured in alternate mode.
- If the failure of the green (yellow) hydraulic system occurs before landing gear retraction:
  - When commanded, the Main Landing Gear (MLG) retracts, if the yellow hydraulic system is failed
  - When commanded, the Nose Landing Gear (NLG) retracts, if the green hydraulic system is failed.
- Landing gear extension is performed by gravity.

Continued on the following page

HYD G(Y) SYS PRESS LO (Cont'd)

Ident.: PRO-ABN-HYD-2910W020-00012155.0012001 / 03 JAN 19

- **On ground and** HYD Y SYS PRESS LO **alert :**
  - **During taxi-out:**

    BKUP STEER INHIBITED
    TOWING...CONSIDER

L2 *Loss of the Y HYD system leads to the loss of nose wheel steering function. Towing is required during taxi out.*

L1
  - **During taxi-in:**

    BKUP STEER AVAIL BELOW 30KT & A/BRK OFF

    TO VACATE CONTAM RWY : USE TOWING

- **In flight:**

  FLAPS SLOW

L2 *Due to the failure of the green hydraulic system, only the remaining hydraulic system is available to move the flaps. As a result, the flaps operate at half-speed.*

L1 L/G GRVTY EXTN ONLY
AUTO BRK...CONSIDER

  - **If** HYD Y SYS PRESS LO **alert**

    SLATS/FLAPS SLOW

L2 *Due to the failure of the yellow hydraulic system, only the remaining hydraulic system is available to move the flaps. As a result, the flaps operate at half-speed. Due to the failure of the yellow hydraulic system, only the electric motor is available to move the slats. As a result, the slats operate at half-speed.*

L1 TO VACATE RWY : CONSIDER TOWING

LDG DIST AFFECTED

L2 *Landing distance is increased due to the loss of 3 pairs of ground spoilers.*

L12

ASSOCIATED PROCEDURES

F/CTL SPLRS PARTLY EXTENDED

This alert is displayed only after the loss of 3 pairs of spoilers and the position of those spoilers affects the fuel consumption. It may be displayed immediately or some time after

Continued on the following page

HYD G(Y) SYS PRESS LO (Cont'd)

the failure once the drift (if any) is established (Refer to PRO-ABN-F_CTL F/CTL SPLRs PARTLY EXTENDED).

L1

SECONDARY FAILURES

*F/CTL

*WHEEL

Continued on the following page

HYD G(Y) SYS PRESS LO (Cont'd)

Ident.: PRO-ABN-HYD-2910W020-00012156.0007001 / 03 JUL 20

4

LIMITATIONS

LIMITATIONS ON ECAM

APPR & LDG

FLAPS SLOW
- **If** HYD Y SYS PRESS LO **alert**

  SLATS SLOW
- **If the L/G is not extended:**

  L/G GRVTY EXTN ONLY

LANDING DIST AFFECTED

L12

DEFERRED PROC

FOR LANDING

> L/G GRVTY EXTN

FOR L/G GRVTY EXTN : MAX SPEED 220 KT

L/G LEVER.......................................UP

L/G GRVTY (EXTN MAX 90 S)......................DOWN

- **WHEN L/G LOCKED DOWN OR AFTER 90 s :**

  L/G LEVER.......................................DOWN

  Note: After a L/G gravity extension, a maintenance action is required to reset the LGERS (Refer to DSC-32-10-10-20 General).

STATUS

INOP SYS

ALL PHASES

PART SPLRs
L/G RETRACTION
HYD G(Y) SYS
MOST SPLRs (If 4 pairs of spoilers or more are inoperative)

APPR & LDG

FLAPS SYS 1 (2)
SLATS SYS 2 (If Y SYS PRESS LO)
N/W STEER (If Y SYS PRESS LO)
BTV
PART NORM BRK
G(Y) BRK ACCU REINFLATE

Continued on the following page

HYD G(Y) SYS PRESS LO (Cont'd)

LDG DIST AFFECTED

INFO

ON ACCU : BRK AS RQRD WITHOUT RELEASING
LAND 3 SINGLE ONLY

- **If** HYD G SYS PRESS LO **alert:**
  AT LDG IF ACCU PRESS BELOW 1 600 PSI : A-SKID LOST ON AFT BRK
- **If** HYD Y SYS PRESS LO **alert:**
  AT LDG IF ACCU PRESS BELOW 1 600 PSI : A-SKID LOST ON FWD BRK
  BKUP STEER AVAIL BELOW 30 KT & A/BRK OFF
  TO VACATE CONTAM RWY : USE TOWING

HYD G(Y) SYS TEMP HI

Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO

Ident.: PRO-ABN-HYD-2910W080-00012193.0001001 / 07 JUL 16

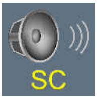
ANNUNCIATIONS

Triggering Conditions:

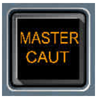
L2 The temperature in the hydraulic fluid in the reservoir or in the EDP is high.
For more information about temperature thresholds and the associated indications on the HYD SD page, *Refer to DSC-29-30 Excessive Temperature in the Hydraulic System*.

Indications:

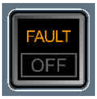
Audio



Master Light

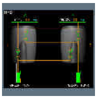

MASTER
CAUT

Local Light



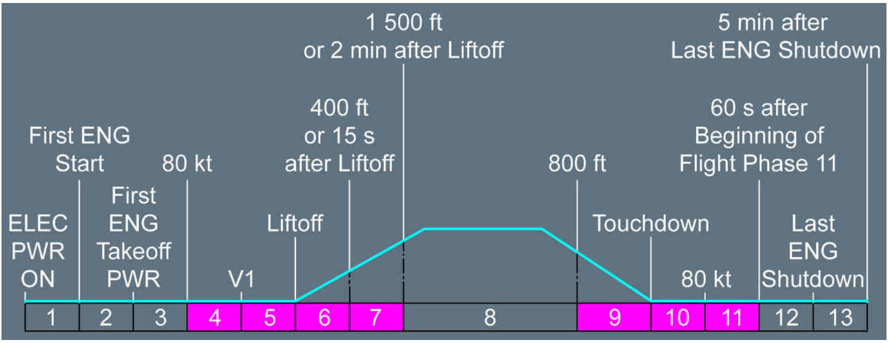
GREEN(YELLOW) PMP pb-sw

SD page



HYD SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

HYD G(Y) SYS TEMP HI (Cont'd)

Ident.: PRO-ABN-HYD-2910W080-00012195.0001001 / 03 JUL 14

ENG 1 G(Y) PMP....................OFF
ENG 2 G(Y) PMP....................OFF

- **If on ground, and all engines are off:**
  G(Y) ELEC PMP....................OFF

L12

ASSOCIATED PROCEDURES

HYD G(Y) SYS PRESS LO

This alert is displayed only when the green or yellow hydraulic system is lost (Refer to PRO-ABN-HYD HYD G(Y) SYS PRESS LO).

Ident.: PRO-ABN-HYD-2910W080-00012196.0003001 / 26 OCT 17

DEFERRED PROC

APPR & LDG

> WHEN G(Y) SYS TEMP HI OUT

ENG 1 G(Y) PMP....................ON
ENG 2 G(Y) PMP....................ON

Note: The procedure line associated with an EDP that was automatically depressurized has no effect.

HYD G(Y) SYS OVHT

Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO

Ident.: PRO-ABN-HYD-2910W100-00012304.0001001 / 07 JUL 16

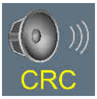
ANNUNCIATIONS

Triggering Conditions:

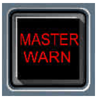
L2 The temperature in the hydraulic fluid in the reservoir or in the EDP is overheated.
For more information about temperature thresholds and the associated indications on the HYD SD page, *Refer to DSC-29-30 Excessive Temperature in the Hydraulic System*.

Indications:

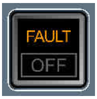
Audio



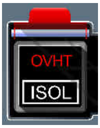
Master Light


MASTER
WARN

Local Light

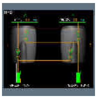


Both GREEN (both YELLOW) PMP pb-sw



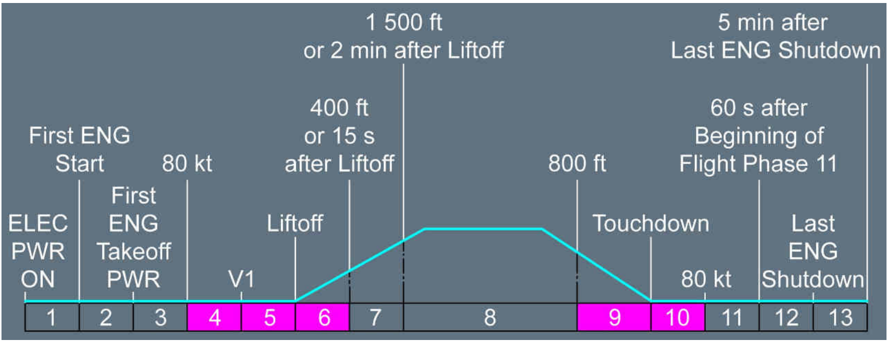
Both GREEN (both YELLOW) SUPPLY pb-sw

SD page



HYD SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

HYD G(Y) SYS OVHT (Cont'd)

Ident.: PRO-ABN-HYD-2910W100-00012306.0001001 / 03 JUL 14

ENG 1 G(Y) PMP....................OFF
ENG 2 G(Y) PMP....................OFF
ENG 1 G(Y) SUPPLY....................ISOL
ENG 2 G(Y) SUPPLY....................ISOL

- **If on ground, and all engines are off:**
  G(Y) ELEC PMP....................OFF

L12

ASSOCIATED PROCEDURES

HYD G(Y) SYS PRESS LO

This alert is displayed only when the green or yellow hydraulic system is lost (Refer to PRO-ABN-HYD HYD G(Y) SYS PRESS LO).

HYD G+Y SYS PRESS LO

Applicable to: ALL

Ident.: PRO-ABN-HYD-2910W010-00012299.0001001 / 01 JUL 14

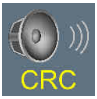
ANNUNCIATIONS

Triggering Conditions:

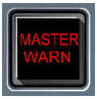
L2 The pressure of both green and yellow hydraulic systems is below 2 900 PSI.

Indications:

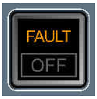
Audio



Master Light

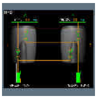

MASTER
WARN

Local Light



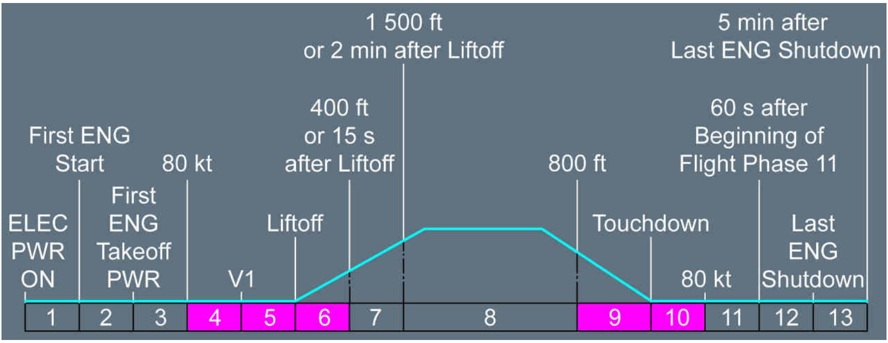
All engine driven pump pb-sw

SD page



HYD SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Continued on the following page

HYD G+Y SYS PRESS LO (Cont'd)

Ident.: PRO-ABN-HYD-2910W010-00012300.0001001 / 28 APR 17

L2 In the case of green and yellow hydraulic systems failure:
- The flight controls revert to alternate law.
  The autopilot remains available.
  The flight control surfaces are actuated by the Electrical-Hydrostatic Actuators (EHA) and the Electrical Backup Hydraulic Actuators (EBHA).
- The inner flaps are inoperative and the outer flaps are slow.
  The slats are slow.
  The Primary Flight Display (PFD) displays the Maximum Flap Extended Speed (VFE) and the Lowest Selectable Speed (VLS) that corresponds to the current abnormal slats/flaps configuration.
- No autoland.
  If the configuration is set to CONF 3 or CONF FULL before the failure, the autoland remains available.
- Landing gear extension is performed by gravity.
- Normal braking is lost.
- Nose Wheel Steering (NWS) is lost.
- Alternate braking with anti-skid is available.
- Brake To Vacate (BTV) function is lost, but autobrake (A/BRK) mode remains available.
  Runway end Overrun Warning / Runway end Overrun Protection (ROW/ROP) bars display are lost but warnings (PFD and audio) remain active.

Continued on the following page

HYD G+Y SYS PRESS LO (Cont'd)

Ident.: PRO-ABN-HYD-2910W010-00012301.0003001 / 03 JAN 19

LAND ASAP

ALL ENG PMPs .... OFF

- **On ground**

  TOWING .... CONSIDER

  NO L/G RETRACTION

- **In flight:**

  - **If aircraft configuration is not clean:**

    FLAP RETRACTION INHIBITED

  FUEL CONSUMPT INCRSD

L2 *The fuel consumption increases due to the loss of both outer ailerons.*
If the position of the failed spoilers leads also to an increase of the fuel consumption, the F/CTL SPLRS PARTLY EXTENDED alert is displayed on the WD. Consider an immediate fuel consumption increase for these spoilers.

L1 FOR BETTER RANGE: REDUCE CRZ MACH/SPD

FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

The FMS predictions are not correct.

SLATS SLOW

L2 *Due to the failure of the yellow hydraulic system, only the electric motor is available to move the slats. As a result, the slats operate at half-speed.*

L1 OUTR FLAPS SLOW

L3 *Due to the failure of the yellow hydraulic system, only the electric motor of the Active Differential Gear Box (ADGB) is available to move the outer flaps.*

L2 *As a result, the outer flaps operate at rate up to seven times slower than in normal operations.*

L1
  - **If L/G is extended:**

    NO L/G RETRACTION

  L/G GRVTY EXTN ONLY

  FOR LDG: FLAP LVR 3

L2 *Note: The inner flaps are lost but the outer flaps can still be deflected by the electrical motor of the Active Differential Gear Box (ADGB).*

Continued on the following page

HYD G+Y SYS PRESS LO (Cont'd)

L1 AUTO BRK..CONSIDER

FOR GA: KEEP S/F CONF

TO VACATE RWY : CONSIDER TOWING

LDG PERF AFFECTED

L2 *Landing performance is degraded due to:*

- *The loss of 6 pairs of ground spoilers and 2 ailerons (used as ground spoilers)*
- *The increased approach speed, because of the abnormal configuration, and to provide adequate margin against tail strike).*

Note: All pitch control surfaces are available and the approach speed is increased. Therefore, the pitch authority of the aircraft during approach is greater than usual.

L12

ASSOCIATED PROCEDURES

F/CTL ALTN LAW (PROT LOST)

The flight control laws revert to alternate. AP, FD and A/THR remain available.
Refer to procedure.

F/CTL SPLRS PARTLY EXTENDED

This alert is displayed after the loss of 3 pairs of spoilers and the position of those spoilers affects the fuel consumption. It may be displayed immediately or some time after the failure once the drift (if any) is established Refer to procedure.

L1

SECONDARY FAILURES

*F/CTL
*WHEEL

Continued on the following page

HYD G+Y SYS PRESS LO (Cont'd)

Ident.: PRO-ABN-HYD-2910W010-00012302.0009001 / 03 JAN 19

L12

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES	APPR & LDG
MAX SPEED : 310 KT ● **If the aircraft configuration is not clean:** FLAP RETRACTN INHIBD ● **If the L/G is extended:** NO L/G RETRACTION FUEL CONSUMPT INCRSD *The fuel consumption increases due to the loss of both outer ailerons. If the position of the failed spoilers leads also to an increase of the fuel consumption, the F/CTL SPLRS PARTLY EXTENDED alert is displayed on the WD. Consider an immediate fuel consumption increase for these spoilers.*	SLATS SLOW OUTR FLAPS SLOW L/G GRVTY EXTN ONLY LDG PERF AFFECTED FOR LDG : FLAP LVR 3 FOR GA: KEEP S/F CONF

LIMITATIONS ON PFD

ALL PHASES	
MAX SPEED : 310 KT	

L12

DEFERRED PROC

ALL PHASES

> FOR APPROACH (HYD G+Y SYS PRESS LO)

USE SELECTED SPEED

Continued on the following page

HYD G+Y SYS PRESS LO (Cont'd)

To prepare the aircraft for landing, the managed speed is not adapted in the case of abnormal slats/flaps configuration. Therefore, the flight crew must use the selected speed to decelerate the aircraft to the approach speed, as follows:

- *Decelerate the aircraft toward the VFE NEXT-5 kt. In the case of turbulence, to avoid VFE exceedance, the flight crew may decide to decelerate to a lower speed but above the VLS.*
- *When the aircraft reaches the selected speed, the FLAPS lever can be set one step down.*

The above steps are repeated until the FLAPS lever is set to 3.
When the landing configuration is established, aircraft can be decelerated to the computed approach speed.

Note: The VFE NEXT displayed on the PFD takes into account the abnormal slats/flaps configuration.

FOR VFE: USE PFD

The ECAM and the PFD speed scale display the VFE that is associated with the current abnormal configuration. For more information, Refer to DSC-27-20-20 Configurations.

AUTO BRK....................CONSIDER

> L/G GRVTY EXTN

FOR L/G GRVTY EXTN : MAX SPEED 220 KT
L/G LEVER....................UP
L/G GRVTY (EXTN MAX 90 S)....................DOWN

- **WHEN L/G LOCKED DOWN OR AFTER 90 s :**
  L/G LEVER....................DOWN

  Note: After a L/G gravity extension, a maintenance action is required to reset the LGERS (Refer to DSC-32-10-10-20 General).

L12

STATUS

INOP SYS

ALL PHASES	APP & LDG
F/CTL PROT L OUTR AILERON	INR FLAPS SLAT SYS 2

Continued on the following page

HYD G+Y SYS PRESS LO (Cont'd)

R OUTR AILERON

Due to the loss of the green and yellow hydraulic systems, the outer ailerons move upward to their balanced position.

MOST SPLRs
L/G RETRACTION (If the L/G is extended)
G HYD SYS
Y HYD SYS

BTV
NORM BRK
G BRK ACCU REINFLATE
Y BRK ACCU REINFLATE
N/W+BKUP STEER
AUTOLAND (If autoland is inoperative)

INFO

ALTN LAW : PROT LOST
FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

The fuel consumption is increased. The FUEL PENALTY on the FMS DATA/STATUS page may be updated.
For fuel penalty determination, Refer to PER-IFT-FP Fuel Penalty Tables - Fuel Consumption Increased.

FOR BETTER RANGE: REDUCE CRZ MACH/SPD
ON ACCU: BRK AS RQRD WITHOUT RELEASING

- **On AFT wheels if anti-skid is available:**
  AT LDG IF ACCU PRESS BELOW 1 600 PSI : A-SKID LOST ON AFT BRK
- **On FWD wheels if anti-skid is available:**
  AT LDG IF ACCU PRESS BELOW 1 600 PSI : A-SKID LOST ON FWD BRK

TO VACATE RWY : CONSIDER TOWING

- **If autoland is not available:**
  APPR 1 ONLY

MEMOPAGE

MEMO ON ECAM

LAND ASAP

Intentionally left blank

IMA MODULE FAULT

Applicable to: ALL

Ident.: PRO-ABN-IMA-4200W100-00016064.0001001 / 01 JUL 14

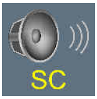
ANNUNCIATIONS

Triggering Conditions:

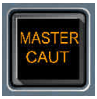
L2 At least 2 alerts are triggered due to an IMA module failure.

Indications:

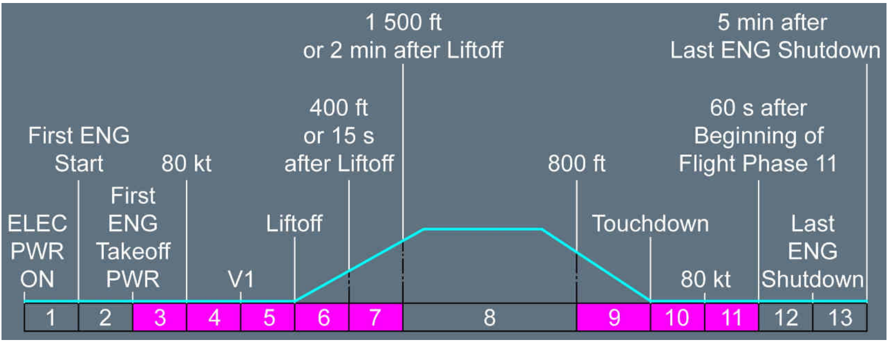
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-IMA-4200W100-00016066.0001001 / 01 JUL 14

Crew awareness.

L2 The IMA MODULE FAULT alert is triggered prior to all other ECAM alerts of the aircraft systems concerned by the multiple IMA module failures, to clearly inform the flight crew of the root cause of these alerts.

Intentionally left blank

[ABN] L/G LDG WITH ABNORM MAIN L/G

Applicable to: ALL

Ident.: PRO-ABN-LG-9032W100-00014928.0001001 / 06 NOV 14

ANNUNCIATIONS

Triggering Conditions:

L2 To display this procedure, the flight crew must press the ABN pb on the ECP, and then select the L/G LDG WITH ABNORM MAIN L/G in the L/G section.

L3 The flight crew must apply this procedure if the MLG is not downlocked for landing.

Indications:

L2

SD page

WHEEL SD Page

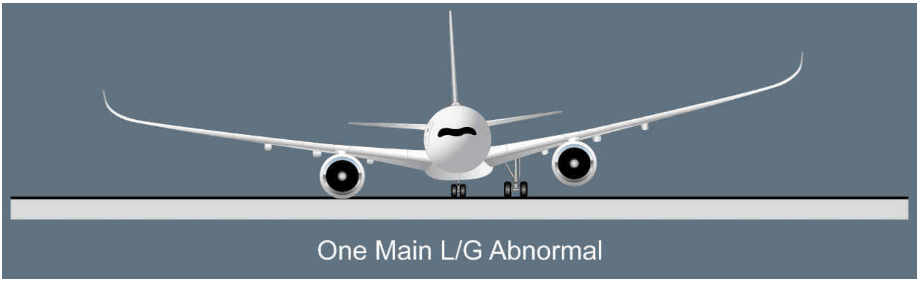
Continued on the following page

[ABN] L/G LDG WITH ABNORM MAIN L/G **(Cont'd)**

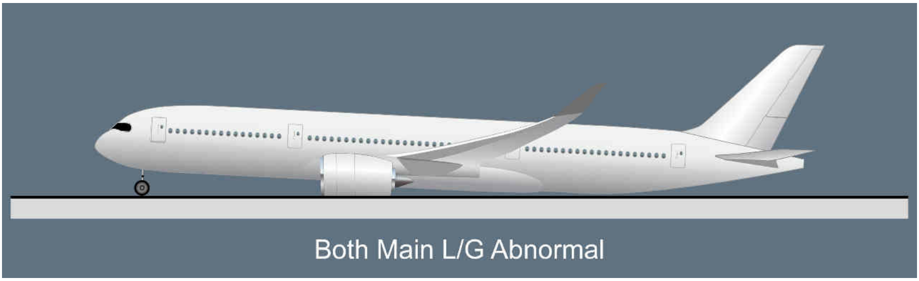
Ident.: PRO-ABN-LG-9032W100-00014929.0001001 / 08 JUL 19

L2 *Note:* *The flight crew should consider requesting that foam be spread on the runway.*

One Main L/G Abnormal



Both Main L/G Abnormal



Continued on the following page

[ABN] L/G LDG WITH ABNORM MAIN L/G **(Cont'd)**

Ident.: PRO-ABN-LG-9032W100-00014930.0007001 / 26 JUL 17

CABIN CREW..ADVISE

L2 *Inform the cabin crew of the nature of the emergency, the actions planned and the remaining time to prepare the cabin for landing.*

L1 ATC..NOTIFY

L2 *Inform ATC of the nature of the emergency, and the actions planned.*

L1 LDG LIMITED TO MAX LDG WEIGHT

- **JETTISON ⩤ RQRD ?**
  - **YES**

    FOR JETTISON : DO NOT USE SPD BRK

    L2 *The use of the speedbrakes is not permitted because this would create a fuel backflow on the spoilers during jettison operation.*

    L1 JETTISON ARM..ON

    L2 *Consider jettison to a safe minimum in order to reduce the approach speed.*

    L1 JETTISON ACTIVE..ON

OXYGEN CREW SUPPLY..OFF

L2 *Reduces the risk of fire when the aircraft lands.*

L1 DISREGARD NORM APPR & LDG C/Ls
SEAT BELTS..ON
CABIN & CKPT (LOOSE EQPT)..SECURE

- ■ **If left(right) L/G affected:**

  AVOID XWIND FROM LEFT(RIGHT) SIDE

  L2 *Landing has been demonstrated with crosswind up to 20 kt from the right(left) side. This value was not found limiting.*

L1
- ■ **If both L/G affected:**

  MINIMIZE XWIND FOR LANDING

  L2 *Landing has been demonstrated with crosswind up to 10 kt from either side. This value was not found limiting.*

  L1
  - **If GW < 155 000 kg (342 000 lb):**

    FOR LDG : FLAP LVR 3

  FOR VAPP : USE VLS

Continued on the following page

[ABN] L/G LDG WITH ABNORM MAIN L/G (Cont'd)

LDG DIST AFFECTED

- **FOR APPROACH:**

  ECAM STS.......................CHECK
  BARO REF.......................SET
  MINIMUM.......................SET
  [MFD SURV] GPWS.......................OFF

  AUTO BRK : DO NOT USE

L2 *Manual braking enables better pitch and yaw control.*

L1 L/G GRVTY.......................CHECK DOWN
  L/G LEVER.......................CHECK DOWN

  - **If jettison ◁ is in progress:**

    JETTISON ACTIVE.......................OFF
    JETTISON ARM.......................OFF

  CABIN REPORT.......................OBTAIN
  EMER EXIT LT.......................ON
  COMMERCIAL 1+2.......................OFF
  A/THR.......................AS RQRD

  GND SPLRs : DO NOT ARM
  FLAPS.......................LDG
  APU MASTER SW.......................OFF

- **AT 500 FT AGL:**

  BRACE FOR IMPACT.......................ORDER

- **If both L/G affected:**

  - **BEFORE TOUCHDOWN:**

    MIN PITCH ATTITUDE AT TOUCHDOWN : 5 °

    BEFORE IMPACT : ALL ENG MASTERS OFF

- **AFTER TOUCHDOWN:**

  REVERSERS : DO NOT USE

  - **If left(right) L/G affected:**

    BEFORE NACELLE IMPACT: ENG 1(2) MASTER OFF

    L(R) WING : KEEP UP

Continued on the following page

[ABN] L/G LDG WITH ABNORM MAIN L/G **(Cont'd)**

- **WHEN AIRCRAFT STOPPED:**
  - **If left(right) L/G affected:**

L2 When the aircraft is stopped, shut down the remaining running engine.

L1 ENG 2(1) MASTER.....OFF

PARK BRK.....ON
ALL FIRE P/Bs (ENGs & APU).....PUSH

L2 *Shuts off all hydraulic supply.*

L1 ALL AGENTS (ENGs & APU).....AS RQRD

- **EVAC RQRD ?**
  - ■ **YES**

EVAC (PA).....ANNOUNCE

L2 *Make a short and precise announcement to order the emergency evacuation.*

L1 EVAC COMMAND ⊲✻ .....ON
ALL 4 BATS.....OFF

L2 *Only PA announcement and CAB communication are available, via the handset.*

L1
  - ■ **NO**

CABIN CREW & PAX (PA).....ADVISE

Continued on the following page

[ABN] L/G LDG WITH ABNORM MAIN L/G **(Cont'd)**

Ident.: PRO-ABN-LG-9032W100-00014931.0002001 / 03 JAN 19

LIMITATIONS

LIMITATIONS ON ECAM

APPR & LDG

GND SPLRs:DO NOT ARM
MAX LDG WEIGHT
LDG DIST AFFECTED

- **If both L/G are affected and GW < 155 000 kg (342 000 lb)**
  FOR LDG : FLAP LVR 3

LIMITATIONS ON PFD

ALL PHASES

MAX LDG WEIGHT

STATUS

INOP SYS

APPR & LDG

BTV

INFO

- **If both L/G are affected**
  MINIMIZE XWIND FOR LANDING

[ABN] L/G LDG WITH ABNORM NOSE L/G

Applicable to: ALL

Ident.: PRO-ABN-LG-9032W110-00014927.0001001 / 06 NOV 14

ANNUNCIATIONS

Triggering Conditions:

L2 To display this procedure, the flight crew must press the ABN pb on the ECP, and then select the LDG WITH ABNORM NOSE L/G in the L/G section.

L3 The flight crew must apply this procedure if the nose landing gear is not downlocked for landing.

Indications:

L2

SD page

WHEEL SD Page

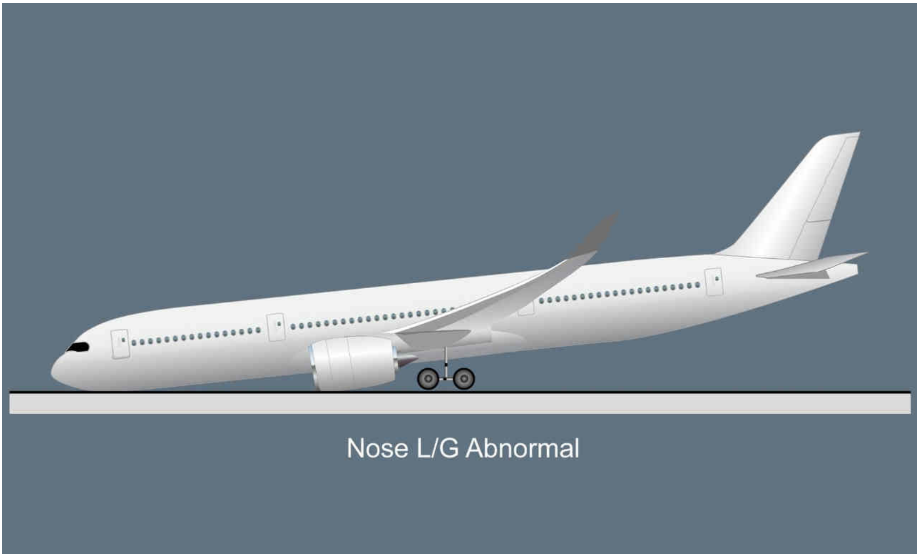
Continued on the following page

[ABN] L/G LDG WITH ABNORM NOSE L/G (Cont'd)

Ident.: PRO-ABN-LG-9032W110-00005633.0001001 / 06 NOV 14

L2 *Note: The flight crew should consider requesting that foam be spread on the runway.*

Nose L/G Abnormal



Continued on the following page

[ABN] L/G LDG WITH ABNORM NOSE L/G **(Cont'd)**

Ident.: PRO-ABN-LG-9032W110-00008788.0007001 / 03 JAN 19

CABIN CREW.....ADVISE

L2 *Inform the cabin crew of the nature of the emergency, the actions planned and the remaining time to prepare the cabin for landing.*

L1 ATC.....NOTIFY

L2 *Inform ATC of the nature of the emergency, and the actions planned.*

L1 LDG LIMITED TO MAX LDG WEIGHT

- **JETTISON ⩤ RQRD ?**
  - **YES**

    FOR JETTISON : DO NOT USE SPD BRK

    L2 *The use of speedbrakes is not permitted because it would create a backflow on the spoilers during jettison operation.*

    L1 JETTISON ARM.....ON

    L2 *Consider jettison to a safe minimum in order to reduce the approach speed.*

    L1 JETTISON ACTIVE.....ON

CG AFT SHIFT (12 PAX =2% CG).....CONSIDER

L2 *Aim for aft CG in order to delay nose impact and minimize structural damages.*
The CG shifts 2 % aft when 12 passengers move from forward to aft of the wing root.
Refer to the weight and balance module for accurate calculation.

L1 DISREGARD NORM APPR & LDG C/Ls
SEAT BELTS.....ON
CABIN & CKPT (LOOSE EQPT).....SECURE
LDG DIST AFFECTED

- **FOR APPROACH**

  ECAM STS.....CHECK
  BARO REF.....SET
  MINIMUM.....SET
  [MFD SURV] GPWS.....OFF

  AUTO BRK : DO NOT USE

  L2 *Manual braking enables better pitch and yaw control.*

  L1 L/G GRVTY.....CHECK DOWN
  L/G LEVER.....CHECK DOWN

Continued on the following page

[ABN] L/G LDG WITH ABNORM NOSE L/G **(Cont'd)**

- **If jettison ⋞ is progress:**
  JETTISON ACTIVE........................OFF
  JETTISON ARM........................OFF

CABIN REPORT........................OBTAIN
EMER EXIT LT........................ON
COMMERCIAL 1+2........................OFF
A/THR........................AS RQRD
GND SPLRS........................ARM
FLAPS........................LDG

- **AT 500 FT AGL**

BRACE FOR IMPACT........................ORDER

- **AFTER TOUCHDOWN**

L2 After touchdown:

- Use the elevators to keep the nose off the runway
- Adapt braking to the efficiency of the elevators (max braking pressure: 1 000 PSI)
- Lower the nose on the runway before elevator control is lost.

When the nose is on the runway:

- Resume braking as necessary
- Maintain the stick in the full back position to minimize structural damage.

L1 REVERSERS : DO NOT USE

NOSE : KEEP UP

BEFORE NOSE IMPACT : MAX BRK 1000 PSI

BEFORE NOSE IMPACT: ALL ENG MASTERS OFF

- **WHEN AIRCRAFT STOPPED**

PARK BRK........................ON
ALL FIRE P/Bs (ENGs & APU)........................PUSH

L2 *Shuts off all hydraulic supply.*

L1 ALL AGENTS (ENGs & APU)........................AS RQRD

- **EVAC RQRD ?**
  - ■ **YES**

    EVAC (PA)........................ANNOUNCE

L2 *Make a short and precise announcement to order the emergency evacuation.*

Continued on the following page

[ABN] L/G LDG WITH ABNORM NOSE L/G **(Cont'd)**

L1 EVAC COMMAND ⊲ ....ON
ALL 4 BATS...OFF

L2 *Only PA announcement and CAB communication are available, via the handset.*

L1 ■ **NO**
CABIN CREW & PAX (PA)...ADVISE

Ident.: PRO-ABN-LG-9032W110-00008789.0001001 / 07 NOV 16

LIMITATIONS

LIMITATIONS ON ECAM

	APPR & LDG
	MAX LDG WEIGHT LDG DIST AFFECTED

LIMITATIONS ON PFD

ALL PHASES	
MAX LDG WEIGHT	

STATUS

INOP SYS

	APPR & LDG
	BTV

L/G CTL 1+2 FAULT

Applicable to: ALL

Ident.: PRO-ABN-LG-3231W160-00014505.0001001 / 02 JUL 14

ANNUNCIATIONS

Triggering Conditions:

L2 Both L/G CTL systems are failed, and can no longer control the LGERS.

Indications:

Audio

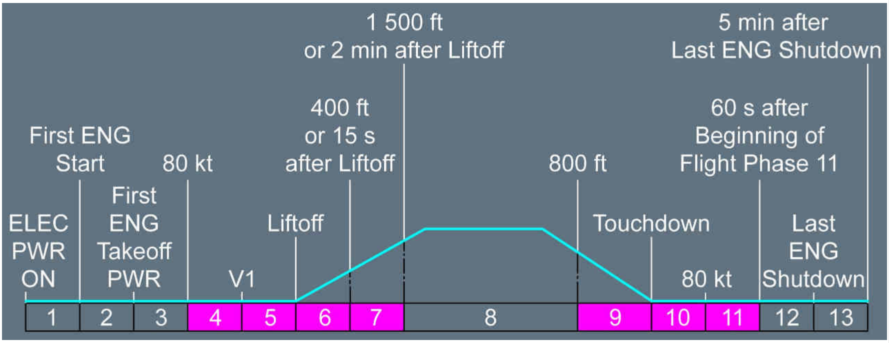
Master Light

MASTER
CAUT

SD page

WHEEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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13

Ident.: PRO-ABN-LG-3231W160-00014506.0001001 / 04 SEP 14

Note: *If the failure is only due to an IMA module failure, the ECAM displays the DUE TO IMA MODULE FAULT subtitle.*

L2 These IMA component failures may cause the loss of the landing gear indications on both WHEEL SD page and PFD. However, these IMA component failures do not affect the L/G gravity extension capability and the L/G downlocking mechanism.

Continued on the following page

L/G CTL 1+2 FAULT (Cont'd)

Ident.: PRO-ABN-LG-3231W160-00014507.0001001 / 02 JUL 14

- **If all L/Gs are already locked down when the alert is activated:**
  NO L/G RETRACTION

Ident.: PRO-ABN-LG-3231W160-00014508.0003001 / 26 JUL 17

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES	APPR & LDG
● **If all L/Gs are already locked down when the alert is activated:** NO L/G RETRACTION	● **For L/G gravity extension:** L/G GRVTY EXTN ONLY

L12

DEFERRED PROC

FOR LANDING

> L/G GRVTY EXTN
FOR L/G GRVTY EXTN : MAX SPEED 220 KT
L/G LEVER.. UP
L/G GRVTY (EXTN MAX 90 S).. DOWN

- **WHEN L/G LOCKED DOWN OR AFTER 90 s :**
  L/G LEVER.. DOWN

  Note: *After a L/G gravity extension, a maintenance action is required to reset the LGERS (Refer to DSC-32-10-10-20 General).*

STATUS

INOP SYS

ALL PHASES	APPR & LDG
GPWS	L/G CTL 1+2

L/G DOORS NOT CLOSED

Applicable to: ALL

Ident.: PRO-ABN-LG-3231W050-00014481.0001001 / 02 JUL 14

ANNUNCIATIONS

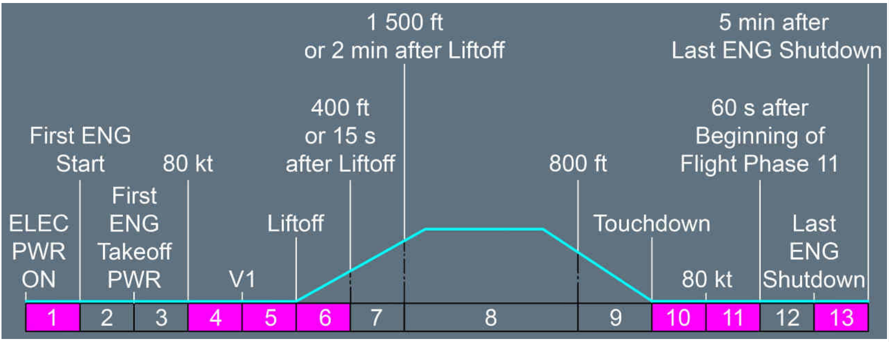
Triggering Conditions:

L2 One or more landing gear door remains open after a landing gear extension or retraction sequence.

Indications:

Audio	Master Light	Local Light	SD page
	MASTER CAUT	*Refer to DSC-32-10-20 Slats/Flaps Display* L/G DOORS indication on the Slat/Flap display.	 WHEEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Continued on the following page

L/G DOORS NOT CLOSED (Cont'd)

Ident.: PRO-ABN-LG-3231W050-00014483.0003001 / 03 JAN 19

- **In flight:**

  MAX SPEED : 250/.55

  - **If speed is above 250 kt or M .55:**

    SPEED...REDUCE BELOW 250/.55

  L/G...RECYCLE

L2 *To recycle, select the L/G lever DOWN(UP). Wait for the landing gear downlock(uplock). Then, select the L/G lever UP(DOWN) again.*
The active L/G CTL changes when the landing gear is recycled. Recycle one time only.

L1 FUEL CONSUMPT INCRSD

FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

The FMS predictions are not correct.

Continued on the following page

L/G DOORS NOT CLOSED (Cont'd)

Ident.: PRO-ABN-LG-3231W050-00014484.0001001 / 02 JUL 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

- **In flight:**
  MAX SPEED: 250/.55
  FUEL CONSUMPT INCRSD

LIMITATIONS ON PFD

ALL PHASES

- **In flight:**
  MAX SPEED: 250/.55

STATUS

INOP SYS

APPR & LDG

L/G DOORS

INFO

FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

The fuel consumption is increased. The FUEL PENALTY on the FMS DATA/STATUS page may be updated.
For fuel penalty determination, Refer to PER-IFT-FP Fuel Penalty Tables - Fuel Consumption Increased.

L/G GEAR NOT DOWN

Applicable to: ALL

Ident.: PRO-ABN-LG-3231W090-00014671.0001001 / 08 JUL 19

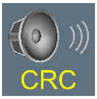
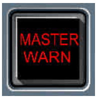
ANNUNCIATIONS

Triggering Conditions:

L2 This alert activates when all the following conditions occur:
- Both engines are not at take-off power (TOGA, FLEX or DERATED),
- One or more landing gears are not downlocked,
- Flaps are in CONF 3 or FULL,
- The radio height is below 750 ft.

When one of the above parameters is not available, the Flight Warning System uses the remaining parameters to activate the alert.

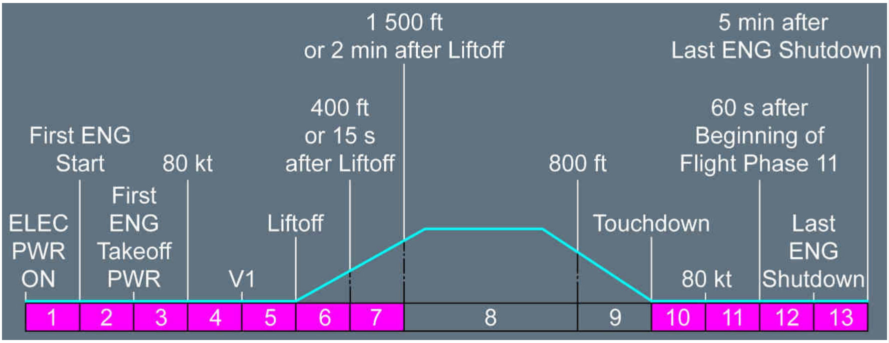
Indications:

Audio	Master Light	Local Light	SD page
		*Refer to DSC-32-10-20 L/G Lever* Red arrow light on the landing gear lever panel. *Refer to DSC-32-10-20 Slats/Flaps Display* **GEAR NOT DOWN** indication on the Slat/Flap display.	 WHEEL SD Page

Flight Phase Inhibition:

Continued on the following page

L/G GEAR NOT DOWN (Cont'd)


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-LG-3231W090-00014673.0001001 / 02 JUL 14

Crew awareness.

L/G GEAR NOT LOCKED DOWN

Applicable to: ALL

Ident.: PRO-ABN-LG-3231W080-00014675.0001001 / 02 JUL 14

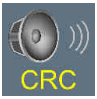
ANNUNCIATIONS

Triggering Conditions:

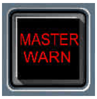
L2 The L/G lever is in the DOWN position, and one or more landing gears are not downlocked after approximately 50 s

Indications:

Audio



Master Light


MASTER
WARN

Local Light

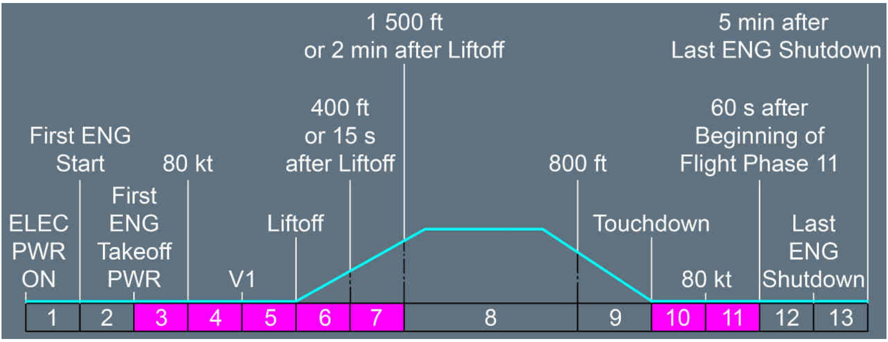
Refer to DSC-32-10-20 Slats/Flaps Display

Red landing gear indication on the Slat/Flap display.

SD page

WHEEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

L/G GEAR NOT LOCKED DOWN (Cont'd)

Ident.: PRO-ABN-LG-3231W080-00014677.0002001 / 07 JUL 16

L/G.. RECYCLE

L2 *To recycle, set the L/G lever to the UP position. Wait for the landing gear uplock. Then, set the L/G lever DOWN again.*
The active L/G CTL changes when the landing gear is recycled. Recycle one time only.

L1 ● **IF L/G STILL NOT DOWN AFTER 50 s**

FOR L/G GRVTY EXTN : MAX SPEED 220 KT
L/G LEVER.. UP
L/G GRVTY EXTN.. DOWN

● **WHEN L/G LOCKED DOWN OR AFTER 90 s**

L/G LEVER.. DOWN

L2 *Note:* *After a L/G gravity extension, a maintenance action is required on ground to reset the LGERS (Refer to DSC-32-10-10-20 General).*

L1 ■ **If the forward side stays of the MLG is not locked:**

L2 The purpose of this procedure line is to accelerate in order to try to lock the forward side stays of the MLG.

L1 SPEED.. INCREASE UP TO VLE

■ **If the aft side stays of the MLG is not locked:**

L2 The purpose of this procedure line is to decelerate in order to try to lock the aft side stays of the MLG.

L1 SPEED.. REDUCE TO VAPP CONF FULL

● **IF L/G STILL NOT LOCKED DOWN**

MAX SPEED : VLE
LDG WITH ABNORM L/G PROC.. APPLY

L2 *If the main landing gear cannot be downlocked, Refer to PRO-ABN-LG [ABN] L/G LDG WITH ABNORM MAIN L/G*
If the nose landing gear cannot be downlocked, Refer to PRO-ABN-LG [ABN] L/G LDG WITH ABNORM NOSE L/G

L/G GEAR NOT LOCKED UP

Applicable to: ALL

Ident.: PRO-ABN-LG-3231W060-00014485.0001001 / 02 JUL 14

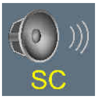
ANNUNCIATIONS

Triggering Conditions:

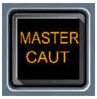
L2 The L/G lever is in the UP position, and one or more landing gears are not locked up after approximately 40 s.

Indications:

Audio



Master Light


MASTER
CAUT

Local Light

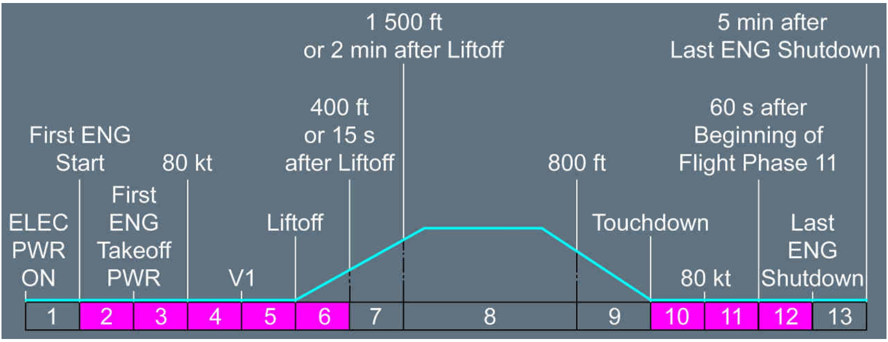
Refer to DSC-32-10-20 Slats/Flaps Display

Amber landing gear indication on the Slat/Flap display.

SD page

WHEEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Continued on the following page

L/G GEAR NOT LOCKED UP (Cont'd)

- ■ **If one hydraulic circuit is lost and speed is below 250 kt or M .55:**
  MAX SPEED : 250/.55
- ■ **If both hydraulic circuits are available:**
  - ● **If speed is above 250 kt or M .55:**
    SPEED....................REDUCE BELOW 250/.55

  L/G....................RECYCLE

L2 *To recycle, select the L/G lever DOWN. Wait for the landing gear downlock. Then, select the L/G lever UP again.*
The active L/G CTL changes when the landing gear is recycled. Recycle one time only.

L1
  - ● **RECYCLE SUCCESSFUL ?**
    - ● **NO**
      L/G LEVER....................DOWN
      MAX SPEED : 250/.55
- ● **If the L/G is not locked up and all L/G doors are closed:**
  AVOID EXCESS G LOAD

L2 *The landing gear may be resting on the landing gear door. Excessive G load may damage the doors.*

L1 FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

The FMS predictions are not correct.

Continued on the following page

L/G GEAR NOT LOCKED UP (Cont'd)

Ident.: PRO-ABN-LG-3231W060-00014488.0001001 / 02 JUL 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

- **If the L/G is downlocked and one or more L/G doors is not closed:**
  MAX SPEED : 250/.55
  FUEL CONSUMPT INCRSD
- **If the L/G is not locked up and all L/G doors are closed:**
  AVOID EXCESS G LOAD

LIMITATIONS ON PFD

ALL PHASES

- **If the L/G is downlocked and one or more L/G doors is not closed:**
  MAX SPEED : 250/.55
- **If the L/G is not locked up and all L/G doors are closed:**
  AVOID EXCESS G LOAD

STATUS

INOP SYS

ALL PHASES	APPR & LDG
L/G RETRACTION	L/G DOORS (If at least one landing gear door is open)

INFO

FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

The fuel consumption is increased. The FUEL PENALTY on the FMS DATA/STATUS page may be updated.

Continued on the following page

L/G GEAR NOT LOCKED UP (Cont'd)

For fuel penalty determination, Refer to PER-IFT-FP Fuel Penalty Tables - Fuel Consumption Increased.

L/G GEAR UPLOCK FAULT

Applicable to: ALL

Ident.: PRO-ABN-LG-3231W070-00014489.0001001 / 02 JUL 14

ANNUNCIATIONS

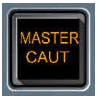
Triggering Conditions:

L2 A landing gear is extended, and one or more of its associated uplocks are in the closed position (the normal position is open).

Indications:

Audio

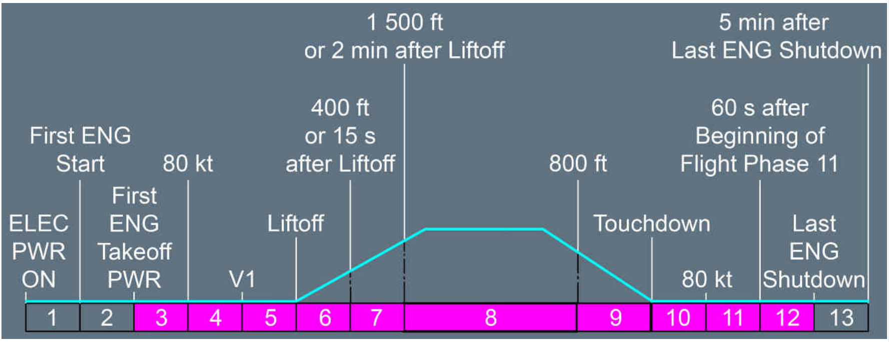
Master Light


MASTER
CAUT

SD page

WHEEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

L/G GEAR UPLOCK FAULT (Cont'd)

Ident.: PRO-ABN-LG-3231W070-00014491.0001001 / 02 JUL 14

Crew awareness.

- **If one or both engines are running and all L/G are already downlocked when the alert is activated:**

  NO L/G RETRACTION

  L2 *The landing gear cannot be retracted. If a landing gear retraction is attempted, the L/G RETRACTION FAULT alert will be generated, Refer to procedure.*

Ident.: PRO-ABN-LG-3231W070-00014492.0001001 / 02 JUL 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

- **If one or both engines are running and all L/G are already downlocked when the alert is activated:**
  NO L/G RETRACTION

L/G RETRACTION FAULT

Applicable to: ALL

Ident.: PRO-ABN-LG-3231W110-00014501.0001001 / 02 JUL 14

ANNUNCIATIONS

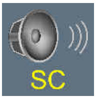
Triggering Conditions:

L2 The L/G lever is in the UP position, and one or more landing gears are not in the correct configuration for retraction.

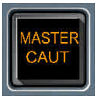
- Shock not fully extended, or
- Nose wheel not centered, or
- Main landing gears not tilted.

Indications:

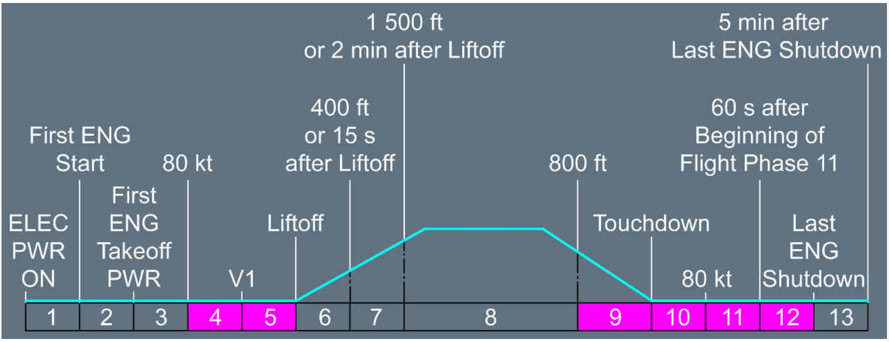
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Continued on the following page

L/G RETRACTION FAULT (Cont'd)

Ident.: PRO-ABN-LG-3231W110-00014503.0003001 / 03 JAN 19

MAX SPEED : 250/.55

- **If speed is above 250 kt or M .55:**
  SPEED..REDUCE BELOW 250/.55

L/G..RECYCLE

L2 *To recycle, select the L/G lever DOWN. Wait for the landing gear downlock. Then, select the L/G lever UP again.*

The active L/G CTL changes when the landing gear is recycled. Recycle one time only.

L1
- **IF RECYCLE NOT SUCCESSFUL OR AFTER 50 s:**
  L/G : KEEP DOWN

  MAX SPEED : 250/.55

  FUEL CONSUMPT INCRSD

  FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

  The FMS predictions are not correct.

Continued on the following page

L/G RETRACTION FAULT (Cont'd)

Ident.: PRO-ABN-LG-3231W110-00014504.0001001 / 02 JUL 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

MAX SPEED : 250/.55
FUEL CONSUMPT INCRSD

- **If recycle is not successful:**
  L/G : KEEP DOWN

LIMITATIONS ON PFD

ALL PHASES

MAX SPEED : 250/.55

STATUS

INOP SYS

ALL PHASES

L/G RETRACTION

INFO

FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

The fuel consumption is increased. The FUEL PENALTY on the FMS DATA/STATUS page may be updated.
For fuel penalty determination, Refer to PER-IFT-FP Fuel Penalty Tables - Fuel Consumption Increased.

[ABN] MISC BOMB ON BOARD

Applicable to: ALL

Ident.: PRO-ABN-MISC-9090W180-00015854.0001001 / 06 NOV 14

ANNUNCIATIONS

Triggering Conditions:

L2 To display this procedure, the flight crew must press the ABN pb on the ECP, and then select the BOMB ON BOARD procedure in the MISCELLANEOUS section.

L3 The flight crew must apply this procedure if a bomb is discovered.

Ident.: PRO-ABN-MISC-9090W180-00005189.0001001 / 07 NOV 16

L2 To avoid the activation of an altitude-sensitive bomb, the cabin altitude should not exceed the value at which the bomb is discovered.
To reduce the effects of the explosion, the aircraft should fly as long as possible with approximately 1 PSI differential pressure, to help the blast to go outwards. 1 PSI differential pressure corresponds to a 2 500 ft difference between the aircraft and the cabin altitude. The flight crew sets and maintains the differential pressure with the manual pressure control.
This procedure is considered to be applicable during climb or cruise. However, if flight conditions are different, the crew should adapt the procedure in accordance with the above-mentioned principles.
This procedure is related to flight crew actions. For cabin related procedure, *Refer to CCOM/14-90 Bomb On Board*.

Continued on the following page

[ABN] MISC BOMB ON BOARD (Cont'd)

Ident.: PRO-ABN-MISC-9090W180-00008670.0003001 / 03 JAN 19

CKPT / CABIN COM........................ESTABLISH

- **LDG + EVAC POSSIBLE IN 30 MIN ?**
  - **YES**

    ATC / COMPANY........................NOTIFY
    EVAC........................PREPARE
  - **NO**

    ATC / COMPANY........................NOTIFY
    AIRCRAFT (IF CLIMBING)........................LEVEL OFF

    TRGT SPEED : PREFER LO IAS

    L2 *Select the most appropriate speed, taking into account the time to destination, the fuel consumption and the fact that low speed could reduce the consequences of possible structural damage, if the bomb explodes.*

    L1 CABIN ALT MODE........................MAN

    L2 *Use the manual mode to prevent the cabin altitude from increasing, in order to avoid the activation of an altitude-sensitive bomb.*
    When selected, the manual mode automatically maintains the current cabin altitude.

    L1 DES TO CABIN ALT + 2500 FT / MEA

    L2 *When the aircraft is 2 500 ft above the cabin altitude, the cabin differential pressure is approximately of 1 PSI. The positive differential pressure ensures the blast to go outwards, if the bomb explodes.*

    L1
    - **WHEN ACFT ALT = CAB ALT + 2500 FT/MEA:**

      ELEC GALLEY........................OFF
      ELEC PAX SYS........................OFF

    CRZ PERF (CONF 1 & L/G DOWN)........................COMPUTE
    - **FUEL PERMITS LDG CONF 1 & L/G DN?**
      - **YES**

        FLAPS........................AT LEAST CONF 1

        L2 *For landing, use normal landing configuration.*

        L1 L/G LEVER........................DOWN

        The detonation could damage the landing systems. Therefore, if fuel permits, configure the aircraft for landing as soon as possible.

Continued on the following page

[ABN] MISC BOMB ON BOARD **(Cont'd)**

FUEL CONSUMPT INCRSD

FMS PRED UNRELiABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

The FMS predictions are not correct.

DURING FURTHER DESCENT: MAINTAIN MAX DIFF PRESS 1 PSI

EVAC...PREPARE

Ident.: PRO-ABN-MISC-9090W180-00008671.0001001 / 03 JUL 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

MAX DIFF PR : 1PSI
FUEL CONSUMPT INCRSD

L12

DEFERRED PROC

ALL PHASES

> FOR APPROACH (BOMB ON BOARD)

CABIN ALT MODE...AUTO

The pressurization system automatically controls the cabin altitude to the landing elevation during the final approach.

STATUS

INFO

FMS PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

The fuel consumption is increased. The FUEL PENALTY on the FMS DATA/STATUS page may be updated.

For fuel penalty determination, Refer to PER-IFT-FP Fuel Penalty Tables - Fuel Consumption Increased.

[ABN] MISC CIRCLING APPROACH WITH ONE ENG INOP

Applicable to: ALL

Ident.: PRO-ABN-MISC-9090W210-00018982.0001001 / 06 NOV 14

ANNUNCIATIONS

Triggering Conditions:

L2 To display this procedure, the flight crew must press the ABN pb on the ECP, and then select the CIRCLING APPROACH WITH ONE ENG INOP procedure in the MISCELLANEOUS section.

Ident.: PRO-ABN-MISC-9090W210-00020265.0001001 / 12 NOV 14

LDG WEIGHT.. CHECK
[QRH] CIRCLING APPROACH PROC.. *REFER TO (PROC APPLY)*

L2 *Refer to the CIRCLING APPROACH WITH ONE ENGINE INOPERATIVE QRH procedure to check whether the landing weight is below the maximum weight for circling approach in CONF 3 with LDG GEAR DOWN.*

[ABN] MISC CKPT WINDOW CRACKED

Applicable to: ALL

Ident.: PRO-ABN-MISC-9090W160-00015855.0001001 / 04 MAY 16

ANNUNCIATIONS

Triggering Conditions:

L2 To display this procedure, the flight crew must press the ABN pb on the ECP, and then select the CKPT WINDOW CRACKED procedure in the MISCELLANEOUS section.

L3 The flight crew must apply this procedure when cracks are detected on a cockpit window.

Ident.: PRO-ABN-MISC-9090W160-00005190.0002001 / 13 MAR 19

L2 When a windshield or a lateral window is cracked, the flight crew must determine which layer is cracked (*Refer to DSC-56-10 Cockpit Windshields and Windows*).

L1 Touch the cracks with a pen (or carefully with fingernail) to determine if there is a crack on the cockpit side.

Continued on the following page

[ABN] MISC CKPT WINDOW CRACKED (Cont'd)

Ident.: PRO-ABN-MISC-9090W160-00008672.0002001 / 03 JUL 20

1 CREW SHOULDER HARNESSES....................FASTEN

- **CRACK(S) ON COCKPIT SIDE ?**
  - **YES...**

L2 The internal cockpit side layer is affected. At least one structural layer is broken. The flight crew is not able to accurately determine if the internal middle structural layer is also cracked. Therefore, the flight crew must reduce differential pressure to 5 PSI.

L1 CREW OXY MASKS....................USE

MAX FL : 230/MEA-MORA

L2 *Reducing the flight level to FL 230 will enable the flight crew to obtain a differential pressure of 5 PSI. This reduction will also help to avoid excessive cabin altitude, and the triggering of the CAB PRESS EXCESS CAB ALT alert.*

L1 MAX DIFF PRESS : 5 PSI

CABIN ALT MODE....................MAN

ACFT CRZ FL	CABIN ALT TRGT
230	8000
200	6000
150	3000
100	LDG ELEVN

CABIN ALT TRGT....................AS RQRD

Set the cabin altitude target, in accordance with the above table, to maintain a differential pressure of 5 PSI.

  - **NO...**

L2 The internal cockpit side layer is not affected. At least one structural layer remains intact, therefore the integrity of the structure is not affected. The flight can be continued. Windshield or window arcing is not likely to occur.

L1 STRUCTURE NOT AFFECTED

NO LIMITATION

L2 To avoid windshield or window arcing, turn off the heating:

Continued on the following page

[ABN] MISC CKPT WINDOW CRACKED **(Cont'd)**

L1

- **WINDOW/WINDSHLD AFFECTED ?**
  - **LEFT...**
    [RESET PNL : C6] WHC 1 .... PULL
  - **RIGHT...**
    [RESET PNL : T6] WHC 2 .... PULL
  - **LEFT + RIGHT...**
    [RESET PNL : C6] WHC 1 .... PULL
    [RESET PNL : T6] WHC 2 .... PULL
    AVOID ICING CONDs
- **WHEN DIFF PRESS = 5 PSI**
  CREW OXY MASKS.......... REMOVE

Note: *If the visibility through the damaged window is affected, consider the following recommendations for landing:*
- *The PF for approach and landing should be on the cockpit side where the visibility is the best*
- *Use autoland, if available*
- *Require the tower control of the airport to set the runway lights to bright.*

Continued on the following page

[ABN] MISC CKPT WINDOW CRACKED (Cont'd)

Ident.: PRO-ABN-MISC-9090W160-00008673.0002001 / 13 MAR 19

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

- **If cracks on cockpit side, or no diagnosis possible:**
  MAX FL: 230/MEA-MORA
  MAX DIFF PR : 5 PSI
- **If WHC 1 and WHC 2 power supply buttons are pulled:**
  AVOID ICING CONDs

LIMITATIONS ON PFD

ALL PHASES

- **If cracks on cockpit side, or no diagnosis possible:**
  MAX FL: 230/MEA-MORA
- **If WHC 1 and WHC 2 power supply buttons are pulled:**
  AVOID ICING CONDs

DEFERRED PROC

ALL PHASES

> BLW FL 100 FOR LDG (WINDOW CRACKED)

CABIN ALT MODE.. AUTO

STATUS

INOP SYS

ALL PHASES

ALL L WINDOWS HEATG (If WHC 1 power supply button pulled)

Continued on the following page

[ABN] MISC CKPT WINDOW CRACKED **(Cont'd)**

ALL R WINDOWS HEATG (If WHC 2 power supply button pulled)
L+R WINDOWS HEATG (If WHC 1 and WHC 2 power supply buttons pulled)

INFO

ACFT CRZ FL	CABIN ALT TRGT
230	8000
200	6000
150	3000
100	LDG ELEVN

[ABN] MISC CKPT WINDOW ELEC ARCING

Applicable to: ALL

Ident.: PRO-ABN-MISC-9090W170-00015856.0001001 / 06 NOV 14

ANNUNCIATIONS

Triggering Conditions:

L2 To display this procedure, the flight crew must press the ABN pb on the ECP, and then select the CKPT WINDOW ELEC ARCING procedure in the MISCELLANEOUS section.

L3 The flight crew must apply this procedure when an electrical arc appears on a cockpit window.

Ident.: PRO-ABN-MISC-9090W170-00005191.0001001 / 03 JAN 19

L2 Turn off the heating when:

- Electrical arcing appears on a windshield, or on a window, or
- Burning smell or smoke identified as coming from the bottom left corner of the CAPT windshield, or from the bottom right corner of the F/O windshield.
  The ECAM can also trigger the A-ICE L(R) WINDSHIELD HEATG FAULT alert associated with the same side of the windshield.

Continued on the following page

[ABN] MISC CKPT WINDOW ELEC ARCING **(Cont'd)**

Ident.: PRO-ABN-MISC-9090W170-00008674.0002001 / 03 JAN 19

- **WINDOW/WINDSHLD AFFECTED ?**
  - **LEFT...**
    [RESET PNL : C6] WHC 1 .... PULL
  - **RIGHT...**
    [RESET PNL : T6] WHC 2 .... PULL
  - **LEFT + RIGHT...**
    [RESET PNL : C6] WHC 1 .... PULL
    [RESET PNL : T6] WHC 2 .... PULL
    AVOID ICING CONDs

L2 This action will trigger the A-ICE L(R) WINDOWS HEATG FAULT alert.

Continued on the following page

[ABN] MISC CKPT WINDOW ELEC ARCING **(Cont'd)**

Ident.: PRO-ABN-MISC-9090W170-00008675.0001001 / 03 JAN 19

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

- **If WHC 1 and WHC 2 power supply buttons are pulled:**
  AVOID ICING CONDs

LIMITATIONS ON PFD

ALL PHASES

- **If WHC 1 and WHC 2 power supply buttons are pulled:**
  AVOID ICING CONDs

STATUS

INOP SYS

ALL PHASES

ALL L WINDOWS HEATG (If WHC 1 power supply button pulled)
ALL R WINDOWS HEATG (If WHC 2 power supply button pulled)
L+R WINDOWS HEATG (If both WHC 1 and 2 power supply buttons pulled)

[ABN] MISC DITCHING

Applicable to: ALL

Ident.: PRO-ABN-MISC-9090W130-00015857.0001001 / 08 JUL 19

ANNUNCIATIONS

Triggering Conditions:

L2 To display this procedure, the flight crew must press the ABN pb on the ECP, and then select the DITCHING procedure.
If both engines are detected failed by the FWS, the ECAM displays the ENG ALL ENGINES FAILURE alert and the flight crew should apply the associated procedure, that includes the DITCHING procedure.

Ident.: PRO-ABN-MISC-9090W130-00008676.0001001 / 07 JUL 16

The direction of ditching depends mainly on wind direction and sea state and these factors may be considered as follows:

1. Wind direction:
   This may be determined by observation of the waves, which move and break downwind. Spray from wave tops is also a reliable indicator.
2. Wind speed:

   The following guidelines can be used to evaluate wind speed:
   - A few white crests: 8 kt-17 kt
   - Many white crests: 17 kt-26 kt
   - Streaks of foam along water: 23 kt-35 kt
   - Spray from waves: 35 kt-43 kt.

3. Sea state:
   This is best determined from a height of 500 ft to 1 000 ft. At lower height, the direction of the swell may be less obvious than the direction of the waves, even though the waves are much smaller.
   When there is no swell, align into the wind.
   In the presence of swell, and provided that drift does not exceed 10 °, ditch parallel to the swell and as nearly into the wind as possible. If drift exceeds 10 °, ditch into wind. The presence of drift on touchdown is not dangerous, but every effort should be made to minimize roll.
   Touchdown with approximately 7.5 ° of pitch and minimum vertical speed.

Continued on the following page

[ABN] MISC DITCHING **(Cont'd)**

Ident.: PRO-ABN-MISC-9090W130-00008677.0010001 / 08 JUL 19

- **TIME PERMITS FOR FULL PROCEDURE ?**
  - ■ **YES**

    ATC .... NOTIFY

    L2 *Notify ATC of the nature of the emergency, and state intentions.*

    L1 ATC SQUAWK 7700

    L2 *Unless otherwise specified by ATC, squawk the emergency 7700 transponder code.*

    L1 CABIN & CKPT .... PREPARE

    L2 *Notify the cabin crew of the nature of the emergency and state intentions.*

    Specify the available time, in order to:
    - *Secure loose equipment*
    - *Prepare survival equipment*
    - *Lock belts and shoulder harnesses.*

    L1 FOR JETTISON : DO NOT USE SPD BRK

    L2 *The use of speedbrakes is not permitted because it would create a fuel backflow on the spoilers during jettison operation.*

    L1 JETTISON ARM .... ON
    JETTISON ACTIVE .... ON
    [MFD SURV] TERR SYS .... OFF

    L2 *Switching the GPWS and TERR SYS OFF avoids nuisance warnings.*

    L1 [MFD SURV] GPWS .... OFF
    SEAT BELT .... ON
    EMER EXIT LT .... ON
    COMMERCIAL 1+2 .... OFF

    DISREGARD NORM C/Ls

    L2 *Approach and landing normal checklists are included in the procedure.*

    L1
    - **THRUST AVAILABLE**
      - ■ **YES**
        - **AT TOP OF DESCENT:**
          - **if AUTO mode of CABIN PRESS inoperative:**

            CABIN ALT MODE .... MAN
            CABIN ALT TRGT .... ZERO

Continued on the following page

[ABN] MISC DITCHING **(Cont'd)**

- **FOR APPROACH & DITCHING:**

  FOR DITCHING : KEEP L/G UP
  BARO REF (IF AVAIL).. SET

  - **If jettison ◁ in progress:**

    JETTISON ACTIVE...OFF

  SLATS / FLAPS...MAX AVAIL

  A/THR RECOMMENDED

  MIN Approach SPEED : VLS

  L2 *The computed VLS will change during the approach, in accordance with the DITCHING pb-sw position and the aircraft height. When the DITCHING pb-sw is set to ON, the VLS decreases when the aircraft reaches 1 000 ft AGL.*
  L3 *The VLS decreases from 1.23*Vs1g to 1.19*Vs1g without VMCL limitation.*

  L1 FOR DITCHING : OPTIMUM PITCH 7.5° & MIN V/S
  ELT.. ON

- **AT 2000 FT AGL:**

  ALL BLEEDS (ENGs & APU)...OFF
  CABIN CREW...ADVISE
  DITCHING P/B.. ON

  L2 *All the valves of the pressurization system that are below the flotation line close. Additionally, when the DITCHING pb-sw is pressed, the VLS also decreases below 1 000 ft.*

L1

- **AT 500 FT AGL:**

  MIN SPEED : VLS
  BRACE FOR IMPACT.. ORDER

  PITCH ATT : KEEP 7.5°

  MIN V/S

- **AT TOUCHDOWN:**

  ALL THR LEVERS...IDLE
  ALL MASTERS (ENGs & APU)...OFF

- **AFTER DITCHING:**

  ELEC SIDE 1&2 ISOL...OFF
  ALL FIRE P/Bs (ENGs & APU)... PUSH
  ALL AGENTS (ENGs & APU)... DISCH

Continued on the following page

[ABN] MISC DITCHING **(Cont'd)**

ATC...NOTIFY
EVAC (PA)...ANNOUNCE

L2 *Make a short and precise announcement to order the emergency evacuation.*

L1 EVAC COMMAND ⩤ ....ON
ALL 4 BATs...OFF

- ■ **NO**
  - **AT TOP OF DESCENT:**
    - **if AUTO mode of CABIN PRESS inoperative:**
      CABIN ALT MODE..MAN
      CABIN ALT TRGT..ZERO
  - **FOR APPROACH & DITCHING:**
    FOR DITCHING : KEEP L/G UP
    BARO REF (IF AVAIL)...SET
    - **If jettison ⩤ in progress:**
      JETTISON ACTIVE...OFF

    SLATS / FLAPS..AT LEAST CONF 2

    A/THR RECOMMENDED

    MIN Approach SPEED : VLS + 15KT

    L2 *The computed VLS will change during the approach, in accordance with the DITCHING pb-sw position and the aircraft height. When the DITCHING pb-sw is set to ON, the VLS decreases when the aircraft reaches 1 000 ft AGL.*

    L3 *The VLS decreases from 1.23*Vs1g to 1.19*Vs1g without VMCL limitation.*

    L1 ELT..ON
  - **AT 2000 FT AGL:**
    ALL BLEEDS (ENGs & APU)...OFF
    CABIN CREW...ADVISE
    DITCHING P/B..ON

    L2 *All the valves of the pressurization system that are below the flotation line close. Additionally, when the DITCHING pb-sw is pressed, the VLS also decreases below 1 000 ft.*

  - L1 **AT 500 FT AGL:**
    BRACE FOR IMPACT...ORDER
    INCREASE FLARE HEIGHT

Continued on the following page

[ABN] MISC DITCHING **(Cont'd)**

OPTIMUM PITCH ATT : 7.5° & MIN V/S

max pitch att : 9°

- **AT TOUCHDOWN:**

  ALL THR LEVERS...IDLE
  ALL MASTERS (ENGs & APU)...OFF

- **AFTER DITCHING:**

  ELEC SIDE 1&2 ISOL..OFF
  ALL FIRE P/Bs (ENGs & APU)..PUSH
  ALL AGENTS (ENGs & APU)...DISCH
  ATC...NOTIFY
  EVAC (PA)...ANNOUNCE

  L2 *Make a short and precise announcement to order the emergency evacuation.*

  L1 EVAC COMMAND ◁ ....ON
  ALL 4 BATs...OFF

■ **NO**

- **THRUST AVAILABLE**

  ■ **YES**

  SLATS / FLAPS...MAX AVAIL

  FOR DITCHING : KEEP L/G UP

  MIN Approach SPEED : VLS

  L2 *The computed VLS will change during the approach, in accordance with the DITCHING pb-sw position and the aircraft height. When the DITCHING pb-sw is set to ON, the VLS decreases when the aircraft reaches 1 000 ft AGL.*
  L3 *The VLS decreases from 1.23*Vs1g to 1.19*Vs1g without VMCL limitation.*

  L1 FOR DITCHING : OPTIMUM PITCH 7.5° & MIN V/S
  ELT...ON
  ALL BLEEDS (ENGs & APU)...OFF
  CABIN CREW..ADVISE
  DITCHING P/B...ON

  L2 *All the valves of the pressurization system that are below the flotation line close. Additionally, when the DITCHING pb-sw is pressed, the VLS also decreases below 1 000 ft.*

  L1 [MFD SURV] TERR SYS..OFF
  [MFD SURV] GPWS...OFF

Continued on the following page

[ABN] MISC DITCHING **(Cont'd)**

- **AT 500 FT AGL:**

  MIN SPEED : VLS
  BRACE FOR IMPACT .... ORDER

  PITCH ATT : KEEP 7.5°

  MIN V/S

- **AT TOUCHDOWN:**

  ALL THR LEVERS .... IDLE
  ALL MASTERS (ENGs & APU) .... OFF

- **AFTER DITCHING:**

  ELEC SIDE 1&2 ISOL .... OFF
  ALL FIRE P/Bs (ENGs & APU) .... PUSH
  ALL AGENTS (ENGs & APU) .... DISCH
  ATC .... NOTIFY
  EVAC (PA) .... ANNOUNCE

  L2 *Make a short and precise announcement to order the emergency evacuation.*

  L1 EVAC COMMAND ◁ .... ON
  ALL 4 BATs .... OFF

■ **NO**

SLATS / FLAPS .... AT LEAST CONF 2

FOR DITCHING : KEEP L/G UP

MIN Approach SPEED : VLS + 15 KT

L2 *The computed VLS will change during the approach, in accordance with the DITCHING pb-sw position and the aircraft height. When the DITCHING pb-sw is set to ON, the VLS decreases when the aircraft reaches 1 000 ft AGL.*

L3 *The VLS decreases from 1.23*Vs1g to 1.19*Vs1g without VMCL limitation.*

L1 ELT .... ON
ALL BLEEDS (ENGs & APU) .... OFF
CABIN CREW .... ADVISE
DITCHING P/B .... ON

L2 *All the valves of the pressurization system that are below the flotation line close. Additionally, when the DITCHING pb-sw is pressed, the VLS also decreases below 1 000 ft.*

L1 [MFD SURV] TERR SYS .... OFF
[MFD SURV] GPWS .... OFF

Continued on the following page

[ABN] MISC DITCHING (Cont'd)

- **AT 500 FT AGL:**

  BRACE FOR IMPACT.. ORDER

  INCREASE FLARE HEIGHT

  OPTIMUM PITCH ATT : 7.5° & MIN V/S

  MAX PITCH ATT : 9°

- **AT TOUCHDOWN:**

  ALL THR LEVERS.. IDLE
  ALL MASTERS (ENGs & APU).. OFF

- **AFTER DITCHING:**

  ELEC SIDE 1&2 ISOL.. OFF
  ALL FIRE P/Bs (ENGs & APU).. PUSH
  ALL AGENTS (ENGs & APU).. DISCH
  ATC.. NOTIFY
  EVAC (PA).. ANNOUNCE

L2 *Make a short and precise announcement to order the emergency evacuation.*

L1 EVAC COMMAND ◁✻ .... ON
  ALL 4 BATs.. OFF

[ABN] MISC EMER DESCENT

Applicable to: ALL

Ident.: PRO-ABN-MISC-9090W110-00005193.0001001 / 06 NOV 14

ANNUNCIATIONS

Triggering Conditions:

L2 To display this procedure, the flight crew must press the ABN pb on the ECP, and then select the EMER DESCENT procedure.

Indications:

SD page

CAB PRESS SD Page

Continued on the following page

[ABN] MISC EMER DESCENT (Cont'd)

Ident.: PRO-ABN-MISC-9090W110-00008679.0003001 / 03 JUL 20

2

- **If the cabin pressure altitude is above 10 000 ft:**

  CREW OXY MASKS...USE

SIGNS...ON
EMER DESCENT...INITIATE

Initiate the emergency descent with one of the following techniques:
- *Use of the AUTO EMER DESCENT function*
- *Use of selected guidance via the AFS CP.*

L3 *For more information on the two techniques for emergency descent initiation, Refer to FCTM/PR-AEP-MISC EMER DESCENT.*

L1 ● **If A/THR is not active:**

ALL THR LEVERS...IDLE

L2 *If the A/THR is active, check A/THR is at IDLE on the ED.*

L1 SPEED BRAKES LEVER...FULL

CAUTION	Descent at the maximum appropriate speed. If structural damage is suspected, use the flight controls with care and limit speed as appropriate.

SPEED...MAX / APPROPRIATE

The flight crew may extend the landing gear when the speed is below VLO.

ATC...NOTIFY

L2 *Notify ATC of the nature of the emergency, and state intentions.*

L1 EMER DESCENT (PA)...ANNOUNCE

L2 *The flight crew must inform the cabin crew of the emergency descent, via the Passenger Address (PA).*

L1 ATC SQUAWK...7700

L2 *Unless otherwise specified by ATC, squawk the emergency 7700 transponder code.*

L1 MAX FL : 100/MEA-MORA

L2 *If the AUTO EMER DESCENT function is used, the initial descent altitude target is MORA $_{dISA/dP}$. The flight crew should consider to readjust the AFS altitude target according to the MORA displayed on ND. The flight crew should be aware that a PULL or PUSH action on the ALT knob will disengage the EMER DES mode.*

Continued on the following page

[ABN] MISC EMER DESCENT **(Cont'd)**

L1
- **CAB ALT ABOVE 14000 FT**
  - **YES**

    PAX OXY MASK MAN ON.. PRESS

L2

This action on the PAX OXY MASK MAN ON pb confirms that the oxygen masks drop in the cabin, in the case they do not automatically drop when the cabin altitude is above 13 800 ft.

When the aircraft reaches a safe flight level and when the use of oxygen masks is no longer necessary, notify the cabin crew.

L1
- **WHEN DESCENT ESTABLISHED**

  CREW OXY MASKS DILUTION..NORM

To save oxygen, set the EMER/100%/NORM selector to NORM.

With the EMER/100%/NORM selector set to 100 %, oxygen quantity may be insufficient to cover the entire emergency descent profile.

Ensure that crew communication is established with oxygen masks. Avoid the continuous use of the interphone to minimize interference with the breathing noise in the oxygen mask.

DEACTIVATE

Ident.: PRO-ABN-MISC-9090W110-00008680.0002001 / 07 JUL 16

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

MAX FL : 100/MEA-MORA

LIMITATIONS ON PFD

ALL PHASES

MAX FL : 100/MEA-MORA

[ABN] MISC EMER EVAC

Applicable to: ALL

Ident.: PRO-ABN-MISC-9090W100-00014311.0001001 / 06 NOV 14

ANNUNCIATIONS

Triggering Conditions:

L2 To display this procedure, the flight crew must press the ABN pb on the ECP, and then select the EMER EVAC procedure.

Ident.: PRO-ABN-MISC-9090W100-00014313.0001001 / 06 NOV 14

Apply this procedure when considering an emergency evacuation.
Carefully analyze the situation before deciding to evacuate passengers.
However, do not waste valuable time.

Continued on the following page

[ABN] MISC EMER EVAC **(Cont'd)**

Ident.: PRO-ABN-MISC-9090W100-00014312.0002001 / 03 JUL 20

3 ● **WHEN AIRCRAFT STOPPED:**

PARK BRK..........ON
ATC..........NOTIFY

L2 *Notify ATC of the nature of the emergency, and state intentions.*

L1 CABIN CREW..........ALERT

L2 *Make a short and precise announcement to warn that an emergency evacuation may be required.*

L1 PACK 1+2..........OFF
ELEC SIDE 1&2 ISOL..........OFF

L3 *If the emergency evacuation follows the smoke procedure, the SIDE 1 & 2 ISOL pb-sw can be set to ON, and as a consequence some systems necessary for the emergency evacuation are not electrically supplied if the engines are off (e.g. emergency lighting system, display units).*

L1 ALL ENG MASTERS..........OFF

L2 *The associated LP and HP valves close.*

L1 ALL FIRE P/Bs (ENG & APU)..........PUSH
ALL AGENTS (ENG & APU)..........AS RQRD

L2 *The use of agents is required if the ENG FIRE or APU FIRE alert is displayed.*

L1 ● **EVAC REQUIRED ?**

■ **YES**

EVAC (PA)..........ANNOUNCE

L2 *Make a short and precise announcement to order the emergency evacuation.*

L1 EVAC COMMAND ◁✳ ....ON
ALL 4 BATS..........OFF

L2 *Only PA announcement and CAB communication are available, via the handset.*

L1 ■ **NO**

CABIN CREW AND PASSENGERS..........ADVISE

[ABN] MISC FORCED LANDING

Applicable to: ALL

Ident.: PRO-ABN-MISC-9090W120-00015858.0001001 / 08 JUL 19

ANNUNCIATIONS

Triggering Conditions:

L2 To display this procedure, the flight crew must press the ABN pb on the ECP, and then select the FORCED LANDING procedure.
If both engines are detected failed by the FWS, the ECAM displays the ENG ALL ENGINES FAILURE alert and the flight crew should apply the associated procedure, that includes the FORCED LANDING procedure.

Continued on the following page

[ABN] MISC FORCED LANDING **(Cont'd)**

Ident.: PRO-ABN-MISC-9090W120-00008682.0005001 / 08 JUL 19

- **TIME PERMITS FOR FULL PROCEDURE ?**
  - **YES**

    ATC .... NOTIFY

    L2 *Notify ATC of the nature of the emergency, and state intentions.*

    L1 ATC SQUAWK 7700

    L2 *Unless otherwise specified by ATC, squawk the emergency 7700 transponder code.*

    L1 CABIN & CKPT .... PREPARE

    L2 *Notify the cabin crew of the nature of the emergency and indicate intentions.*

    Specify the available time, in order to:
    - *Secure loose equipment*
    - *Prepare survival equipment*
    - *Lock belts and shoulder harnesses.*

    L1 FOR JETTISON ◁ : DO NOT USE SPD BRK

    L2 *The use of speedbrakes is not permitted because it would create a fuel backflow on the spoilers during jettison operation.*

    L1 JETTISON ARM ◁ .... ON
    JETTISON ACTIVE ◁ .... ON
    [MFD SURV] TERR SYS .... OFF

    L2 *This avoids nuisance warnings.*

    L1 [MFD SURV] GPWS .... OFF
    SEAT BELTS .... ON
    EMER EXIT LT .... ON
    COMMERCIAL 1+2 .... OFF

    DISREGARD NORM C/L

    L2 *Approach and landing checklists are included in the procedure.*

    L1 CABIN ALT MODE .... MAN
    CABIN ALT TRGT .... LDG ELEVN

    L2 *If not known, select an approximate value.*

    L1
    - **FOR APPROACH & LANDING:**

      BARO REF (IF AVAIL) .... SET
      RAM AIR .... ON

Continued on the following page

[ABN] MISC FORCED LANDING **(Cont'd)**

L2 *Switch ON the RAM AIR to ensure complete depressurization on the ground.*

L1 - **If jettison ◁ in progress:**
  JETTISON ACTIVE........................OFF

L/G GRVTY (EXTN 1 MIN)........................DOWN
SLATS / FLAPS........................AT LEAST CONF 1
A/THR........................AS RQRD
GND SPLRs........................ARM
ELT........................ON
CABIN CREW........................ADVISE

- **AT 500 FT AGL:**

SLATS / FLAPS........................MAX AVAIL
BRACE FOR IMPACT........................ORDER

- **FOR LANDING:**

INCREASE FLARE HEIGHT

- **AT TOUCHDOWN:**

ALL MASTERS (ENGs & APU)........................OFF

L2 *The engine LP and HP valves close.*

L1
- **WHEN AIRCRAFT STOPPED:**

PARK BRK........................ON
ELEC 1&2 ISOL........................OFF
ALL FIRE P/Bs (ENGs & APU)........................PUSH
ALL AGENTS (ENGs & APU)........................DISCH
ATC........................NOTIFY

L2 *Notify ATC of the nature of the emergency, and indicate intentions.*

L1
- **EVAC RQRD ?**
  - ■ **YES**
    EVAC (PA)........................ANNOUNCE

L2 *Make a short and precise announcement to order the emergency evacuation.*

L1 EVAC COMMAND ◁ ....ON
ALL 4 BATs........................OFF

L2 *Only PA announcement and CAB communication are available, via the handset.*

Continued on the following page

[ABN] MISC FORCED LANDING **(Cont'd)**

L1 ■ **NO**
CABIN CREW & PAX (PA)... ADVISE

■ **NO**
SLATS / FLAPS...AT LEAST CONF 1
L/G GRVTY (EXTN 1 MIN)..DOWN
GND SPLRs.. ARM
ELT..ON
CABIN CREW...ADVISE
[MFD SURV] TERR SYS.. OFF
L2 *This avoids nuisance warnings.*
L1 [MFD SURV] GPWS.. OFF

● **AT 500 FT AGL:**
SLATS / FLAPS..MAX AVAIL
BRACE FOR IMPACT.. ORDER

● **FOR LANDING:**
INCREASE FLARE HEIGHT

● **AT TOUCHDOWN:**
ALL MASTERS (ENGs & APU)...OFF
L2 *The engine LP and HP valves close.*

L1 ● **WHEN AIRCRAFT STOPPED:**
PARK BRK..ON
ELEC 1&2 ISOL..OFF
ALL FIRE P/Bs (ENGs & APU)... PUSH
ALL AGENTS (ENGs & APU)... DISCH
ATC.. NOTIFY
L2 *Notify ATC of the nature of the emergency, and indicate intentions.*
L1 ● **EVAC RQRD ?**
■ **YES**
EVAC (PA)...ANNOUNCE
L2 *Make a short and precise announcement to order the emergency evacuation.*
L1 EVAC COMMAND ⊲ ....ON
ALL 4 BATs.. OFF

Continued on the following page

[ABN] MISC FORCED LANDING **(Cont'd)**

L2 *Only PA announcement and CAB communication are available, via the handset.*

L1 ■ **NO**

CABIN CREW & PAX (PA).. ADVISE

[ABN] MISC OVERWEIGHT LDG

Applicable to: ALL

Ident.: PRO-ABN-MISC-9090W150-00015860.0001001 / 06 NOV 14

ANNUNCIATIONS

Triggering Conditions:

L2 To display this procedure, the flight crew must press the ABN pb on the ECP, and then select the MISC OVERWEIGHT LDG procedure in the MISCELLANEOUS section.

L3 The flight crew must apply this procedure when the aircraft must land above the Maximum Landing Weight (MLW).

Ident.: PRO-ABN-MISC-9090W150-00005196.0001001 / 06 NOV 14

L2 Automatic landing is certified up to the Maximum Landing Weight (MLW). Autoland flight tests have, however, been successful up to the Maximum Takeoff Weight (MTOW).
Depending on the situation (e.g emergency or other) and provided that the runway is approved for automatic landing, the flight crew can decide to perform an autoland up to the maximum takeoff weight.

Continued on the following page

[ABN] MISC OVERWEIGHT LDG **(Cont'd)**

Ident.: PRO-ABN-MISC-9090W150-00008684.0001001 / 08 JUL 19

JETTISON PROC ◁✻ .... CONSIDER

LDG DIST AFFECTED

- **If another failure affects VAPP:**

  LDG PERF AFFECTED

  Use the ECAM flap setting, if required for abnormal operations. In all other cases:
  - *FULL is preferred for optimized landing performance*
  - *If the aircraft weight is above one of the limiting weight for go-around use FLAP 3 for landing.*

- **FOR APPROACH:**

  PACK 1+2.. OFF OR ON APU BLEED

  L2 *The selection of the PACKS to OFF (or to APU BLEED) increases the maximum thrust available from the engines, in the case of a go-around.*

  L1 If LDG CONF 3: USE CONF 1 FOR GO AROUND

  SPEED AT RUNWAY THRESHOLD : VLS

  L2 *This speed target is applicable in manual landing and autoland. Reduce the speed to reach VLS at the runway threshold. Touch down as smoothly as possible to reduce the V/S. The maximum touchdown V/S should not exceed 360 ft/min. The main landing gears must touch down as symmetrically as possible.*

  Note: The VLS that is displayed on the PFD takes into account the actual aircraft configuration, even with slats or flaps, locked or failed.
  However, this line can be inhibited if another failure affects the landing performances with a VAPP increment. In that case the flight crew must follow the VAPP that the ECAM requires.

L1
- **FOR LANDING:**

  INCREASE FLARE HEIGHT

  USE MAX REVERSE ASAP

  L2 *It is recommended to use the reverse as soon as possible, in order to limit the braking action.*

  L1 APPLY BRAKES AS NECESSARY

  L2 *It is recommended that the flight crew uses the maximum available runway length to limit the braking energy.*
  It is recommended to use the BTV function, and set the runway end as the BTV exit in order to optimize the braking and to minimize the braking energy.

Continued on the following page

[ABN] MISC OVERWEIGHT LDG **(Cont'd)**

Ident.: PRO-ABN-MISC-9090W150-00008685.0001001 / 04 SEP 14

LIMITATIONS

LIMITATIONS ON ECAM

APPR & LDG

LDG PERF AFFECTED

[ABN] MISC SEVERE TURBULENCE IN CRUISE

Applicable to: ALL

Ident.: PRO-ABN-MISC-9090W190-00015861.0001001 / 06 NOV 14

ANNUNCIATIONS

Triggering Conditions:

L2 To display this procedure, the flight crew must press the ABN pb on the ECP, and then select the SEVERE TURBULENCE IN CRUISE procedure in the MISCELLANEOUS section.

Continued on the following page

[ABN] MISC SEVERE TURBULENCE IN CRUISE **(Cont'd)**

Ident.: PRO-ABN-MISC-9090W190-00008686.0002001 / 03 JUL 20

4 SEAT BELTS....................ON

- **If no speed limitations:**

  MAX TURB SPEED....................300 KT / 0.85

L2 *This speed range:*

- *Protects the aircraft structure from wind gusts*
- *Maintains a buffet margin, especially during vertical wind gusts.*

L1 MIN TURB SPEED....................GREEN DOT
SPEED....................ADJUST FOR COMFORT
AP....................KEEP ON
CABIN & CKPT (LOOSE EQPT)....................SECURE

L2 *The flight and cabin crewmembers must secure all loose equipment.*

L1 SPEED BRAKES....................AS RQRD

L2 *Be prepared to use the speedbrakes, if necessary.*

L1
- **EXCESSIVE THRUST VARIATIONS ?**
  - **YES**

    A/THR....................OFF

L2 *Do not attempt to maintain Mach or airspeed.*

L1 DES TO OR BELOW OPT ALT....................CONSIDER

DEACTIVATE

Continued on the following page

[ABN] MISC SEVERE TURBULENCE IN CRUISE (Cont'd)

Ident.: PRO-ABN-MISC-9090W190-00008687.0001001 / 04 SEP 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

TURB SPEED:

- **If no speed limitation**
  MAX SPEED: 300 / .85
  MIN SPEED: GREEN DOT

LIMITATIONS ON PFD

ALL PHASES

TURB SPEED:

- **If no speed limitation**
  MAX SPEED: 300 / .85
  MIN SPEED: GREEN DOT

[ABN] MISC VOLCANIC ASH ENCOUNTER

Applicable to: ALL

Ident.: PRO-ABN-MISC-9090W140-00015862.0001001 / 06 NOV 14

ANNUNCIATIONS

Triggering Conditions:

L2 To display this procedure, the flight crew must press the ABN pb on the ECP, and then select the MISC VOLCANIC ASH ENCOUNTER procedure in the MISCELLANEOUS section.

L3 The flight crew must apply this procedure when the aircraft flies into a cloud of volcanic ash.

Ident.: PRO-ABN-MISC-9090W140-00020918.0001001 / 06 NOV 14

L2 For operations on airports covered with ash, sand or dust, *Refer to procedure*.

Continued on the following page

[ABN] MISC VOLCANIC ASH ENCOUNTER **(Cont'd)**

Ident.: PRO-ABN-MISC-9090W140-00008688.0003001 / 29 JAN 19

180° TURN....................INITIATE

L2 *A 180 ° turn will usually enable the aircraft to exit the volcanic ash clouds as quickly as possible, because volcanic ash clouds can extend for hundreds of nautical miles.*

L1 ATC....................NOTIFY
A/THR....................OFF

L2 *This action prevents thrust variations due to the use of autothrust.*

L1 THRUST (IF CONDS PERMIT)....................REDUCE

L2 *A decrease in thrust helps to maintain the engine stall margin by reducing the amount of volcanic ash ingestion and limiting the EGT. It also limits the accumulation of molten ash on the turbine vanes.*
Do not climb, because this increases the EGT.

L1 CREW OXY MASKS....................USE / 100% / EMER
CABIN CREW....................ADVISE
PAX OXY MASK MAN ON....................AS RQRD

L2 *Oxygen masks may be necessary depending on the cabin contamination.*

L1 ENGs 1+2 A-ICE....................ON
WING A-ICE....................ON
AIR FLOW....................HI

L2 *Maximum air bleed provides the engines with an additional stall margin.*

L1 CARGO FWD ISOL VALVES ◁✳ ....OFF

L2 *Close the cargo isolation valves to avoid cargo smoke warning.*

L1 CARGO AFT ISOL VALVES ◁✳ ....OFF

L2 *Close the cargo isolation valves to avoid cargo smoke warning.*

L1 CARGO BULK ISOL VALVES....................OFF

L2 *Close the cargo isolation valves to avoid cargo smoke warning.*

L1 ENG PARAMETERS....................MONITOR

L2 *Carefully monitor the EGT to prevent the engines from exceeding EGT limits.*

Note: *To prevent the engines from exceeding EGT limits, it may become necessary to perform a precautionary engine shutdown. In this case:*
- *Restart the engines, when the aircraft is no longer flying in a volcanic ash cloud*
- *The engines may accelerate very slowly. This is not an indication of a start failure*

Continued on the following page

[ABN] MISC VOLCANIC ASH ENCOUNTER **(Cont'd)**

- *Due to the fact that the compressor and turbine blades may have been eroded, avoid sudden thrust changes. Fuel flow and the EGT may increase.*

L1 AIR SPEED....................MONITOR

L2 *Volcanic ash may cause an obstruction of the pitot probes.*
If speed becomes unreliable, Refer to PRO-ABN-NAV [ABN] NAV UNRELIABLE AIR SPEED INDICATION.

L1 *Note:*
1. *Electrostatic conditions may cause communication problems.*
2. *If the flight crew does not have enough visibility for approach due to windshield (window) damage, they should consider automatic landing.*

[MEM] EMER DESCENT

Ident.: PRO-ABN-MISC-00020894.0004001 / 01 JUN 17
Applicable to: ALL

- **If the pressure altitude is above 10 000 ft:**

  CREW OXY MASKS....................USE

SIGNS....................ON
EMER DESCENT....................INITIATE

Initiate the emergency descent with one of the following techniques:
- *Use of the AUTO EMER DESCENT function*
- *Use of selected guidance via the AFS CP.*

L3 *For more information on the two techniques for emergency descent initiation, refer to Refer to FCTM/PR-AEP-MISC EMER DESCENT.*

L1 ● **If A/THR is not active:**

  ALL THR LEVERS....................IDLE

L2 *If the A/THR is active, check A/THR is at IDLE on the ED.*

L1 SPEED BRAKES LEVER....................FULL

[MEM] STALL RECOVERY

Ident.: PRO-ABN-MISC-00017698.0001001 / 06 NOV 14
Applicable to: ALL

As soon as any stall indication (could be aural warning, buffet, etc.) is recognized, apply the immediate actions.

NOSE DOWN PITCH CONTROL.. APPLY

This will reduce angle of attack.

Note: In the case of lack of pitch down authority, reducing thrust may be necessary.

BANK.. WINGS LEVEL

- **When out of stall (no longer stall indications):**

  THRUST.. INCREASE SMOOTHLY AS NEEDED

  Note: In the case of one engine inoperative progressively compensate the thrust asymmetry with rudder.

  SPEEDBRAKES.. CHECK RETRACTED
  FLIGHT PATH.. RECOVER SMOOTHLY

  - **If in clean configuration and below 20 000 ft:**

    FLAP 1.. SELECT

  Note: If a risk of ground contact exists, once clearly out of stall (no longer stall indications), establish smoothly a positive climb gradient.

[QRH] CIRCLING APPROACH WITH ONE ENGINE INOPERATIVE

Ident.: PRO-ABN-MISC-00020848.0001001 / 15 APR 19
Applicable to: ALL

OAT	MAXIMUM WEIGHT FOR CIRCLING IN CONF 3 WITH GEAR DOWN (x 1 000 kg)							
	AIRPORT ELEVATION (feet)							
(°C)	0	2 000	4 000	6 000	8 000	10 000	12 000	14 000
0	272	268	259	247	235	223	212	195
5	272	268	259	247	235	223	205	187
10	272	268	259	247	232	212	195	178
15	272	268	259	242	220	201	185	169
20	272	268	252	230	209	191	175	160
25	272	258	240	219	199	181	165	150
30	260	246	228	207	187	170	155	
35	247	233	216	194	175	160		
40	234	220	202	182				
45	221	207	188					
50	207	193						
55	193							

- **If aircraft weight above maximum weight for circling in CONF 3 with gear down:**

  DELAY GEAR EXTENSION TO MAINTAIN LEVEL FLIGHT

L2

Note:
- *If the approach is flown at less than 750 ft RA, the L/G GEAR NOT DOWN alert will be triggered. The pilot can cancel the aural warning via the EMER CANC pb on the ECAM control panel.*
- *”TOO LOW GEAR” audio indicator to be expected, if the landing gear is not locked down at 500 ft RA.*

[QRH] EFB FAULT

Ident.: PRO-ABN-MISC-00021946.0001001 / 02 MAY 17
Applicable to: ALL

L2 Apply this procedure on the affected side.

L1 AFFECTED DOCKING STATION.......................................OFF THEN ON
EFB...CHECK ON
EFB...UNSTOW AND CHECK CABLES

- **If EFB available:**
  EFB...STOW IN DOCKING STATION
- **If EFB not available:**
  EFB : KEEP CONNECTED TO DOCKING STATION
  EFB...RESTART
  - **If EFB available on outer DU:**
    EFB...STOW IN DOCKING STATION
  - **If EFB available on laptop screen only:**
    EFB.......................................DISCONNECT FROM DOCKING STATION
    EFB...STRAP ON LATERAL CONSOLE
    CONNECTION WITH AVIONICS LOST
    LAPTOP ON BATTERIES : CONSIDER LIMITED USE
  - **If EFB not available:**
    USE BACKUP AS RQRD

[QRH] EMER EVAC

Ident.: PRO-ABN-MISC-00020850.0001001 / 02 MAY 17
Applicable to: ALL

- **When aircraft stopped:**

PARK BRK	ON
ATC	NOTIFY
CABIN CREW	ALERT
PACK 1+2	OFF
ELEC SIDE 1&2 ISOL	OFF
ALL ENG MASTERS	OFF
ALL FIRE pb (ENGs & APU)	PUSH
ALL AGENTS (ENGs & APU)	AS RQRD

  - **If evacuation required:**

EVAC (PA)	ANNOUNCE
EVAC COMMAND	ON
ALL 4 BATs	OFF

  - **If evacuation not required:**

CABIN CREW and PASSENGERS (PA)	ADVISE

[QRH] EMER LANDING
ALL ENG FAILURE

Ident.: PRO-ABN-MISC-00020851.0001001 / 14 MAR 18
Applicable to: ALL

Apply the following if not able to maintain altitude after the loss of thrust near the ground.

■ For anticipated Ditching

APU.......................................START

L2 *If the ENG ALL ENGINES FAILURE alert is triggered, the RAT automatically extends, and the APU automatically starts.*
If the ENG ALL ENGINES FAILURE alert is not detected, the flight crew starts the APU.

L1 FLAPS.......................................AT LEAST CONF 2

L2 *The flaps extension to the FLAPS 2 position requires 3 min (A350-900) and 4 min (A350-1000).*
If the FLAPS position is above FLAPS 2, the flight crew should keep current FLAPS setting.
If the flaps are retracted, and if required, the flight crew can extend FLAPS to more than 2.
However, due to the slow flap extension, the selected flaps configuration may not be reached.

L1 L/G.......................................KEEP UP
MIN APPROACH SPEED.......................................VLS+15 kt
CABIN CREW.......................................ADVISE
DITCHING P/B.......................................ON

L2 *All the valves of the pressurization system that are below the flotation line close.*
Additionally, when the DITCHING pb-sw is pressed, the VLS also decrease below 1 000 ft.

L1 [MFD SURV] GPWS/TERR (if avail).......................................OFF

L2 *The flight crew sets the GPWS button and the TERR button to off on the SURV page of the MFD in order to avoid a permanent audio warning/caution.*
Depending on the electric supply, the SURV page may not be available.

L1 ● **At 500 ft AGL or below:**

BRACE FOR IMPACT.......................................ORDER
VAPP : VLS+15 kt.......................................ADJUST

L2 *Below 500 ft and DITCHING pb-sw pressed, the VLS decreases and the flight crew must adjust the VAPP for touchdown.*

L1 ● **For flare:**

INCREASE FLARE HEIGHT

OPTIMUM PITCH ATT: 7.5 ° (MAX 9 °)

TOUCHDOWN AT MIN V/S

Continued on the following page

[QRH] EMER LANDING (Cont'd)
ALL ENG FAILURE

- **At touchdown:**
  ALL ENG MASTERS (ALL)....OFF
  APU MASTER SW....OFF
  EMER EVAC PROC....APPLY

■ **For anticipated Forced Landing:**

APU....START

L2 *If the ENG ALL ENGINES FAILURE alert is detected, the RAT automatically extends, and the APU automatically starts.*
If the ENG ALL ENGINES FAILURE alert is not detected, the flight crew starts the APU.

L1 FLAPS....AT LEAST CONF 2

L2 *The flaps extension to the FLAPS 2 position requires 3 min (A350-900) and 4 min (A350-1000).*
If the FLAPS position is above FLAPS 2, the flight crew should keep current FLAPS setting.
If the flaps are retracted, and if required, the flight crew can extend FLAPS to more than 2.
However, due to the slow flap extension, the selected flaps configuration may not be reached.

L1 MIN APPROACH SPEED....VLS
GND SPLRS....ARM
[MFD SURV] GPWS/TERR (if avail)....OFF

L2 *The flight crew sets the GPWS button and the TERR button to off on the SURV page of the MFD in order to avoid a permanent audio warning/caution.*
Depending on the electric supply, the SURV page may not be available.

L1
- **At 1 500 ft AGL at the latest:**
  L/G GRVTY....DOWN

L2 *The landing gear requires 1 min to extend.*

L1
- **At 500 ft AGL or below:**
  BRACE FOR IMPACT....ORDER
- **For flare:**
  TOUCHDOWN AT MIN V/S
- **At touchdown:**
  ALL ENG MASTERS (ALL)....OFF
  APU MASTER SW....OFF
  EMER EVAC PROC....APPLY

MLG BAY FIRE DET FAULT

Applicable to: ALL

Ident.: PRO-ABN-MLG_BAY-2611W100-00017211.0001001 / 02 JUL 14

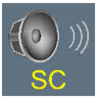
ANNUNCIATIONS

Triggering Conditions:

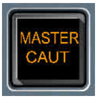
L2 The MLG bay fire detection system is failed.
For more information about the detection logic in the MLG bay, *Refer to DSC-26-50-10 Detection Logic*.

Indications:

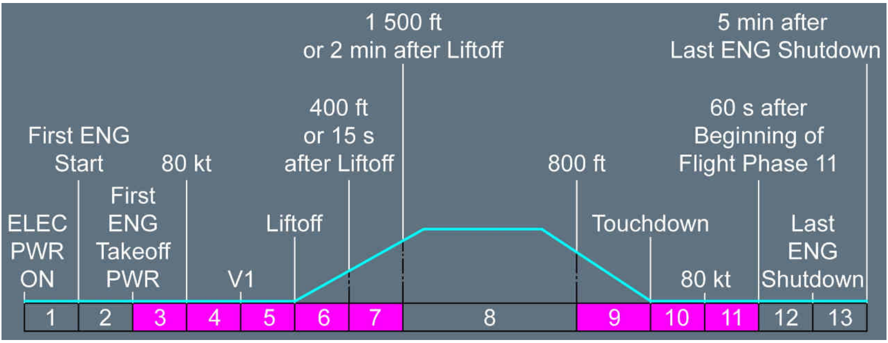
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

Ident.: PRO-ABN-MLG_BAY-2611W100-00017213.0001001 / 02 JUL 14

Note: *If the failure is only due to an IMA module failure, the ECAM displays the DUE TO IMA MODULE FAULT subtitle.*

Crew awareness.

Continued on the following page

MLG BAY FIRE DET FAULT (Cont'd)

Ident.: PRO-ABN-MLG_BAY-2611W100-00017214.0001001 / 02 JUL 14

STATUS

INOP SYS

ALL PHASES

MLG BAY FIRE DET

MLG BAY FIRE

Applicable to: ALL

Ident.: PRO-ABN-MLG_BAYF-2620W100_F-00017202.0001001 / 02 JUL 14

ANNUNCIATIONS

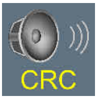
Triggering Conditions:

L2 A fire is detected in the MLG bay when:
- Both loops A and B detect a fire, or
- One loop detects a fire and the other loop is failed, or
- Both loops fail within 5 s.

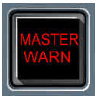
For more information about the detection logic in the MLG bay, *Refer to DSC-26-50-10 Detection Logic*.

Indications:

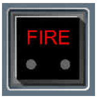
Audio



Master Light


MASTER
WARN

Local Light

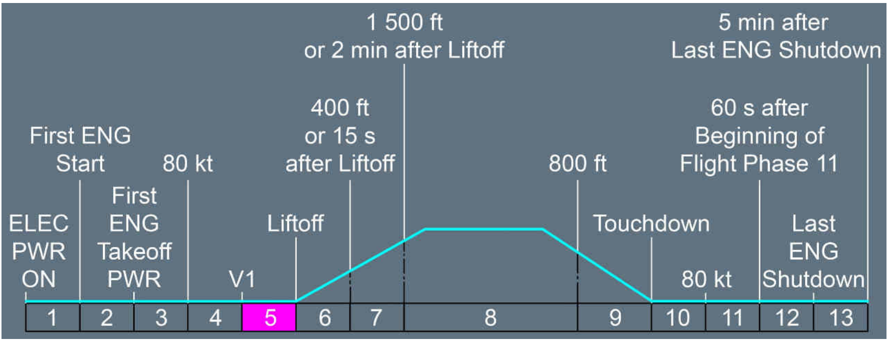


MLG BAY light

SD page

WHEEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

Continued on the following page

MLG BAY FIRE (Cont'd)

Ident.: PRO-ABN-MLG_BAYF-2620W100_F-00017204.0002001 / 26 JUL 17

- **In flight:**

  LAND ASAP

  - **If landing gear is not down:**
    - **If speed is above 250/.55:**
      SPEED....................REDUCE BELOW 250/.55

    L/G LEVER....................DOWN

  L/G : KEEP DOWN
  ATC....................NOTIFY
  MAX SPEED: 250/.55

- **On ground:**
  ALL THR LEVERS....................IDLE
  - **WHEN AIRCRAFT STOPPED:**
    PARK BRK....................ON
    ATC....................NOTIFY

    L2 *Notify ATC of the nature of the emergency, and state intentions.*

    L1 CABIN CREW....................ALERT

    L2 *Make a short and precise announcement to warn that an emergency evacuation may be required.*

    L1 ALL ENG MASTERS....................OFF

    L2 *Associated LP and HP valves close.*

    L1
    - **EVAC RQRD?**
      - **YES**
        EVAC (PA)....................ANNOUNCE

        L2 *Make a short and precise announcement to order the emergency evacuation.*

        L1 EVAC COMMAND ⊲ ....ON
        APU MASTER SW....................OFF
        ALL 4 BATS....................OFF

        L2 *Only PA announcement and CAB communication are available, via the handset.*

      L1
      - **NO**
        CABIN CREW & PAX (PA)....................ADVISE

Continued on the following page

MLG BAY FIRE (Cont'd)

Ident.: PRO-ABN-MLG_BAYF-2620W100_F-00017205.0001001 / 02 JUL 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

MAX SPEED: 250/.55

LIMITATIONS ON PFD

ALL PHASES

MAX SPEED: 250/.55

MEMOPAGE

MEMO ON ECAM

LAND ASAP

Intentionally left blank

[ABN] NAV IR ALIGNMENT IN ATT MODE

Applicable to: ALL

Ident.: PRO-ABN-NAV-9034W100-00015863.0001001 / 06 NOV 14

ANNUNCIATIONS

Triggering Conditions:

L2 To display this procedure, the flight crew must press the ABN pb on the ECP, and then select the IR ALIGNMENT IN ATT MODE in the NAV section.

Ident.: PRO-ABN-NAV-9034W100-00004543.0001001 / 06 NOV 14

L2 If IR alignment is lost in flight, the navigation mode of affected IR is inoperative. However, the CDS automatically reconfigures to use an operative IR.
If the navigation mode of all IRs is inoperative, the heading is inoperative (HDG flag appears on the PFD and on the ND). For attitude, the PFDs automatically reconfigure to use the ISIS attitude (for more information, *Refer to DSC-34-NAV-20-30 Display of ISIS Inertial Data*).
Aircraft attitude and heading for affected IR can be recovered with the following procedure.

During the procedure, the flight crew must ensure that:
- The wings are level
- The speed is constant.

Ident.: PRO-ABN-NAV-9034W100-00008330.0002001 / 03 JUL 20

1 IR MODE SEL (AFFECTED)..ATT
SPEED, HDG & FL : KEEP CONST FOR 30 S
FMS POSITION / IRS PAGE..SELECT
HDG..ENTER THEN UPDATE REGULARLY

L2 *Note:* *Due to IR drift, the flight crew must periodically crosscheck the magnetic heading with the standby compass, and update regularly the heading if required.*

L1

DEACTIVATE

[ABN] NAV UNRELIABLE AIR SPEED INDICATION

Applicable to: ALL

Ident.: PRO-ABN-NAV-9027W140-00019126.0001001 / 06 NOV 14

ANNUNCIATIONS

Triggering Conditions:

L2 To display this procedure, the flight crew must press the ABN pb on the ECP, and then select the UNRELIABLE AIR SPEED INDICATION in the NAV section.

Continued on the following page

[ABN] NAV UNRELIABLE AIR SPEED INDICATION **(Cont'd)**

AP.......................................OFF
A/THR.......................................OFF
FD.......................................OFF

L2 *The flight crew considers the ADR speeds unreliable. As a consequence, they must not use the AP/FD and A/THR.*

L1 AIR DATA SWTG ON PF SIDE.......................................BKUP

L2 *The PFD on the PF side displays the backup speed and backup altitude. The backup air data is reliable.*

L3 *For more information on the display of backup indications, Refer to DSC-34-NAV-20-30 Backup Speed and Backup Altitude Indications.*

L2 *The air data displayed on the PM side remains based on the ADRs. As a consequence, the PM should consider the air data displayed on its PFD as unreliable.*

L1 MIN N1 (ALL ENGs)....................................... 40 %

L2 *The backup speed is displayed on PF side with the AIR DATA selector. When the ADRs are on and are not rejected by PRIMs, the backup speed is only based on FADECs data. The thrust must be above 40 % N1 to ensure the accuracy of the displayed backup speed.*

L1 ■ **If CAPT & F/O SPD DISAGREE (>30 KT):**

ADR 1+2+3 P/Bs ....OFF

L2 *The backup speed is reliable. The flight crew confirms that the ADRs are unreliable. Therefore, the flight crew must switch off the ADRs.*
The RVSM capability is lost (Refer to PRO-SPO-RVSM Required Equipment and Functions).

The PRIMs compare the ISIS air data and the backup air data:

- *If there are no differences, the CDS displays the backup air data on the PFD of the PF (as set with the AIR DATA selector) and the ISIS air data on the PFD of the PM. As a consequence, the alternate law is triggered. In this case, the OVERSPEED alert is not available.*
  For more information on the display of ISIS air data indications, Refer to DSC-34-NAV-20-30 Display of ISIS Speed and Altitude Indications.
- *In the case of differences, the PRIMs reject the ISIS air data and the CDS displays the backup air data on both PFDs. As a consequence, the direct law is triggered.*

L1 N1.......................................AS RQRD

L2 *When all ADRs are switched off , the backup speed is based on FADECs data at high speed but also on AOA probes at low speed. Therefore, the thrust can be set as required.*

Continued on the following page

[ABN] NAV UNRELIABLE AIR SPEED INDICATION **(Cont'd)**

L1 SPD & ALT...FLY THE BKUP

L2 *Even if the ISIS air data is displayed on one PFD, the PF should use the backup speed and altitude. Indeed, the backup air data is the source of air data which is the most independent from the ADRs (different technology compared to ISIS and ADIRS).*
A rapid change of thrust may disturb the backup speed computation. In this case, the backup speed indication fluctuates during a transient.

L1
- **If backup altitude (or speed) is displayed on at least one PFD:**
  BKUP SPD ACCURACY : 10 KT
  BKUP ALT ACCURACY : 500 FT

L2 *The speed and altitude accuracy is downgraded when the PFD displays the backup air data.*

L1
- **If the backup speed is only based on AOA probes and backup speed is displayed on at least one PFD:**
  MAX SPEED : 300/.80
  MAX FL : 300

L2 *Due to failures, the PRIMs cannot use the FADEC air data for computation of the backup speed. Therefore, the flight level and speed are limited to ensure the accuracy of the backup speed.*

L1 GA THR : TOGA ONLY
CABIN ALT MODE...MAN

ACFT CRZ FL	CABIN ALT TRGT
430	6000
400	5900
350	5000
300	4200
250	3300
200	2500
150	1600
100	800

CABIN ALT TRGT...AS RQRD
WING A-ICE...OFF
AVOID ICING CONDs

■ **If CAPT & F/O SPD DISAGREE <30 KT:**
AIR DATA SWTG...AUTO

Continued on the following page

[ABN] NAV UNRELIABLE AIR SPEED INDICATION **(Cont'd)**

L2 *The ADRs are reliable and can be used for display on both PFDs.*

L1 AP & FD.. AS RQRD
A/THR OR N1.. AS RQRD

L2 *The ADRs are reliable. Therefore, the flight crew can use the AP/FD and A/THR.*

L1 DEACTIVATE

- **If all ADRs are switched off:**

L12

ASSOCIATED PROCEDURES

F/CTL DIRECT LAW (PROT LOST)

Refer to procedure

The flight controls will revert to DIRECT LAW if the discrepancy between the ISIS and the BACKUP sources is above a monitoring threshold. Otherwise, the flight controls will revert to ALTERNATE LAW.

Continued on the following page

[ABN] NAV UNRELIABLE AIR SPEED INDICATION (Cont'd)

Ident.: PRO-ABN-NAV-9027W140-00020137.0009001 / 26 JUL 17

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

- **If the backup speed is displayed on at least one PFD and is only based on AOA probes:**
  MAX SPEED : 300/.80
  MAX FL : 300
- **If all ADRs are switched off:**
  AVOID ICING CONDs

APPR & LDG

- **If all ADRs are switched off:**
  GA THR : TOGA ONLY

LIMITATIONS ON PFD

ALL PHASES

- **If the backup speed is displayed on at least one PFD and is only based on AOA probes:**
  MAX SPEED : 300/.80
  MAX FL : 300
- **If all ADRs are switched off:**
  AVOID ICING CONDs

L12

DEFERRED PROC

ALL PHASES

- **If all ADRs are switched off:**

  > AT TOP OF DES : LDG ELEVN

  CABIN ALT TRGT.. LDG ELEVN

  The automatic cabin pressure control is failed due to all ADRs switched off. Therefore, the flight crew must set the landing field elevation with the CABIN ALT TRGT selector.

Continued on the following page

[ABN] NAV UNRELIABLE AIR SPEED INDICATION **(Cont'd)**

STATUS

INOP SYS

ALL PHASES	APPR & LDG
RNP AR ADR 1+2+3 (If all ADRs are switched off) TCAS 1+2 (If all ADRs are switched off) TAWS (If all ADRs are switched off) ADS-B TRAFFIC 1+2 ◁ (If all ADRs are switched off) CAB PRESS AUTO CTL (If all ADRs are switched off) WING A-ICE (If all ADRs are switched off)	ROW/ROP (If all ADRs are switched off) BTV (If all ADRs are switched off) GA SOFT REACTIVE W/S DET

INFO

- **If backup altitude or speed is displayed on at least one PFD:**
  BKUP SPD ACCURACY : 10 KT
  BKUP ALT ACCURACY : 500 FT
- **If all ADRs are switched off:**
  APPR 1 ONLY

ACFT CRZ FL	CABIN ALT TRGT
430	6000
400	5900
350	5000
300	4200
250	3300
200	2500
150	1600
100	800

[MEM] UNRELIABLE AIR SPEED INDICATION

Ident.: PRO-ABN-NAV-00020895.0001001 / 06 NOV 14
Applicable to: ALL

L2 *Note:*

1. *This procedure contains items that the flight crew must perform from memory. For more information, Refer to FCTM/PR-AEP-NAV Unreliable Air Speed Indication*
2. *When a safe trajectory is ensured with the below applicable pitch and thrust values, the flight crew must activate the NAV UNRELIABLE AIR SPEED INDICATION not-sensed procedure without delay, Refer to (procedure).*

L1 ● **If the safe conduct of the flight is impacted:**

AP.. OFF
A/THR.. OFF
FD.. OFF

L2 *The flight crew considers the ADR speed unreliable. As a consequence, they must not use the AP/FD and A/THR.*

L1 PITCH / THRUST:
Below THR RED ALT........................ 12.5 °/TOGA
Above THR RED ALT and Below FL 100 .... 10 °/CLB
Above THR RED ALT and Above FL 100 .... 5 °/CLB
FLAPS (if CONF 0(1)(2)(3))........................ MAINTAIN CURRENT CONF
FLAPS (if CONF FULL)........................ SELECT CONF 3 AND MAINTAIN
SPEED BRAKES........................ CHECK RETRACTED
L/G........................ UP

NAV ACFT POS DEGRADED

Applicable to: ALL

Ident.: PRO-ABN-NAV-3410W200-00024930.0001001 / 03 JAN 19

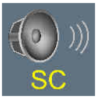
ANNUNCIATIONS

Triggering Conditions:

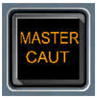
L2 At least one IR declares that the aircraft position is degraded.
This degradation results from a too long time since the IR have been powered without a long alignment.
This necessitates to perform a long alignment on the three IRs while the aircraft is stopped.

Indications:

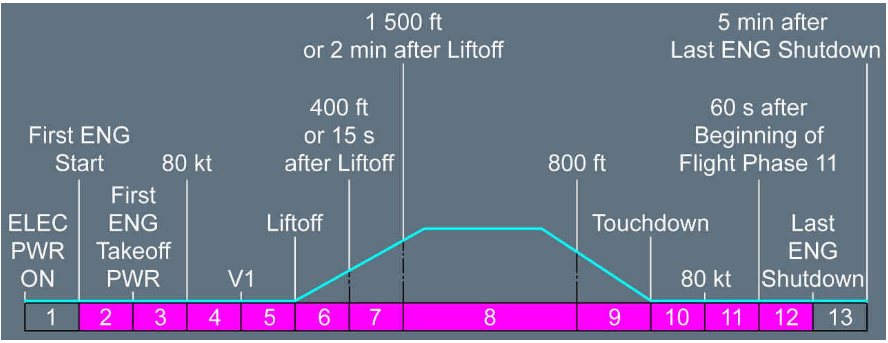
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
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Ident.: PRO-ABN-NAV-3410W200-00024931.0001001 / 13 MAR 19

- **WHEN AIRCRAFT STOPPED**

  ALL ADIRS COMPLETE ALIGNMENT ....PERFORM

  L2 *Perform a complete alignment. For more information, Refer to DSC-34-NAV-20-10-40 IR Alignment*

NAV ADR 1(2)(3) FAULT

Applicable to: ALL

Ident.: PRO-ABN-NAV-3410W540-00004514.0002001 / 03 JAN 19

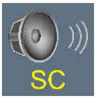
ANNUNCIATIONS

Triggering Conditions:

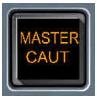
L2 The ADR part of the ADIRU 1(2)(3) is failed.

Indications:

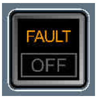
Audio



Master Light

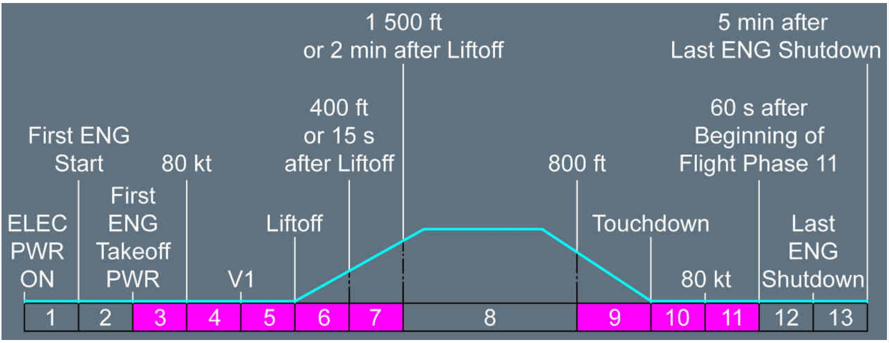

MASTER
CAUT

Local Light



ADR1(2)(3) pb

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
V1
Touchdown
80 kt
Last
ENG
Shutdown
1
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3
4
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Ident.: PRO-ABN-NAV-3410W540-00008274.0002001 / 03 AUG 16

ADR (AFFECTED) P/B.. OFF

Continued on the following page

NAV ADR 1(2)(3) FAULT (Cont'd)

Ident.: PRO-ABN-NAV-3410W540-00008275.0002001 / 03 AUG 16

STATUS

INOP SYS

ALL PHASES

ADR 1(2)(3)

NAV ADR 1+2 (1+3) (2+3) FAULT

Applicable to: ALL

Ident.: PRO-ABN-NAV-3410W510-00004515.0001001 / 01 JUL 14

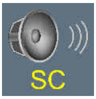
ANNUNCIATIONS

Triggering Conditions:

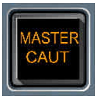
L2 The ADR parts of ADIRUs 1+2 (1+3) (2+3) are failed.

Indications:

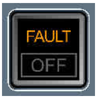
Audio



Master Light

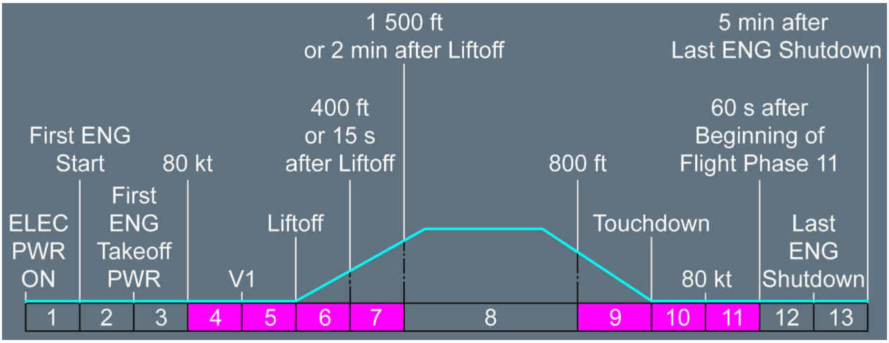

MASTER
CAUT

Local Light



ADR1(2)(3) pb

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Ident.: PRO-ABN-NAV-3410W510-00020054.0002001 / 03 AUG 16

Note: *If the failure occurs during an RNP AR operation, the ECAM displays the RNP AR CAPABILITY DOWNGRADED subtitle.*

Continued on the following page

NAV ADR 1+2 (1+3) (2+3) FAULT (Cont'd)

Ident.: PRO-ABN-NAV-3410W510-00008277.0002001 / 03 AUG 16

- **If RNP AR operation in progress:**
  MINIMUM LIMITED TO RNP 0.30

ADR (AFFECTED) P/B.. OFF
ALT SINGLE SOURCE ON PFD_S

L2 *The same altitude is displayed on both PFDs. Indeed, when the two affected ADRs are set to OFF, only one ADR is available and supplies the altitude to both PFDs. The RVSM capability is lost (Refer to PRO-SPO-RVSM Required Equipment and Functions).*

L1 GA THR : TOGA ONLY

L2 *The go-around soft mode is failed.*

Ident.: PRO-ABN-NAV-3410W510-00008278.0003001 / 26 JUL 17

LIMITATIONS

LIMITATIONS ON ECAM

APPR & LDG

GA THR : TOGA ONLY

STATUS

INOP SYS

ALL PHASES	APPR & LDG
ADR 1+2(1+3)(2+3)	GA SOFT

INFO

ALT SINGLE SOURCE ON PFD_s
FOR RNP AR : MINIMUM LIMITED TO RNP 0.30
LAND 3 SINGLE ONLY

NAV ADR 1+2+3 DATA DEGRADED

Applicable to: ALL

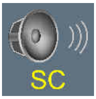
Ident.: PRO-ABN-NAV-3413W200-00004516.0001001 / 06 NOV 14

ANNUNCIATIONS

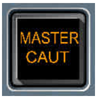
Triggering Conditions:

L2 A damage is detected on the static pressure probes of the three ADRs.
It may be an indication of a bird strike.
Indications:

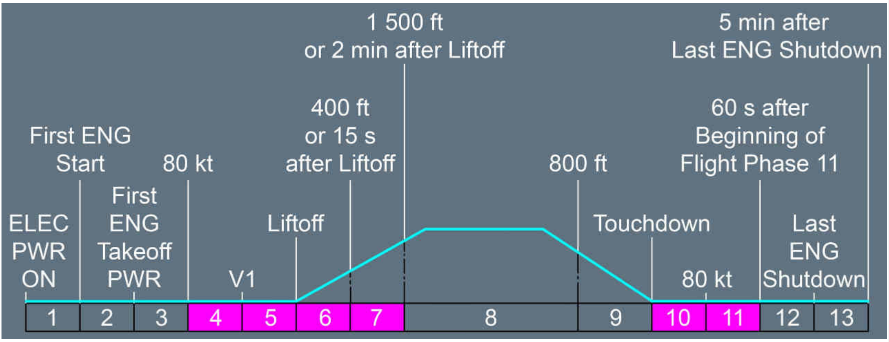
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Ident.: PRO-ABN-NAV-3413W200-00008279.0001001 / 01 JUL 14

L2 The ADRs compute altitude with a degraded accuracy. Therefore, the RVSM capability is lost. For more information about RVSM abnormal procedures, *Refer to PRO-SPO-RVSM Abnormal and Emergency Procedures*.

Continued on the following page

NAV ADR 1+2+3 DATA DEGRADED (Cont'd)

Ident.: PRO-ABN-NAV-3413W200-00008280.0001001 / 01 JUL 14

USE ISIS

[MFD SURV] ALT RPTG...OFF

L2 *The altitude transmitted by the XPDR to the ATC and surrounding aircraft may be erroneous. Therefore, the flight crew must disconnect the altitude reporting. After the flight crew turns off the altitude reporting, an ALT RPTG OFF memo and a TCAS STBY memo appear on the WD.*

NAV ADR 1+2+3 FAULT

Applicable to: ALL

Ident.: PRO-ABN-NAV-3410W500-00004518.0001001 / 01 JUL 14

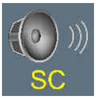
ANNUNCIATIONS

Triggering Conditions:

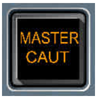
L2 The ADR parts of ADIRUs 1+2+3 are failed.

Indications:

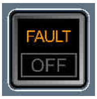
Audio



Master Light

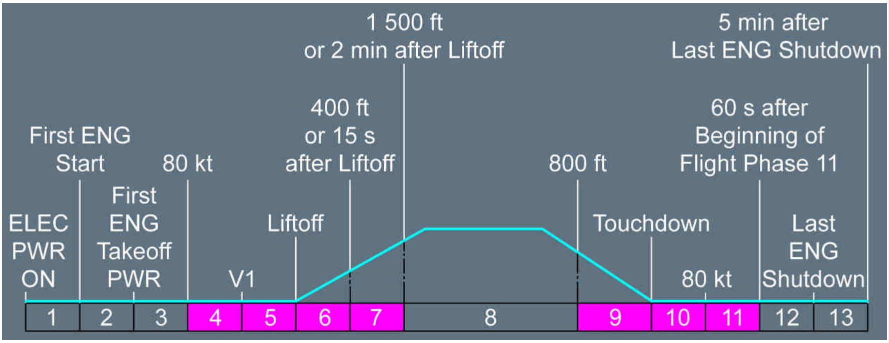

MASTER
CAUT

Local Light



ADR1(2)(3) pb

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
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Other Inhibition:

This alert is also inhibited when the NAV UNRELIABLE AIR SPEED INDICATION not-sensed procedure (*Refer to procedure*) is triggered and all ADRs are set to OFF.

Ident.: PRO-ABN-NAV-3410W500-00020106.0001001 / 01 JUL 14

Note: *If the failure occurs during an RNP AR operation, the ECAM displays the RNP AR CAPABILITY LOST subtitle.*

Continued on the following page

NAV ADR 1+2+3 FAULT (Cont'd)

Ident.: PRO-ABN-NAV-3410W500-00008286.0004001 / 26 JUL 17

ADR 1+2+3 P/Bs .... OFF

L2 *The RVSM capability is lost (Refer to PRO-SPO-RVSM Required Equipment and Functions).*

L1 CABIN ALT MODE.. MAN

L2 *The automatic cabin pressure control is inoperative due to the failure of all ADRs.*

L1

ACFT CRZ FL	CABIN ALT TRGT
430	6000
400	5900
350	5000
300	4200
250	3300
200	2500
150	1600
100	800

CABIN ALT TRGT.. AS RQRD

WING A-ICE.. OFF
AVOID ICING CONDs

- **If the ISIS altitude and speed are automatically displayed on both PFDs:**

  ISIS ALT & SPD ON PFDs

  L2 *When all ADRs are failed, the PRIMs use the backup source (with air data from the FADECs and AOA probes) to monitor the ISIS. If the PRIMs do not reject the ISIS altitude and speed, both PFDs automatically display the ISIS altitude and speed. If the PRIMs reject the ISIS altitude or speed, both PFDs automatically displays the altitude or speed from backup source.*

  L1 FOR BARO SETTING : USE ISIS

  L2 *When the ISIS altitude is displayed on both PFDs, the barometric setting is not possible with the EFIS CP. The barometric setting must be done with the ISIS.*

L1
- **If the lateral and vertical managed modes are not available:**

  AUTO FLT MANAGED MODES NOT AVAIL

  L2 *When all ADRs are failed, the managed modes are inoperative. Only selected modes are available.*

L1 GA THR : TOGA ONLY

L2 *The go-around soft mode is failed.*

Continued on the following page

NAV ADR 1+2+3 FAULT (Cont'd)

L1

ASSOCIATED PROCEDURES

F/CTL ALTN LAW (PROT LOST)

Refer to procedure

Continued on the following page

NAV ADR 1+2+3 FAULT (Cont'd)

Ident.: PRO-ABN-NAV-3410W500-00014300.0007001 / 26 JUL 17

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES	APPR & LDG
AVOID ICING CONDs ● **If the lateral and vertical managed modes are not available:** NO MANAGED MODES	GA THR : TOGA ONLY

LIMITATIONS ON PFD

ALL PHASES

AVOID ICING CONDs

L12

DEFERRED PROC

ALL PHASES

> AT TOP OF DES : LDG ELEVN

CABIN ALT TRGT..LDG ELEVN

The automatic cabin pressure control is failed due to the failure of all ADRs. Therefore, the flight crew must set the landing field elevation with the CABIN ALT TRGT selector.

STATUS

INOP SYS

ALL PHASES	APPR & LDG
RNP AR ADR 1+2+3 TCAS 1+2 TAWS ADS-B TRAFFIC 1+2 ◁ CAB PRESS AUTO CTL WING A-ICE	ROW/ROP GA SOFT

Continued on the following page

NAV ADR 1+2+3 FAULT (Cont'd)

INFO

- **If the ISIS altitude and speed are displayed on both PFDs:**
  ISIS ALT & SPD ON PFDs
  FOR BARO SETTING : USE ISIS

ACFT CRZ FL	CABIN ALT TRGT
430	6000
400	5900
350	5000
300	4200
250	3300
200	2500
150	1600
100	800

APPR 1 ONLY

NAV AIR DATA REDUNDANCY LOST

Applicable to: ALL

Ident.: PRO-ABN-NAV-3413W300-00020128.0001001 / 01 JUL 14

ANNUNCIATIONS

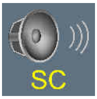
Triggering Conditions:

L2 The PRIMs reject:

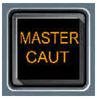
- Two or more air data sources (ADR or ISIS), as indicated by the MULTIPLE AIR DATA REJECTED BY PRIMs INFO message, or
- One or more air data sources (ADR or ISIS) and one or more ADRs are failed.

Indications:

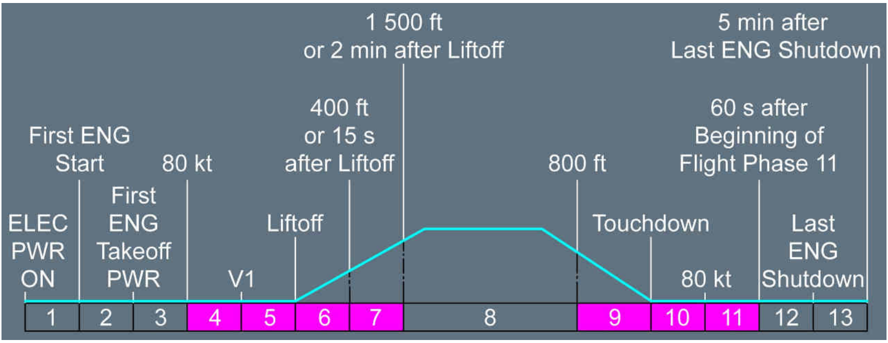
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Other Inhibition:

This alert is also inhibited when the NAV UNRELIABLE AIR SPEED INDICATION not-sensed procedure (*Refer to procedure*) is triggered and all ADRs are set to OFF.

Continued on the following page

NAV AIR DATA REDUNDANCY LOST (Cont'd)

Ident.: PRO-ABN-NAV-3413W300-00020130.0001001 / 01 JUL 14

Note: *If the failure occurs during an RNP AR operation, the ECAM displays the RNP AR CAPABILITY DOWNGRADED or RNP AR CAPABILITY LOST subtitle.*

Continued on the following page

NAV AIR DATA REDUNDANCY LOST (Cont'd)

Ident.: PRO-ABN-NAV-3413W300-00020131.0011001 / 07 JUN 19

- **During an RNP AR operation**
  and
  If the ECAM displays the RNP AR CAPABILITY DOWNGRADED subtitle:
  MINIMUM LIMITED TO RNP 0.30
- **If PRIMs reject two or more air data sources (ADR or ISIS):**
  MULTIPLE AIR DATA REJECTED BY PRIMs
- **If at least one MFP probe is not deiced:**
  WING A-ICE....................OFF
  AVOID ICING CONDs
- **If only ISIS altitude (or speed) (or altitude and speed) is displayed on both PFDs:**
  ISIS ALT(SPD)(ALT & SPD) ON PFDs

L2 *Both PFDs automatically display the ISIS altitude (or speed) (or altitude and speed) when the PRIMs reject this parameter from all operative ADRs. For more information,Refer to DSC-34-NAV-20-30 Display of ISIS Speed and Altitude Indications.*

L1 FOR BARO SETTING : USE ISIS (for altitude)

L2 *When the ISIS altitude is displayed on both PFDs, the barometric setting is not possible with the EFIS CP. The barometric setting must be done with the ISIS.*

L1
- **If only backup altitude (or speed) (or altitude and speed) is displayed on both PFDs:**
  BKUP ALT(SPD)(ALT & SPD) ON PFDs

L2 *Both PFDs automatically display the backup altitude (or speed) (or altitude and speed) when the PRIMs reject this parameter from all operative ADRs and ISIS. For more information,Refer to DSC-34-NAV-20-30 Backup Speed and Backup Altitude Indications.*

L1 BKUP SPEED ACCURACY : 10 KT (for speed)

L2 *The backup speed is automatically displayed on the PFDs when the PRIMs have rejected the speed from all operative ADRs and ISIS. The speed accuracy is downgraded.*

L1 BKUP ALT ACCURACY : 500 FT (for altitude)

L2 *The backup altitude is automatically displayed on the PFDs when the PRIMs have rejected the altitude from all operative ADRs and ISIS. The altitude accuracy is downgraded.*

L1
  - **If FCU BKUP 1 is failed:**
    CAPT BKUP ALT BARO REF : STD ONLY (for altitude)

L2 *The backup altitude only enables to set the standard barometric reference.*

Continued on the following page

NAV AIR DATA REDUNDANCY LOST (Cont'd)

L1

- **If FCU BKUP 2 is failed:**

  F/O BKUP ALT BARO REF : STD ONLY (for altitude)

L2 *The backup altitude only enables to set the standard barometric reference.*

L1

- **If the backup speed is displayed on both PFDs and is only based on AOA probes:**

  MAX FL : 300

  MAX SPEED : 300/.80

L2 *Both PFDs automatically display the backup speed. However, due to failures, the PRIMs cannot use the FADECs air data in the backup speed computation. Therefore, the flight level and speed are limited to ensure the accuracy of the backup speed.*

L1

- **If the same ADR altitude is displayed on both PFDs:**

  ALT SINGLE SOURCE

L2 *The automatic monitoring (with the ADRs and the PRIMs) has rejected the two other ADRs for altitude data. The RVSM capability is lost (Refer to PRO-SPO-RVSM Required Equipment and Functions).*

L1

- **If the lateral and vertical managed modes are not available:**

  AUTO FLT MANAGED MODES NOT AVAIL

L2 *When all ADRs are failed, the managed modes are inoperative. Only selected modes are available.*

L1

- **If two or three ADRs are failed or rejected by PRIMs:**

  GA THR : TOGA ONLY

- **If all ADRs are failed or rejected by PRIMs:**

L12

ASSOCIATED PROCEDURES

F/CTL DIRECT LAW (PROT LOST)

Refer to procedure

The flight controls will revert to DIRECT LAW if the discrepancy between the ISIS and the BACKUP sources is above a monitoring threshold. Otherwise, the flight controls will revert to ALTERNATE LAW.

Continued on the following page

NAV AIR DATA REDUNDANCY LOST (Cont'd)

Ident.: PRO-ABN-NAV-3413W300-00020133.0007001 / 03 JAN 19

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

- **If the backup speed is displayed on both PFDs and is only based on AOA probes:**
  MAX SPEED : 300/.80
  MAX FL : 300
- **If at least one MFP or SSA probe is not deiced:**
  AVOID ICING CONDs
- **If the lateral and vertical managed modes are not available:**
  NO MANAGED MODES

APPR & LDG

- **If two or three ADRs are failed or rejected by PRIMs:**
  GA THR : TOGA ONLY

LIMITATIONS ON PFD

ALL PHASES

- **If the backup speed is displayed on both PFDs and is only based on AOA probes:**
  MAX SPEED : 300/.80
  MAX FL : 300
- **If at least one MFP or SSA probe is not deiced:**
  AVOID ICING CONDs

STATUS

INOP SYS

ALL PHASES

RNP AR (If the RNP AR is lost)

APPR & LDG

GA SOFT (If two or three ADRs are failed or rejected by PRIMs)

Continued on the following page

NAV AIR DATA REDUNDANCY LOST (Cont'd)

WING A-ICE (If at least one MFP or SSA probe is not deiced)
GPWS (If all ADRs are rejected by PRIMs)
TCAS 1+2 (If all ADRs are rejected by PRIMs)
TAWS (If all ADRs are rejected by PRIMs)
TERR SYS (If all ADRs are rejected by PRIMs)
ADS-B TRAFFIC 1+2 ◁ (If all ADRs are rejected by PRIMs)

AUTOLAND (If three or more air data sources are failed or rejected by PRIMs)

INFO

- **If PRIMs reject two or more air data sources (ADR or ISIS):**
  MULTIPLE AIR DATA REJECTED BY PRIMs
- **If only ISIS altitude (or speed) (or altitude and speed) is displayed on both PFDs:**
  ISIS ALT(SPD)(ALT & SPD) ON PFDs
  FOR BARO SETTING : USE ISIS (For altitude)
- **If only backup altitude (or speed) (or altitude and speed) is displayed on both PFDs:**
  BKUP ALT(SPD)(ALT & SPD) ON PFDs
  BKUP SPD ACCURACY : 10 KT (For speed)
  BKUP ALT ACCURACY : 500 FT (For altitude)
- **If the same ADR altitude is displayed on both PFDs:**
  ALT SINGLE SOURCE

FOR RNP AR : MINIMUM LIMITED TO RNP 0.30

- **If two or more ADRs are failed or rejected by PRIMs:**
  APPR 1 ONLY
- **If one ADRs is failed or rejected by PRIMs:**
  LAND 3 SINGLE ONLY

NAV AOA DISAGREE

Applicable to: ALL

Ident.: PRO-ABN-NAV-2790W420-00004520.0001001 / 01 JUL 14

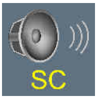
ANNUNCIATIONS

Triggering Conditions:

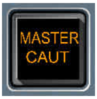
L2 The PRIMs detect that the angle of attack values disagree.

Indications:

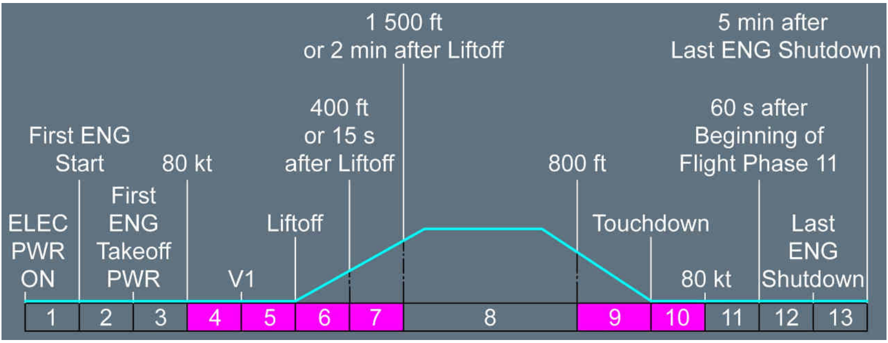
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

NAV AOA DISAGREE (Cont'd)

Ident.: PRO-ABN-NAV-2790W420-00008291.0003001 / 29 JAN 19

Crew awareness.

GA THR : TOGA ONLY

L12

ASSOCIATED PROCEDURES

F/CTL DIRECT LAW (PROT LOST)

Refer to procedure

The flight control laws revert to direct law. The AP and the FD are not available.

Ident.: PRO-ABN-NAV-2790W420-00008292.0003001 / 29 JAN 19

STATUS

INOP SYS

ALL PHASES	APPR & LDG
AUTO EMER DES ◁	REACTIVE W/S DET GA SOFT

NAV CAPT(F/O) ARPT NAV FAULT

Applicable to: ALL

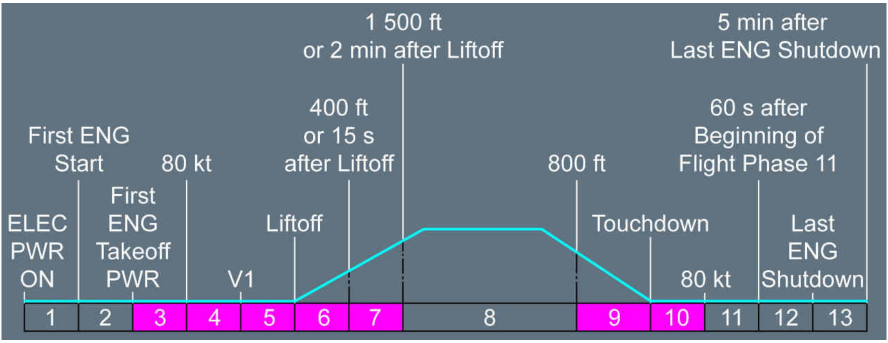
Ident.: PRO-ABN-NAV-3438W010-00012613.0001001 / 01 JUL 14

ANNUNCIATIONS

Triggering Conditions:

L2 The airport navigation function (ANF) on the side of the CAPT(F/O) is failed.
The ANF is available on the side of the F/O(CAPT).

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
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ON
First
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Takeoff
PWR
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Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Ident.: PRO-ABN-NAV-3438W010-00012615.0001001 / 01 JUL 14

Crew awareness.

Ident.: PRO-ABN-NAV-3438W010-00012616.0001001 / 01 JUL 14

STATUS

INOP SYS

APPR & LDG

CAPT(F/O) ARPT NAV

NAV CAPT+F/O ARPT NAV FAULT

Applicable to: ALL

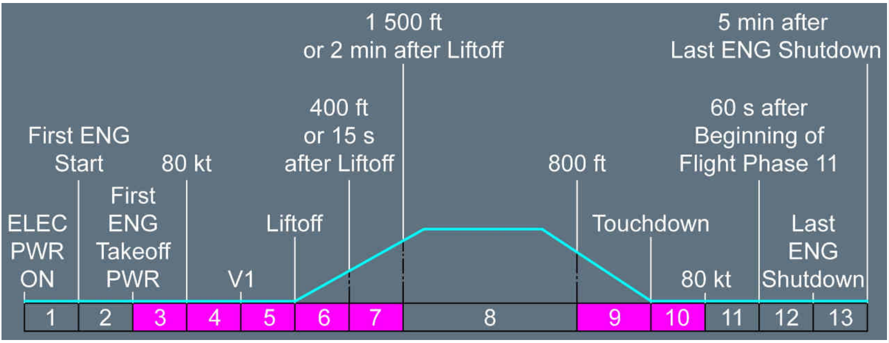
Ident.: PRO-ABN-NAV-3438W030-00004521.0001001 / 01 JUL 14

ANNUNCIATIONS

Triggering Conditions:

L2 The Airport Navigation Function (ANF) is failed on both sides, or the CAPT ANF database and the F/O ANF database are not the same.

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
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ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-NAV-3438W030-00008294.0001001 / 01 JUL 14

Crew awareness.

L2 The ROW/ROP remains available even if the ARPT NAV is inoperative.

Ident.: PRO-ABN-NAV-3438W030-00008295.0001001 / 01 JUL 14

STATUS

INOP SYS

APPR & LDG

BTV
ARPT NAV

NAV CAPT(F/O) HUD FAULT

Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB

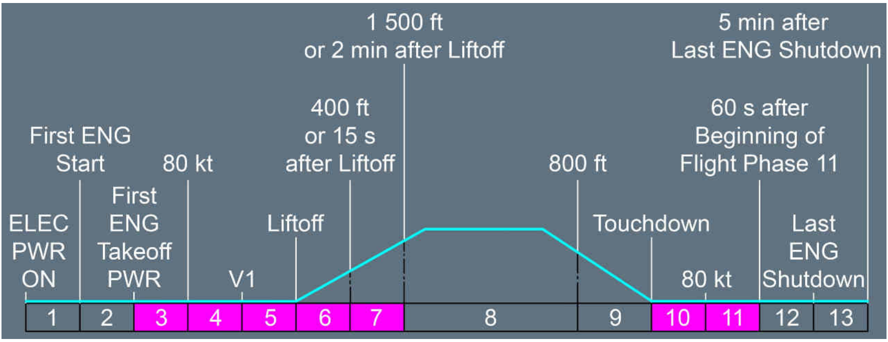
Ident.: PRO-ABN-NAV-3168W200-00016613.0001001 / 03 JUL 14

ANNUNCIATIONS

Triggering Conditions:

L2 The HUD on the CAPT(F/O) side is failed.
The F/O(CAPT) HUD is still available.

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
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or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
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ENG
Takeoff
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ELEC
PWR
ON
Liftoff
V1
Touchdown
80 kt
Last
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Shutdown
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Ident.: PRO-ABN-NAV-3168W200-00016614.0001001 / 03 JUL 14

Crew awareness

Ident.: PRO-ABN-NAV-3168W200-00016615.0001001 / 03 JUL 14

STATUS

INOP SYS

ALL PHASES

CAPT(F/O) HUD

NAV CAPT+F/O HUDs FAULT

Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB

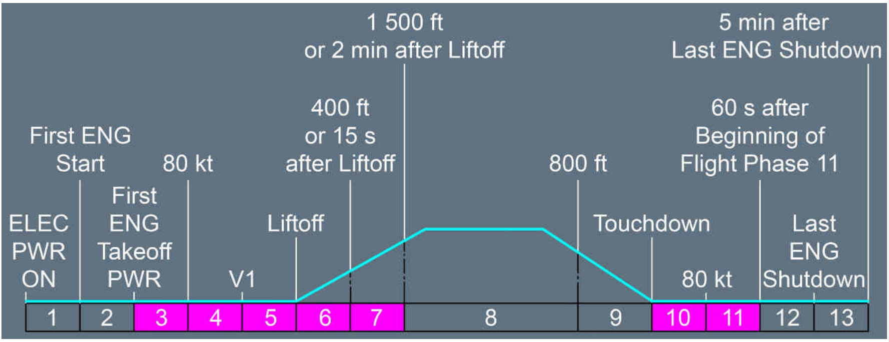
Ident.: PRO-ABN-NAV-3168W220-00016617.0001001 / 03 JUL 14

ANNUNCIATIONS

Triggering Conditions:

L2 The HUDs on both CAPT and F/O sides are failed.

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
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60 s after
Beginning of
Flight Phase 11
ELEC
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Takeoff
PWR
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Liftoff
Touchdown
80 kt
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Shutdown
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Ident.: PRO-ABN-NAV-3168W220-00016619.0001001 / 03 JUL 14

Crew awareness.

Ident.: PRO-ABN-NAV-3168W220-00016620.0003001 / 26 JUL 17

STATUS

INOP SYS

ALL PHASES

CAPT+F/O HUDs

NAV CAPT(F/O) HUD NOT LOCKED

Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB

Ident.: PRO-ABN-NAV-3168W410-00016621.0001001 / 03 JUL 14

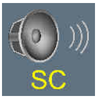
ANNUNCIATIONS

Triggering Conditions:

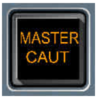
L2 The CAPT(F/O) HUD is not locked in the stowed or deployed position for at least 20 s.

Indications:

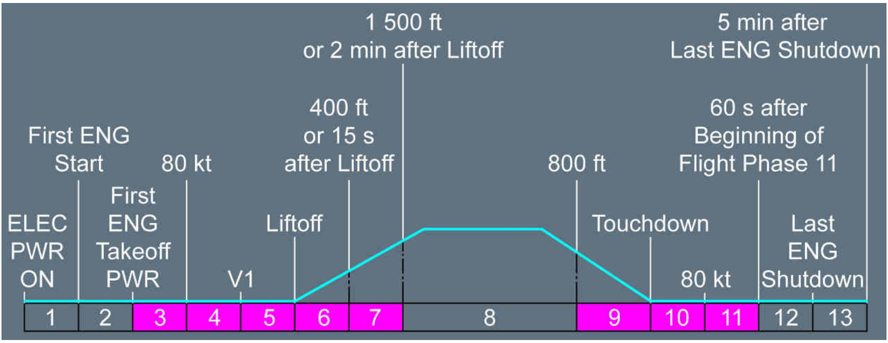
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
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5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
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Liftoff
Touchdown
Last
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Ident.: PRO-ABN-NAV-3168W410-00016623.0001001 / 03 JUL 14

CAPT(F/O) HUD.. LOCK

NAV CAPT(F/O) PFD ON BKUP

Applicable to: ALL

Ident.: PRO-ABN-NAV-3413W400-00020269.0001001 / 01 JUL 14

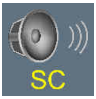
ANNUNCIATIONS

Triggering Conditions:

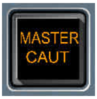
L2 The backup air data source (from FADECs and AOA probes) is manually displayed on the Captain(First Officer) PFD and AP 1(2) is engaged.

Indications:

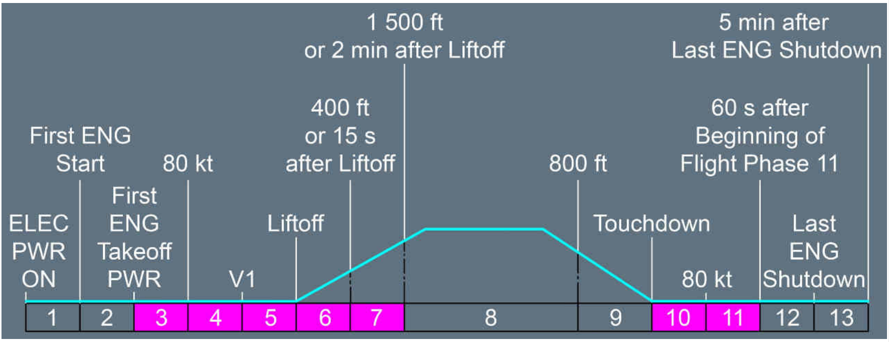
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
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Takeoff
PWR
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PWR
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Liftoff
Touchdown
Last
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Shutdown
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Ident.: PRO-ABN-NAV-3413W400-00020282.0001001 / 01 JUL 14

Note: *If the failure occurs during an RNP AR operation, the ECAM displays the RNP AR CAPABILITY DOWNGRADED subtitle.*

Continued on the following page

NAV CAPT(F/O) PFD ON BKUP (Cont'd)

Ident.: PRO-ABN-NAV-3413W400-00020283.0002001 / 07 JUL 16

- **If RNP AR operation in progress:**
  MINIMUM LIMITED TO RNP 0.30

AP 1(2) : DO NOT USE

NAV CAPT & F/O ATT DISAGREE

Applicable to: ALL

Ident.: PRO-ABN-NAV-3414W380-00006061.0001001 / 01 JUL 14

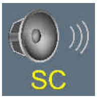
ANNUNCIATIONS

Triggering Conditions:

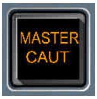
L2 The attitude displayed on the PFD of the Captain differs from the attitude displayed on the PFD of the First Officer by more than 5 ° in pitch or roll.

Indications:

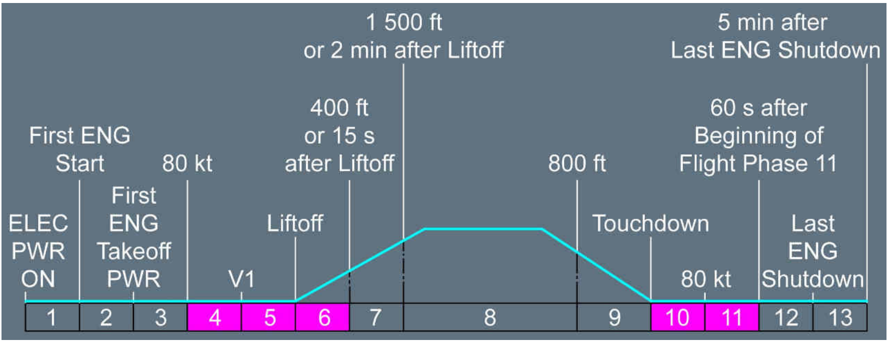
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
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Beginning of
Flight Phase 11
First ENG
Start
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Takeoff
PWR
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PWR
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Liftoff
Touchdown
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NAV CAPT & F/O ATT DISAGREE (Cont'd)

Ident.: PRO-ABN-NAV-3414W380-00020492.0001001 / 01 JUL 14

Crew awareness.

NAV CAPT & F/O BARO REF DISAGREE

Applicable to: ALL

Ident.: PRO-ABN-NAV-3414W400-00016022.0001001 / 01 JUL 14

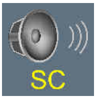
ANNUNCIATIONS

Triggering Conditions:

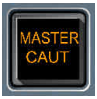
L2 The barometric reference on the side of the Captain, and the barometric reference on the side of the First Officer are different (e.g. one is QNH while the other is STD).

Indications:

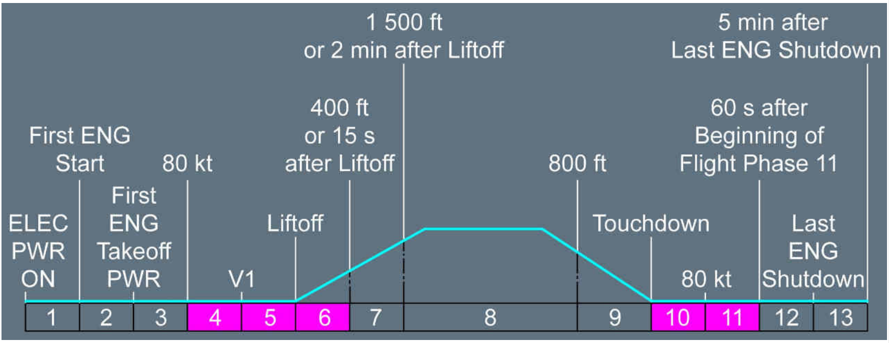
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
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after Liftoff
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Beginning of
Flight Phase 11
First ENG
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NAV CAPT & F/O BARO REF DISAGREE (Cont'd)

Ident.: PRO-ABN-NAV-3414W400-00016023.0001001 / 01 JUL 14

BARO REF.. XCHECK

L2 *Check on both PFDs that the displayed barometric reference is correct. If the barometric reference is erroneous, set the correct reference on FCU or on MFD page (Refer to DSC-31-CDS-40-60 Barometric Reference).*

NAV CAPT & F/O BARO VALUE DISAGREE

Applicable to: ALL

Ident.: PRO-ABN-NAV-3414W410-00016538.0001001 / 01 JUL 14

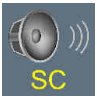
ANNUNCIATIONS

Triggering Conditions:

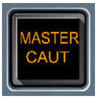
L2 The barometric value(unit) on the side of the Captain, and the barometric value(unit) on the side of the First Officer are different.

Indications:

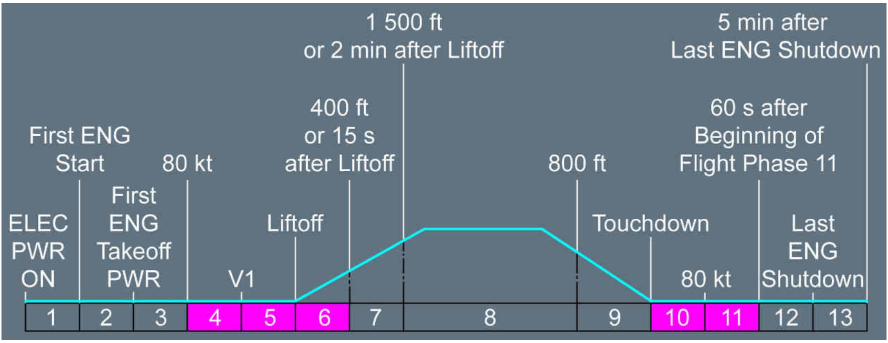
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
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Beginning of
Flight Phase 11
First ENG
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800 ft
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NAV CAPT & F/O BARO VALUE DISAGREE (Cont'd)

Ident.: PRO-ABN-NAV-3414W410-00016539.0001001 / 01 JUL 14

BARO VALUE..XCHECK

L2 *Check on both PFDs that the displayed barometric reference value is correct. If the barometric reference value is erroneous, set the correct value on FCU or on MFD page (Refer to DSC-31-CDS-40-60 Barometric Reference).*

NAV CAPT & F/O HDG DISAGREE

Applicable to: ALL

Ident.: PRO-ABN-NAV-3414W100-00004525.0001001 / 02 OCT 14

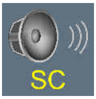
ANNUNCIATIONS

Triggering Conditions:

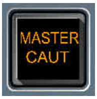
L2 The heading displayed on the EFIS of the Captain differs from the heading displayed on the EFIS of the First Officer by more than 7 °(5 °) in MAG(TRUE) north reference.

Indications:

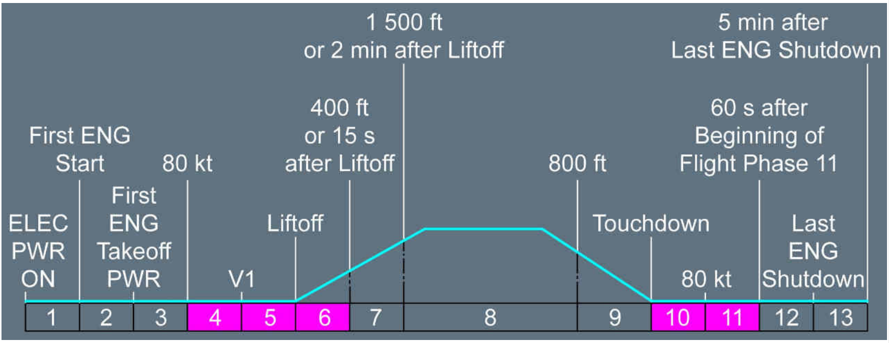
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
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after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
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NAV CAPT & F/O HDG DISAGREE (Cont'd)

Ident.: PRO-ABN-NAV-3414W100-00020493.0001001 / 01 JUL 14

Crew Awareness.

NAV EXTREME LATITUDE

Applicable to: ALL

Ident.: PRO-ABN-NAV-3410W080-00004527.0001001 / 01 JUL 14

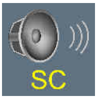
ANNUNCIATIONS

Triggering Conditions:

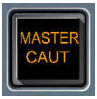
L2 The north reference is not true north, and the aircraft reaches latitudes:
- Above 82 ° 30' N, or
- Above 73 ° 30' N, with a longitude between 117 ° W and 92 ° W, or
- Below 60 ° 30' S.

Indications:

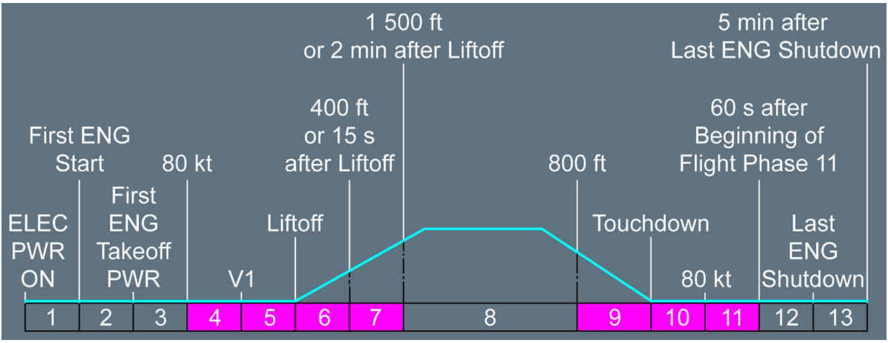
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
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Continued on the following page

NAV EXTREME LATITUDE (Cont'd)

Ident.: PRO-ABN-NAV-3410W080-00008303.0001001 / 01 JUL 14

NORTH REF SEL...TRUE

Use the TRUE/MAG pb on the AFS CP to change the north reference from MAG to TRUE.

NAV FLS 1(2) FAULT

Applicable to: ALL

Ident.: PRO-ABN-NAV-3436W170-00004529.0001001 / 30 JUN 14

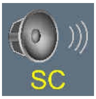
ANNUNCIATIONS

Triggering Conditions:

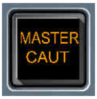
The FLS function within MMR 1(2) is failed.

Indications:

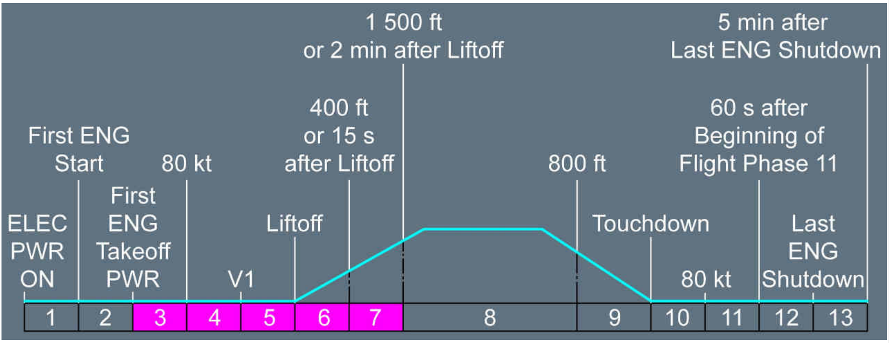
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
V1
Touchdown
80 kt
Last
ENG
Shutdown
1
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3
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Ident.: PRO-ABN-NAV-3436W170-00008305.0001001 / 30 JUN 14

Crew awareness.

Continued on the following page

NAV FLS 1(2) FAULT (Cont'd)

Ident.: PRO-ABN-NAV-3436W170-00008306.0001001 / 30 JUN 14

STATUS

INOP SYS

APPR & LDG

FLS 1(2)

NAV FLS 1+2 FAULT

Applicable to: ALL

Ident.: PRO-ABN-NAV-3436W160-00004530.0001001 / 30 JUN 14

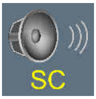
ANNUNCIATIONS

Triggering Conditions:

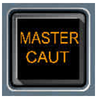
L2 The FLS function within both MMRs is failed.

Indications:

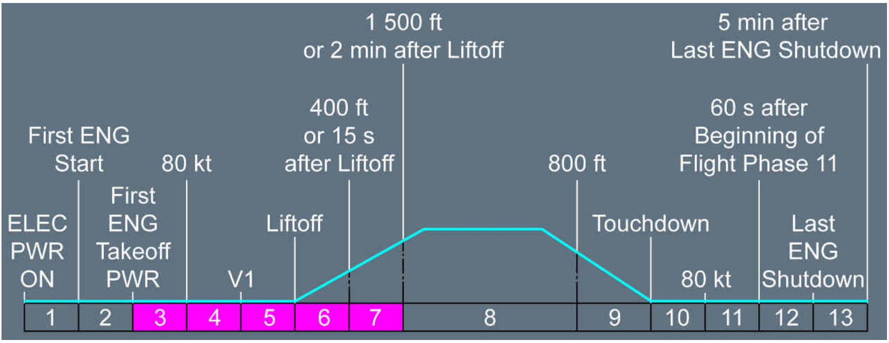
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Ident.: PRO-ABN-NAV-3436W160-00008308.0001001 / 30 JUN 14

Crew awareness.

Continued on the following page

NAV FLS 1+2 FAULT (Cont'd)

Ident.: PRO-ABN-NAV-3436W160-00008309.0001001 / 30 JUN 14

STATUS

INOP SYS

APPR & LDG

FLS 1+2

NAV GLS 1(2) FAULT ◁

Applicable to: ALL

Ident.: PRO-ABN-NAV-3436W140-00016070.0001001 / 09 MAR 16

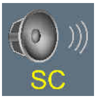
ANNUNCIATIONS

Triggering Conditions:

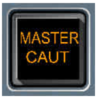
L2 The GLS ◁ function within MMR 1(2) is failed

Indications:

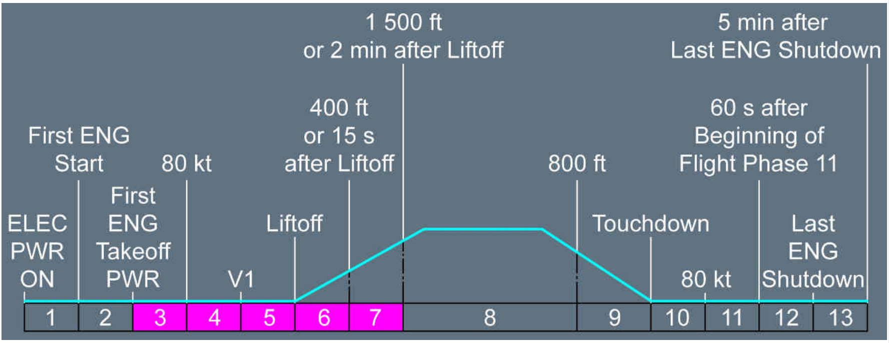
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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4
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Ident.: PRO-ABN-NAV-3436W140-00016072.0001001 / 09 MAR 16

Crew awareness.

Continued on the following page

NAV GLS 1(2) FAULT ◁ (Cont'd)

Ident.: PRO-ABN-NAV-3436W140-00016073.0001001 / 09 MAR 16

STATUS

INOP SYS

APPR & LDG

GLS AUTOLAND ◁
GLS 1(2) ◁

INFO

GLS LIMITED TO APPR 1 ◁

NAV GLS 1+2 FAULT ◁

Applicable to: ALL

Ident.: PRO-ABN-NAV-3436W130-00016075.0001001 / 09 MAR 16

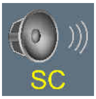
ANNUNCIATIONS

Triggering Conditions:

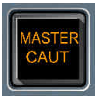
L2 The GLS ◁ function within both MMRs is failed

Indications:

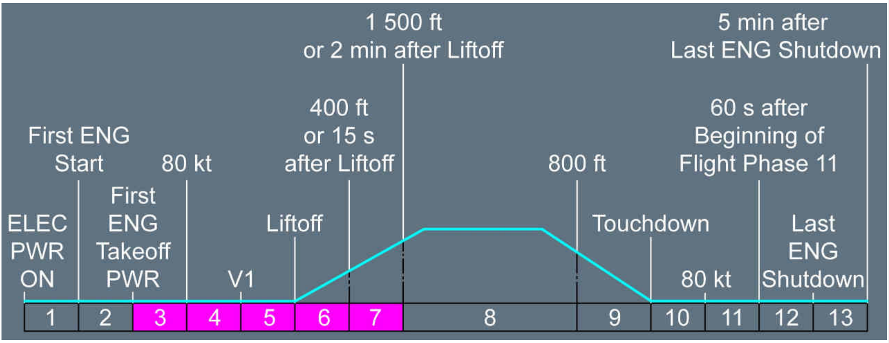
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Ident.: PRO-ABN-NAV-3436W130-00016077.0001001 / 09 MAR 16

Crew awareness.

Continued on the following page

NAV GLS 1+2 FAULT ◁ (Cont'd)

Ident.: PRO-ABN-NAV-3436W130-00016079.0001001 / 09 MAR 16

STATUS

INOP SYS

APPR & LDG

GLS 1+2 ◁

NAV GNSS 1(2) FAULT

Applicable to: ALL

Ident.: PRO-ABN-NAV-3436W300-00004535.0001001 / 30 JUN 14

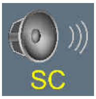
ANNUNCIATIONS

Triggering Conditions:

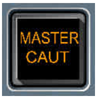
L2 The GNSS part of MMR 1(2) is failed.

Indications:

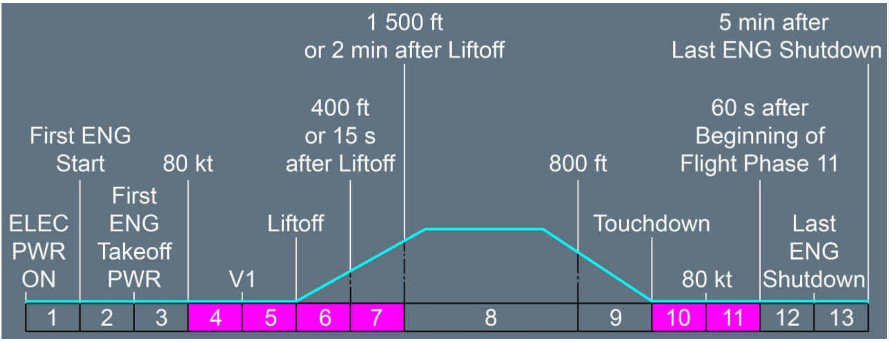
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Ident.: PRO-ABN-NAV-3436W300-00021222.0001001 / 03 JUL 14

Note: *If the failure occurs during an RNP AR operation, the ECAM displays the RNP AR CAPABILITY DOWNGRADED subtitle.*

Ident.: PRO-ABN-NAV-3436W300-00008316.0001001 / 30 JUN 14

- **If RNP AR operation in progress:**

  Minimum LIMITED TO RNP 0.30

Continued on the following page

NAV GNSS 1(2) FAULT (Cont'd)

Ident.: PRO-ABN-NAV-3436W300-00008317.0003001 / 07 JUL 16

STATUS

INOP SYS

ALL PHASES	APPR & LDG
GNSS 1(2)	GLS AUTOLAND ◁

INFO

FOR RNP AR : MINIMUM LIMITED TO RNP 0.30
GLS LIMITED TO APPR 1 ◁

NAV GNSS 1+2 FAULT

Applicable to: ALL

Ident.: PRO-ABN-NAV-3436W320-00016088.0001001 / 30 JUN 14

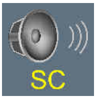
ANNUNCIATIONS

Triggering Conditions:

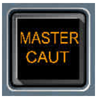
L2 The GNSS part of both MMRs is failed.

Indications:

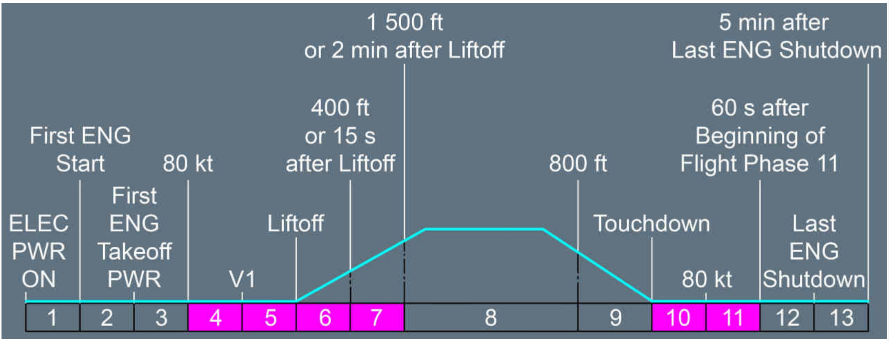
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Ident.: PRO-ABN-NAV-3436W320-00021223.0001001 / 30 JUN 14

Note: *If the failure occurs during an RNP AR operation, the ECAM displays the RNP AR CAPABILITY LOST subtitle.*

Ident.: PRO-ABN-NAV-3436W320-00016090.0001001 / 30 JUN 14

Crew awareness.

Continued on the following page

NAV GNSS 1+2 FAULT (Cont'd)

Ident.: PRO-ABN-NAV-3436W320-00016091.0002001 / 07 JUL 16

L12

STATUS

INOP SYS

ALL PHASES	APPR & LDG
RNP AR	BTV
GNSS 1+2	ROW/ROP *The BTV and ROW/ROP become inoperative below 1 000 ft.*
ADS-B RPTG 1+2	GLS AUTOLAND ◁

INFO

GLS LIMITED TO APPR 1 ◁
FLS LIMITED TO F-APP + RAW

NAV GNSS 1(2) REJECTED BY IRs

Applicable to: ALL

Ident.: PRO-ABN-NAV-3436W350-00023640.0001001 / 07 JUL 16

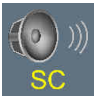
ANNUNCIATIONS

Triggering Conditions:

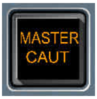
L2 The GNSS part of MMR 1(2) is declared faulty by the ADIRS and is rejected.

Indications:

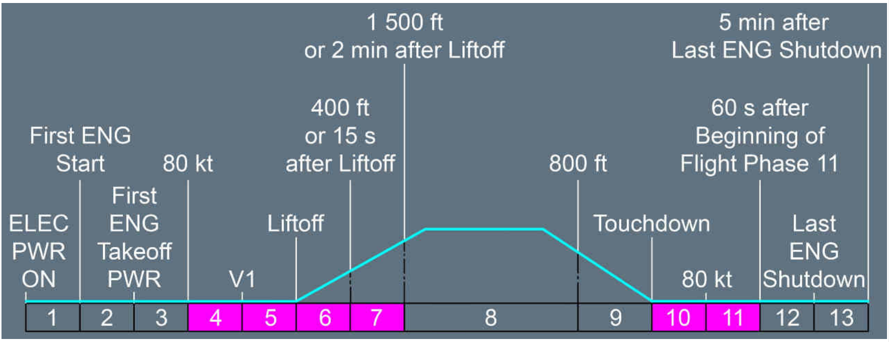
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Ident.: PRO-ABN-NAV-3436W350-00023641.0001001 / 07 JUL 16

Note: *If the failure occurs during an RNP AR operation, the ECAM displays the RNP AR CAPABILITY DOWNGRADED subtitle.*

Ident.: PRO-ABN-NAV-3436W350-00023642.0001001 / 07 JUL 16

- **If RNP AR operation in progress:**

  MINIMUM LIMITED TO RNP 0.30

Continued on the following page

NAV GNSS 1(2) REJECTED BY IRs (Cont'd)

Ident.: PRO-ABN-NAV-3436W350-00023643.0001001 / 07 JUL 16

STATUS

INFO

FOR RNP AR : MINIMUM LIMITED TO RNP 0.30

NAV GNSS 1+2 REJECTED BY IRs

Applicable to: ALL

Ident.: PRO-ABN-NAV-3436W370-00023644.0001001 / 07 JUL 16

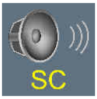
ANNUNCIATIONS

Triggering Conditions:

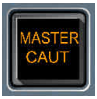
L2 The GNSS part of both MMRs is declared faulty by the ADIRS and is rejected.

Indications:

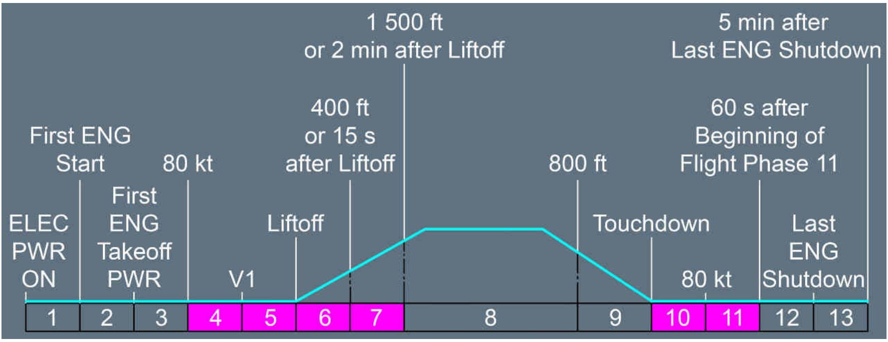
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

NAV GNSS 1+2 REJECTED BY IRs (Cont'd)

Ident.: PRO-ABN-NAV-3436W370-00023645.0001001 / 07 JUL 16

Note: If the failure occurs during an RNP AR operation, the ECAM displays the RNP AR CAPABILITY LOST subtitle.

Ident.: PRO-ABN-NAV-3436W370-00023647.0001001 / 07 JUL 16

Crew awareness.

Ident.: PRO-ABN-NAV-3436W370-00023646.0002001 / 03 JAN 19

STATUS

INOP SYS

ALL PHASES	APPR & LDG
RNP AR	BTV ROW/ROP

NAV GNSS/ACFT POS DISAGREE

Applicable to: ALL

Ident.: PRO-ABN-NAV-3414W800-00004531.0001001 / 30 JUN 14

ANNUNCIATIONS

Triggering Conditions:

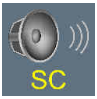
L2 A discrepancy is detected between the aircraft and the GNSS position.

L3 The GNSS position and the computed aircraft position differ by more than:
- A longitude threshold that depends on the latitude:
  - 0.5 min for latitude below 45 °
  - 0.7 min for latitude at, or above, 45 °, and below 60 °
  - 1 min for latitude at, or above, 60 °, and below 70 °
- A latitude threshold of 0.5 min.

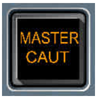
Indications:

L2

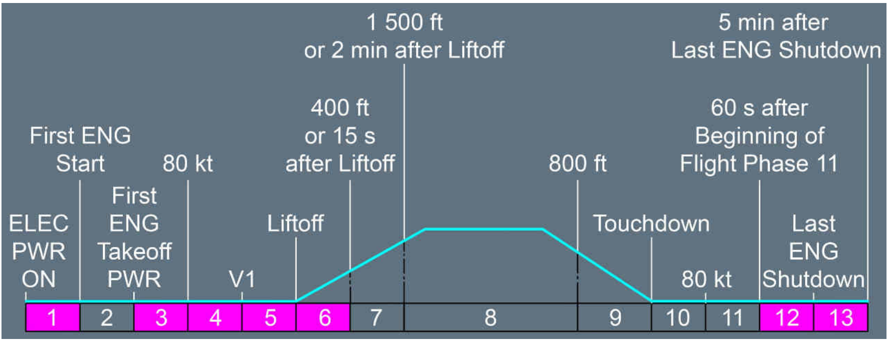
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

NAV GNSS/ACFT POS DISAGREE (Cont'd)

Ident.: PRO-ABN-NAV-3414W800-00008311.0001001 / 30 JUN 14

ACFT POS.. CHECK

L2 *Use the FMS POSITION/MONITOR page (Refer to DSC-22-FMS-20-20-20 POSITION/MONITOR Page).*

For the remainder of the flight, consider periodic NAV ACCURACY check.

Ident.: PRO-ABN-NAV-3414W800-00022236.0001001 / 06 NOV 14

STATUS

INFO

FLS : RAW ONLY

NAV ILS 1(2) FAULT

Applicable to: ALL

Ident.: PRO-ABN-NAV-3436W110-00004539.0001001 / 30 JUN 14

ANNUNCIATIONS

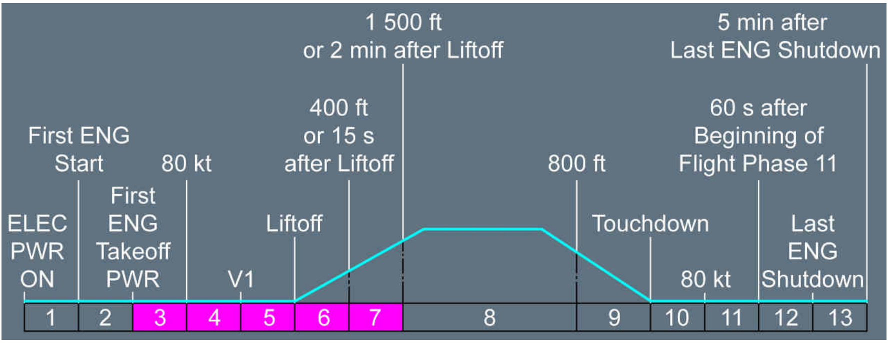
Triggering Conditions:

L2 The ILS function within MMR 1(2) is failed.

Indications:

Audio	Master Light
SC	MASTER CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-NAV-3436W110-00008319.0001001 / 30 JUN 14

Crew awareness.

Continued on the following page

NAV ILS 1(2) FAULT (Cont'd)

Ident.: PRO-ABN-NAV-3436W110-00008320.0001001 / 30 JUN 14

STATUS

INOP SYS

APPR & LDG

ILS AUTOLAND
ILS 1(2)

INFO

ILS LIMITED TO APPR 1

NAV ILS 1+2 FAULT

Applicable to: ALL

Ident.: PRO-ABN-NAV-3436W100-00004540.0001001 / 30 JUN 14

ANNUNCIATIONS

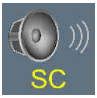
Triggering Conditions:

L2 ILS 1 and 2 are failed if:

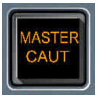
- The ILS function within both MMRs is failed, or
- The G/S antenna is failed.

Indications:

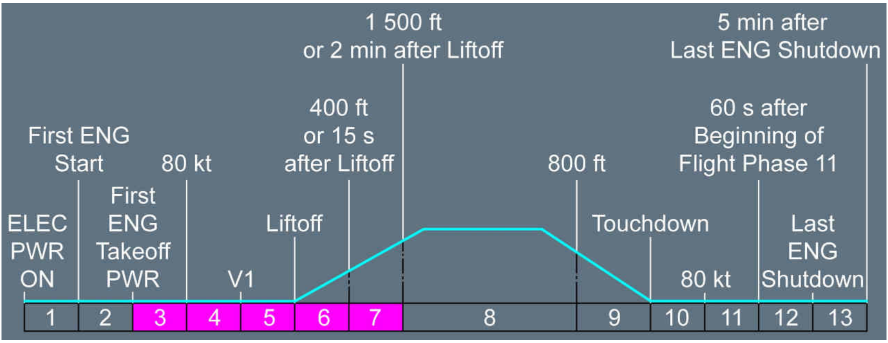
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
2
3
4
5
6
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9
10
11
12
13

Ident.: PRO-ABN-NAV-3436W100-00008322.0001001 / 30 JUN 14

Crew awareness.

Continued on the following page

NAV ILS 1+2 FAULT (Cont'd)

Ident.: PRO-ABN-NAV-3436W100-00008323.0001001 / 30 JUN 14

STATUS

INOP SYS

APPR & LDG

ILS 1+2

NAV IR 1(2)(3) FAULT

Applicable to: ALL

Ident.: PRO-ABN-NAV-3410W050-00004541.0001001 / 03 JUL 20

2

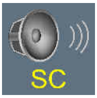
ANNUNCIATIONS

Triggering Conditions:

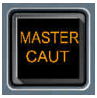
L2 The IR part of ADIRU 1(2)(3) is failed.

Indications:

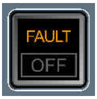
Audio



Master Light

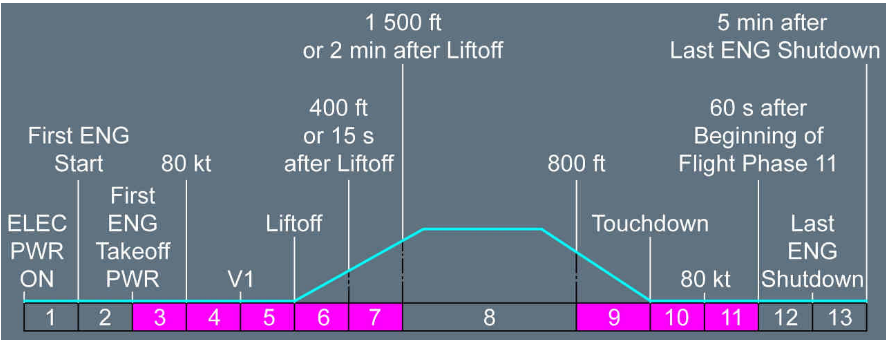

MASTER
CAUT

Local Light



IR1(2)(3) pb

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
2
3
4
5
6
7
8
9
10
11
12
13

Continued on the following page

NAV IR 1(2)(3) FAULT (Cont'd)

Ident.: PRO-ABN-NAV-3410W050-00008325.0002001 / 03 AUG 16

- **If IR 1(2)(3) is available in ATT mode :**

  IR 1(2)(3) MODE SEL....................ATT
  SPEED, HDG & FL : KEEP CONST FOR 30 S
  FMS POSITION / IRS PAGE....................SELECT
  HDG.................... ENTER THEN UPDATE REGULARLY

L2 *Note: Due to IR drift, the flight crew must periodically crosscheck the magnetic heading with the standby compass, and update the heading if required.*

L1
- **If IR 1(2)(3) is not available in ATT mode :**

L2 Before setting the IR pb to OFF, the flight crew can try to recover the IR in ATT mode. In order to recover the ATT mode, set the IR1(2)(3) mode selector to OFF for 10 s, and then apply the NAV IR ALIGNMENT IN ATT MODE abnormal not-sensed procedure (*Refer to procedure*).

L1 IR 1(2)(3) P/B.................... OFF

Ident.: PRO-ABN-NAV-3410W050-00008326.0002001 / 03 AUG 16

STATUS

INOP SYS

ALL PHASES

IR 1(2)(3)

INFO

LAND 3 SINGLE ONLY

NAV IR 1+2 (1+3) (2+3) FAULT

Applicable to: ALL

Ident.: PRO-ABN-NAV-3410W020-00004542.0001001 / 01 JUL 14

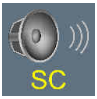
ANNUNCIATIONS

Triggering Conditions:

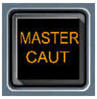
L2 The IR parts of two ADIRUs are failed.

Indications:

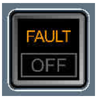
Audio



Master Light

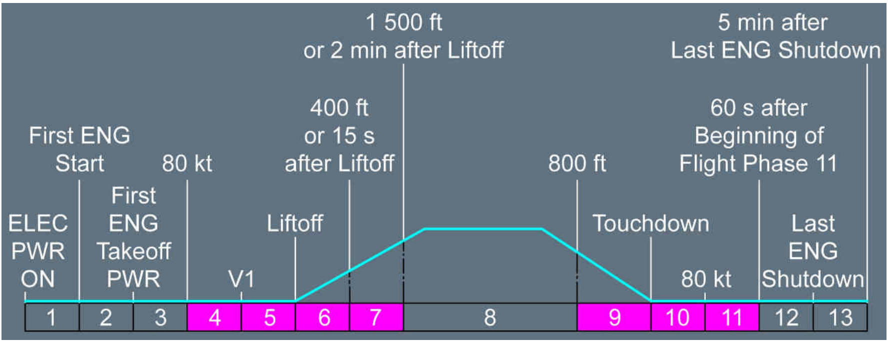

MASTER
CAUT

Local Light



IR1(2)(3) pb

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
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8
9
10
11
12
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Ident.: PRO-ABN-NAV-3410W020-00020355.0002001 / 03 AUG 16

Note: *If the failure occurs during an RNP AR operation, the ECAM displays the RNP AR CAPABILITY DOWNGRADED subtitle.*

Continued on the following page

NAV IR 1+2 (1+3) (2+3) FAULT (Cont'd)

Ident.: PRO-ABN-NAV-3410W020-00008328.0002001 / 03 AUG 16

- **If RNP AR operation in progress:**

  MINIMUM LIMITED TO RNP 0.30

- **If one of the affected IR is available in ATT mode :**

  IR (AFFECTED) MODE SEL.. ATT

  SPEED, HDG & FL : KEEP CONST FOR 30 S

  FMS POSITION / IRS PAGE..SELECT

  HDG.. ENTER THEN UPDATE REGULARLY

L2 *Note: Due to IR drift, the flight crew must periodically crosscheck the magnetic heading with the standby compass, and update the heading if required.*

L1
- **If one of the affected IR is not available in ATT mode:**

L2 Before setting the IR to OFF, the flight crew can try to recover the IR in ATT mode. In order to recover the ATT mode, set the IR1(2)(3) mode selector to OFF for 10 s, and then apply the NAV IR ALIGNMENT IN ATT MODE abnormal not-sensed procedure (*Refer to procedure*).

L1 IR (AFFECTED) P/B .... OFF

- **If IR 1 and IR 3 are not available in ATT mode:**

  STBY NAV IN TRUE GNSS TRK

L2 *When IR 1 and IR 3 are lost, the ISIS only displays true track information from GNSS.*

Continued on the following page

NAV IR 1+2 (1+3) (2+3) FAULT (Cont'd)

Ident.: PRO-ABN-NAV-3410W020-00008329.0003001 / 03 JAN 19

STATUS

INOP SYS

ALL PHASES	APPR & LDG
IR 1+2(1+3)(2+3) TCAS 1+2 (If all 3 IRs are lost) TERR SYS (If all 3 IRs are lost) ADS-B TRAFFIC 1+2 ❄ (If all 3 IRs are lost) ADS-B RPTG 1+2 (If all 3 IRs are lost or invalid and ADS-B RPTG function uses GPIRS or GPS-SBAS DATA)	BTV AUTOLAND

INFO

FOR RNP AR : MINIMUM LIMITED TO RNP 0.30

APPR 1 ONLY

- **If IR 1 and IR 3 are not available in ATT mode :**
  STBY NAV IN TRUE GNSS TRK

NAV IR NOT ALIGNED

Applicable to: ALL

Ident.: PRO-ABN-NAV-3410W100-00004544.0001001 / 01 JUL 14

ANNUNCIATIONS

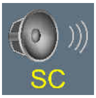
Triggering Conditions:

L2 At least one IR fails to align in NAV mode because:

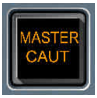
- The position initialization failed, or
- No position is available for the position initialization.

Indications:

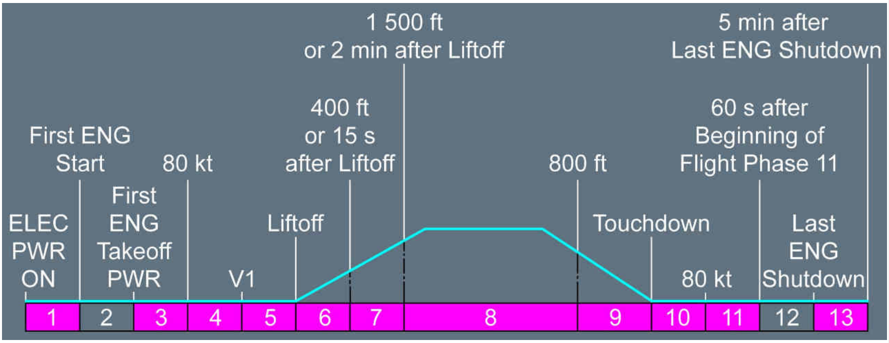
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
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Continued on the following page

NAV IR NOT ALIGNED (Cont'd)

Ident.: PRO-ABN-NAV-3410W100-00008332.0001001 / 01 JUL 14

■ POSITION DISAGREE

ACFT PPOS....................................REENTER

L2 *The position initialization failed due to an erroneous position.*

L1 ■ POSITION MISSING

ACFT PPOS....................................INSERT

L2 *No position is available for the position initialization.*

NAV ISIS ALT(SPD) RECOVERED

Applicable to: ALL

Ident.: PRO-ABN-NAV-3421W210-00020361.0002001 / 10 APR 18

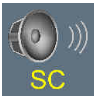
ANNUNCIATIONS

Triggering Conditions:

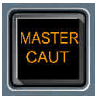
L2 The ISIS altitude(speed) was previously unreliable by PRIMs (refer to *Refer to PRO-ABN-NAV NAV ISIS ALT(ATT)(SPD) UNRELIABLE*) and is now recovered.

Indications:

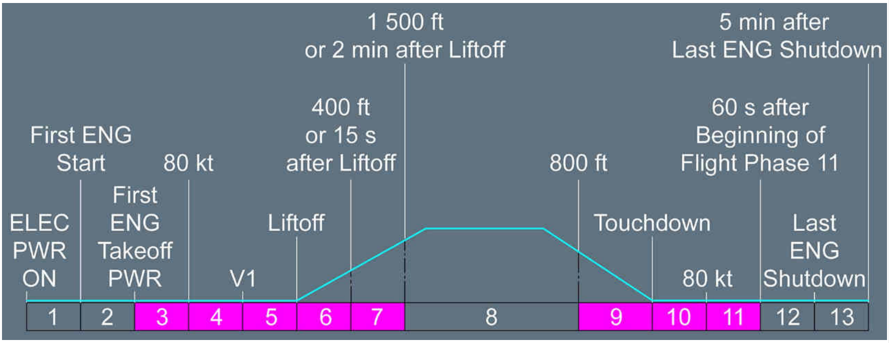
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
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3
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Ident.: PRO-ABN-NAV-3421W210-00020494.0001001 / 01 JUL 14

Crew awareness.

NAV ISIS ALT(ATT)(SPD) UNRELIABLE

Applicable to: ALL

Ident.: PRO-ABN-NAV-3421W110-00020362.0002001 / 10 APR 18

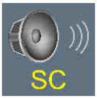
ANNUNCIATIONS

Triggering Conditions:

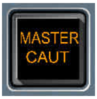
L2 The ISIS altitude(attitude)(speed) is detected unreliable by the PRIMs.

Indications:

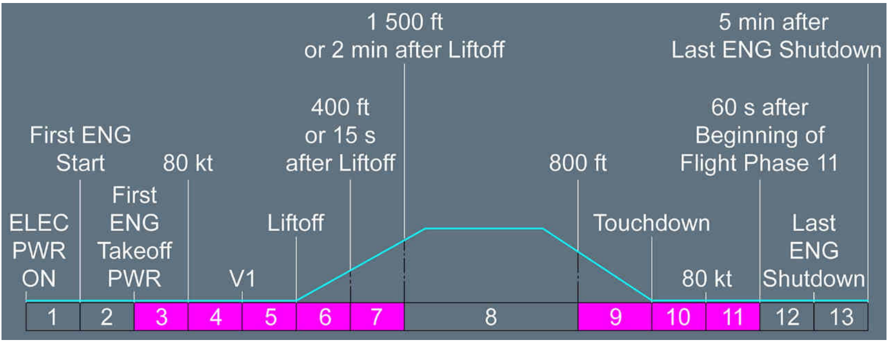
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
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8
9
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11
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Ident.: PRO-ABN-NAV-3421W110-00020495.0001001 / 01 JUL 14

Crew awareness.

Continued on the following page

NAV ISIS ALT(ATT)(SPD) UNRELIABLE (Cont'd)

Ident.: PRO-ABN-NAV-3421W110-00020363.0001001 / 01 JUL 14

STATUS

INFO

ISIS ALT(ATT)(SPD)(ALT & SPD) UNRELIABLE

NAV ISIS/FCU BKUP BARO REF DISAGREE

Applicable to: ALL

Ident.: PRO-ABN-NAV-3414W420B-00023566.0001001 / 07 JUL 16

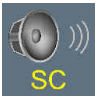
ANNUNCIATIONS

Triggering Conditions:

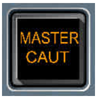
L2 There is a discrepancy between ISIS and FCU backup on the barometric reference, barometric value or altitude. This discrepancy is due to a failure in display unit (displaying MFD) or in avionics network switch. As a result, the same erroneous barometric parameter and altitude is displayed on both PFDs.

Indications:

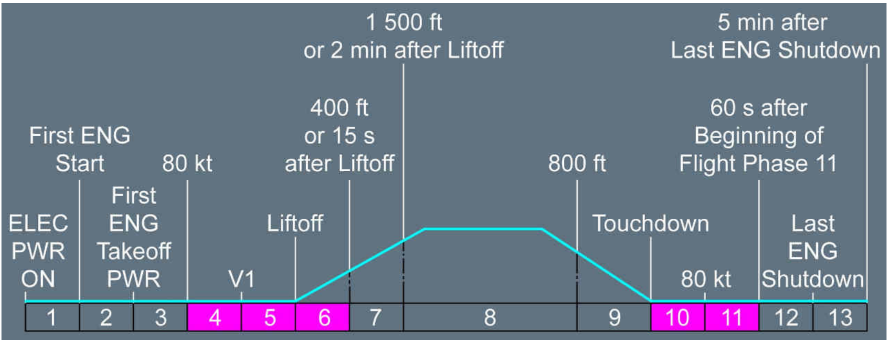
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
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Continued on the following page

NAV ISIS/FCU BKUP BARO REF DISAGREE (Cont'd)

Ident.: PRO-ABN-NAV-3414W420B-00023567.0001001 / 07 JUL 16

BARO VALUE..XCHECK

L2 *Crosscheck barometric reference and barometric reference value:*

L2 - *Check on both PFDs that the displayed barometric reference and barometric reference value are correct. If the barometric reference or the barometric reference value is erroneous, set the correct reference and value on FCU or on MFD page (Refer to DSC-31-CDS-40-60 Barometric Reference).*
- *Check on ISIS that the displayed barometric reference and barometric reference value are correct. If the barometric reference or the barometric reference value is erroneous, set the correct reference and value on ISIS.*

NAV LS 1 DEGRADED

Applicable to: ALL

Ident.: PRO-ABN-NAV-3436W080-00020120.0001001 / 30 JUN 14

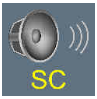
ANNUNCIATIONS

Triggering Conditions:

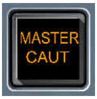
L2 The links between MMR and others systems are failed.
MMR 1 remains connected to ISIS.

Indications:

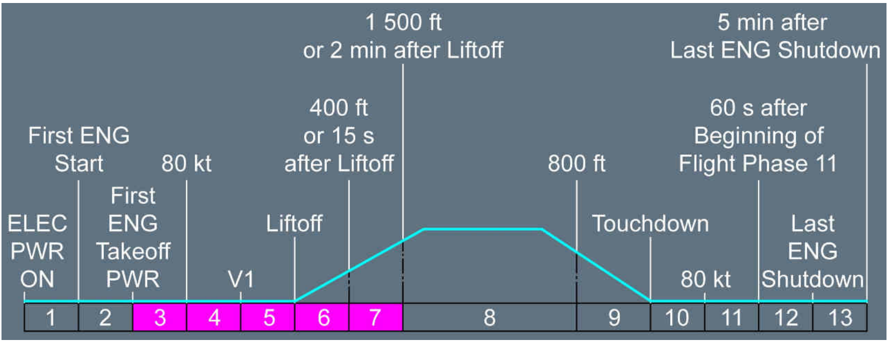
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft or 2 min after Liftoff
5 min after Last ENG Shutdown
First ENG Start
80 kt
400 ft or 15 s after Liftoff
800 ft
60 s after Beginning of Flight Phase 11
ELEC PWR ON
First ENG Takeoff PWR
V1
Liftoff
Touchdown
80 kt
Last ENG Shutdown
1
2
3
4
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12
13

Ident.: PRO-ABN-NAV-3436W080-00019153.0001001 / 03 JUL 14

Note: *If the failure is only due to an IMA module failure, the ECAM displays the DUE TO IMA MODULE FAULT subtitle.*

Continued on the following page

NAV LS 1 DEGRADED (Cont'd)

Ident.: PRO-ABN-NAV-3436W080-00020223.0001001 / 30 JUN 14

FOR LS 1 TUNING : USE RMP
ILS 1 / GLS 1 ON ISIS ONLY
LS 2 ON F/O PFD & CAPT ND

Ident.: PRO-ABN-NAV-3436W080-00019155.0001001 / 09 MAR 16

STATUS

INOP SYS

APPR & LDG

AUTOLAND
FLS 1
SLS 1 ⊲

INFO

APPR 1 ONLY
ILS 1 / GLS 1 ON ISIS ONLY
LS 2 ON F/O PFD & CAPT ND

NAV LS 1(2) FAULT

Applicable to: ALL

Ident.: PRO-ABN-NAV-3436W060-00004547.0001001 / 30 JUN 14

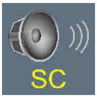
ANNUNCIATIONS

Triggering Conditions:

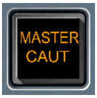
L2 If one of the following is applicable:
- All landing systems within MMR 1(2) are failed
- MMR1(2) is failed.

Indications:

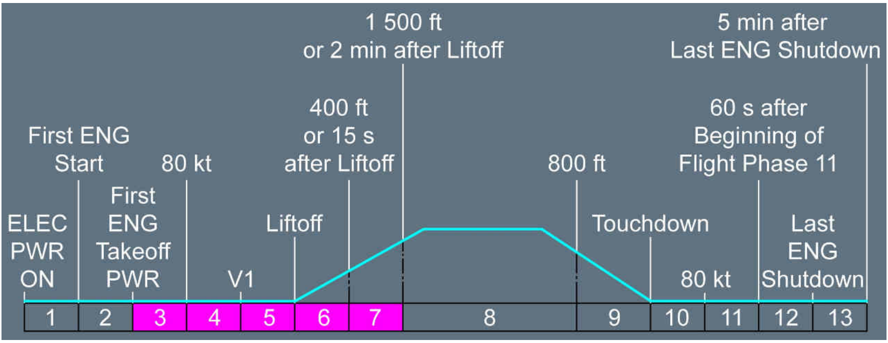
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

Ident.: PRO-ABN-NAV-3436W060-00008334.0001001 / 03 JUL 14

Note: *If the failure is only due to an IMA module failure, the ECAM displays the DUE TO IMA MODULE FAULT subtitle.*

Continued on the following page

NAV LS 1(2) FAULT (Cont'd)

Ident.: PRO-ABN-NAV-3436W060-00008335.0001001 / 30 JUN 14

Crew awareness.

Ident.: PRO-ABN-NAV-3436W060-00008336.0001001 / 30 JUN 14

STATUS

INOP SYS

APPR & LDG

AUTOLAND
LS 1(2)

INFO

APPR 1 ONLY

NAV LS 1+2 FAULT

Applicable to: ALL

Ident.: PRO-ABN-NAV-3436W050-00004548.0001001 / 30 JUN 14

ANNUNCIATIONS

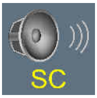
Triggering Conditions:

L2

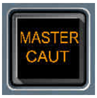
If one of the following is applicable:
- All landing systems within both MMRs are failed
- Both MMRs are failed.

Indications:

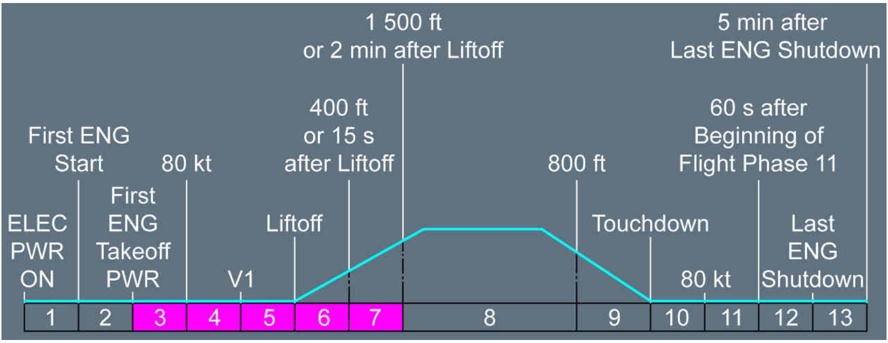
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
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Ident.: PRO-ABN-NAV-3436W050-00008338.0001001 / 30 JUN 14

Crew awareness.

Continued on the following page

NAV LS 1+2 FAULT (Cont'd)

Ident.: PRO-ABN-NAV-3436W050-00008339.0001001 / 30 JUN 14

STATUS

INOP SYS

APPR & LDG

LS 1+2

NAV LS TUNING DISAGREE

Applicable to: ALL

Ident.: PRO-ABN-NAV-2213W200-00004549.0001001 / 30 JUN 14

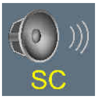
ANNUNCIATIONS

Triggering Conditions:

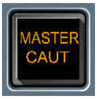
L2 There is a discrepancy between both MMRs, on one of the following parameters: approach mode, frequency, or course.

Indications:

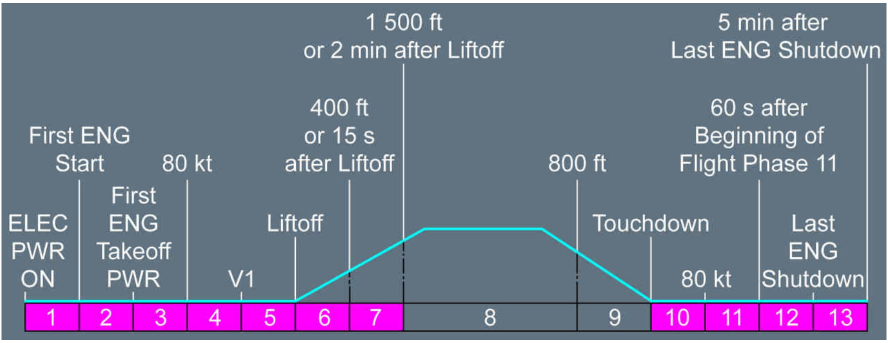
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
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11
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Ident.: PRO-ABN-NAV-2213W200-00008341.0001001 / 30 JUN 14

Crew awareness.

Continued on the following page

NAV LS TUNING DISAGREE (Cont'd)

Ident.: PRO-ABN-NAV-2213W200-00008342.0001001 / 30 JUN 14

STATUS

INOP SYS

APPR & LDG

AUTOLAND

INFO

APPR 1 ONLY

NAV MULTIPLE ADR STATIC PROBE FAULT

Applicable to: ALL

Ident.: PRO-ABN-NAV-3413W040-00021764.0001001 / 02 OCT 14

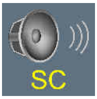
ANNUNCIATIONS

Triggering Conditions:

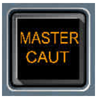
L2 At least one static probe is obstructed on at least two different ADRs.
The airspeed and altitude computed by affected ADRs may be degraded.

Indications:

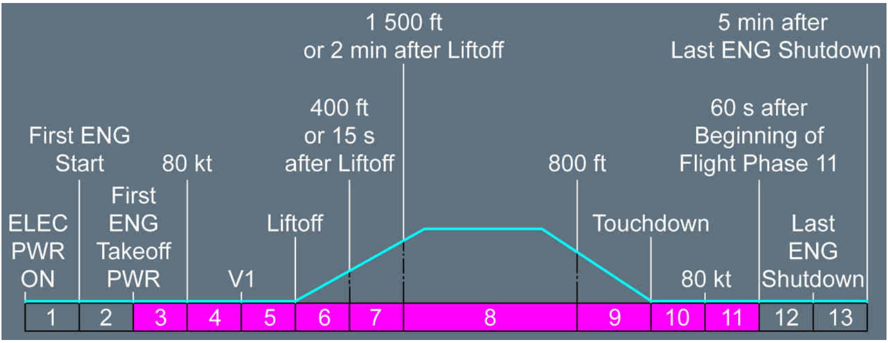
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
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Ident.: PRO-ABN-NAV-3413W040-00021780.0001001 / 02 OCT 14

Crew awareness.

NAV NOT ON FMS RUNWAY

Applicable to: ALL

Ident.: PRO-ABN-NAV-3438W100-00012619.0001001 / 03 DEC 15

ANNUNCIATIONS

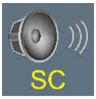
Triggering Conditions:

L2 One thrust lever is set at or above the CLB detent and airport navigation function detects that the aircraft is not on the runway that is selected in the FMS.

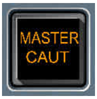
The alert remains displayed:
- During 30 s after the flight crew retards the thrust levers below the CLB detent, or
- Until the aircraft becomes airborne.

Indications:

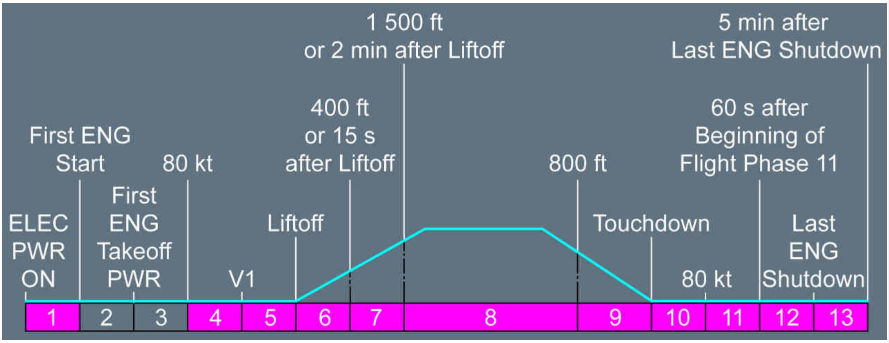
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
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Ident.: PRO-ABN-NAV-3438W100-00012621.0001001 / 30 JUN 14

Crew awareness.

NAV ON TAXIWAY

Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB

Ident.: PRO-ABN-NAV-3438W110-00012623.0001001 / 03 JAN 19

ANNUNCIATIONS

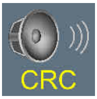
Triggering Conditions:

L2 One thrust lever is set at or above the CLB detent and the airport navigation function detects that the aircraft is on a taxiway.

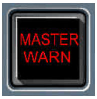
The alert remains displayed:
- During 30 s after the flight crew retards the thrust levers below the CLB detent, or
- During 30 s after the aircraft enters the FMS runway.

Indications:

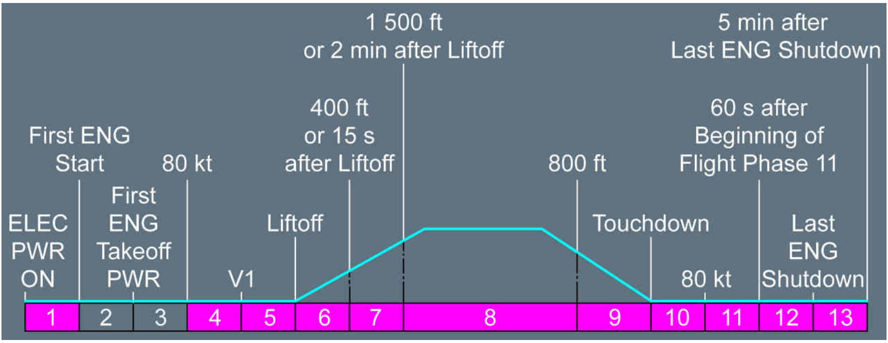
Audio



Master Light


MASTER
WARN

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Ident.: PRO-ABN-NAV-3438W110-00012624.0001001 / 03 JAN 19

Crew awareness.

NAV ON TAXIWAY

Applicable to: ET-AUC

Ident.: PRO-ABN-NAV-3438W110B-00024189.0001001 / 03 JAN 19

ANNUNCIATIONS

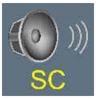
Triggering Conditions:

L2 One thrust lever is set at or above the CLB detent and the airport navigation function detects that the aircraft is on a taxiway.

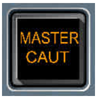
The alert remains displayed:
- During 30 s after the flight crew performs a RTO, or
- During 2 s after the airport navigation function no longer detects that the aircraft is on a taxiway.

Indications:

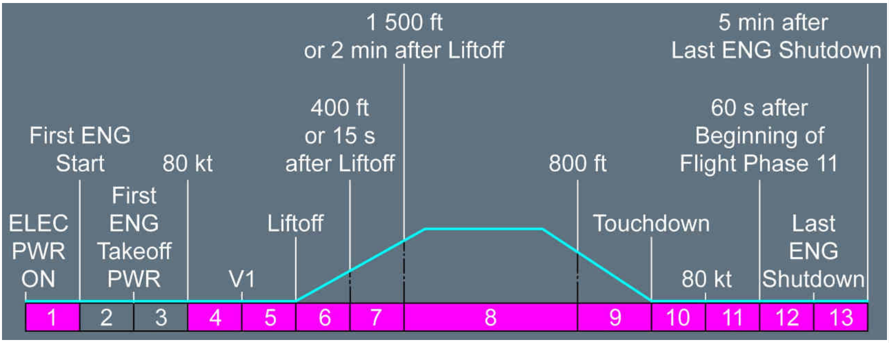
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-NAV-3438W110B-00024190.0001001 / 03 JAN 19

Crew awareness.

NAV RA SYS A+B (A+C) (B+C) FAULT

Applicable to: ALL

Ident.: PRO-ABN-NAV-3442W020-00004551.0001001 / 30 JUN 14

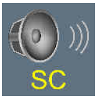
ANNUNCIATIONS

Triggering Conditions:

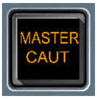
L2 The RAs A+B (A+C) (B+C) are failed.

Indications:

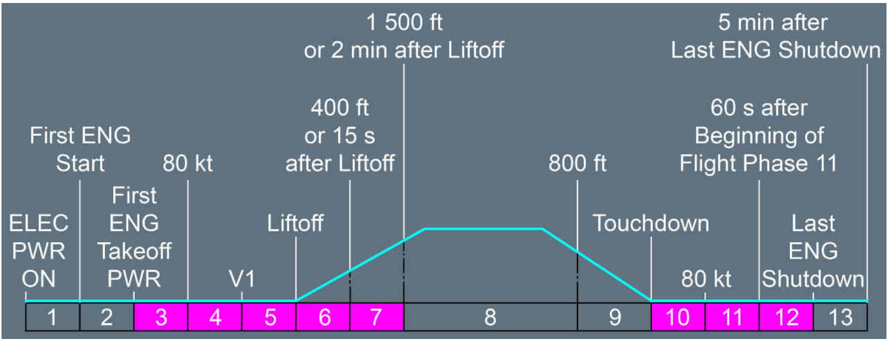
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-NAV-3442W020-00008347.0001001 / 30 JUN 14

Crew awareness.

Continued on the following page

NAV RA SYS A+B (A+C) (B+C) FAULT (Cont'd)

Ident.: PRO-ABN-NAV-3442W020-00008348.0001001 / 30 JUN 14

STATUS

INOP SYS

APPR & LDG

RA SYS A+B (A+C) (B+C)

INFO

LAND 2 ONLY

NAV RA SYS A+B+C FAULT

Applicable to: ALL

Ident.: PRO-ABN-NAV-3442W010-00004552.0001001 / 30 JUN 14

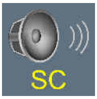
ANNUNCIATIONS

Triggering Conditions:

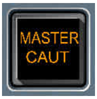
L2 RA SYS A, RA SYS B and RA SYS C are failed.

Indications:

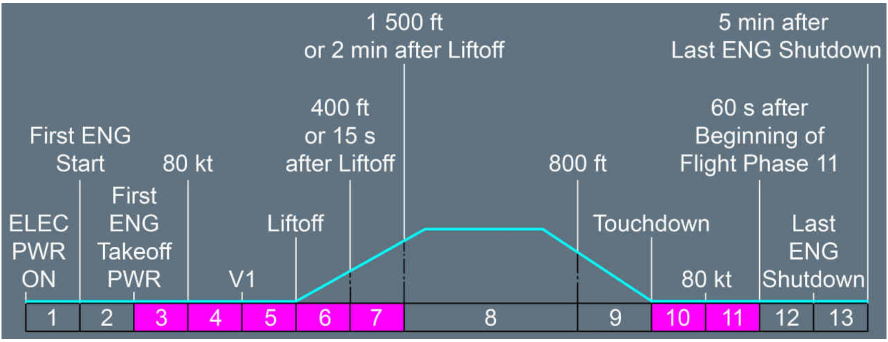
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Ident.: PRO-ABN-NAV-3442W010-00008350.0002001 / 07 JUL 16

WHEN L/G DOWN & AP OFF :
ALTN LAW
USE MAN PITCH TRIM

Continued on the following page

NAV RA SYS A+B+C FAULT (Cont'd)

Ident.: PRO-ABN-NAV-3442W010-00008351.0003001 / 07 JUL 16

STATUS

INOP SYS

ALL PHASES

GPWS
TCAS 1+2
PRED W/S 1+2
ADS-B TRAFFIC 1+2 ◁

APPR & LDG

RA SYS A+B+C
AUTO CALLOUT
AUTOLAND
REACTIVE W/S DET

INFO

APPR 1 ONLY
WHEN L/G DOWN & AP OFF :
ALTN LAW
USE MAN PITCH TRIM

NAV RNP AR CAPABILITY DOWNGRADED

Applicable to: ALL

Ident.: PRO-ABN-NAV-2280W050-00018985.0002001 / 07 JUL 16

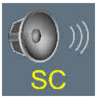
ANNUNCIATIONS

Triggering Conditions:

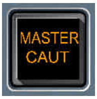
L2 The RNP AR approach capability is downgraded.

Indications:

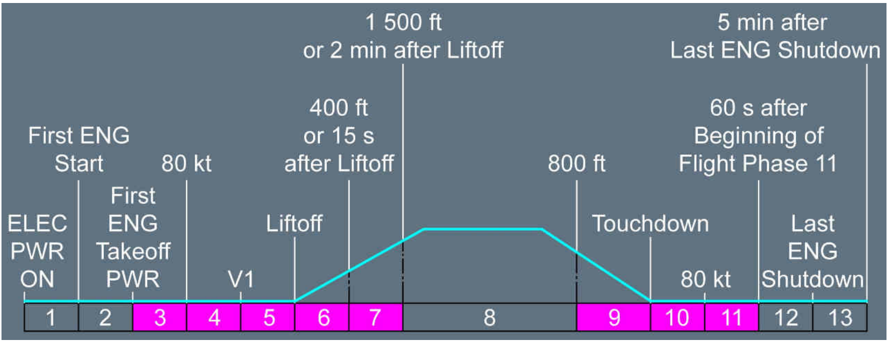
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
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Ident.: PRO-ABN-NAV-2280W050-00018987.0001001 / 30 JUN 14

Crew awareness.

- **During RNP AR operation:**
  MINIMUM LIMITED TO RNP 0.30

Continued on the following page

NAV RNP AR CAPABILITY DOWNGRADED (Cont'd)

Ident.: PRO-ABN-NAV-2280W050-00018991.0001001 / 30 JUN 14

STATUS

INFO

FOR RNP AR : MINMUM LIMITED TO RNP 0.30

NAV RNP AR CAPABILITY LOST

Applicable to: ALL

Ident.: PRO-ABN-NAV-2280W060-00018986.0003001 / 30 NOV 17

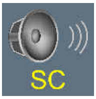
ANNUNCIATIONS

Triggering Conditions:

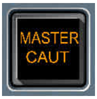
L2 The RNP AR approach capability is lost.

Indications:

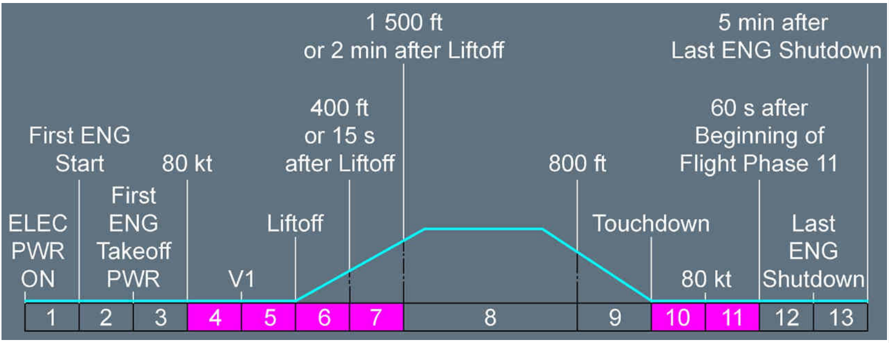
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
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First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Continued on the following page

NAV RNP AR CAPABILITY LOST (Cont'd)

Ident.: PRO-ABN-NAV-2280W060-00018989.0001001 / 30 JUN 14

Crew awareness.

Ident.: PRO-ABN-NAV-2280W060-00018992.0001001 / 30 JUN 14

STATUS

INOP SYS

ALL PHASES

RNP AR

NAV SLS 1(2) FAULT ◁

Applicable to: ALL

Ident.: PRO-ABN-NAV-3436W210-00016080.0001001 / 09 MAR 16

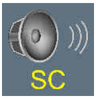
ANNUNCIATIONS

Triggering Conditions:

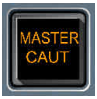
L2 The SLS ◁ function within MMR 1(2) is failed.

Indications:

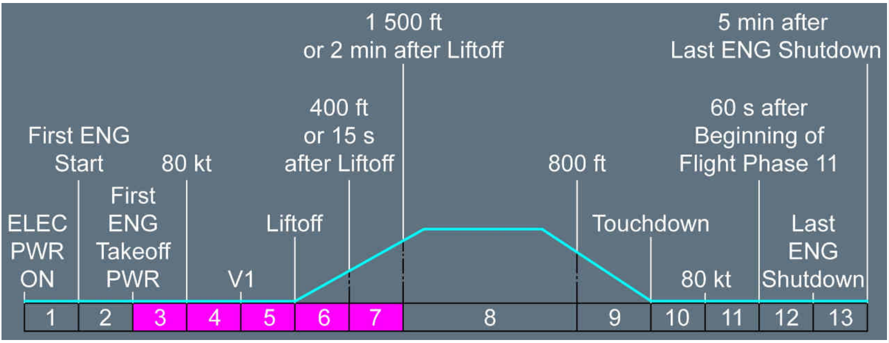
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Ident.: PRO-ABN-NAV-3436W210-00016082.0001001 / 09 MAR 16

Crew awareness.

Continued on the following page

NAV SLS 1(2) FAULT ⩤ (Cont'd)

Ident.: PRO-ABN-NAV-3436W210-00016083.0001001 / 08 JUL 19

STATUS

INOP SYS

APPR & LDG

SLS 1(2) ⩤

NAV SLS 1+2 FAULT ◁

Applicable to: ALL

Ident.: PRO-ABN-NAV-3436W200-00016084.0001001 / 09 MAR 16

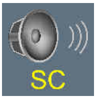
ANNUNCIATIONS

Triggering Conditions:

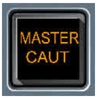
L2 The SLS ◁ function within both MMRs is failed

Indications:

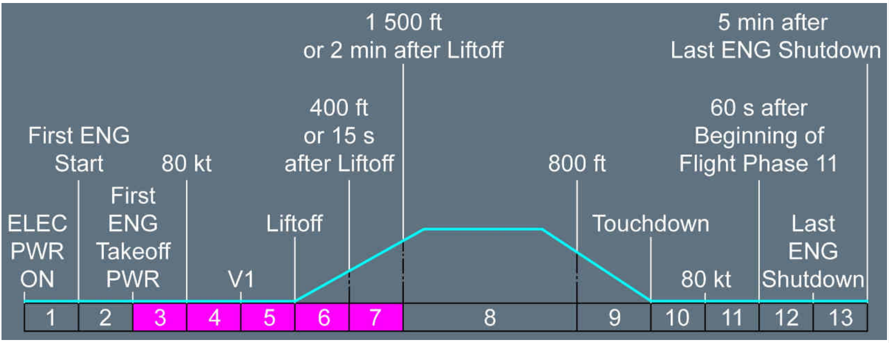
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Ident.: PRO-ABN-NAV-3436W200-00016086.0001001 / 09 MAR 16

- **If FLS is available:**

  FOR FLS : DESELECT SLS ON NAVAIDS PAGE

Continued on the following page

NAV SLS 1+2 FAULT ⩤ (Cont'd)

Ident.: PRO-ABN-NAV-3436W200-00016087.0001001 / 09 MAR 16

STATUS

INOP SYS

	APPR & LDG
	SLS 1+2 ⩤

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OIS CAPT(F/O) OIS DISPLAY FAULT

Applicable to: ALL

Ident.: PRO-ABN-OIS-3166W050-00023578.0001001 / 07 JUL 16

ANNUNCIATIONS

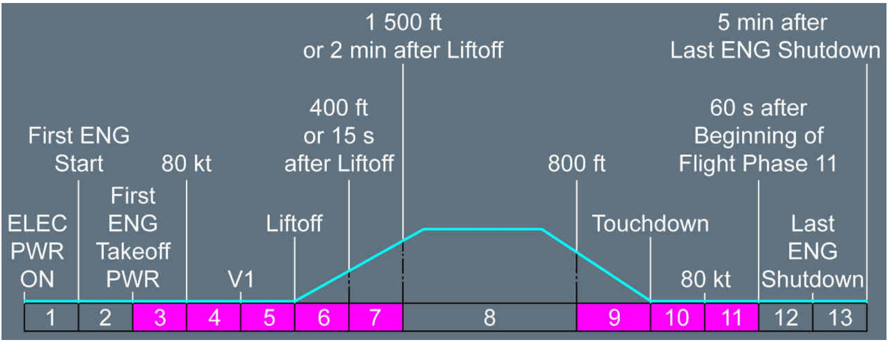
Triggering Conditions:

L2

One of the following occurs:

- The CAPT(F/O) OUTER DU is not able to display the OIS of the Captain(First Officer), or
- The CAPT(F/O) OUTER DU is not able to display the OIS of both the Captain and the First Officer, or
- None of the DUs is able to display the OIS of the Captain(First Officer).

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-OIS-3166W050-00023579.0001001 / 07 JUL 16

- **If the affected OIS can still be displayed on the CENTER LOWER DU (i.e. no CAPT(F/O) OIS message on the STATUS page):**
  OIS ON CTR AS RQRD
- **If CAPT(F/O) OIS message is displayed on the STATUS page, the affected OIS cannot be displayed on the CENTER LOWER DU:**
  EFB LAPTOP UNSTOW..CONSIDER

Continued on the following page

OIS CAPT(F/O) OIS DISPLAY FAULT (Cont'd)

Ident.: PRO-ABN-OIS-3166W050-00023581.0001001 / 07 JUL 16

STATUS

INOP SYS

ALL PHASES

CAPT(F/O) OIS

If the affected OIS cannot be displayed on the CENTER LOWER DU.

OIS CAPT+F/O OIS DISPLAY FAULT

Applicable to: ALL

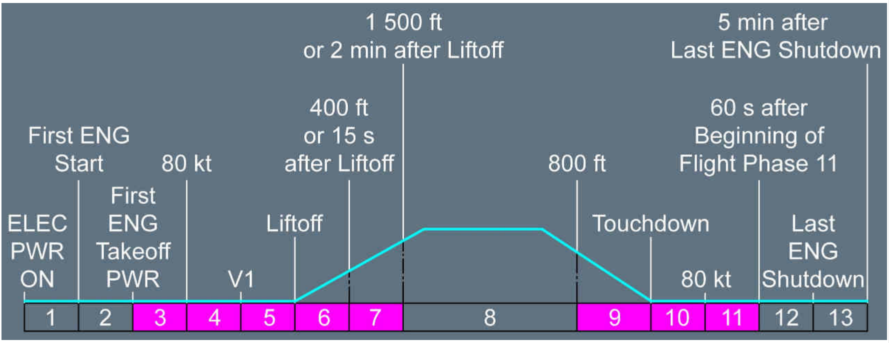
Ident.: PRO-ABN-OIS-3166W060-00023582.0001001 / 07 JUL 16

ANNUNCIATIONS

Triggering Conditions:

L2 None of the DUs is able to display the OIS of the Captain, and none of the DUs is able to display the OIS of the First Officer.

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
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11
12
13

Continued on the following page

OIS CAPT+F/O OIS DISPLAY FAULT (Cont'd)

Ident.: PRO-ABN-OIS-3166W060-00023584.0001001 / 07 JUL 20

1

- **In the case of OIS failure:**
  - **OIS RESET (MAX 11 min) NECESSARY ?**

    L2 The reset of the OIS system can require up to 11 min to recover all the associated OIS applications. As a result, the flight crew may decide, depending on the operational context:

    - Either to launch the OIS reset but wait up to 11 min order to recover all the OIS applications and OIS display, or
    - To not launch the OIS reset but unstow and use the laptop in order to avoid losing the OIS applications available during 11 min.

    L1

    - **YES**

      OIS CAB&MAINT [S4].. RESET

      - **RESET (AFTER 11 min) SUCESSFUL ?:**
        - **NO**

          EFB LAPTOP UNSTOW..CONSIDER

- **Otherwise:**

  EFB LAPTOP UNSTOW..CONSIDER

Ident.: PRO-ABN-OIS-3166W060-00023585.0001001 / 07 JUL 16

STATUS

INOP SYS

ALL PHASES

CAPT+F/O OIS

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OVERSPEED

Applicable to: ALL

Ident.: PRO-ABN-OVERSPEED-2790W510-00004777.0001001 / 06 NOV 14

ANNUNCIATIONS

Triggering Conditions:

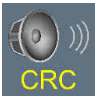
L2 The aircraft speed has exceeded the maximum speed.

The aircraft speed is above:
- VMO + 4 kt or MMO + M 0.006, in clean configuration, gear up
- VLE + 4 kt or MLE + M 0.006, in clean configuration or CONF 1, gear down
- VFE + 4 kt in CONF 1+F, 2, 3 or FULL

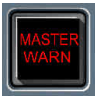
The warning disappears when the speed goes below the associated limitation.

Indications:

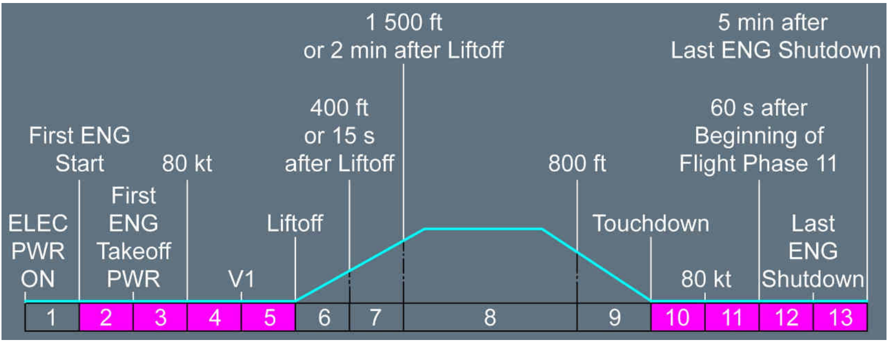
Audio



Master Light


MASTER
WARN

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Continued on the following page

OVERSPEED (Cont'd)

Ident.: PRO-ABN-OVERSPEED-2790W510-00008206.0001001 / 06 NOV 14

- **If VMO/MMO is exceeded:**

  VMO/MMO........340/.89

L2 *Note: For ferry flights with gear down, the VMO/MMO is 255/.64.*

L1
- **If VLE/MLE is exceeded:**

  VLE/MLE........250/.55

L2 *Note: The VLE/MLE limitation is inhibited for revenue flights with gear down.*

L1
- **If VFE is exceeded:**

  VFE........see below

  The VFE corresponding to the current slats/flaps configuration is displayed on the ECAM.

L2 *Note: If the Flap Load Relief System is active (Refer to DSC-27-20-20 Flap Load Relief System), the overspeed warning is triggered when the speed exceeds the VFE of the actual configuration (i.e. the overspeed warning does not consider the selected lever position).*

L1

VFE NORM CONF (kt)	
CONF 1	255
CONF 1+ F	220
CONF 2	212
CONF 3	195
CONF FULL	186

If the slats or flaps are jammed, the overspeed warning is triggered according to the VFE of the abnormal configuration.
The abnormal configuration VFE is displayed on the ECAM.

L2

VFE ABN CONF (kt)			
	S=0	0<S≤1	S>1
F=0	255	255	215
0<F≤1	230	220	215
1 < F ≤2	220	212	200
2<F≤3	215	200	200
F>3	200	200	200

OXY PAX OXY MASKS FAULT

Applicable to: ALL

Ident.: PRO-ABN-OXY-3523W060-00021690.0001001 / 02 OCT 14

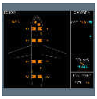
ANNUNCIATIONS

Triggering Conditions:

L2 The passenger oxygen system is failed. Depending on the failure, 33 %, 66 % or 100 % of passenger oxygen masks are failed.

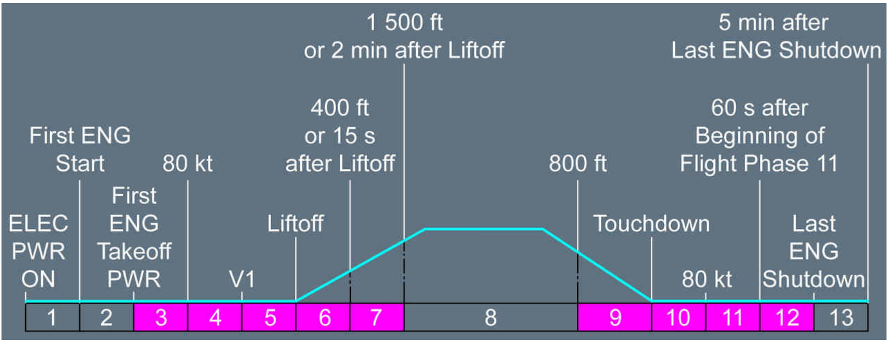
Indications:

SD page



DOOR/OXYGEN SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-OXY-3523W060-00021691.0001001 / 02 OCT 14

Note: *If the failure is only due to an IMA module failure, the ECAM displays the DUE TO IMA MODULE FAULT subtitle.*

Continued on the following page

OXY PAX OXY MASKS FAULT (Cont'd)

Ident.: PRO-ABN-OXY-3523W060-00021692.0001001 / 02 OCT 14

Crew awareness.

- **Depending on the failure:**
  CAPT+F/O MASKS AVAIL

Ident.: PRO-ABN-OXY-3523W060-00021693.0001001 / 02 OCT 14

STATUS

INOP SYS

ALL PHASES

PAX OXY MASKS

OXY CAPT(F/O) BOTTLE PRESS LO

Applicable to: ALL

Ident.: PRO-ABN-OXY-3513W020-00005977.0001001 / 30 JUN 14

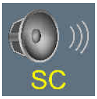
ANNUNCIATIONS

Triggering Conditions:

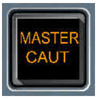
L2 Low pressure is detected in the captain (first officer) oxygen bottle.
The quantity of oxygen in the captain (first officer) bottle is below the required quantity for an emergency descent (350 PSI).

Indications:

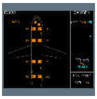
Audio



Master Light

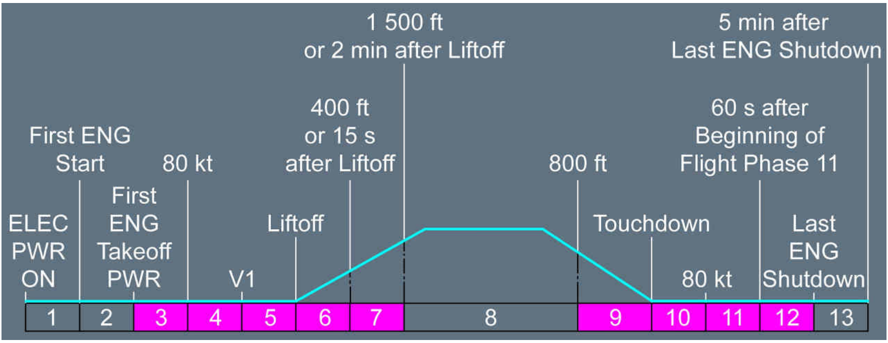

MASTER
CAUT

SD page



DOOR/OXYGEN SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Ident.: PRO-ABN-OXY-3513W020-00008429.0001001 / 30 JUN 14

Crew awareness.

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SMOKE AFT/BULK CARGO DET FAULT

Applicable to: ALL

Ident.: PRO-ABN-SMOKE-2616W510-00017276.0001001 / 06 NOV 14

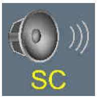
ANNUNCIATIONS

Triggering Conditions:

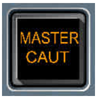
L2 The smoke detection in aft/bulk cargo compartment is failed.

Indications:

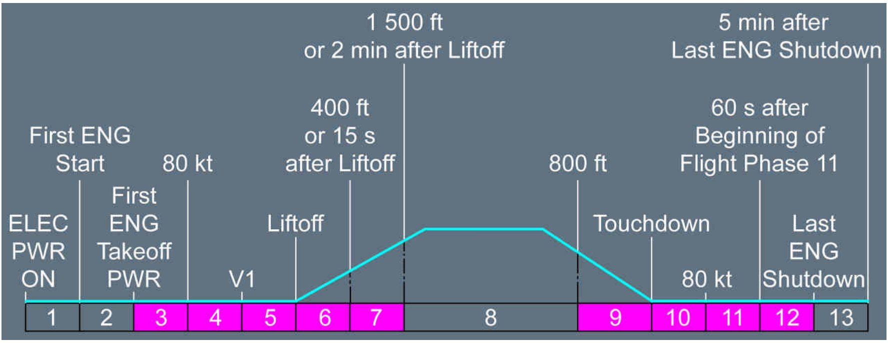
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Ident.: PRO-ABN-SMOKE-2616W510-00017278.0002001 / 09 MAR 16

- **LIVESTOCK IN AFT/BULK CARGO ?**
  - **NO**

    CARGO AFT ISOL VALVES ⊲✻ .... OFF
    CARGO BULK ISOL VALVES.. OFF
    CARGO BULK HEATER... OFF

Continued on the following page

SMOKE AFT/BULK CARGO DET FAULT (Cont'd)

Ident.: PRO-ABN-SMOKE-2616W510-00017279.0002001 / 09 MAR 16

STATUS

INOP SYS

ALL PHASES

AFT CARGO VENT ◁* (Only if CARGO AFT ISOL VALVES is OFF)
BULK CARGO VENT (Only if CARGO BULK ISOL VALVES is OFF)
BULK CARGO HEATER (Only if CARGO BULK ISOL HEATER is OFF)
AFT CARGO SMK DET

SMOKE AFT/BULK CARGO SMOKE

Applicable to: ALL

Ident.: PRO-ABN-SMOKE-2616W500-00017437.0001001 / 02 OCT 14

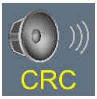
ANNUNCIATIONS

Triggering Conditions:

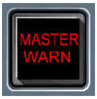
L2 Smoke is detected in the aft/bulk cargo compartment.

Indications:

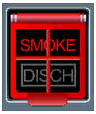
Audio



Master Light


MASTER
WARN

Local Light

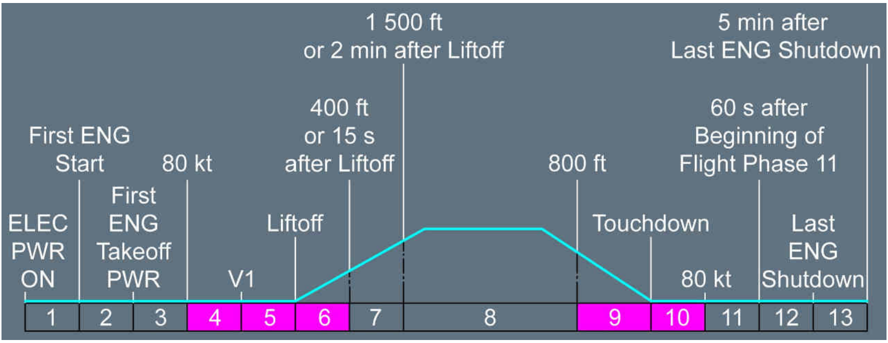

SMOKE
DISCH

AGENT TO AFT/BULK pb

SD page

COND SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Ident.: PRO-ABN-SMOKE-2616W500-00017438.0001001 / 07 MAY 18

L2 Expect the SMOKE warning to remain displayed during agent discharge. The smoke detectors are sensitive to both smoke and extinguishing agent. Once the bottles are fully discharged, the SMOKE warning remains displayed only if smoke particles are still detected.
Once isolation valves are closed, the cargo is no longer ventilated, and cargo temperature is no longer reliable.

Continued on the following page

SMOKE AFT/BULK CARGO SMOKE (Cont'd)

Ident.: PRO-ABN-SMOKE-2616W500-00017439.0003001 / 07 JUL 16

LAND ASAP

CARGO AFT ISOL VALVES ◁ .... OFF
CARGO BULK ISOL VALVES .... OFF

- **If in flight or at least one engine is running:**
  CARGO AGENT TO AFT .... DISCH
  CAB FANS .... OFF
  AIR FLOW .... HI
  CARGO BULK HEATER .... OFF
  SIGNS .... ON
  CKPT / CABIN COM .... ESTABLISH

  BEFORE CARGO OPENING : PAX DISEMBARK

L2 *Note: Order the ground crew not to open the door of the affected cargo compartment until the passengers have disembarked and fire services are present.*

L1

- **If on ground and no engine running:**
  - **AFT/BULK CARGO DOOR CLOSED ?**
    - **YES**
      CARGO AGENT TO AFT .... DISCH
      CAB FANS .... OFF
      AIR FLOW .... HI
      CARGO BULK HEATER .... OFF
      SIGNS .... ON
      CKPT / CABIN COM .... ESTABLISH

      BEFORE CARGO OPENING : PAX DISEMBARK

L2 *Note: Order the ground crew not to open the door of the affected cargo compartment until the passengers have disembarked and fire services are present.*

L1

- **NO**

L2

If the SMOKE warning is displayed on ground with cargo compartment door open, request that ground crew investigates and eliminates the smoke source.

This warning may be due to a high level of humidity or insecticide spraying. In this case, when the warning disappears, the flight crew can perform a VCS 1 and 2 reset

Continued on the following page

SMOKE AFT/BULK CARGO SMOKE (Cont'd)

to enable cargo ventilation. For more information on VCS 1 and 2 reset, *Refer to PRO-ABN-ABN-RESET VENT VCS 1+2 Reset*.

Ident.: PRO-ABN-SMOKE-2616W500-00017440.0001001 / 17 NOV 17

STATUS

INOP SYS

ALL PHASES

CAB FANS
AFT CARGO VENT
BULK CARGO VENT
BULK CARGO HEATER

INFO

- **Only if the aircraft is in flight when the alert is triggered:**
  BEFORE CARGO OPENING : PAX DISEMBARK

MEMOPAGE

MEMO ON ECAM

LAND ASAP

SMOKE DET FAULT

Applicable to: ALL

Ident.: PRO-ABN-SMOKE-2616W100-00017215.0001001 / 02 JUL 14

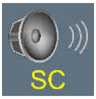
ANNUNCIATIONS

Triggering Conditions:

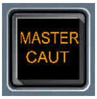
L2 The Smoke Detection Function (SDF) is failed. For more information on the SDF, *Refer to DSC-26-20 Smoke Detection System*.

Indications:

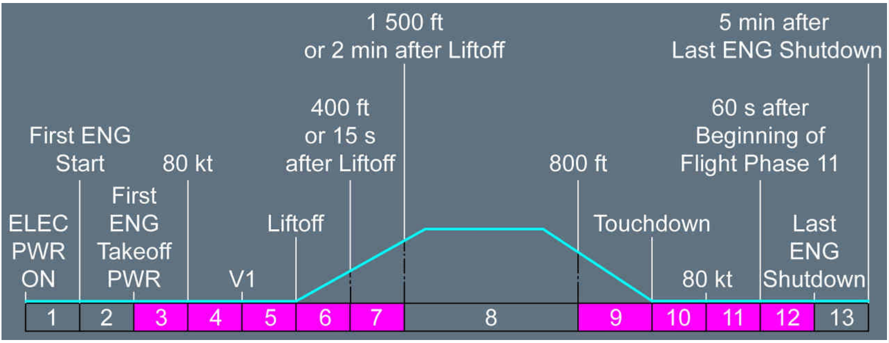
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Ident.: PRO-ABN-SMOKE-2616W100-00017216.0001001 / 02 JUL 14

L2 Smoke detection is lost in:
- The avionics compartments (including the IFE Center)
- The cargo compartments
- The cabin areas.

Continued on the following page

SMOKE DET FAULT (Cont'd)

Ident.: PRO-ABN-SMOKE-2616W100-00017217.0003001 / 28 APR 17

IFEC........................OFF
PAX BBAND ◁ ....OFF

- **LIVESTOCK IN FWD CARGO ?**
  - **NO**

    CARGO FWD ISOL VALVES ◁ ....OFF
- **LIVESTOCK IN AFT/BULK CARGO ?**
  - **NO**

    CARGO AFT ISOL VALVES ◁ ....OFF
    CARGO BULK ISOL VALVES........................OFF
    CARGO BULK HEATER........................OFF

Ident.: PRO-ABN-SMOKE-2616W100-00017218.0004001 / 07 JUL 16

STATUS

INOP SYS

ALL PHASES

FWD CARGO VENT ◁ (Only if CARGO FWD ISOL VALVES is OFF)
AFT CARGO VENT ◁ (Only if CARGO AFT ISOL VALVES is OFF)
BULK CARGO VENT (Only if CARGO BULK ISOL VALVES is OFF)
FWD CARGO TEMP REGUL ◁ (Only if CARGO FWD ISOL VALVES is OFF)
BULK CARGO HEATER (Only if CARGO BULK HEATER is OFF)
ALL SMK DET

SMOKE FLT(CABIN) REST DET FAULT ⩤

Applicable to: ALL

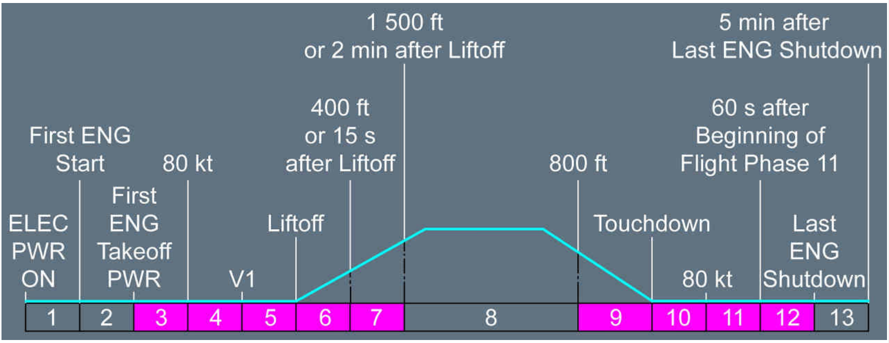
Ident.: PRO-ABN-SMOKE-2618W210-00017220.0001001 / 09 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 The smoke detection system in the flight(cabin) crew rest compartment is failed.

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-SMOKE-2618W210-00017223.0001001 / 02 JUL 14

Crew awareness.

Ident.: PRO-ABN-SMOKE-2618W210-00017225.0001001 / 09 MAR 16

STATUS

INOP SYS

ALL PHASES

FLT(CABIN) REST SMK DET

SMOKE FLT(CABIN) REST SMOKE ◁

Applicable to: ALL

Ident.: PRO-ABN-SMOKE-2618W200-00017226.0001001 / 09 MAR 16

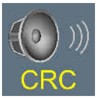
ANNUNCIATIONS

Triggering Conditions:

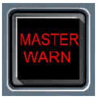
L2 Smoke is detected in the flight(cabin) crew rest compartment.

Indications:

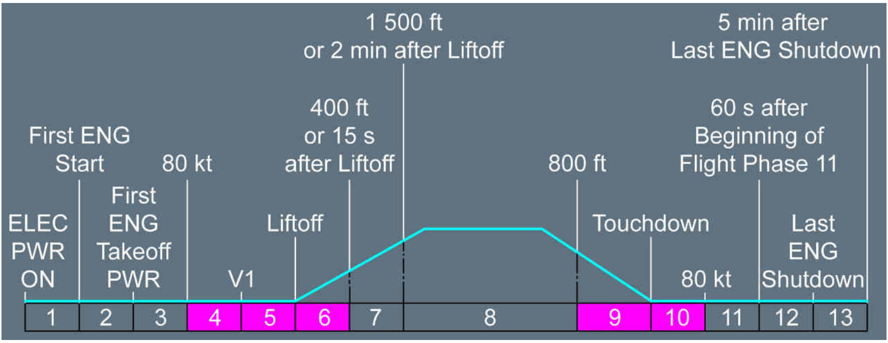
Audio



Master Light


MASTER
WARN

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-SMOKE-2618W200-00017228.0003001 / 28 JUL 17

EMER EXIT LT...ON
CAB FANS...OFF
AIR FLOW...HI
CARGO FWD ISOL VALVES ◁ ....OFF
CARGO AFT ISOL VALVES ◁ ....OFF
CARGO BULK ISOL VALVES...OFF
CKPT / CABIN COM...ESTABLISH

Continued on the following page

SMOKE FLT(CABIN) REST SMOKE ◁ (Cont'd)

Ident.: PRO-ABN-SMOKE-2618W200-00017229.0003001 / 28 JUL 17

STATUS

INOP SYS

ALL PHASES

CAB FANS
FWD CARGO VENT ◁
AFT CARGO VENT ◁
BULK CARGO VENT
FWD CARGO TEMP REGUL ◁

SMOKE FWD CARGO DET FAULT

Applicable to: ALL

Ident.: PRO-ABN-SMOKE-2616W410-00017272.0001001 / 06 NOV 14

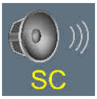
ANNUNCIATIONS

Triggering Conditions:

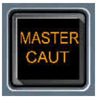
L2 The smoke detection in the forward cargo compartment is failed.

Indications:

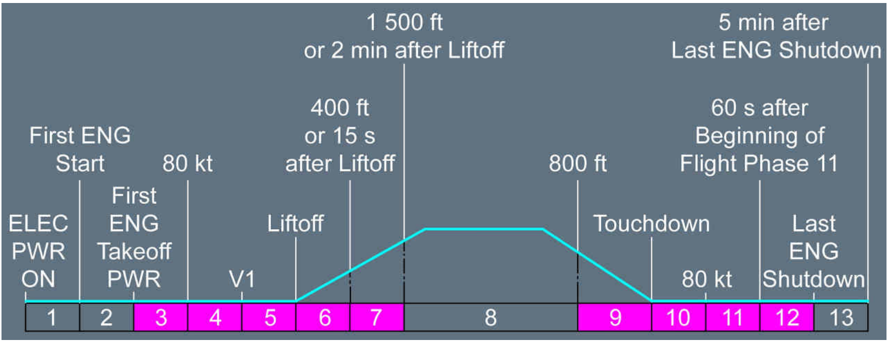
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
V1
Touchdown
80 kt
Last
ENG
Shutdown
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Ident.: PRO-ABN-SMOKE-2616W410-00017274.0002001 / 09 MAR 16

- **LIVESTOCK IN FWD CARGO ?**
  - **NO**
    CARGO FWD ISOL VALVES ⊲ ....OFF

Continued on the following page

SMOKE FWD CARGO DET FAULT (Cont'd)

Ident.: PRO-ABN-SMOKE-2616W410-00017275.0002001 / 09 MAR 16

STATUS

INOP SYS

ALL PHASES

FWD CARGO VENT ◁✱
FWD CARGO TEMP REGUL ◁✱
FWD CARGO SMK DET

SMOKE FWD CARGO SMOKE

Applicable to: ALL

Ident.: PRO-ABN-SMOKE-2616W400-00017441.0001001 / 02 OCT 14

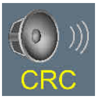
ANNUNCIATIONS

Triggering Conditions:

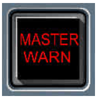
L2 Smoke is detected in the forward cargo compartment.

Indications:

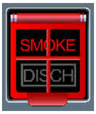
Audio



Master Light


MASTER
WARN

Local Light

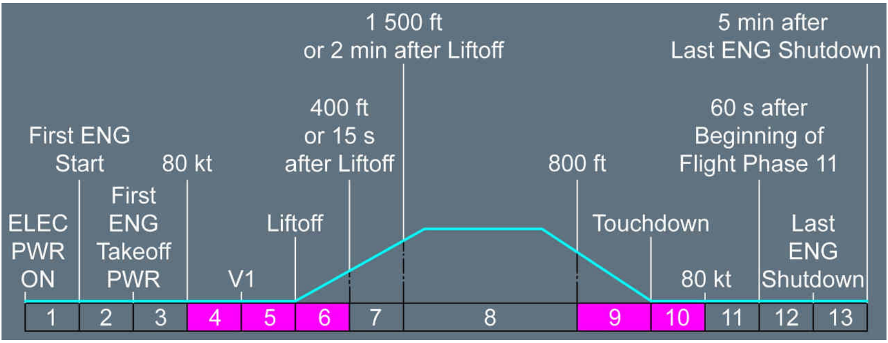

SMOKE
DISCH

AGENT TO FWD pb

SD page

COND SD Page

Flight Phase Inhibition: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5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
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ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
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Shutdown
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Ident.: PRO-ABN-SMOKE-2616W400-00017442.0001001 / 07 MAY 18

L2 Expect the SMOKE warning to remain displayed during agent discharge. The smoke detectors are sensitive to both smoke and extinguishing agent. Once the bottles are fully discharged, the SMOKE warning remains displayed only if smoke particles are still detected.
Once isolation valves are closed, the cargo is no longer ventilated, and cargo temperature is no longer reliable.

Continued on the following page

SMOKE FWD CARGO SMOKE (Cont'd)

Ident.: PRO-ABN-SMOKE-2616W400-00017443.0003001 / 07 JUL 16

LAND ASAP

CARGO FWD ISOL VALVES ◁ .... OFF

- **If in flight or at least one engine is running:**

  CARGO AGENT TO FWD.................... DISCH
  CAB FANS.................... OFF
  AIR FLOW.................... HI
  SIGNS.................... ON
  CKPT / CABIN COM.................... ESTABLISH
  BEFORE CARGO OPENING : PAX DISEMBARK

L2 Note: *Order the ground crew not to open the door of the affected cargo compartment until the passengers have disembarked and fire services are present.*

L1
- **If on ground and no engine running:**
  - **FWD CARGO DOOR CLOSED ?**
    - **YES**

      CARGO AGENT TO FWD.................... DISCH
      CAB FANS.................... OFF
      AIR FLOW.................... HI
      SIGNS.................... ON
      CKPT / CABIN COM.................... ESTABLISH
      BEFORE CARGO OPENING : PAX DISEMBARK

L2 Note: *Order the ground crew not to open the door of the affected cargo compartment until the passengers have disembarked and fire services are present.*

L1
    - **NO**

L2 If the SMOKE warning is displayed on ground with cargo compartment door open, request that ground crew investigates and eliminates the smoke source.

This warning may be due to a high level of humidity or insecticide spraying. In this case, when the warning disappears, the flight crew can perform a VCS 1 and 2 reset to enable cargo ventilation. For more information on VCS 1 and 2 reset, *Refer to PRO-ABN-ABN-RESET VENT VCS 1+2 Reset*.

Continued on the following page

SMOKE FWD CARGO SMOKE (Cont'd)

Ident.: PRO-ABN-SMOKE-2616W400-00017444.0002001 / 09 MAR 16

STATUS

INOP SYS

ALL PHASES

CAB FANS
FWD CARGO VENT ◁*
FWD CARGO TEMP REGUL ◁*

INFO

- **Only if the aircraft is in flight when the alert is triggered:**
  BEFORE CARGO OPENING : PAX DISEMBARK

MEMOPAGE

MEMO ON ECAM

LAND ASAP

SMOKE FWD(AFT/BULK) CARGO BOTTLES FAULT

Applicable to: ALL

Ident.: PRO-ABN-SMOKE-2623W700-00017268.0001001 / 02 JUL 14

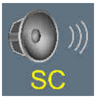
ANNUNCIATIONS

Triggering Conditions:

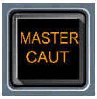
L2 The fire extinguishing system in the forward (aft/bulk) cargo compartment is failed. The forward(aft/bulk) position of the diverter valve is failed.

Indications:

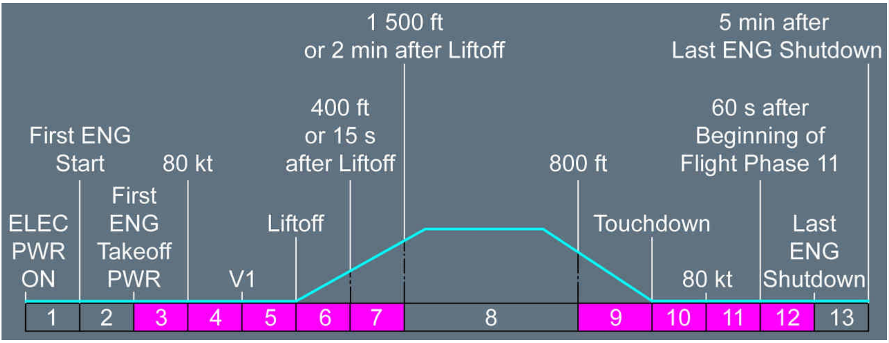
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
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400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
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Ident.: PRO-ABN-SMOKE-2623W700-00017270.0001001 / 02 JUL 14

Crew awareness.

Continued on the following page

SMOKE FWD(AFT/BULK) CARGO BOTTLES FAULT (Cont'd)

Ident.: PRO-ABN-SMOKE-2623W700-00017271.0001001 / 02 JUL 14

STATUS

INOP SYS

ALL PHASES

FWD(AFT/BULK) CARGO BTLs

SMOKE FWD+AFT CARGOS BOTTLES FAULT

Applicable to: ALL

Ident.: PRO-ABN-SMOKE-2623W800-00017445.0001001 / 02 JUL 14

ANNUNCIATIONS

Triggering Conditions:

L2 The fire extinguishing system in the cargo compartments is failed if:
- The diverter valve is failed, or
- The function that controls the fire extinguisher bottles is failed, or
- The pressure of both extinguisher bottles is low.

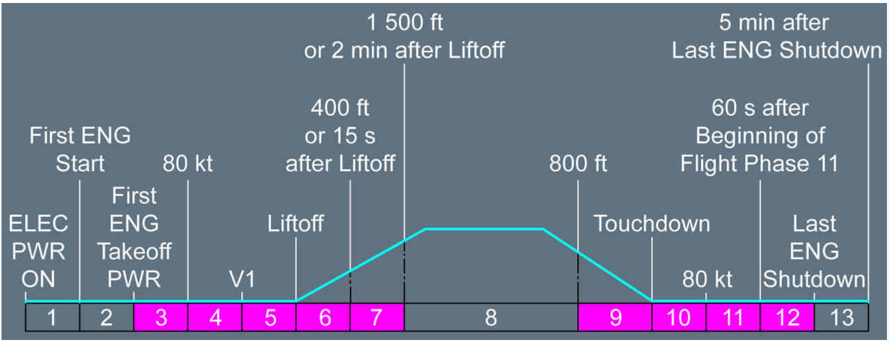
Indications:

Audio

Master Light

MASTER
CAUT

Flight Phase Inhibition: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400 ft
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Beginning of
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80 kt
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Takeoff
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Liftoff
Touchdown
80 kt
Last
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Shutdown
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Ident.: PRO-ABN-SMOKE-2623W800-00017447.0001001 / 02 JUL 14

Crew awareness.

Continued on the following page

SMOKE FWD+AFT CARGOS BOTTLES FAULT (Cont'd)

Ident.: PRO-ABN-SMOKE-2623W800-00017448.0001001 / 02 JUL 14

STATUS

INOP SYS

ALL PHASES

FWD+AFT CARGOS BTLs

SMOKE FWD+AFT CARGOS BTL 1(2)(3) FAULT

Applicable to: ALL

Ident.: PRO-ABN-SMOKE-2623W100-00017449.0001001 / 22 NOV 17

ANNUNCIATIONS

Triggering Conditions:

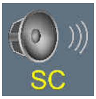
L2 The fire extinguisher 1(2)(3) of the cargo compartments is failed when:

- The function that controls the fire extinguisher bottle 1(2)(3) is failed, or
- The pressure of the fire extinguisher bottle 1(2)(3) is low.

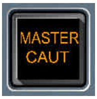
Bottle 3 is only installed on A350-1000.

Indications:

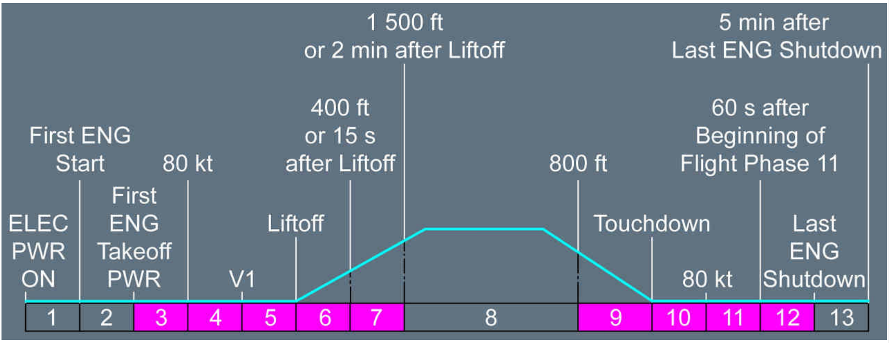
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition: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80 kt
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after Liftoff
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60 s after
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Flight Phase 11
ELEC
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Takeoff
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Liftoff
Touchdown
80 kt
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Shutdown
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Ident.: PRO-ABN-SMOKE-2623W100-00017451.0001001 / 07 JUL 16

Crew awareness.

Continued on the following page

SMOKE FWD+AFT CARGOS BTL 1(2)(3) FAULT (Cont'd)

Ident.: PRO-ABN-SMOKE-2623W100-00017452.0001001 / 07 JUL 16

STATUS

INOP SYS

ALL PHASES

FWD+AFT CARGOS BTL 1(2)(3)

SMOKE IFE BAY DET FAULT

Applicable to: ALL

Ident.: PRO-ABN-SMOKE-2615W410-00017453.0001001 / 02 JUL 14

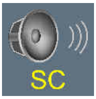
ANNUNCIATIONS

Triggering Conditions:

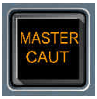
L2 The smoke detection in the IFE bay is failed.

Indications:

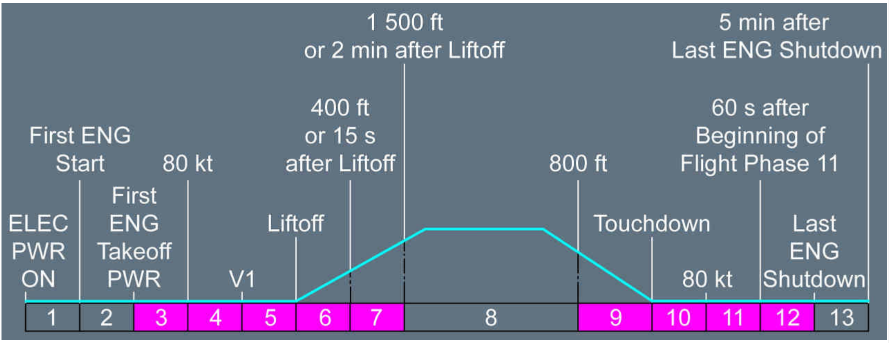
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition: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Last ENG Shutdown
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Beginning of
Flight Phase 11
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Takeoff
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Liftoff
Touchdown
Last
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Ident.: PRO-ABN-SMOKE-2615W410-00017455.0001001 / 02 JUL 14

IFEC..OFF

Continued on the following page

SMOKE IFE BAY DET FAULT (Cont'd)

Ident.: PRO-ABN-SMOKE-2615W410-00017456.0002001 / 07 JUL 16

STATUS

INOP SYS

ALL PHASES

IFE BAY SMK DET

SMOKE IFE BAY SMOKE

Applicable to: ALL

Ident.: PRO-ABN-SMOKE-2615W400-00017457.0001001 / 02 JUL 14

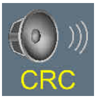
ANNUNCIATIONS

Triggering Conditions:

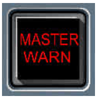
L2 Smoke is detected in the IFE bay.

Indications:

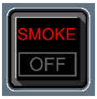
Audio



Master Light

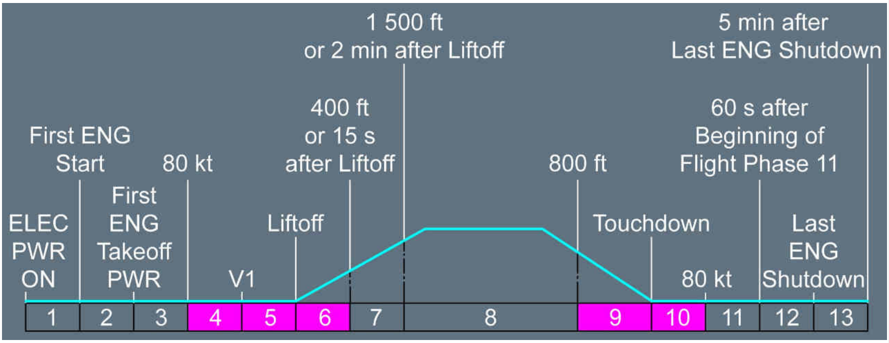

MASTER
WARN

Local Light



IFEC pb-sw

Flight Phase Inhibition: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First ENG
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Liftoff
Touchdown
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Ident.: PRO-ABN-SMOKE-2615W400-00017459.0001001 / 03 SEP 14

LAND ASAP

CAB FANS..OFF
AIR FLOW..HI
IFEC..OFF
CKPT / CABIN COM..ESTABLISH

Continued on the following page

SMOKE IFE BAY SMOKE (Cont'd)

Ident.: PRO-ABN-SMOKE-2615W400-00017460.0001001 / 02 JUL 14

STATUS

INOP SYS

ALL PHASES

IFE BAY VENT
CAB FANS

MEMOPAGE

MEMO ON ECAM

LAND ASAP

SMOKE L(R) AVNCS DET FAULT

Applicable to: ALL

Ident.: PRO-ABN-SMOKE-2615W210-00017461.0001001 / 06 NOV 14

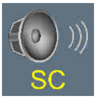
ANNUNCIATIONS

Triggering Conditions:

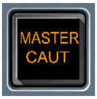
L2 Smoke detection in the left(right) avionics bay is failed.

Indications:

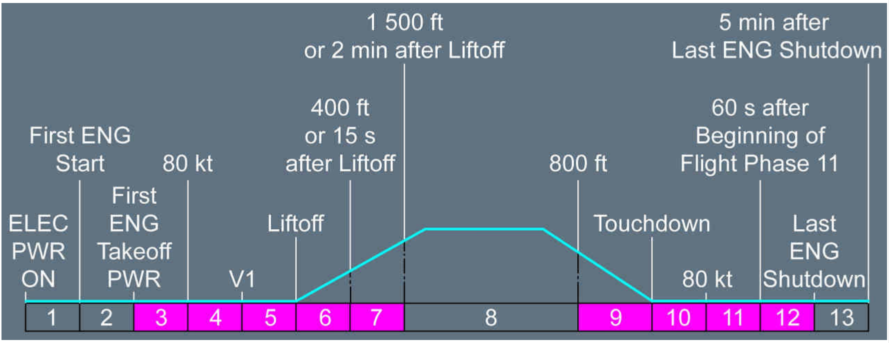
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
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Ident.: PRO-ABN-SMOKE-2615W210-00017463.0001001 / 06 NOV 14

Crew awareness.

Continued on the following page

SMOKE L(R) AVNCS DET FAULT (Cont'd)

Ident.: PRO-ABN-SMOKE-2615W210-00017464.0001001 / 06 NOV 14

STATUS

INOP SYS

ALL PHASES

L(R) AVNCS SMK DET

SMOKE L(R) AVNCS SMOKE

Applicable to: ALL

Ident.: PRO-ABN-SMOKE-2615W100-00017465.0001001 / 06 NOV 14

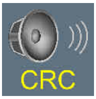
ANNUNCIATIONS

Triggering Conditions:

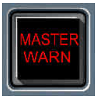
L2 Smoke is detected in the left(right) hand area of the avionics bay.

Indications:

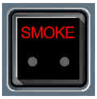
Audio



Master Light


MASTER
WARN

Local Light

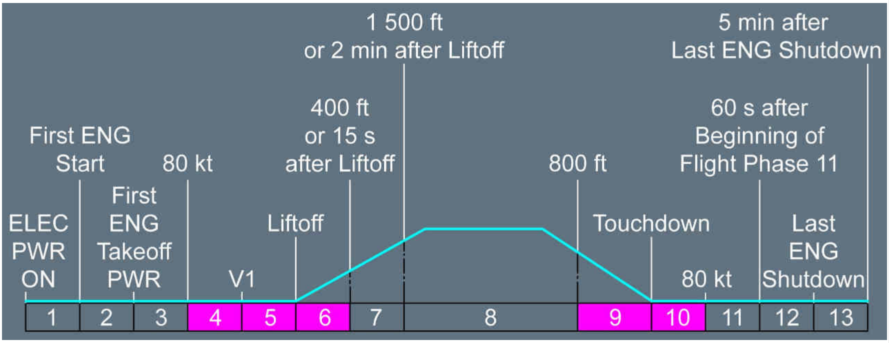


AVNCS light

SD page

COND SD Page

Flight Phase Inhibition: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Continued on the following page

SMOKE L(R) AVNCS SMOKE (Cont'd)

Ident.: PRO-ABN-SMOKE-2615W100-00017467.0006001 / 09 MAR 16

LAND ASAP

CREW OXY MASKS (IF RQRD)........USE/100%/EMER
CAB FANS........OFF
VENT AVNCS EXTRACT........OVRD

L2 *Avionics ventilation air is extracted overboard.*

L1 AIR FLOW........HI
ELEC PAX SYS........OFF
ELEC GALLEY........OFF
CARGO FWD ISOL VALVES ◁ ....OFF
CARGO AFT ISOL VALVES ◁ ....OFF
CARGO BULK ISOL VALVES........OFF
SIGNS........ON
CKPT / CABIN COM........ESTABLISH
[QRH] SMOKE/FUMES PROC........*REFER TO PROC APPLY*

Ident.: PRO-ABN-SMOKE-2615W100-00017468.0006001 / 09 MAR 16

STATUS

INOP SYS

ALL PHASES

CAB FANS
FWD CARGO VENT ◁
AFT CARGO VENT ◁
BULK CARGO VENT
FWD CARGO TEMP REGUL ◁

MEMOPAGE

MEMO ON ECAM

LAND ASAP

SMOKE LAVATORY DET FAULT

Applicable to: ALL

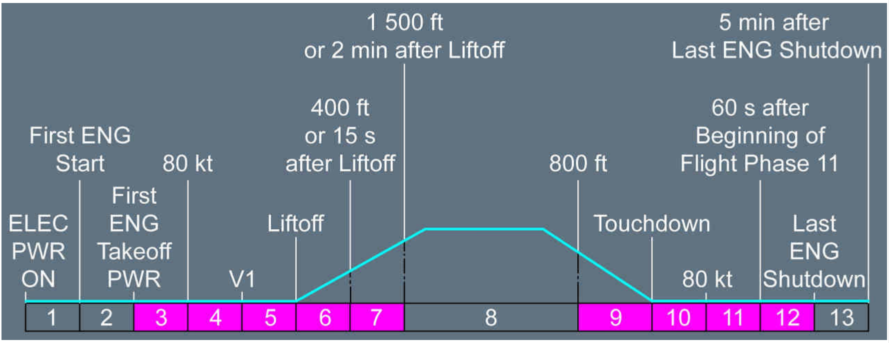
Ident.: PRO-ABN-SMOKE-2617W210-00002511.0001001 / 02 JUL 14

ANNUNCIATIONS

Triggering Conditions:

L2 The smoke detection system in the lavatory is failed.

Flight Phase Inhibition: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Ident.: PRO-ABN-SMOKE-2617W210-00008093.0001001 / 02 JUL 14

Crew awareness.

Ident.: PRO-ABN-SMOKE-2617W210-00008094.0001001 / 02 JUL 14

STATUS

INOP SYS

ALL PHASES

LAV SMK DET

SMOKE LAVATORY SMOKE

Applicable to: ALL

Ident.: PRO-ABN-SMOKE-2617W200-00017473.0001001 / 02 JUL 14

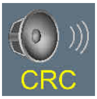
ANNUNCIATIONS

Triggering Conditions:

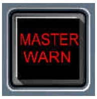
L2 Smoke is detected in the lavatory.

Indications:

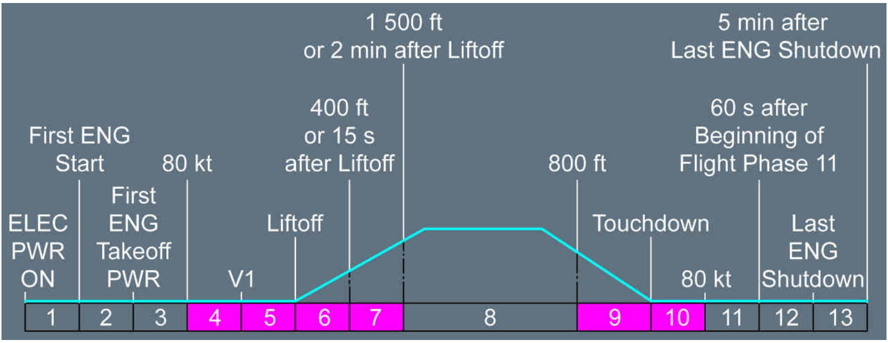
Audio



Master Light


MASTER
WARN

Flight Phase Inhibition: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400 ft
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Flight Phase 11
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Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
2
3
4
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Ident.: PRO-ABN-SMOKE-2617W200-00017475.0001001 / 02 JUL 14

CKPT / CABIN COM.. ESTABLISH

SMOKE PAX BBAND DET FAULT

Applicable to: ALL

Ident.: PRO-ABN-SMOKE-2615W310-00017477.0001001 / 09 MAR 16

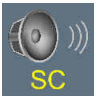
ANNUNCIATIONS

Triggering Conditions:

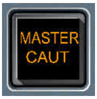
L2 The smoke detection system in the connectivity rack compartment is failed.

Indications:

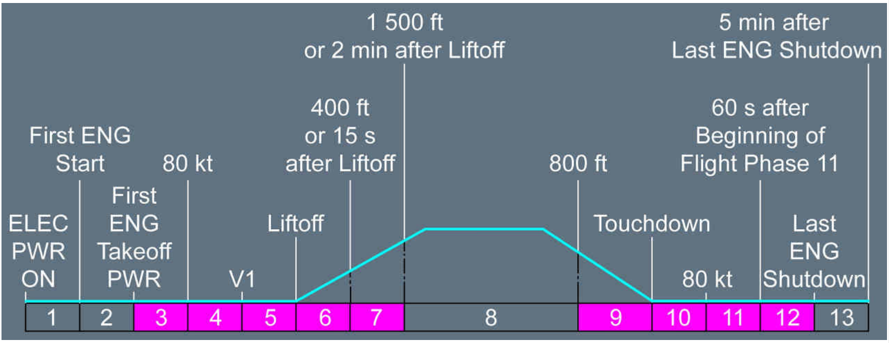
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
2
3
4
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12
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Ident.: PRO-ABN-SMOKE-2615W310-00017479.0001001 / 02 JUL 14

PAX BBAND...OFF

Continued on the following page

SMOKE PAX BBAND DET FAULT ⩤ (Cont'd)

Ident.: PRO-ABN-SMOKE-2615W310-00017480.0001001 / 02 JUL 14

STATUS

INOP SYS

ALL PHASES

PAX BBAND SMK DET

SMOKE PAX BBAND SMOKE ⩤

Applicable to: ALL

Ident.: PRO-ABN-SMOKE-2615W300-00017481.0001001 / 09 MAR 16

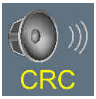
ANNUNCIATIONS

Triggering Conditions:

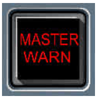
L2 Smoke is detected in the connectivity rack compartment.

Indications:

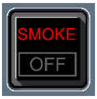
Audio



Master Light

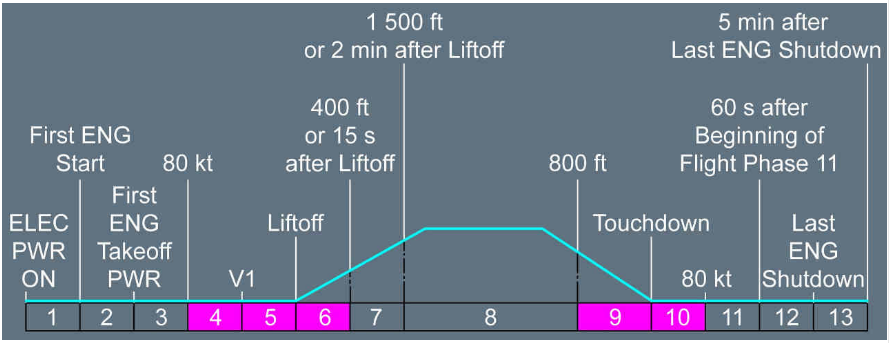

MASTER
WARN

Local Light



PAX BBAND pb-sw

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Ident.: PRO-ABN-SMOKE-2615W300-00017483.0001001 / 03 SEP 14

LAND ASAP

CAB FANS..OFF
AIR FLOW...HI
PAX BBAND...OFF
CKPT / CABIN COM.. ESTABLISH

Continued on the following page

SMOKE PAX BBAND SMOKE ⩤ (Cont'd)

Ident.: PRO-ABN-SMOKE-2615W300-00017484.0001001 / 02 JUL 14

STATUS

INOP SYS

ALL PHASES

CAB FANS

MEMOPAGE

MEMO ON ECAM

LAND ASAP

Intentionally left blank

STEER CAPT(F/O) STEER TILLER FAULT

Applicable to: ALL

Ident.: PRO-ABN-STEER-3251W050-00014456.0001001 / 06 MAR 15

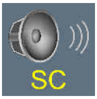
ANNUNCIATIONS

Triggering Conditions:

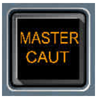
L2 The Captain's or the First Officer's steering handwheel is failed.

Indications:

Audio



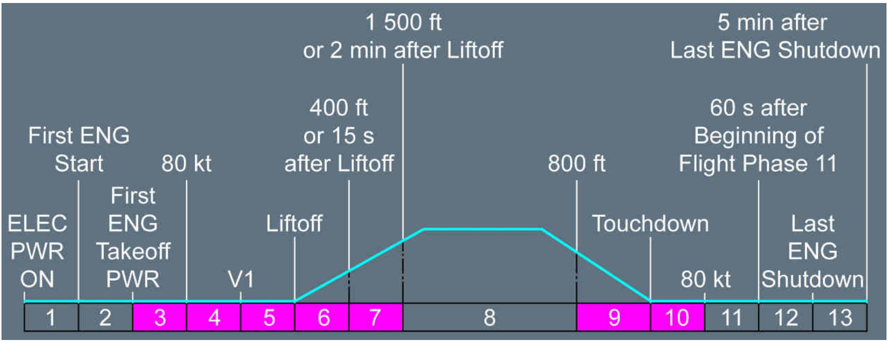
Master Light


MASTER
CAUT

SD page

WHEEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Ident.: PRO-ABN-STEER-3251W050-00014458.0001001 / 06 MAR 15

Crew awareness.

Continued on the following page

STEER CAPT(F/O) STEER TILLER FAULT (Cont'd)

Ident.: PRO-ABN-STEER-3251W050-00014459.0001001 / 06 MAR 15

STATUS

INOP SYS

APPR & LDG

CAPT(F/O) STEER TILLER

STEER N/W STEER ANGLE LIMIT EXCEEDED

Applicable to: ALL

Ident.: PRO-ABN-STEER-3251W140-00014473.0001001 / 02 JUL 14

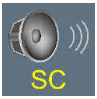
ANNUNCIATIONS

Triggering Conditions:

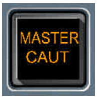
L2 The nose wheel steering angle has exceeded the maximum value.

Indications:

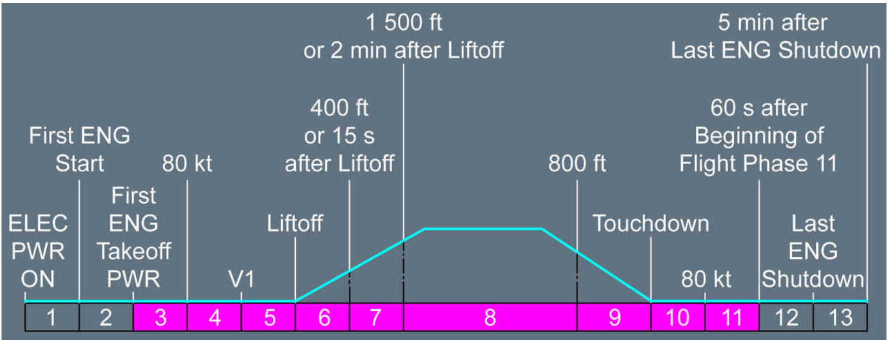
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft or 2 min after Liftoff
5 min after Last ENG Shutdown
First ENG Start
80 kt
400 ft or 15 s after Liftoff
800 ft
60 s after Beginning of Flight Phase 11
ELEC PWR ON
First ENG Takeoff PWR
V1
Liftoff
Touchdown
80 kt
Last ENG Shutdown
1
2
3
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Ident.: PRO-ABN-STEER-3251W140-00014475.0001001 / 06 MAR 15

Crew awareness.

L2 The nose landing gear may be damaged. Maintenance action is due.

STEER N/W STEER DISC FAULT

Applicable to: ALL

Ident.: PRO-ABN-STEER-3251W080-00014465.0003001 / 04 MAY 18

ANNUNCIATIONS

Triggering Conditions:

L2 The nose wheel steering cannot be disconnected via the NWS DISCONNECT sw on the steering disconnect panel.

Indications:

Audio

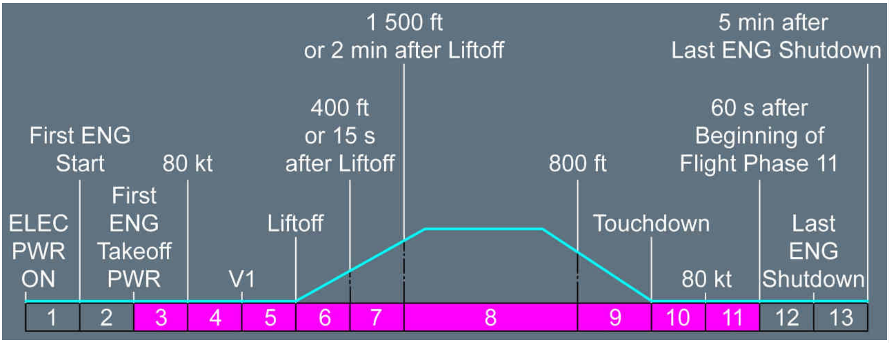
Master Light

MASTER
CAUT

SD page

WHEEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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3
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Ident.: PRO-ABN-STEER-3251W080-00014467.0002001 / 07 JUL 16

- **On ground:**

  N/W STEER STILL POWERED

  FOR TOWING : ALL ENG MASTERS OFF

L2 *The NWS is isolated as long as all Engine master levers are set to OFF.*

Continued on the following page

STEER N/W STEER DISC FAULT (Cont'd)

Ident.: PRO-ABN-STEER-3251W080-00014468.0001001 / 06 MAR 15

STATUS

INOP SYS

APPR & LDG

N/W STEER DISC

INFO

N/W STEER STILL POWERED

STEER N/W STEER FAULT

Applicable to: ALL

Ident.: PRO-ABN-STEER-3251W010-00014452.0001001 / 02 JUL 14

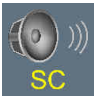
ANNUNCIATIONS

Triggering Conditions:

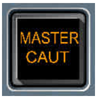
L2 The nose wheel steering system is failed.

Indications:

Audio



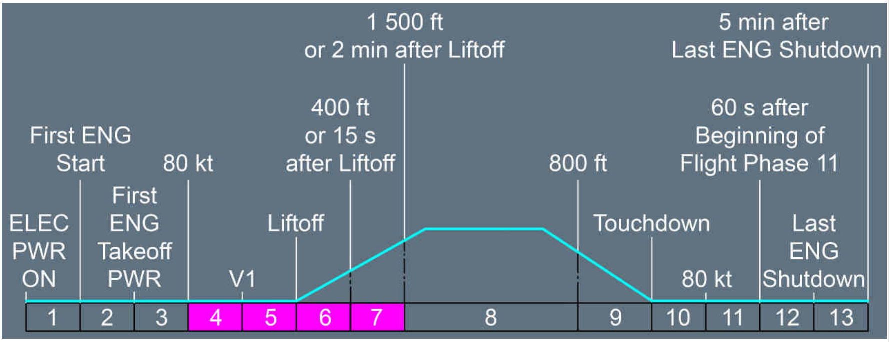
Master Light


MASTER
CAUT

SD page

WHEEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Ident.: PRO-ABN-STEER-3251W010-00014453.0001001 / 06 MAR 15

Note: *If the failure is only due to an IMA module failure, the ECAM displays the DUE TO IMA MODULE FAULT subtitle.*

Continued on the following page

STEER N/W STEER FAULT (Cont'd)

Ident.: PRO-ABN-STEER-3251W010-00014454.0003001 / 03 JAN 19

- ■ **Before takeoff:**
  BKUP STEER INHIBITED
  TOWING.....CONSIDER
- ■ **After takeoff:**
  - ■ **If the nose wheel is free to swivel:**
    BKUP STEER AVAIL BELOW 30KT & A/BRK OFF
    TO VACATE CONTAM RWY : USE TOWING
  - ■ **If the nose wheel is not free to swivel:**
    NO BKUP STEER
    TO VACATE RWY : CONSIDER TOWING
- ● **If the WSCS unduly attempts to activate steering during towing operation:**
  ABNORM STEER DISC SELECTION ON TOW BOX
  N/W STEER NOT POWERED

Ident.: PRO-ABN-STEER-3251W010-00014455.0003001 / 03 JAN 19

STATUS

INFO

LAND 3 SINGLE ONLY

- ● **If the nose wheel is free to swivel:**
  BKUP STEER AVAIL BELOW 30KT & A/BRK OFF
  TO VACATE CONTAM RWY : USE TOWING
- ● **If the nose wheel is not free to swivel:**
  TO VACATE RWY : CONSIDER TOWING

STEER N/W STEER NOT DISC

Applicable to: ALL

Ident.: PRO-ABN-STEER-3251W400-00014477.0001001 / 06 MAR 15

ANNUNCIATIONS

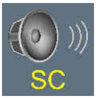
Triggering Conditions:

L2

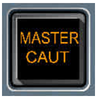
The nose wheel steering is still connected before towing. Before aircraft towing, the nose wheel steering has to be disconnected.

Indications:

Audio



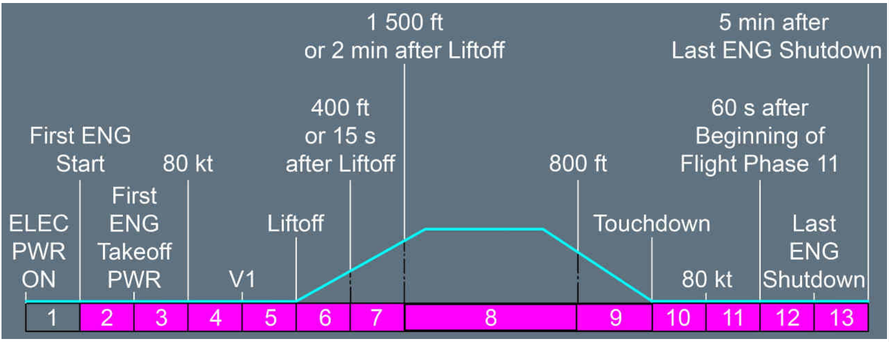
Master Light


MASTER
CAUT

SD page

WHEEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Ident.: PRO-ABN-STEER-3251W400-00014479.0001001 / 06 MAR 15

N/W STEER STILL POWERED
FOR TOWING : ALL ENG MASTERS OFF

Continued on the following page

STEER N/W STEER NOT DISC (Cont'd)

Ident.: PRO-ABN-STEER-3251W400-00014480.0001001 / 06 MAR 15

STATUS

INFO

N/W STEER STILL POWERED

STEER PEDAL STEER CTL FAULT

Applicable to: ALL

Ident.: PRO-ABN-STEER-3251W070-00014461.0001001 / 06 MAR 15

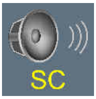
ANNUNCIATIONS

Triggering Conditions:

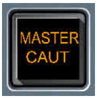
L2 The steering system does not receive steering orders from the rudder pedals.

Indications:

Audio



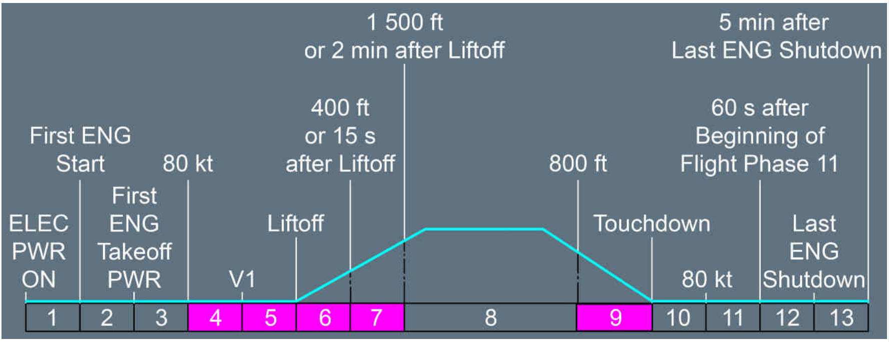
Master Light


MASTER
CAUT

SD page

WHEEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
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First
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Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
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Shutdown
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Ident.: PRO-ABN-STEER-3251W070-00014463.0001001 / 06 MAR 15

Crew awareness.

Continued on the following page

STEER PEDAL STEER CTL FAULT (Cont'd)

Ident.: PRO-ABN-STEER-3251W070-00014464.0001001 / 06 MAR 15

STATUS

INOP SYS

APPR & LDG

PEDAL STEER CTL

Intentionally left blank

[MEM] TAWS CAUTION

Applicable to: ALL

Ident.: PRO-ABN-SURV-MEM15-00007806.0001001 / 06 NOV 14

ANNUNCIATIONS

Triggering Conditions:

L2 The TAWS detects potential hazardous situation with respect to surrounding terrain. For more information, *Refer to TAWS*.
For more information on the audio indicators, *Refer to DSC-34-SURV-20-20 Audio Indicators*.

Continued on the following page

[MEM] TAWS CAUTION (Cont'd)

Ident.: PRO-ABN-SURV-MEM15-00007808.0001001 / 05 NOV 18

■ "OBSTACLE AHEAD", "TERRAIN AHEAD", "TERRAIN TERRAIN" or "TOO LOW TERRAIN"

L2 For more information on "OBSTACLE AHEAD" and "TERRAIN AHEAD" alerts, *Refer to Terrain Function*.
For more information on "TERRAIN TERRAIN" alert, *Refer to GPWS mode 2*.
For more information on "TOO LOW TERRAIN" alert, *Refer to GPWS mode 4*.

L1 **■ During night or IMC conditions:**

Simultaneously:

AP...OFF
PITCH...PULL UP

Pull to full backstick and maintain in that position.

THRUST LEVERS...TOGA
SPEED BRAKES LEVER...CHECK RETRACTED
BANK...WINGS LEVEL or ADJUST

L2 Aircraft obtain the best climb performance when the wings are as level as possible. The flight crew can adjust bank while climbing, provided that turning is the safest action.

L1 *Note:* *For some airports, the operator may define a specific procedure.*

DO NOT CHANGE CONFIGURATION (SLATS/FLAPS, GEAR) UNTIL CLEAR OF OBSTACLE.

■ During daylight and VMC conditions, with terrain and obstacles clearly in sight:

FLIGHT PATH...ADJUST

L2 Adjust pitch, bank and thrust to silence the alert.

L1 *Note:* *For some airports, the operator may define a specific procedure.*

■ "SINK RATE"

L2 For more information on "SINK RATE" alert, *Refer to GPWS mode 1*.

L1 **■ Above 1 000 ft AAL IMC or above 500 ft AAL VMC:**

FLIGHT PATH...ADJUST

L2 Adjust pitch and thrust to silence the alert.

Continued on the following page

[MEM] TAWS CAUTION (Cont'd)

L1

- ■ **Below 1 000 ft AAL IMC or below 500 ft AAL VMC:**

  GO AROUND.. CONSIDER

- ■ **"DON'T SINK"**

L2 For more information on "DON'T SINK" alert, *Refer to GPWS mode 3*.

L1 FLIGHT PATH.. ADJUST

L2 Adjust pitch and thrust to silence the alert.

L1
- ■ **"GLIDESLOPE"**

L2 For more information on "GLIDESLOPE" alert, *Refer to GPWS mode 5*.

L1
- ■ **Above 1 000 ft AAL IMC or above 500 ft AAL VMC:**

  FLIGHT PATH.. ADJUST

L2 Adjust pitch and thrust to reduce the vertical deviation from the glideslope.

L1
  - ● **If the flight crew intentionally flies below the glide slope:**

    G/S MODE.. OFF

- ■ **Below 1 000 ft AAL IMC or below 500 ft AAL VMC:**

  GO AROUND.. CONSIDER

- ■ **"TOO LOW GEAR" or "TOO LOW FLAPS"**

L2 For more information on "TOO LOW GEAR" and "TOO LOW FLAPS" alerts, *Refer to GPWS mode 4*.

L1 GO AROUND.. PERFORM

[MEM] TAWS WARNING

Applicable to: ALL

Ident.: PRO-ABN-SURV-MEM20-00007790.0001001 / 06 NOV 14

ANNUNCIATIONS

Triggering Conditions:

L2 The TAWS detects:
- An excessive rate of descent at low altitude ("PULL UP"), or
- A terrain collision threat ahead of the aircraft ("TERRAIN AHEAD, PULL UP"), or
- An obstacle collision threat ahead of the aircraft ("OBSTACLE AHEAD, PULL UP").

For more information on the audio indicators, *Refer to DSC-34-SURV-20-20 Audio Indicators*.

Ident.: PRO-ABN-SURV-MEM20-00007800.0001001 / 05 NOV 18

● **"PULL UP" or "TERRAIN AHEAD PULL UP" or "OBSTACLE AHEAD PULL UP"**

Simultaneously:

AP..OFF
PITCH..PULL UP

Pull to full backstick and maintain in that position.

THRUST LEVERS..TOGA
SPEED BRAKES LEVER..CHECK RETRACTED
BANK..WINGS LEVEL or ADJUST

L2 Aircraft obtain the best climb performance when the wings are as level as possible. The flight crew can adjust bank while climbing, provided that turning is the safest action.

The “TERRAIN AHEAD, PULL UP” or the “OBSTACLE AHEAD, PULL UP” aural alert may be followed by the "AVOID TERRAIN" or "AVOID OBSTACLE" aural alert. In this case, the flight crew must adjust bank as necessary.

L1 DO NOT CHANGE CONFIGURATION (SLATS/FLAPS, GEAR) UNTIL CLEAR OF OBSTACLE.

[MEM] TCAS CAUTION - TRAFFIC ADVISORY

Applicable to: ALL

Ident.: PRO-ABN-SURV-MEM30-00007794.0001001 / 06 NOV 14

ANNUNCIATIONS

Triggering Conditions:

L2 The TCAS detects a Traffic Advisory (TA).

Indications:

Audio

For more information on the audio indicator, *Refer to DSC-34-SURV-40-20 Audio Indicators*.

Ident.: PRO-ABN-SURV-MEM30-00007809.0001001 / 06 NOV 14

L2 If the AP/FD TCAS mode is available, the TCAS mode arms on FMA.
For more information about AP/FD mode with traffic advisory, *Refer to DSC-22-FG-70-100-40 Introduction*.

L1 TCAS mode..CHECK ARMED

L2 If the AP/FD TCAS mode does not arm, the flight crew must be prepared to disconnect the AP in the case of a resolution advisory, and manually follow the TCAS guidances.

L1 ● **If the A/THR is off:**

AUTOTHRUST..RECOMMENDED

L2 *It is recommended to set the A/THR to ON with the thrust levers in CL detent, in order to avoid the AUTO FLT A/THR LIMITED alert at the automatic A/THR activation that occurs in the case of a resolution advisory.*

L1 Do not perform a maneuver based on a TA alone.

[MEM] TCAS WARNING - RESOLUTION ADVISORY

Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB

Ident.: PRO-ABN-SURV-MEM35-00021020.0001001 / 06 NOV 14

ANNUNCIATIONS

Triggering Conditions:

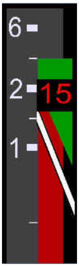
L2 The TCAS detects a Resolution Advisory (RA).

Indications:

Audio

For more information on the audio indicators, *Refer to DSC-34-SURV-40-20 Audio Indicators*.

SD page



The vertical speed scale appears on the PFD. For more information on the vertical speed scale, *Refer to DSC-34-SURV-40-20 Vertical Speed Scale*.

Continued on the following page

[MEM] TCAS WARNING - RESOLUTION ADVISORY (Cont'd)

Ident.: PRO-ABN-SURV-MEM35-00022204.0002001 / 06 NOV 14

Always follow RA orders, even if this results in crossing the intruder altitude, because these orders ensure the best altitude separation.

CAUTION	Be aware that the intruder may have a TCAS, and may maneuver in response to a coordinated RA order. Therefore, not following an RA order could compromise safe separation.

- **If the flight crew uses the HUD:**

  Revert to PFD.

L2 The HUD does not display the green and red areas of the vertical speed scale.

L1 ■ **If AP/FD TCAS mode is available:**

- **If the AP is off:**

  FD ORDERS........................FOLLOW

  The AP can be engaged

VERTICAL SPEED........................MONITOR

L2 If a preventive RA was triggered: Check that the vertical speed remains out of the red area of the vertical speed scale.

If a corrective RA was triggered: Check that the vertical speed gets out of the red area, and remains in the green area of the vertical speed scale.

L1

CAUTION	If for any reason during an RA, the aircraft vertical speed does not reach the green area of the vertical speed scale, the Pilot Flying (PF) should disconnect the AP, and override the FD orders, in order to lead the aircraft vertical speed out of the red area of the vertical speed scale. If necessary, the PF must use the full speed range between $V\alpha_{max}$ and V_{max}.

- **If any "CLIMB" audio indicator sounds during the final approach:**

  AP/FD TCAS ORDERS........................MONITOR/FOLLOW

  GO-AROUND........................CONSIDER

L2 If the flight crew performs a go-around, the AP/FD TCAS mode disengages, and the SRS GA mode engages. The AP/FD does no longer follow the RA orders. The flight crew must fly manually the TCAS order and follow the vertical speed indications on the vertical speed scale.

Continued on the following page

[MEM] TCAS WARNING - RESOLUTION ADVISORY (Cont'd)

L1

Respect stall, TAWS, or windshear warning.
ATC .... NOTIFY

- **When the "CLEAR OF CONFLICT" audio indicator sounds:**

L2

The AP/FD TCAS mode disengages. For more information, *Refer to DSC-22-FG-70-100-40 Introduction*.

L1

AP/FD .... MONITOR/FOLLOW
ATC .... NOTIFY
LATERAL AND VERTICAL GUIDANCE.......... ADJUST

L2

The flight crew should engage an appropriate vertical mode, or adjust the vertical speed target, in accordance with the latest ATC clearance.

L1

SPEED.......... ADJUST

L2

The flight crew should adjust the speed target, and revert to managed speed, as appropriate.

L1

■ **If the AP/FD TCAS mode is not available:**

AP (if engaged).......... OFF
FDs.......... OFF
Respond promptly and smoothly.
VERTICAL SPEED.......... ADJUST or MAINTAIN

L2

Adjust or maintain the vertical speed as required, depending on the green area, and/or to avoid the red area of the vertical speed scale.

Note: *Avoid excessive maneuvers while attempting to maintain the vertical speed just outside the red area of the scale, and within the green area. If necessary, use the full speed range between* $V\alpha_{max}$ *and* V_{max}.

L1

Respect stall, TAWS, or windshear warnings.
ATC .... NOTIFY

- **When the "CLEAR OF CONFLICT" audio indicator sounds:**

ATC .... NOTIFY
LATERAL AND VERTICAL GUIDANCE.......... ADJUST

L2

Adjust the lateral and vertical guidance to resume normal navigation, in accordance with ATC clearance.

Continued on the following page

[MEM] TCAS WARNING - RESOLUTION ADVISORY (Cont'd)

L1 AP/FD .... AS RQRD

L2 If necessary, reengage the AP/FD.

L1 ● **If any "CLIMB" audio indicator sounds during the final approach:**

GO AROUND.. PERFORM

[MEM] TCAS WARNING - RESOLUTION ADVISORY

Applicable to: ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB

Ident.: PRO-ABN-SURV-MEM35-00021020.0001001 / 06 NOV 14

ANNUNCIATIONS

Triggering Conditions:

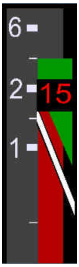
L2 The TCAS detects a Resolution Advisory (RA).

Indications:

Audio

For more information on the audio indicators, *Refer to DSC-34-SURV-40-20 Audio Indicators*.

SD page



The vertical speed scale appears on the PFD. For more information on the vertical speed scale, *Refer to DSC-34-SURV-40-20 Vertical Speed Scale*.

Continued on the following page

[MEM] TCAS WARNING - RESOLUTION ADVISORY (Cont'd)

Ident.: PRO-ABN-SURV-MEM35-00022204.0001001 / 06 NOV 14

Always follow RA orders, even if this results in crossing the intruder altitude, because these orders ensure the best altitude separation.

CAUTION	Be aware that the intruder may have a TCAS, and may maneuver in response to a coordinated RA order. Therefore, not following an RA order could compromise safe separation.

- ■ **If AP/FD TCAS mode is available:**
  - ● **If the AP is off:**

    FD ORDERS...FOLLOW

    The AP can be engaged

VERTICAL SPEED...MONITOR

L2 If a preventive RA was triggered: Check that the vertical speed remains out of the red area of the vertical speed scale.

If a corrective RA was triggered: Check that the vertical speed gets out of the red area, and remains in the green area of the vertical speed scale.

L1

CAUTION	If for any reason during an RA, the aircraft vertical speed does not reach the green area of the vertical speed scale, the Pilot Flying (PF) should disconnect the AP, and override the FD orders, in order to lead the aircraft vertical speed out of the red area of the vertical speed scale. If necessary, the PF must use the full speed range between $V\alpha_{max}$ and V_{max}.

- ● **If any "CLIMB" audio indicator sounds during the final approach:**

  AP/FD TCAS ORDERS...MONITOR/FOLLOW
  GO-AROUND...CONSIDER

L2 If the flight crew performs a go-around, the AP/FD TCAS mode disengages, and the SRS GA mode engages. The AP/FD does no longer follow the RA orders. The flight crew must fly manually the TCAS order and follow the vertical speed indications on the vertical speed scale.

L1 Respect stall, TAWS, or windshear warning.
ATC ....NOTIFY

Continued on the following page

[MEM] TCAS WARNING - RESOLUTION ADVISORY (Cont'd)

- **When the "CLEAR OF CONFLICT" audio indicator sounds:**

L2 The AP/FD TCAS mode disengages. For more information, *Refer to DSC-22-FG-70-100-40 Introduction*.

L1
AP/FD ....MONITOR/FOLLOW
ATC ....NOTIFY
LATERAL AND VERTICAL GUIDANCE....................ADJUST

L2 The flight crew should engage an appropriate vertical mode, or adjust the vertical speed target, in accordance with the latest ATC clearance.

L1
SPEED....................ADJUST

L2 The flight crew should adjust the speed target, and revert to managed speed, as appropriate.

L1 ■ **If the AP/FD TCAS mode is not available:**

AP (if engaged).................... OFF
FDs.................... OFF

Respond promptly and smoothly.
VERTICAL SPEED.................... ADJUST or MAINTAIN

L2 Adjust or maintain the vertical speed as required, depending on the green area, and/or to avoid the red area of the vertical speed scale.

Note: *Avoid excessive maneuvers while attempting to maintain the vertical speed just outside the red area of the scale, and within the green area. If necessary, use the full speed range between* $V\alpha_{max}$ *and* V_{max}.

L1
Respect stall, TAWS, or windshear warnings.
ATC .... NOTIFY

- **When the "CLEAR OF CONFLICT" audio indicator sounds:**

ATC ....NOTIFY
LATERAL AND VERTICAL GUIDANCE....................ADJUST

L2 Adjust the lateral and vertical guidance to resume normal navigation, in accordance with ATC clearance.

L1
AP/FD ....AS RQRD

L2 If necessary, reengage the AP/FD.

Continued on the following page

[MEM] TCAS WARNING - RESOLUTION ADVISORY (Cont'd)

L1

- **If any "CLIMB" audio indicator sounds during the final approach:**

GO AROUND.. PERFORM

[MEM] WINDSHEAR WARNING - PREDICTIVE WINDSHEAR

Applicable to: ALL

Ident.: PRO-ABN-SURV-MEM610-00007795.0001001 / 06 NOV 14

ANNUNCIATIONS

Triggering Conditions:

L2

If the Predictive Windshear System (PWS) detects windshear on the aircraft path, one of the following audio indicator is triggered:
- During takeoff, "WINDSHEAR AHEAD"
- During approach, "GO AROUND, WINDSHEAR AHEAD".

For more information on the PWS, *Refer to DSC-34-SURV-30-10 Predictive Windshear (PWS) Function*.
For more information on audio indicators, *Refer to DSC-34-SURV-30-20 Audio Indicators*.

Continued on the following page

[MEM] WINDSHEAR WARNING - PREDICTIVE WINDSHEAR (Cont'd)

Ident.: PRO-ABN-SURV-MEM610-00007811.0001001 / 03 JAN 20

L2 *Note: If the flight crew verifies and confirms that there is no risk of windshear, they may disregard the alert, provided that:*
- *There are no others signs of possible windshear conditions*
- *The reactive windshear function is operative.*

There are reported cases that specific environments (e.g. obstacles) cause the spurious triggering of predictive windshear alerts, during either takeoff or landing. However, the flight crew must always rely on all reactive windshear (i.e. WINDSHEAR) alerts.

L1
- **Before V1:**

RTO...PERFORM

- **After V1, or when airborne (initial climb, or during approach and landing):**

THRUST LEVERS...TOGA
AP (if engaged)...KEEP ON
SRS ORDERS...FOLLOW

IF WINDSHEAR IS ENTERED, DO NOT CHANGE CONFIGURATION.

CAREFULLY MONITOR FLIGHT PATH AND SPEED.

Note: If the FD bars are not displayed, move toward an initial pitch attitude of 15 °. Then, if necessary to prevent a loss of altitude, increase the pitch attitude.

[MEM] WINDSHEAR WARNING - REACTIVE WINDSHEAR

Applicable to: ALL

Ident.: PRO-ABN-SURV-MEM630-00007796.0001001 / 06 NOV 14

ANNUNCIATIONS

Triggering Conditions:

L2 The PRIMs detect windshear (reactive windshear) during takeoff or landing.
For more information, *Refer to DSC-22-27-20 Reactive Windshear Detection*.
Indications:

Audio
"Windshear, Windshear, Windshear"

Ident.: PRO-ABN-SURV-MEM630-00021018.0001001 / 06 NOV 14

L2 Both PFDs display the WINDSHEAR warning, during the takeoff and landing phases. This warning is associated with a WINDSHEAR, WINDSHEAR, WINDSHEAR audio indicator.
If windshear is detected, either by the systems, or by the flight crew, apply the following recovery techniques.

Continued on the following page

[MEM] WINDSHEAR WARNING - REACTIVE WINDSHEAR (Cont'd)

Ident.: PRO-ABN-SURV-MEM630-00007813.0001001 / 03 JUL 20

1

On ground, at takeoff:

L2 During the takeoff roll, "WINDSHEAR, WINDSHEAR, WINDSHEAR" alert is inhibited. Windshear recognition is based on the flight crew observation.

L1
- **Before V1:**

  If there are significant variations in airspeed, and in airspeed trend below the indicated V1, reject the takeoff.

  L2 *If windshear occurs during the takeoff roll, the aircraft may reach V1 later (or sooner) than expected. The flight crew should ensure that there is sufficient runway remaining to stop the aircraft, if necessary.*

L1
- **After V1:**

  THR LEVERS....................TOGA
  REACHING VR....................ROTATE NORMALLY
  SRS ORDERS....................FOLLOW

When airborne, during initial climb, or at landing:

THR LEVERS AT TOGA....................SET OR CONFIRM
AP (if engaged)....................KEEP ENGAGED
SRS ORDERS....................FOLLOW

L2 *If necessary, the flight crew may apply full backstick.*

L1 DO NOT CHANGE CONFIGURATION (SLATS/FLAPS, GEAR) UNTIL OUT OF WINDSHEAR.

CAREFULLY MONITOR FLIGHT PATH AND SPEED.

RECOVER SMOOTHLY TO CLIMB, WHEN OUT OF WINDSHEAR.

Note: *If the FD bars are not displayed, move toward an initial pitch attitude of 15 °. Then, if necessary to prevent a loss of altitude, increase the pitch attitude.*

SURV ADS-B TRAFFIC 1(2) FAULT ⩤

Applicable to: ALL

Ident.: PRO-ABN-SURV-3471W610-00017067.0001001 / 09 MAR 16

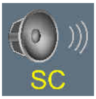
ANNUNCIATIONS

Triggering Conditions:

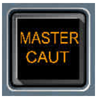
L2 The SURV SYS 1(2) has failed.

Indications:

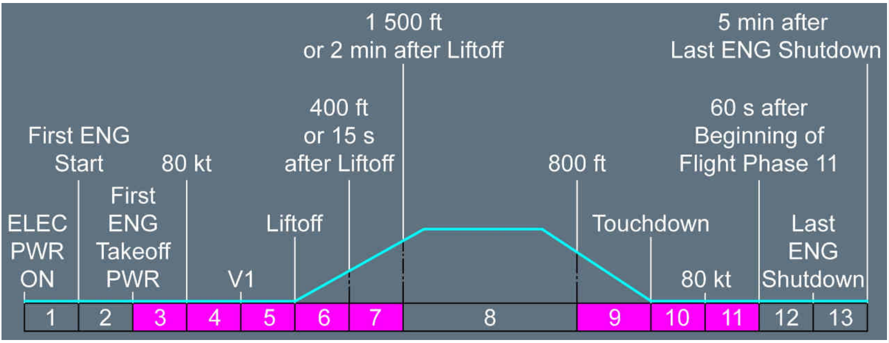
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
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800 ft
60 s after
Beginning of
Flight Phase 11
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Takeoff
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Ident.: PRO-ABN-SURV-3471W610-00017069.0001001 / 09 MAR 16

XPDR & TCAS.. SYS 2(1)

Continued on the following page

SURV ADS-B TRAFFIC 1(2) FAULT ⩤ (Cont'd)

Ident.: PRO-ABN-SURV-3471W610-00017070.0001001 / 09 MAR 16

STATUS

INOP SYS

ALL PHASES	
ADS-B TRAFFIC 1(2)	

SURV ADS-B TRAFFIC 1+2 FAULT

Applicable to: ALL

Ident.: PRO-ABN-SURV-3471W600-00017060.0001001 / 09 MAR 16

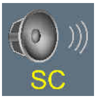
ANNUNCIATIONS

Triggering Conditions:

L2 Both SURV SYS 1 and 2 are failed.

Indications:

Audio



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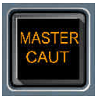
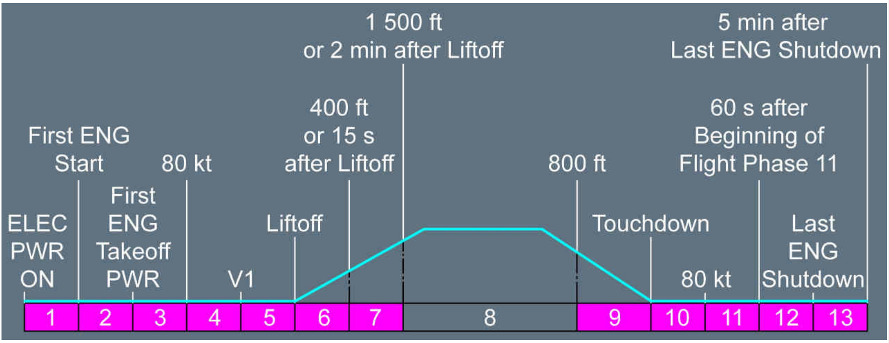

MASTER
CAUT

Flight Phase Inhibition: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Ident.: PRO-ABN-SURV-3471W600-00017063.0001001 / 09 MAR 16

Crew awareness.

Continued on the following page

SURV ADS-B TRAFFIC 1+2 FAULT ⩤ (Cont'd)

Ident.: PRO-ABN-SURV-3471W600-00017064.0001001 / 09 MAR 16

STATUS

INOP SYS

ALL PHASES

ADS-B TRAFFIC 1+2

SURV GPWS FAULT

Applicable to: ALL

Ident.: PRO-ABN-SURV-3471W160-00006439.0006001 / 07 JUL 16

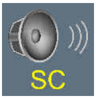
ANNUNCIATIONS

Triggering Conditions:

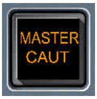
L2 The GPWS function of both TAWS is failed.

Indications:

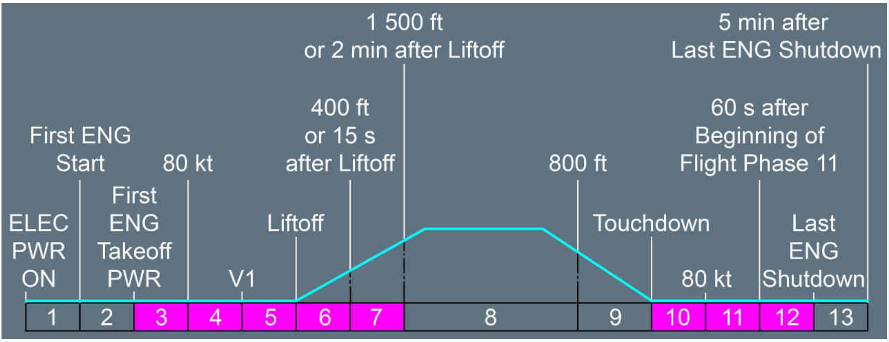
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition: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Ident.: PRO-ABN-SURV-3471W160-00008364.0001001 / 30 JUN 14

Crew awareness.

Continued on the following page

SURV GPWS FAULT (Cont'd)

Ident.: PRO-ABN-SURV-3471W160-00008365.0001001 / 30 JUN 14

STATUS

INOP SYS

ALL PHASES	
GPWS	

SURV PRED W/S 1(2) FAULT

Applicable to: ALL

Ident.: PRO-ABN-SURV-3471W510-00006440.0001001 / 30 JUN 14

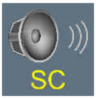
ANNUNCIATIONS

Triggering Conditions:

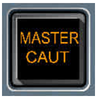
L2 The predictive windshear function of SURV SYS 1(2) is failed.

Indications:

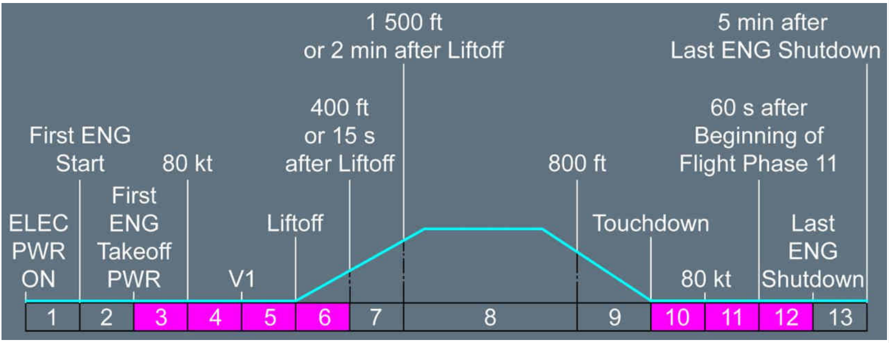
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition: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after Liftoff
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Beginning of
Flight Phase 11
First ENG
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Continued on the following page

SURV PRED W/S 1(2) FAULT (Cont'd)

Ident.: PRO-ABN-SURV-3471W510-00008367.0001001 / 30 JUN 14

- **If the WXR and PRED W/S functions on SYS 2(1) are operative:**
  WXR..SYS 2(1)
- **If the PRED W/S function on SYS 2(1) is operative and WX display function on SYS 2(1) is failed:**
  [MFD SURV] STATUS & SWTG PAGE..CHECK
  WXR..AS RQRD

L2 *The flight crew must select the most appropriate SYS, depending on available functions and flight conditions, to recover the required function(s).*

Ident.: PRO-ABN-SURV-3471W510-00008368.0001001 / 30 JUN 14

STATUS

INOP SYS

ALL PHASES

PRED W/S 1(2)

SURV PRED W/S 1+2 FAULT

Applicable to: ALL

Ident.: PRO-ABN-SURV-3471W500-00006441.0001001 / 30 JUN 14

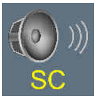
ANNUNCIATIONS

Triggering Conditions:

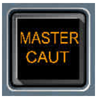
L2 At least, one of the following conditions occurs:
- The predictive windshear function is failed on both SURV SYS, or
- The predictive windshear function is failed on one SURV SYS and the other SURV SYS is failed.

Indications:

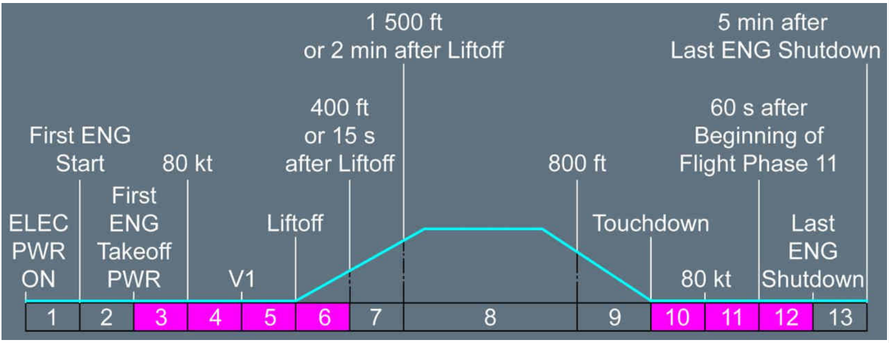
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition: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Ident.: PRO-ABN-SURV-3471W500-00008370.0001001 / 30 JUN 14

[MFD SURV] STATUS & SWTG PAGE...CHECK
WXR...AS RQRD

L2 *The flight crew must select the most appropriate SYS, depending on available functions and flight conditions, to recover the required function(s).*

Continued on the following page

SURV PRED W/S 1+2 FAULT (Cont'd)

Ident.: PRO-ABN-SURV-3471W500-00008371.0001001 / 30 JUN 14

STATUS

INOP SYS

ALL PHASES

PRED W/S 1+2

SURV REACTIVE W/S DET FAULT

Applicable to: ALL

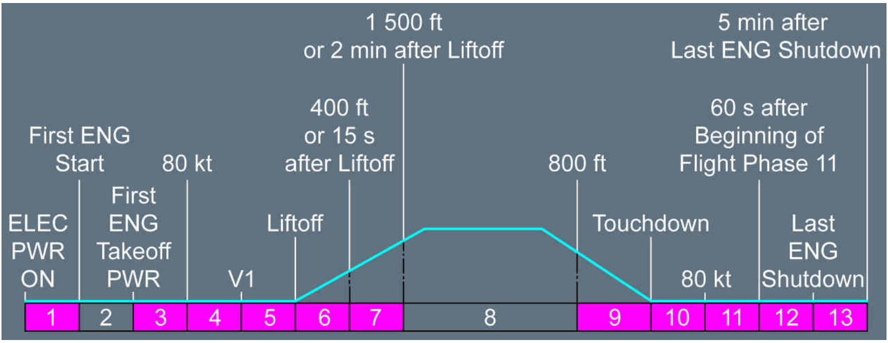
Ident.: PRO-ABN-SURV-2260W010-00006442.0002001 / 07 JUL 16

ANNUNCIATIONS

Triggering Conditions:

L2 The reactive windshear detection, done by the PRIMs, is failed.

Flight Phase Inhibition: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Beginning of
Flight Phase 11
First ENG
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Ident.: PRO-ABN-SURV-2260W010-00008373.0001001 / 30 JUN 14

Crew awareness.

Continued on the following page

SURV REACTIVE W/S DET FAULT (Cont'd)

Ident.: PRO-ABN-SURV-2260W010-00008374.0001001 / 30 JUN 14

STATUS

INOP SYS

APPR & LDG

REACTIVE W/S DET

SURV ROW/ROP LOST

Applicable to: ALL

Ident.: PRO-ABN-SURV-3242W370-00014663.0001001 / 30 JUN 14

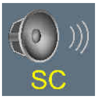
ANNUNCIATIONS

Triggering Conditions:

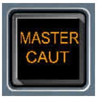
L2 The ROW and ROP functions are lost.

Indications:

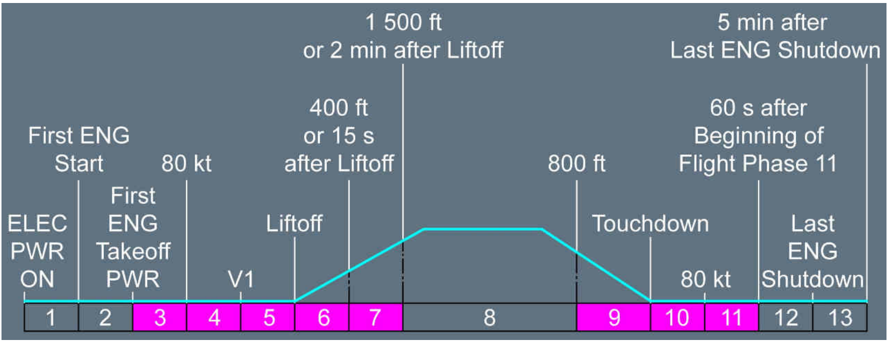
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
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Takeoff
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V1
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Ident.: PRO-ABN-SURV-3242W370-00014665.0001001 / 30 JUN 14

Crew awareness.

Continued on the following page

SURV ROW/ROP LOST (Cont'd)

Ident.: PRO-ABN-SURV-3242W370-00014666.0001001 / 30 JUN 14

STATUS

INOP SYS

APPR & LDG

BTV
ROW/ROP

SURV SYS 1(2) FAULT

Applicable to: ALL

Ident.: PRO-ABN-SURV-3471W020-00006443.0001001 / 30 JUN 14

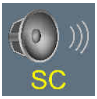
ANNUNCIATIONS

Triggering Conditions:

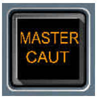
L2 SURV SYS 1(2) is failed.

Indications:

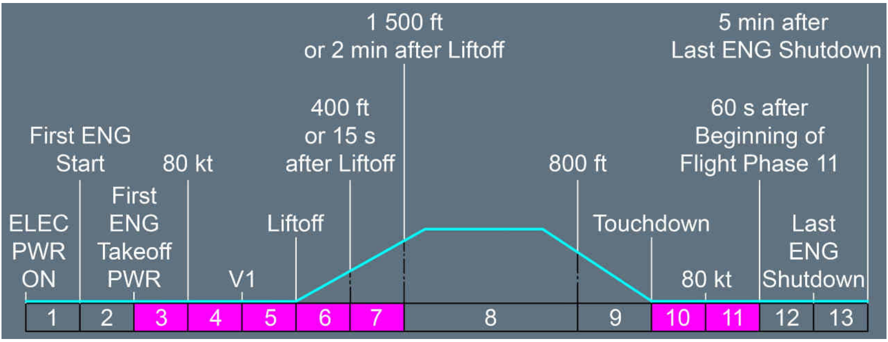
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

Ident.: PRO-ABN-SURV-3471W020-00008376.0001001 / 30 JUN 14

- **If the WXR is selected on SYS1(2), and if the WXR on SYS 2(1) is operative:**
  WXR...SYS 2(1)
- **If the XPDR/TCAS is selected on SYS1(2), and if the XPDR/TCAS on SYS 2(1) is operative:**
  XPDR & TCAS..SYS 2(1)

Continued on the following page

SURV SYS 1(2) FAULT (Cont'd)

Ident.: PRO-ABN-SURV-3471W020-00008377.0001001 / 08 JUL 19

STATUS

INOP SYS

ALL PHASES

XPDR 1(2)
WXR 1(2)
TCAS 1(2)
ADS-B TRAFFIC 1(2) ◁
ADS-B RPTG 1(2)

SURV SYS 1+2 FAULT

Applicable to: ALL

Ident.: PRO-ABN-SURV-3471W010-00006444.0001001 / 30 JUN 14

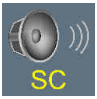
ANNUNCIATIONS

Triggering Conditions:

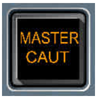
L2 Both SURV systems are failed. All surveillance functions are lost.

Indications:

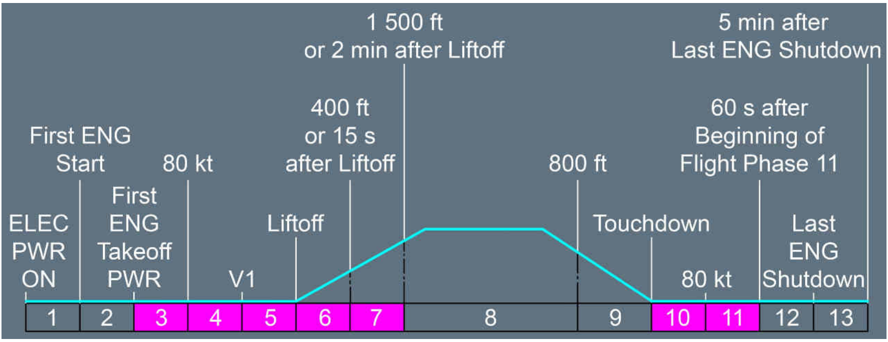
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

Ident.: PRO-ABN-SURV-3471W010-00008379.0001001 / 30 JUN 14

Crew awareness.

Continued on the following page

SURV SYS 1+2 FAULT (Cont'd)

Ident.: PRO-ABN-SURV-3471W010-00008380.0001001 / 05 NOV 18

STATUS

INOP SYS

ALL PHASES

XPDR 1+2
WXR 1+2
TCAS 1+2
TAWS
ADS-B TRAFFIC 1+2 ◁
ADS-B RPTG 1+2

SURV SYS DEGRADED

Applicable to: ALL

Ident.: PRO-ABN-SURV-3471W040-00006445.0001001 / 30 JUN 14

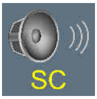
ANNUNCIATIONS

Triggering Conditions:

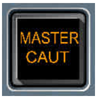
L2 The links between both SURV systems are failed.

Indications:

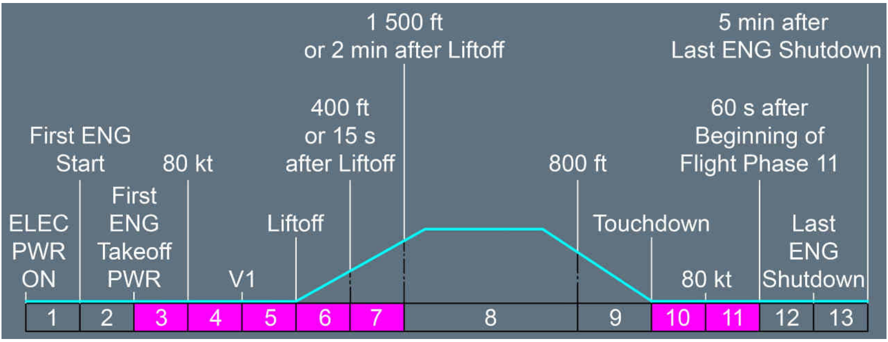
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

Ident.: PRO-ABN-SURV-3471W040-00008382.0001001 / 30 JUN 14

USE SURV SYS CTL PNL FOR SWITCHING
WXR & XPDR / TCAS.. ON SAME SYS

Continued on the following page

SURV SYS DEGRADED (Cont'd)

Ident.: PRO-ABN-SURV-3471W040-00008383.0001001 / 30 JUN 14

STATUS

INOP SYS

ALL PHASES	
SURV SYS DEGRADED	

SURV TAWS FAULT

Applicable to: ALL

Ident.: PRO-ABN-SURV-3471W100-00006447.0001001 / 30 JUN 14

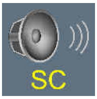
ANNUNCIATIONS

Triggering Conditions:

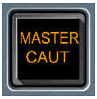
L2 The TAWS functions (GPWS and TERR) of both SURV systems are failed.

Indications:

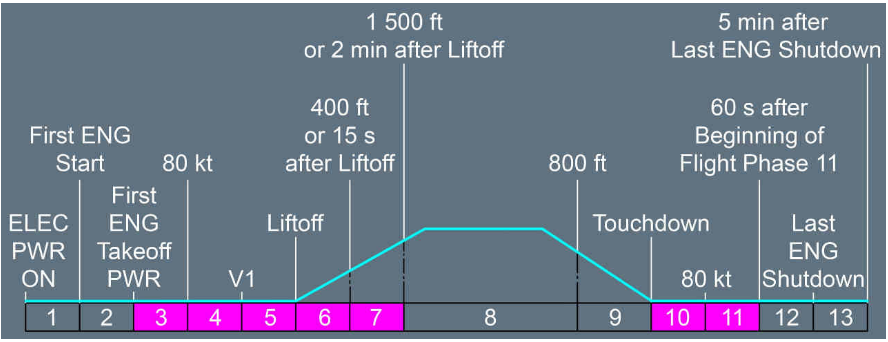
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
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10
11
12
13

Ident.: PRO-ABN-SURV-3471W100-00008388.0001001 / 30 JUN 14

Crew awareness.

Continued on the following page

SURV TAWS FAULT (Cont'd)

Ident.: PRO-ABN-SURV-3471W100-00008389.0001001 / 30 JUN 14

STATUS

INOP SYS

ALL PHASES

TAWS

SURV TCAS 1(2) FAULT

Applicable to: ALL

Ident.: PRO-ABN-SURV-3471W460-00006448.0001001 / 30 JUN 14

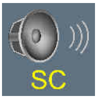
ANNUNCIATIONS

Triggering Conditions:

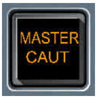
L2 The TCAS function of SURV SYS 1(2) is failed.

Indications:

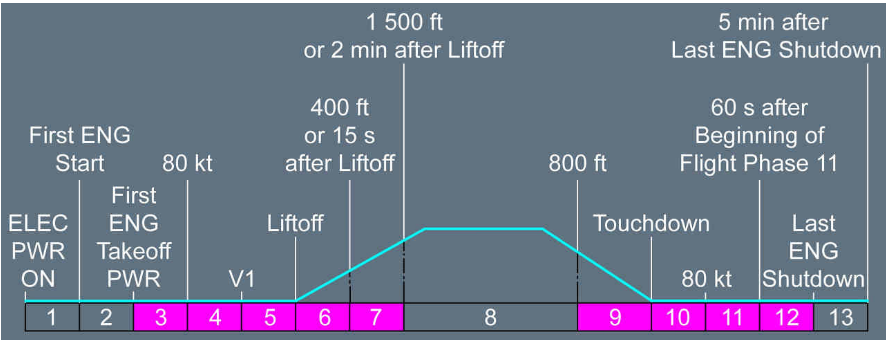
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

Ident.: PRO-ABN-SURV-3471W460-00008391.0001001 / 30 JUN 14

- **If the XPDR/TCAS on SYS 2(1) is operative:**
  XPDR & TCAS...SYS 2(1)

Continued on the following page

SURV TCAS 1(2) FAULT (Cont'd)

Ident.: PRO-ABN-SURV-3471W460-00008392.0001001 / 09 MAR 16

STATUS

INOP SYS

ALL PHASES

TCAS 1(2)
ADS-B TRAFFIC 1(2) ◁

SURV TCAS 1+2 FAULT

Applicable to: ALL

Ident.: PRO-ABN-SURV-3471W450-00006449.0001001 / 30 JUN 14

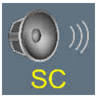
ANNUNCIATIONS

Triggering Conditions:

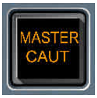
L2 At least one of the following conditions occurs:
- The TCAS function on both SURV SYS is failed, or
- The TCAS function is failed on one SURV SYS and the other SURV SYS is failed.

Indications:

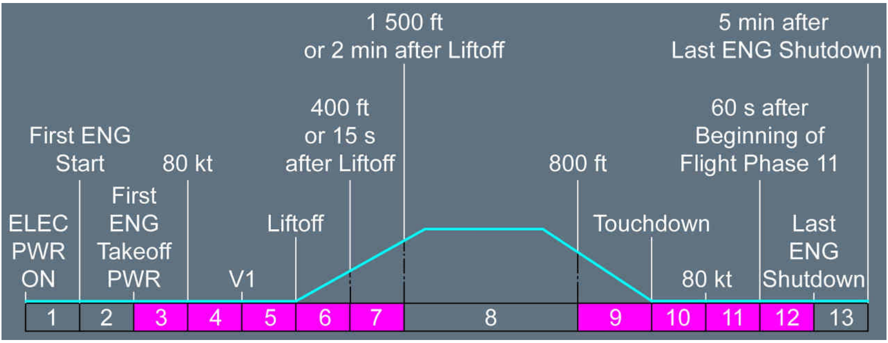
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft or 2 min after Liftoff
5 min after Last ENG Shutdown
First ENG Start
80 kt
400 ft or 15 s after Liftoff
800 ft
60 s after Beginning of Flight Phase 11
ELEC PWR ON
First ENG Takeoff PWR
V1
Liftoff
Touchdown
80 kt
Last ENG Shutdown
1
2
3
4
5
6
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11
12
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Ident.: PRO-ABN-SURV-3471W450-00008394.0001001 / 30 JUN 14

Crew awareness.

Continued on the following page

SURV TCAS 1+2 FAULT (Cont'd)

Ident.: PRO-ABN-SURV-3471W450-00008395.0001001 / 09 MAR 16

STATUS

INOP SYS

ALL PHASES

TCAS 1+2
ADS-B TRAFFIC 1+2 ◁

SURV TCAS STBY

Applicable to: ALL

Ident.: PRO-ABN-SURV-3471W560-00016155.0001001 / 30 JUN 14

ANNUNCIATIONS

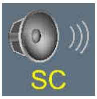
Triggering Conditions:

L2

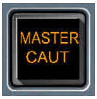
At least one of the following conditions occurs:
- The TCAS function is in STBY mode, or
- The XPDR function is in STBY mode, or
- The ALT Reporting function is set to OFF.

Indications:

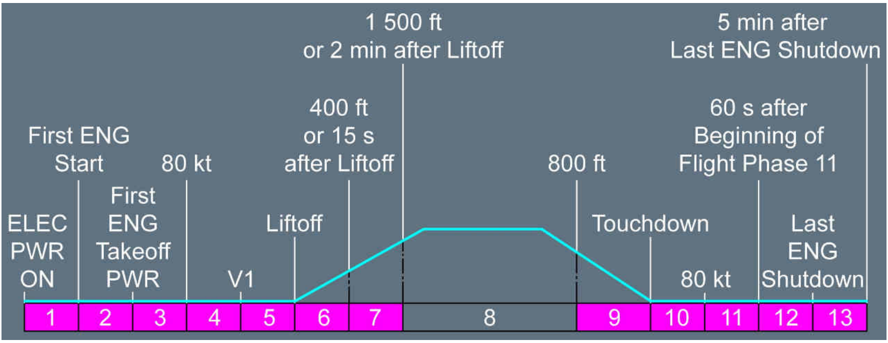
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
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12
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Ident.: PRO-ABN-SURV-3471W560-00016174.0001001 / 30 JUN 14

Crew awareness.

SURV TERR SYS FAULT

Applicable to: ALL

Ident.: PRO-ABN-SURV-3471W130-00006451.0001001 / 30 JUN 14

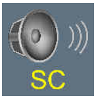
ANNUNCIATIONS

Triggering Conditions:

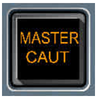
L2 The TERR function of both TAWS is failed.

Indications:

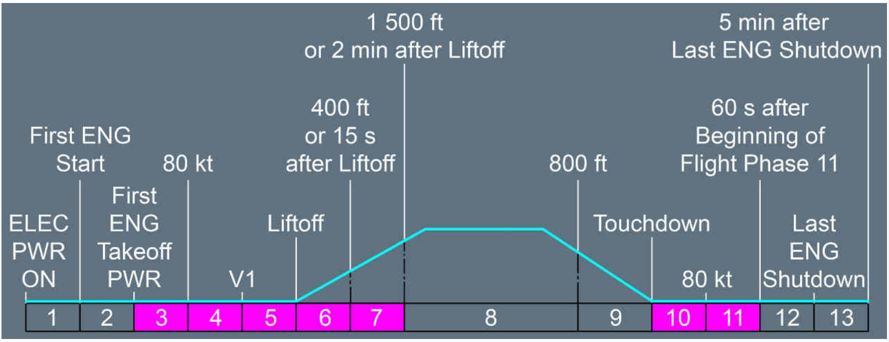
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
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Ident.: PRO-ABN-SURV-3471W130-00008400.0001001 / 30 JUN 14

Crew awareness.

Continued on the following page

SURV TERR SYS FAULT (Cont'd)

Ident.: PRO-ABN-SURV-3471W130-00008401.0001001 / 30 JUN 14

STATUS

INOP SYS

ALL PHASES

TERR SYS

SURV WXR 1(2) FAULT

Applicable to: ALL

Ident.: PRO-ABN-SURV-3471W310-00016161.0001001 / 30 JUN 14

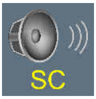
ANNUNCIATIONS

Triggering Conditions:

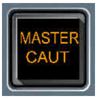
L2 At least, the WX display function of SURV system 1(2) is failed.

Indications:

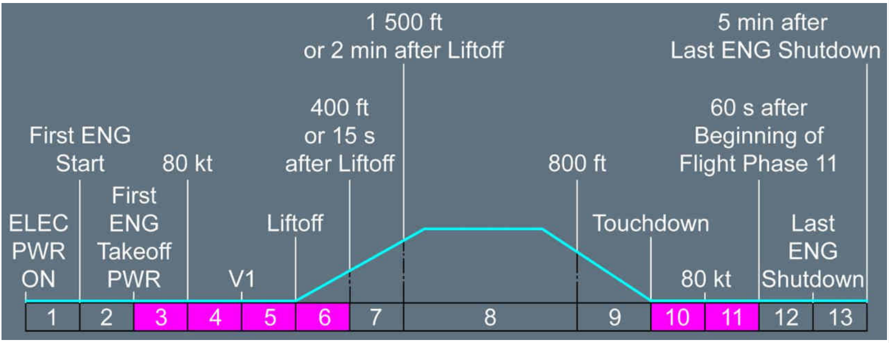
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
2
3
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Ident.: PRO-ABN-SURV-3471W310-00016180.0001001 / 30 JUN 14

- **If the WXR is selected on SYS1(2), and the WXR on SYS 2(1) is operative:**
  WXR.. SYS 2(1)

Continued on the following page

SURV WXR 1(2) FAULT (Cont'd)

Ident.: PRO-ABN-SURV-3471W310-00016181.0001001 / 30 JUN 14

STATUS

INOP SYS

ALL PHASES

WXR 1(2)
PRED W/S 1(2)

SURV WXR 1+2 FAULT

Applicable to: ALL

Ident.: PRO-ABN-SURV-3471W300-00006455.0001001 / 30 JUN 14

ANNUNCIATIONS

Triggering Conditions:

L2 At least, one of the following conditions occurs:
- The WX display function of both SURV SYS is failed, or
- The WX display function of one SURV SYS is failed, and the other SURV SYS is failed.

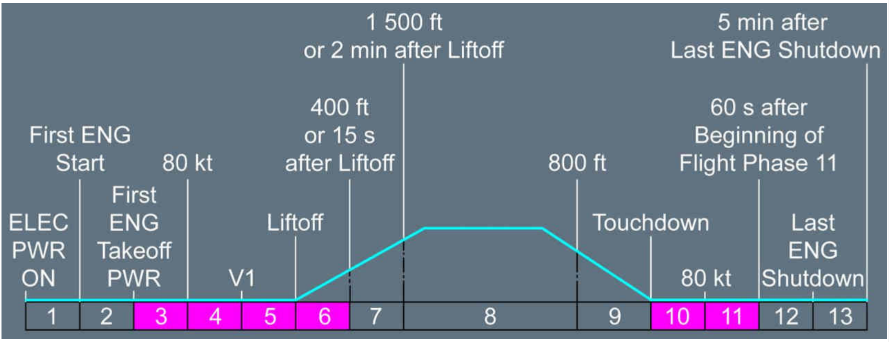
Indications:

Audio

Master Light

MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
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10
11
12
13

Ident.: PRO-ABN-SURV-3471W300-00008412.0001001 / 30 JUN 14

- **If at least one WXR function (TURB, or PWS) is operative:**

  [MFD SURV] STATUS & SWTG PAGE..........CHECK
  WXR..........AS RQRD

L2 *The flight crew must select the most appropriate SYS, depending on available functions and flight conditions, to recover the required function(s).*

Continued on the following page

SURV WXR 1+2 FAULT (Cont'd)

Ident.: PRO-ABN-SURV-3471W300-00008413.0001001 / 30 JUN 14

STATUS

INOP SYS

ALL PHASES

WXR 1+2
PRED W/S 1+2

SURV XPDR 1(2) FAULT

Applicable to: ALL

Ident.: PRO-ABN-SURV-3471W410-00006456.0001001 / 30 JUN 14

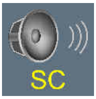
ANNUNCIATIONS

Triggering Conditions:

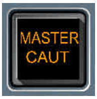
L2 The XPDR function of SURV SYS1(2) is failed.

Indications:

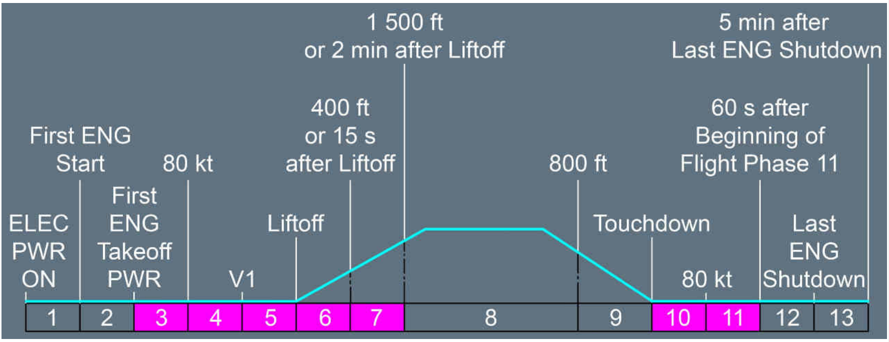
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
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11
12
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Ident.: PRO-ABN-SURV-3471W410-00008415.0001001 / 30 JUN 14

- **If the XPDR on SYS 2(1) is operative:**
  XPDR & TCAS..SYS 2(1)

Continued on the following page

SURV XPDR 1(2) FAULT (Cont'd)

Ident.: PRO-ABN-SURV-3471W410-00008416.0001001 / 09 MAR 16

STATUS

INOP SYS

ALL PHASES

XPDR 1(2)
TCAS 1(2)
ADS-B TRAFFIC 1(2) ◁
ADS-B RPTG 1(2)

SURV XPDR 1+2 FAULT

Applicable to: ALL

Ident.: PRO-ABN-SURV-3471W400-00006457.0001001 / 30 JUN 14

ANNUNCIATIONS

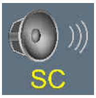
Triggering Conditions:

L2 At least one of the following conditions occurs:

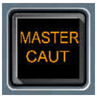
- The XPDR function is failed on both SURV SYS or,
- The XPDR function is failed on one SURV SYS and the other SURV SYS is failed.

Indications:

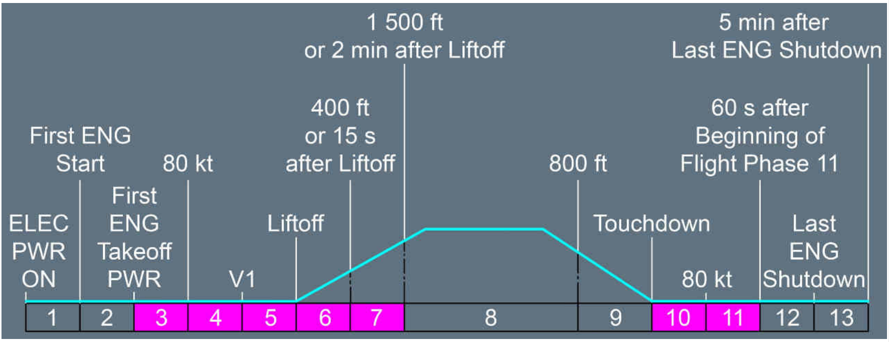
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
2
3
4
5
6
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8
9
10
11
12
13

Ident.: PRO-ABN-SURV-3471W400-00008418.0001001 / 30 JUN 14

Crew awareness.

Continued on the following page

SURV XPDR 1+2 FAULT (Cont'd)

Ident.: PRO-ABN-SURV-3471W400-00008419.0001001 / 09 MAR 16

STATUS

INOP SYS

ALL PHASES

XPDR 1+2
TCAS 1+2
ADS-B TRAFFIC 1+2 ◁
ADS-B RPTG 1+2

SURV XPDR STBY

Applicable to: ALL

Ident.: PRO-ABN-SURV-3471W440-00016162.0001001 / 30 JUN 14

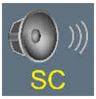
ANNUNCIATIONS

Triggering Conditions:

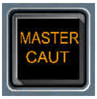
L2 The XPDR function is in STBY mode.

Indications:

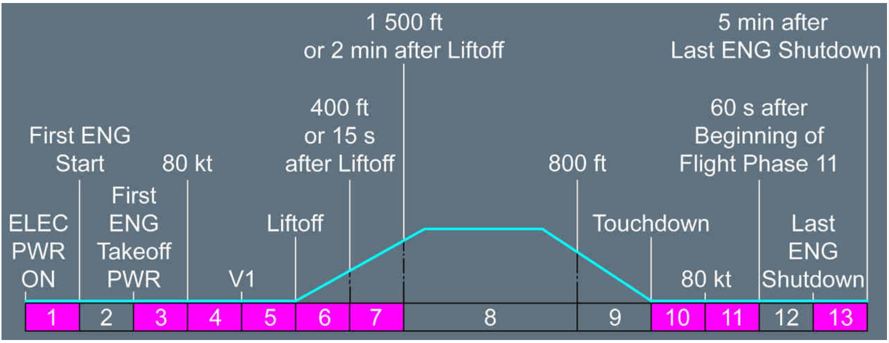
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
V1
Touchdown
80 kt
Last
ENG
Shutdown
1
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Ident.: PRO-ABN-SURV-3471W440-00016177.0001001 / 30 JUN 14

Crew awareness.

TAIL STRIKE

Applicable to: ALL

Ident.: PRO-ABN-TAIL_STRK-3128W010-00004778.0001001 / 30 JUN 14

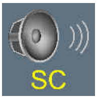
ANNUNCIATIONS

Triggering Conditions:

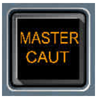
L2 A contact of the rear fuselage with ground is detected by the TAIL STRIKE DETECTOR.

Indications:

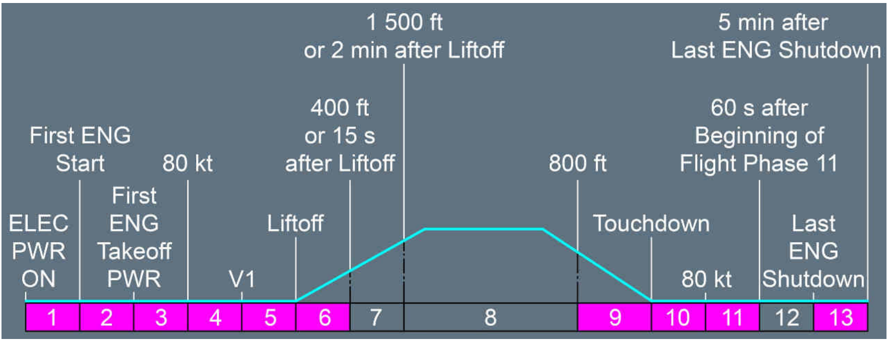
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Continued on the following page

TAIL STRIKE (Cont'd)

Ident.: PRO-ABN-TAIL_STRK-3128W010-00008208.0001001 / 07 NOV 16

In flight:

L2

If a tail strike occurs at takeoff, limit FL to 100 or MEA-MORA to minimize pressure change.

Note: *An aircraft vertical speed of +1 000 ft/min (with a maximum of +1 500 ft/min) should be targeted for climb, to minimize pressure changes, and for passenger and crew comfort. Similarly, the rate of descent should be limited to about -500 ft/min (with a maximum of -800 ft/min), except for the final approach that must be performed normally.*

Turn off PACK 1 and PACK 2, open the RAM AIR, and return to the airport for damage assessment.

L1

LAND ANSA

MAX FL : 100/MEA-MORA
PACK 1..OFF
PACK 2..OFF
RAM AIR..ON
CAB FANS..OFF

On ground:

Crew awareness.

Continued on the following page

TAIL STRIKE (Cont'd)

Ident.: PRO-ABN-TAIL_STRK-3128W010-00008209.0001001 / 30 JUN 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

- **In flight:**
  MAX FL: 100/MEA-MORA

LIMITATIONS ON PFD

ALL PHASES

- **In flight:**
  MAX FL: 100/MEA-MORA

MEMOPAGE

MEMO ON ECAM

- **In flight:**
  LAND ANSA

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T.O ACCELERATION DEGRADED ⩤

Applicable to: ALL

Ident.: PRO-ABN-T-O-2792W010-00023574.0005001 / 03 JAN 19

ANNUNCIATIONS

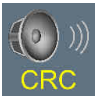
Triggering Conditions:

L2 At 90 kt, the Takeoff Monitoring (TOM) function detects a reduction in performance that is more than 15 %.

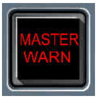
Note: After a rejected takeoff, the T.O ACCELERATION DEGRADED ECAM disappears:
- *After 5 min have elapsed, or*
- *The flight crew pushes the TO CONFIG pb.*

Indications:

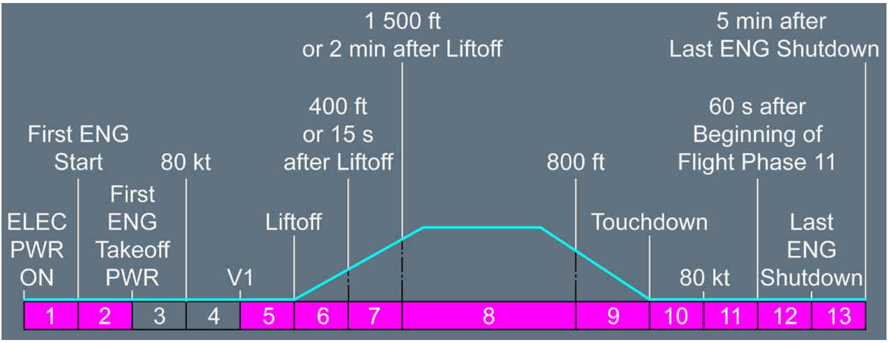
Audio



Master Light


MASTER
WARN

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
V1
Touchdown
80 kt
Last
ENG
Shutdown
1
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Continued on the following page

T.O ACCELERATION DEGRADED ◁ (Cont'd)

Ident.: PRO-ABN-T-O-2792W010-00023575.0004001 / 03 JAN 19

Crew awareness.
A ZFW entry error is one of the reasons for the Takeoff Monitoring (TOM) function to trigger this alert. For more information on the other possible root causes and on the TOM function, *Refer to DSC-22-FMS-10-70-10 Takeoff Monitoring (TOM) Function (If Installed)*.

T.O RWY TOO SHORT

Applicable to: ALL

Ident.: PRO-ABN-T-O-2272W050-00011503.0001001 / 05 JUL 16

ANNUNCIATIONS

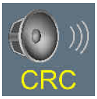
Triggering Conditions:

L2 The engines are set to takeoff power, and the takeoff surveillance function determines that the computed liftoff distance is more than the available runway length.
For more information about the liftoff distance check of the takeoff surveillance function, *Refer to DSC-22-FMS-10-70-20 Takeoff Surveillance Function*.

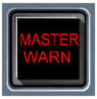
The alert remains displayed:
- During 5 min after the flight crew retards the thrust levers below the CLB detent, or
- Until the flight crew presses the T.O CONFIG pb while the triggering conditions are not true.

Indications:

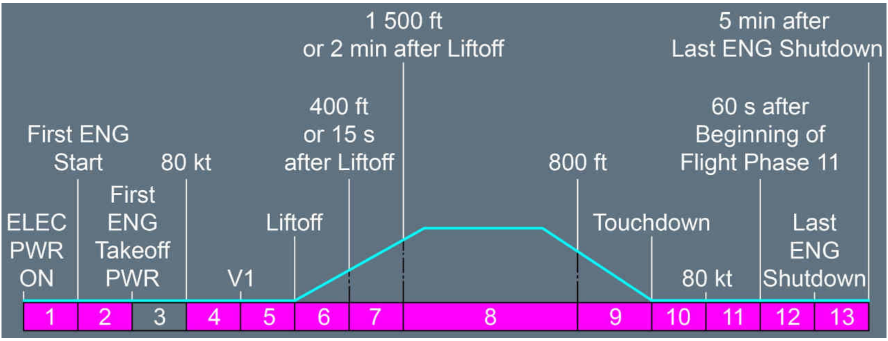
Audio



Master Light


MASTER
WARN

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Ident.: PRO-ABN-T-O-2272W050-00017075.0001001 / 30 JUN 14

Crew awareness.

T.O RWY TOO SHORT

Applicable to: ALL

Ident.: PRO-ABN-T-O-2272W080-00011504.0001001 / 05 JUL 16

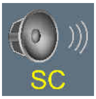
ANNUNCIATIONS

Triggering Conditions:

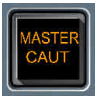
L2 The flight crew presses the T.O CONFIG pb of the ECP, and the liftoff distance check of the takeoff surveillance function determines that the computed liftoff distance is more than the available runway length.
For more information about the liftoff distance check of the takeoff surveillance function, *Refer to DSC-22-FMS-10-70-20 Takeoff Surveillance Function*.

Indications:

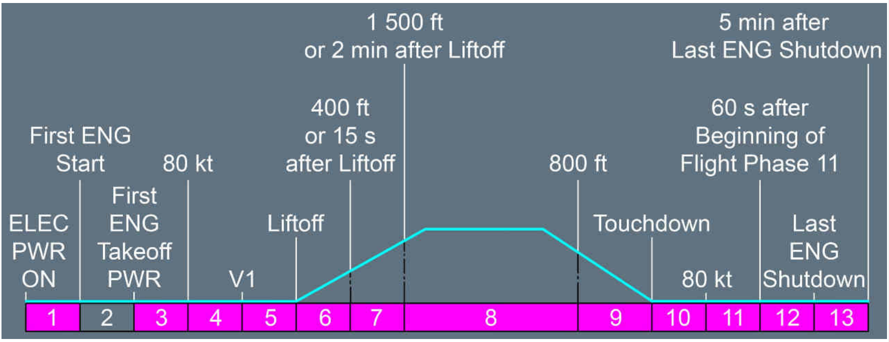
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
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3
4
5
6
7
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Ident.: PRO-ABN-T-O-2272W080-00017076.0001001 / 30 JUN 14

TOW & T.O DATA..CHECK

L2 *Verify the takeoff weight and the takeoff data that is entered and selected on the FMS pages.*

T.O SPEEDS NOT INSERTED

Applicable to: ALL

Ident.: PRO-ABN-T-O-2272W010-00011505.0001001 / 30 JUN 14

ANNUNCIATIONS

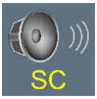
Triggering Conditions:

L2 One or more of the V1, VR, and V2 entry fields on the T.O panel of the PERF page are empty, and:

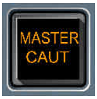
- The flight crew presses the T.O CONFIG pb of the ECP, or
- The engines are set to takeoff power.

Indications:

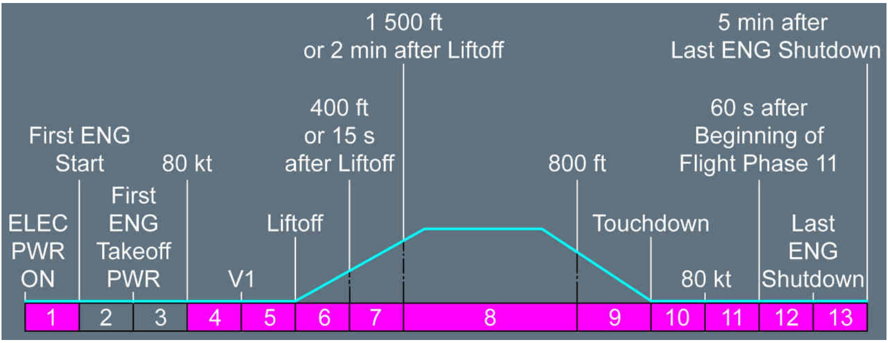
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
2
3
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Ident.: PRO-ABN-T-O-2272W010-00017065.0001001 / 30 JUN 14

Crew awareness.

T.O SPEEDS TOO LOW

Applicable to: ALL

Ident.: PRO-ABN-T-O-2272W070-00011507.0001001 / 30 JUN 14

ANNUNCIATIONS

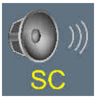
Triggering Conditions:

L2 The values that are entered in the V1, VR, and V2 entry fields on the T.O panel of the PERF page do not satisfy the regulatory requirements for the minimum speeds (VMCG, VMCA, VMU, and VS1G), and:

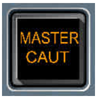
- The flight crew presses the T.O CONFIG pb of the ECP, or
- The engines are set to takeoff power.

Indications:

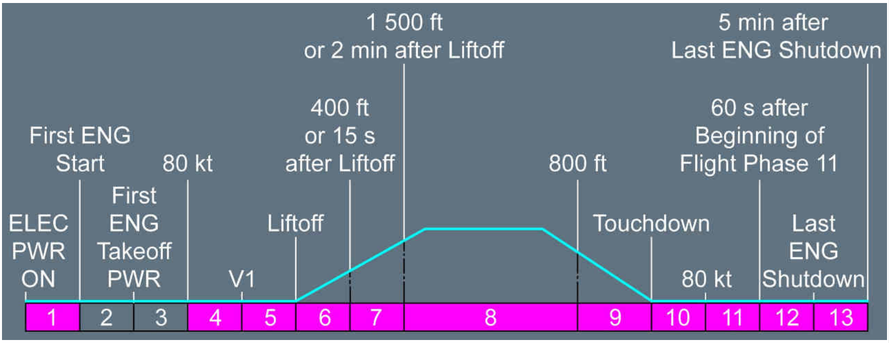
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
1
2
3
4
5
6
7
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Ident.: PRO-ABN-T-O-2272W070-00017079.0001001 / 30 JUN 14

TOW & T.O DATA.. CHECK

L2 *Verify the takeoff weight and the takeoff data that is entered and selected on the FMS pages.*

T.O V1/VR/V2 DISAGREE

Applicable to: ALL

Ident.: PRO-ABN-T-O-2272W020-00011508.0001001 / 30 JUN 14

ANNUNCIATIONS

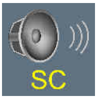
Triggering Conditions:

L2 The values that are entered in the V1, VR, and V2 entry fields on the T.O panel of the PERF page do not satisfy the condition V1 ≤ VR ≤ V2, and:

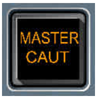
- The flight crew presses the T.O CONFIG pb of the ECP, or
- The engines are set to takeoff power.

Indications:

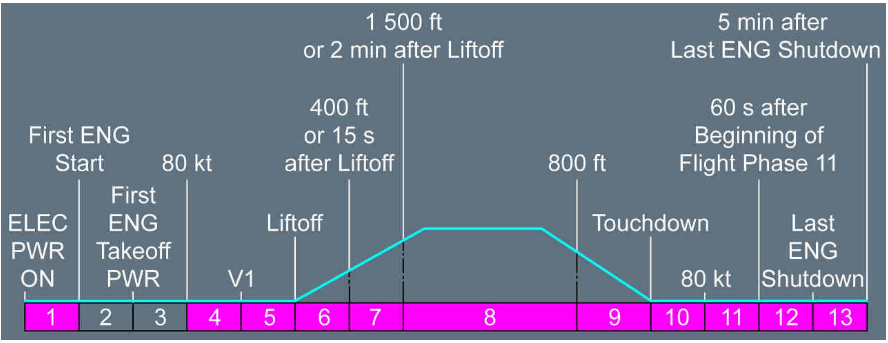
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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Ident.: PRO-ABN-T-O-2272W020-00017066.0001001 / 30 JUN 14

Crew awareness

L2 Verify the values that are entered in the V1, VR, and V2 entry fields on the T.O panel of the PERF page.

Intentionally left blank

VENT AVNCS EXTRACT FAULT

Applicable to: ALL

Ident.: PRO-ABN-VENT-2126W040-00005171.0001001 / 01 JUL 14

ANNUNCIATIONS

Triggering Conditions:

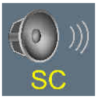
L2 The avionics ventilation system detects a low performance of the air extraction.

L3 One of the following conditions occurs:
- Both extraction fans are failed, or
- The overboard valve and the inboard valve are not in the command position.

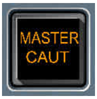
Indications:

L2

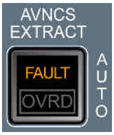
Audio



Master Light


MASTER
CAUT

Local Light

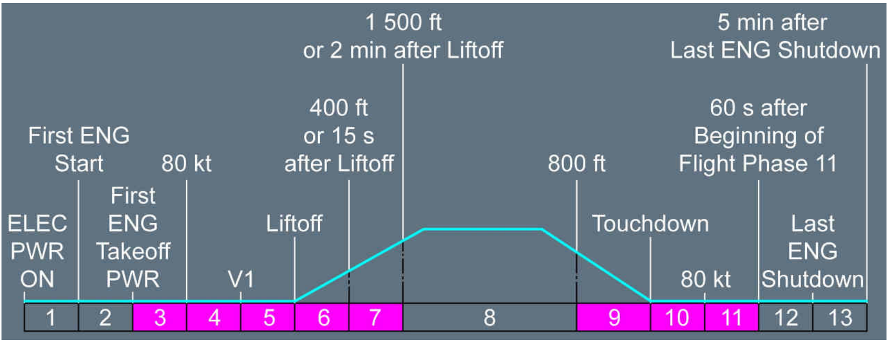

AVNCS
EXTRACT
FAULT
OVRD
AUTO

AVNCS EXTRACT pb-sw

SD page

COND SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Continued on the following page

VENT AVNCS EXTRACT FAULT (Cont'd)

Ident.: PRO-ABN-VENT-2126W040-00007220.0001001 / 01 JUL 14

Note: *If the failure is only due to an IMA module failure, the ECAM displays the DUE TO IMA MODULE FAULT subtitle.*

Ident.: PRO-ABN-VENT-2126W040-00007221.0003001 / 07 JUL 16

VENT AVNCS EXTRACT.. OVRD

L2 *Air that ventilates the avionics bay is extracted by differential pressure via the overboard valve and the inboard valve.*

Ident.: PRO-ABN-VENT-2126W040-00007222.0003001 / 07 JUL 16

STATUS

INOP SYS

ALL PHASES

VENT AVNCS EXTRACT
L AVNCS SMK DET
R AVNCS SMK DET

VENT AVNCS L(R) BLOWING FAULT

Applicable to: ALL

Ident.: PRO-ABN-VENT-2126W010-00005172.0001001 / 01 JUL 14

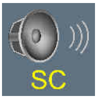
ANNUNCIATIONS

Triggering Conditions:

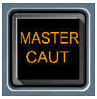
L2 A low blowing performance is detected in the left(right) avionics ventilation circuit.

Indications:

Audio



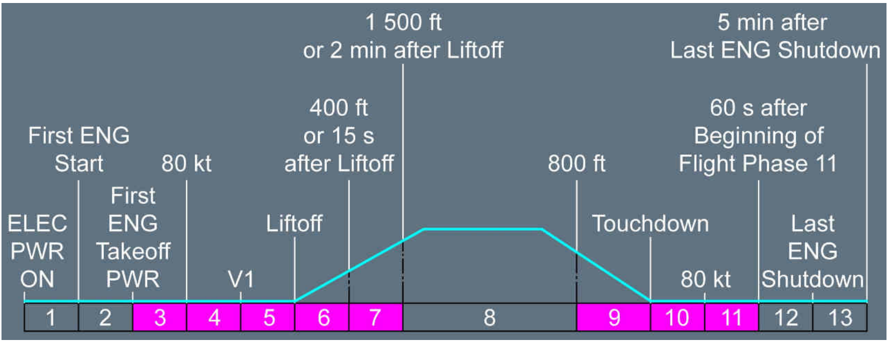
Master Light


MASTER
CAUT

SD page

COND SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-VENT-2126W010-00007223.0001001 / 01 JUL 14

Note: *If the failure is only due to an IMA module failure, the ECAM displays the DUE TO IMA MODULE FAULT subtitle.*

Ident.: PRO-ABN-VENT-2126W010-00007224.0001001 / 01 JUL 14

AIR FLOW..HI
CAB FANS..ON

Continued on the following page

VENT AVNCS L(R) BLOWING FAULT (Cont'd)

Ident.: PRO-ABN-VENT-2126W010-00007225.0001001 / 01 JUL 14

STATUS

INOP SYS

ALL PHASES

VENT AVNCS L(R) BLOWING

VENT AVNCS L+R BLOWING FAULT

Applicable to: ALL

Ident.: PRO-ABN-VENT-2126W030-00005170.0001001 / 01 JUL 14

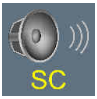
ANNUNCIATIONS

Triggering Conditions:

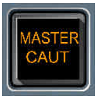
L2 Both L and R ventilation circuits are not ventilated.

Indications:

Audio



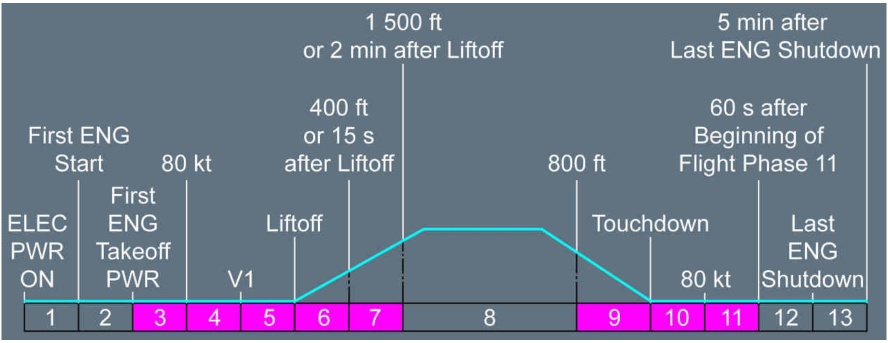
Master Light


MASTER
CAUT

SD page

COND SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
2
3
4
5
6
7
8
9
10
11
12
13

Ident.: PRO-ABN-VENT-2126W030-00007217.0001001 / 01 JUL 14

Ident.: PRO-ABN-VENT-2126W030-00007218.0001001 / 27 OCT 14

AIR FLOW...HI
CAB FANS...ON

Continued on the following page

VENT AVNCS L+R BLOWING FAULT (Cont'd)

Ident.: PRO-ABN-VENT-2126W030-00007219.0001001 / 27 OCT 14

STATUS

INOP SYS

ALL PHASES

VENT AVNCS BLOWING

VENT AVNCS OVBD VLV FAULT

Applicable to: ALL

Ident.: PRO-ABN-VENT-2126W050-00005173.0001001 / 01 JUL 14

ANNUNCIATIONS

Triggering Conditions:

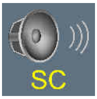
L2 The avionics overboard valve is failed.

L3 This alert occurs in case of:
- The big flap of the overboard valve is not fully closed after the first engine start
- The small flap of the overboard valve is not fully open when the AVNCS EXTRACT pb-sw is set to **OVRD.**

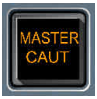
Indications:

L2

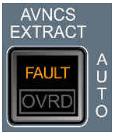
Audio



Master Light


MASTER
CAUT

Local Light

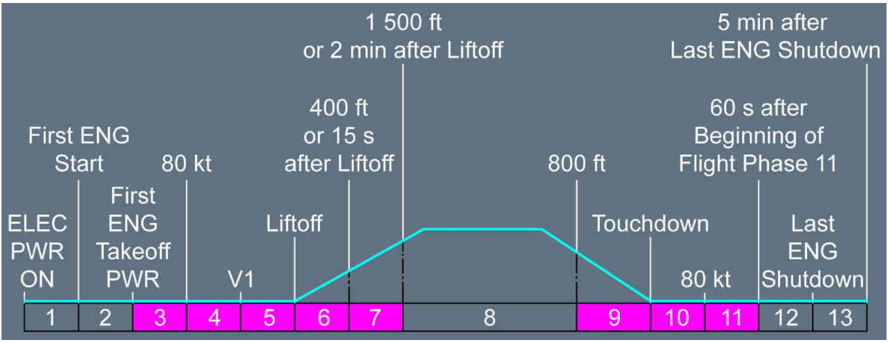

AVNCS
EXTRACT
FAULT
OVRD
AUTO

AVNCS EXTRACT pb-sw

SD page

CAB PRESS SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
1
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3
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Continued on the following page

VENT AVNCS OVBD VLV FAULT (Cont'd)

Ident.: PRO-ABN-VENT-2126W050-00007226.0001001 / 01 JUL 14

Note: *If the failure is only due to an IMA module failure, the ECAM displays the DUE TO IMA MODULE FAULT subtitle.*

Ident.: PRO-ABN-VENT-2126W050-00007227.0001001 / 01 JUL 14

VENT AVNCS EXTRACT..OVRD

L2 *Air that ventilates the avionics bay is extracted by differential pressure via the overboard valve and the inboard valve.*

L1 ● **IF AVNCS OVBD VLV STILL FULL OPEN**
MAX FL : 100/MEA-MORA

Ident.: PRO-ABN-VENT-2126W050-00007228.0001001 / 01 JUL 14

LIMITATIONS

LIMITATIONS ON ECAM

ALL PHASES

- **In flight, if the avionics overboard valve is fully open:**
  MAX FL : 100/MEA-MORA

LIMITATIONS ON PFD

ALL PHASES

- **In flight, if the avionics overboard valve is fully open:**
  MAX FL : 100/MEA-MORA

STATUS

INOP SYS

ALL PHASES

VENT AVNCS OVBD VLV

VENT IFE BAY VENT FAULT

Applicable to: ALL

Ident.: PRO-ABN-VENT-2129W010-00005178.0001001 / 01 JUL 14

ANNUNCIATIONS

Triggering Conditions:

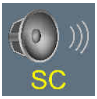
L2 The ventilation of the IFE bay is failed.

L3 The fans of the commercial equipment ventilation are failed.

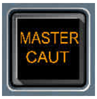
Indications:

L2

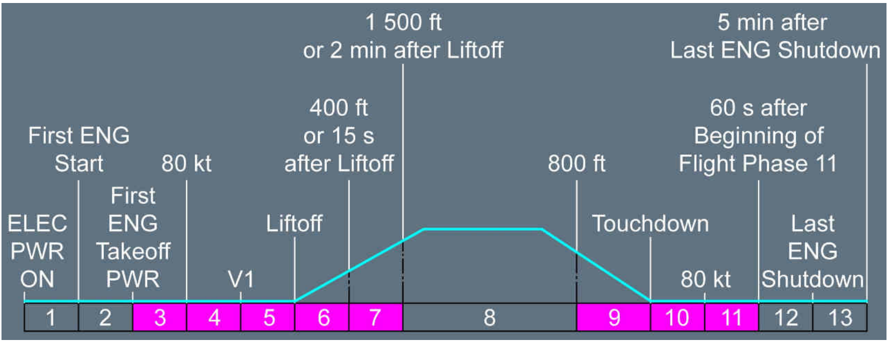
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
Start
80 kt
800 ft
First
ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-VENT-2129W010-00007240.0001001 / 01 JUL 14

Note: *If the failure is only due to an IMA module failure, the ECAM displays the DUE TO IMA MODULE FAULT subtitle.*

Ident.: PRO-ABN-VENT-2129W010-00007241.0001001 / 01 JUL 14

IFEC...OFF

Continued on the following page

VENT IFE BAY VENT FAULT (Cont'd)

Ident.: PRO-ABN-VENT-2129W010-00007242.0001001 / 09 MAR 16

STATUS

INOP SYS

ALL PHASES

IFE BAY VENT
CAB REST TEMP CTL ◁
IFE BAY SMK DET

VENT LAV AND GALLEYS EXTRACT FAULT

Applicable to: ALL

Ident.: PRO-ABN-VENT-2123W010-00005179.0002001 / 07 JUL 16

ANNUNCIATIONS

Triggering Conditions:

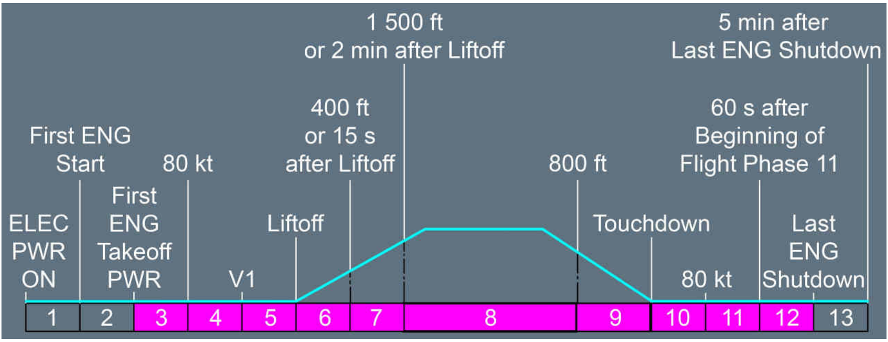
L2 The air extraction system of the lavatory and galley compartments is failed.

Indications:

SD page

COND SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
400 ft
or 15 s
after Liftoff
60 s after
Beginning of
Flight Phase 11
First ENG
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80 kt
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ENG
Takeoff
PWR
ELEC
PWR
ON
Liftoff
Touchdown
Last
ENG
Shutdown
V1
80 kt
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Ident.: PRO-ABN-VENT-2123W010-00007243.0001001 / 01 JUL 14

Note: *If the failure is only due to an IMA module failure, the ECAM displays the DUE TO IMA MODULE FAULT subtitle.*

Continued on the following page

VENT LAV AND GALLEYS EXTRACT FAULT (Cont'd)

Ident.: PRO-ABN-VENT-2123W010-00007244.0001001 / 01 JUL 14

Crew Awareness.

- **On ground, if the in-flight function of the lavatory and galleys extraction is not lost:**
  LAV & GALLEYS EXTRACT AVAIL IN FLT

Ident.: PRO-ABN-VENT-2123W010-00007245.0001001 / 01 JUL 14

STATUS

INOP SYS

ALL PHASES

LAV & GALLEYS EXTRACT

INFO

- **On ground, when the in-flight function of the lavatory and galleys extraction is not lost:**
  LAV & GALLEYS EXTRACT AVAIL IN FLT

VENT PAX BBAND VENT FAULT

Applicable to: ALL

Ident.: PRO-ABN-VENT-2129W040-00014767.0001001 / 09 MAR 16

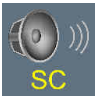
ANNUNCIATIONS

Triggering Conditions:

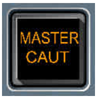
L2 The ventilation of the PAX BBAND is failed

Indications:

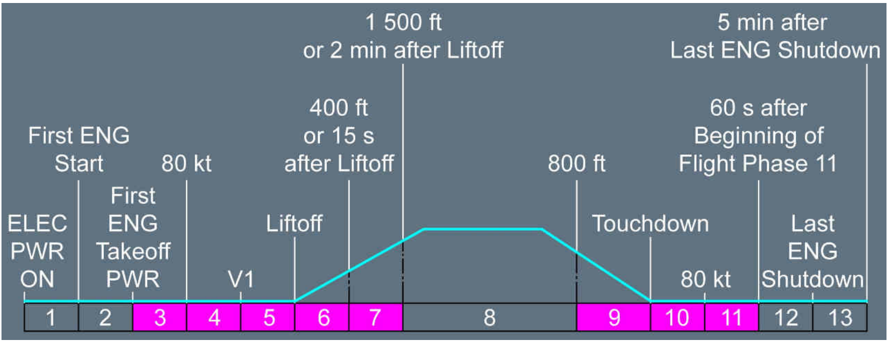
Audio



Master Light


MASTER
CAUT

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Ident.: PRO-ABN-VENT-2129W040-00014768.0001001 / 09 MAR 16

Note: *If the failure is only due to an IMA module failure, the ECAM displays the DUE TO IMA MODULE FAULT subtitle.*

Ident.: PRO-ABN-VENT-2129W040-00014769.0001001 / 09 MAR 16

PAX BBAND ....OFF

Continued on the following page

VENT PAX BBAND VENT FAULT (Cont'd)

Ident.: PRO-ABN-VENT-2129W040-00014770.0001001 / 09 MAR 16

STATUS

INOP SYS

ALL PHASES

CAB REST TEMP CTL
PAX BBAND VENT
PAX BBAND SMK DET

[ABN] WHEEL TIRE DAMAGE SUSPECTED

Applicable to: ALL

Ident.: PRO-ABN-WHEEL-9032W200-00023514.0001001 / 07 JUL 16

ANNUNCIATIONS

Triggering Conditions:

L2 To display this procedure, the flight crew must press the ABN pb on the ECP, and then select the WHEEL TIRE DAMAGE SUSPECTED in the L/G-WHEEL section.
The flight crew applies this procedure when a damage is suspected on one or several tires. For more information, *Refer to FCTM/PR-AEP-WHEEL Wheel Tire Damaged Suspected*.
Indications:

SD page

WHEEL SD Page

1 Ident.: PRO-ABN-WHEEL-9032W200-00023515.0002001 / 07 JUL 20

AUTO BRK : DO NOT USE

L2 *The autobrake should not be used in order to ensure braking is applied without delay at touchdown. In some cases, a tire burst may lead to a disconnection of the autobrake at landing.*

L1 FOR LDG : USE DIFF BRAKING AS RQRD

L2 *A tire burst may lead to asymmetry during braking. In this case, differential braking may be needed for lateral control.*

L1 TAXI WITH CARE

LDG DIST AFFECTED

Continued on the following page

[ABN] WHEEL TIRE DAMAGE SUSPECTED (Cont'd)

2 Ident.: PRO-ABN-WHEEL-9032W200-00023516.0002001 / 07 JUL 20

LIMITATIONS

LIMITATIONS ON ECAM

APPR & LDG

LDG DIST AFFECTED
AUTO BRK : DO NOT USE

STATUS

INOP SYS

APPR & LDG

BTV

INFO

TAXI WITH CARE
FOR LDG : USE DIFF BRAKING AS RQRD

WHEEL TIRE PRESS LO

Applicable to: ALL

Ident.: PRO-ABN-WHEEL-3249W010-00014667.0001001 / 04 DEC 14

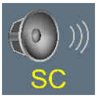
ANNUNCIATIONS

Triggering Conditions:

L2 One of the following applies:
- The measured pressure of one or more tires is too low, or
- The difference in pressure measured on two tires on the same axle is excessive.

Indications:

Audio



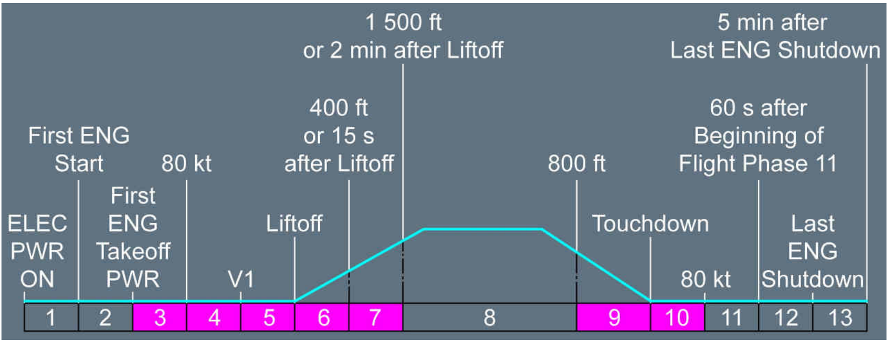
Master Light

MASTER
CAUT

SD page

WHEEL SD Page

Flight Phase Inhibition:


1 500 ft
or 2 min after Liftoff
5 min after
Last ENG Shutdown
First ENG
Start
80 kt
400 ft
or 15 s
after Liftoff
800 ft
60 s after
Beginning of
Flight Phase 11
ELEC
PWR
ON
First
ENG
Takeoff
PWR
V1
Liftoff
Touchdown
80 kt
Last
ENG
Shutdown
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Ident.: PRO-ABN-WHEEL-3249W010-00014669.0001001 / 07 JAN 16

Crew awareness.

L2 For more information on taxi with deflated or damaged tires, *Refer to LIM-LG Taxi with Deflated or Damaged Tires*.

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PROCEDURES

NORMAL PROCEDURES

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PRO-NOR-SOP Standard Operating Procedures

PRO-NOR-SOP-10 General Information

Standard Operating Procedures (SOP)........A

PRO-NOR-SOP-30 Safety Exterior Inspection

Safety Exterior Inspection........A

PRO-NOR-SOP-40 Preliminary Cockpit Preparation

General........A
Aircraft Setup........B
Batteries/External Power........C
Cockpit Lights........D
OIS Initialization........E
ECAM/Logbook Check........F
Fire Test/APU Start........G
OIS Preparation........H
Before Walkaround........I

PRO-NOR-SOP-50 Exterior Walkaround

General........A
Exterior Walkaround - Schematic........B
Exterior Walkaround - LH FWD Fuselage........C
Exterior Walkaround - Nose Section........D
Exterior Walkaround - Nose L/G........E
Exterior Walkaround - RH FWD Fuselage........F
Exterior Walkaround - Lower Center Fuselage........G
Exterior Walkaround - RH Center Wing........H
Exterior Walkaround - ENG 2 LH Side........I
Exterior Walkaround - ENG 2 RH Side........J
Exterior Walkaround - RH Wing Leading Edge........K
Exterior Walkaround - RH Wing Tip........L
Exterior Walkaround - RH Wing Trailing Edge........M
Exterior Walkaround - RH Landing Gear........N
Exterior Walkaround - Center Fuselage........O
Exterior Walkaround - RH Aft Fuselage........P
Exterior Walkaround - Tail........Q
Exterior Walkaround - APU........R
Exterior Walkaround - LH Aft Fuselage........S
Exterior Walkaround - LH Landing Gear........T

Continued on the following page

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Exterior Walkaround - LH Wing Trailing Edge.....U
Exterior Walkaround - LH Wing Tip.....V
Exterior Walkaround - LH Wing Leading Edge.....W
Exterior Walkaround - ENG 1 LH Side.....X
Exterior Walkaround - ENG 1 RH Side.....Y
Exterior Walkaround - LH Center Wing.....Z

PRO-NOR-SOP-60 Cockpit Preparation

General.....A
Panel Scan Sequence.....B
Flow Pattern.....C
Overhead Panel.....D
Center Instrument Panel.....E
Pedestal.....F
MFD ATC COM.....G
MFD SURV.....H
NAV Charts.....I
MFD FMS Preparation.....J
Glareshield.....K
Lateral Consoles.....L
PF and PM Instrument Panels.....M
Takeoff Briefing.....N

PRO-NOR-SOP-70 Before Pushback or Start

Before Start Clearance.....A
At Start Clearance.....B

PRO-NOR-SOP-80 Engine Start

Automatic Engine Start.....A
Ground Run Up - Danger Areas.....B

PRO-NOR-SOP-90 After Start

1 After Start.....A

PRO-NOR-SOP-100 Taxi

Taxi.....A

PRO-NOR-SOP-110 Before Takeoff

Before Takeoff.....A

PRO-NOR-SOP-120 Takeoff

Takeoff.....A

Continued on the following page

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PRO-NOR-SOP-130 After Takeoff

After Takeoff........A

PRO-NOR-SOP-140 Climb

2 Climb........A

PRO-NOR-SOP-150 Cruise

Cruise........A

PRO-NOR-SOP-160 Descent Preparation

Descent Preparation........A

PRO-NOR-SOP-170 Descent

Descent........A

PRO-NOR-SOP-180 Approach

PRO-NOR-SOP-180-A Approach General

Introduction........A
Cross-Reference Table........B
Flying Reference........C
Stabilization Criteria........D
Approach Speed Technique........E
Discontinued Approach........F

PRO-NOR-SOP-180-B Aircraft Configuration Management

Initial Approach........A
Intermediate/Final Approach........B

PRO-NOR-SOP-180-C Aircraft Guidance Management

Approach using XLS Guidance........A
Approach Using APP-DES Guidance for RNP AR........B
Approach using FPA Guidance........C
Circling Approach........D
Visual Approach........E
RNAV Visual Approach........F

PRO-NOR-SOP-210 Landing

Landing........A

PRO-NOR-SOP-220 Go-Around

Go-Around........A

Continued on the following page

Continued from the previous page

PRO-NOR-SOP-230 After Landing

After Landing....A

PRO-NOR-SOP-250 Parking

Parking....A

PRO-NOR-SOP-260 Securing the Aircraft

Securing the Aircraft....A

PRO-NOR-C-L Normal Checklists

Introduction....A
Before Start....B
After Start....C
Before Takeoff....D
After Takeoff / Climb....E
Approach....F
Landing....G
After Landing....H
Parking....I
Securing the Aircraft....J

PRO-NOR-SCO Standard Callouts

Communications and Standard Terms....A
Checklist Callouts....B
Actions Commanded by PF....C
FMA....D
Altitude....E
Flaps or Gear Configuration....F
Flight Parameters....G
PF/PM Duties Transfer....H
Summary for Each Flight Phase....I

3 PRO-NOR-TSK Tasksharing

Safety Exterior Inspection....A
Preliminary Cockpit Preparation....B
Cockpit Preparation....C
Before Pushback or Start....D
Engine Start....E
After Start....F
Taxi....G

Continued on the following page

Continued from the previous page

Before Takeoff....H
Takeoff....I
After Takeoff....J
Climb....K
Cruise....L
Descent Preparation....M
Descent Preparation....N
Descent....O
Approach....P
Manual Landing....Q
Automatic Landing....R
Go Around....S
After Landing....T
Parking....U
Securing the Aircraft....V

PRO-NOR-SUP Supplementary Procedures

PRO-NOR-SUP-SUP-SUP [SUP] Supplementary Procedures Menu

[SUP] Supplementary Procedures....A

PRO-NOR-SUP-SUP-ADVWXR Adverse Weather

Airframe Deicing/Anti-icing Procedure on Ground....A
Cold Weather Procedures....B
Operations in Ash, Sand or Dust....C
Engine OPERATION on Ground in FZFG....D
Flight in Icing Conditions....E
Securing the Aircraft for Cold Soak....F

PRO-NOR-SUP-SUP-ENG Engine

Crossbleed Engine Start....A
Engine Start on Batteries....B
Engine Start with External Electrical Power....C
Engine Start with An Air Start Unit....D
Manual Engine Start....E
Engine Start Valve Manual Operation....F
Engine Ventilation (Dry Cranking)....G
One Engine Taxi....H

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PRO-NOR-SUP-SUP-FUEL Fuel

Safety Precautions for Ground Fuel Operations........A
Automatic Refueling........B
Ground Fuel Transfer........C

PRO-NOR-SUP-SUP-LG Landing Gear

Flight With Gear Down........A

PRO-NOR-SUP-SUP-MISC Miscellaneous

Flight Without Cabin Pressurization........A
Operations at QNH above 1050 hPa (31.00 inHg)........B
High Altitude Airport Operations........C

Localization Title	Toc Index	ID	Reason
PRO-NOR-PLP-TOC After Start		1	Documentation update: Deletion of the "00006560.0002001 After Start - Anti-Ice" documentary unit.
PRO-NOR-PLP-TOC Climb		2	Documentation update: Deletion of the "00023542 Climb - At 10 000 ft" table of content entry.
			Documentation update: Deletion of the "00023542.0001001 Climb - At 10 000 ft" documentary unit.
PRO-NOR-PLP-TOC Tasksharing		3	Documentation update: Deletion of the "00023624 Climb" table of content entry.
			Documentation update: Deletion of the "00023624.0001001 Climb" documentary unit.
PRO-NOR-SOP-40 Batteries/External Power	C	1	Modification of the EXT pb position to be compliant with the pushbutton label.
PRO-NOR-SOP-40 Batteries/External Power	C	2	Modification of the EXT pb position to be compliant with the pushbutton label.
PRO-NOR-SOP-40 ECAM/Logbook Check - Dispatch Messages	F	3	The information about spurious dispatch messages due to IRs not aligned is removed since no longer applicable.
			Documentation update: Deletion of information.
PRO-NOR-SOP-60 Glareshield - AFS Control Panel (AFS CP)	K	1	Addition of a note related to the autothrust to explain and prevent some unexpected warning at engine start and potential return to gate.
PRO-NOR-SOP-70 Before Start Clearance - External Power	A	1	Modification of the EXT pb position to be compliant with the pushbutton label.
PRO-NOR-SOP-90 After Start - Anti-Ice	A	1	Documentation update: Addition of "After Start - Anti-Ice" documentary unit
PRO-NOR-SOP-160 Descent Preparation - ROW/ROP	A	1	Documentation update: Addition of "Descent Preparation - ROW/ROP" documentary unit
PRO-NOR-SOP-160 Descent Preparation - Autobrake	A	2	Documentation update: Addition of "Descent Preparation - Autobrake" documentary unit
PRO-NOR-SOP-180-C Approach Using DES / APP-DES for RNP AR - Descent	B	1	Update of the maximum acceptable discrepancy between altimeters from 75 ft to 100 ft to be compliant with latest regulations.
PRO-NOR-SOP-180-C Approach USING APP-DES guidance FOR RNP AR - Initial/intermediate/final Approach	B	2	Update of the callout in the case of lateral deviation. "LAT DEV" replaces the previously used "CROSS TRACK" callout.
PRO-NOR-SOP-220 Go-Around - Go-Around Initiation	A	1	Update of the callout in the case of lateral deviation. "LAT DEV" replaces the previously used "CROSS TRACK" callout.
PRO-NOR-SOP-250 Parking - EFB	A	1	Update of the name of the button to cover both Flysmart L6.x and L7.x versions. The name of the button is CLOSE FLIGHT on Flysmart L6.x, but becomes CLEAR FLIGHT from Flysmart L7.x version.

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Localization Title	Toc Index	ID	Reason
PRO-NOR-SOP-260 Securing the Aircraft - EXT Power	A	1	Change from EXT pb-sw to EXT pb to be compliant with the type of the control.
PRO-NOR-SCO Approach	G	1	Update of the callout in the case of lateral deviation. "LAT DEV" replaces the previously used "CROSS TRACK" callout.
PRO-NOR-TSK Preliminary Cockpit Preparation - Batteries/External Power	B	1	Modification of the EXT pb position to be compliant with the pushbutton label.
PRO-NOR-TSK Descent Preparation	N	2	Documentation update: Addition of "Descent Preparation" documentary unit
PRO-NOR-TSK Securing the Aircraft	V	3	Change from EXT pb-sw to EXT pb to be compliant with the type of the control.
PRO-NOR-SUP-SUP-ADVWXR Airframe Deicing/Anti-icing Procedure on Ground	A	1	Correction of an error inside the note: "AFTER START C/L" is wrong. Therefore "BEFORE TAKEOFF C/L" replaces now "AFTER START C/L".
PRO-NOR-SUP-SUP-ADVWXR Operations With Ash, Sand or Dust - Landing	C	2	Correction of a typo.
PRO-NOR-SUP-SUP-ADVWXR Securing the Aircraft for Cold Soak	F	3	Introduction of the Cold Soak definition in order to clarify the conditions when cold soak should be considered.
PRO-NOR-SUP-SUP-ENG Engine Start with External Electrical Power - Before Start Clearance	C	1	Documentation update: Deletion of information.
			Revision of the procedure to avoid electrical reconfigurations as EXT 2 is the first one to be used.
			Change from EXT pb-sw to EXT pb to be compliant with the type of the control.
PRO-NOR-SUP-SUP-ENG Engine Start with External Electrical Power - Engine Start	C	2	Modification of the EXT pb position to be compliant with the pushbutton label.
			Documentation update: Deletion of information.
			Simplification of the procedure by checking that the EXT PWR is AVAIL instead of EXT 1 or EXT 2.
PRO-NOR-SUP-SUP-ENG Engine Start with An Air Start Unit - Before Start Clearance	D	3	Modification of the EXT pb position to be compliant with the pushbutton label.
PRO-NOR-SUP-SUP-ENG Engine Start with An Air Start Unit - After Start	D	4	Update of engine thrust lever idle time from 1 minute to 30 seconds.
			Modification of the EXT pb position to be compliant with the pushbutton label.
PRO-NOR-SUP-SUP-ENG One Engine Taxi - At Arrival	H	5	Modification of the EXT pb position to be compliant with the pushbutton label.
			List of expected impacts on OIS applications replaced by a reference to the Abnormal Operations section.
			Documentation update: Deletion of information.

Continued on the following page

Continued from the previous page

Localization Title	Toc Index	ID	Reason
			Addition of information: when F/CTL DIRECT LAW(PROT LOST) appears, ENG GA SOFT FAULT and NAV RNP AR CAPABILITY LOST can also appear.
PRO-NOR-SUP-SUP-FUEL Automatic Refueling	B	1	Addition of information about the need to enter a block value different from the existing one, if any.
			Addition of information about the need to shortly press the refuel pb-sw in order to avoid an undue reset of the preselected block fuel by the maintenance crew.
PRO-NOR-SUP-SUP-FUEL Automatic Refueling	B	2	Addition of information about the need to enter a block value different from the existing one, if any.
			Addition of information about the need to shortly press the refuel pb-sw in order to avoid undue reset of the preselected block fuel by the maintenance crew.
PRO-NOR-SUP-SUP-LG Flight With Gear Down - Flight Preparation - Limitations	A	1	Update of the minimum SAT (with introduction of an altitude criteria) and addition of a minimum TAT. This ensures that the temperature of the aircraft components exposed to the outside air is more than their qualification temperature.
PRO-NOR-SUP-SUP-LG Flight With Gear Down - Climb and Cruise	A	2	Update of the minimum SAT (with introduction of an altitude criteria) and addition of a minimum TAT. This ensures that the temperature of the aircraft components exposed to the outside air is more than their qualification temperature.
			Documentation update: Deletion of information.

Localization Title	Toc Index	ID	Reason
PRO-NOR-SOP-80 Automatic Engine Start	A	1	Effectivity update: The information now also applies to ET-ATQ, ET-AUC.
PRO-NOR-SOP-80 Automatic Engine Start	A	2	Effectivity update: The information no longer applies to ET-ATQ, ET-AUC.

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STANDARD OPERATING PROCEDURES (SOP)

Ident.: PRO-NOR-SOP-10-00005563.0001001 / 09 MAR 16
Applicable to: ALL

SOPs consist of inspections, preparations, and normal procedures. All items of a given procedure are listed in a sequence that follows a standardized scan of the cockpit panels, unless that sequence goes against the action priority logic, to ensure that the flight crew performs all actions in the most efficient way.

A panel scan sequence and flow pattern at the beginning of some flight phases indicate where the actions are performed. The flight crewmembers must apply the flow patterns to ensure that they perform the necessary actions for a specific flight phase, before completing the applicable checklist.

The SOPs assume that all systems are operating normally, and that all automatic functions are used normally.

The FCOM also contains normal procedures that are non-routine procedures in the Supplementary Procedures chapter and in the Special Operations chapter.

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SAFETY EXTERIOR INSPECTION

Applicable to: ALL

Ident.: PRO-NOR-SOP-30-A-00005573.0001001 / 06 MAY 15

GENERAL

Safety exterior inspections ensure that the aircraft and the external environment of the aircraft are safe for operation. When the flight crew arrives at the aircraft, they must check for, or be informed of any obstructions near the aircraft, engineering activity, or refueling activity, etc.

Ident.: PRO-NOR-SOP-30-A-00005574.0001001 / 25 APR 14

WHEEL CHOCKS

WHEEL CHOCKS.. CHECK | CM2

L2 *If the wheel chocks are not in position, the flight crew must check that the parking brake is set with sufficient accumulator pressure.*

Ident.: PRO-NOR-SOP-30-A-00005575.0001001 / 25 APR 14

LANDING GEAR DOORS

LANDING GEAR DOORS..CHECK POSITION | CM2

WARNING	If any landing gear door is open, do not pressurize the hydraulic systems until clearance is obtained from ground personnel.

Ident.: PRO-NOR-SOP-30-A-00005576.0001001 / 25 APR 14

APU AREA

APU AREA.. CHECK | CM2

L2 *Check that the APU exhaust is free of obstruction.*

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GENERAL

Ident.: PRO-NOR-SOP-40-00005577.0001001 / 08 JUL 19
Applicable to: ALL

The flight crew performs the preliminary cockpit preparation to ensure that all required safety checks are completed.
The safety checks prevent the inadvertent operation of aircraft systems, danger to the aircraft, and danger to the personnel.

The preliminary cockpit preparation includes:
- Aircraft setup
- Battery Check/External Power
- OIS initialization
- ECAM/Logbook check
- APU start
- OIS preparation.

AIRCRAFT SETUP

Applicable to: ALL

Ident.: PRO-NOR-SOP-40-A-00018118.0001001 / 06 MAR 18

GENERAL

WARNING	Do not pressurize the hydraulic systems until clearance is obtained from ground personnel.

Ident.: PRO-NOR-SOP-40-A-00018120.0001001 / 27 JUN 17

ENG

ENG 1, 2 MASTER LEVERS....OFF | CM2
ENG START selector....NORM | CM2

Ident.: PRO-NOR-SOP-40-A-00018121.0001001 / 27 JUN 17

L/G

L/G lever....DOWN | CM2

Ident.: PRO-NOR-SOP-40-A-00018122.0001001 / 27 JUN 17

WIPERS

Both WIPER selectors....OFF | CM2

BATTERIES/EXTERNAL POWER

Ident.: PRO-NOR-SOP-40-00024180.0002001 / 03 JUL 20
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD

1 ALL BAT pb-sw (BAT 2, BAT EMER 2, BAT EMER 1, BAT 1)..................................OFF | CM2

L2 *Switch off the batteries in this specific order: BAT 2, BAT EMER 2, BAT EMER 1, BAT 1. This prevents the display of spurious dispatch messages.*

L1 ALL BAT.. CHECK ABOVE 27.1 V | CM2

L2 *Check the battery voltage on the overhead panel.*

L1 ALL BAT pb-sw (BAT 1, BAT EMER 1, BAT EMER 2, BAT 2).................................. ON | CM2

The crew must ensure that the voltage of all batteries is above 27.1 V before takeoff.

L2 *Switch on the batteries in this specific order: BAT 1, BAT EMER 1, BAT EMER 2, BAT 2. This prevents the display of spurious dispatch messages.*

If a battery voltage is at or below 27.1 V, perform a charging cycle of the batteries with the external power or the APU. A charging cycle lasts in average around 20 min. The flight crew can verify on the ELEC DC SD page, that the batteries charge with both indications:
- *The current is above 1 A*
- *A green arrow is displayed between the DC busbar and the battery indications.*

L1 ● **When the AVAIL light is on:**

EXT 1(2) pb..AUTO | CM2

In order to avoid electrical reconfigurations:
- When only one electrical power is available, connect EXT PWR 2
- When two electrical powers are available, connect EXT PWR 2 before EXT PWR 1.

BATTERIES/EXTERNAL POWER

Ident.: PRO-NOR-SOP-40-00024180.0001001 / 03 JUL 20
Applicable to: ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB

2 ALL BAT pb-sw (BAT 2, BAT EMER 2, BAT EMER 1, BAT 1)..................................OFF | CM2

L2 *Switch off the batteries in this specific order: BAT 2, BAT EMER 2, BAT EMER 1, BAT 1. This prevents the display of spurious dispatch messages.*

L1 ALL BAT... CHECK ABOVE 25 V | CM2

L2 *Check the battery voltage on the overhead panel.*

L1 ALL BAT pb-sw (BAT 1, BAT EMER 1, BAT EMER 2, BAT 2).................................. ON | CM2

The crew must ensure that the voltage of all batteries is above 25 V before takeoff.

L2 *Switch on the batteries in this specific order: BAT 1, BAT EMER 1, BAT EMER 2, BAT 2. This prevents the display of spurious dispatch messages.*

If a battery voltage is at or below 25 V, perform a charging cycle of the batteries with the external power or the APU. A charging cycle lasts in average around 45 min. The flight crew can verify on the ELEC DC SD page, that the batteries charge with both indications:
- *The current is above 1 A*
- *A green arrow is displayed between the DC busbar and the battery indications.*

L1 ● **When the AVAIL light is on:**

EXT 1(2) pb..........AUTO | CM2

In order to avoid electrical reconfigurations:
- When only one electrical power is available, connect EXT PWR 2
- When two electrical powers are available, connect EXT PWR 2 before EXT PWR 1.

COCKPIT LIGHTS

Ident.: PRO-NOR-SOP-40-00018124.0001001 / 27 JUN 17
Applicable to: ALL

COCKPIT LIGHTS..........AS RQRD |CM1-CM2

L2 *On the overhead panel, set the STBY COMPASS sw as required, and set to BRT or DIM the ANN LT sw as required.*
On the glareshield, set the glareshield integral lights knob, as required.
On the pedestal, set the FLOOD LT knob, the DOME LT knob and INTEG LT knob, as required.
On the pedestal, set the DU MASTER BRT knob, as required.
On each Display Unit, adjust the brightness and contrast, as required.

OIS INITIALIZATION

Applicable to: ALL

Ident.: PRO-NOR-SOP-40-G-00005578.0002001 / 30 JUL 15

ELECTRONIC FLIGHT BAG (EFB)

ALL EFB LAPTOPS..........START |CM1-CM2

Ident.: PRO-NOR-SOP-40-G-00005583.0001001 / 03 DEC 15

FMS

FLT NBR on FMS ACTIVE/INIT page...INSERT/CHECK | CM1

L2 *Insert FLT NBR only if the company flight plan is not received via ACARS. For ATC needs, the crew should enter exactly the entire flight number, as shown on the ICAO flight plan, without inserting any space.*

L1 ACFT STATUS on FMS DATA/STATUS page...CHECK | CM1

L2 *Check:*
- *The engine and aircraft types*
- *The active database validity period*
- *The pilot stored elements*
  Check if any waypoint, NAVAID, route, and runway appear. Review and delete them, if appropriate.
- *The PERF and IDLE factors.*
  To modify the PERF and IDLE factors, Refer to DSC-22-FMS-20-20-20 MODIFY Button

L1 FROM/TO on FMS ACTIVE/INIT page...INSERT/CHECK | CM1

L2 *Insert FROM/TO only if the company flight plan is not received via ACARS.*

Ident.: PRO-NOR-SOP-40-G-00005584.0001001 / 06 AUG 14

EFB FLT OPS STATUS PAGE

- **In accordance with the Operator's policy or if required by operational regulation:**
  FLT OPS STS page...CHECK EFB VERSION |CM1-CM2

L2 *If required, the flight crew performs this check unless a specific procedure is established as per Operator's policy to ensure that the correct version is on board.*
On the FLT OPS STS page, check the EFB version number and compare it with the valid version number given as reference by the Operator (e.g. on the company flight plan).

L1 SYNCHRO AVIONICS button...CLICK | CM1

L2 *On the FLT OPS STS page, click on the SYNCHRO AVIONICS button to retrieve the FLT NBR and FROM/TO information from the FMS.*

L1 FLT OPS STS page...CHECK |CM1-CM2

L2 *On the FLT OPS STS page:*
- *Check the ACFT TYPE and ACFT REG*
- *Check that FLT NBR and FROM/TO agree with the FMS ACTIVE/INIT page.*

ECAM/LOGBOOK CHECK

Applicable to: ALL

Ident.: PRO-NOR-SOP-40-B-00005585.0001001 / 06 MAR 18

ECAM RCL

RCL ALL pb .... PRESS | CM1

L2 *Press the RCL ALL pb for at least 3 s to recall all alerts that were cleared or canceled.*

Ident.: PRO-NOR-SOP-40-B-00005579.0001001 / 03 JUL 20

3 DISPATCH MESSAGES

DISPCH pb.......... PRESS | CM1

L2 *Press the DISPCH pb to consult all active dispatch messages. The dispatch message NAV RNP AR CAPABILITY DOWNGRADED may be displayed if the F-PLN is not yet entered in the FMS. If the above dispatch message is still displayed after the entry of the F-PLN in the FMS, the flight crew must take it into account for the aircraft acceptance.*

Ident.: PRO-NOR-SOP-40-B-00005586.0001001 / 25 APR 14

LOGBOOK CHECK

LOGBOOK.......... CHECK | CM1-CM2

L2
- *Check the deferred items list*
- *Crosscheck with active dispatch messages.*

Ident.: PRO-NOR-SOP-40-B-00005587.0001001 / 25 APR 14

MEL/CDL ITEMS CHECK

MEL/CDL ITEMS (as appropriate).......... CHECK DISPATCH CONDITIONS | CM1-CM2

L2 *As appropriate, check and activate the MEL and CDL items. The activated MEL and CDL items are sent to the performance applications.*

Ident.: PRO-NOR-SOP-40-B-00005588.0001001 / 25 APR 14

AIRCRAFT ACCEPTANCE

AIRCRAFT ACCEPTANCE.......... PERFORM | CM1

L2 *Note:* *The aircraft acceptance can be performed later, but must be completed at the end of the Cockpit Preparation.*

FIRE TEST/APU START

Applicable to: ALL

Ident.: PRO-NOR-SOP-40-C-00005580.0001001 / 27 SEP 18

RMP

L2 For more information, *Refer to FCTM/PR-NP-SOP-40 Fire Test/APU Start*.

L1

RMP 1 and 2	CHECK ON	CM2
STBY RAD NAV key	OFF	CM2
COMMUNICATION FREQUENCIES	TUNE	CM2
INT RECEPTION knob	RELEASE/ADJUST	BOTH

L2 *Press and release the INT RECEPTION knob to the out position.*
Turn the INT RECEPTION knob to adjust the volume and to enable contact with the ground crew.

Ident.: PRO-NOR-SOP-40-C-00005589.0001001 / 25 APR 14

FIRE TEST

APU FIRE pb-sw	CHECK IN and GUARDED	CM2
APU AGENT light	OFF	CM2
ALL ENG FIRE pb-sw	CHECK IN and GUARDED	CM2
ALL ENG AGENT 1 and 2 lights	OFF	CM2
FIRE TEST pb	PRESS	CM2

L2 *The flight crew should maintain the TEST pb pressed during the time of the test.*

L1 **TEST RESULT**

Check that the engines, APU and main landing gear bay fire detection and extinguishing systems are operative:

- The continuous repetitive chime sounds
- All ENG FIRE pb-sw and the APU FIRE pb-sw come on red
- All SQUIB lights of the ENG and APU AGENT pb come on
- All DISCH lights of the ENG and APU AGENT pb come on
- The FIRE light of the MLG BAY light comes on red
- The MASTER WARN lights flash
- The ECAM displays the ENG 1 FIRE, ENG 2 FIRE, APU FIRE, MLG BAY FIRE alerts
- All FIRE lights on the ENG MASTER panel come on.

Ident.: PRO-NOR-SOP-40-C-00005590.0003001 / 03 JAN 20

APU START

L2 For more information, *Refer to APU Normal Operations*.

L1

APU MASTER SW pb-sw	ON	CM2

APU START pb ....ON | CM2

Note: *If the APU start failed, Refer to APU Abnormal Operations.*

- **When the APU is AVAIL:**

  APU BLEED pb-sw ....ON | CM2

  L2 *Do not use APU bleed if the ground crew confirms that an air start unit or air conditioning unit is connected to the aircraft.*
  To determine if an air start unit is connected, the flight crew should check on the BLEED SD page, if there is pressure in the bleed air system.

  L1 XBLEED selector ....AUTO | CM2
  AIR FLOW selector ....NORM | CM2

  L2 *As long as the number of passenger is not entered in the FMS, airflow is automatically adjusted to the maximum number of passengers.*
  As soon as the number of passengers is entered, during FMS initialization, airflow is automatically adjusted to the actual number of passengers.

  L1 COCKPIT selector ....AS RQRD | CM2
  CABIN selector ....PURS SEL | CM2
  EXT PWR ....AS RQRD | CM2

  L2 When the APU GEN is ON, the EXT PWR 1 does not supply the electrical network.

  - **If EXT PWR 1 was used before APU start:**

    EXT 1 pb ....PRESS | CM2

    Note: *the AVAIL light comes on.*

  The flight crew may keep EXT PWR 2 to reduce the APU load, particularly in hot weather conditions.

L1

- **If APU start on BAT:**

  The following spurious dispatch messages may be displayed on the DISPATCH page:

  - ELEC RAT SHEDDING REDUNDANCY,
  - COND VENT LOCAL CTL REDUNDANCY.

  Contact maintenance to clear the spurious dispatch messages, or apply MEL:

  - For ELEC RAT SHEDDING REDUNDANCY: *Refer to MMEL/ME-DM-ELEC ELEC RAT SHEDDING REDUNDANCY*,
  - For COND VENT LOCAL CTL REDUNDANCY: *Refer to MMEL/ME-DM-COND COND VENT LOCAL CTL REDUNDANCY*.

OIS PREPARATION

Applicable to: ALL

Ident.: PRO-NOR-SOP-40-D-00005596.0001001 / 27 JUN 17

PRELIMINARY PERFORMANCE DETERMINATION

L2 For more information, *Refer to FCTM/PR-NP-SOP-40 OIS Preparation*.

L1 Compute the preliminary performance data in accordance with the technical condition of the aircraft and/or any other criteria that may impact the performance data (e.g. NOTAM, runway condition, aircraft configuration).

AIRFIELD DATA..OBTAIN | CM1-CM2

- **If dispatch under MEL or CDL and in accordance with the logbook:**

  MEL/CDL ITEMS (as appropriate)........................CHECK ACTIVATED | CM1-CM2

  L2 *As appropriate, check that the MEL and CDL items are activated in the T.O PERF application.*

L1 OIS PRELIMINARY TAKEOFF PERF DATA........................COMPUTE | CM1-CM2

L2 *Both flight crewmembers independently compute the preliminary takeoff performance data.*

L1 OIS PRELIMINARY TAKEOFF PERF DATA........................CROSSCHECK | CM1-CM2

L2 *Both flight crewmembers compare their OIS to ensure that the computations are the same.*

Ident.: PRO-NOR-SOP-40-D-00005597.0001001 / 25 APR 14

OPERATIONS ENGINEERING BULLETINS (OEB)

OEB in FCOM..CHECK | CM1-CM2

Review all OEBs in the OEB section of the FCOM, particularly red OEBs, that are applicable to the aircraft.

L2 *Any flight crewmember who operates at the flight deck at any time during the on-going flight should be aware of the applicable OEB(s).*

BEFORE WALKAROUND

Applicable to: ALL

Ident.: PRO-NOR-SOP-40-E-00005582.0001001 / 29 NOV 18

ECAM PAGES

- **On the DOOR SD page:**

  RAIN RPLNT LEVEL INDICATION ◁ ....CHECK NORM | PM

CAUTION	*Rain repellent must not be used as a windshield washer, and never be applied on a dry windshield.*

CAPT and F/O OXYGEN PRESSURE .... CHECK | PM

L2 *Check that the oxygen pressure is above the minimum necessary to fly the scheduled flight.* *Refer to LIM-OXY Minimum Flight Crew Oxygen Pressure.*

L1
- **On the HYD SD page:**
  RESERVOIR FLUID LEVEL.......................... CHECK WITHIN NORMAL RANGE | PM
- **On the ENG SD page:**
  ENG OIL QUANTITY ....CHECK | PM

Note: *If the ENG oil quantity indication does not appear on the ENG SD page, press the ENG 1 and 2 FADEC GND PWR pb-sw on the overhead maintenance panel. After the check of the ENG oil quantity, press again the ENG 1 and 2 FADEC GND PWR pb-sw.*

L2 *Check that the oil quantity is above the minimum. Refer to Engines Oil Limitations.*

Ident.: PRO-NOR-SOP-40-E-00005601.0001001 / 25 APR 14

SLATS/FLAPS POSITION

FLAPS...CHECK POSITION | PM

L2 *Check that the slats/flaps position on the lower part of the PFD agrees with the FLAPS lever position.*

L1

WARNING	*If the flight control surfaces position does not agree with the FLAP lever position, do not apply hydraulic power until clearance is obtained from maintenance personnel.*

Ident.: PRO-NOR-SOP-40-E-00005598.0001001 / 25 APR 14

SPEED BRAKES

SPEED BRAKES... CHECK RETRACTED and DISARMED | PM

WARNING	*If the flight control surfaces position does not agree with the SPEED BRAKE lever position, do not apply hydraulic power until clearance is obtained from maintenance personnel.*

Ident.: PRO-NOR-SOP-40-E-00005599.0001001 / 29 NOV 18

PARK BRK

ACCU pressure indicator.. CHECK | PM

L2 *The GREEN and YELLOW ACCU pressure indications must be in the green band.*

L1

- **If the GREEN pressure indication is not in the green band:**
  - **If APU GEN is ON or two external power units are connected:**

    ACCU REINFLATE pb.......................................PRESS | PM
  - **If APU GEN is OFF and only one external power unit is connected:**

    YELLOW ELEC PMP pb-sw...............PRESS (the white OFF light comes on) | PM
    ACCU REINFLATE pb.......................................PRESS | PM
    YELLOW ELEC PMP pb-sw................. PRESS (the white OFF light goes off) | PM
- **If the YELLOW pressure indication is not in the green band:**
  - **If APU GEN is ON or two external power units are connected:**

    ACCU REINFLATE pb.......................................PRESS | PM
  - **If APU GEN is OFF and only one external power unit is connected:**

    GREEN ELEC PMP pb-sw.................PRESS (the white OFF light comes on) | PM
    ACCU REINFLATE pb.......................................PRESS | PM
    GREEN ELEC PMP pb-sw................... PRESS (the white OFF light goes off) | PM

PARK BRK handle.. ON | PM

L2 *Set to ON the PARK BRK handle during the exterior inspection, in order to check the brake wear indicators.*

L1 PARK BRK indication.. CHECK DISPLAYED | PM

L2 *When the parking brake is set to ON and the pressure is effective on brakes, the slats/flaps display shows the PARK BRK indication.*

Ident.: PRO-NOR-SOP-40-E-00005602.0001001 / 14 JUN 16

EMERGENCY EQUIPMENT

Check that:

- Life vests are stowed
- Crash axe or crow bar is stowed
- Protective Breathing Equipment (PBE) is stowed and ready for use
- Portable fire extinguisher is lockwired and the pressure gauge indicator is in the green area
- Oxygen masks are stowed
- Flashlights are stowed.

Ident.: PRO-NOR-SOP-40-E-00005603.0001001 / 04 MAR 20

PINS AND COVERS

GEAR PINS and COVERS.................................CHECK ONBOARD and STOWED | PM

L2 *Check that the covers and the five gear pins are on board and stowed.*

L1 FAN COWL DOORS (FCD) KEYS ⊲ .... CHECK ONBOARD and STOWED | PM

L2 *Check that the two FCD keys ⊲ are on board and stowed.*

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GENERAL

Ident.: PRO-NOR-SOP-50-00020454.0001001 / 03 MAY 17
Applicable to: ALL

The exterior walkaround ensures that the general condition of the aircraft is satisfactory and that the visible aircraft components and equipment are safe for the flight:

- There is no impact damage to the structure
- There is no evident fuel, oil, or hydraulic leak
- All ground access doors are closed.

The flight must perform a complete walkaround before each flight.
The parking brake must be set to ON during the exterior walkaround, in order to enable the flight crew to check brake wear indicators.

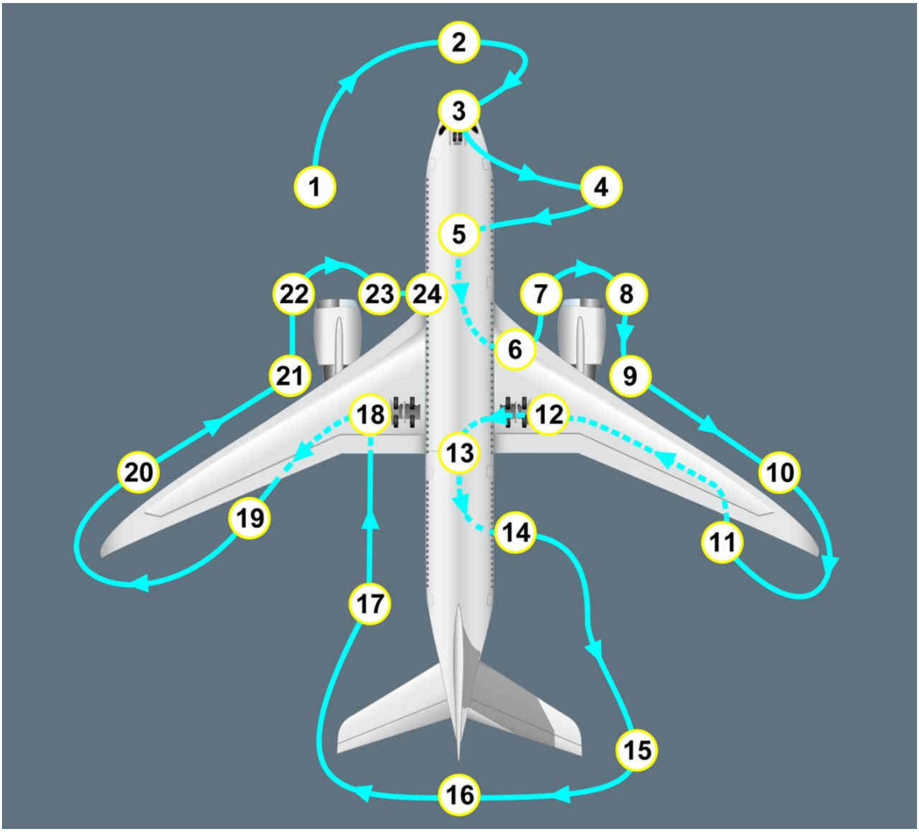
WARNING	If any landing gear door is open, do not apply hydraulic power until clearance is obtained from ground personnel.

The illustrations available in the Exterior Walkaround section are typical illustrations and may not reflect the exact configuration of the aircraft.

EXTERIOR WALKAROUND - SCHEMATIC

Ident.: PRO-NOR-SOP-50-00020455.0001001 / 06 AUG 14
Applicable to: ALL

Exterior Walkaround

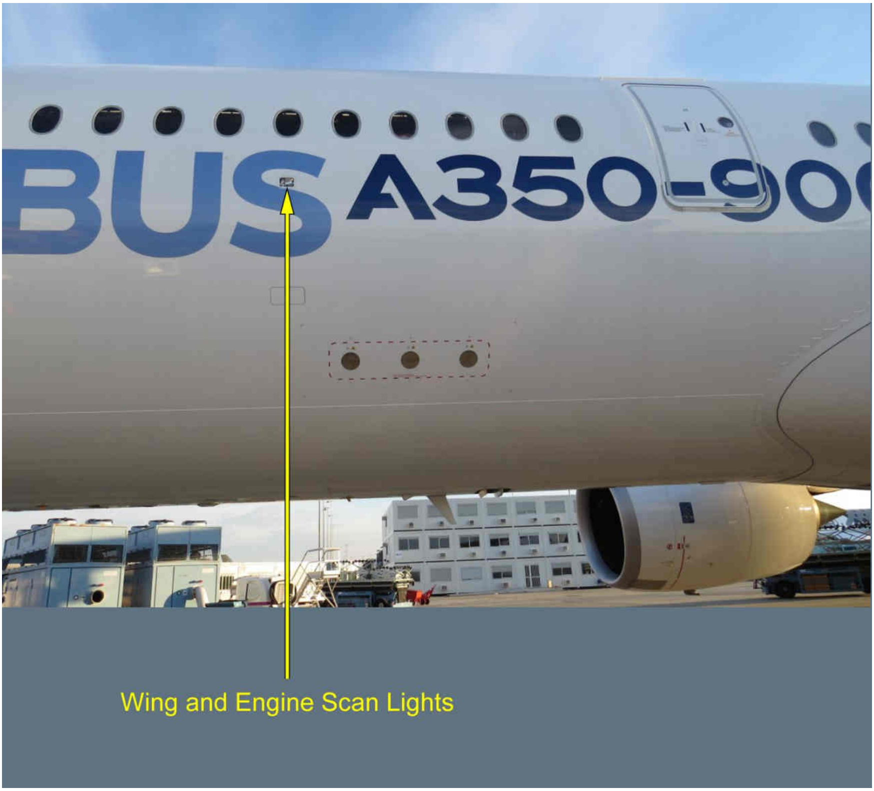


EXTERIOR WALKAROUND - LH FWD FUSELAGE

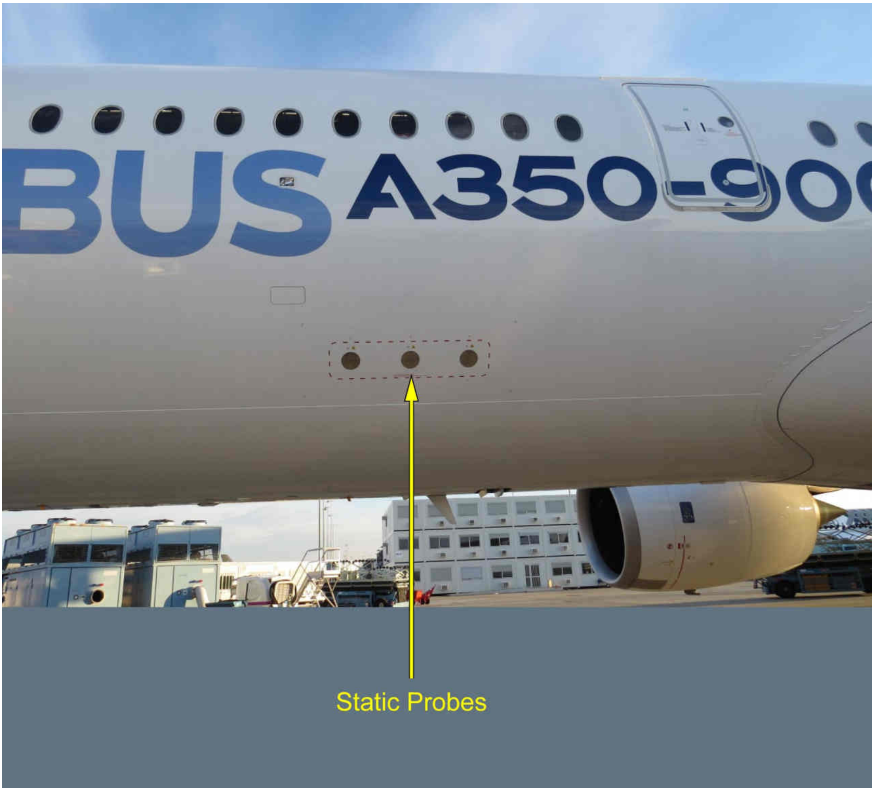
Ident.: PRO-NOR-SOP-50-00020456.0001001 / 03 MAY 17
Applicable to: ALL

POSITION 1 - LH FWD FUSELAGE

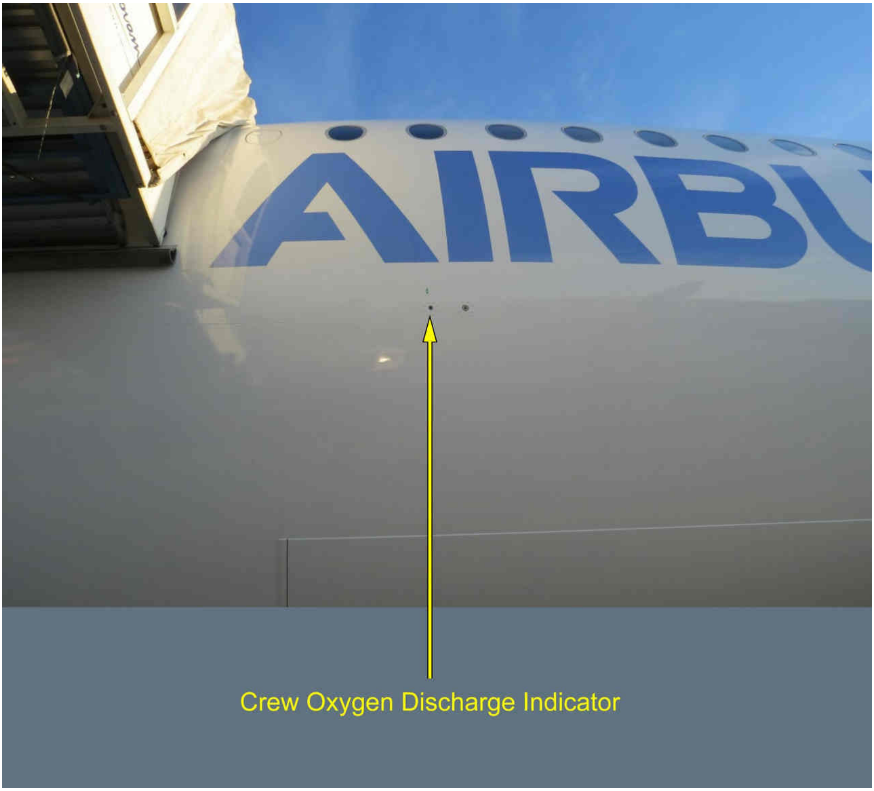
WING AND ENGINE SCAN LIGHTS..CHECK CONDITION


Wing and Engine Scan Lights

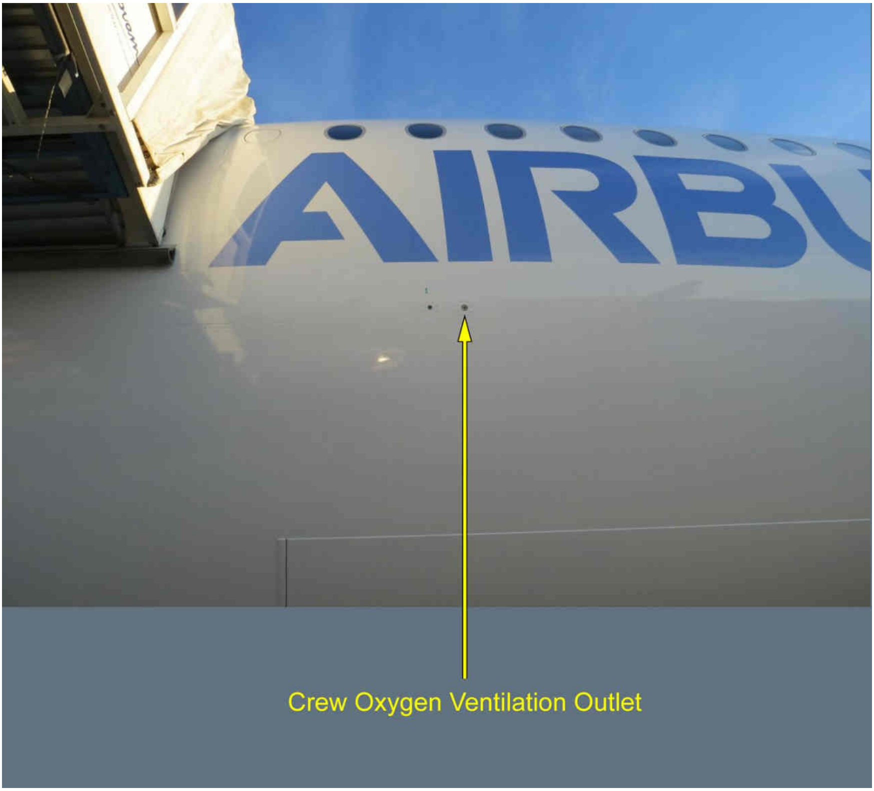
STATIC PROBES.. CLEAR



CREW OXYGEN DISCHARGE INDICATOR..GREEN

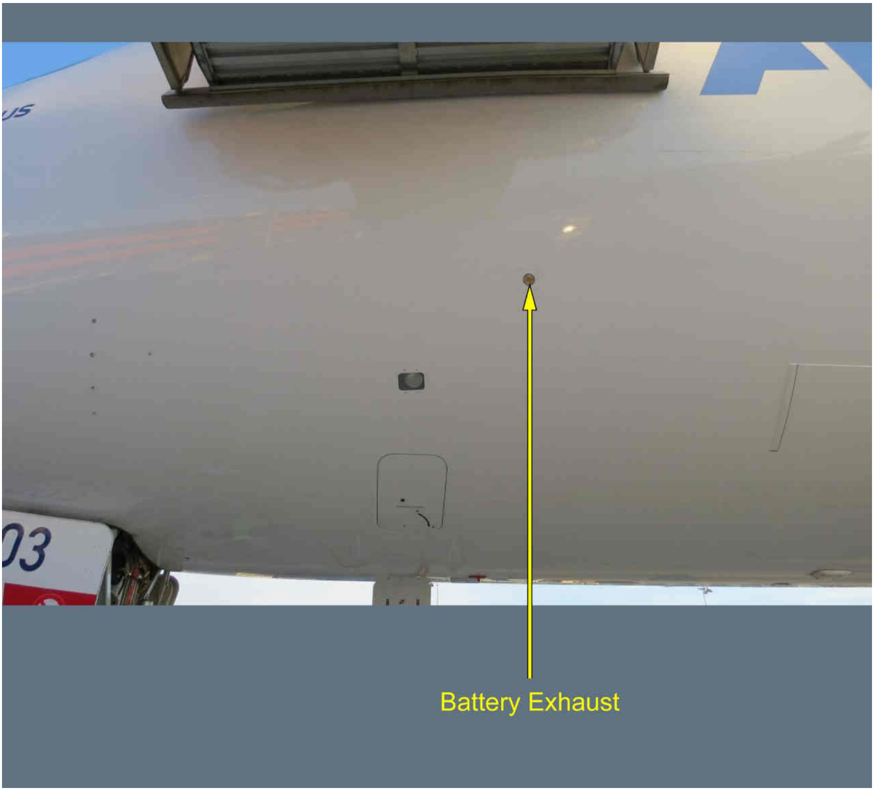

Crew Oxygen Discharge Indicator

CREW OXYGEN VENTILATION OUTLET..CHECK CONDITION

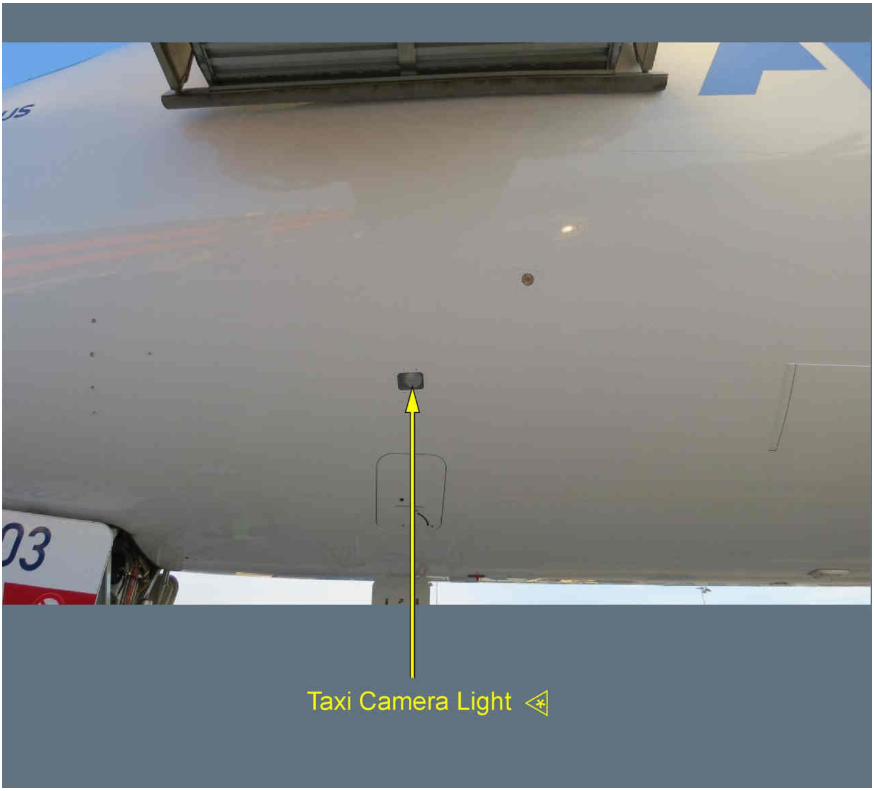


BATTERY EXHAUST..CHECK CONDITION

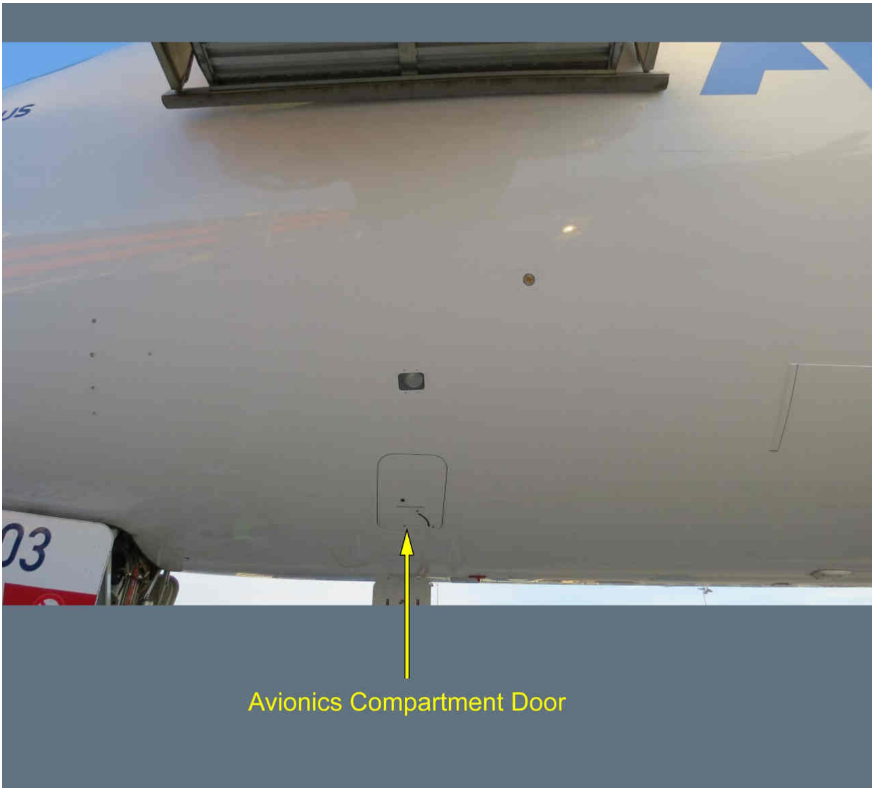
L2 *Check that there is no indication of battery discharge through the battery exhaust.*
With Li-Ion batteries ◁ *, check the presence of the yellow disc on the battery exhaust.*


Battery Exhaust

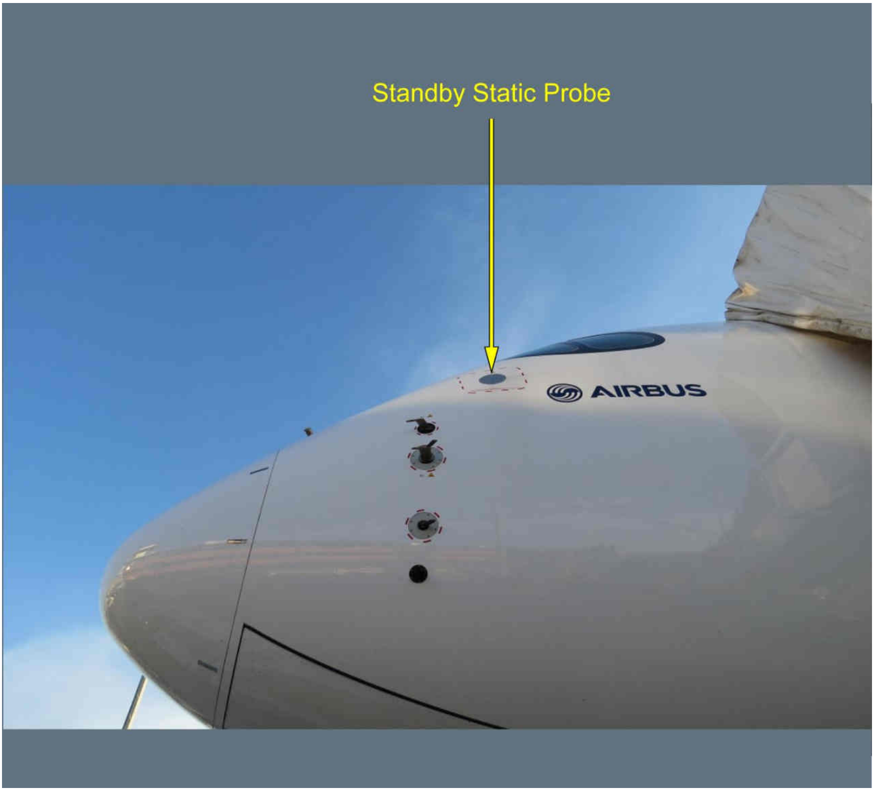
L1 TAXI CAMERA LIGHT ◁ .... CHECK CONDITION



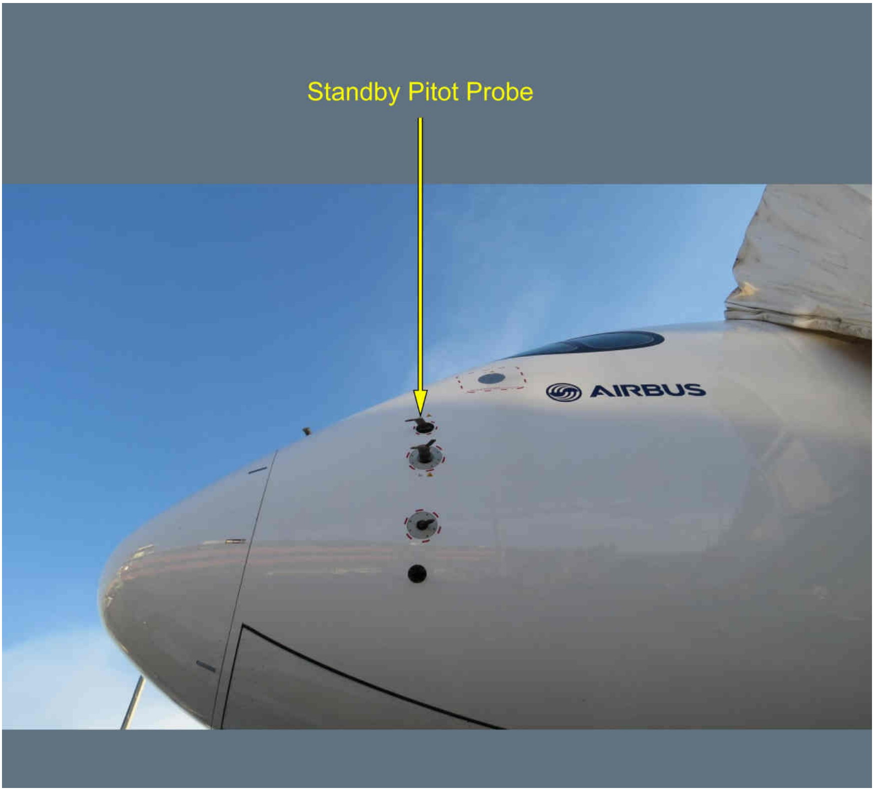
AVIONICS COMPARTMENT DOOR..CLOSED


Avionics Compartment Door

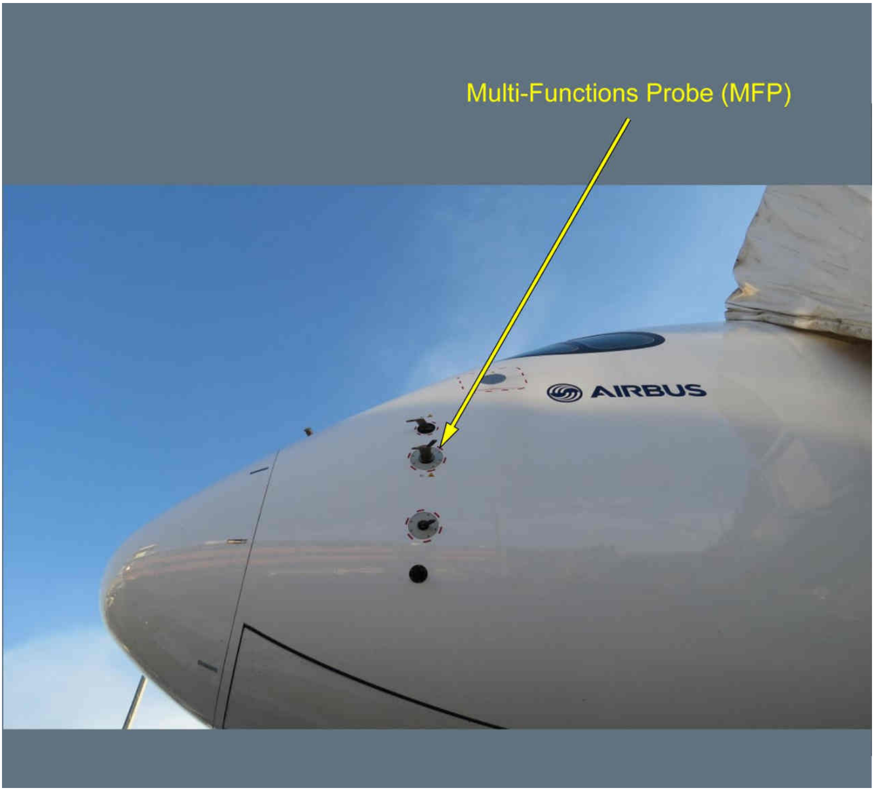
STANDBY STATIC PROBE..CLEAR


Standby Static Probe
AIRBUS

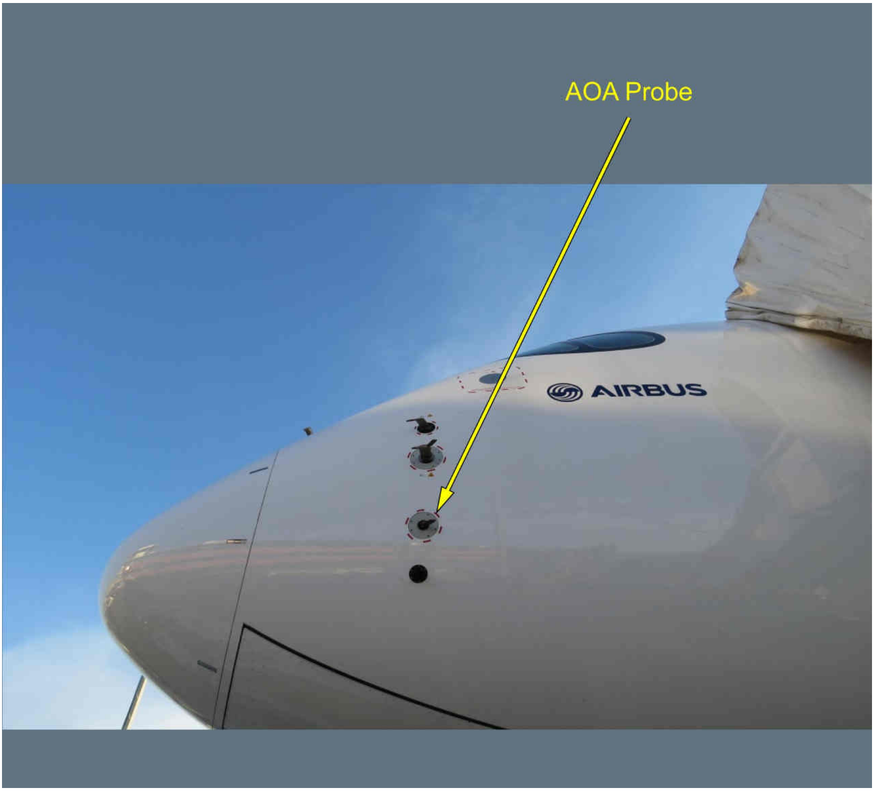
STANDBY PITOT PROBE..CHECK CONDITION


Standby Pitot Probe
AIRBUS

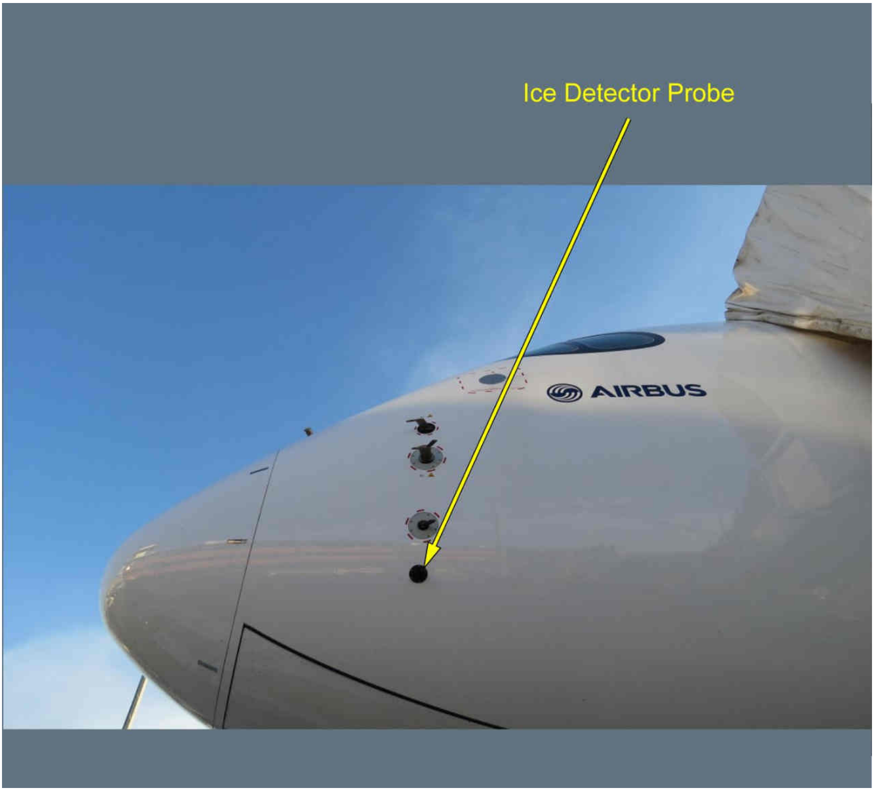
MULTI-FUNCTIONS PROBE (MFP)..CHECK CONDITION


Multi-Functions Probe (MFP)
AIRBUS

AOA PROBE..CHECK CONDITION



ICE DETECTOR PROBE..CHECK CONDITION



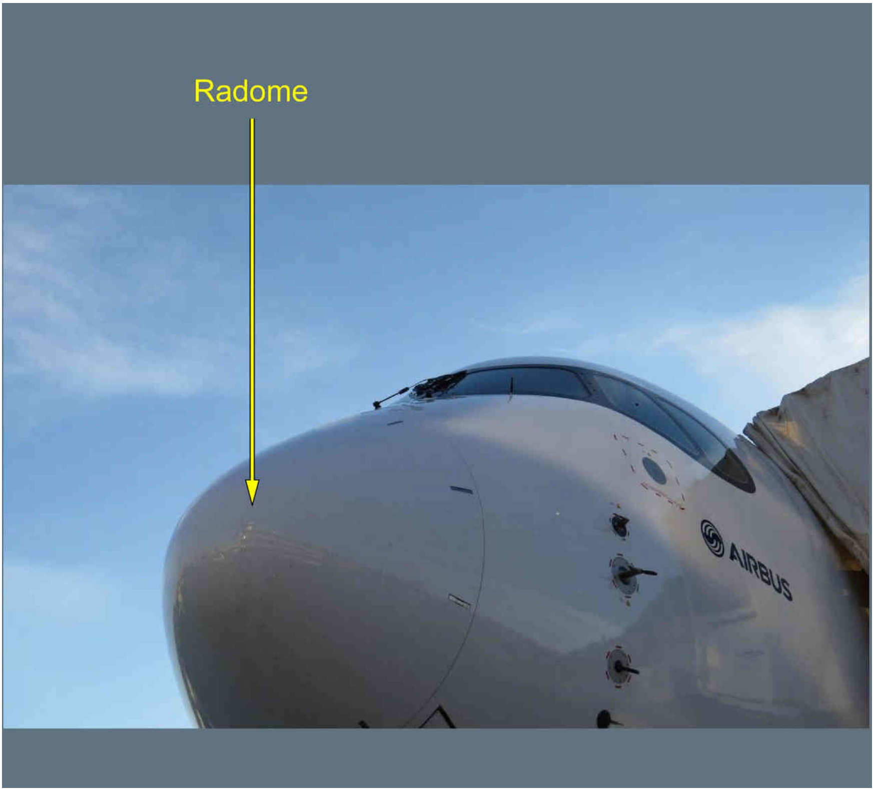
To return to the Exterior Walkaround schematic, *Refer to PRO-NOR-SOP-50 Exterior Walkaround - Schematic*.

EXTERIOR WALKAROUND - NOSE SECTION

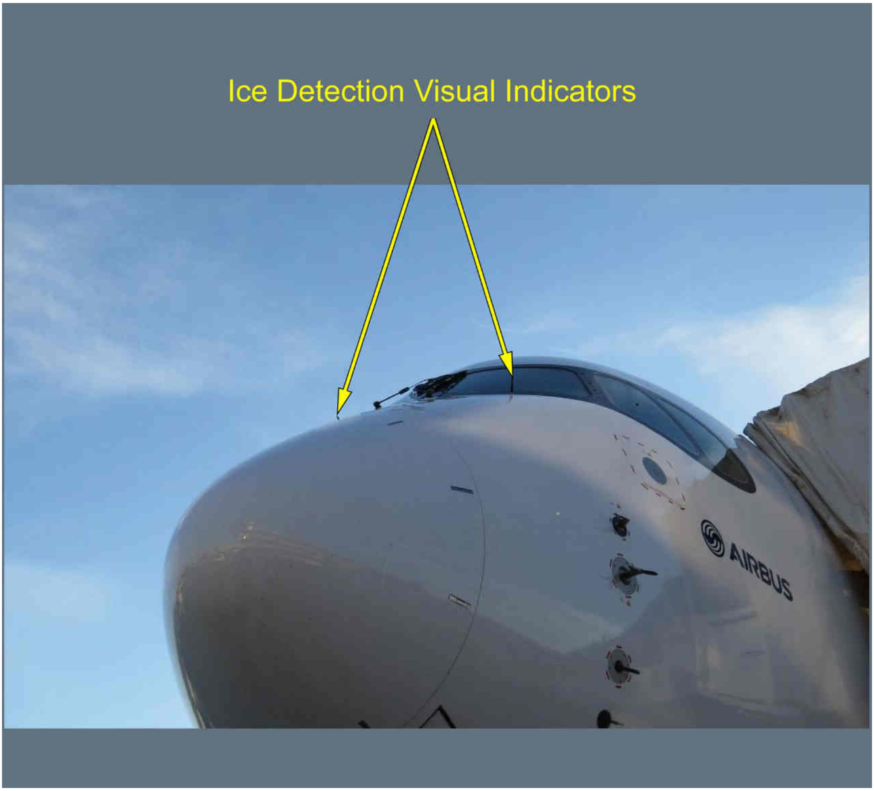
Ident.: PRO-NOR-SOP-50-00020457.0003001 / 24 SEP 19
Applicable to: ET-AWO, ET-AWP, ET-AYA, ET-AYB

POSITION 2 - NOSE SECTION

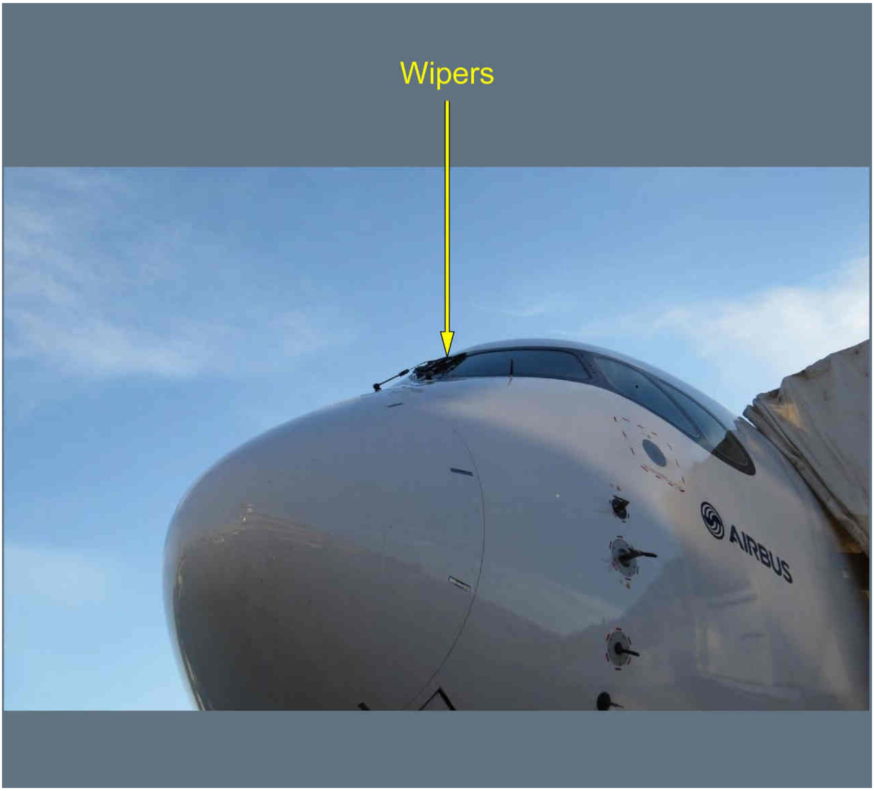
RADOME...CHECK CONDITION/LATCHED



ICE DETECTION VISUAL INDICATORS.. CHECK CONDITION


Ice Detection Visual Indicators
AIRBUS

WIPERS.. CHECK CONDITION



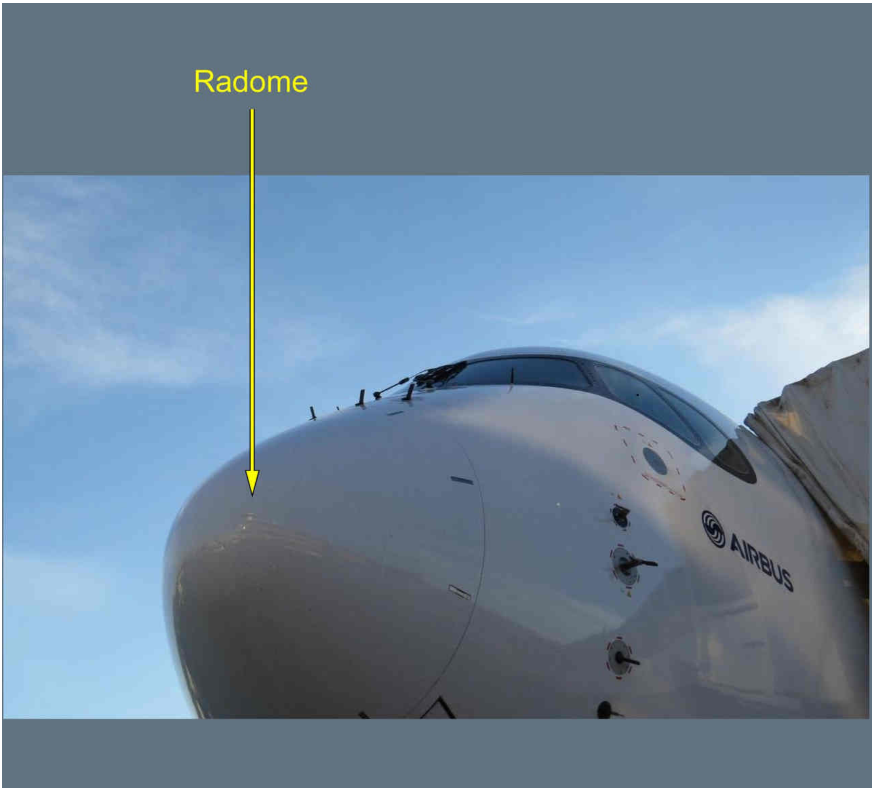
To return to the Exterior Walkaround schematic, *Refer to PRO-NOR-SOP-50 Exterior Walkaround - Schematic*.

EXTERIOR WALKAROUND - NOSE SECTION

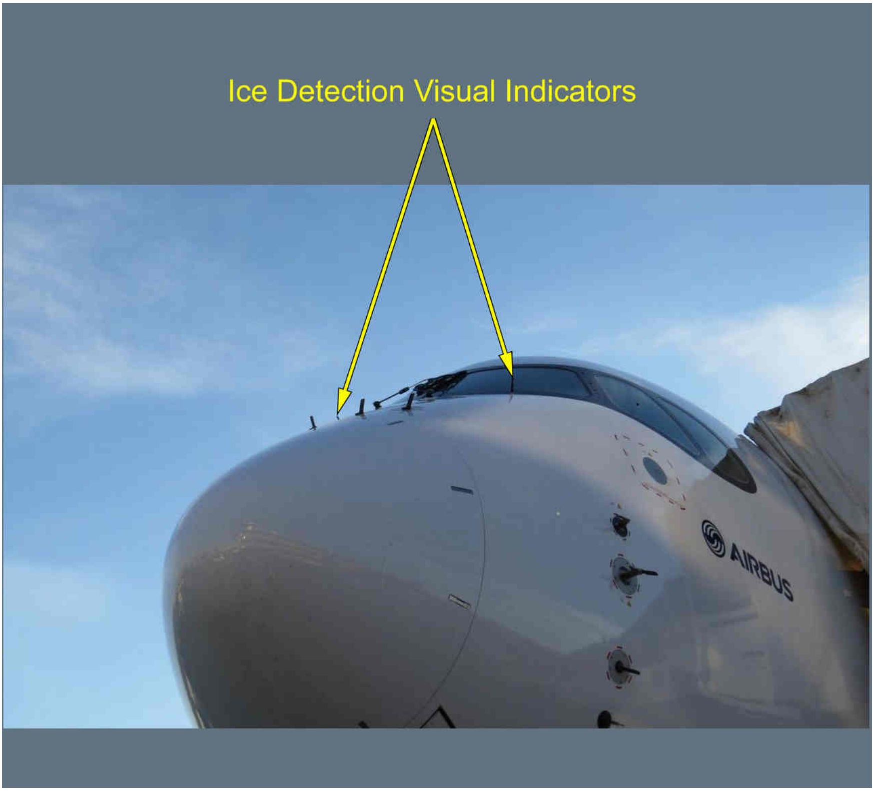
Ident.: PRO-NOR-SOP-50-00020457.0002001 / 03 JAN 20
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN

POSITION 2 - NOSE SECTION

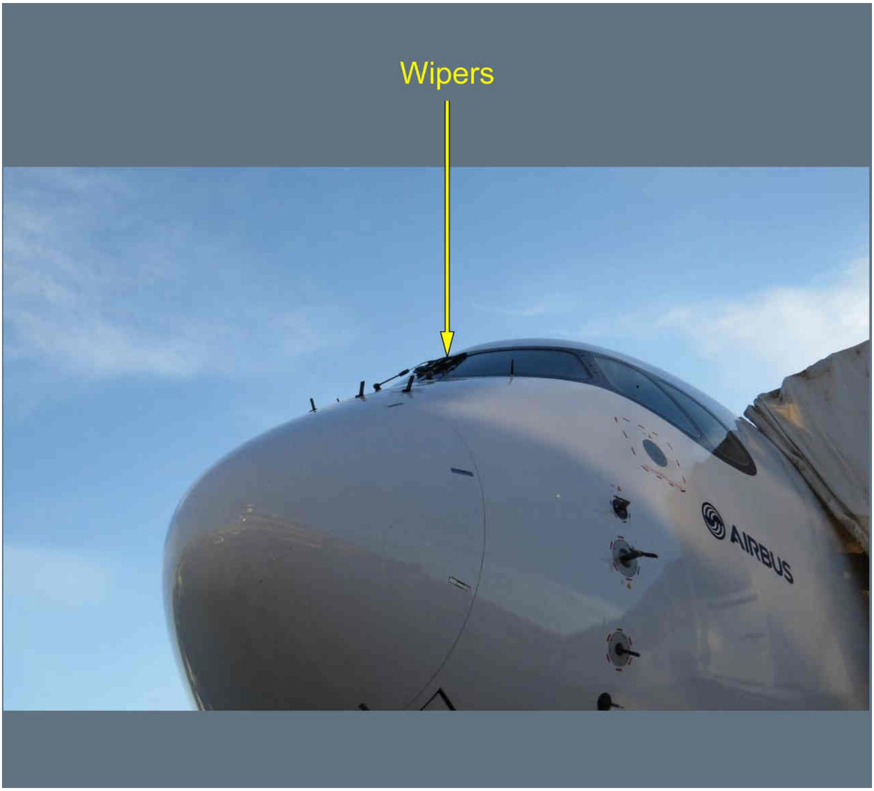
RADOME...CHECK CONDITION/LATCHED



ICE DETECTION VISUAL INDICATORS.. CHECK CONDITION


Ice Detection Visual Indicators
AIRBUS

WIPERS.. CHECK CONDITION



To return to the Exterior Walkaround schematic, *Refer to PRO-NOR-SOP-50 Exterior Walkaround - Schematic*.

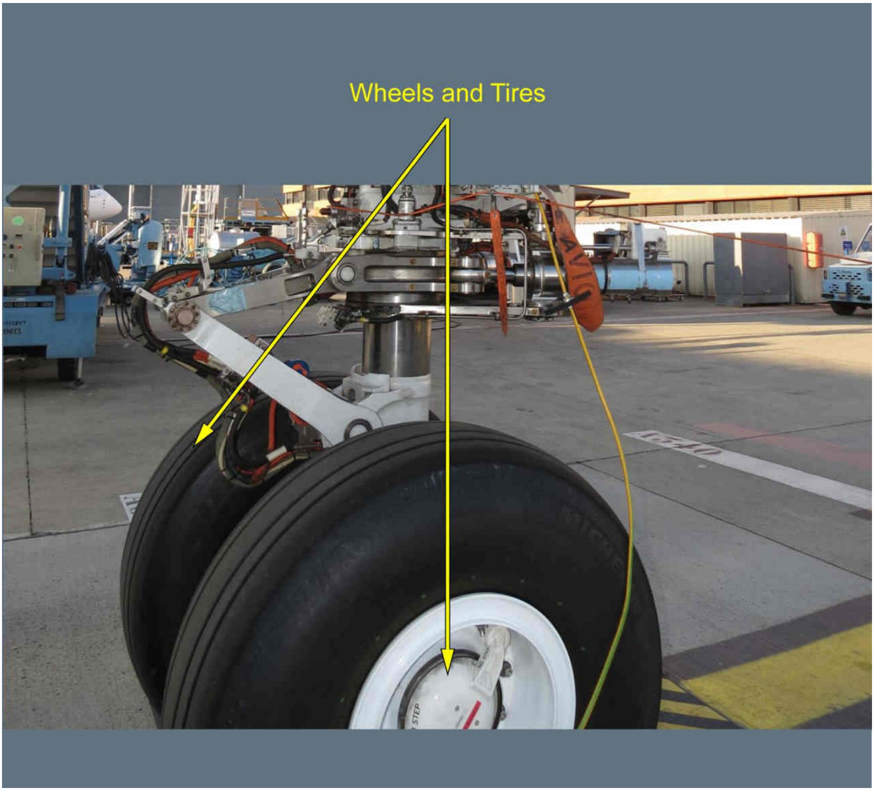
EXTERIOR WALKAROUND - NOSE L/G

Ident.: PRO-NOR-SOP-50-00020458.0001001 / 08 JUL 19
Applicable to: ALL

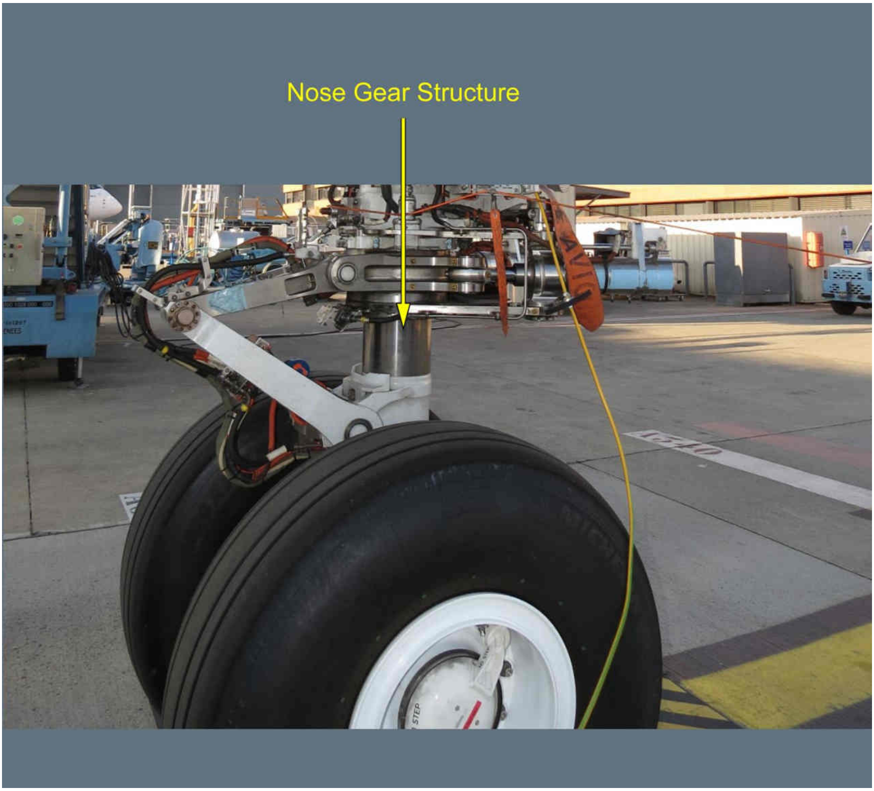
POSITION 3 - NOSE L/G

CHOCKS.. IN PLACE

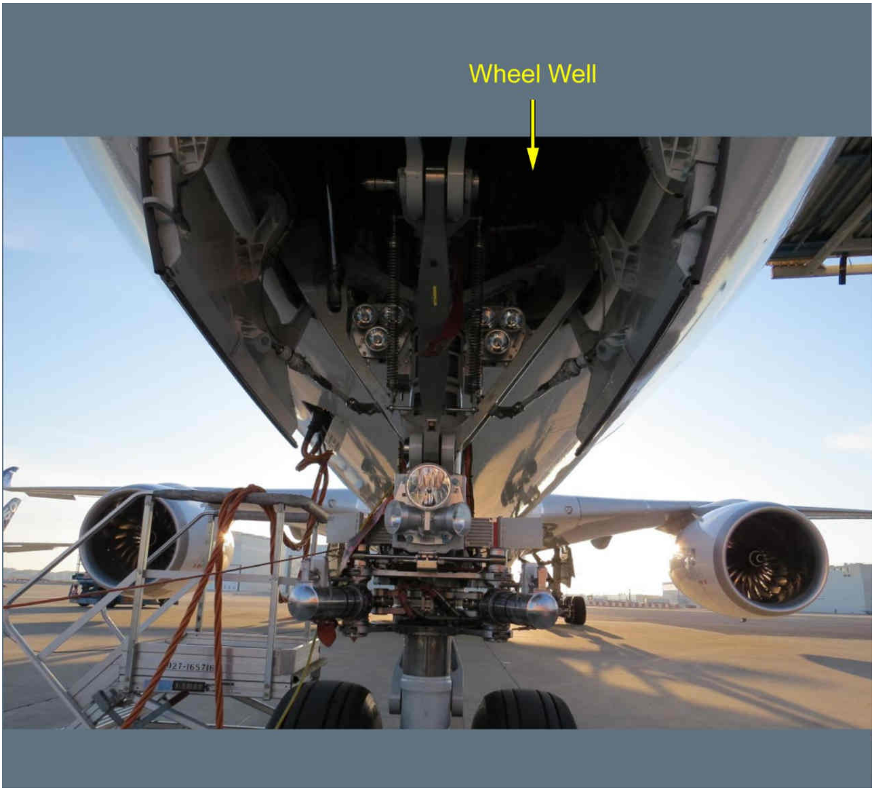
WHEELS AND TIRES..CHECK CONDITION



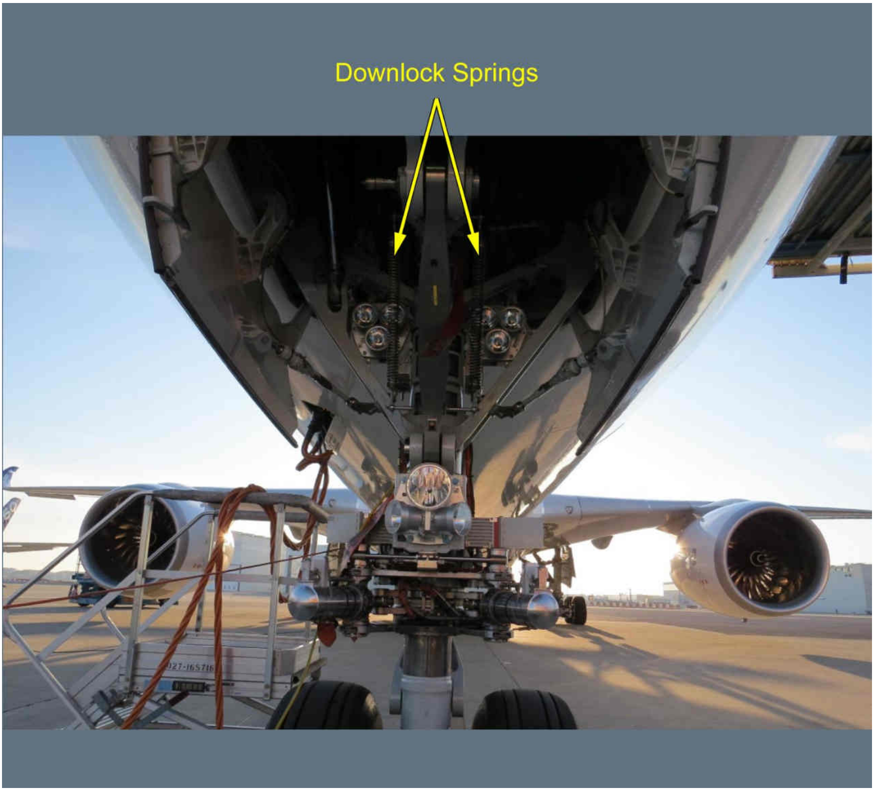
NOSE GEAR STRUCTURE.. CHECK CONDITION



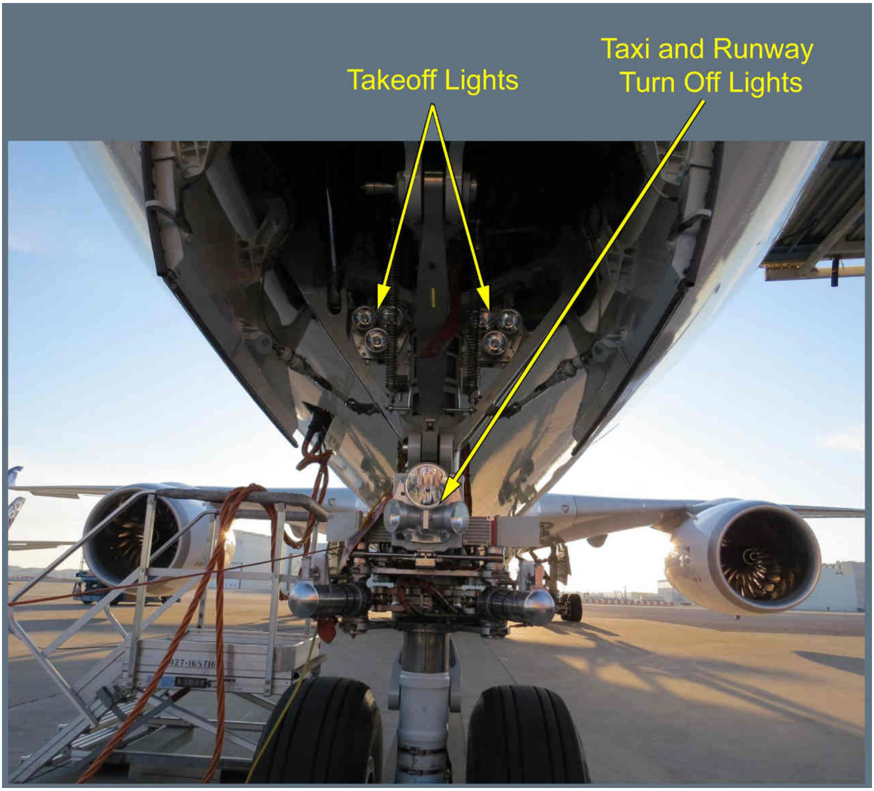
WHEEL WELL...CHECK



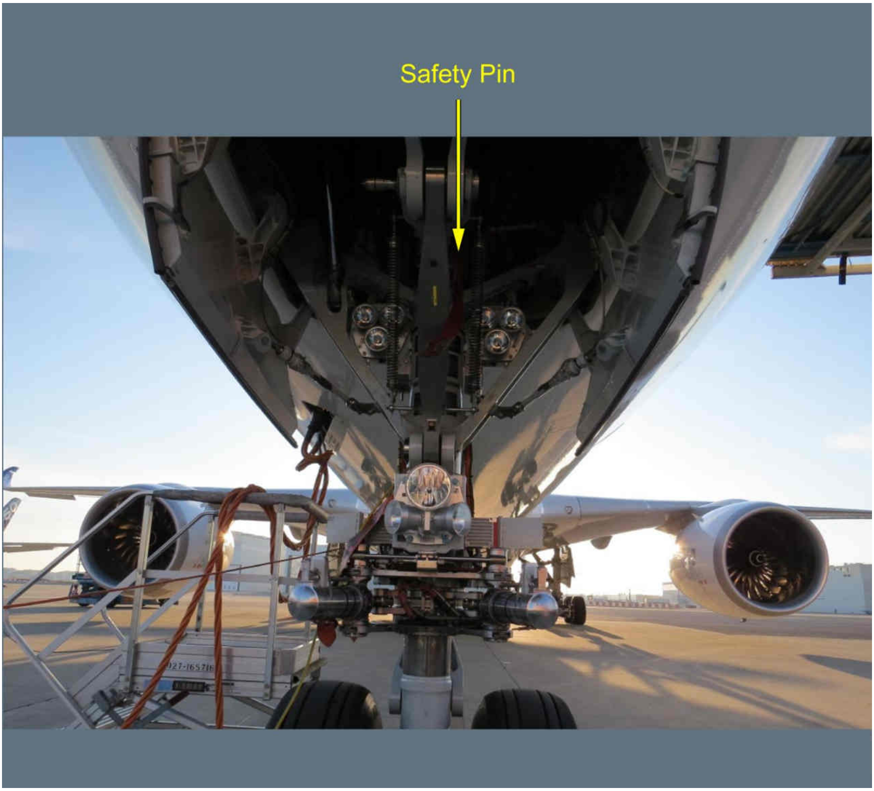
DOWNLOCK SPRINGS.. CHECK



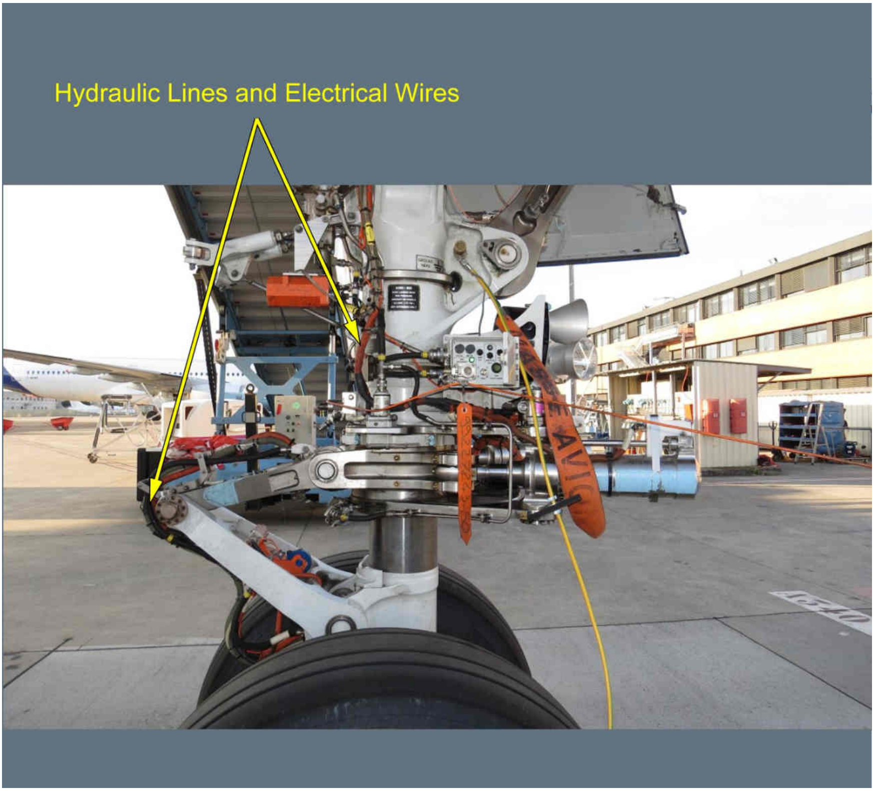
TAKEOFF, TAXI AND RUNWAY TURN OFF LIGHTS....................................CHECK CONDITION


Takeoff Lights
Taxi and Runway Turn Off Lights

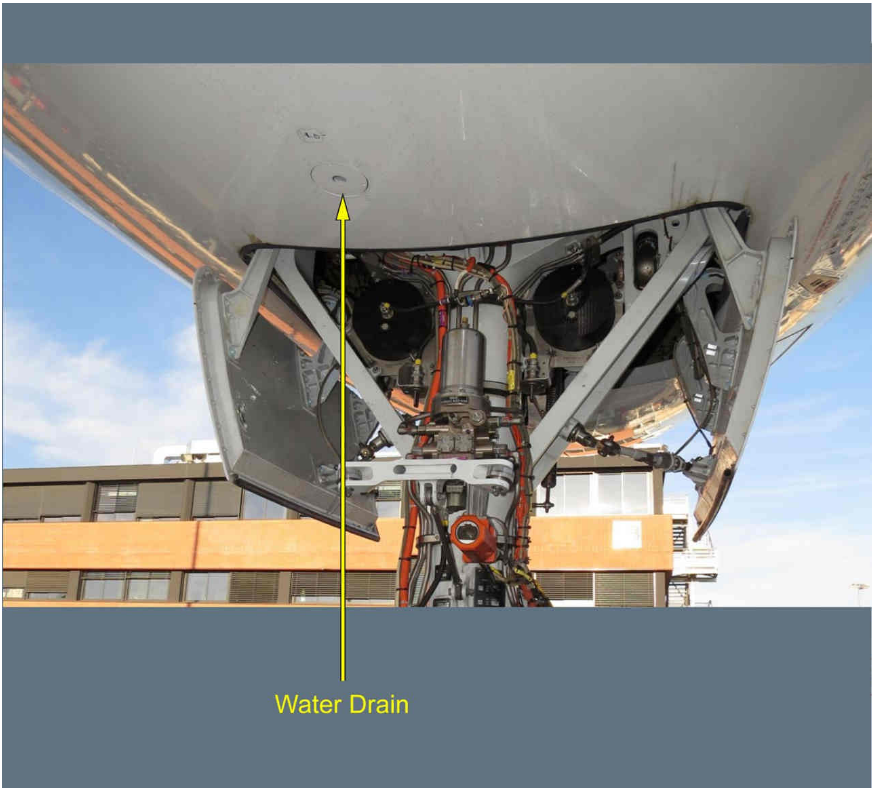
SAFETY PIN..REMOVED



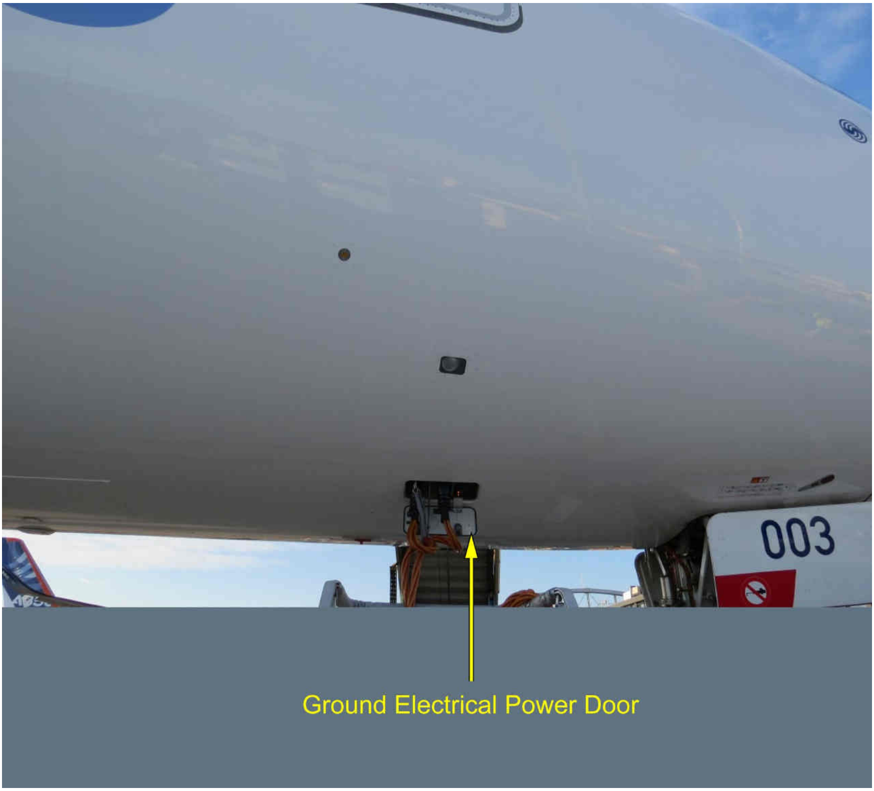
HYDRAULIC LINES AND ELECTRICAL WIRES.. CHECK CONDITION


Hydraulic Lines and Electrical Wires

WATER DRAIN..CHECK CONDITION



GROUND ELECTRICAL POWER DOOR (IF NOT REQUIRED).. CLOSED



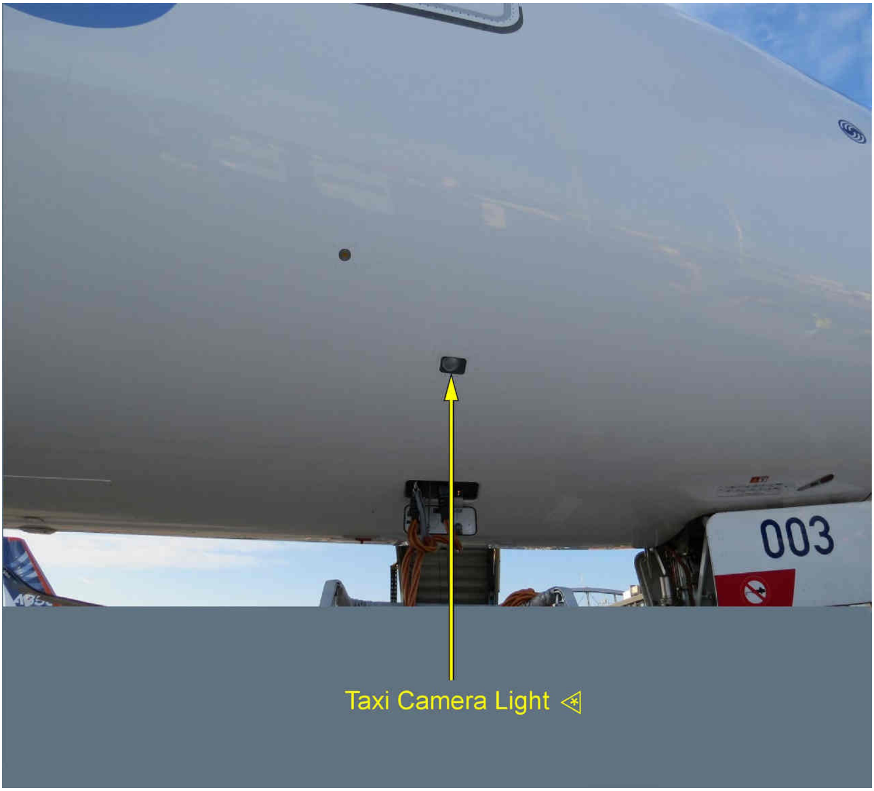
To return to the Exterior Walkaround schematic, *Refer to PRO-NOR-SOP-50 Exterior Walkaround - Schematic*.

EXTERIOR WALKAROUND - RH FWD FUSELAGE

Ident.: PRO-NOR-SOP-50-00020459.0001001 / 09 MAR 16
Applicable to: ALL

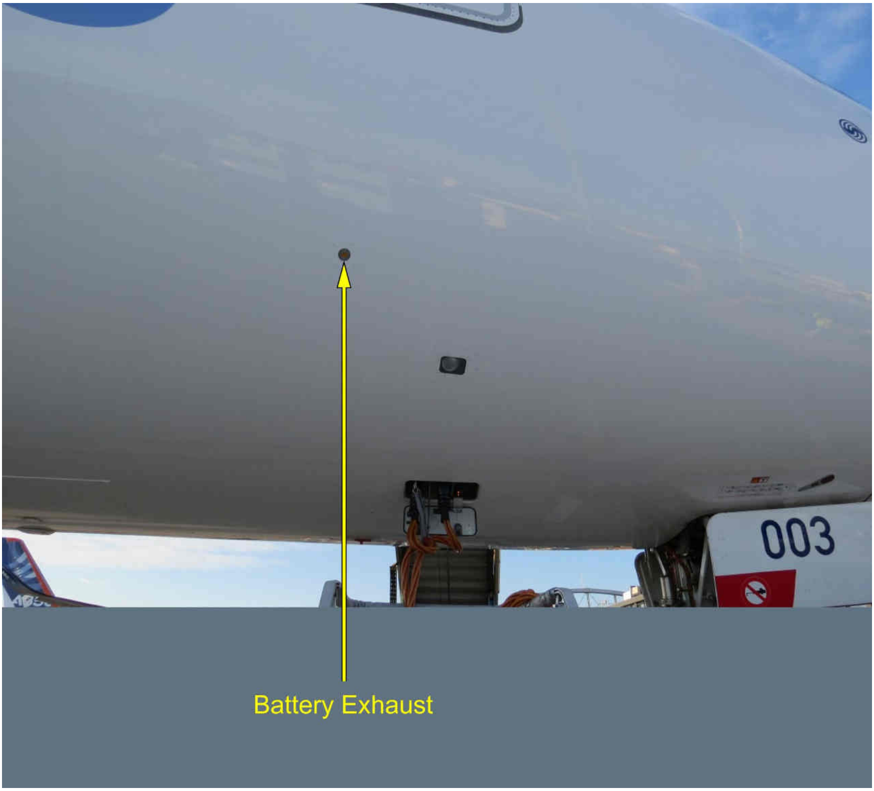
POSITION 4 - RH FWD FUSELAGE

TAXI CAMERA LIGHT ◁ ....CHECK CONDITION

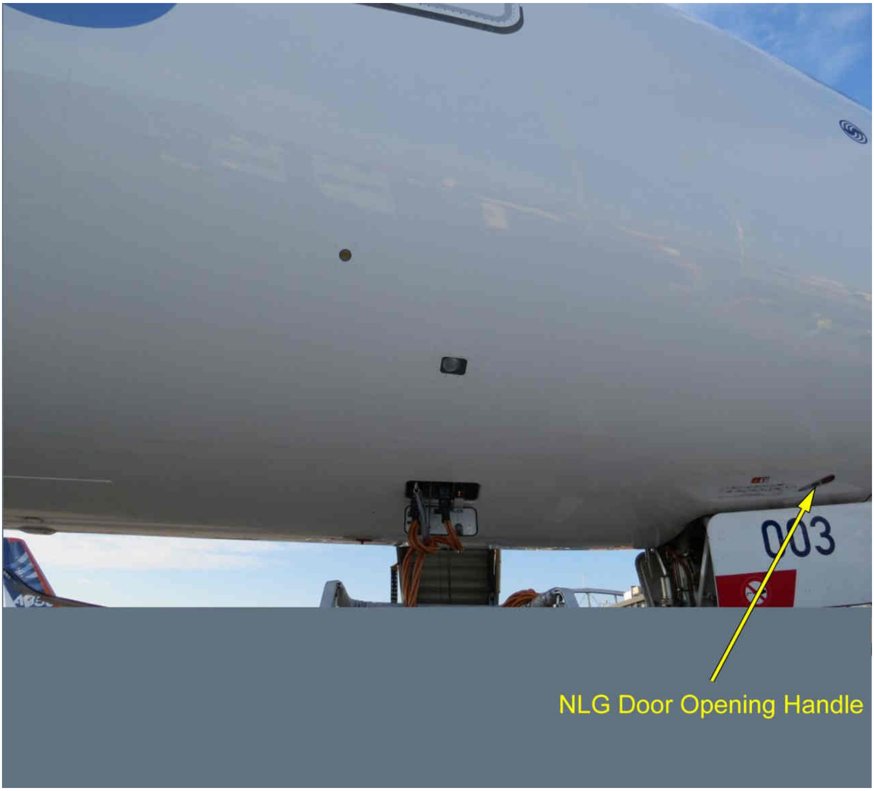


BATTERY EXHAUST..CHECK CONDITION

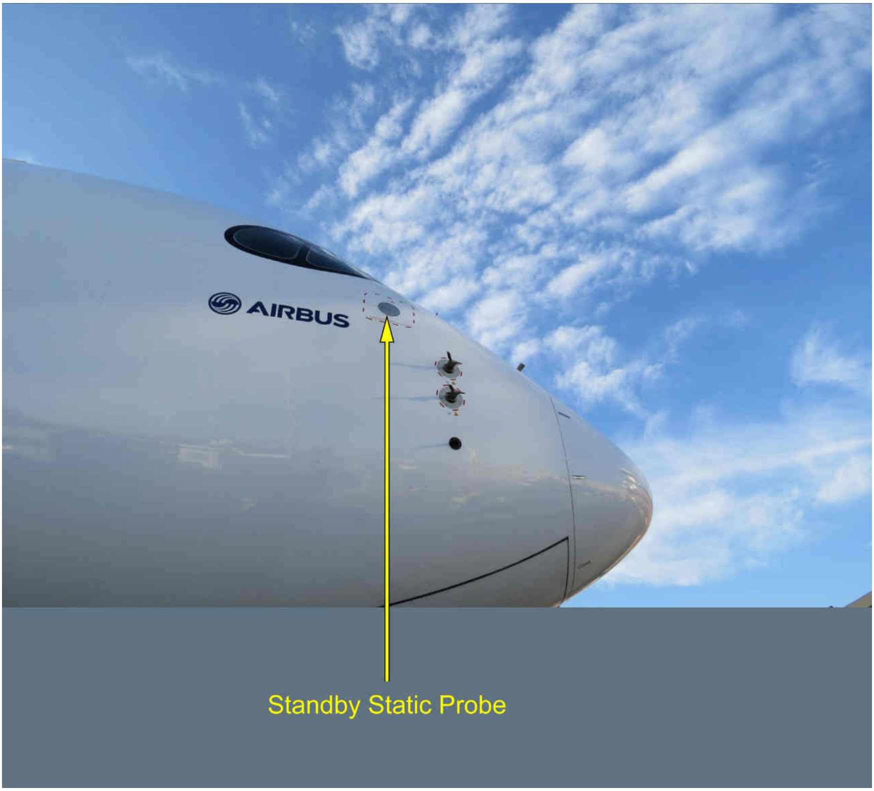
L2 *Check that there is no indication of battery discharge through the battery exhaust.*
With Li-Ion batteries ◁ , check the presence of the yellow disc on the battery exhaust.


Battery Exhaust
003

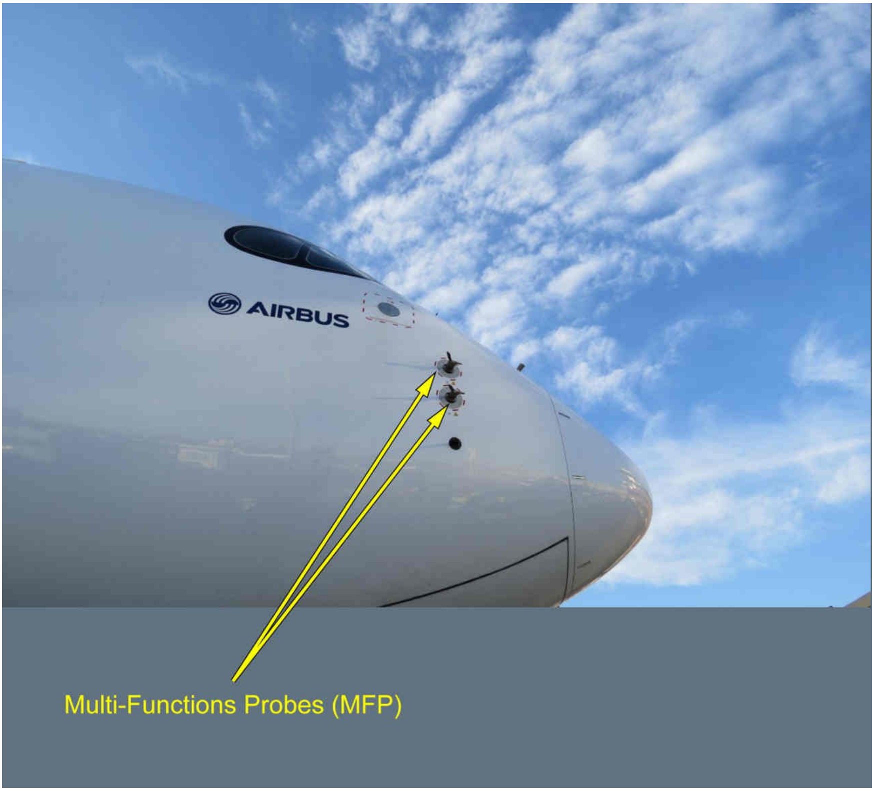
L1 NLG DOOR OPENING HANDLE..........STOWED



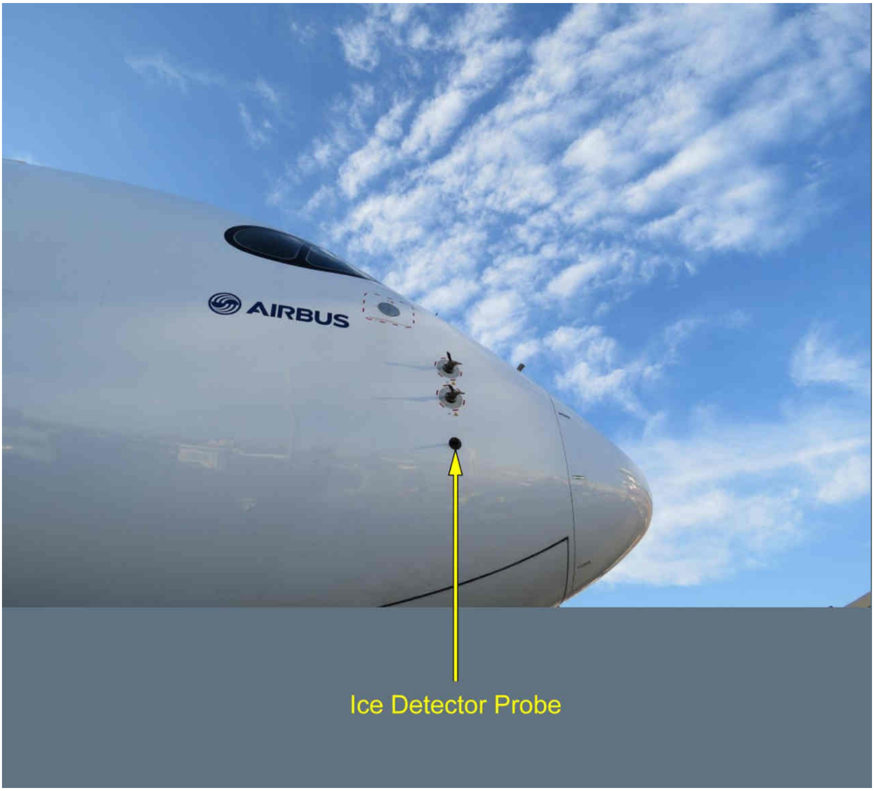
STANDBY STATIC PROBE..CLEAR


AIRBUS
Standby Static Probe

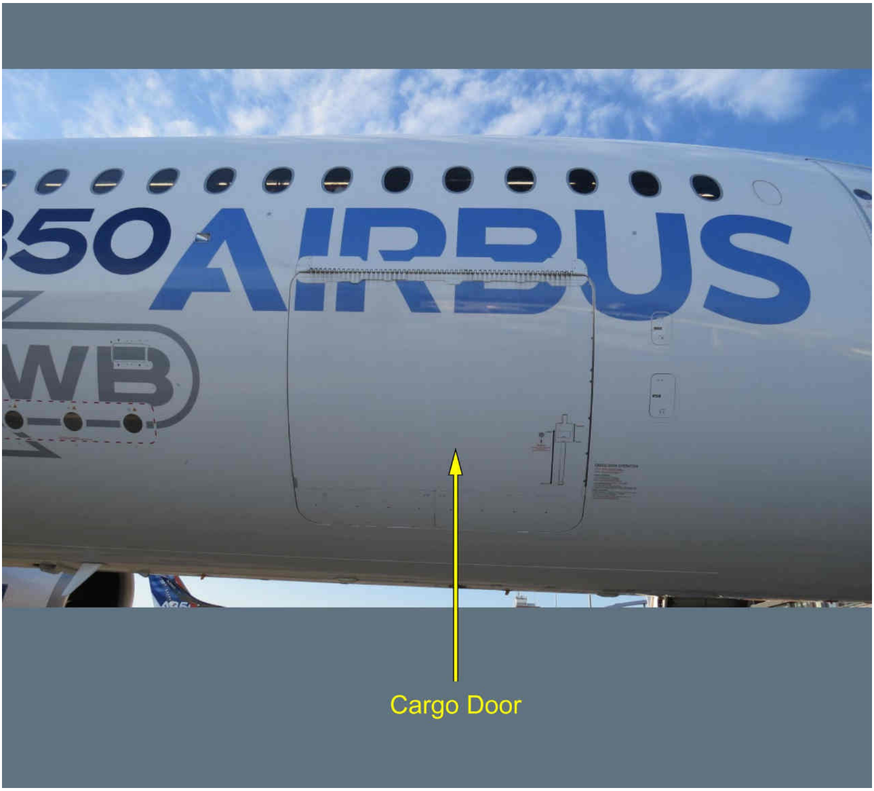
MULTI-FUNCTIONS PROBES (MFP)... CHECK CONDITION


AIRBUS
Multi-Functions Probes (MFP)

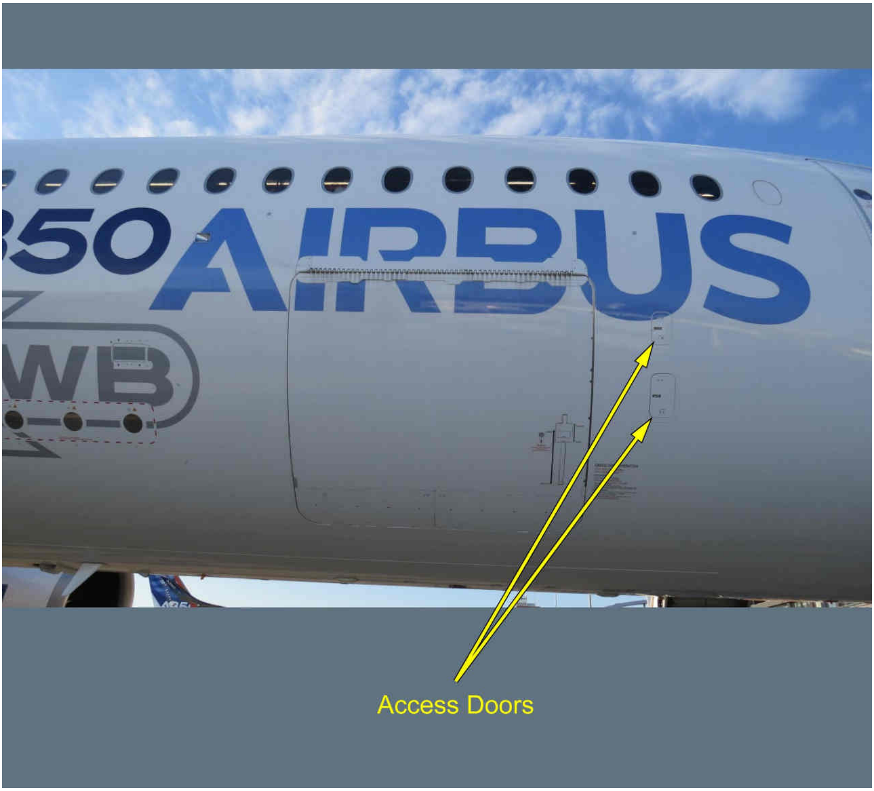
ICE DETECTOR PROBE...CHECK CONDITION


AIRBUS
Ice Detector Probe

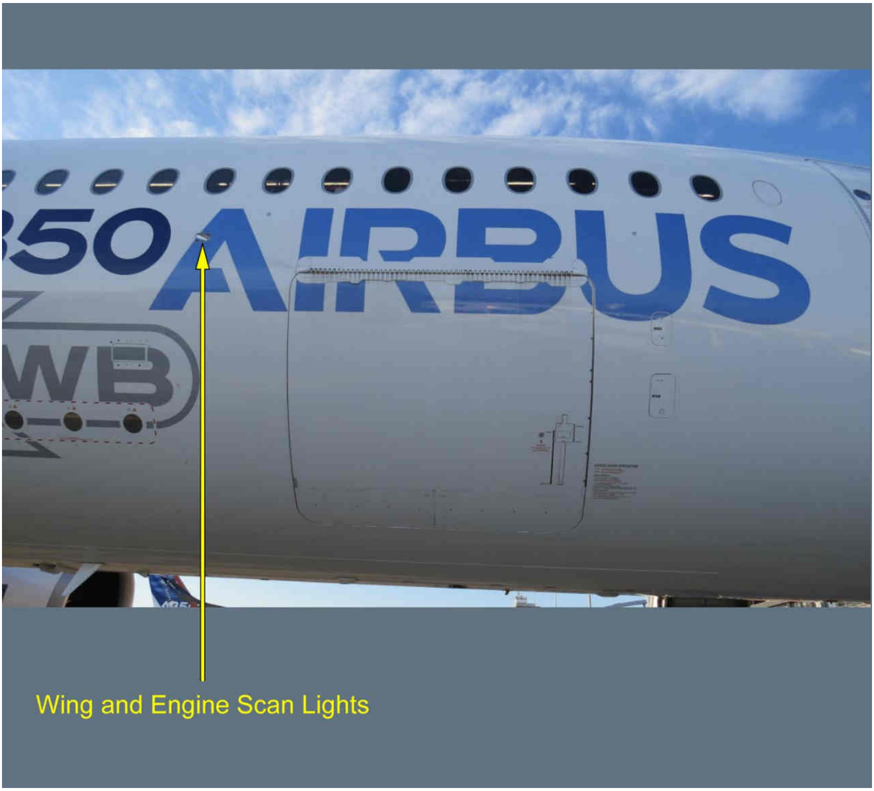
CARGO DOOR (IF NOT REQUIRED)..CLOSED



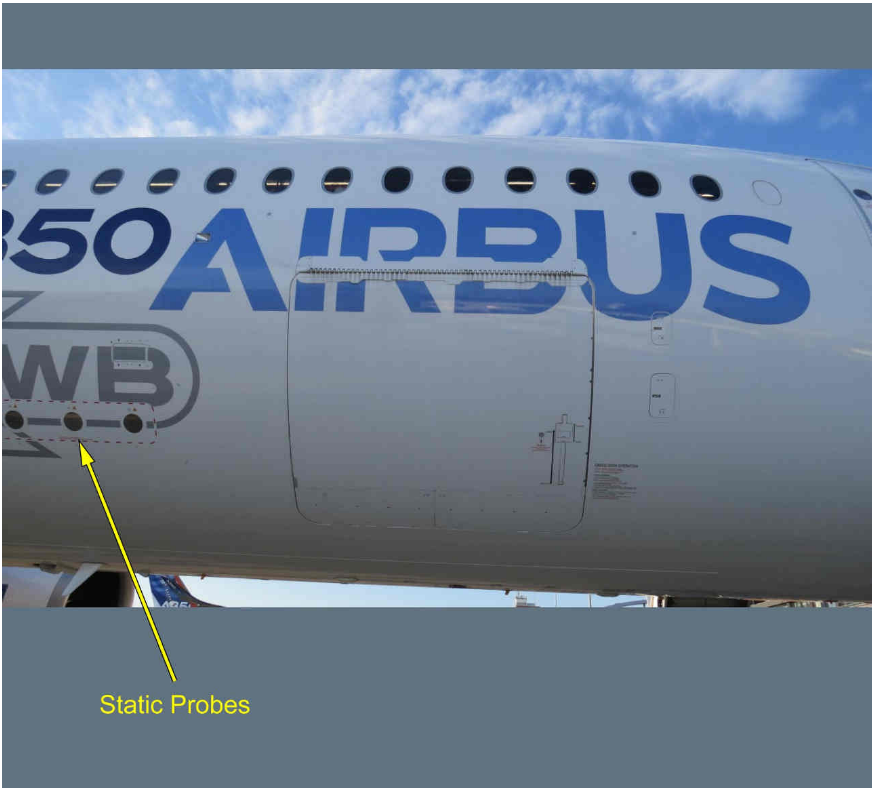
ACCESS DOORS (IF NOT REQUIRED)..CLOSED



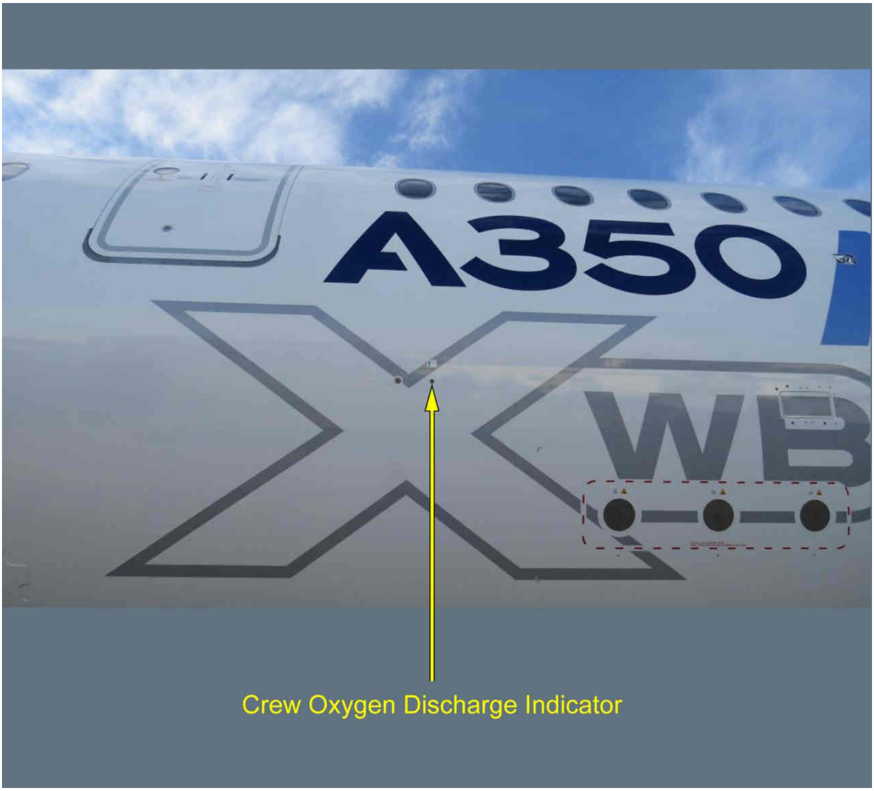
WING AND ENGINE SCAN LIGHTS...CHECK CONDITION


Wing and Engine Scan Lights

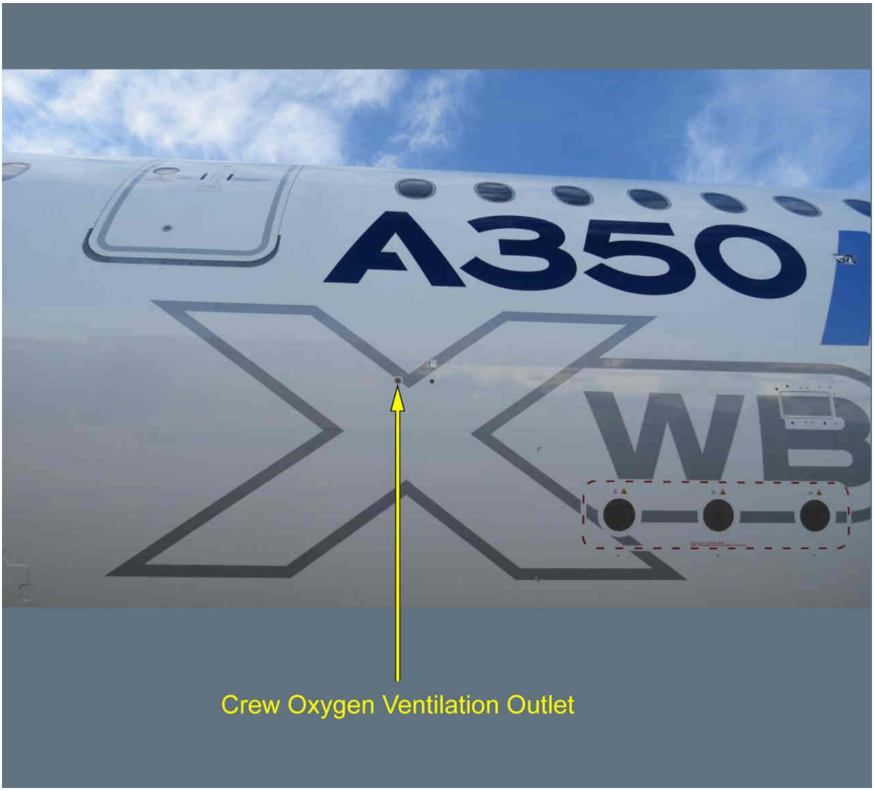
STATIC PROBES.. CLEAR



CREW OXYGEN DISCHARGE INDICATOR...GREEN


Crew Oxygen Discharge Indicator

CREW OXYGEN VENTILATION OUTLET..CHECK CONDITION



To return to the Exterior Walkaround schematic, *Refer to PRO-NOR-SOP-50 Exterior Walkaround - Schematic*.

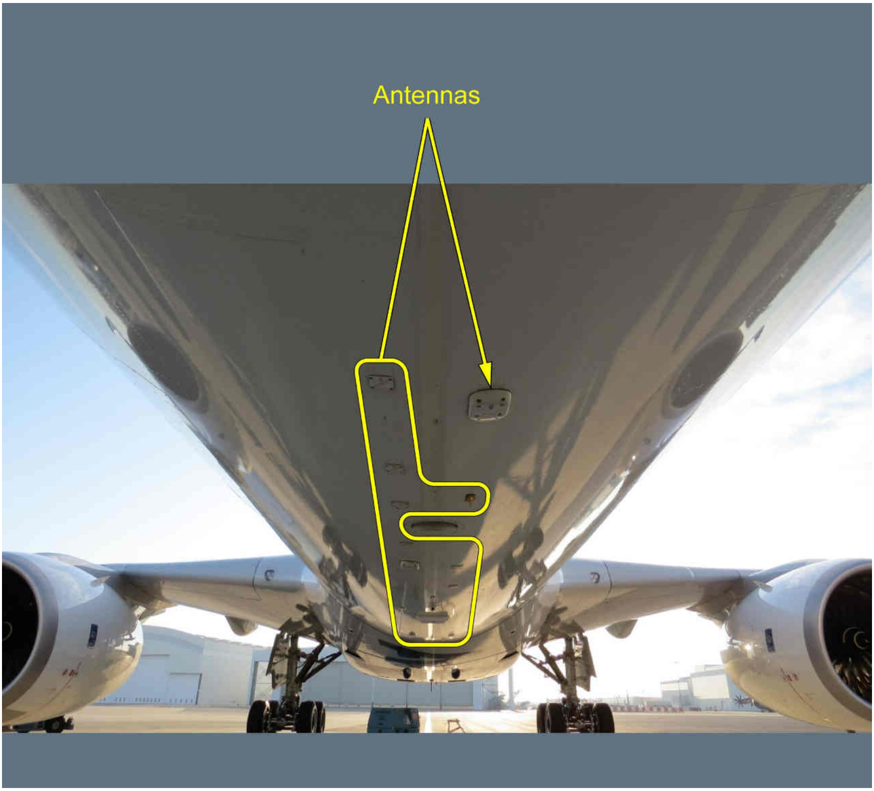
EXTERIOR WALKAROUND - LOWER CENTER FUSELAGE

Ident.: PRO-NOR-SOP-50-00020460.0001001 / 08 JUL 19
Applicable to: ALL

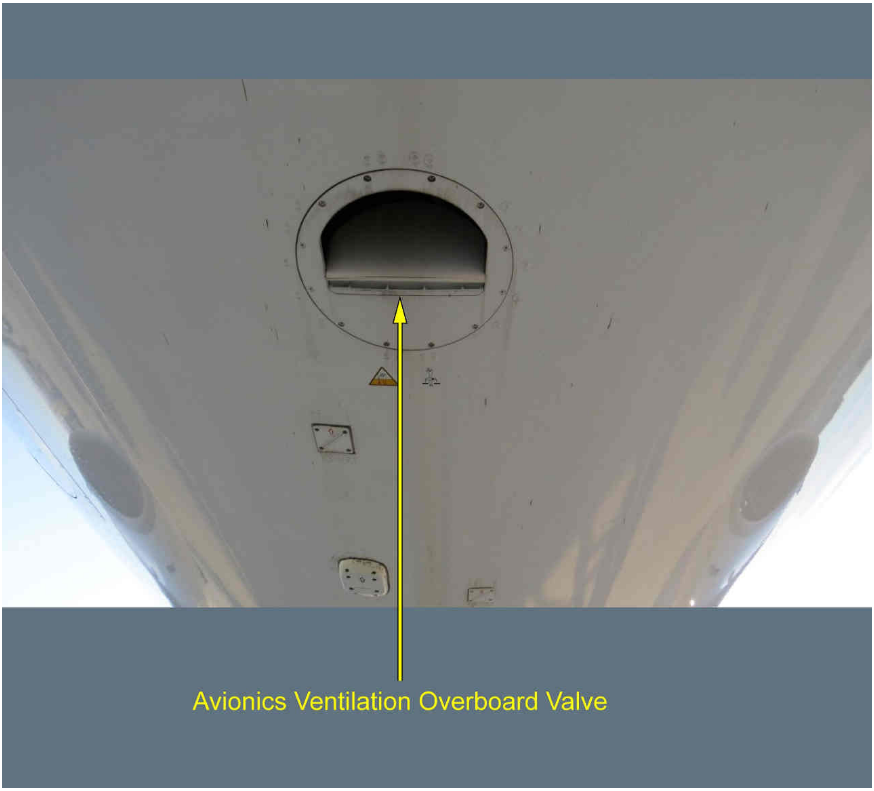
POSITION 5 - LOWER CENTER FUSELAGE

ANTENNAS ....CHECK CONDITION

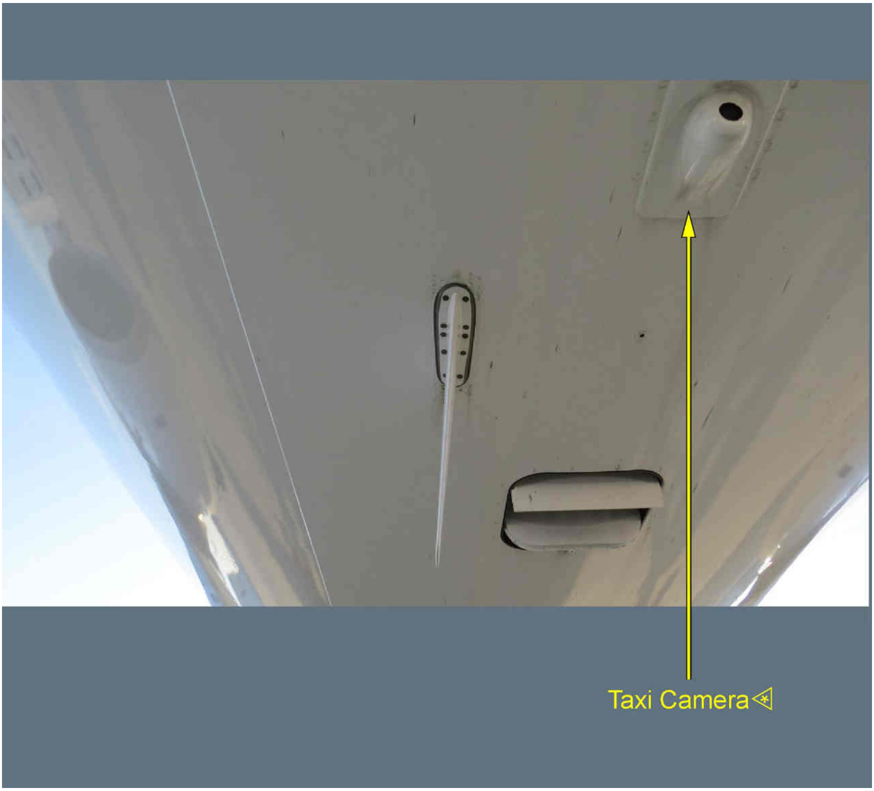
L2 *Check that the RA antennas are clean.*


Antennas

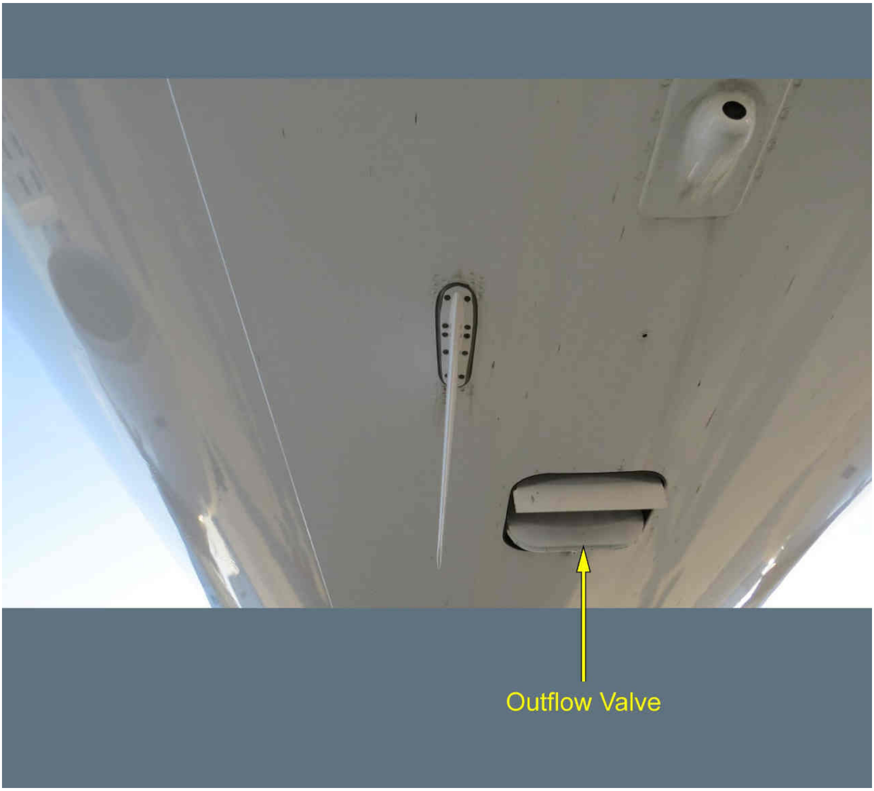
L1 AVIONICS VENTILATION OVERBOARD VALVE...CHECK CONDITION


Avionics Ventilation Overboard Valve

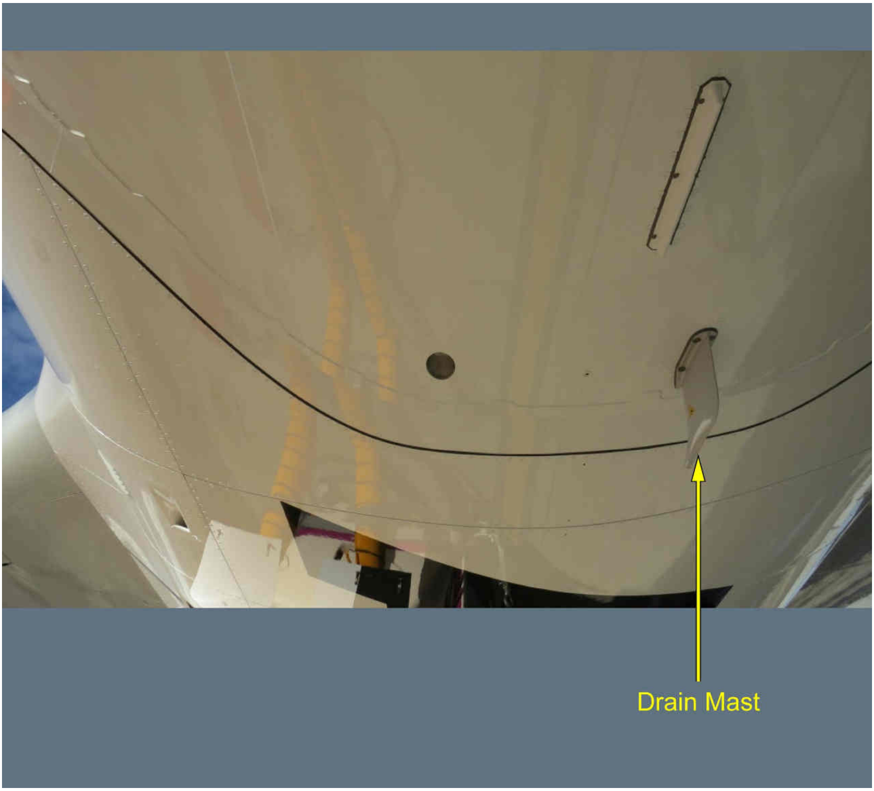
TAXI CAMERA ◁ ....CHECK CONDITION



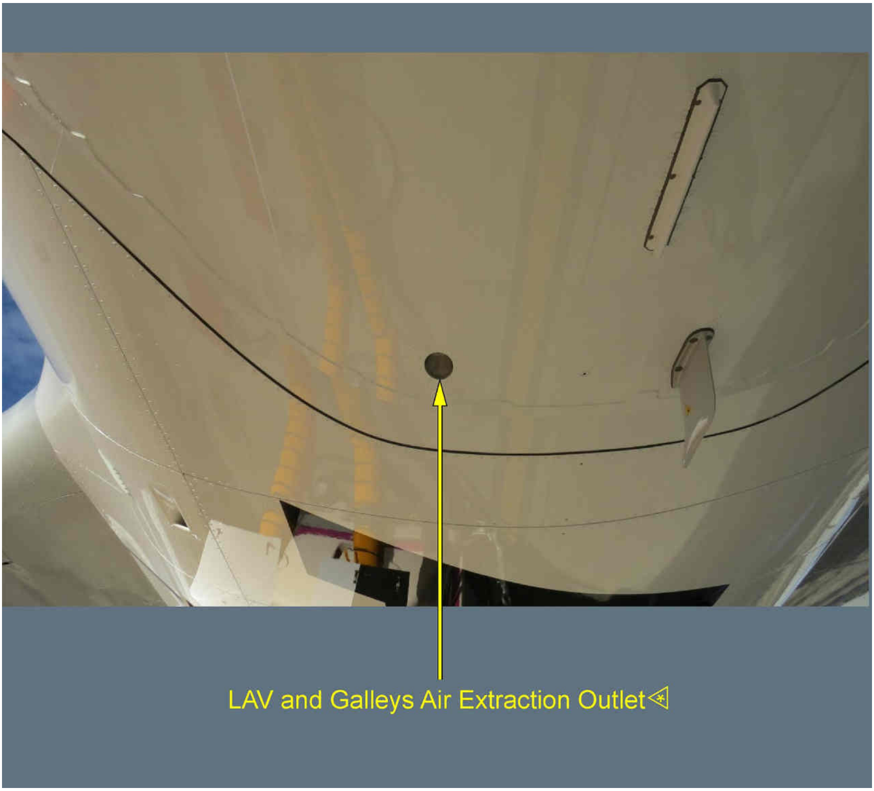
OUTFLOW VALVE...CHECK CONDITION



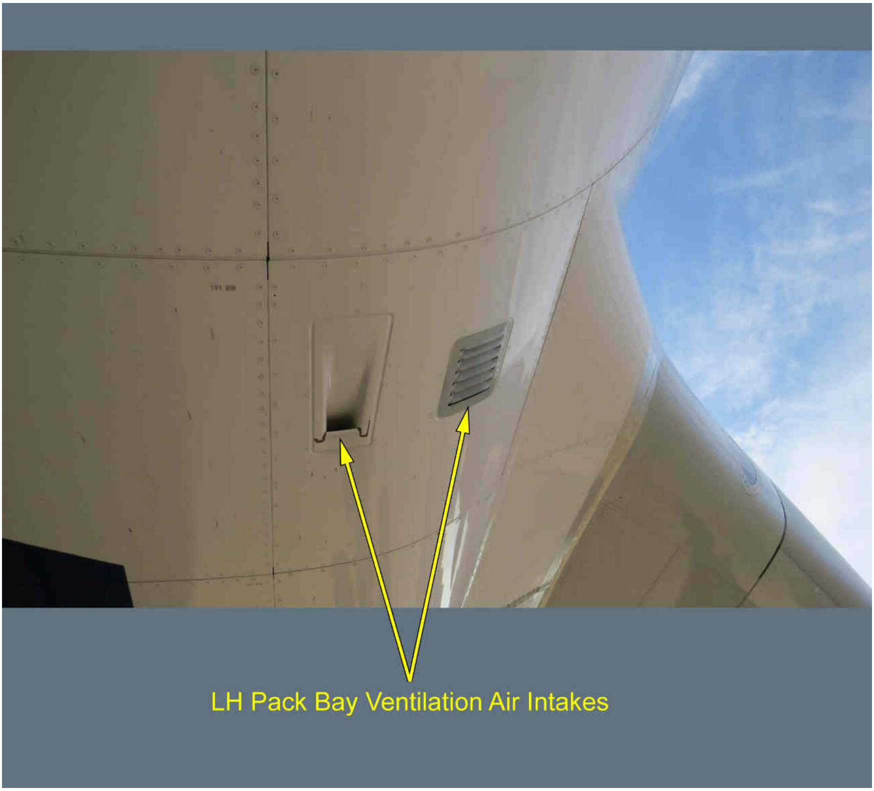
DRAIN MAST...CHECK CONDITION



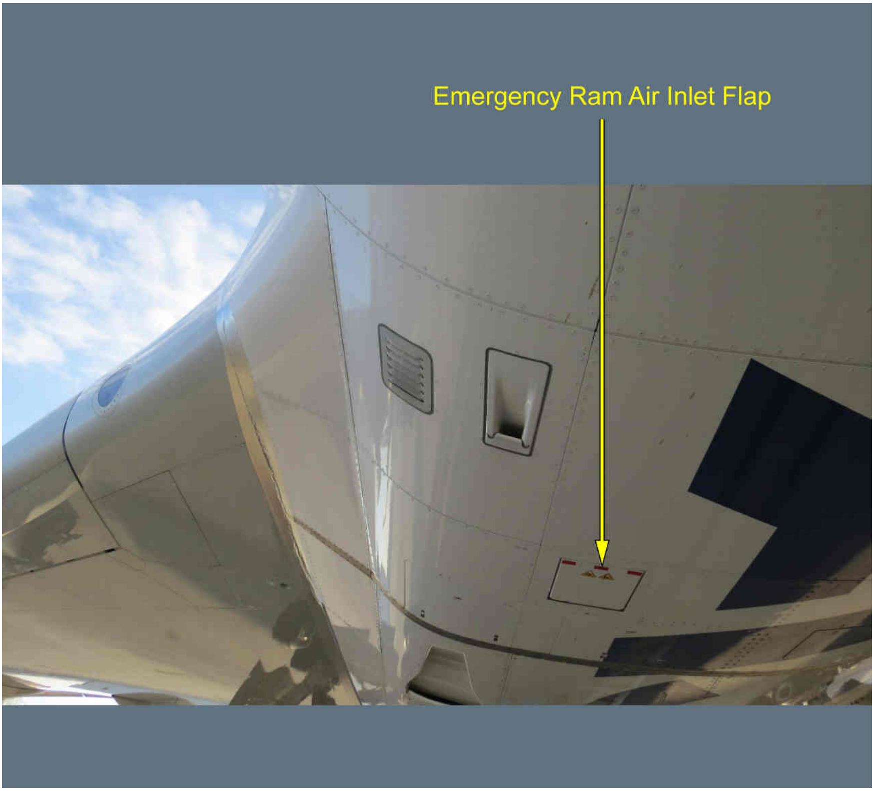
LAV AND GALLEYS AIR EXTRACTION OUTLET ◁ .... CHECK CONDITION


LAV and Galleys Air Extraction Outlet◁

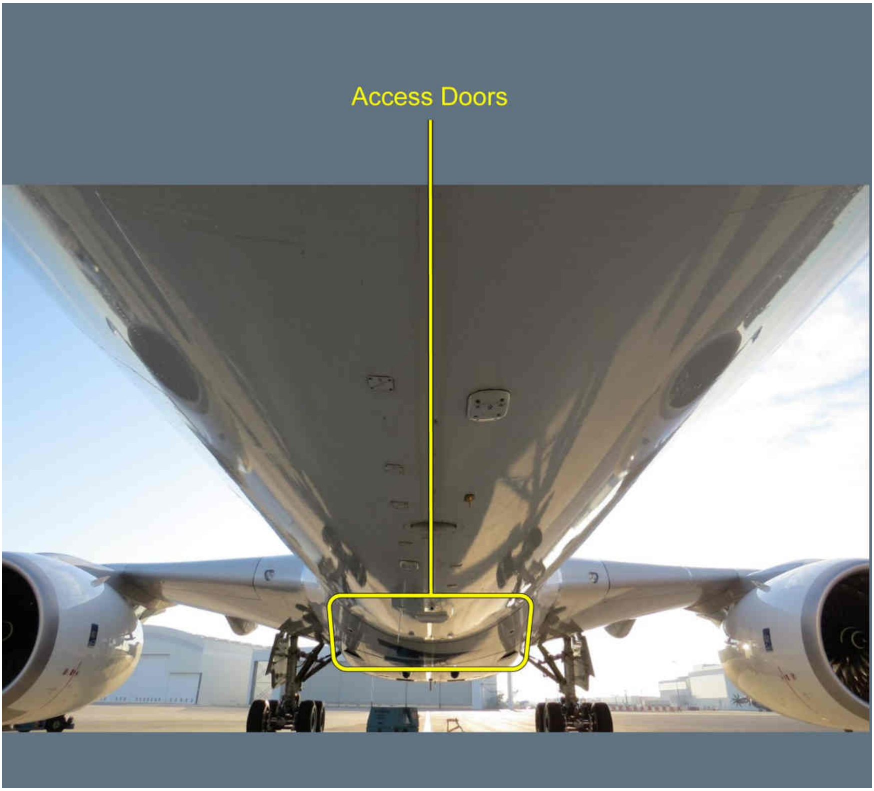
PACK BAY VENTILATION AIR INTAKES (4)..CLEAR


LH Pack Bay Ventilation Air Intakes

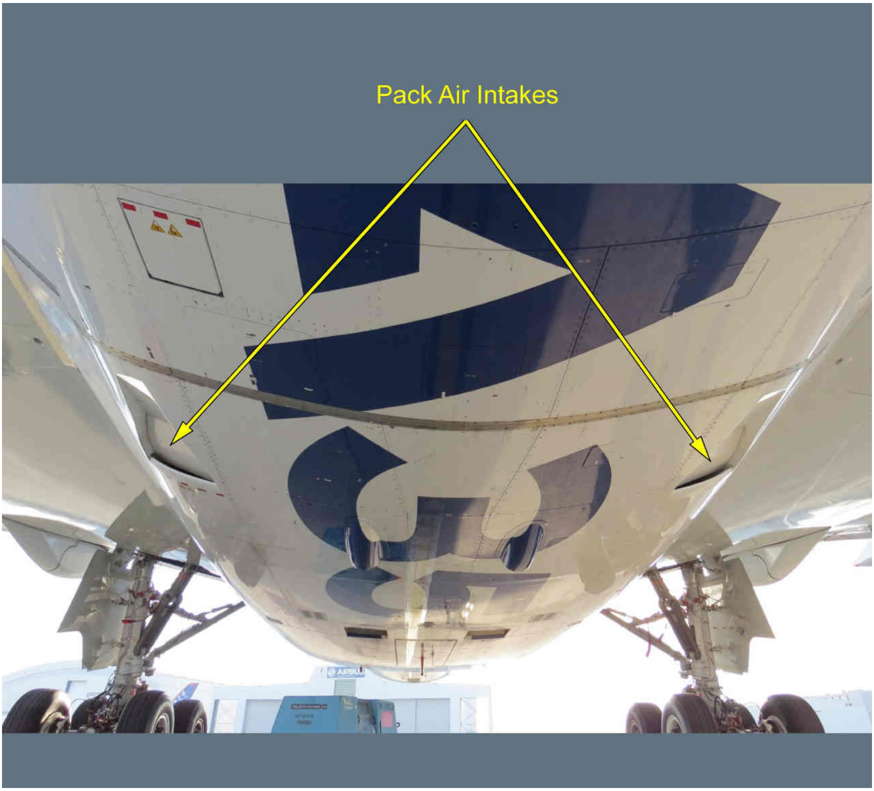
EMERGENCY RAM AIR INLET FLAP.. CHECK CONDITION


Emergency Ram Air Inlet Flap

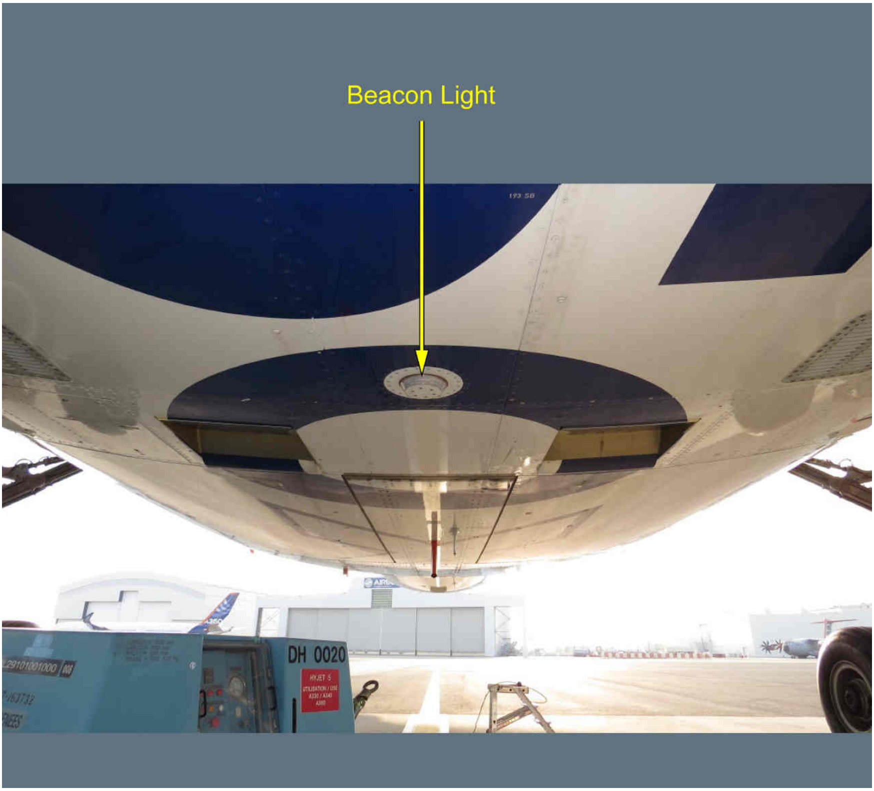
ACCESS DOORS (IF NOT REQUIRED)..CLOSED



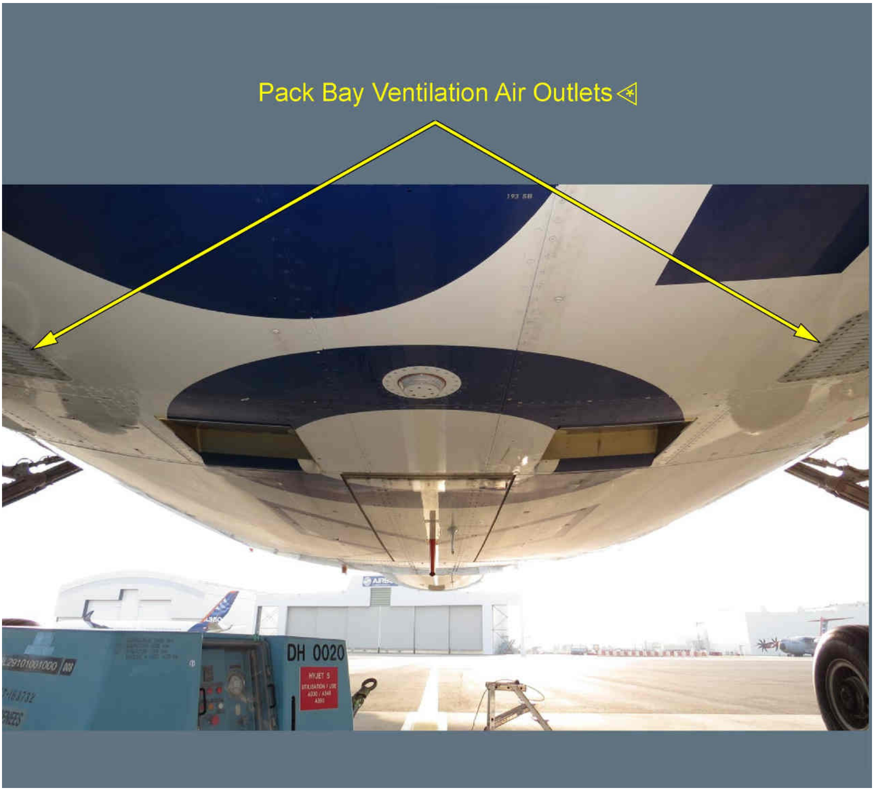
PACK AIR INTAKES (2)...CLEAR



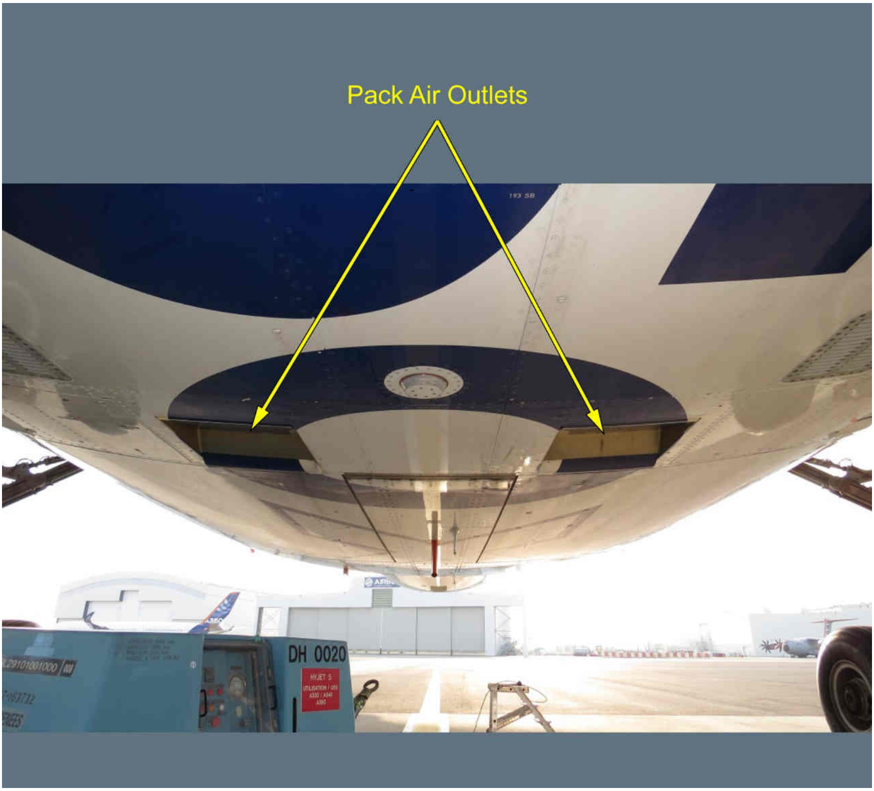
BEACON LIGHT.. CHECK CONDITION



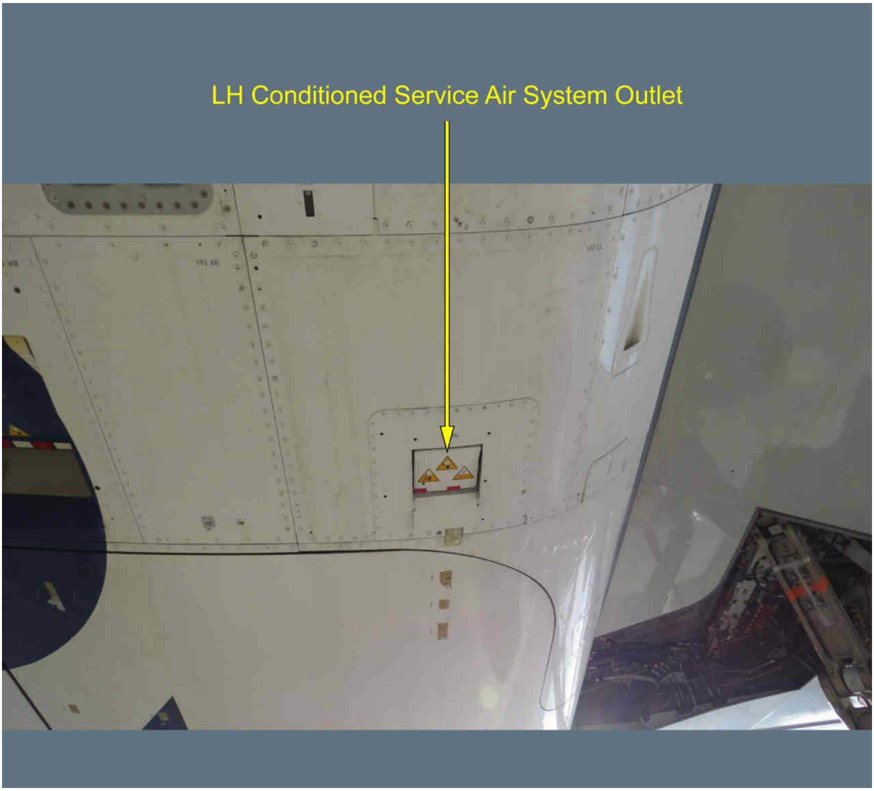
PACK BAY VENTILATION AIR OUTLETS ◁ (2).. CLEAR


Pack Bay Ventilation Air Outlets ◁
DH 0020

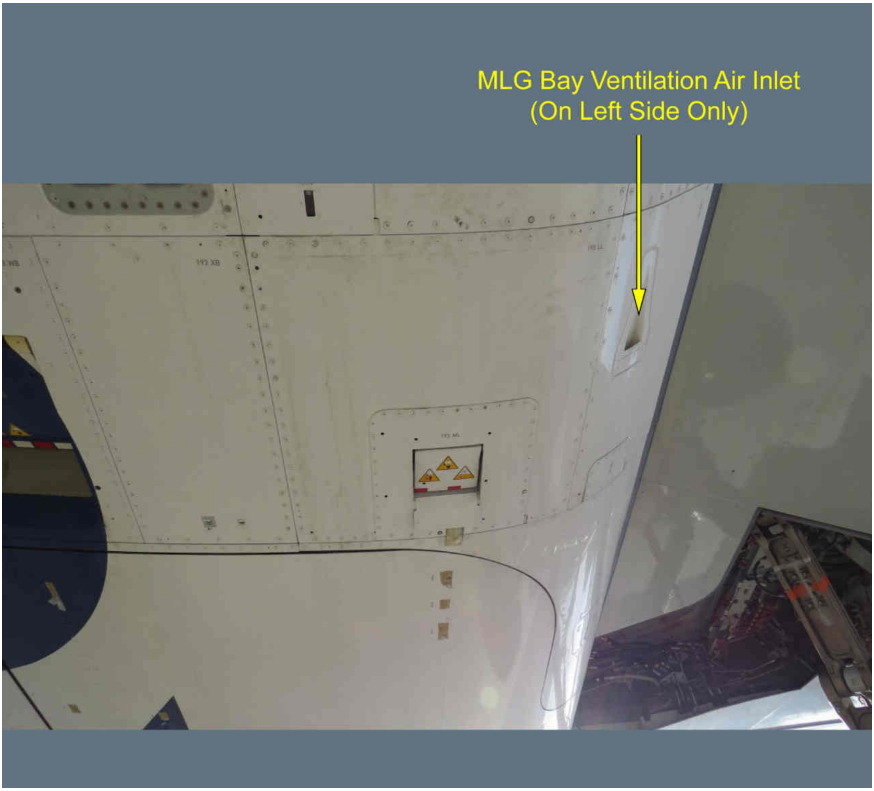
PACK AIR OUTLETS (2)..CLEAR



CONDITIONED SERVICE AIR SYSTEM OUTLETS (2)..CLEAR


LH Conditioned Service Air System Outlet

MLG BAY VENTILATION AIR INLET (ON LEFT SIDE ONLY)..CLEAR



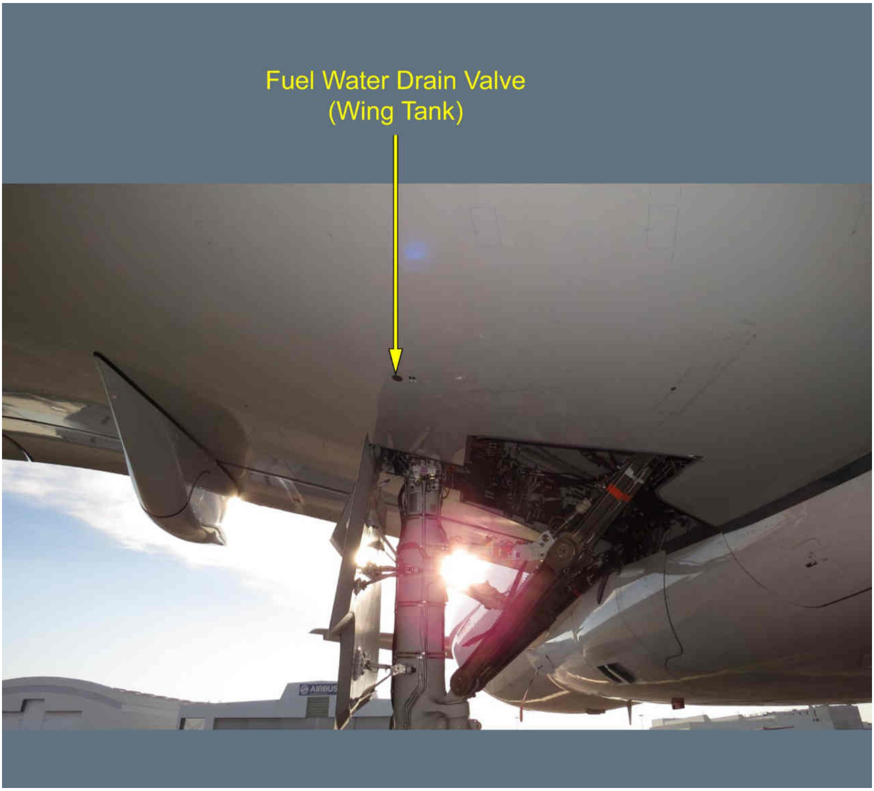
To return to the Exterior Walkaround schematic, *Refer to PRO-NOR-SOP-50 Exterior Walkaround - Schematic*.

EXTERIOR WALKAROUND - RH CENTER WING

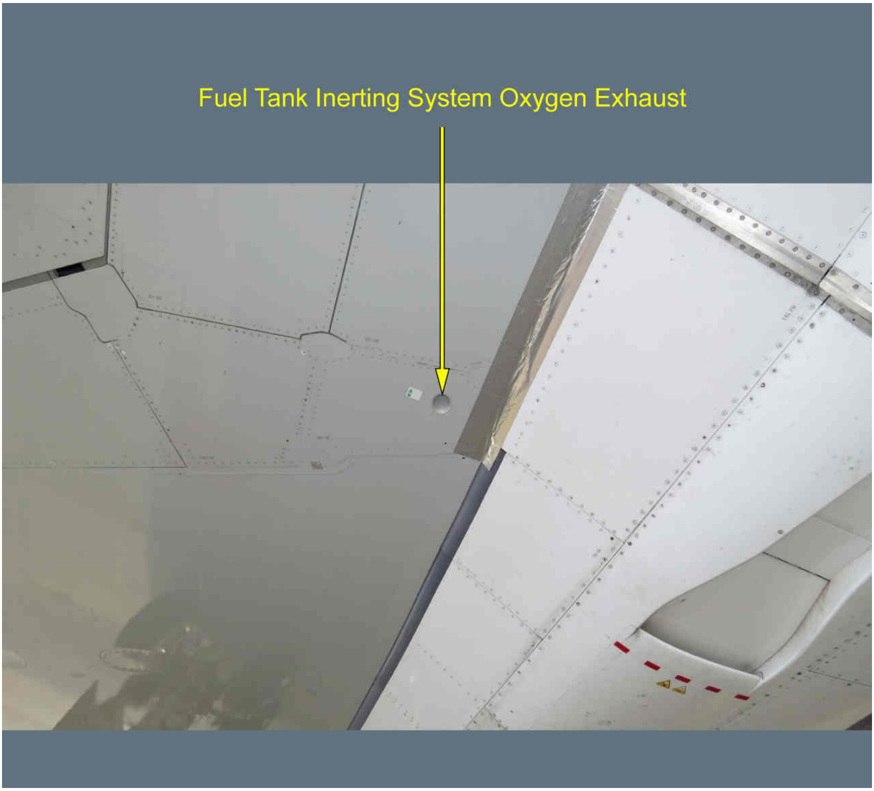
Ident.: PRO-NOR-SOP-50-00020461.0001001 / 03 MAY 17
Applicable to: ALL

POSITION 6 - RH CENTER WING

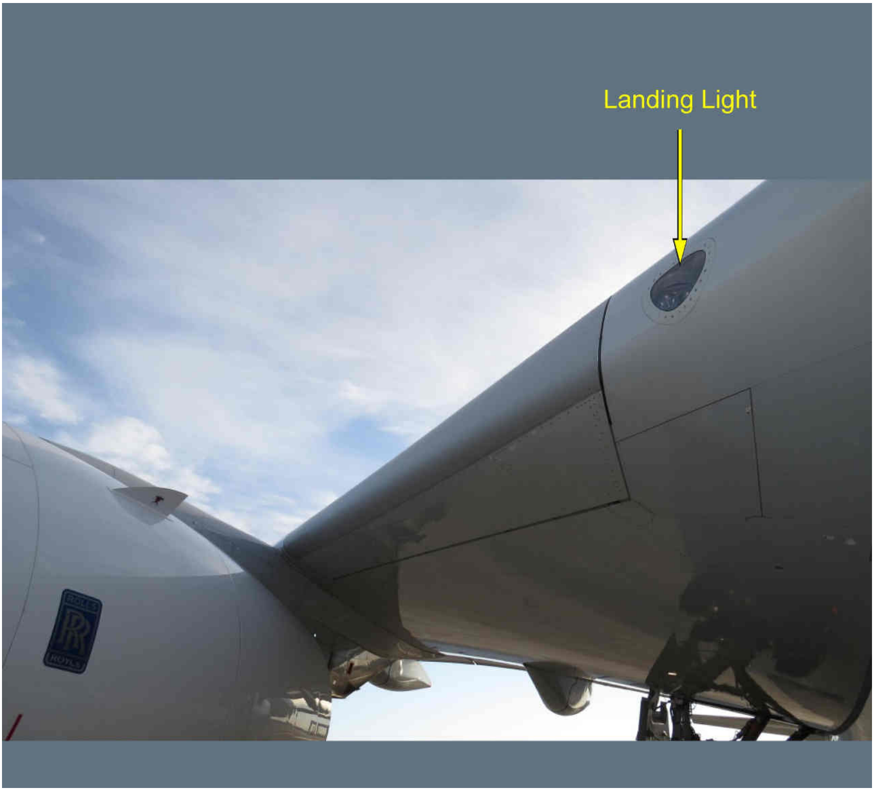
FUEL WATER DRAIN VALVE (WING TANK) ....NO LEAK


Fuel Water Drain Valve
(Wing Tank)

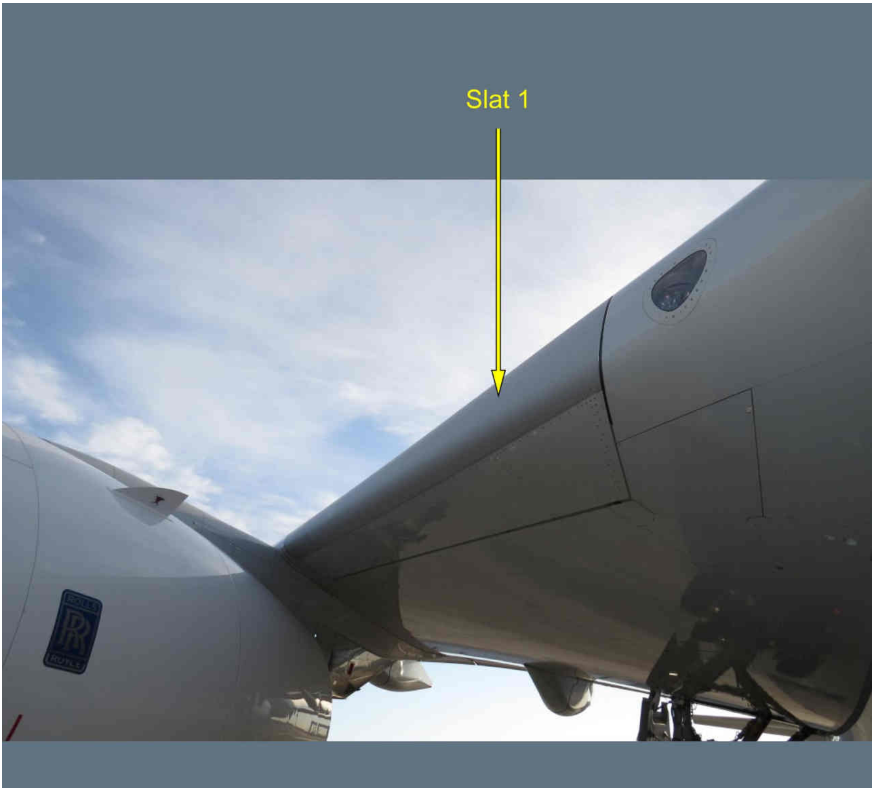
FUEL TANK INERTING SYSTEM OXYGEN EXHAUST ....CHECK CONDITION


Fuel Tank Inerting System Oxygen Exhaust

LANDING LIGHT..CHECK CONDITION



SLAT 1 .... CHECK CONDITION



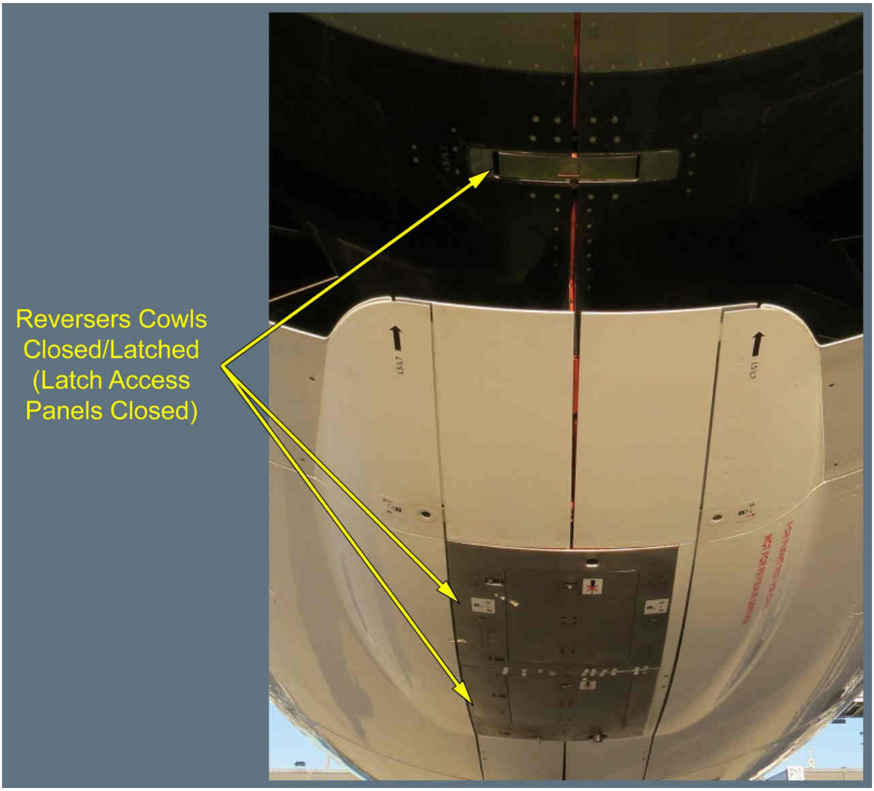
To return to the Exterior Walkaround schematic, *Refer to PRO-NOR-SOP-50 Exterior Walkaround - Schematic*.

EXTERIOR WALKAROUND - ENG 2 LH SIDE

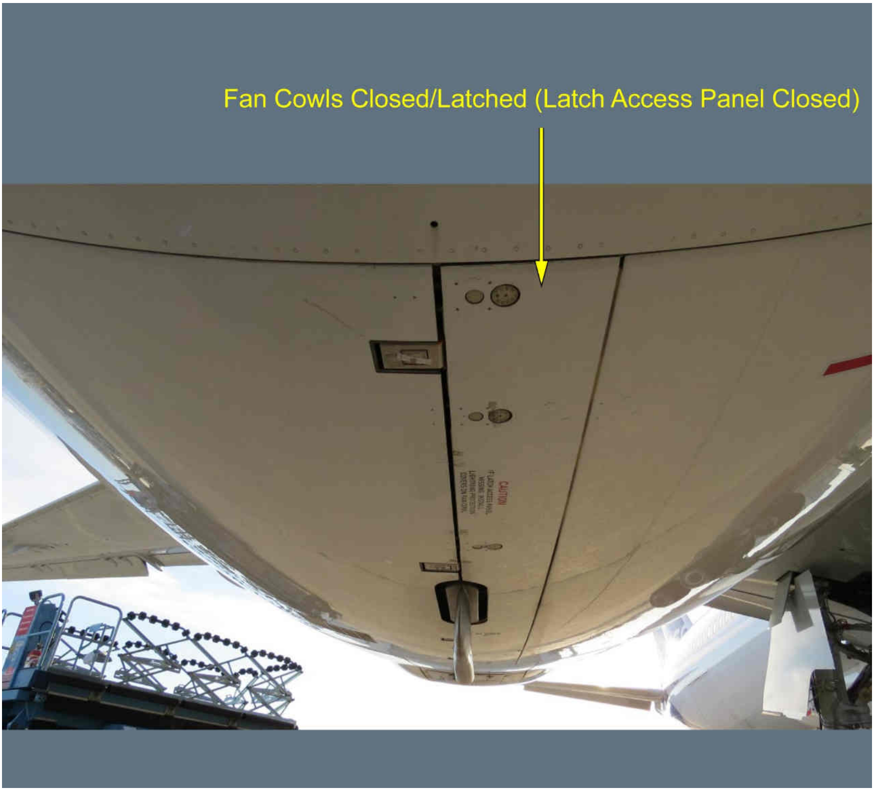
Ident.: PRO-NOR-SOP-50-00020462.0001001 / 04 MAR 20
Applicable to: ALL

POSITION 7 - ENG 2 LH SIDE

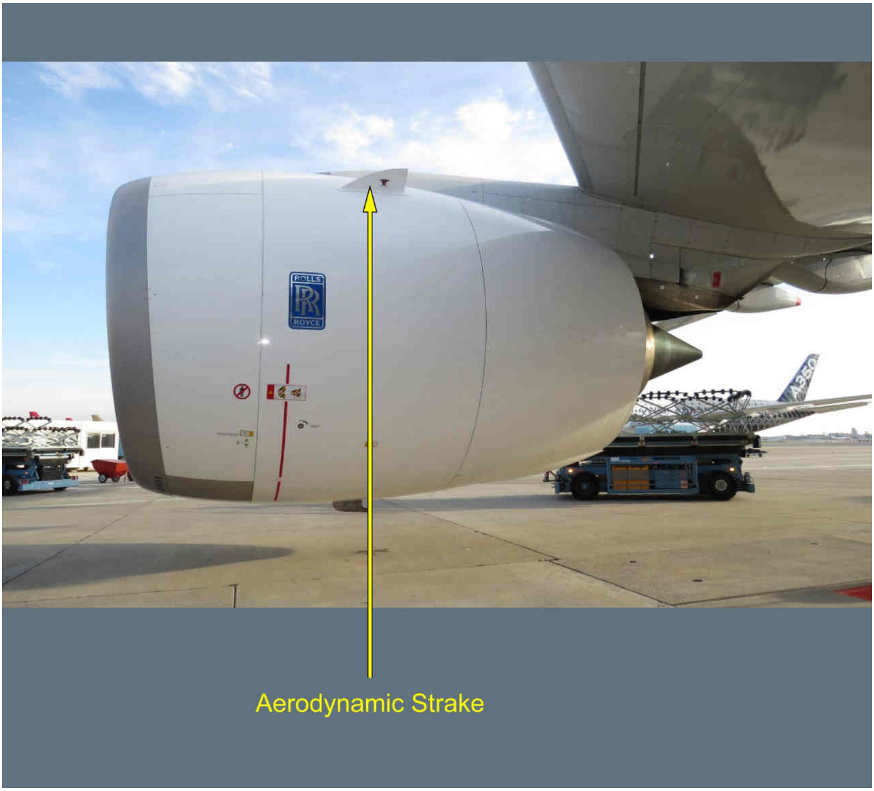
REVERSERS COWLS.. CLOSED/LATCHED


Reversers Cowls
Closed/Latched
(Latch Access
Panels Closed)

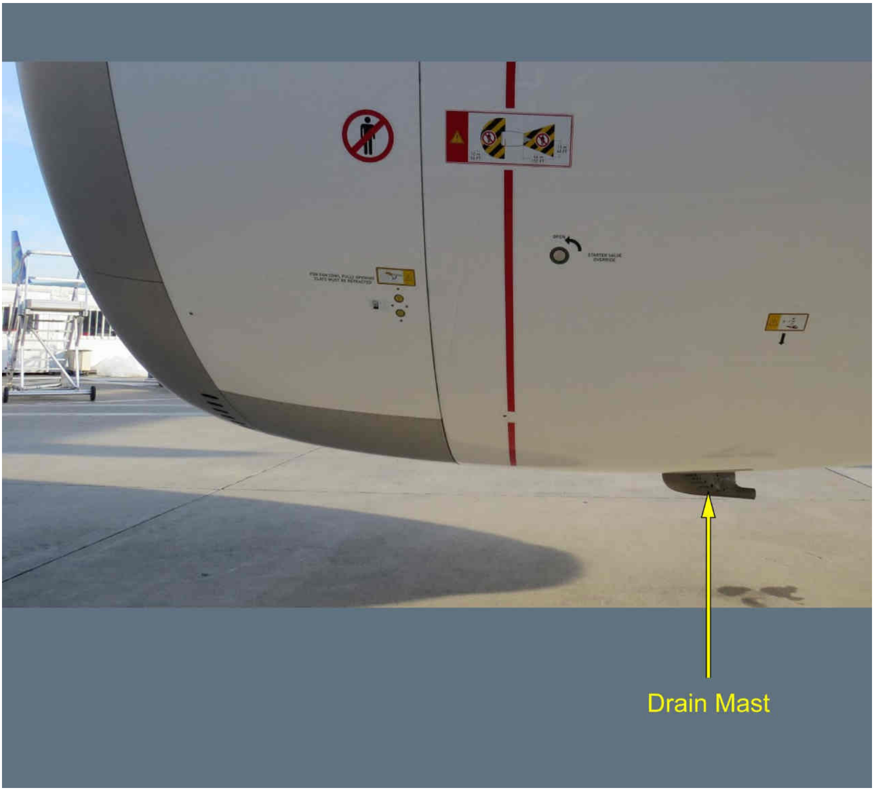
FAN COWLS..CLOSED/LATCHED/FLUSH/FLAG REMOVED


Fan Cowls Closed/Latched (Latch Access Panel Closed)

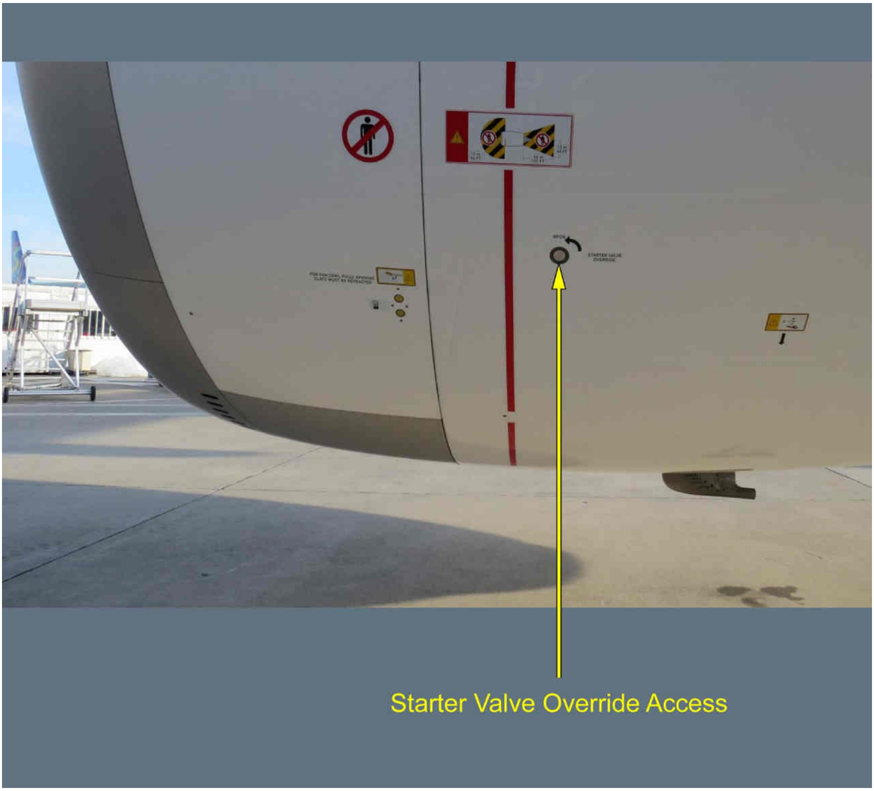
AERODYNAMIC STRAKE..CHECK CONDITION



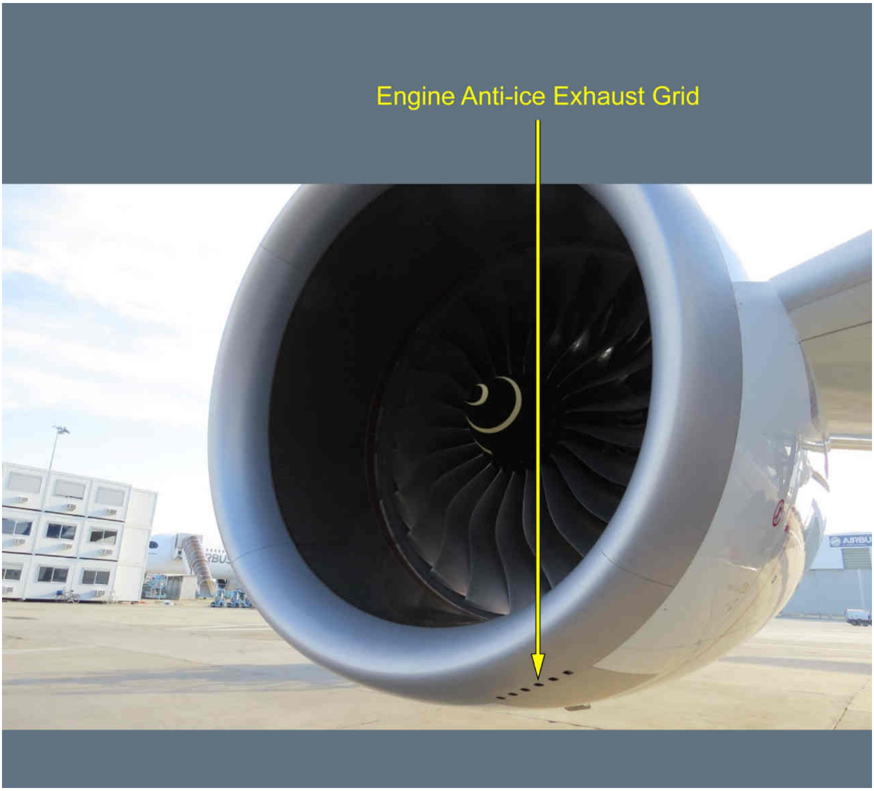
DRAIN MAST...CHECK CONDITION/NO LEAK



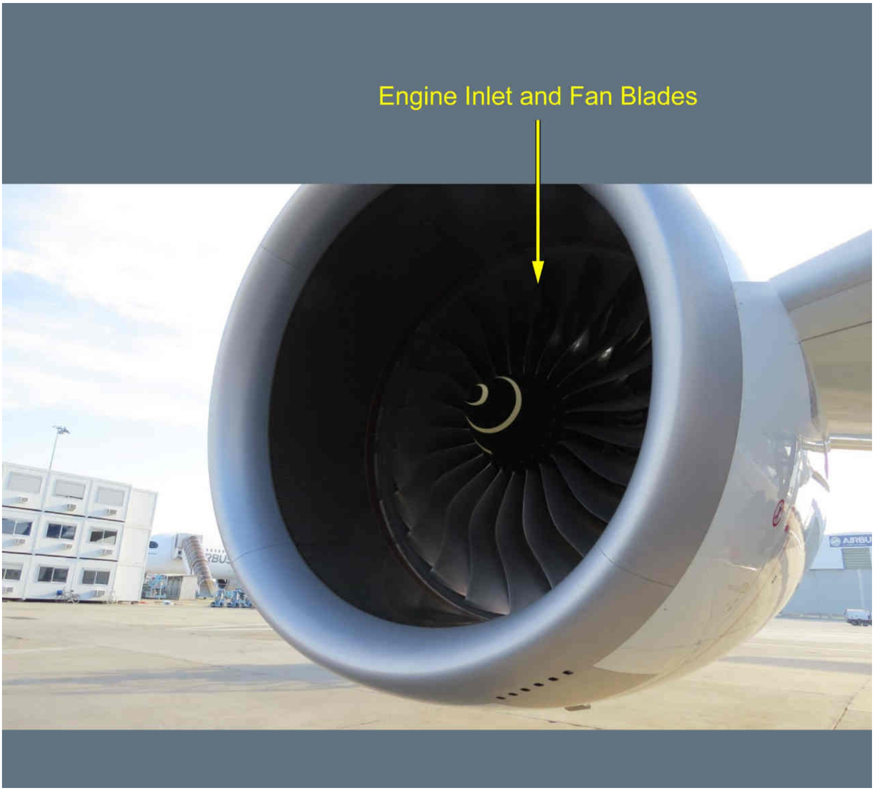
STARTER VALVE OVERRIDE ACCESS..CLOSED


Starter Valve Override Access

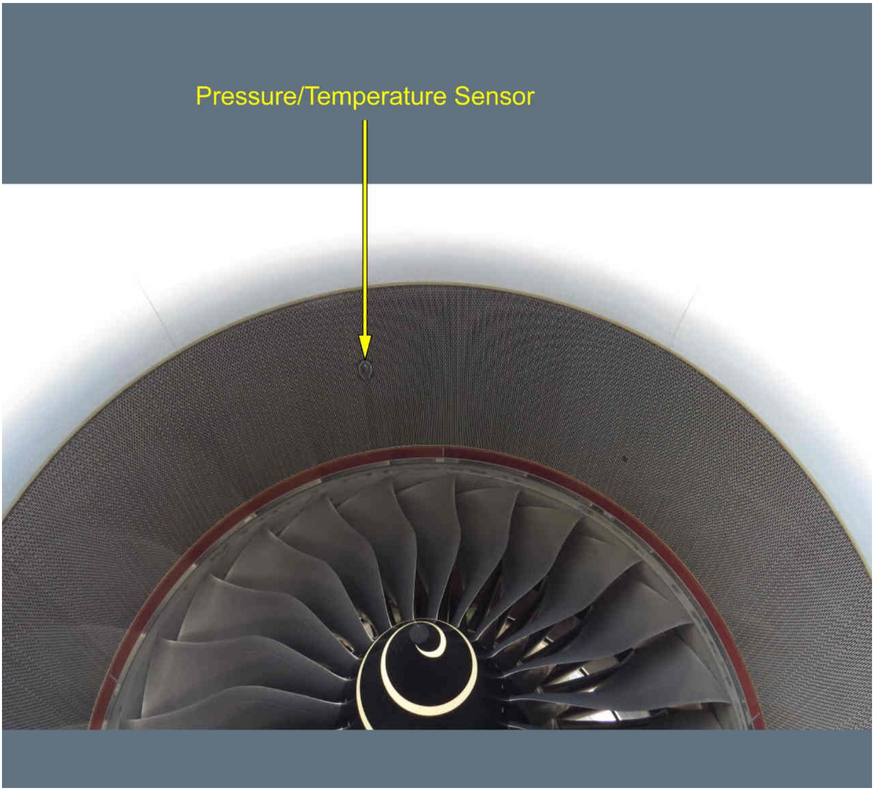
ENGINE ANTI-ICE EXHAUST GRID..CHECK CONDITION


Engine Anti-ice Exhaust Grid

ENGINE INLET AND FAN BLADES..CHECK CONDITION


Engine Inlet and Fan Blades

PRESSURE/TEMPERATURE SENSOR.. CHECK CONDITION



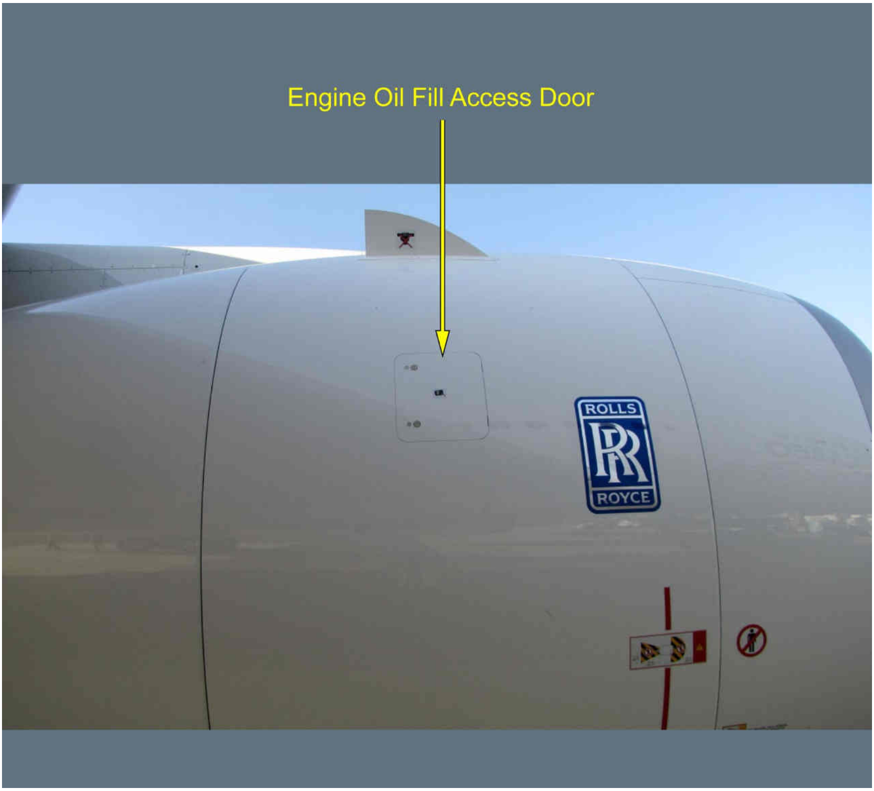
To return to the Exterior Walkaround schematic, *Refer to PRO-NOR-SOP-50 Exterior Walkaround - Schematic*.

EXTERIOR WALKAROUND - ENG 2 RH SIDE

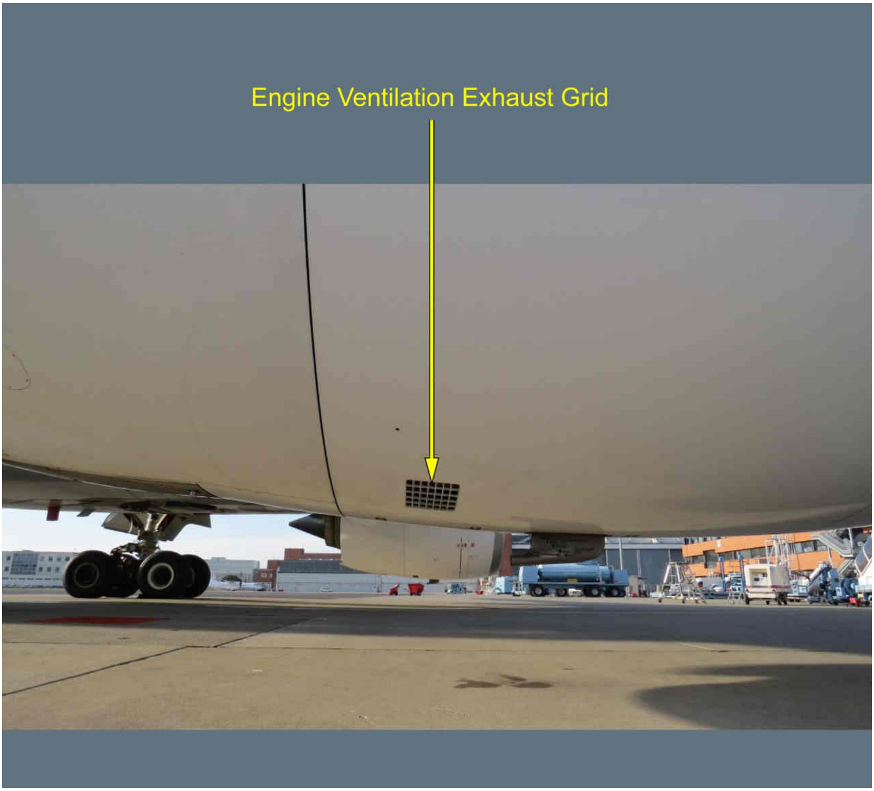
Ident.: PRO-NOR-SOP-50-00020463.0001001 / 06 MAY 15
Applicable to: ALL

POSITION 8 - ENG 2 RH SIDE

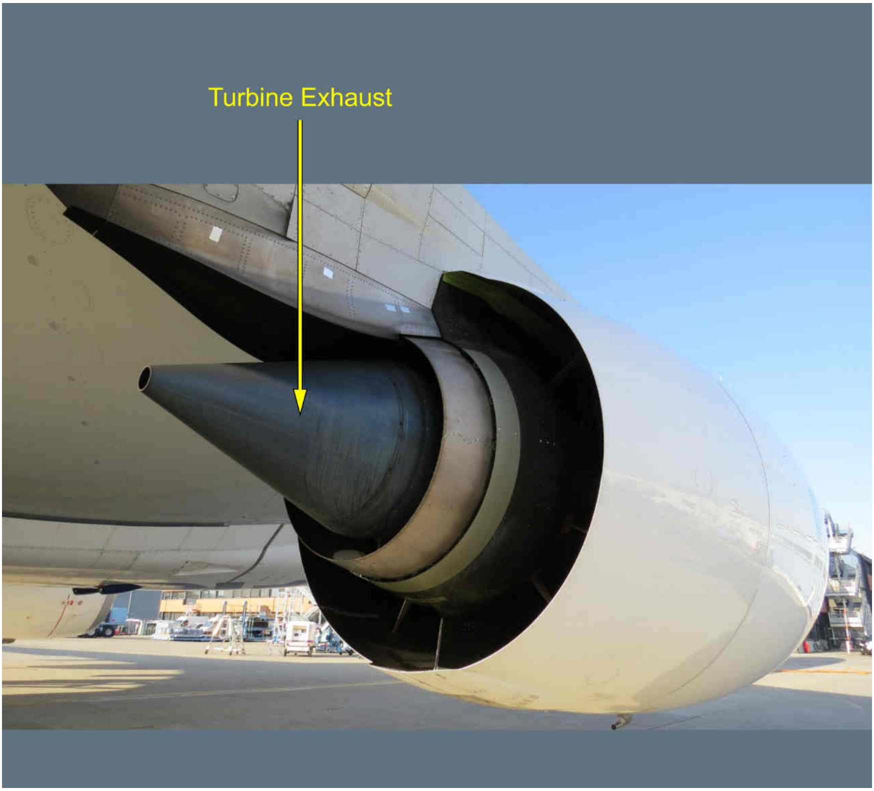
ENGINE OIL FILL ACCESS DOOR..CLOSED


Engine Oil Fill Access Door
ROLLS
ROYCE

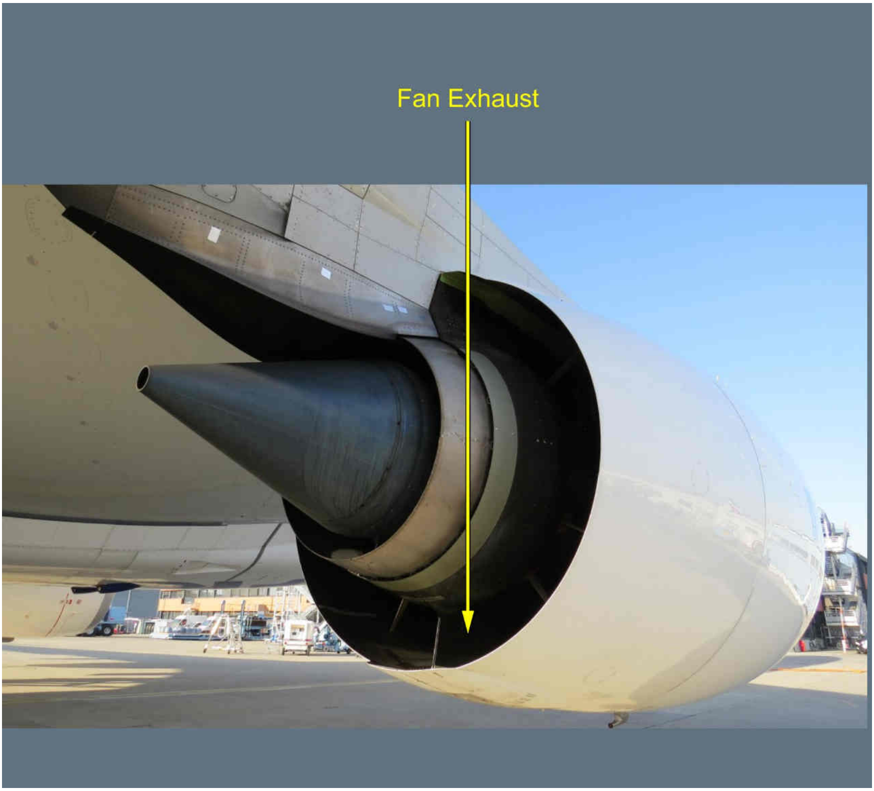
ENGINE VENTILATION EXHAUST GRID..CHECK CONDITION


Engine Ventilation Exhaust Grid

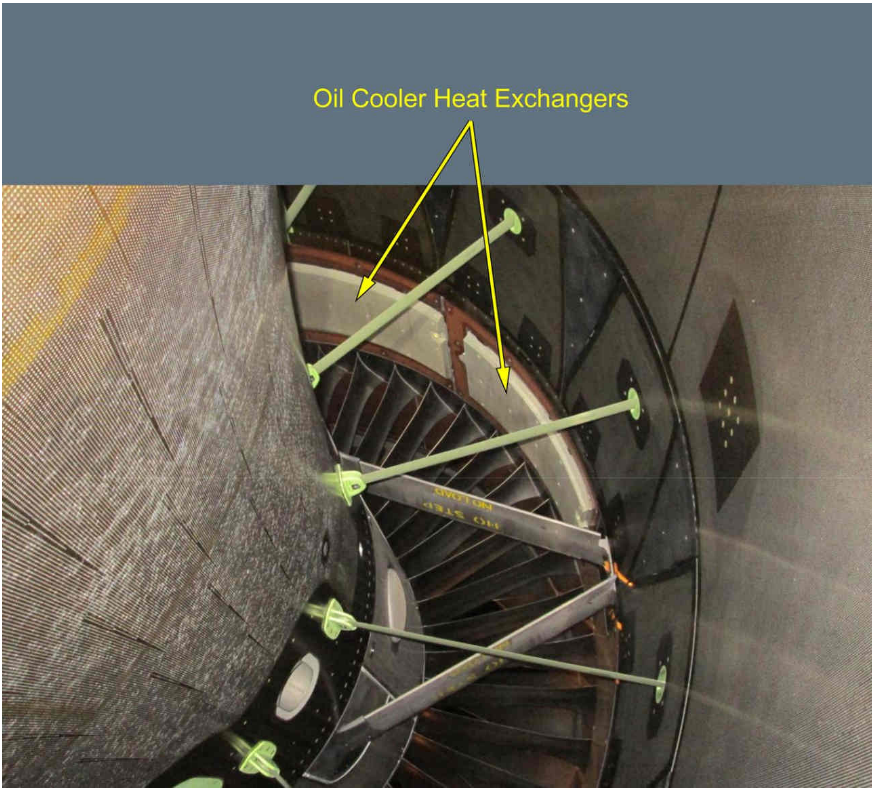
TURBINE EXHAUST.. CLEAR

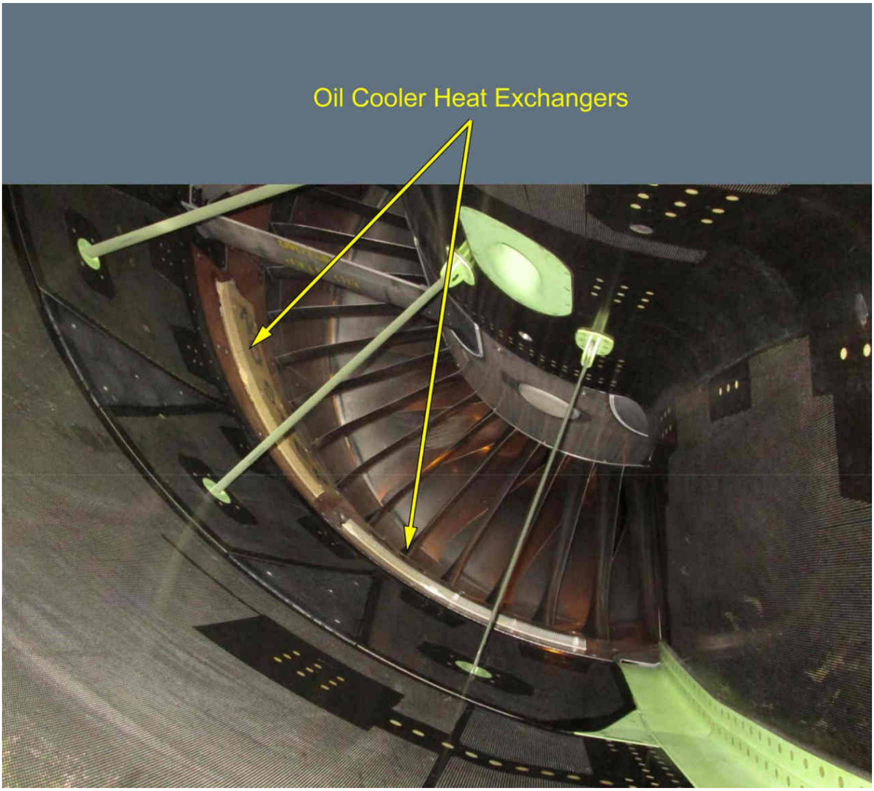


FAN EXHAUST..CLEAR



OIL COOLER HEAT EXCHANGERS .... CHECK CONDITION


Oil Cooler Heat Exchangers
NO LOAD
NO STEP



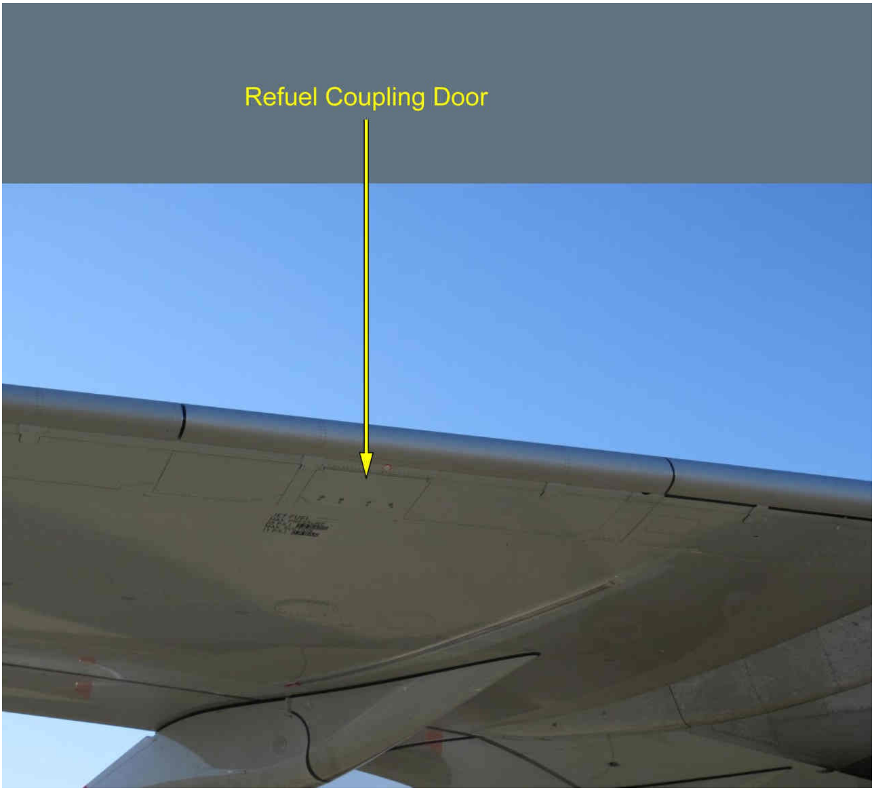
To return to the Exterior Walkaround schematic, *Refer to PRO-NOR-SOP-50 Exterior Walkaround - Schematic*.

EXTERIOR WALKAROUND - RH WING LEADING EDGE

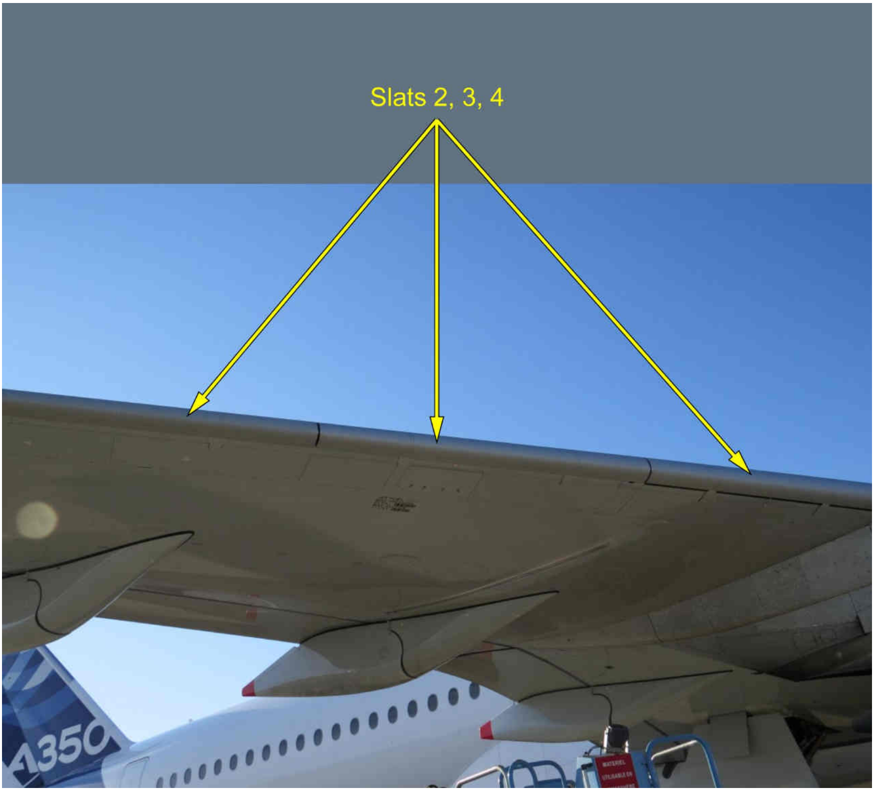
Ident.: PRO-NOR-SOP-50-00020464.0001001 / 03 MAY 17
Applicable to: ALL

POSITION 9 - RH WING LEADING EDGE

REFUEL COUPLING DOOR.. CLOSED



SLATS 2, 3, 4.. CHECK CONDITION



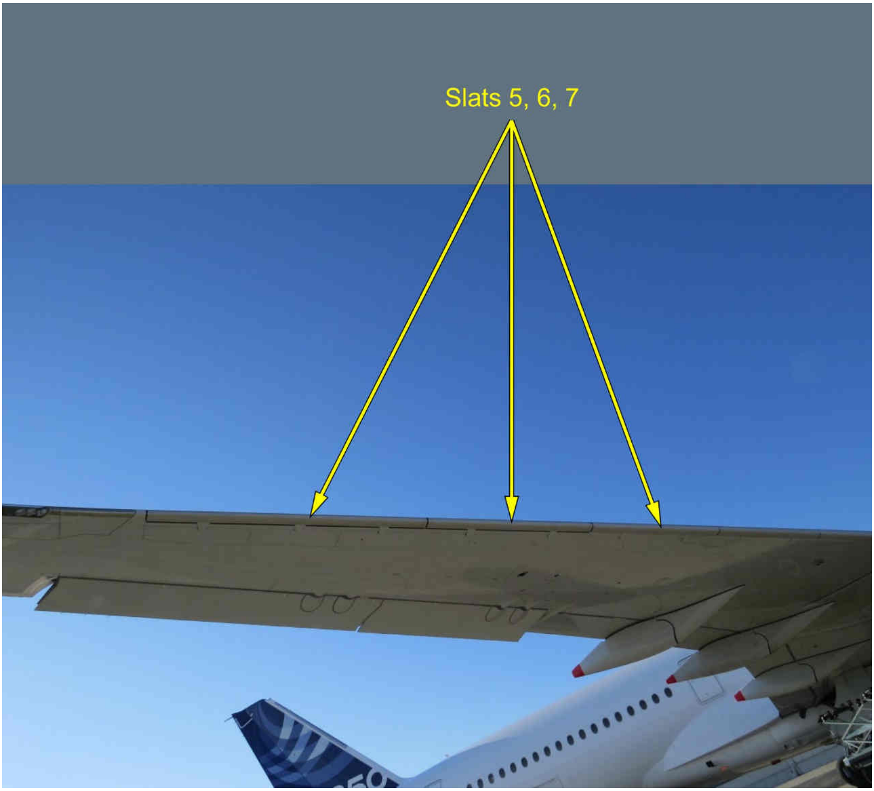
To return to the Exterior Walkaround schematic, *Refer to PRO-NOR-SOP-50 Exterior Walkaround - Schematic*.

EXTERIOR WALKAROUND - RH WING TIP

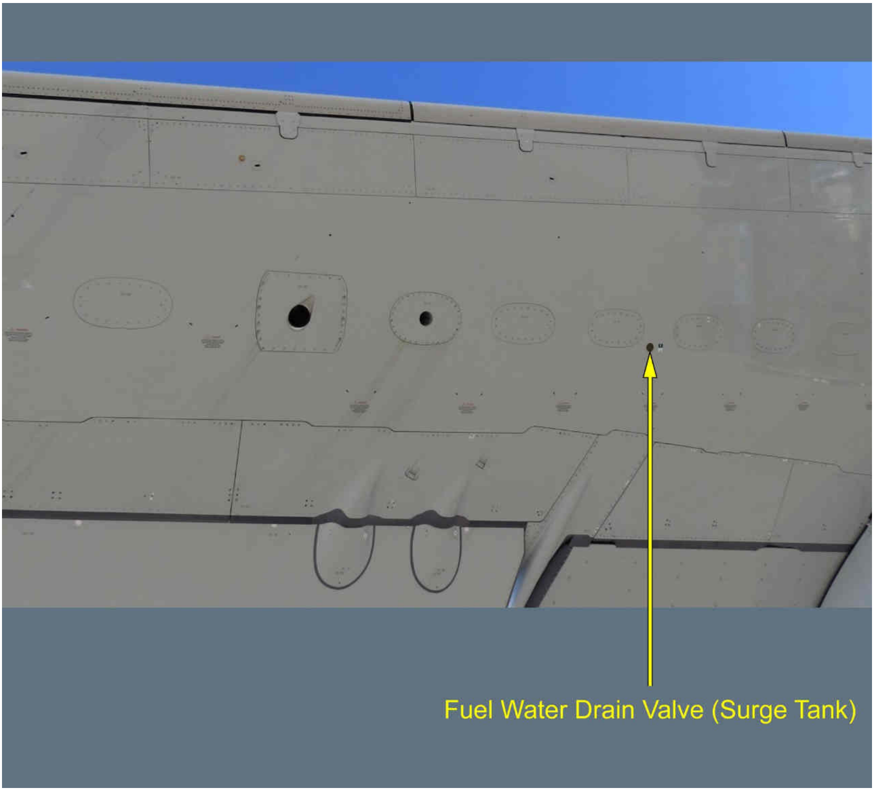
Ident.: PRO-NOR-SOP-50-00020465.0001001 / 03 MAY 17
Applicable to: ALL

POSITION 10 - RH WING TIP

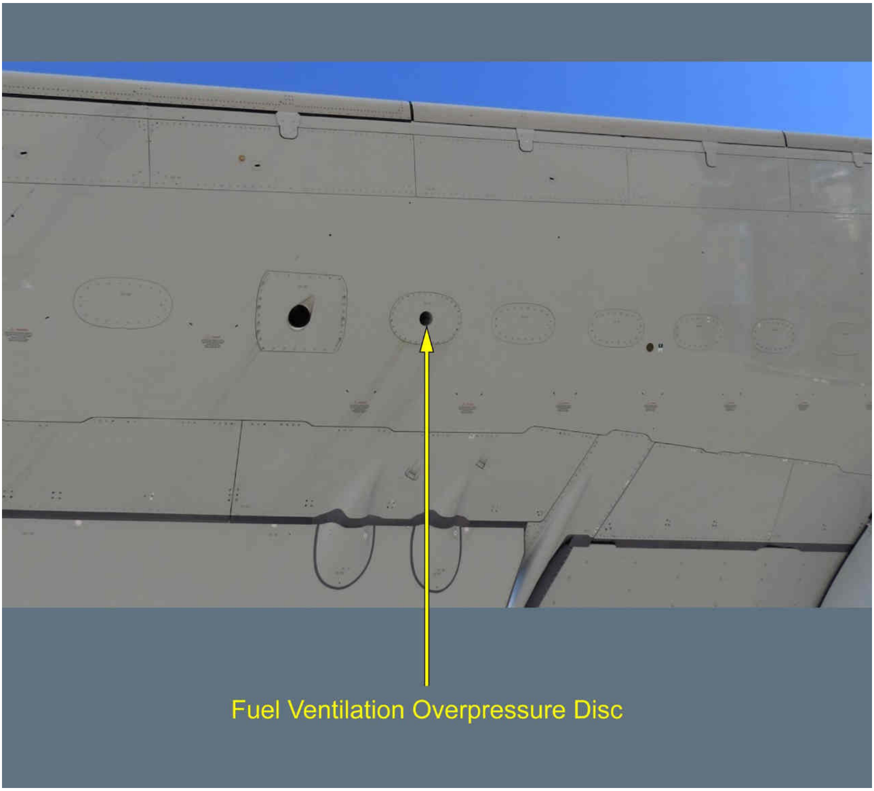
SLATS 5, 6, 7.. CHECK CONDITION



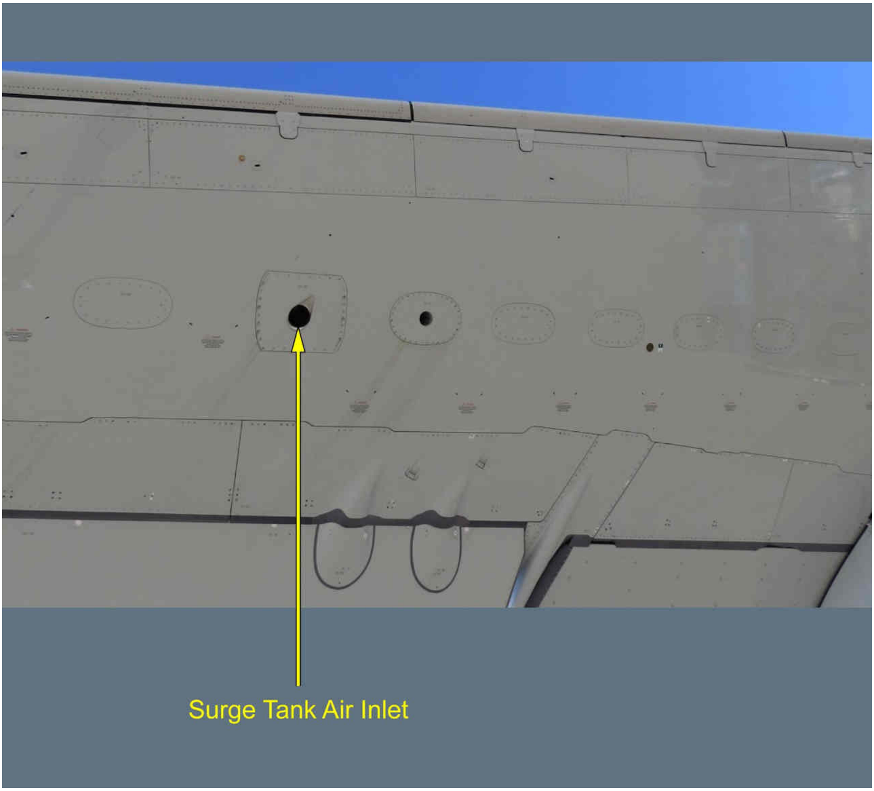
FUEL WATER DRAIN VALVE (SURGE TANK)..NO LEAK


Fuel Water Drain Valve (Surge Tank)

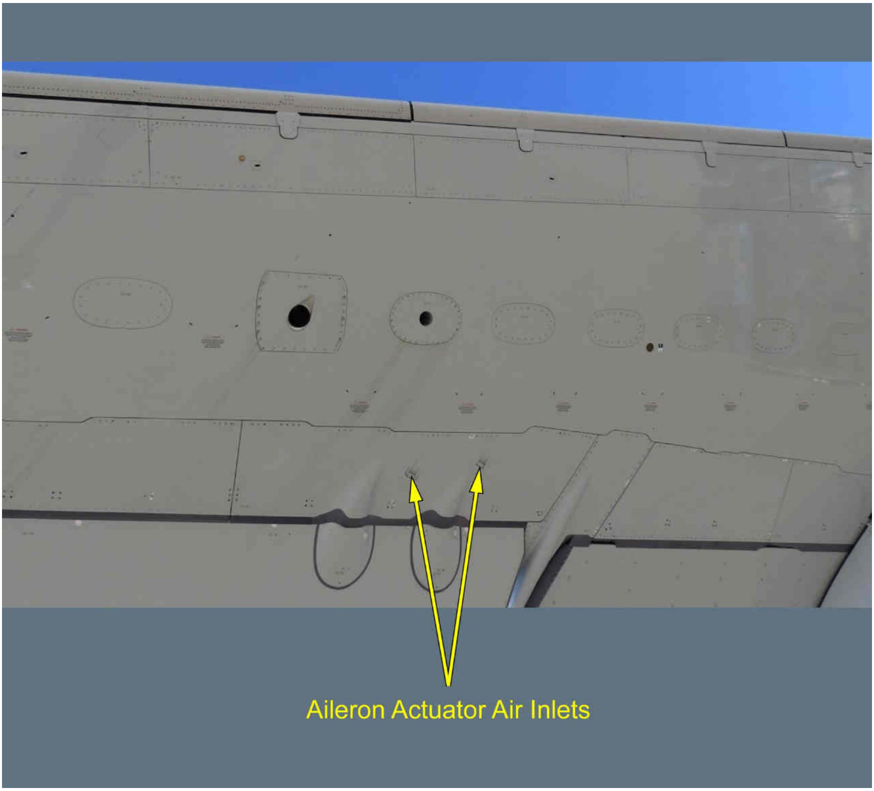
FUEL VENTILATION OVERPRESSURE DISC..INTACT


Fuel Ventilation Overpressure Disc

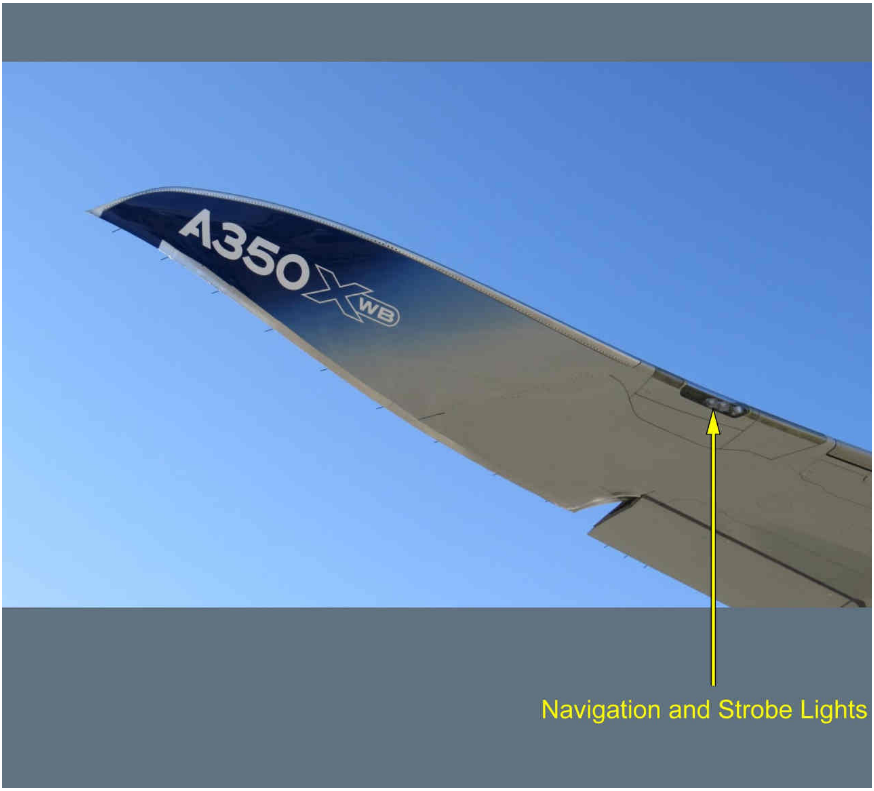
SURGE TANK AIR INLET..CLEAR



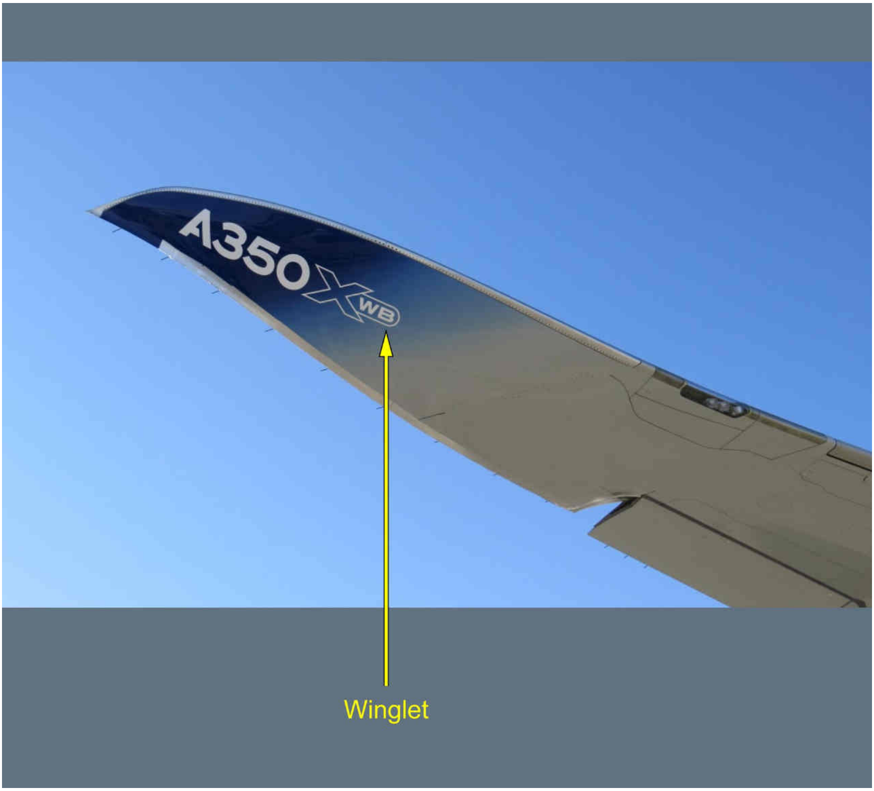
AILERON ACTUATOR AIR INLETS.....CLEAR


Aileron Actuator Air Inlets

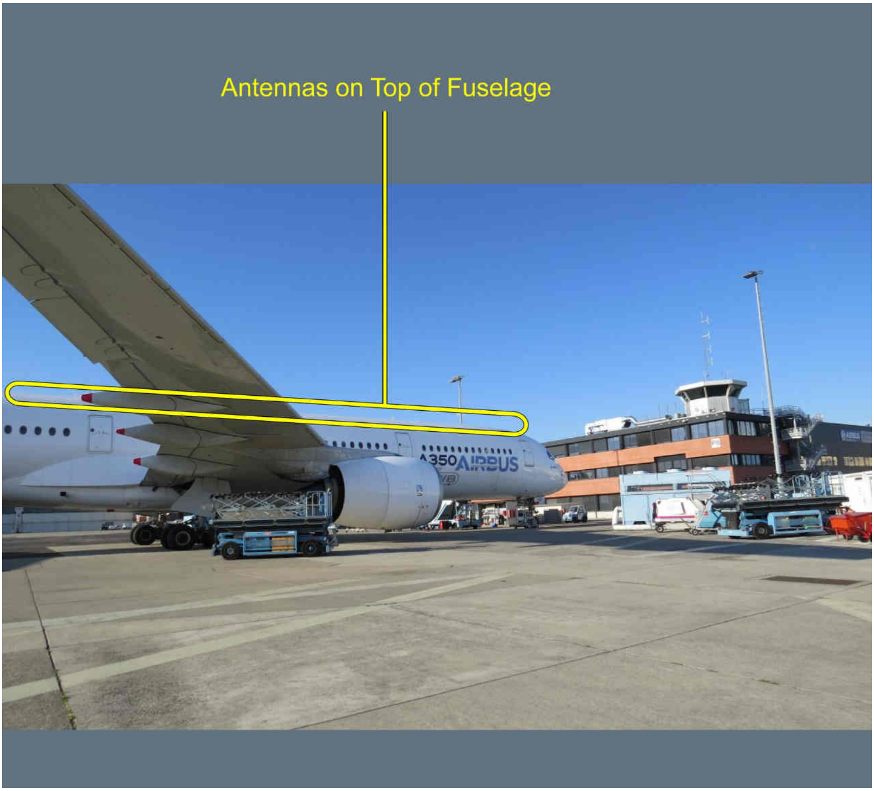
NAVIGATION AND STROBE LIGHTS.. CHECK CONDITION


A350 XWB
Navigation and Strobe Lights

WINGLET..CHECK CONDITION



ANTENNAS ON TOP OF FUSELAGE.. CHECK CONDITION



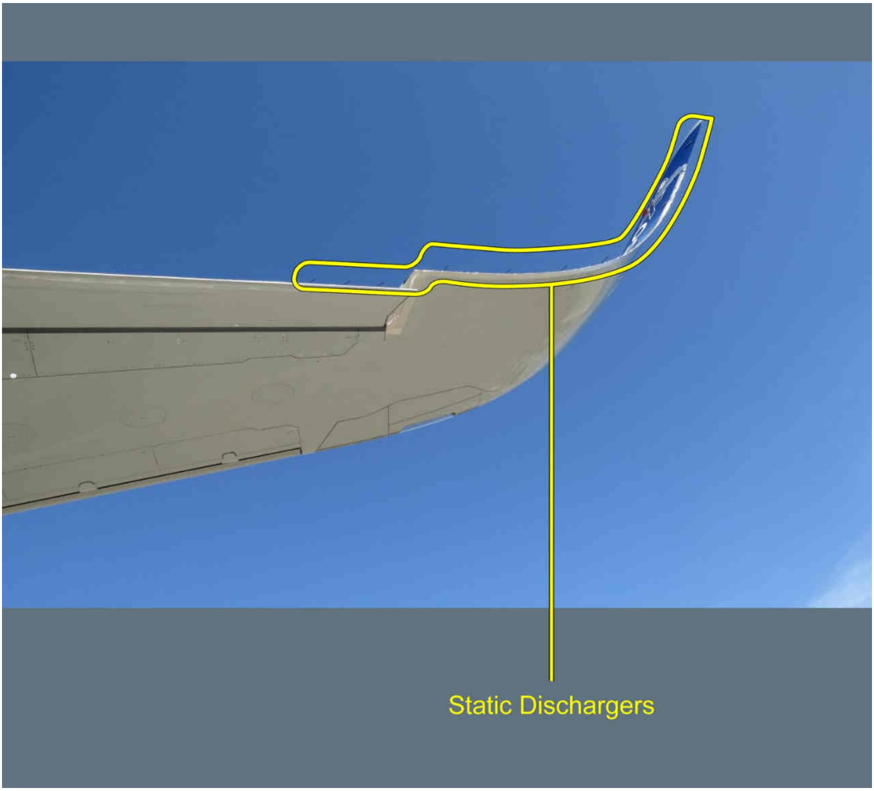
To return to the Exterior Walkaround schematic, *Refer to PRO-NOR-SOP-50 Exterior Walkaround - Schematic*.

EXTERIOR WALKAROUND - RH WING TRAILING EDGE

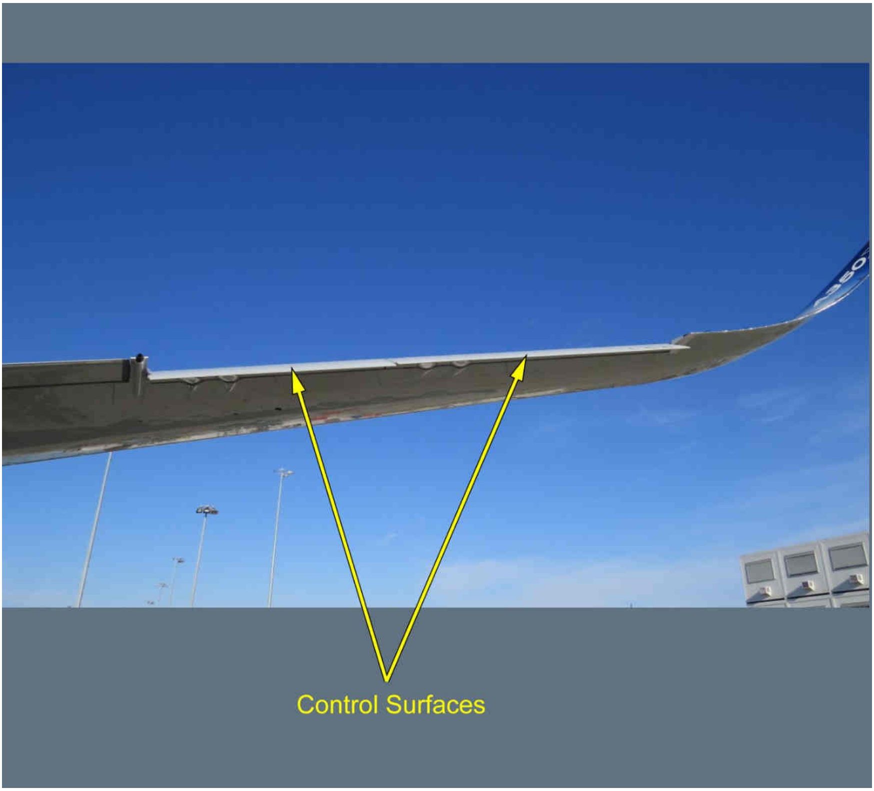
Ident.: PRO-NOR-SOP-50-00020466.0001001 / 03 MAY 17
Applicable to: ALL

POSITION 11 - RH WING TRAILING EDGE

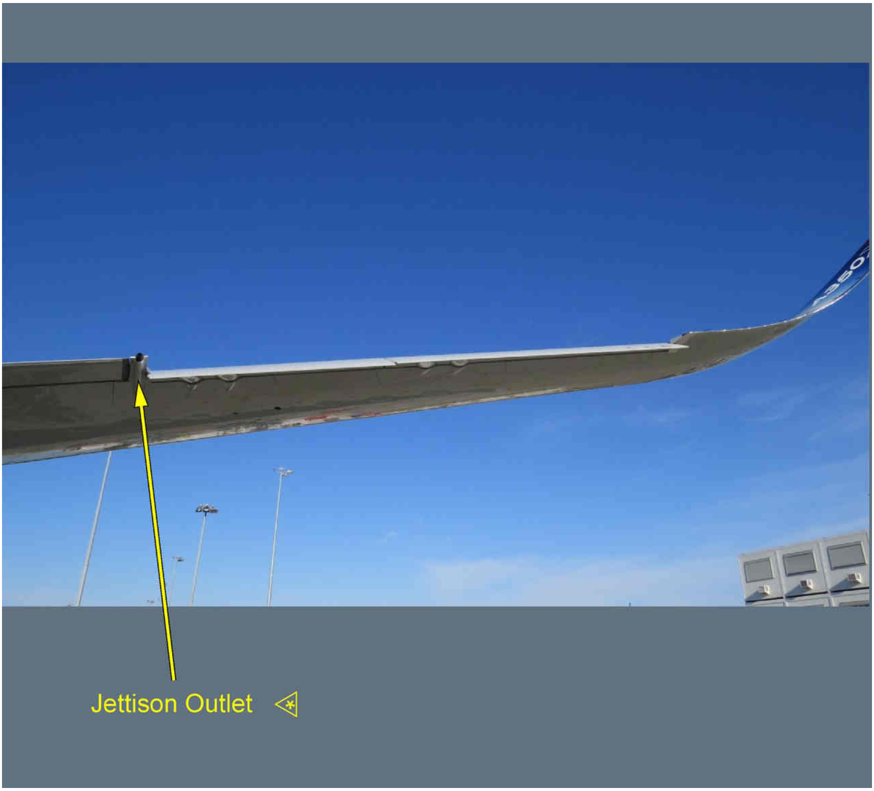
STATIC DISCHARGERS..CHECK CONDITION



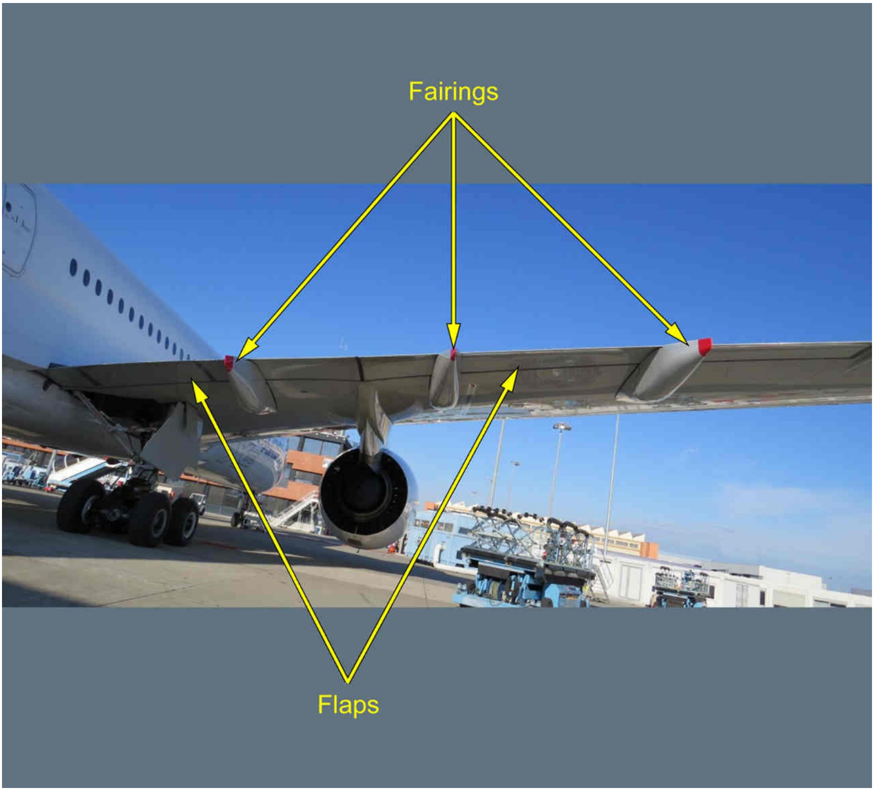
CONTROL SURFACES..CHECK CONDITION



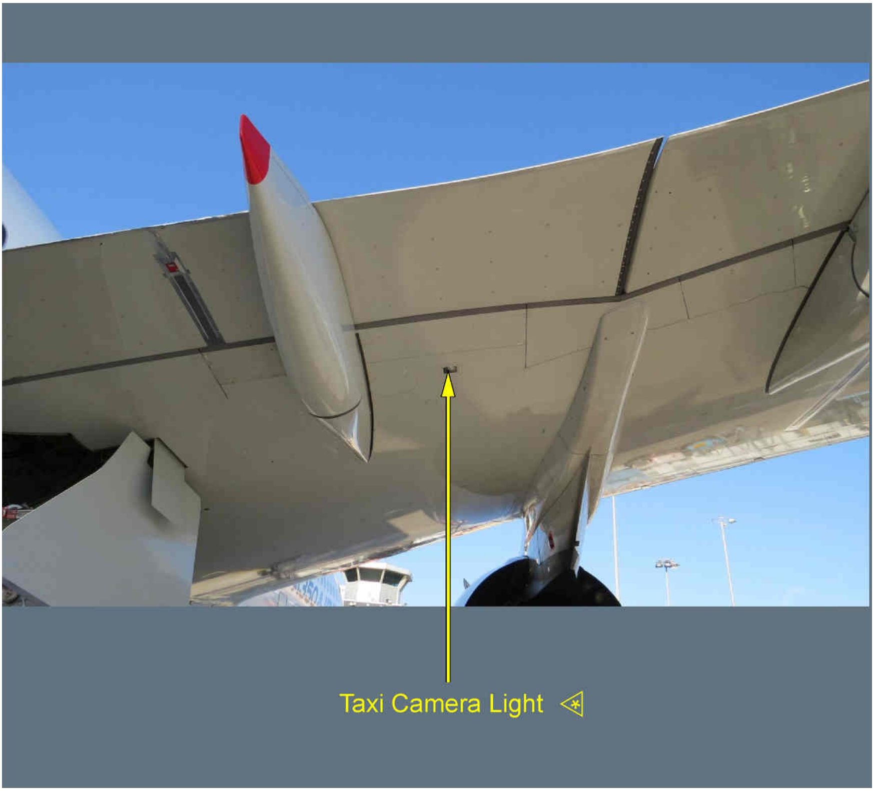
JETTISON OUTLET ◁ ....NO LEAK



FLAPS AND FAIRINGS...CHECK CONDITION



TAXI CAMERA LIGHT ◁ .... CHECK CONDITION



To return to the Exterior Walkaround schematic, *Refer to PRO-NOR-SOP-50 Exterior Walkaround - Schematic*.

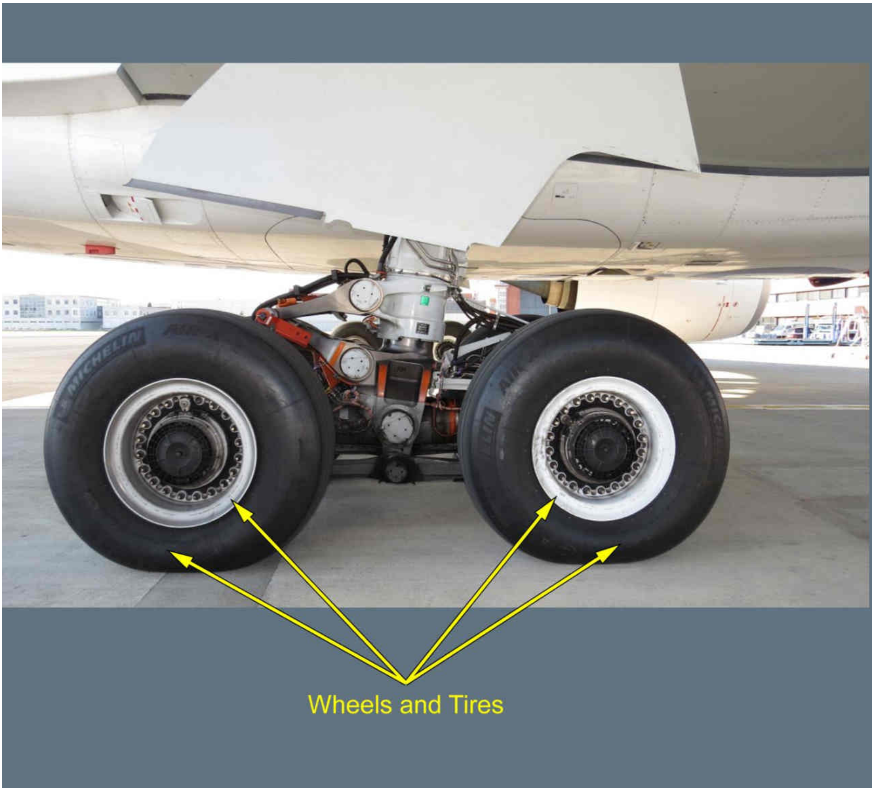
EXTERIOR WALKAROUND - RH LANDING GEAR

Ident.: PRO-NOR-SOP-50-00020467.0001001 / 03 MAY 17
Applicable to: ALL

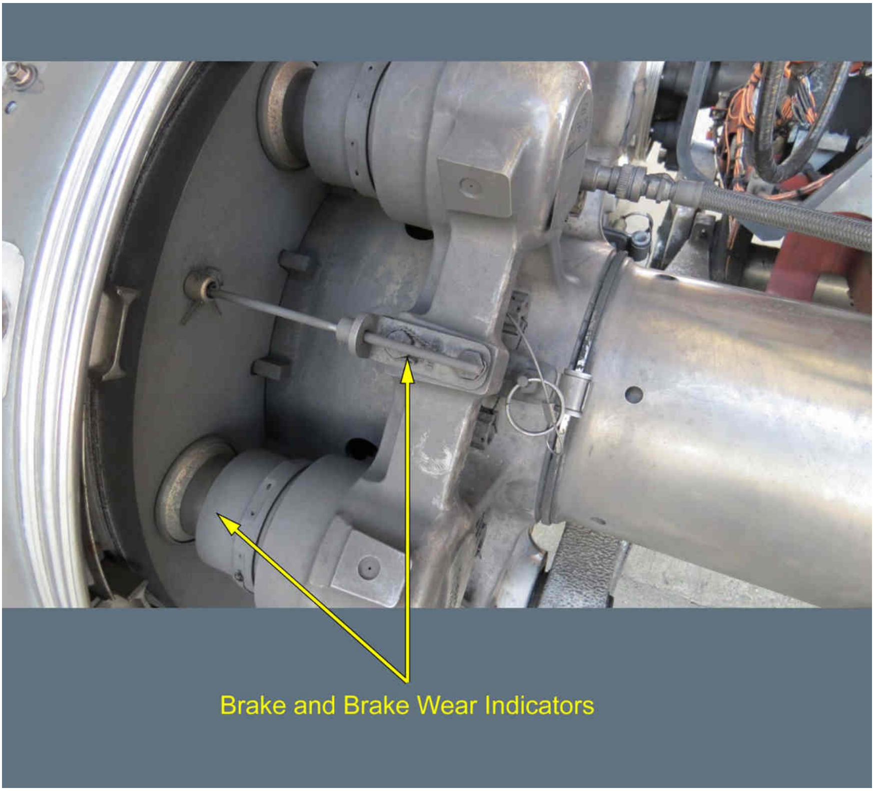
POSITION 12 - RH LANDING GEAR

CHOCKS.. REMOVED

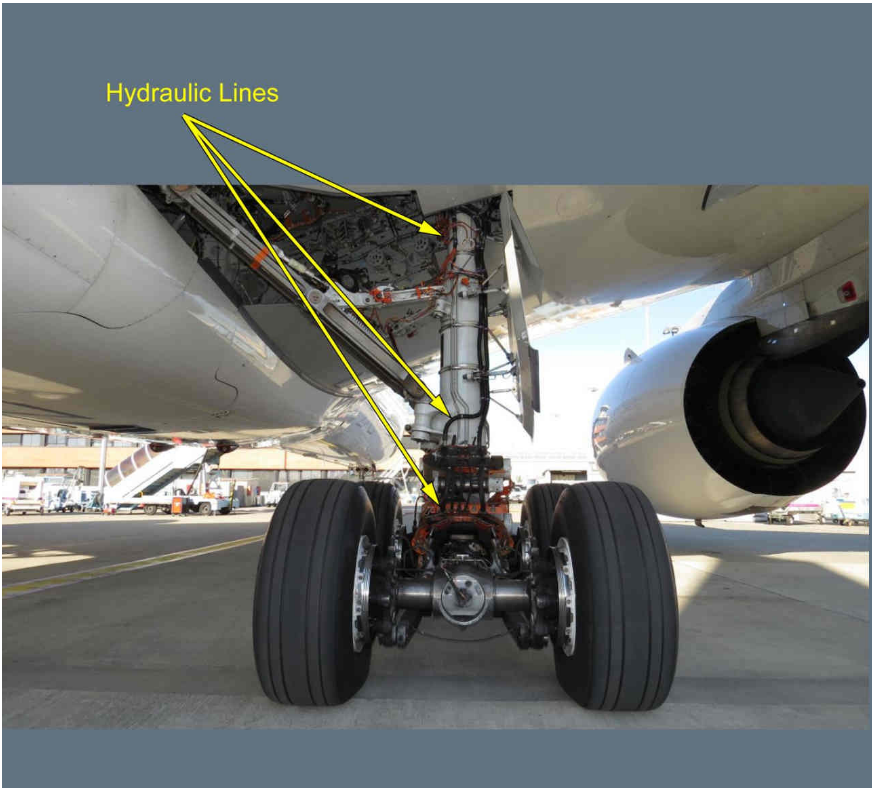
WHEELS AND TIRES..CHECK CONDITION



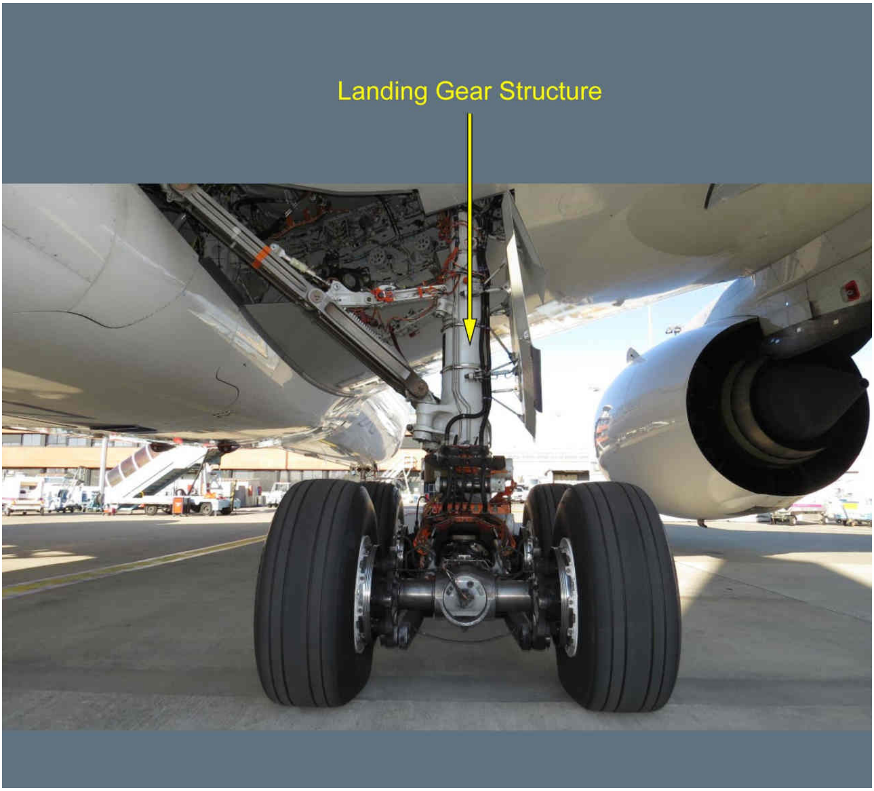
BRAKES AND BRAKE WEAR INDICATORS..CHECK CONDITION


Brake and Brake Wear Indicators

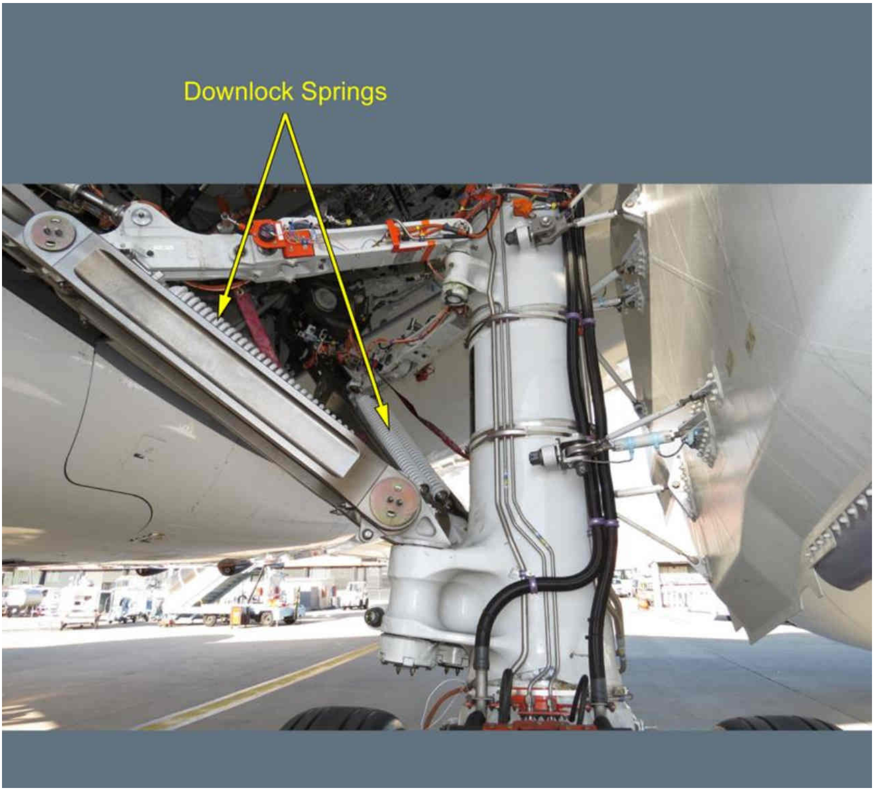
HYDRAULIC LINES... CHECK



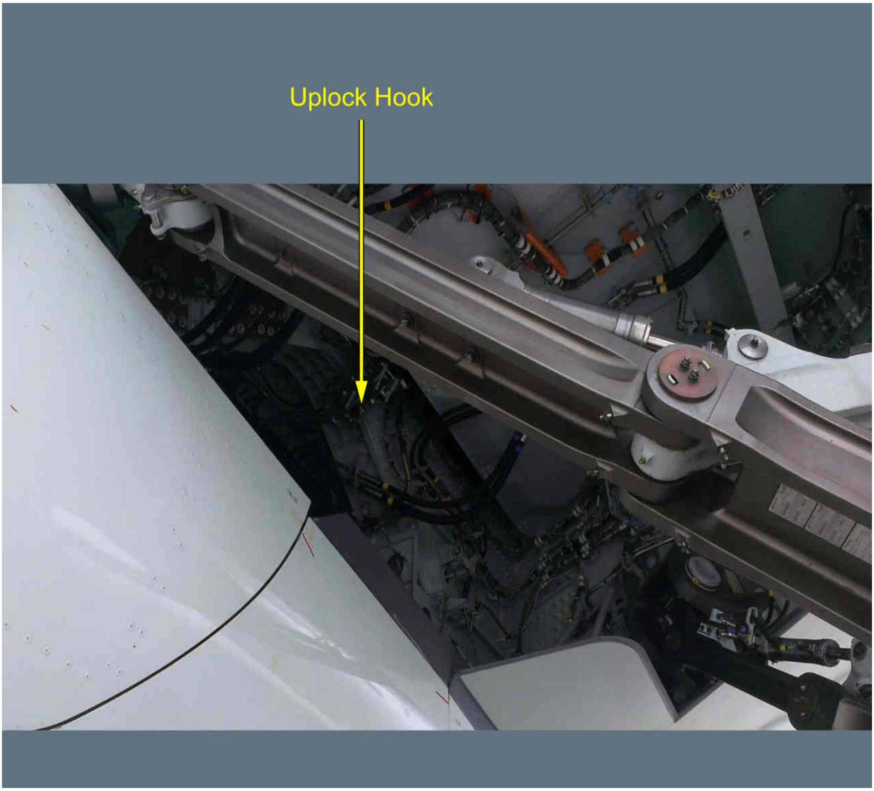
LANDING GEAR STRUCTURE...CHECK



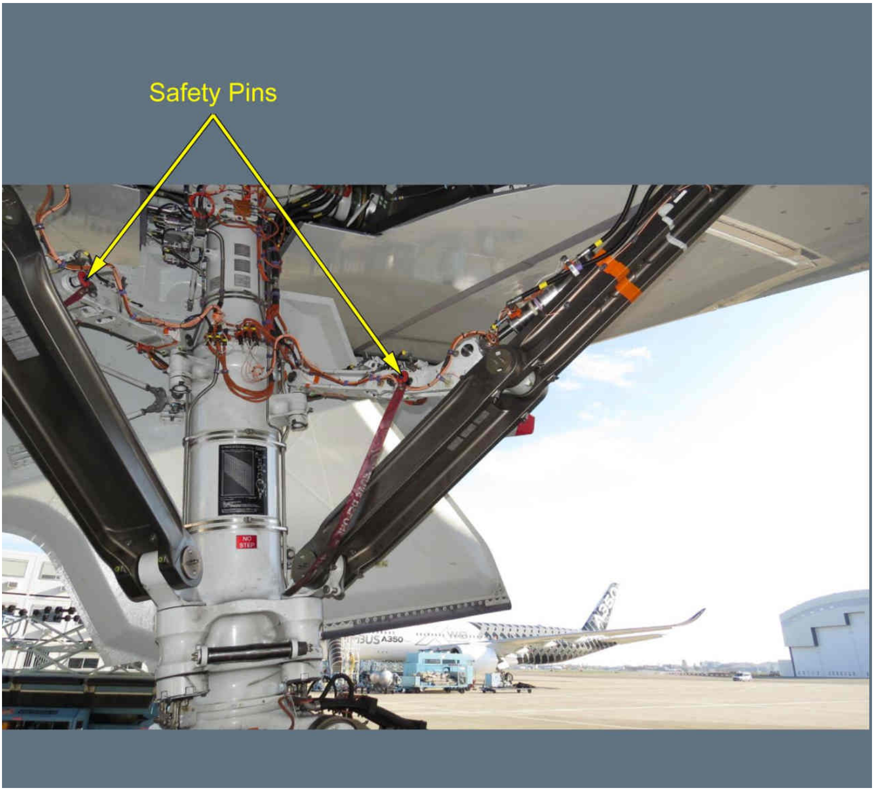
DOWNLOCK SPRINGS.. CHECK



UPLOCK HOOK.. CHECK



SAFETY PINS...REMOVED



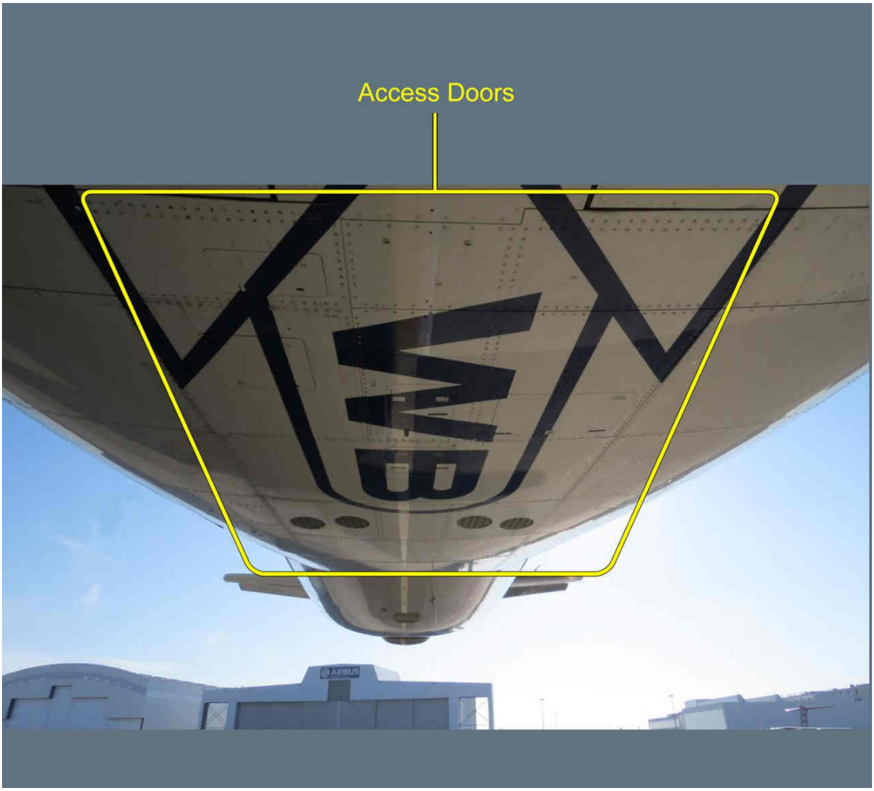
To return to the Exterior Walkaround schematic, *Refer to PRO-NOR-SOP-50 Exterior Walkaround - Schematic*.

EXTERIOR WALKAROUND - CENTER FUSELAGE

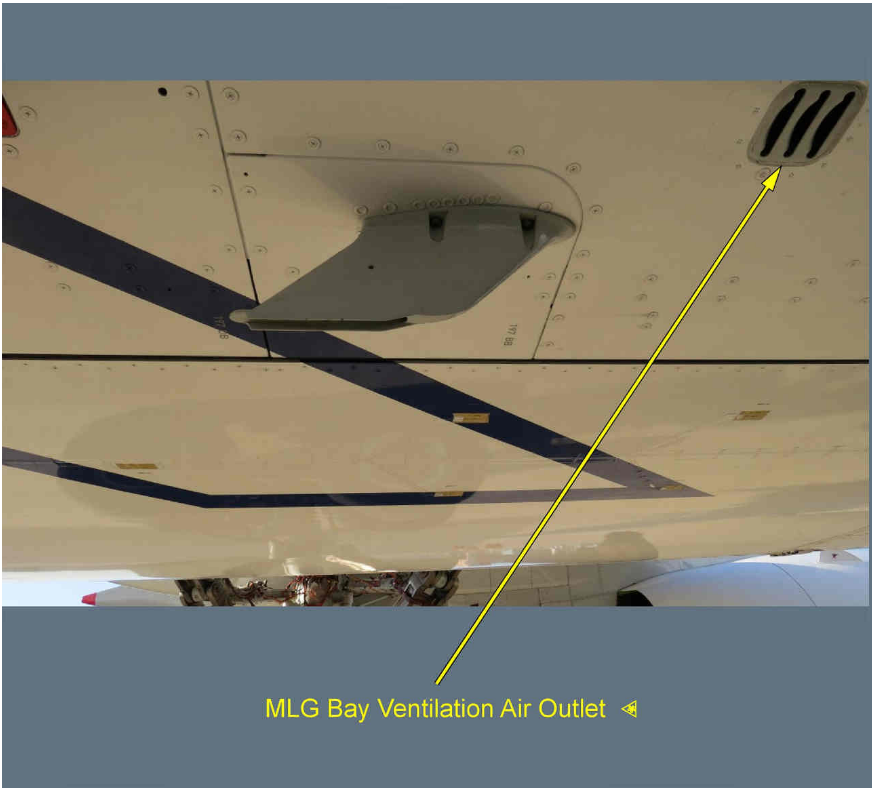
Ident.: PRO-NOR-SOP-50-00020468.0001001 / 09 MAR 16
Applicable to: ALL

POSITION 13 - CENTER FUSELAGE

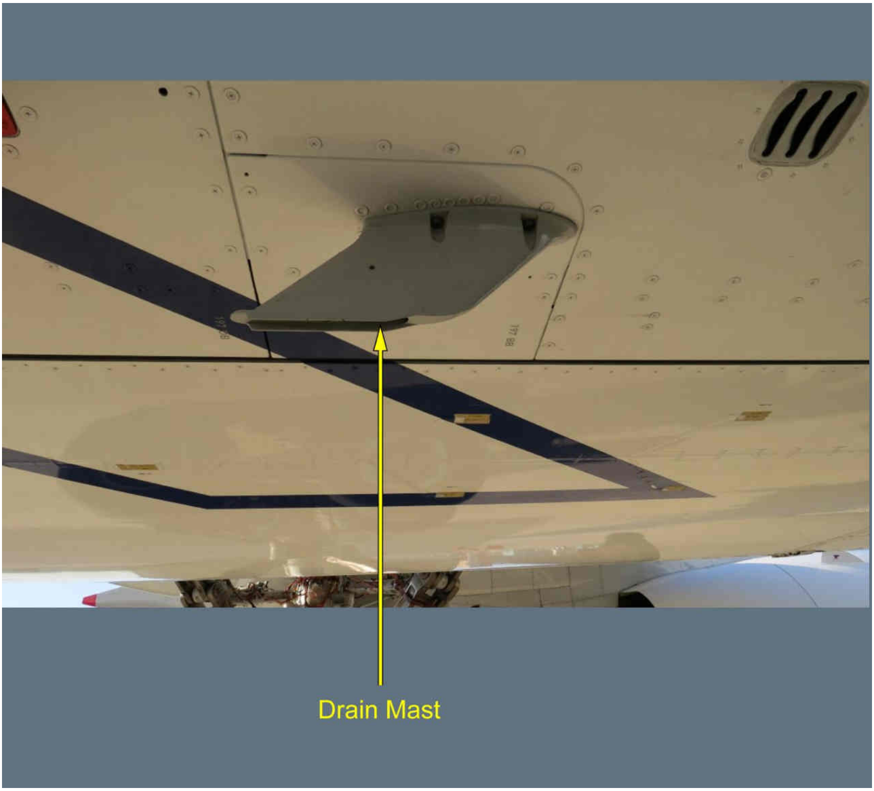
ACCESS DOORS (IF NOT REQUIRED)...CLOSED



MLG BAY VENTILATION AIR OUTLET ◁ ....CLEAR


MLG Bay Ventilation Air Outlet ◁

DRAIN MAST... CHECK CONDITION/NO LEAK



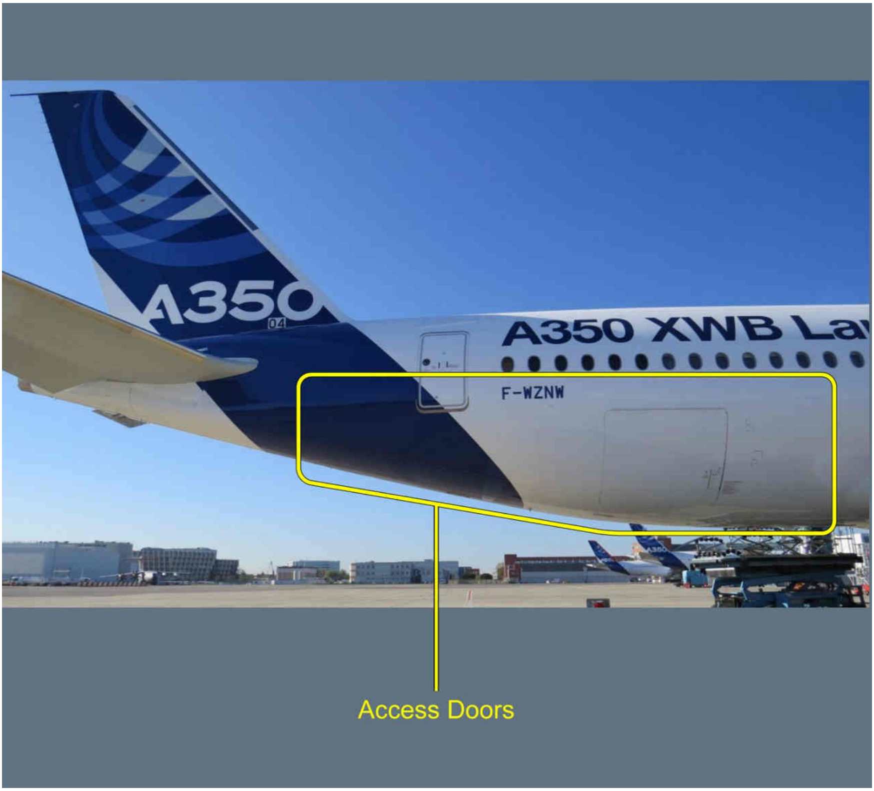
To return to the Exterior Walkaround schematic, *Refer to PRO-NOR-SOP-50 Exterior Walkaround - Schematic*.

EXTERIOR WALKAROUND - RH AFT FUSELAGE

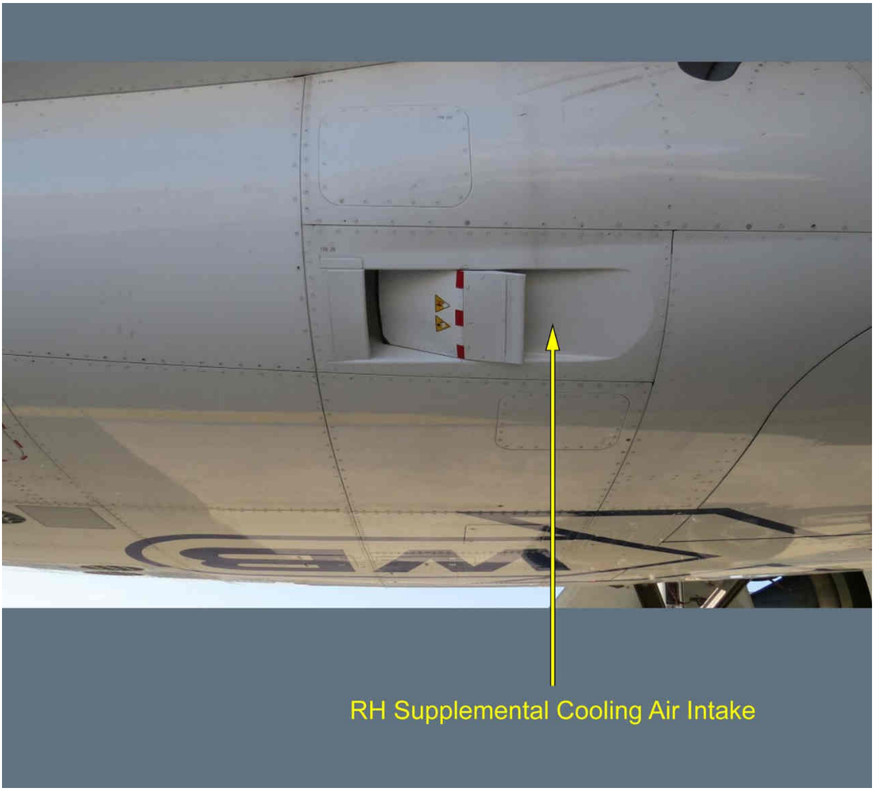
Ident.: PRO-NOR-SOP-50-00020469.0001001 / 03 MAY 17
Applicable to: ALL

POSITION 14 - RH AFT FUSELAGE

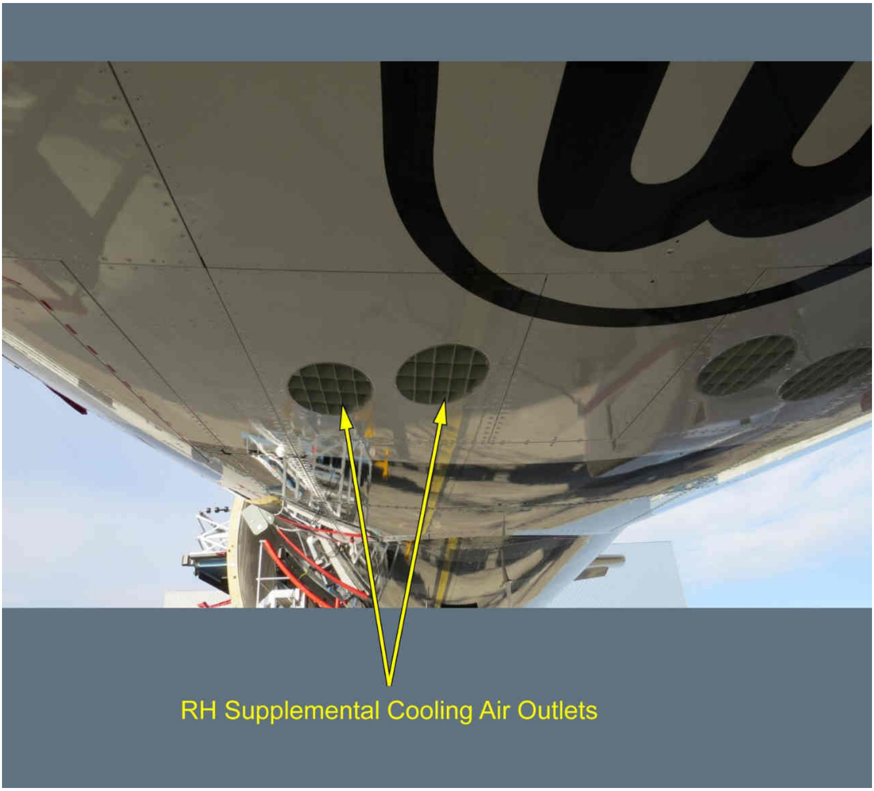
ACCESS DOORS (IF NOT REQUIRED)..CLOSED


A350
04
A350 XWB La
F-WZNW
Access Doors

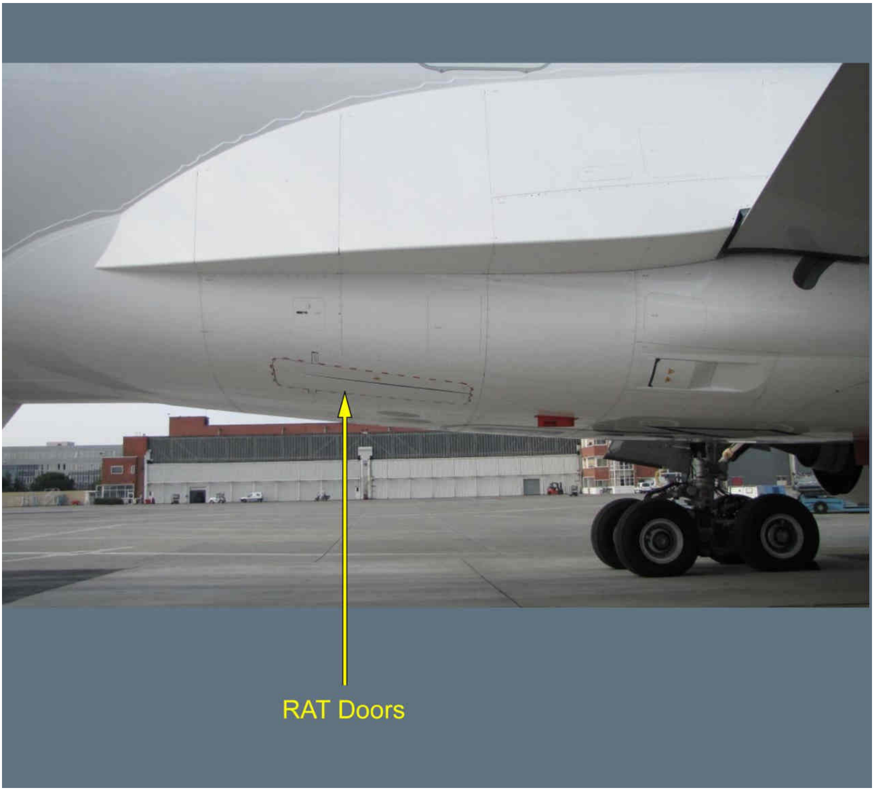
RH SUPPLEMENTAL COOLING AIR INTAKE..CLEAR


RH Supplemental Cooling Air Intake

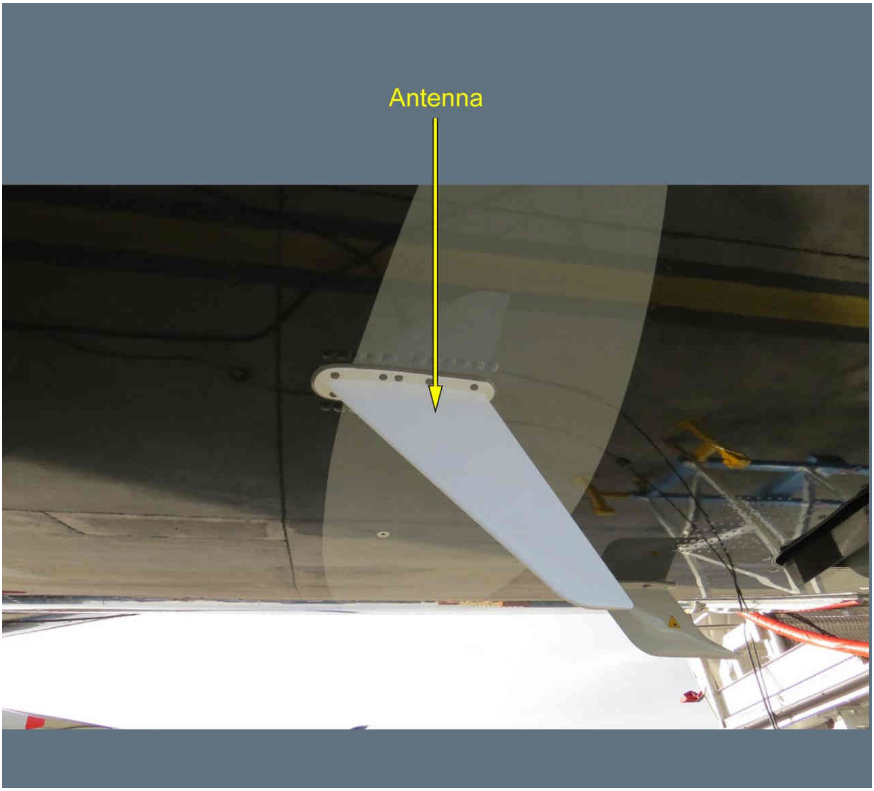
RH SUPPLEMENTAL COOLING AIR OUTLETS (2)..CLEAR


RH Supplemental Cooling Air Outlets

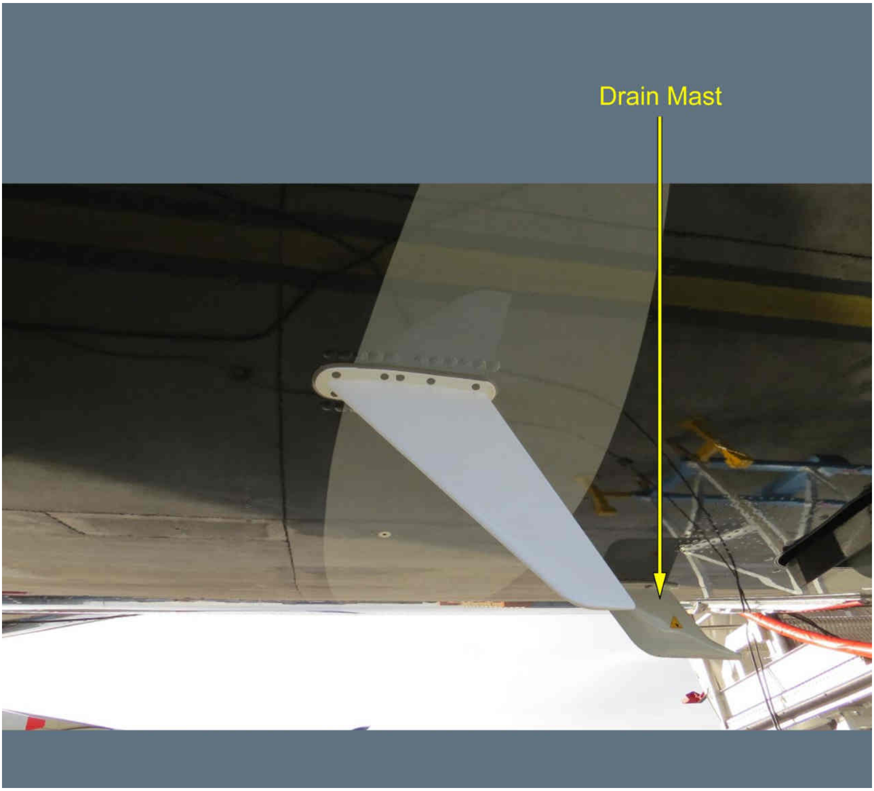
RAT DOORS..CLOSED



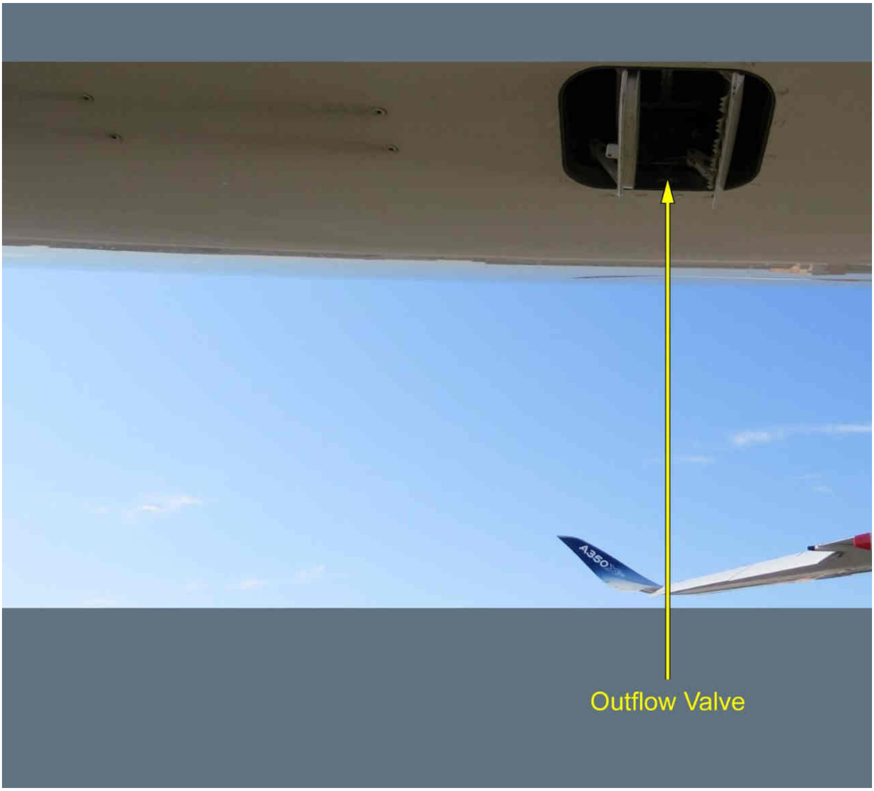
ANTENNA.. CHECK CONDITION



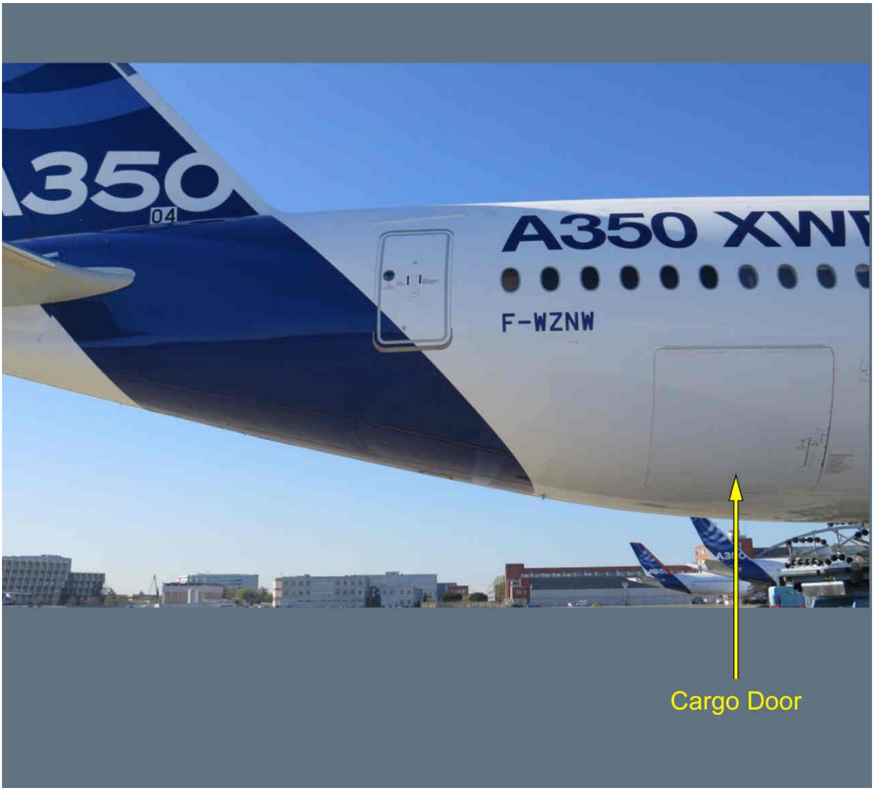
DRAIN MAST...CHECK CONDITION



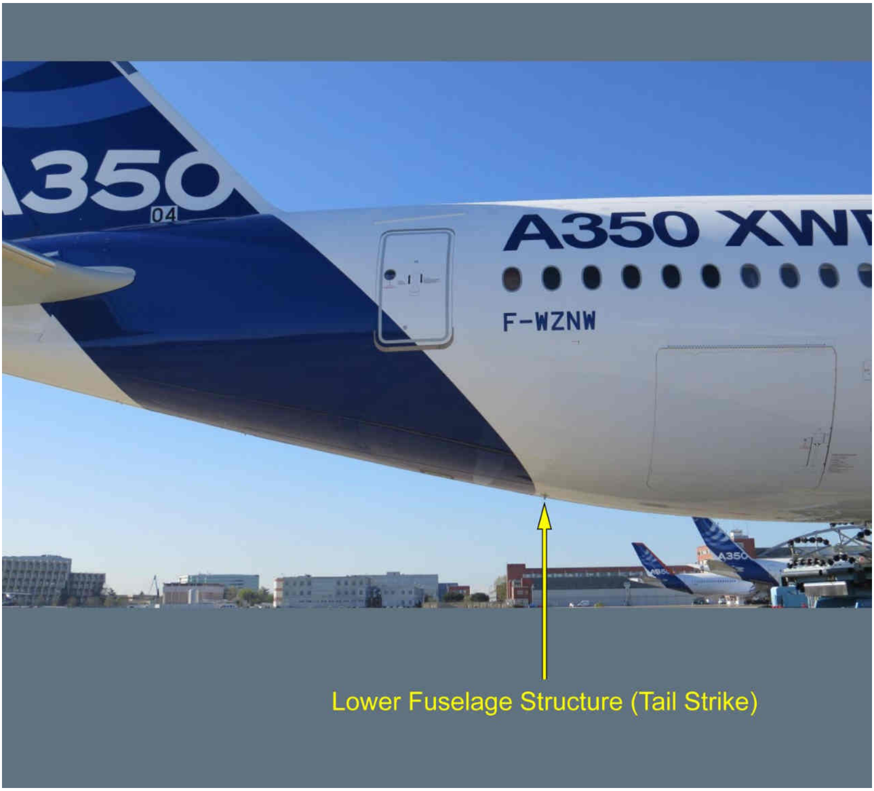
OUTFLOW VALVE..CHECK CONDITION



CARGO DOOR (IF NOT REQUIRED)..CLOSED



LOWER FUSELAGE STRUCTURE (TAIL STRIKE)..CHECK CONDITION



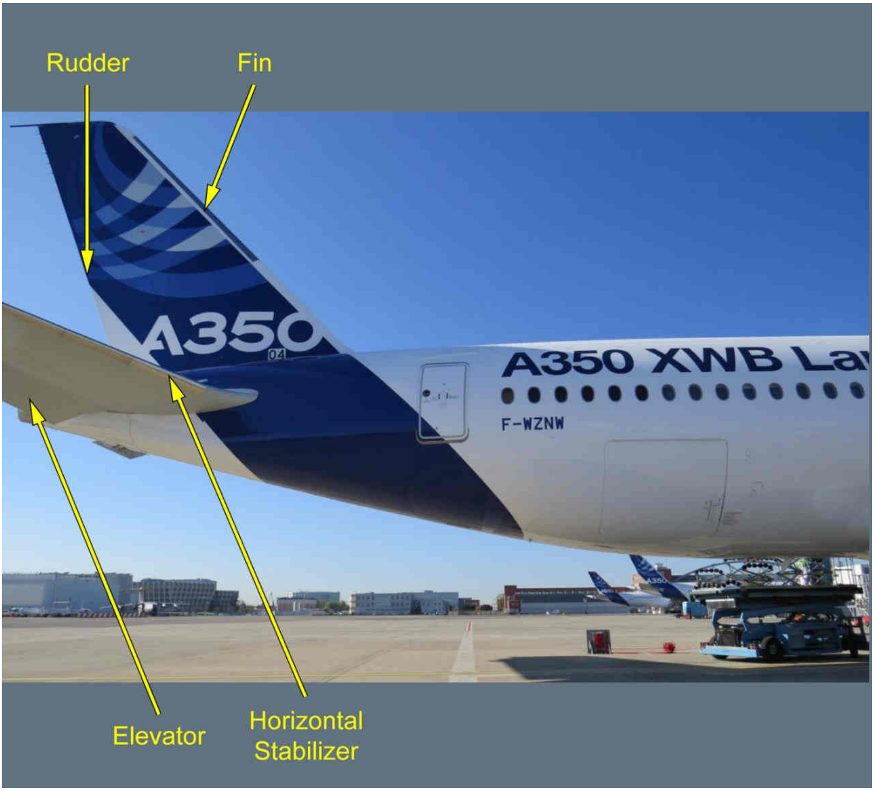
To return to the Exterior Walkaround schematic, *Refer to PRO-NOR-SOP-50 Exterior Walkaround - Schematic*.

EXTERIOR WALKAROUND - TAIL

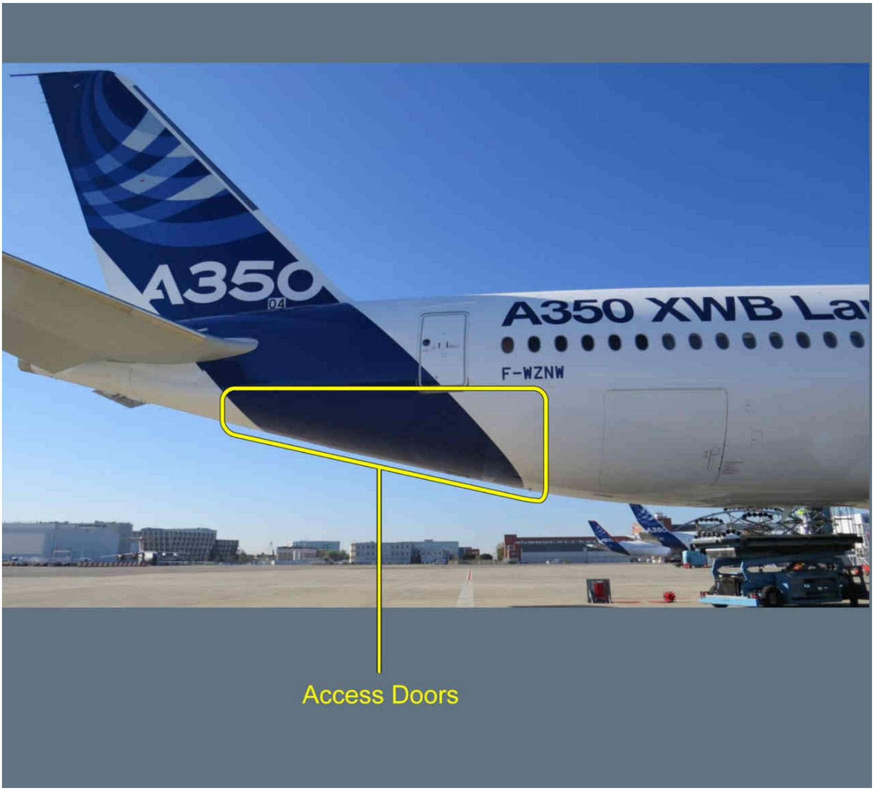
Ident.: PRO-NOR-SOP-50-00020470.0001001 / 03 MAY 17
Applicable to: ALL

POSITION 15 - TAIL

HORIZONTAL STABILIZER, ELEVATOR, FIN AND RUDDER........................CHECK CONDITION


Rudder
Fin
A350
A350 XWB La
F-WZNW
Elevator
Horizontal Stabilizer

ACCESS DOORS (IF NOT REQUIRED)...CLOSED



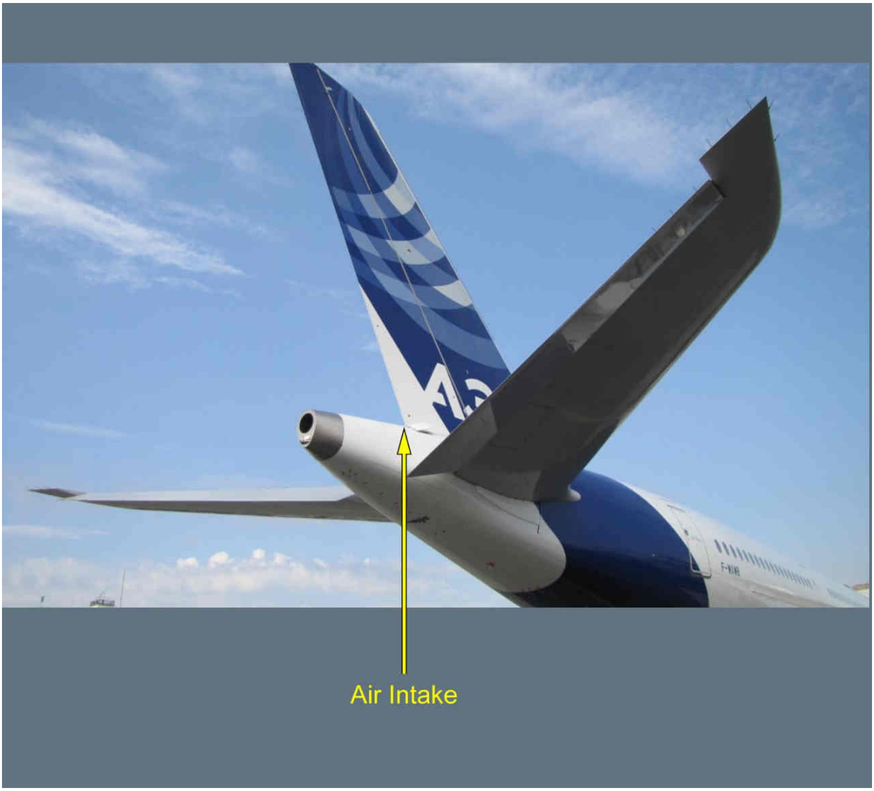
To return to the Exterior Walkaround schematic, *Refer to PRO-NOR-SOP-50 Exterior Walkaround - Schematic*.

EXTERIOR WALKAROUND - APU

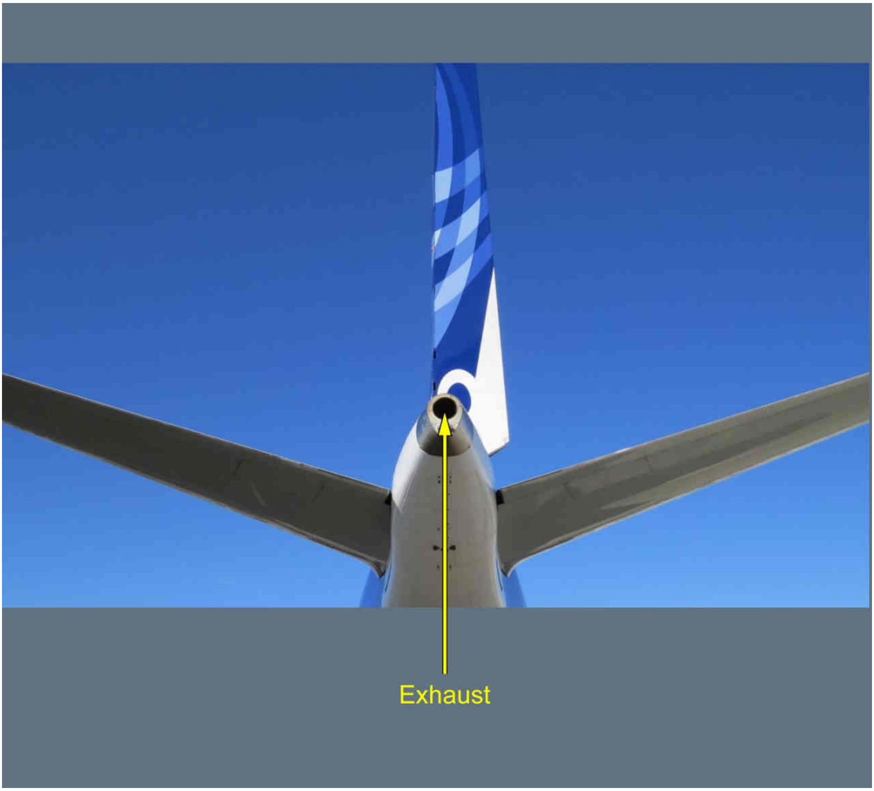
Ident.: PRO-NOR-SOP-50-00020471.0001001 / 03 MAY 17
Applicable to: ALL

POSITION 16 - APU

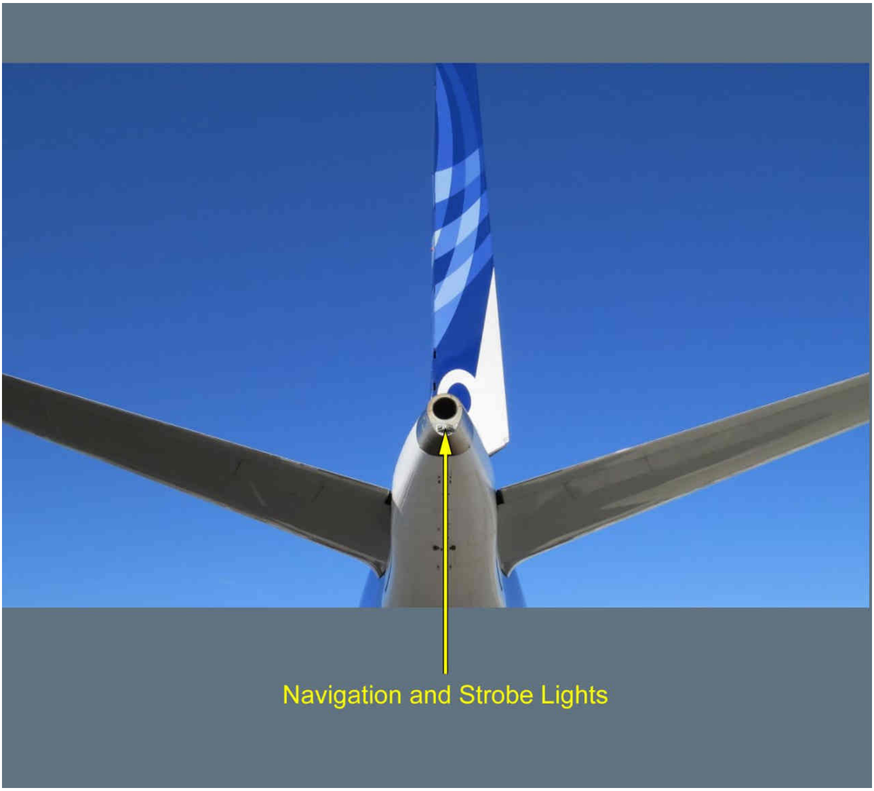
AIR INTAKE..CHECK CONDITION



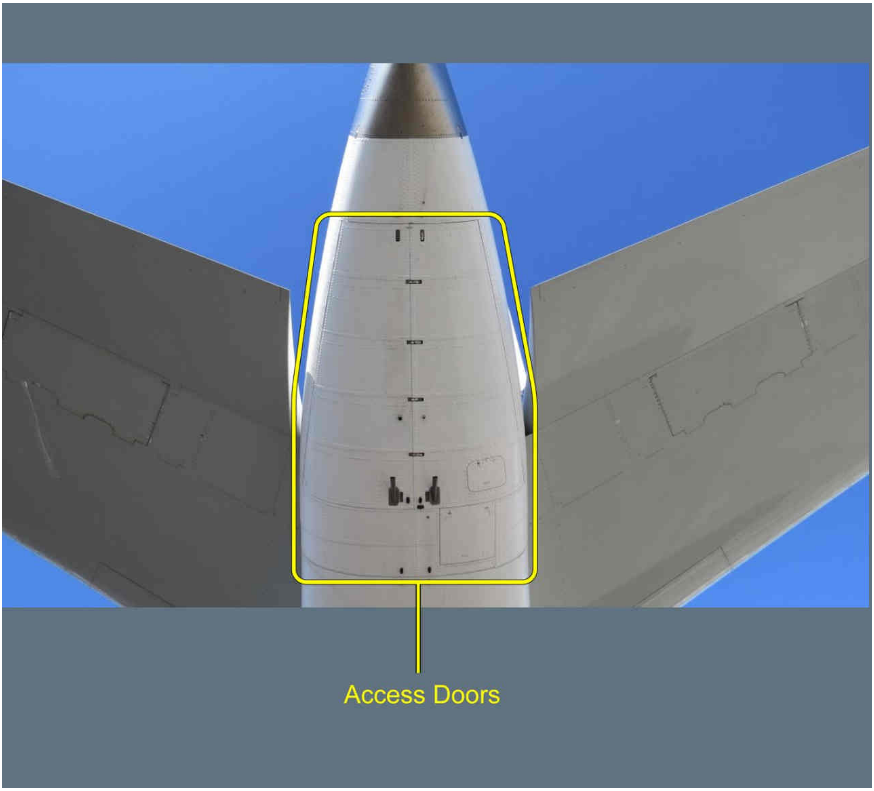
EXHAUST..CLEAR



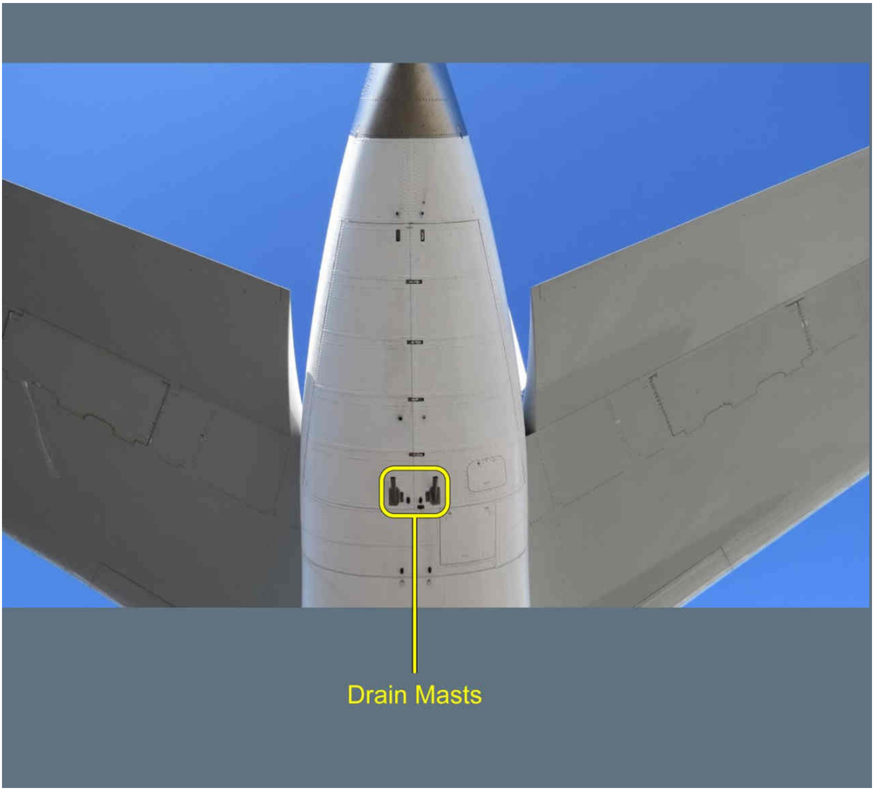
NAVIGATION AND STROBE LIGHTS.. CHECK CONDITION


Navigation and Strobe Lights

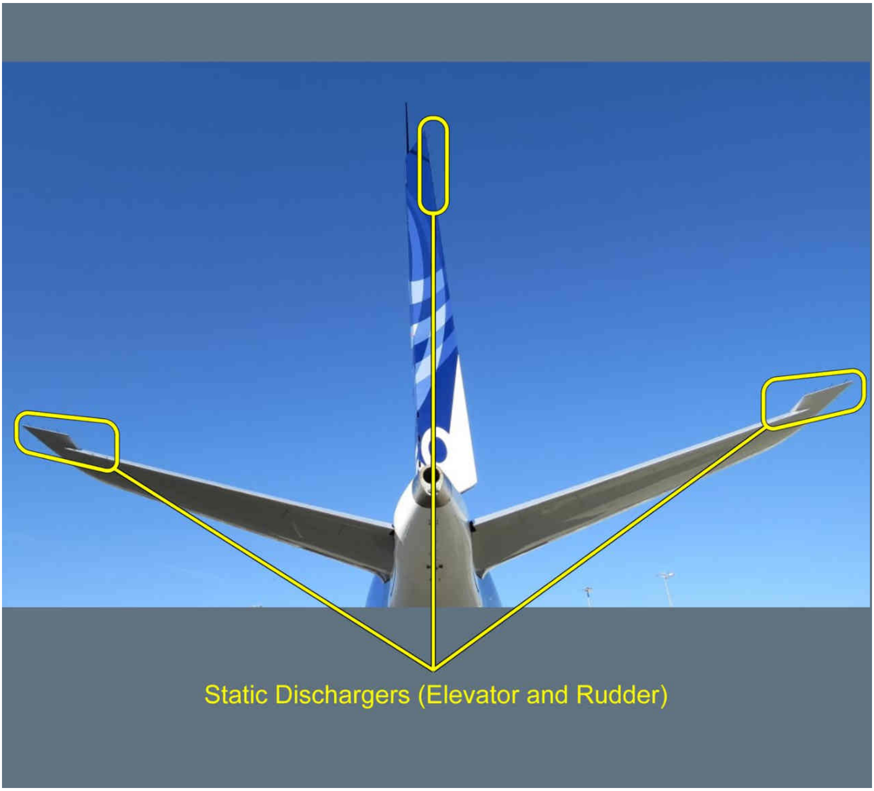
ACCESS DOORS (IF NOT REQUIRED)..CLOSED



DRAIN MASTS..CHECK CONDITION/NO LEAK



STATIC DISCHARGERS (ELEVATOR AND RUDDER)..CHECK



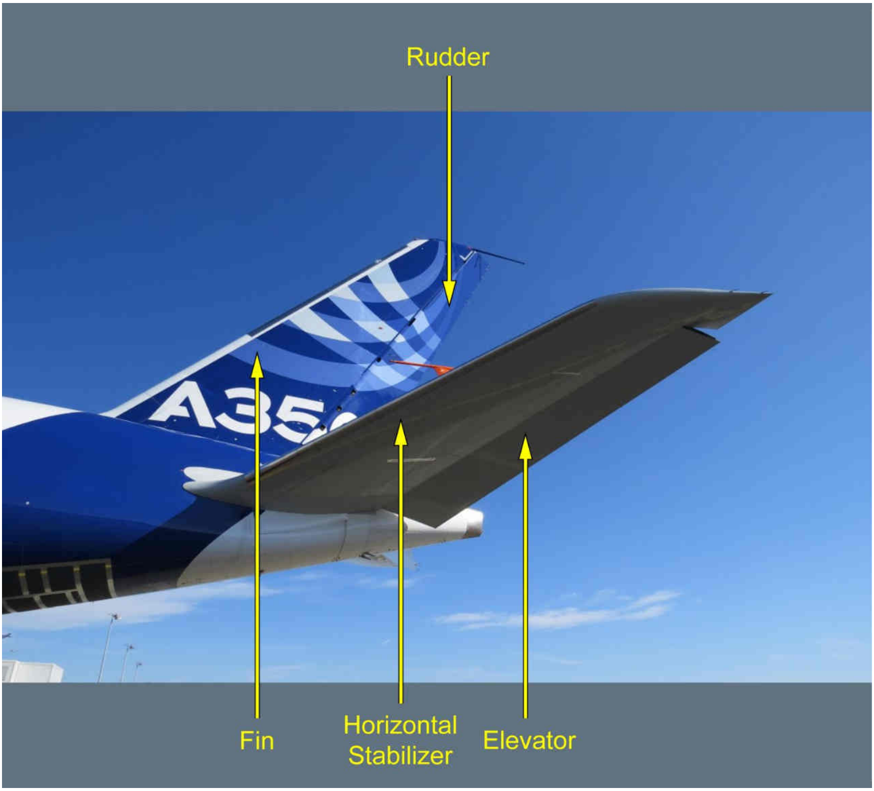
To return to the Exterior Walkaround schematic, *Refer to PRO-NOR-SOP-50 Exterior Walkaround - Schematic*.

EXTERIOR WALKAROUND - LH AFT FUSELAGE

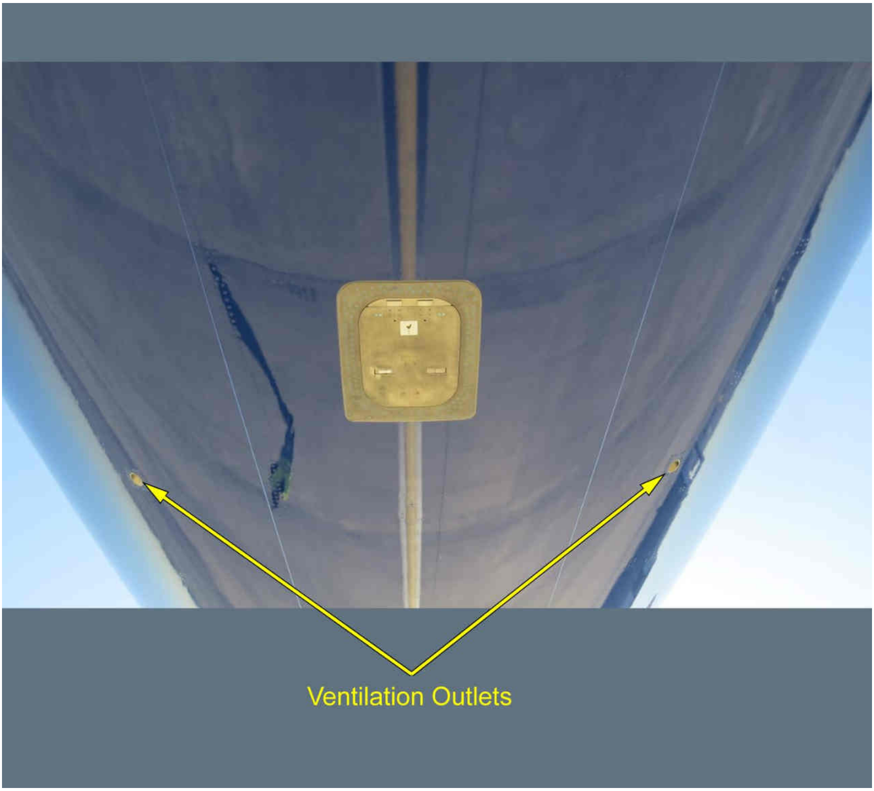
Ident.: PRO-NOR-SOP-50-00020472.0001001 / 03 MAY 17
Applicable to: ALL

POSITION 17 - LH AFT FUSELAGE

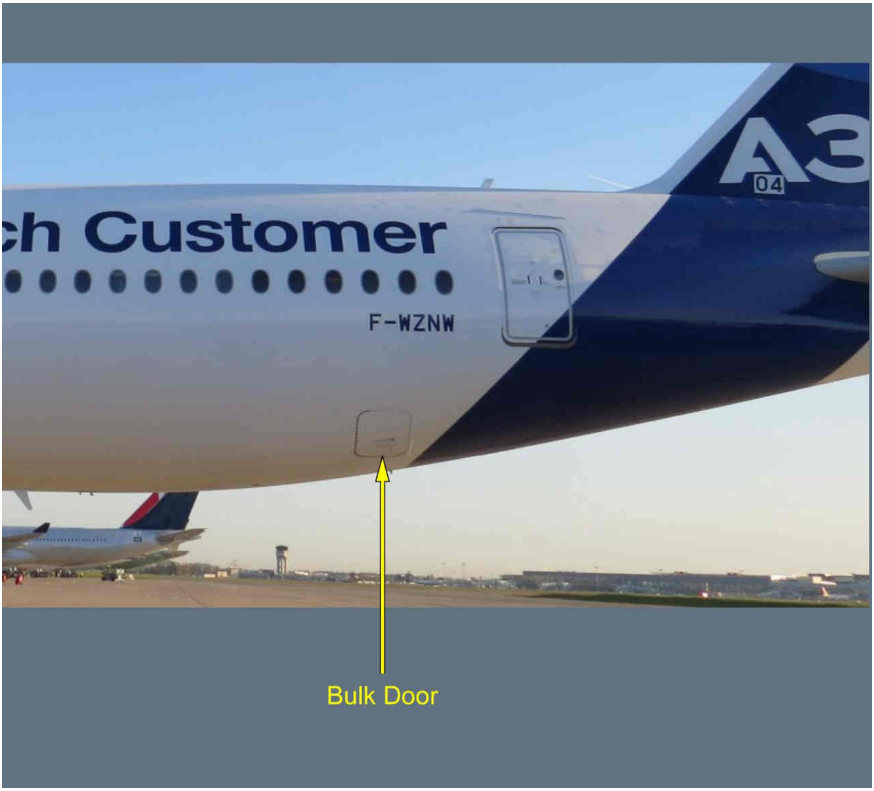
HORIZONTAL STABILIZER, ELEVATOR, FIN AND RUDDER........................CHECK CONDITION


Rudder
Fin
Horizontal Stabilizer
Elevator

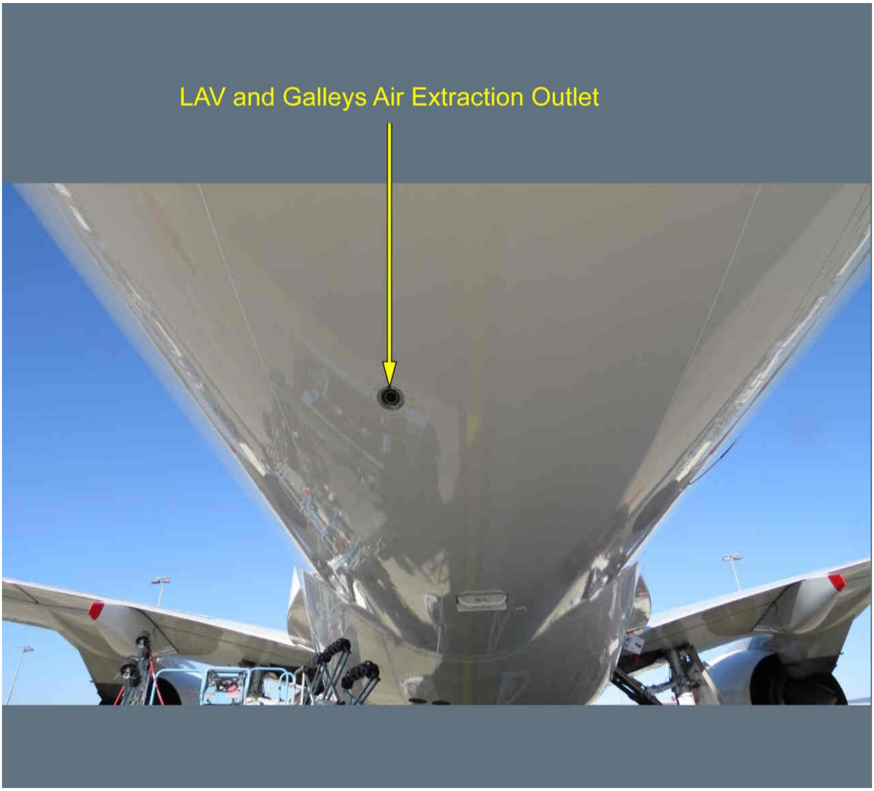
VENTILATION OUTLETS (2).. CLEAR



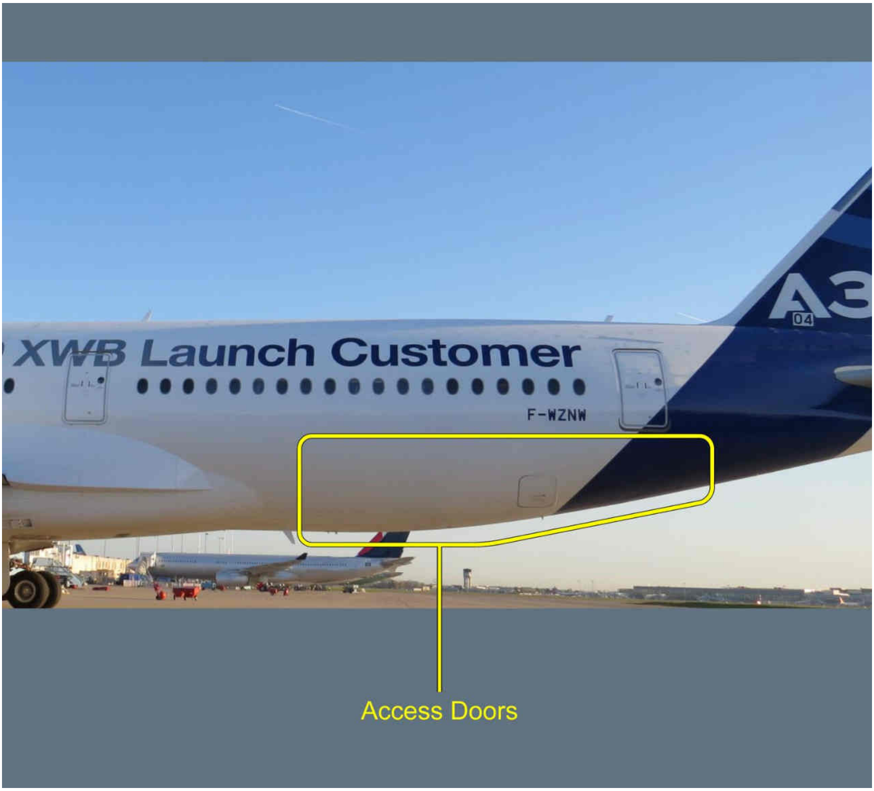
BULK DOOR (IF NOT REQUIRED)... CLOSED



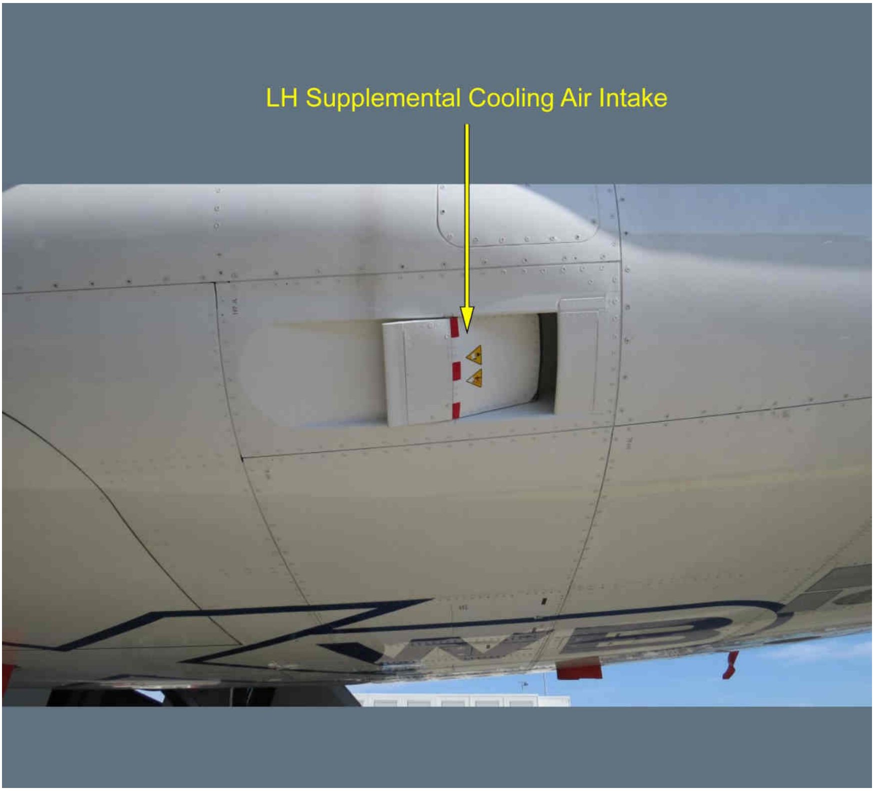
LAV AND GALLEYS AIR EXTRACTION OUTLET..CHECK CONDITION


LAV and Galleys Air Extraction Outlet

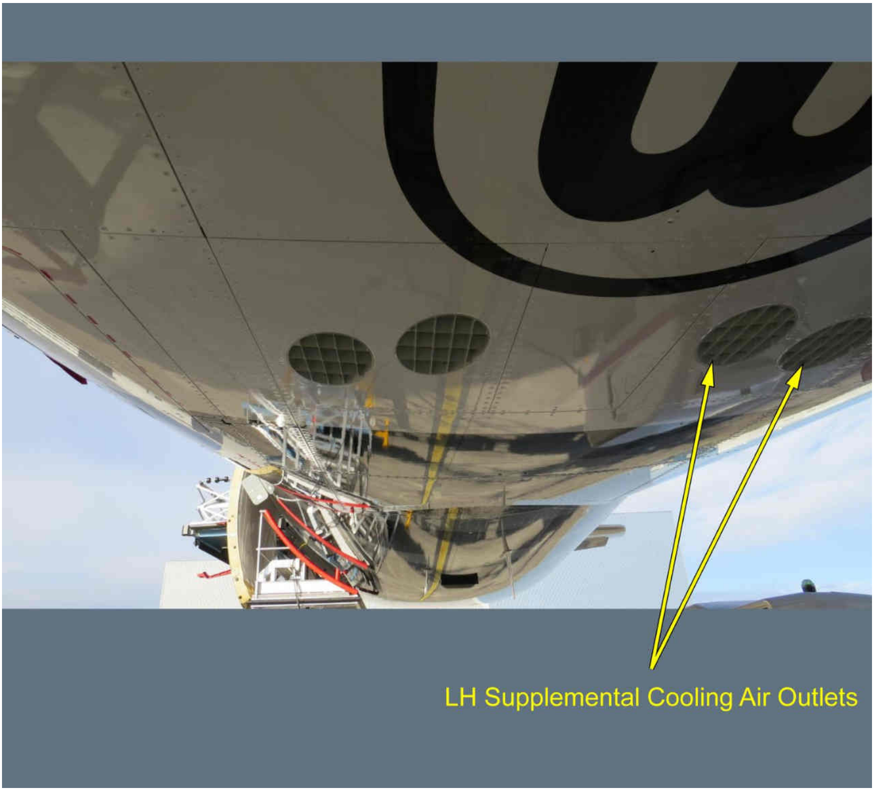
ACCESS DOORS (IF NOT REQUIRED)...CLOSED


XWB Launch Customer
F-WZNW
A3
04
Access Doors

LH SUPPLEMENTAL COOLING AIR INTAKE..CLEAR


LH Supplemental Cooling Air Intake

LH SUPPLEMENTAL COOLING AIR OUTLETS (2)..CLEAR



To return to the Exterior Walkaround schematic, *Refer to PRO-NOR-SOP-50 Exterior Walkaround - Schematic*.

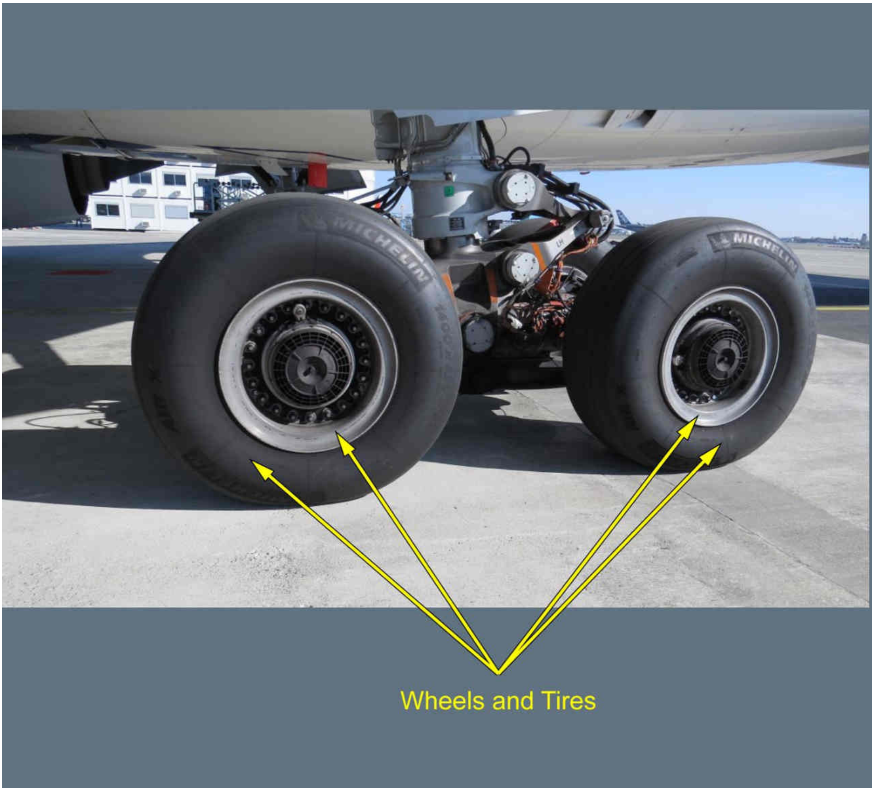
EXTERIOR WALKAROUND - LH LANDING GEAR

Ident.: PRO-NOR-SOP-50-00020473.0001001 / 03 MAY 17
Applicable to: ALL

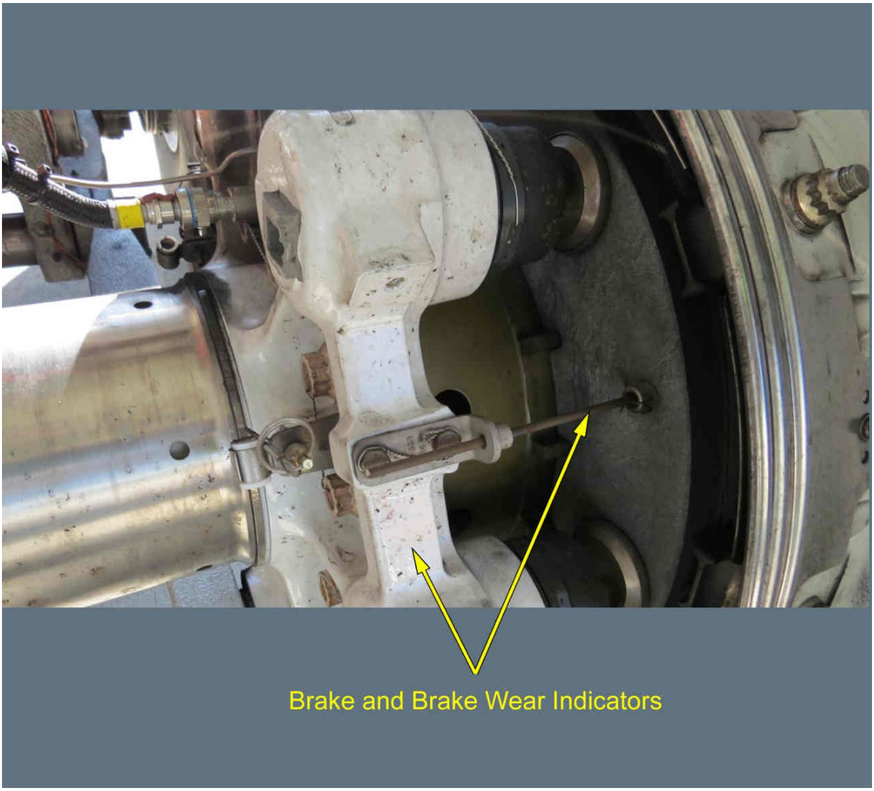
POSITION 18 - LH LANDING GEAR

CHOCKS..REMOVED

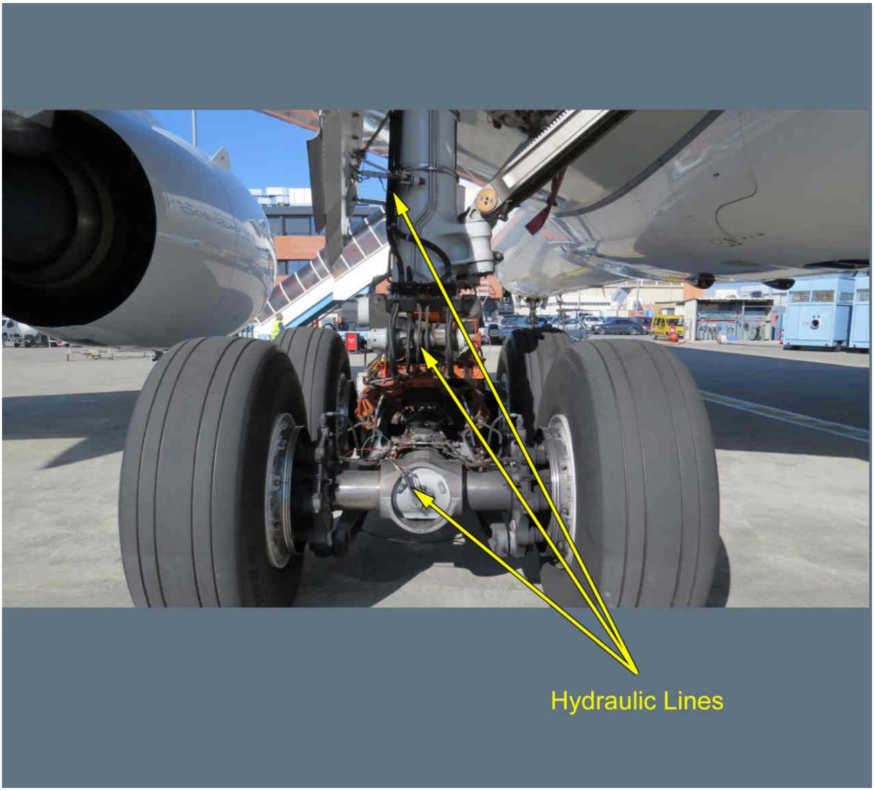
WHEELS AND TIRES...CHECK CONDITION



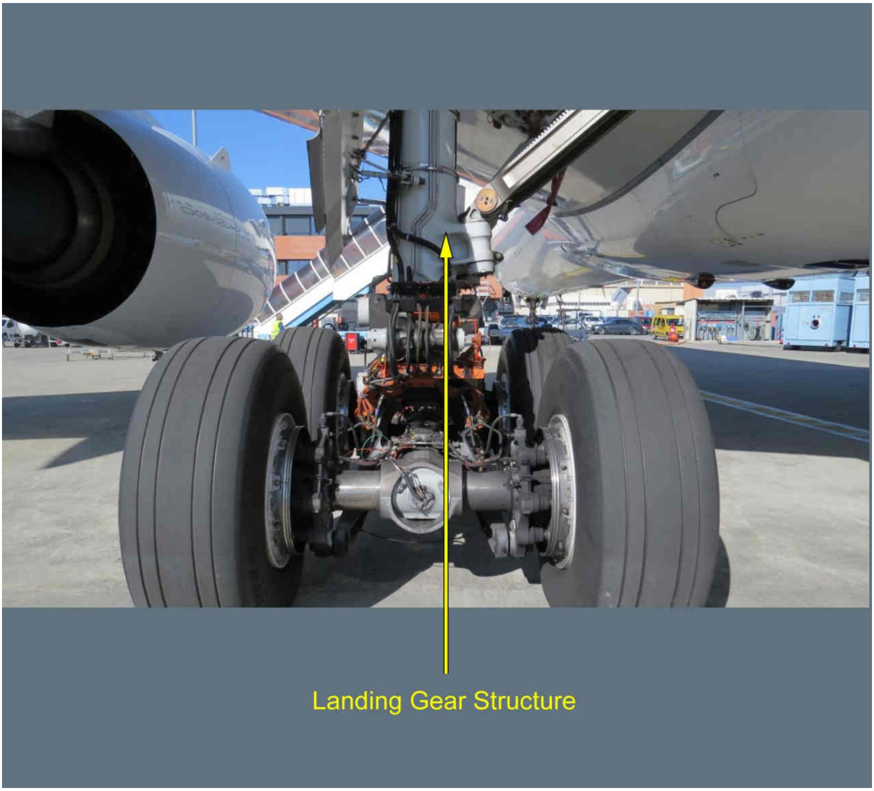
BRAKES AND BRAKE WEAR INDICATORS...CHECK CONDITION


Brake and Brake Wear Indicators

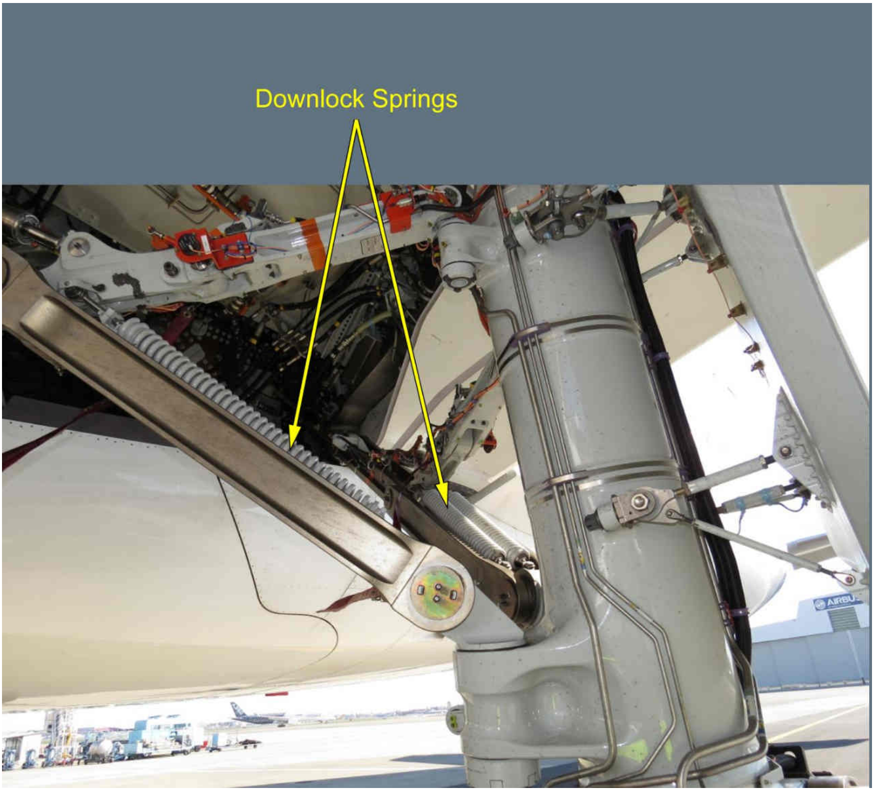
HYDRAULIC LINES.. CHECK



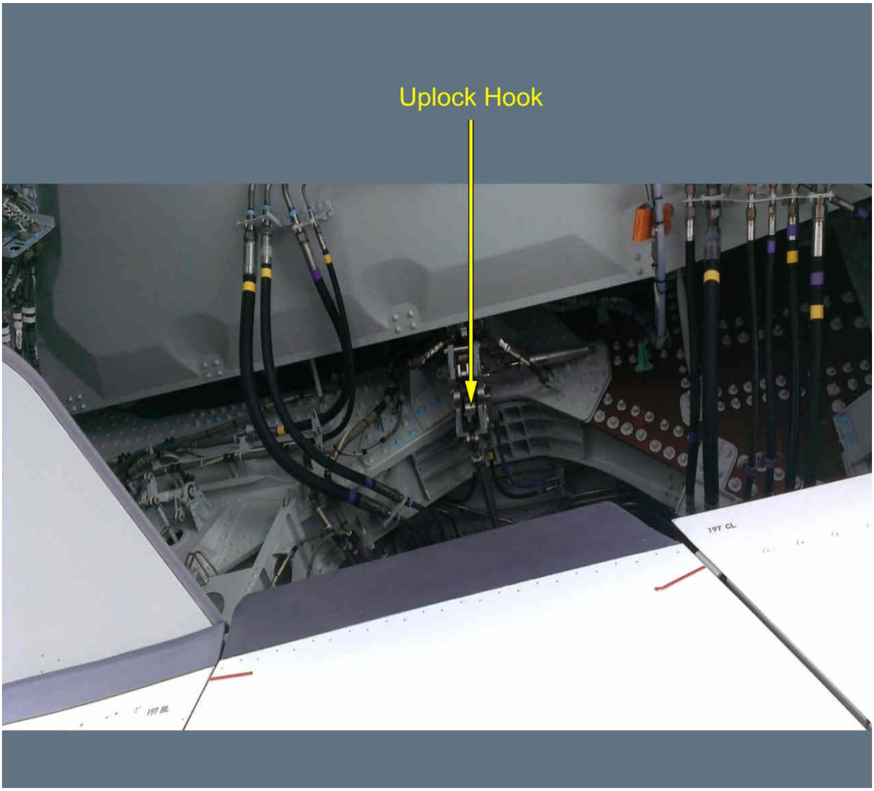
LANDING GEAR STRUCTURE..CHECK



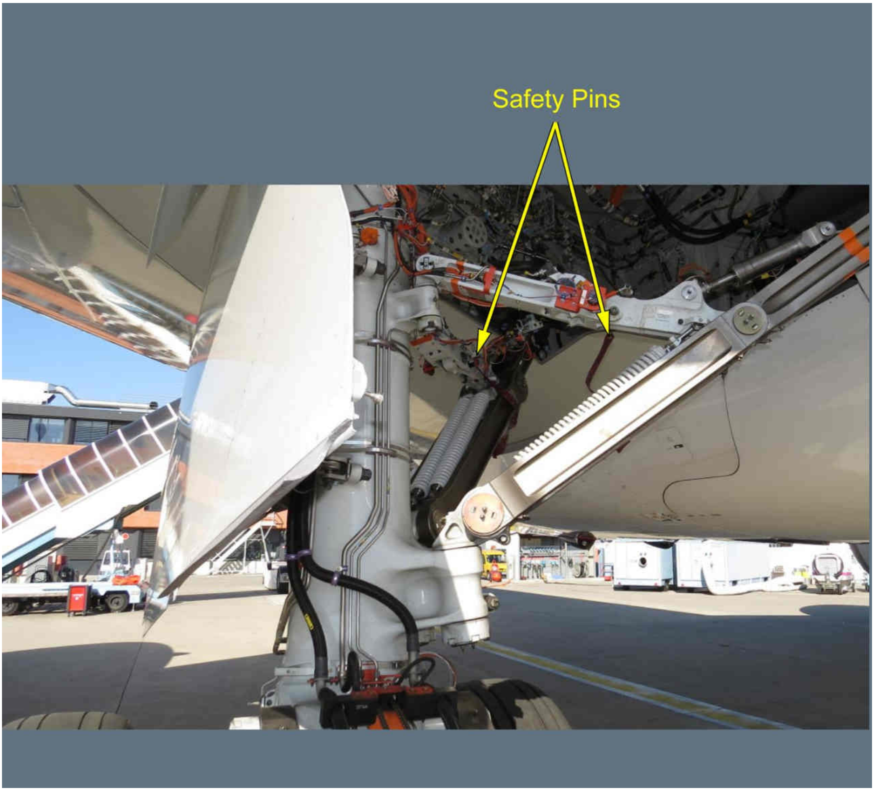
DOWNLOCK SPRINGS.. CHECK



UPLOCK HOOK.. CHECK


Uplock Hook
197 CL
197 BL

SAFETY PINS..REMOVED



To return to the Exterior Walkaround schematic, *Refer to PRO-NOR-SOP-50 Exterior Walkaround - Schematic*.

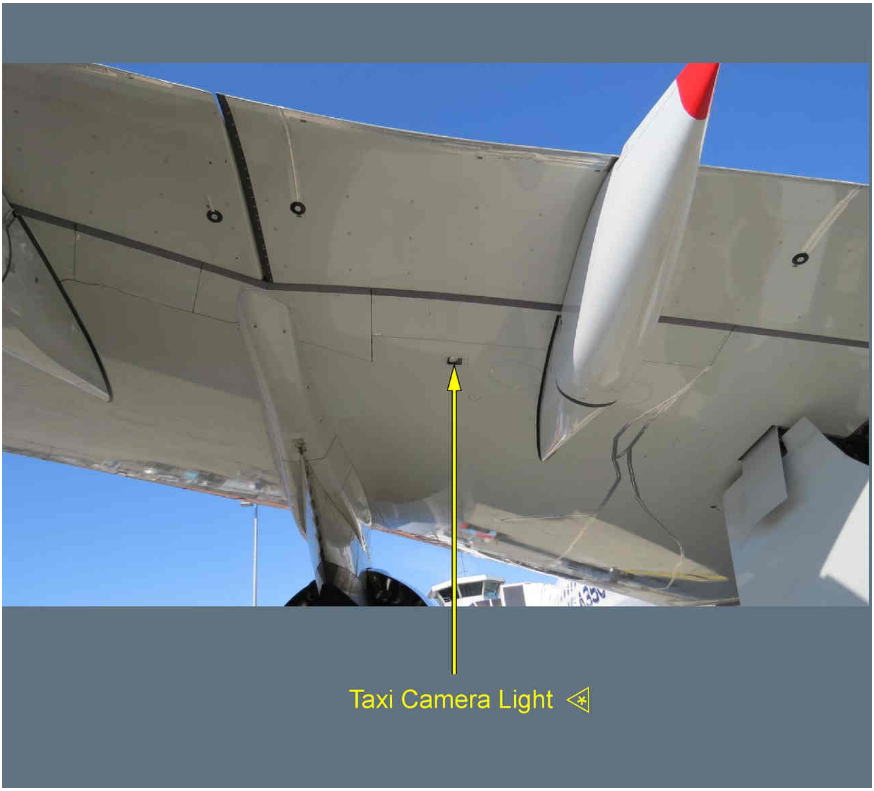
EXTERIOR WALKAROUND - LH WING TRAILING EDGE

Ident.: PRO-NOR-SOP-50-00020474.0001001 / 03 MAY 17

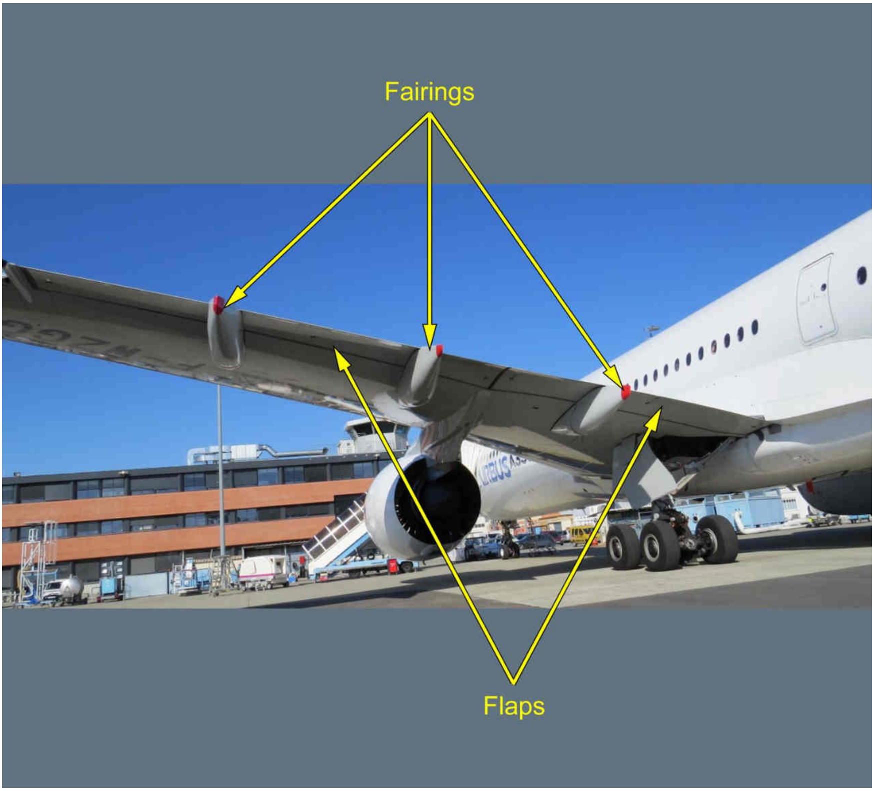
Applicable to: ALL

POSITION 19 - LH WING TRAILING EDGE

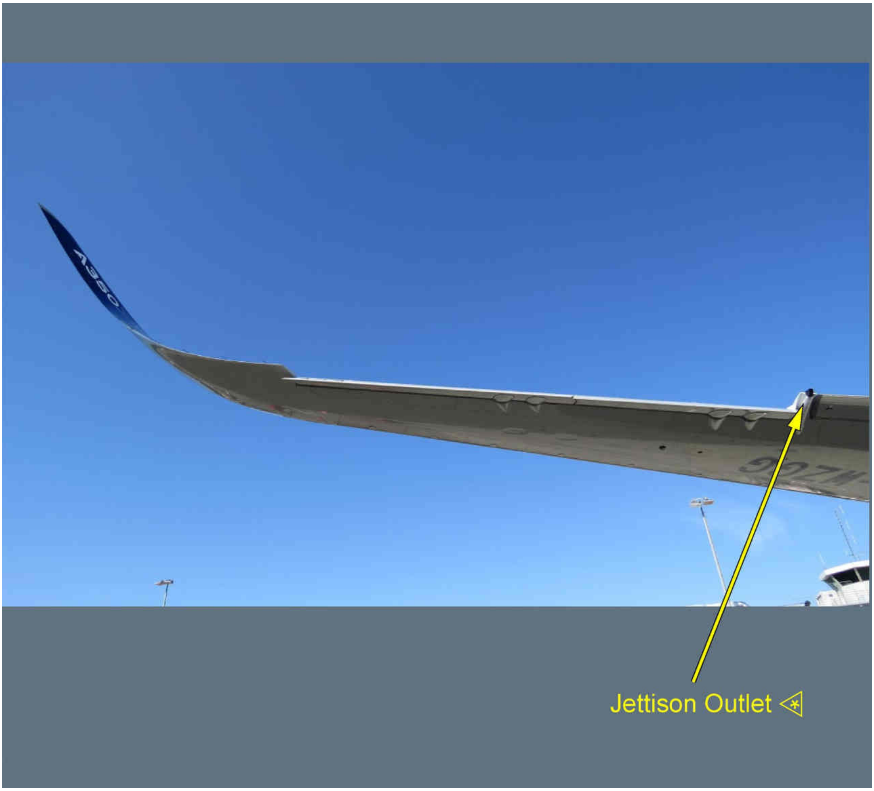
TAXI CAMERA LIGHT ◁ .... CHECK CONDITION



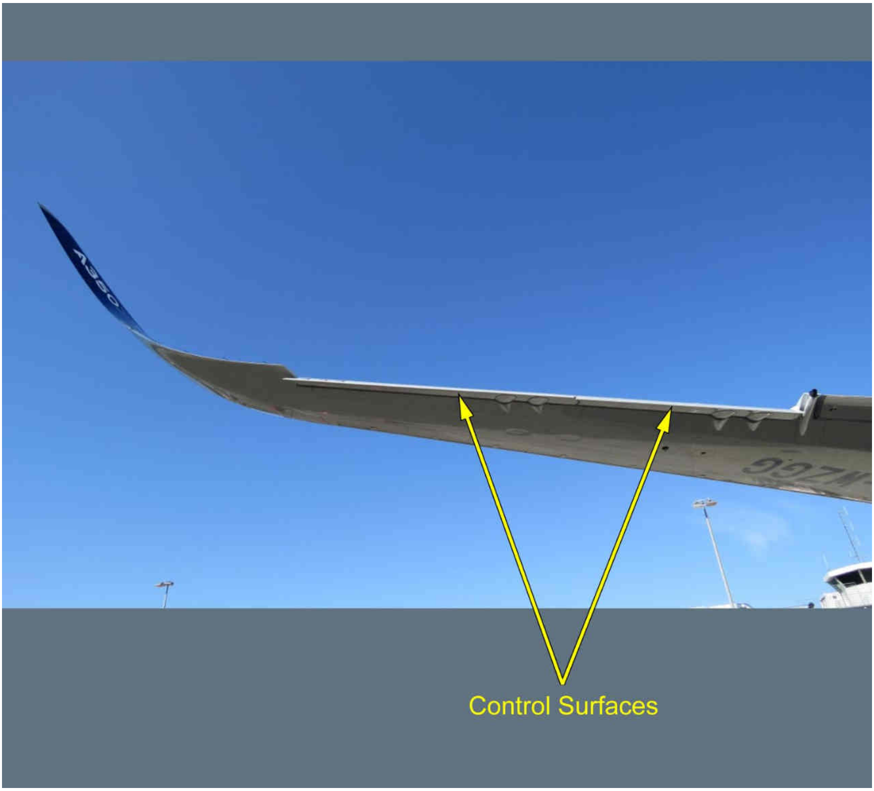
FLAPS AND FAIRINGS...CHECK CONDITION



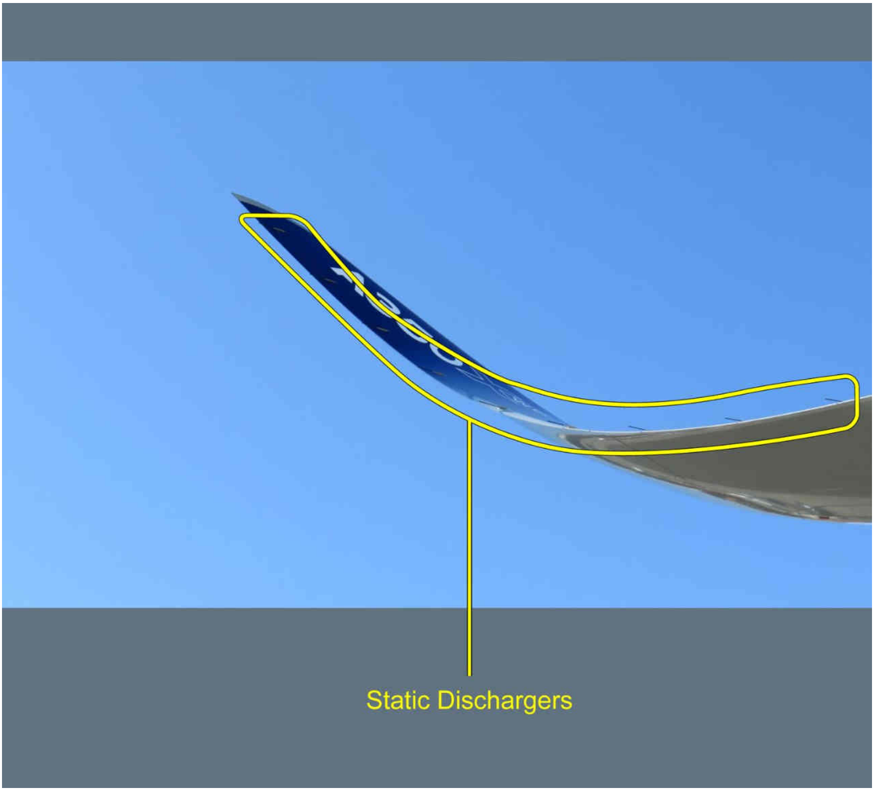
JETTISON OUTLET ◁ ....NO LEAK



CONTROL SURFACES..CHECK CONDITION



STATIC DISCHARGERS..CHECK CONDITION



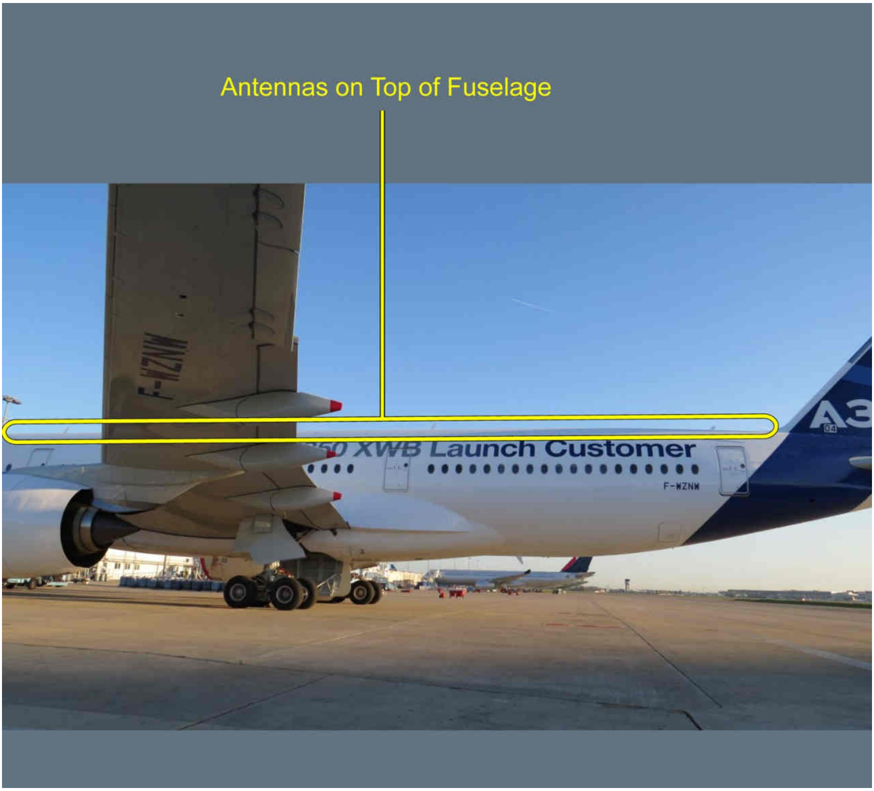
To return to the Exterior Walkaround schematic, *Refer to PRO-NOR-SOP-50 Exterior Walkaround - Schematic*.

EXTERIOR WALKAROUND - LH WING TIP

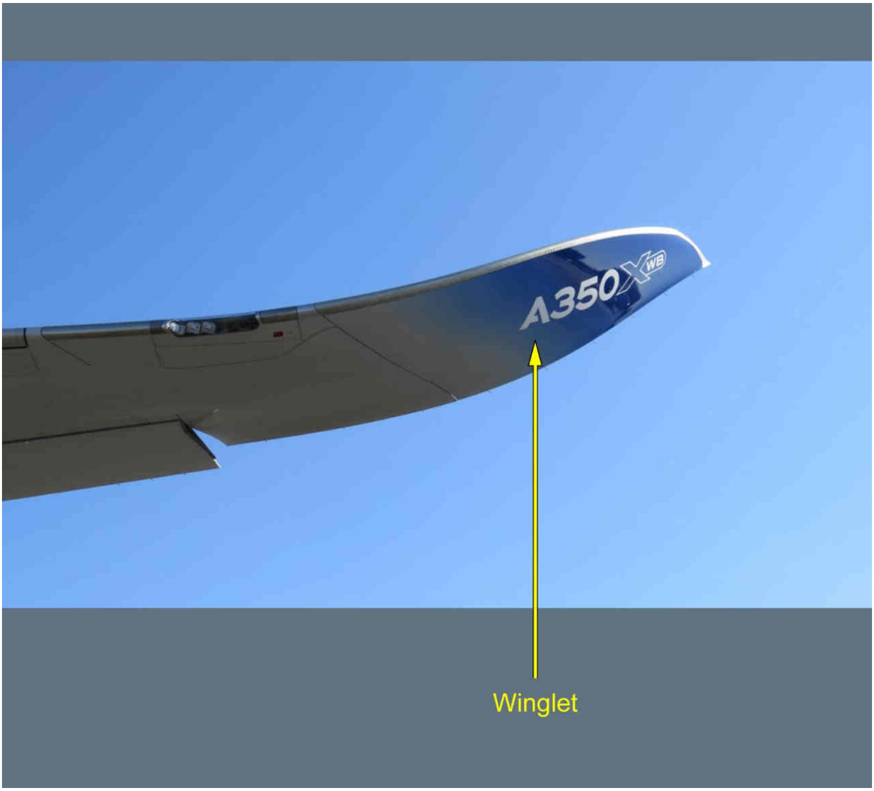
Ident.: PRO-NOR-SOP-50-00020475.0001001 / 03 MAY 17
Applicable to: ALL

POSITION 20 - LH WING TIP

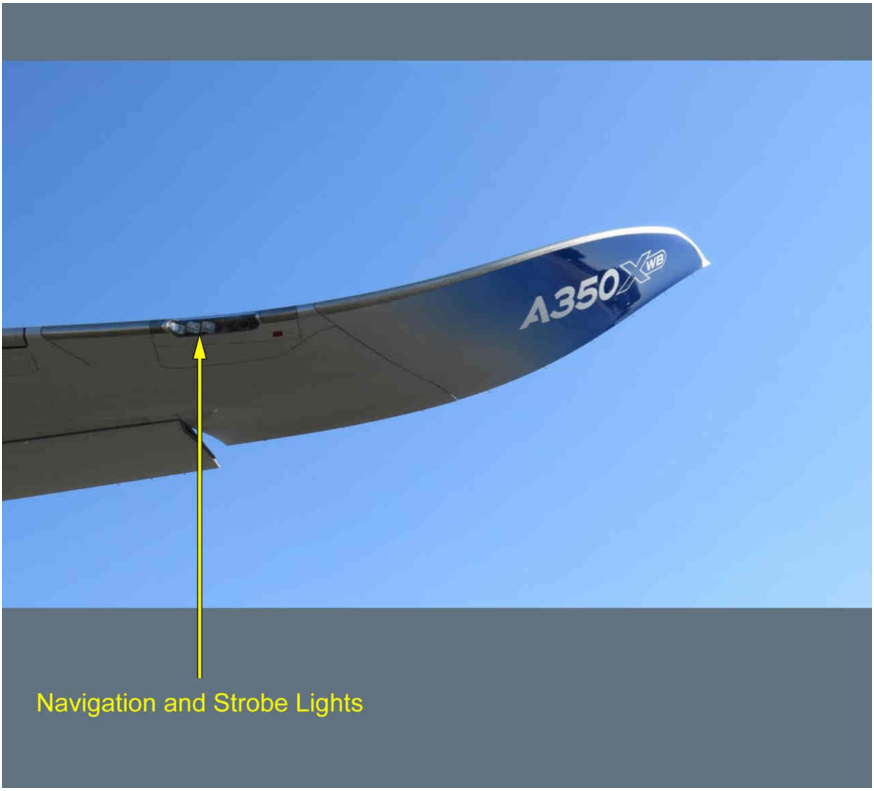
ANTENNAS ON TOP OF FUSELAGE.. CHECK CONDITION


Antennas on Top of Fuselage
A350 XWB Launch Customer
F-WZNW

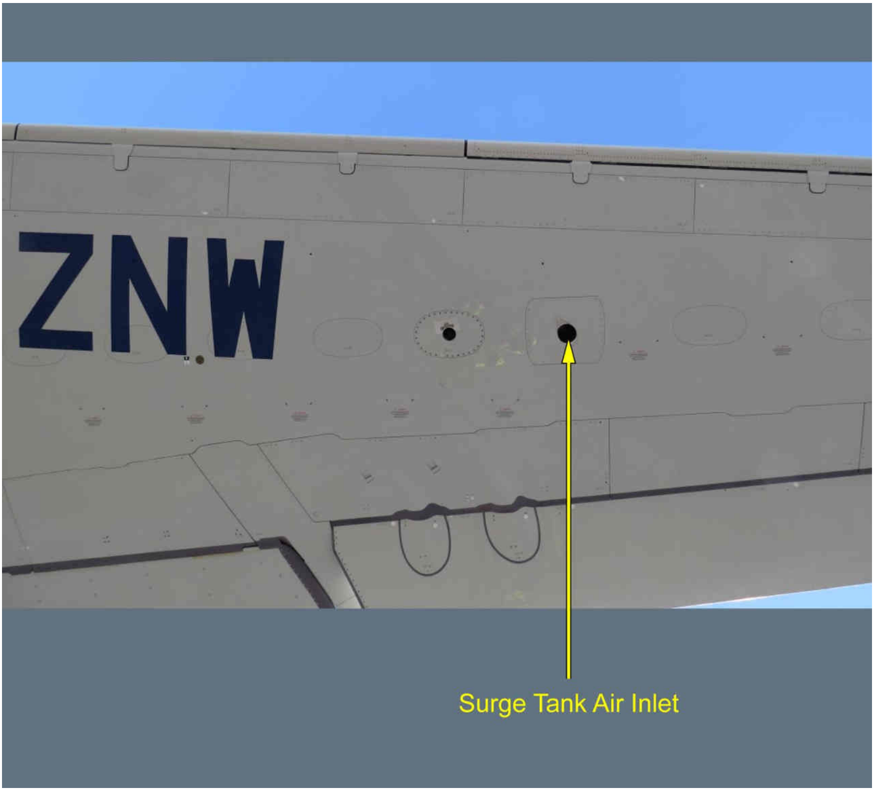
WINGLET...CHECK CONDITION



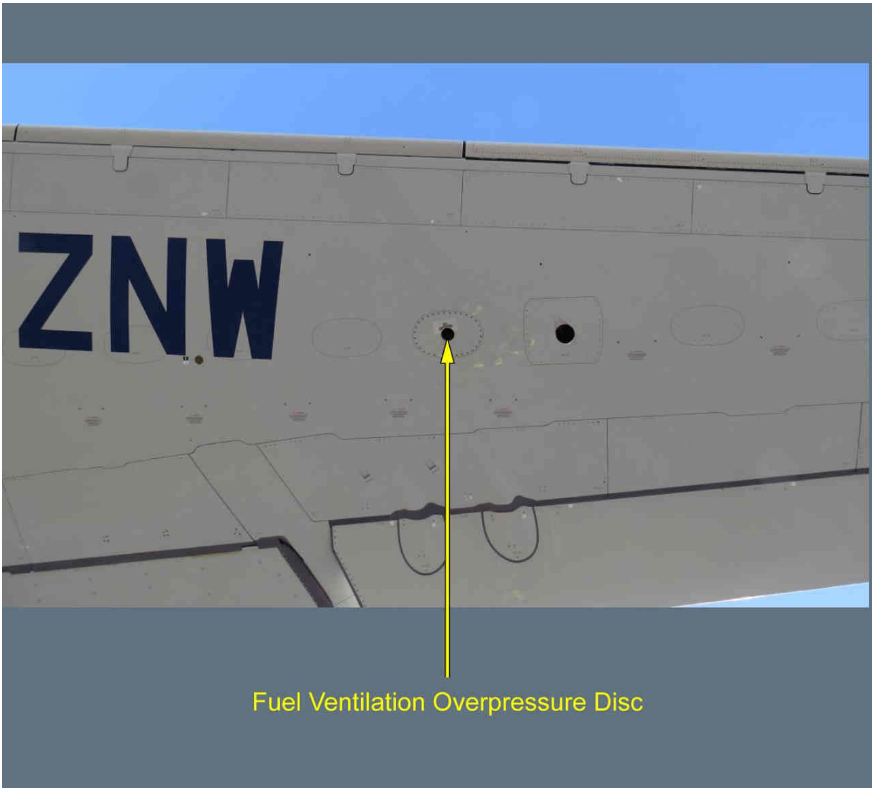
NAVIGATION AND STROBE LIGHTS.. CHECK CONDITION


A350XWB
Navigation and Strobe Lights

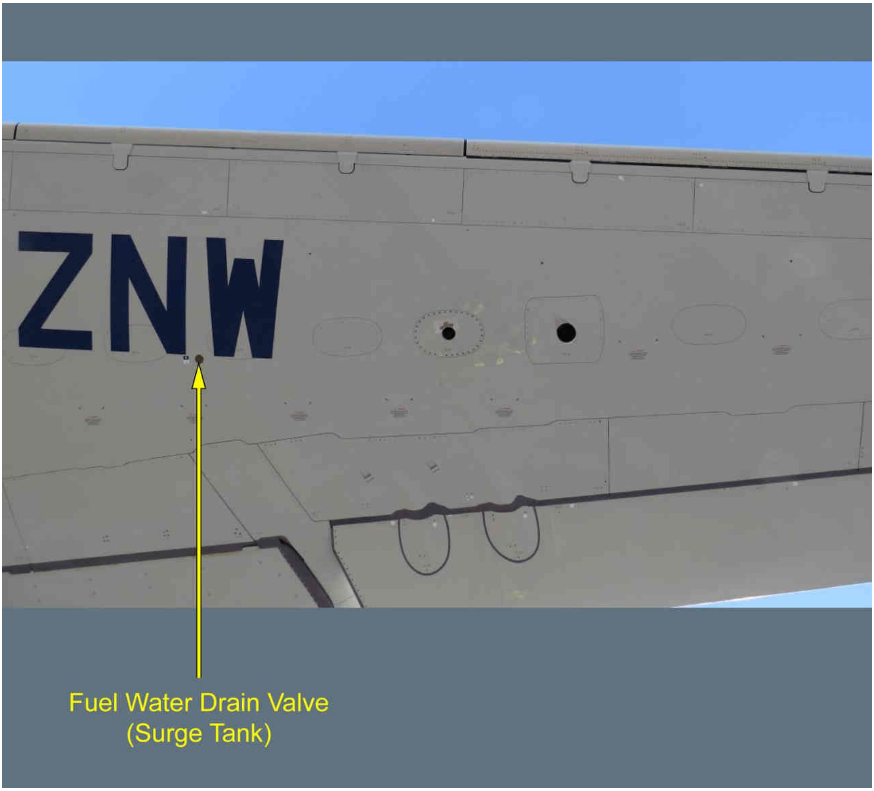
SURGE TANK AIR INLET...CLEAR


ZNW
Surge Tank Air Inlet

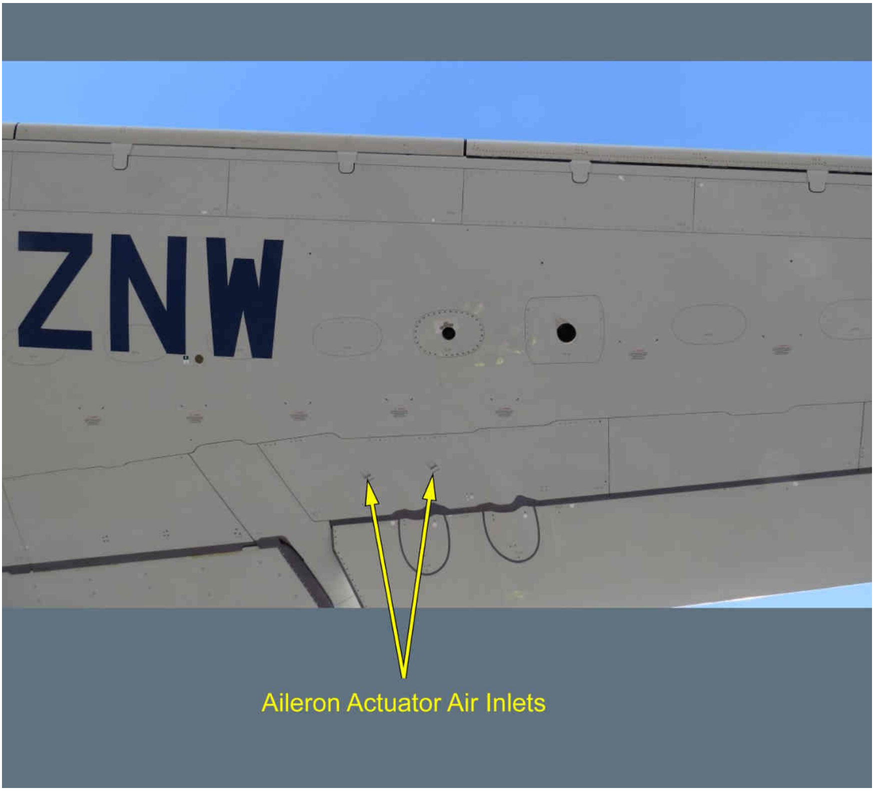
FUEL VENTILATION OVERPRESSURE DISC..INTACT


ZNW
Fuel Ventilation Overpressure Disc

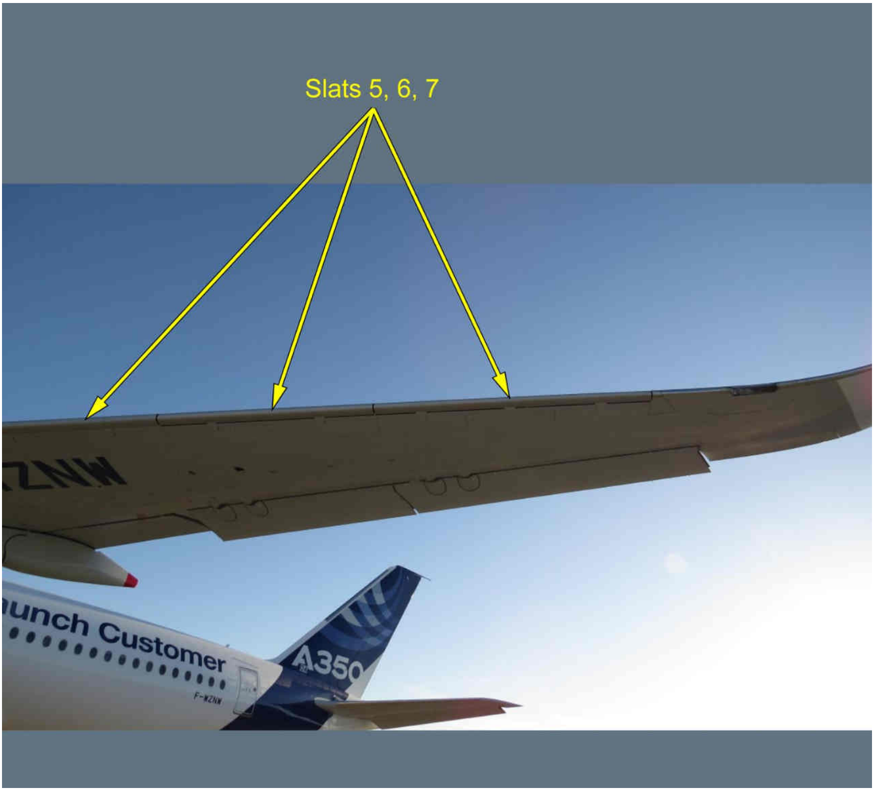
FUEL WATER DRAIN VALVE (SURGE TANK)... NO LEAK


ZNW
Fuel Water Drain Valve
(Surge Tank)

AILERON ACTUATOR AIR INLETS...CLEAR


ZNW
Aileron Actuator Air Inlets

SLATS 7, 6, 5..CHECK CONDITION



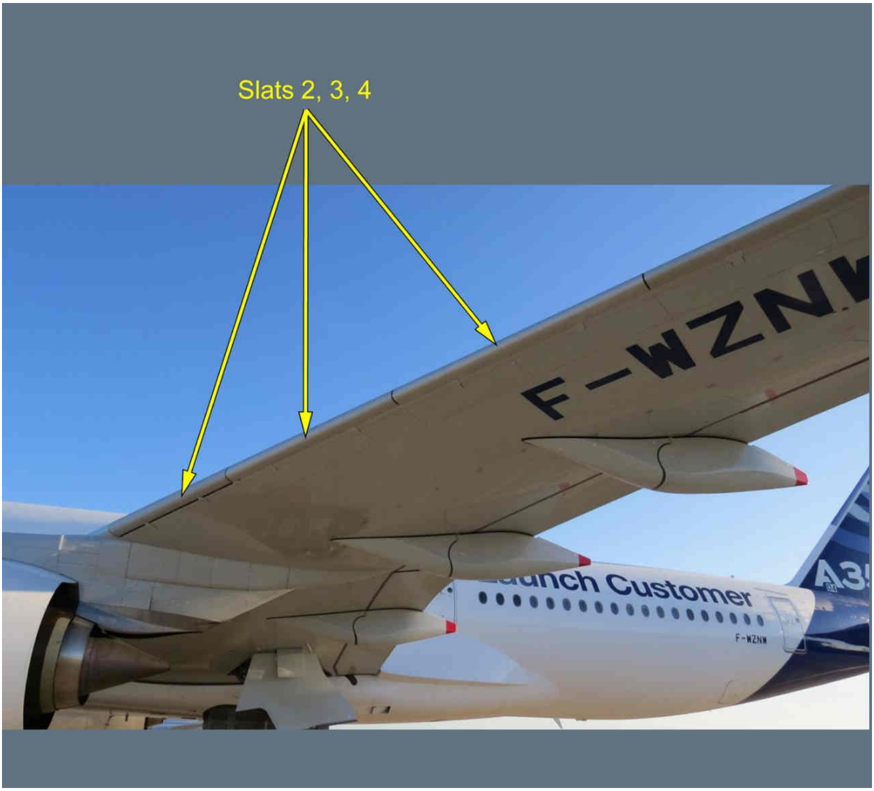
To return to the Exterior Walkaround schematic, *Refer to PRO-NOR-SOP-50 Exterior Walkaround - Schematic*.

EXTERIOR WALKAROUND - LH WING LEADING EDGE

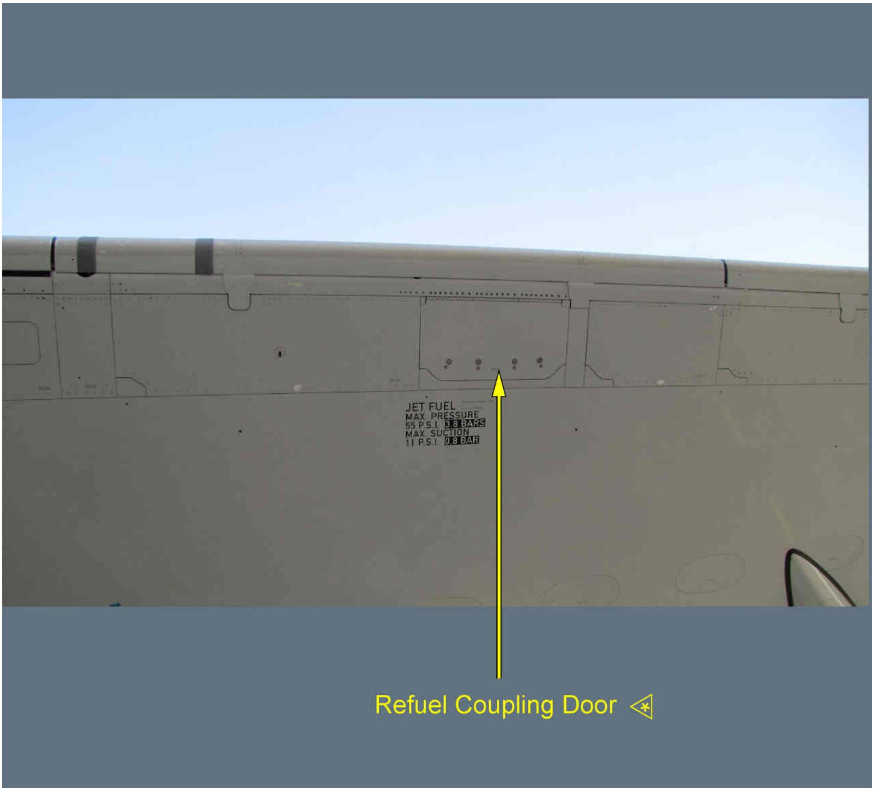
Ident.: PRO-NOR-SOP-50-00020476.0001001 / 03 MAY 17
Applicable to: ALL

POSITION 21 - LH WING LEADING EDGE

SLATS 4, 3, 2.. CHECK CONDITION


Slats 2, 3, 4
F-WZNW
Launch Customer
A350
F-WZNW

REFUEL COUPLING DOOR ◁ .... CLOSED


JET FUEL
MAX PRESSURE
55 P.S.I. 3.8 BARS
MAX SUCTION
11 P.S.I. 0.8 BAR
Refuel Coupling Door ◁

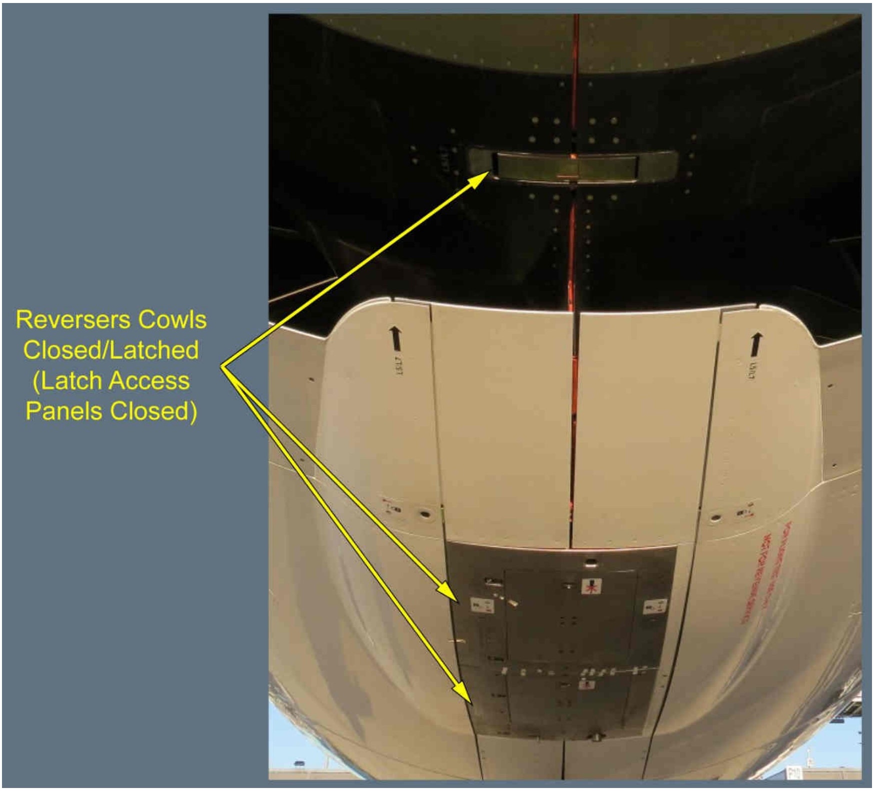
To return to the Exterior Walkaround schematic, *Refer to PRO-NOR-SOP-50 Exterior Walkaround - Schematic*.

EXTERIOR WALKAROUND - ENG 1 LH SIDE

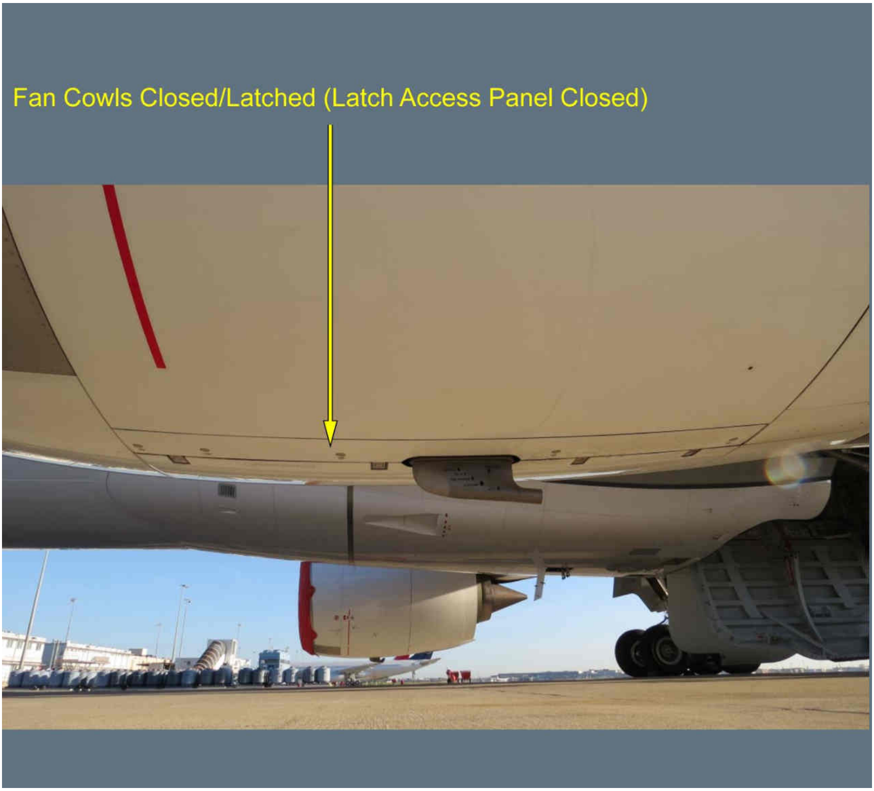
Ident.: PRO-NOR-SOP-50-00020477.0001001 / 04 MAR 20
Applicable to: ALL

POSITION 22 - ENG 1 LH SIDE

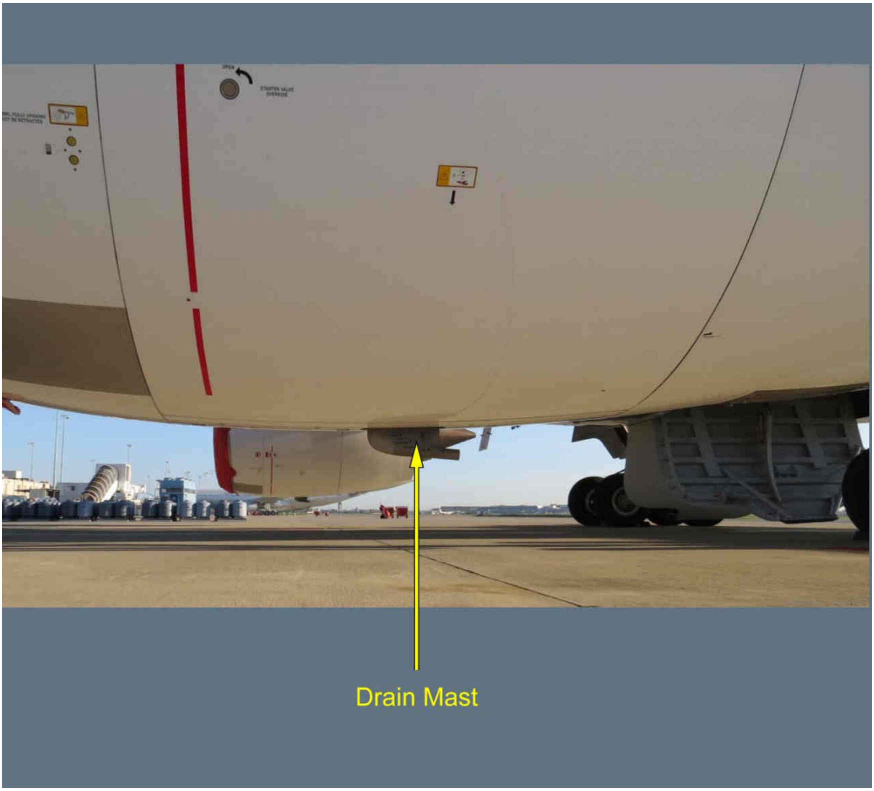
REVERSERS COWLS... CLOSED/LATCHED


Reversers Cowls
Closed/Latched
(Latch Access
Panels Closed)

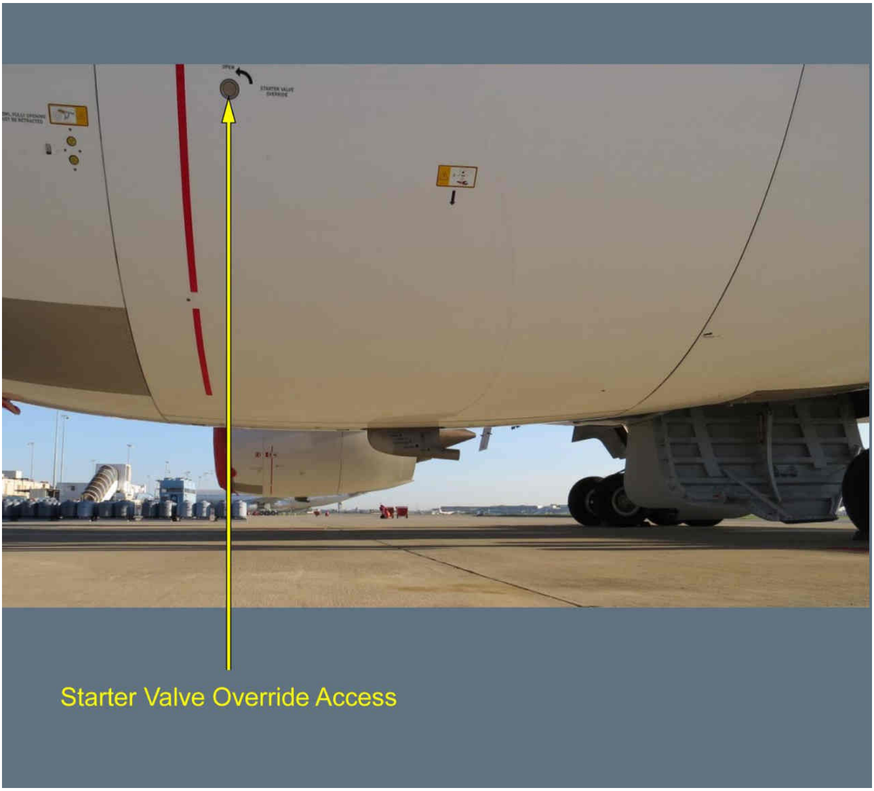
FAN COWLS..CLOSED/LATCHED/FLUSH/FLAG REMOVED


Fan Cowls Closed/Latched (Latch Access Panel Closed)

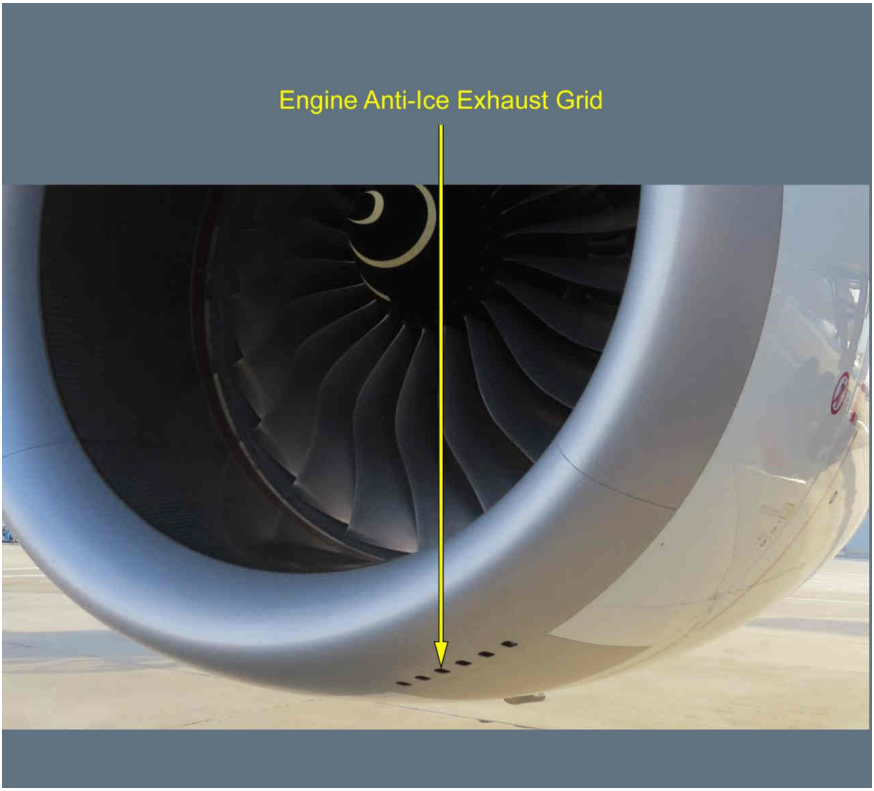
DRAIN MAST.. CHECK CONDITION/NO LEAK



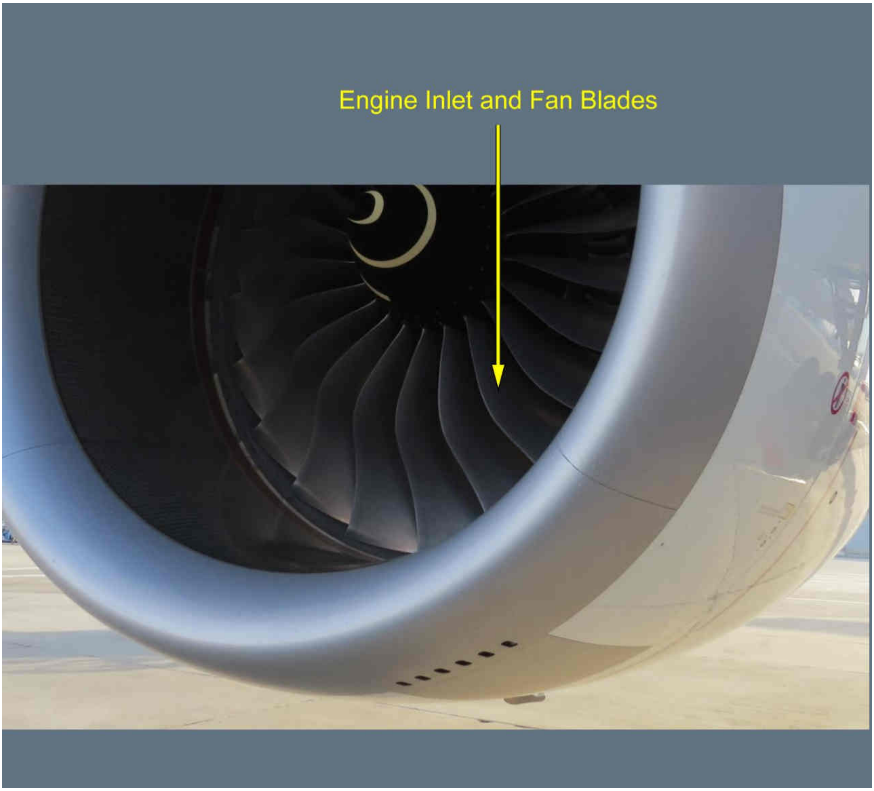
STARTER VALVE OVERRIDE ACCESS..CLOSED


Starter Valve Override Access

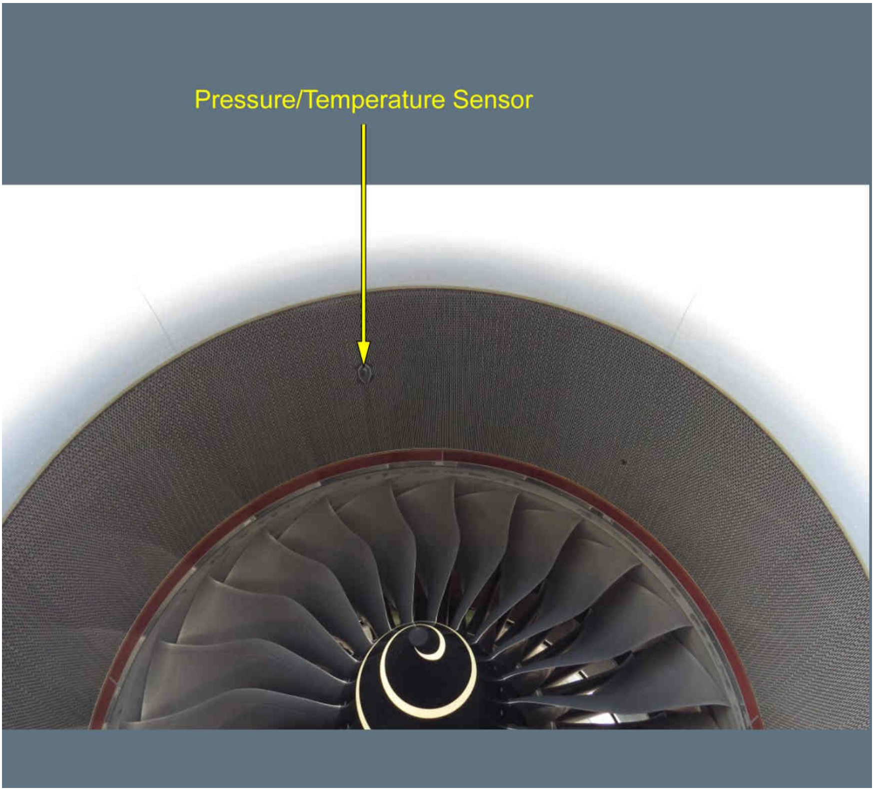
ENGINE ANTI-ICE EXHAUST GRID..CHECK CONDITION


Engine Anti-Ice Exhaust Grid

ENGINE INLET AND FAN BLADES..CHECK CONDITION


Engine Inlet and Fan Blades

PRESSURE/TEMPERATURE SENSOR.. CHECK CONDITION



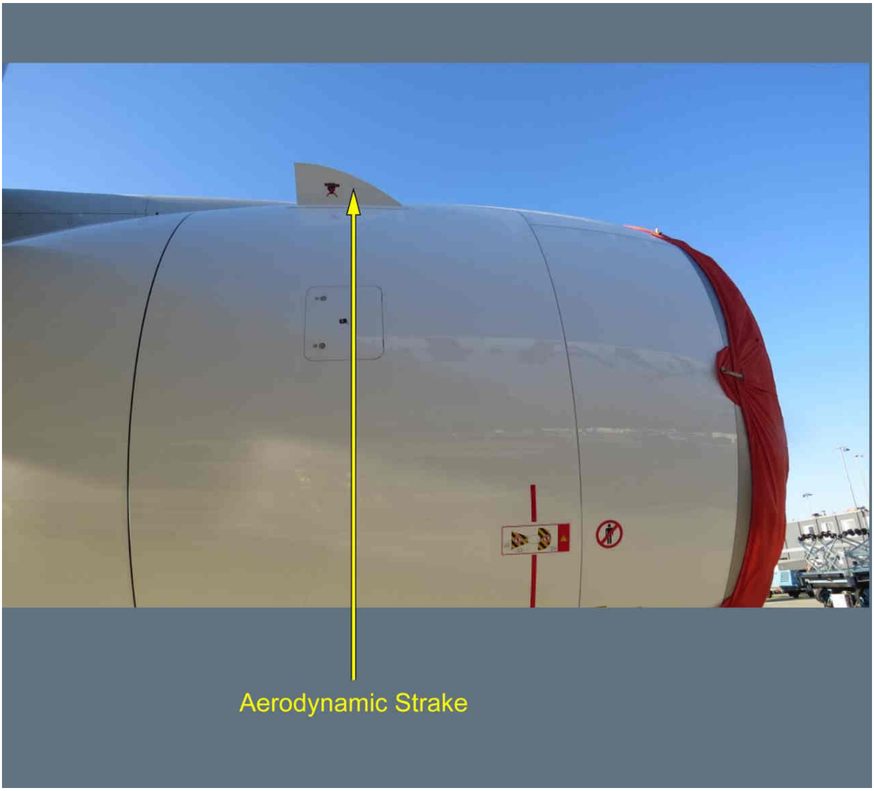
To return to the Exterior Walkaround schematic, *Refer to PRO-NOR-SOP-50 Exterior Walkaround - Schematic*.

EXTERIOR WALKAROUND - ENG 1 RH SIDE

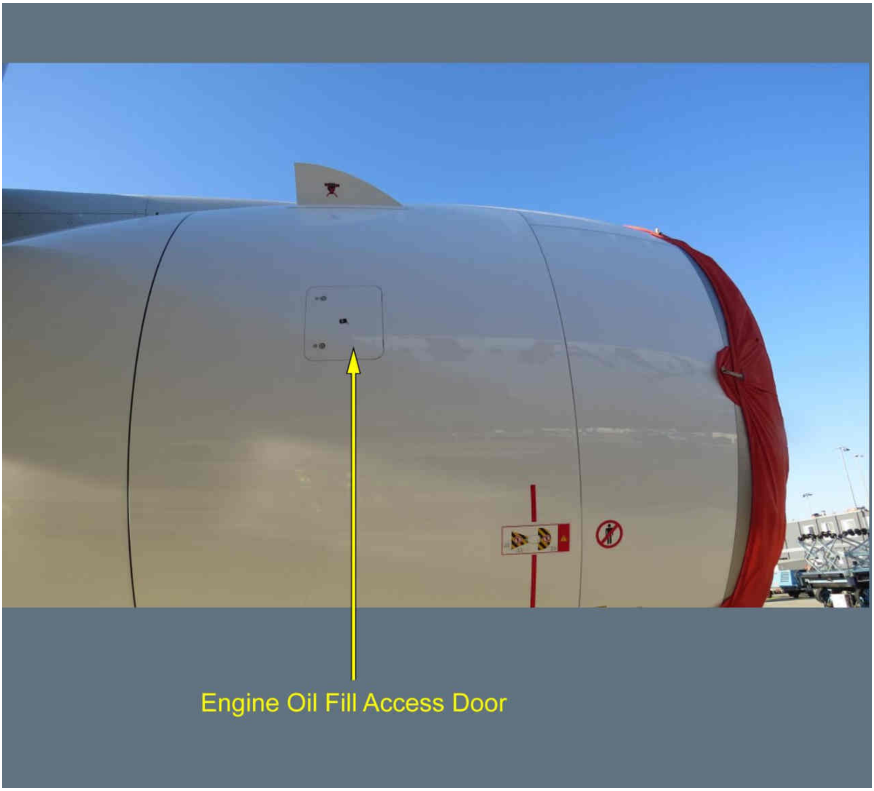
Ident.: PRO-NOR-SOP-50-00020478.0001001 / 06 MAY 15
Applicable to: ALL

POSITION 23 - ENG 1 RH SIDE

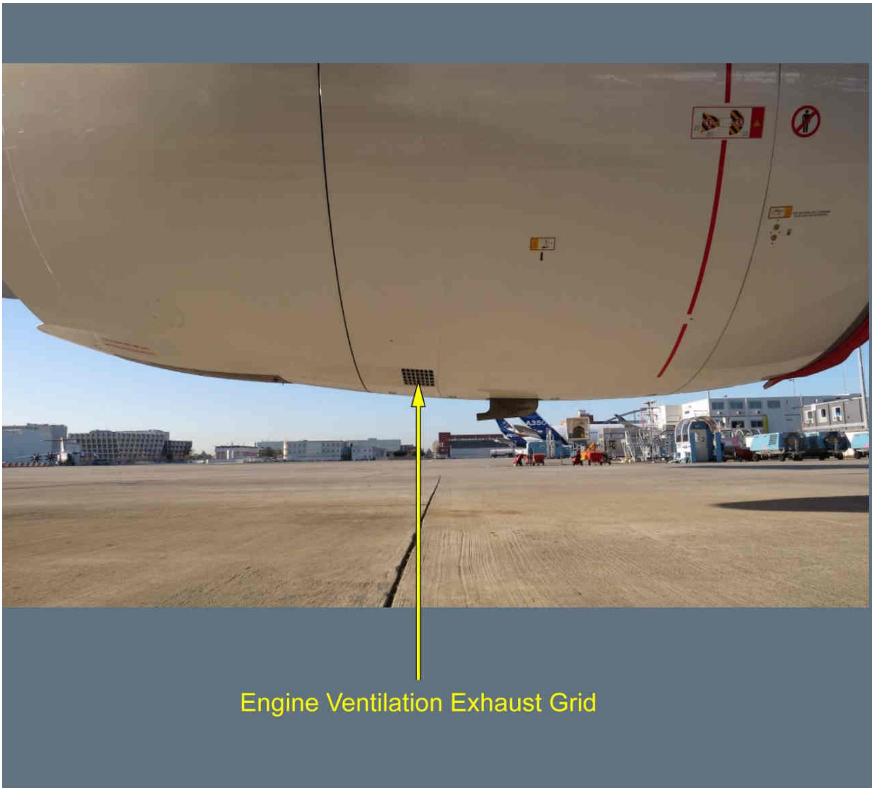
AERODYNAMIC STRAKE... CHECK CONDITION



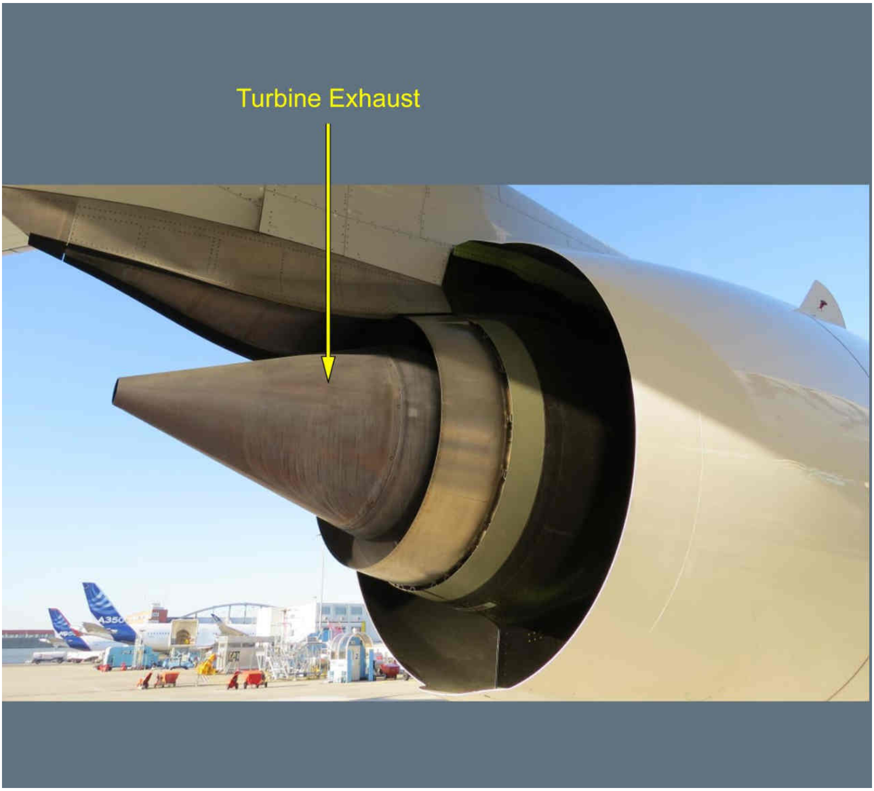
ENGINE OIL FILL ACCESS DOOR.. CLOSED


Engine Oil Fill Access Door

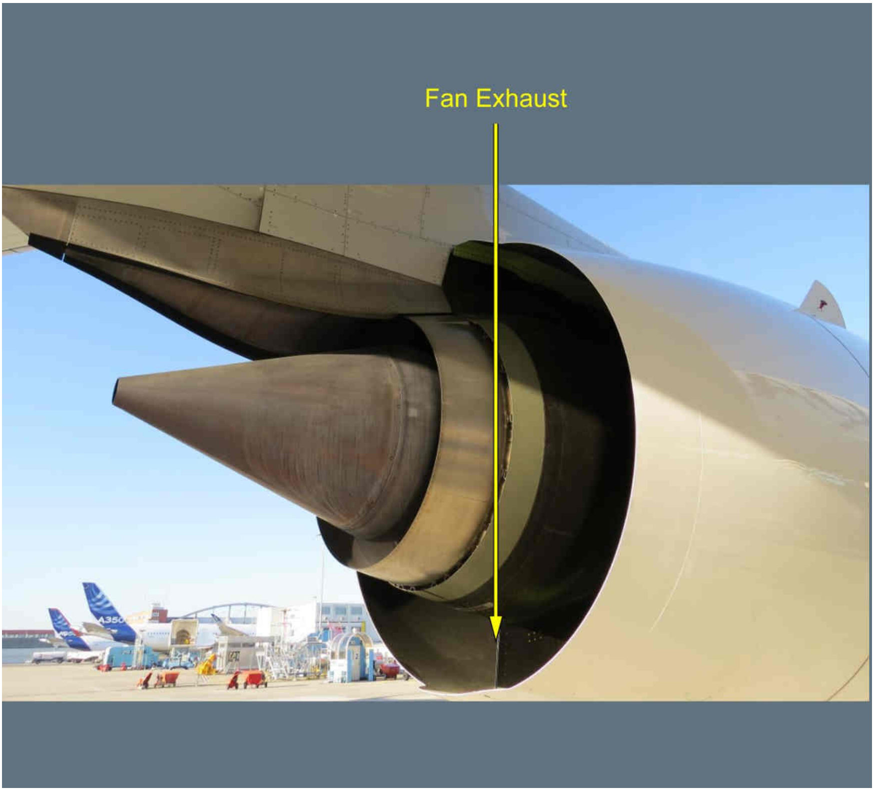
ENGINE VENTILATION EXHAUST GRID..CHECK CONDITION


Engine Ventilation Exhaust Grid

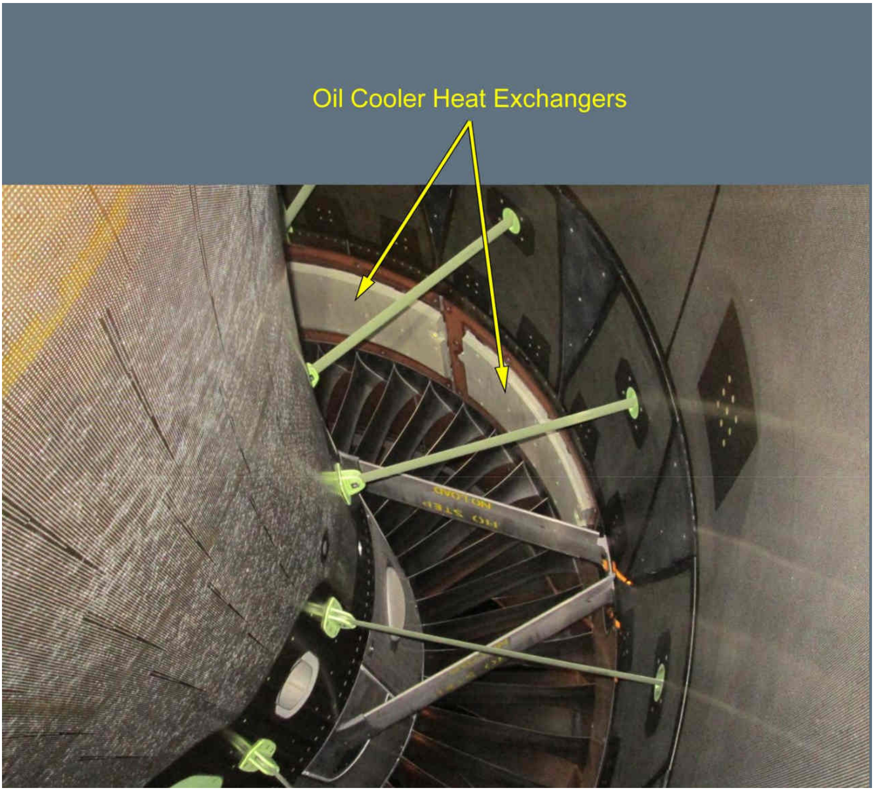
TURBINE EXHAUST.. CLEAR

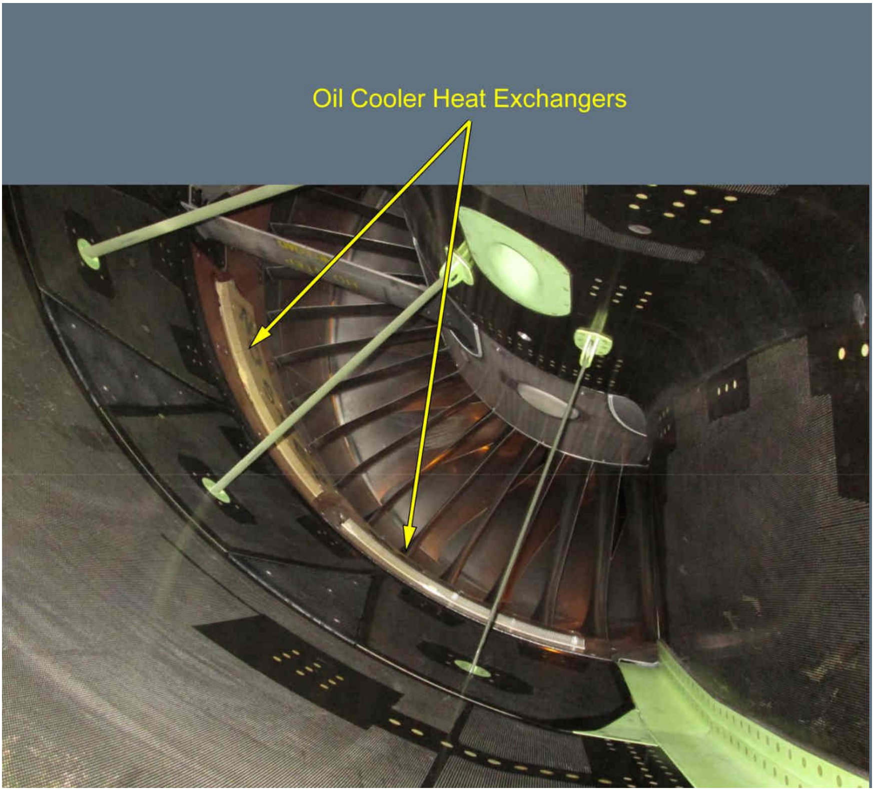


FAN EXHAUST..CLEAR



OIL COOLER HEAT EXCHANGERS .... CHECK CONDITION


Oil Cooler Heat Exchangers
NO LOAD
NO STEP



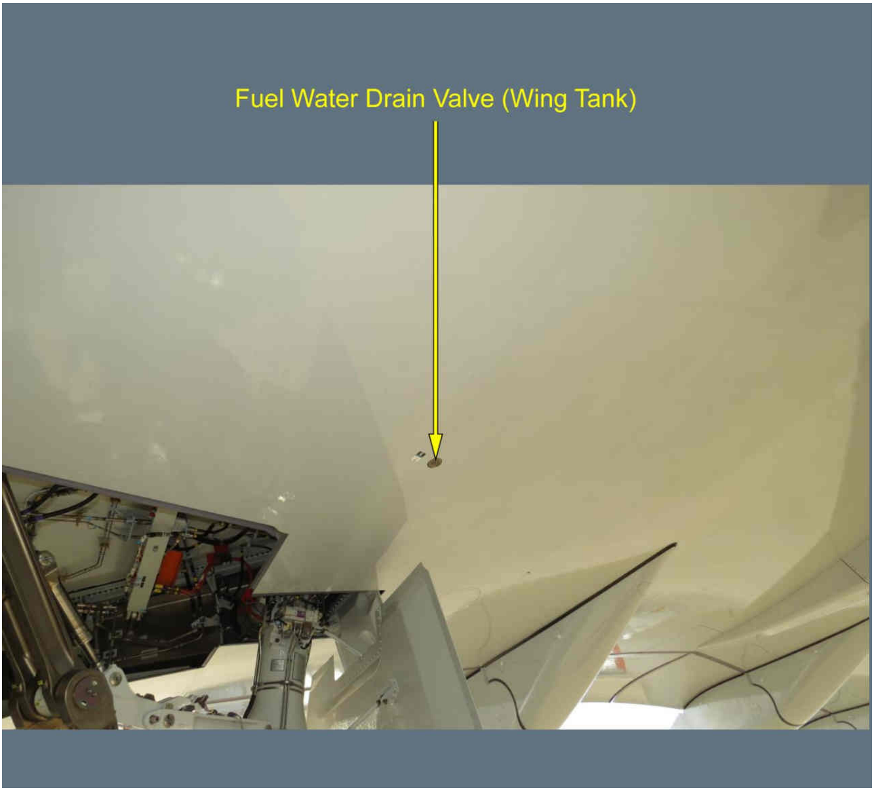
To return to the Exterior Walkaround schematic, *Refer to PRO-NOR-SOP-50 Exterior Walkaround - Schematic*.

EXTERIOR WALKAROUND - LH CENTER WING

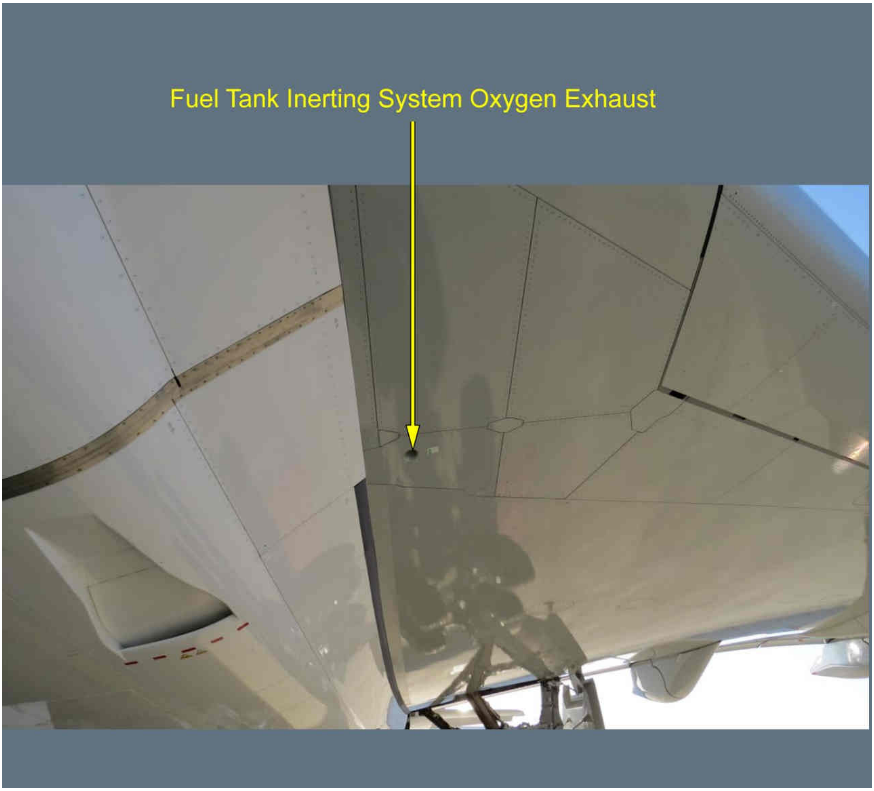
Ident.: PRO-NOR-SOP-50-00020479.0001001 / 03 MAY 17
Applicable to: ALL

POSITION 24 - LH CENTER WING

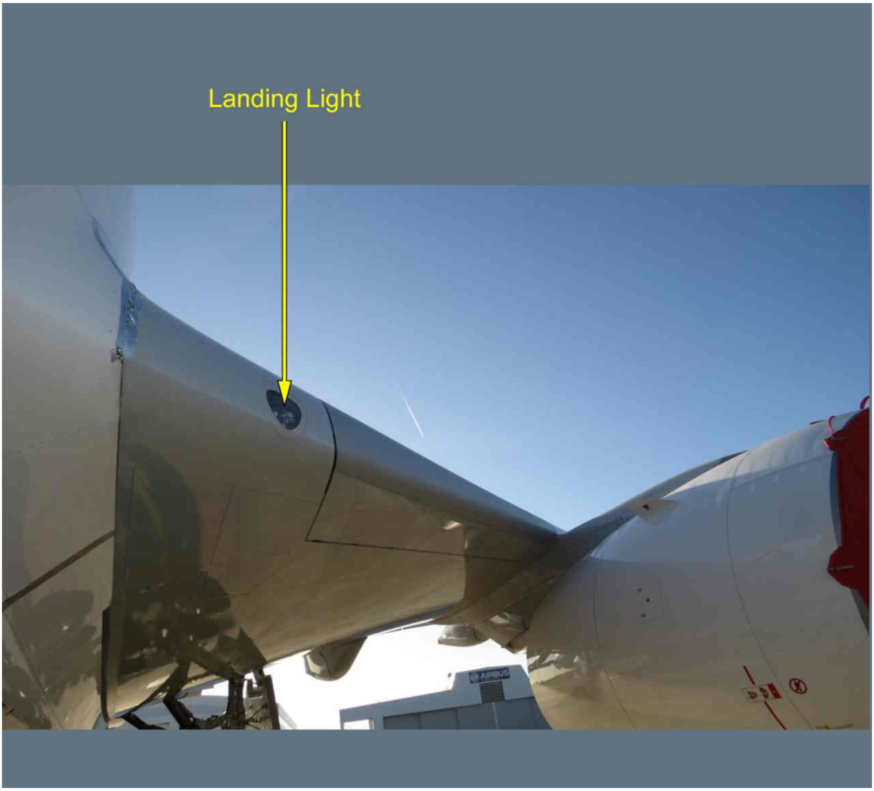
FUEL WATER DRAIN VALVE (WING TANK) ....NO LEAK


Fuel Water Drain Valve (Wing Tank)

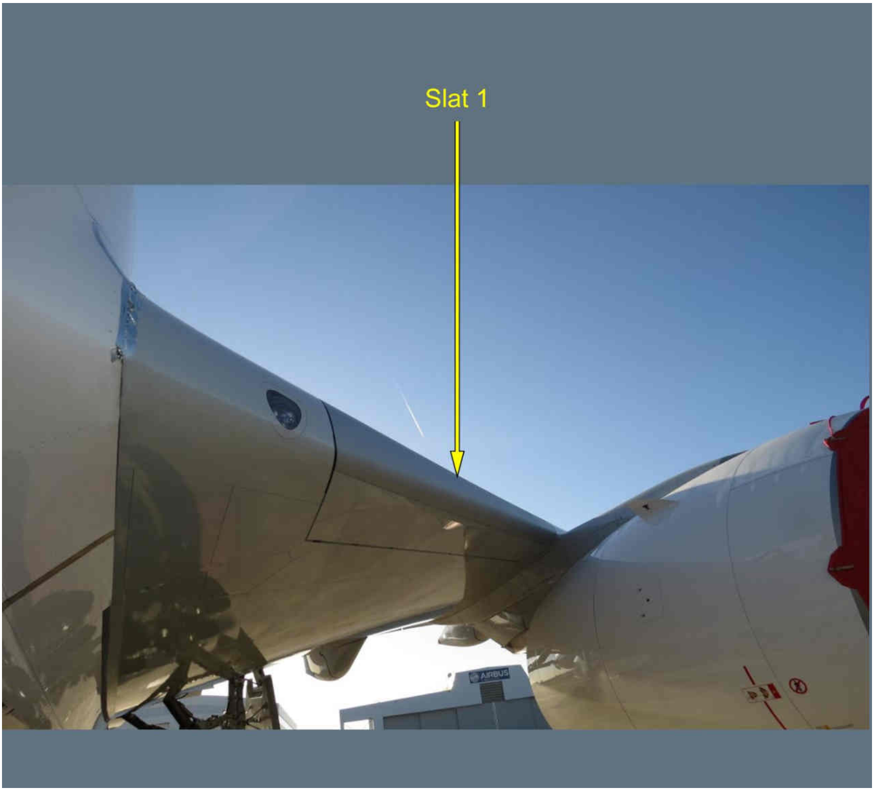
FUEL TANK INERTING SYSTEM OXYGEN EXHAUST ....CHECK CONDITION


Fuel Tank Inerting System Oxygen Exhaust

LANDING LIGHT...CHECK CONDITION



SLAT 1...CHECK CONDITION



To return to the Exterior Walkaround schematic, *Refer to PRO-NOR-SOP-50 Exterior Walkaround - Schematic*.

Intentionally left blank

GENERAL

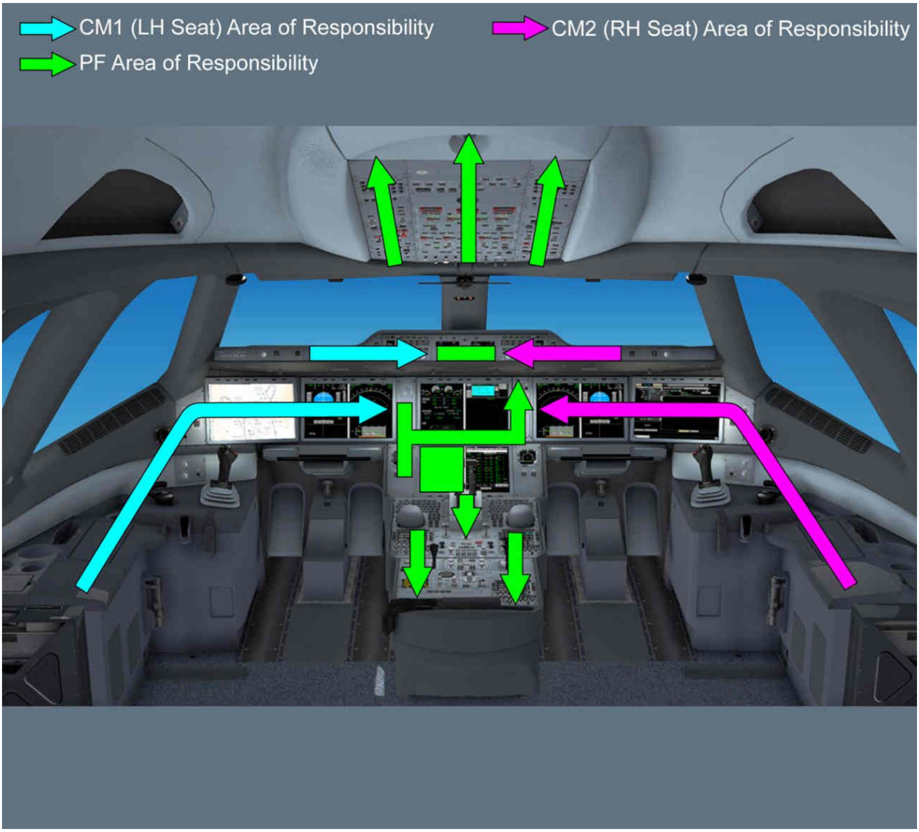
Ident.: PRO-NOR-SOP-60-00006477.0001001 / 25 APR 14
Applicable to: ALL

The PF and PM should perform the cockpit preparation, in accordance with the defined panel scan sequence and tasksharing.
The PF prepares the overhead panel, the center instrument panel and the pedestal while the PM performs the external walkaround. When both flight crewmembers are seated and the PM checked the FMS, both flight crewmembers continue the cockpit preparation.

WARNING	Do not pressurize the hydraulic systems until clearance is obtained from ground personnel.

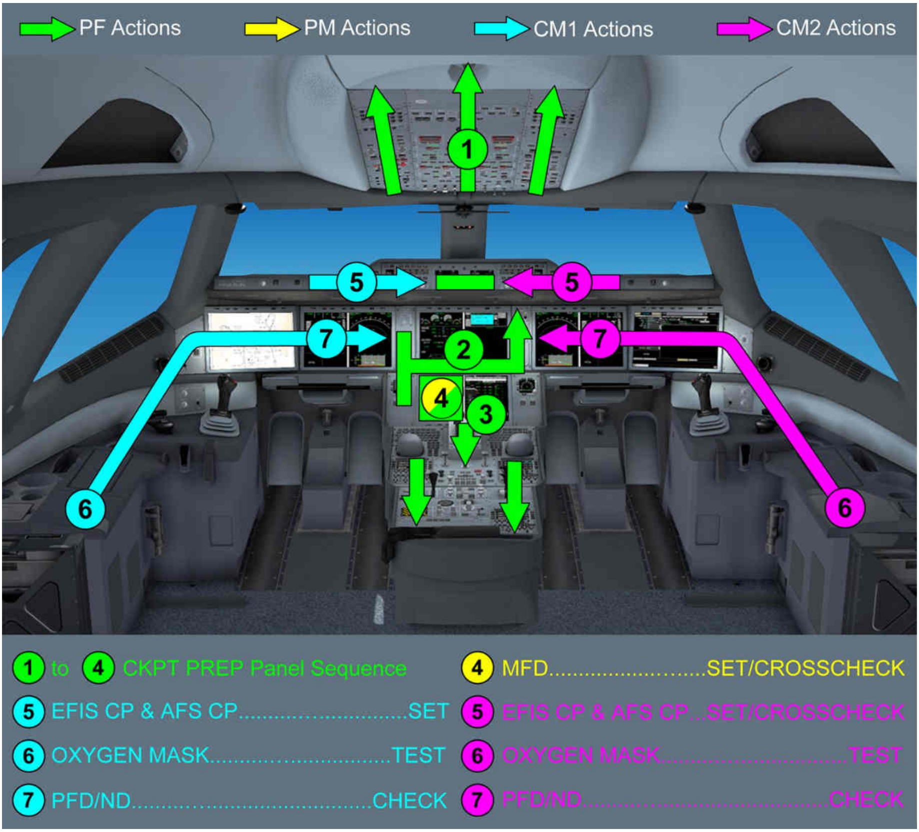
PANEL SCAN SEQUENCE

Ident.: PRO-NOR-SOP-60-00006478.0001001 / 06 AUG 14
Applicable to: ALL


CM1 (LH Seat) Area of Responsibility
CM2 (RH Seat) Area of Responsibility
PF Area of Responsibility

FLOW PATTERN

Ident.: PRO-NOR-SOP-60-00018320.0001001 / 03 SEP 14
Applicable to: ALL


PF Actions
PM Actions
CM1 Actions
CM2 Actions
1
2
3
4
5
5
6
6
7
7
1 to 4 CKPT PREP Panel Sequence
4 MFD.........................SET/CROSSCHECK
5 EFIS CP & AFS CP...........................SET
5 EFIS CP & AFS CP...SET/CROSSCHECK
6 OXYGEN MASK...............................TEST
6 OXYGEN MASK...............................TEST
7 PFD/ND...CHECK
7 PFD/ND...CHECK

OVERHEAD PANEL

Applicable to: ALL

Ident.: PRO-NOR-SOP-60-A-00006479.0001001 / 03 DEC 15

WHITE LIGHTS ON THE OVERHEAD PANEL

- **As a general rule, during the scan sequence of the overhead panel:**
  All white lights (except MAINTENANCE panel)..OFF | PF

Note:
- *Depending on Operators policy, some lights may be kept ON during the cockpit preparation (e.g. lights on GND CONNECTION, REMOTE C/B CTL).*
- *During the scan of the overhead panel, check also that the only amber lights are the GEN FAULT lights.*

Ident.: PRO-NOR-SOP-60-A-00006491.0001001 / 07 NOV 16

EVAC

CAPT/CAPT & PURS sw ....AS RQRD | PF

L2 *Set the CAPT/CAPT & PURS sw on the EVAC panel as per company policy.*

Ident.: PRO-NOR-SOP-60-A-00006490.0001001 / 25 APR 14

RCDR

RCDR GND CTL pb-sw........ON | PF

Ident.: PRO-NOR-SOP-60-A-00006494.0001001 / 25 APR 14

ELT

ELT........ARMED | PF

Ident.: PRO-NOR-SOP-60-A-00025088.0001001 / 15 APR 19

ADIRS

All IR MODE selectors ....OFF then NAV | PF

L2 *Perform a complete alignment, if one of the following applies:*
- *This is the first flight of the day*
- *There was a change in flight crew*
- *The GPS is not available, and if the flight crew expects long segments in airspaces with poor radio NAVAIDS coverage*
- *RNP AR operations are expected*

For other flights, perform a fast alignment.
For more information on the IR alignment, Refer to IR alignment

Ident.: PRO-NOR-SOP-60-A-00018902.0001001 / 25 APR 14

CKPT EQPT POWER SUPPLY

CKPT EQPT POWER SUPPLY buttons (Left side)........CHECK | PF

L2 *Check that all power supply buttons are pushed.*

Ident.: PRO-NOR-SOP-60-A-00006495.0001001 / 25 APR 14

RESET

RESET buttons (Left side)..CHECK | PF

L2 *Check that all reset buttons are pushed.*

Ident.: PRO-NOR-SOP-60-A-00006496.0001001 / 25 APR 14

EXTERIOR LIGHTS

STROBE sw..AUTO | PF
BEACON sw..OFF | PF
NAV sw..AS RQRD | PF

L2 *Set to NAV 1 the NAV sw, as required, to turn on the navigation lights (NAV LT 2 is used only when NAV LT 1 fails).*

L1 REMAINING EXTERIOR LIGHTS..AS RQRD | PF

Ident.: PRO-NOR-SOP-60-A-00006497.0001001 / 25 APR 14

SIGNS

SIGNS panel..SET | PF

L2
- *Set the SEAT BELTS sw to ON when refueling is complete. For more information, Refer to CCOM/Refueling with passengers on board procedure.*
- *Set the EMER EXIT LT sw to ARM*
- *Set the other switches, as required.*

Ident.: PRO-NOR-SOP-60-A-00006492.0001001 / 25 APR 14

PROBE & WINDOW HEAT

PROBE & WINDOW HEAT pb-sw..AUTO | PF

Ident.: PRO-NOR-SOP-60-A-00006499.0001001 / 25 APR 14

AIR

XBLEED selector..AUTO | PF
AIR FLOW selector..NORM | PF

L2 *As long as the number of passenger is not entered in the FMS, airflow is automatically adjusted to the maximum number of passengers.*
As soon as the number of passengers is entered, during FMS initialization, airflow is automatically adjusted to the actual number of passengers.

L1 COCKPIT selector..AS RQRD | PF
CABIN selector..PURS SEL | PF

Ident.: PRO-NOR-SOP-60-A-00006504.0001001 / 25 APR 14

MAINTENANCE

MAINTENANCE panel.. CHECK | PF

L2 *Check the MAINTENANCE according to current maintenance operations on the aircraft: some lights may be kept ON during the cockpit preparation, for example:*
- *ON light on GND CONNECTION pb-sw, or*
- *ON light on REMOTE C/B CTL pb-sw.*

At the latest, check that all lights on the MAINTENANCE panel are OFF before initiating the checklist Before Start down to the line.

Ident.: PRO-NOR-SOP-60-A-00006505.0001001 / 25 APR 14

CARGO AIR COND

CARGO AIR COND selectors...AS RQRD | PF

Ident.: PRO-NOR-SOP-60-A-00006507.0001001 / 25 APR 14

CVR

CVR TEST pb..PRESS | PF

L2 *Press and release the CVR TEST pb. Check the absence of the DISPATCH PAGE UPDATE ECAM alert.*

Ident.: PRO-NOR-SOP-60-A-00018903.0001001 / 25 APR 14

CKPT EQPT POWER SUPPLY

CKPT EQPT POWER SUPPLY buttons (Right side)..CHECK | PF

L2 *Check that all power supply buttons are pushed.*

Ident.: PRO-NOR-SOP-60-A-00006508.0001001 / 25 APR 14

RESET

RESET buttons (Right side)...CHECK | PF

L2 *Check that all reset buttons are pushed.*

CENTER INSTRUMENT PANEL

Applicable to: ALL

Ident.: PRO-NOR-SOP-60-D-00006480.0001001 / 25 APR 14

SWITCHING

AIR DATA selector..AUTO | PF

FMS selector....................NORM | PF

Ident.: PRO-NOR-SOP-60-D-00006509.0001001 / 25 APR 14

ISIS

ISIS....................CHECK | PF

L2
- *Adjust the brightness, as appropriate*
- *Check:*
  - *The airspeed*
  - *The barometric setting*
  - *The altitude indication*
  - *The attitude indications*
  - *The heading.*

Ident.: PRO-NOR-SOP-60-D-00006512.0001001 / 02 OCT 14

ANTI SKID

ANTI SKID sw ....ON | PF

PEDESTAL

Applicable to: ALL

Ident.: PRO-NOR-SOP-60-C-00006481.0001001 / 25 APR 14

RMP 1

RMP 1....................CHECK ON/SET | PF
STBY RAD NAV key.................... CHECK OFF | PF

Ident.: PRO-NOR-SOP-60-C-00006513.0001001 / 29 NOV 18

PARK BRK

ACCU pressure indicator.................... CHECK | PF

L2 *The GREEN and YELLOW ACCU pressure indications must be in the green band.*

L1
- **If the GREEN pressure indication is not in the green band:**
  - **If APU GEN is ON or two external power units are connected:**
    ACCU REINFLATE pb....................PRESS | PF
  - **If APU GEN is OFF and only one external power unit is connected:**
    YELLOW ELEC PMP pb-sw...............PRESS (the white OFF light comes on) | PF
    ACCU REINFLATE pb....................PRESS | PF
    YELLOW ELEC PMP pb-sw................ PRESS (the white OFF light goes off) | PF

- **If the YELLOW pressure indication is not in the green band:**
  - **If APU GEN is ON or two external power units are connected:**
    ACCU REINFLATE pb...PRESS | PF
  - **If APU GEN is OFF and only one external power unit is connected:**
    GREEN ELEC PMP pb-sw.................PRESS (the white OFF light comes on) | PF
    ACCU REINFLATE pb...PRESS | PF
    GREEN ELEC PMP pb-sw.................. PRESS (the white OFF light goes off) | PF

PARK BRK handle.. ON | PF
PARK BRK indication.. CHECK DISPLAYED | PF

L2 *When the parking brake is set to ON and the pressure is effective on brakes, the slats/flaps display shows the PARK BRK indication.*

L1
- **If brakes are hot and chocks are in place:**
  PARK BRK handle ....OFF | PF

L2 *Release the PARK BRK handle to improve brakes cooling.*

Ident.: PRO-NOR-SOP-60-C-00006514.0001001 / 25 APR 14

L/G GRVTY

L/G GRVTY EXTN sw..OFF | PF

Ident.: PRO-NOR-SOP-60-C-00006515.0001001 / 25 APR 14

ENG

THRUST LEVERS... IDLE | PF
THRUST REVERSER LEVERS..STOWED | PF
ENG 1, 2 MASTER LEVERS...OFF | PF
ENG START selector..NORM | PF

Ident.: PRO-NOR-SOP-60-C-00006516.0001001 / 25 APR 14

CKPT DOOR

CKPT DOOR sw..NORM | PF

Ident.: PRO-NOR-SOP-60-C-00018972.0001001 / 25 APR 14

RMP 2

RMP 2...CHECK ON/SET | PF
STBY RAD NAV key.. CHECK OFF | PF

Ident.: PRO-NOR-SOP-60-C-00006517.0001001 / 06 AUG 14

RMP 3

RMP 3....................CHECK ON/SET | PF

MFD ATC COM

Ident.: PRO-NOR-SOP-60-00006483.0001001 / 25 APR 14
Applicable to: ALL

- **On the ATC COM/MSG RECORD/ALL MSG page:**
  MSG RECORD....................CHECK NO STORED MSG | PF

L2 *Check that NO STORED MSG appears on the MFD. If it is not the case, click on the ERASE ALL button in order to erase the record of all CPDLC messages of the previous flight. This avoids confusing CPDLC messages from the previous flight with the ones of the current flight.*

L1
- **On the ATC COM/CONNECT page:**
  - **If ADS-C services are expected:**
    ADS-C....................CHECK ARMED | PF

MFD SURV

Ident.: PRO-NOR-SOP-60-00006484.0001001 / 13 JAN 15
Applicable to: ALL

- **On the SURV/CONTROLS page:**
  XPDR....................STBY | PF

NAV CHARTS

Ident.: PRO-NOR-SOP-60-00005595.0001001 / 25 APR 14
Applicable to: ALL

NAV CHARTS CLIPBOARD....................PREPARE | BOTH

L2
- *Each pilot prepares their clipboard independently of the other, or*
- *One pilot prepares the clipboard, and the other pilot imports it.*

MFD FMS PREPARATION

Applicable to: ALL

Ident.: PRO-NOR-SOP-60-B-00006518.0001001 / 27 SEP 18

FLIGHT PLAN INITIALIZATION

FLIGHT PLAN INITIALIZATION..COMPLETE, AS RQRD | PF

L2 *Complete the FMS ACTIVE/INIT page, as required (in particular, the flight crew may press the CPNY F-PLN REQUEST button, or insert a CPNY RTE, or insert the flight plan manually). For more information, Refer to FCTM/PR-NP-SOP-60 FMS Preparation.*

Ident.: TDU / PRO-NOR-SOP-60-B-00024882.0001001 / 05 NOV 18
Impacted DU: NONE

CRZ TEMP

CRZ TEMP...RE-ENTER / ADJUST AS RQRD

L2 *The entry of accurate CRZ TEMP (at top of climb) enables FMS to correctly compute an accurate REC MAX FL for top of climb. The CRZ TEMP, even if it corresponds to default one, should be entered at each flight preparation.*

L1 TROPO..KEEP DEFAULT

L2 *Do not change the default TROPO (i.e. 36 098 ft) to avoid an automatic change of the pilot-entered CRZ TEMP value.*

Ident.: PRO-NOR-SOP-60-B-00006520.0001001 / 25 APR 14

WINDS

WINDS..ENTER AS APPROPRIATE | PF

L2 *Choose between the trip wind or the forecasted wind for climb, cruise, or descent, as appropriate. Use the average wind or forecasted wind from the computerized F-PLN.*

Ident.: PRO-NOR-SOP-60-B-00006521.0001001 / 25 APR 14

IRS ALIGNMENT

- **If the GPS is available:**

  IRS 1, 2, and 3 ....CHECK NAV or ALIGN | PF

  L2 *On the FMS POSITION/IRS page, check that the IRS are either aligned or in alignment.*

L1
- **If the GPS is not available, or is failed:**

  IRS 1, 2 and 3...ALIGN ON OTHER REF | PF

  L2 *In the ALIGN ON OTHER REF menu, enter the gate coordinates of the departure airport.*

Ident.: PRO-NOR-SOP-60-B-00006522.0001001 / 25 APR 14

DEPARTURE SELECTION

DEPARTURE...SELECT/CHECK | PF

L2 *Select the runway, SID and TRANS, as appropriate, in the FMS DEPARTURE page. If the company route already has the departure procedure, check this departure.*

Ident.: PRO-NOR-SOP-60-B-00006523.0001001 / 03 APR 20

NAVAIDS

NAVAIDS...CHECK | PF

L2 *On the FMS POSITION/NAVAIDS page, check the VOR, ADF ⊲ and ILS tuned by the FMS. Change them, if required, and check that the ND and PFD (for the ILS) display the correct ident.*

L1 NAVAIDS DESELECTION.................................AS RQRD | PF

L2 *Check the list of deselected navaids on the FMS POSITION/NAVAIDS page. If the NOTAMs warn that some navaids are not reliable, deselect them.*

Ident.: PRO-NOR-SOP-60-B-00006525.0001001 / 03 NOV 16

FUEL AND LOAD

CAUTION	Some of the characteristic speeds that are displayed on the PFD (green dot, F, S, VLS) are based on the ZFW and ZFWCG that the flight crew enters in the FMS. In addition, when the first engine starts, the pitch trim is automatically set to the takeoff target, based on the entered ZFWCG and block fuel. It is therefore the Captain's responsibility to carefully check ZFW and ZFWCG.

ZFW/ZFWCG...INSERT | PF

L2 *If the ZFWCG and ZFW are not yet available, the flight crew can enter the expected values to enable FMS predictions.*

L1 BLOCK FUEL...INSERT | PF

L2 *If refuel is not yet completed, the flight crew can enter the expected block fuel to enable FMS predictions.*

L1 PAX NBR...INSERT | PF
TAXI/RTE RSV/ALTN/FINAL..............................CHECK/INSERT AS APPROPRIATE | PF
MIN FUEL AT DEST..CHECK/INSERT AS APPROPRIATE | PF

L2 *Check that the minimum fuel at destination is in accordance with the required minimum fuel.*

Ident.: PRO-NOR-SOP-60-B-00006526.0002001 / 28 SEP 17

TAKEOFF PERFORMANCE

RWY...CHECK | PF
PRELIMINARY TAKEOFF PERF DATA.................................INSERT | PF

L2 *Insert the preliminary takeoff performance data on the T.O panel of the FMS ACTIVE/PERF page.*

L1 T.O SHIFT...INSERT AS RQRD | PF

L2 *If the aircraft takes off from an intersection, insert a T.O shift value to increase awareness of the runway length reduction.*

L1 V1, VR and V2...INSERT | PF

TOGA/FLEX/DERATED..........SELECT/INSERT | PF
FLAPS..........SELECT | PF
THS FOR _..........INSERT T.O CG (in %) | PF

L2 *Use the TOCG indicated on the loadsheet as the reference for insertion of the T.O CG in the FMS.*

L1 PACKS..........INSERT | PF
ANTI-ICE..........INSERT | PF
THR RED/ACCEL ALTITUDE..........SET OR CHECK | PF
NOISE PROCEDURE..........AS APPROPRIATE | PF
TRANS ALTITUDE..........AS APPROPRIATE | PF
EO ACCEL ALTITUDE..........SET OR CHECK | PF

Ident.: PRO-NOR-SOP-60-B-00006527.0001001 / 30 APR 14

CLIMB PERFORMANCE

THR..........SELECT AS APPROPRIATE | PF

L2 *Select AUTO-DERATE or CLB on the CLB panel of the FMS ACTIVE/PERF page, as appropriate.*

Ident.: PRO-NOR-SOP-60-B-00006528.0001001 / 25 APR 14

SPEED PRESELECTION

On the CLB and CRZ panels of the FMS ACTIVE/PERF page:

PRESEL SPEEDS..........AS RQRD | PF

Ident.: PRO-NOR-SOP-60-B-00006529.0001001 / 25 APR 14

ACTIVE F-PLN CHECK

ACTIVE FLIGHT PLAN..........CHECK and COMPLETE AS APPROPRIATE | PF

L2 *Use the computerized flight plan as reference for routing and fuel predictions.*

- *Check the EOSID on the ND PLAN mode, if applicable*
- *Check the F-PLN and the ND PLAN mode vs. the computerized flight plan or the navigation charts (on the FMS ACTIVE/INIT page, the flight crew can access the route summary via the RTE SUMMARY button)*
- *Check the distance to destination along the F-PLN. Compare it with the total distance computed by the computerized flight plan*
- *Modify the active flight plan, as appropriate.*

Ident.: PRO-NOR-SOP-60-B-00006530.0001001 / 29 NOV 18

SEC F-PLN

CAUTION	The SEC 1(2)(3) flight plan data of the previous flight may not be automatically erased after landing.

SECONDARY FLIGHT PLANS DATA.......... CHECK | PF

L2 *On the FMS SEC INDEX page, review the SEC 1(2)(3) F-PLN and delete remaining data from the previous flight if appropriate.*
The associated SEC 1(2)(3) data from the previous flight can be erased via the DELETE button on the SEC 1(2)(3) panel of the SEC INDEX page.

L1 SECONDARY FLIGHT PLANS.......... AS APPROPRIATE | PF

L2 *Create the SEC 1, SEC 2, and SEC 3 F-PLN, as appropriate, using the FMS SEC INDEX page.*
The flight crew can use SEC 1 and SEC 2 to copy the active F-PLN, and to anticipate a runway change, an immediate return, or a diversion immediately after takeoff.
For an anticipated takeoff runway change, the flight crew must compute the takeoff performance accordingly.
The flight crew can load an ATC flight plan in the SEC 3 only.

Ident.: PRO-NOR-SOP-60-B-00006532.0001001 / 27 JUN 17

FMS DATA CROSSCHECK

L2 For more information, *Refer to FCTM/PR-NP-SOP-60 FMS Preparation*.

L1 FMS PREPARATION.......... CHECK | PM

L2 *After the PF prepared the FMS, the PM checks all the data entered in the FMS. This check includes a crosscheck of performance data displayed on the PM's OIS with the T.O panel of the FMS ACTIVE/PERF page.*

GLARESHIELD

Applicable to: ALL

Ident.: PRO-NOR-SOP-60-E-00006486.0001001 / 25 APR 14

GENERAL

Perform the glareshield preparation when both flight crewmembers are seated and after the PM checked the FMS.

Ident.: PRO-NOR-SOP-60-E-00006535.0001001 / 25 APR 14

LOUDSPEAKER

LOUDSPEAKER knob.......... SET | BOTH

L2 *Set the LOUDSPEAKER knob to approximately 1 o'clock position.*

Ident.: PRO-NOR-SOP-60-E-00006536.0001001 / 14 APR 16

BAROMETRIC REFERENCE

BAROMETRIC REFERENCE..SET/CROSSCHECK | BOTH

L2 *Set the QNH (QFE) on the EFIS CP and on the ISIS.*
Check the barometric reference and altitude indications on the PFD and on ISIS.
The maximum difference is:
± 20 ft between both PFD.
± 30 ft between ISIS and PFD.

Ident.: PRO-NOR-SOP-60-E-00006538.0001001 / 09 MAR 16

EFIS CONTROL PANEL (EFIS CP)

ANF DATABASE...CHECK | BOTH

L2
- *Set the ND range selector to ZOOM to activate the ANF, then*
- *Select the STATUS tab and check that the active database is valid. If DATABASE CYCLE NOT VALID appears, swap the active database with the second database.*

L1 WX pb on EFIS CP..OFF | BOTH

Before pressing the WX pb on any EFIS CP, the flight crew should be sure that:
- *No maintenance personnel is facing the aircraft within a distance less that 5 m (16 ft) within an arc of 135 ° on either side of the aircraft centerline*
- *The aircraft is not directed towards any large metallic obstacle, such as a hangar, within 5 m (16 ft) in an arc of 90 ° on either side of the aircraft centerline.*

L2 *The weather radar starts to emit as soon as one engine is started and the flight crew presses the WX pb on the EFIS CP.*

L1 TRAF pb.. TRAF or ID (with ADS-B Traffic ◁ option) | BOTH
OTHER EFIS OPTIONS... AS RQRD | BOTH

L2 *Select other EFIS options (e.g. constraints, waypoints, navaids, etc.) as required.*

Ident.: PRO-NOR-SOP-60-E-00006539.0001001 / 03 JUL 20

1
AFS CONTROL PANEL (AFS CP)

- **The PF sets the AFS CP:**

NORTH REF... MAG | PF

L2 *Check that TRUE does not appear neither on the HDG/TRK window of the AFS CP, nor on the PFD/ND/ISIS.*

L1 METER pb.. AS RQRD | PF
FD...ON | PF
SPD/MACH window...DASHED | PF

HDG/TRK window.. DASHED | PF
HDG-V/S / TRK-FPA pb..HDG-V/S | PF
ALT window.................................INITIAL EXPECTED CLEARANCE ALTITUDE | PF
V/S / FPA window.. DASHED | PF

Note: *Do not engage the autothrust on ground, as it may generate the AUTO FLT A/THR OFF warning at engine start.*

- **The PM crosschecks the AFS CP:**

AFS CP.. CROSSCHECK | PM

LATERAL CONSOLES

Ident.: PRO-NOR-SOP-60-00006487.0001001 / 25 APR 14
Applicable to: ALL

WARNING	To prevent hearing damage to the ground crew connected to the intercom system, inform them that a loud noise may be heard in the headset when performing the oxygen mask test.

- **On the mask stowage box of each occupied station:**

OXYGEN MASK TEST.. PERFORM | BOTH

L2 *For a detailed test of the mask, Refer to DSC-35-20-40 How to Test the Mask.*

L1
- **On the DOOR/OXYGEN SD page:**

REGUL PR LO indication..CHECK NOT DISPLAYED | BOTH

PF AND PM INSTRUMENT PANELS

Ident.: PRO-NOR-SOP-60-00006488.0001001 / 03 APR 20
Applicable to: ALL

PFD..CHECK | BOTH

L2
- *Check for the correct display, when ATT and HDG are available*
- *Check the airspeed, the FMA, the initial target altitude, the altitude, the vertical speed, the barometric settings, and the heading indications*
- *Check that the slats/flaps and the pitch trim displays are available.*

L1 ND..CHECK | BOTH

L2
- *Check for the correct display*
- *Check the heading, the initial waypoint, and the VOR/ADF ◁ indications.*

TAKEOFF BRIEFING

Ident.: PRO-NOR-SOP-60-00006489.0001001 / 25 APR 14
Applicable to: ALL

L2 For more information, *Refer to FCTM/PR-NP-SOP-60 Takeoff Briefing*.

L1 TAKEOFF BRIEFING.. PERFORM | PF

L2 *The purpose of the takeoff briefing is for the PF to inform the PM of the planned course of action for both normal and abnormal situations during takeoff, and to identify other operational risks.*

L1 *If the departure includes an EOSID, use the EOSID procedure described in the RWY COMPUTATION panel of the T.O PERF application, to perform the briefing.*

BEFORE START CLEARANCE

Applicable to: ALL

Ident.: PRO-NOR-SOP-70-A-00006543.0001001 / 08 JUL 19

LOADSHEET

FINAL LOADSHEET.. CHECK | BOTH

L2 *Carefully check the final loadsheet, particularly for significant errors. Make sure that the loadsheet data is correct (e.g. correct flight number, aircraft, dry operating weight/CG, configuration, fuel on board).*

L1 FUEL ON BOARD...CHECK | BOTH

L2
- *On the permanent data of the SD, check that the Fuel On Board (FOB) corresponds to the F-PLN and to the loadsheet*
- *On ECAM FUEL page, check that the fuel is correctly balanced*
- *Crosscheck that the sum of the FOB recorded at the end of the last flight and the fuel uplift (if any) is consistent with the current FOB. If an abnormal difference is found, a maintenance action is due.*

FOB after refueling:	***Abnormal difference above:***
Up to 15 t (33 000 lb)	*600 kg (1 300 lb)*
Between 15 t (33 000 lb) and 35 t (77 000 lb)	*700 kg (1 500 lb)*
Between 35 t (77 000 lb) and 55 t (121 000 lb)	*800 kg (1 700 lb)*
Between 55 t (121 000 lb) and 75 t (165 000 lb)	*900 kg (2 000 lb)*
Between 75 t (165 000 lb) and 90 t (198 000 lb)	*1 000 kg (2 200 lb)*
Between 90 t (198 000 t) and 110 t (242 000 lb)	*1 100 kg (2 400 lb)*
More than 110 t (242 000 lb)	*1 200 kg (2 600 lb)*

L1 ZFW/ZFWCG in FMS...CHECK/REVISE | PF

L2 *The PF compares the ZFW/ZFWCG of the loadsheet with the ZFW/ZFWCG entered in the FMS ACTIVE/FUEL & LOAD page, and revises them if necessary.*

L1 PAX NBR in FMS..CHECK/REVISE | PF
ZFW/ZFWCG in FMS...CROSSCHECK | PM
LOADSHEET TOCG AND ECAM GWCG.......................................CROSSCHECK | BOTH

L2 *Check the loadsheet TOCG vs. the ECAM GWCG:*
- *If the difference is less than 1 %, no further action is required. Rely on ECAM GWCG.*
- *If there is more than 1 % difference, check that the ZFW and the ZFWCG are correctly entered in the FMS, then rely on ECAM GWCG.*

L1 ECAM GWCG ....CHECK WITHIN OPERATIONAL LIMITS | BOTH

L2 *Check that the Gross Weight CG displayed on the permanent data of the SD is within the CG operational limits.*

L1 THS FOR_ .... CHECK/REVISE | PF

L2 *Use the TOCG indicated on the loadsheet as the reference for insertion of the T.O CG in the FMS ACTIVE/PERF page.*

L1 THS FOR_ .... CROSSCHECK | PM

Ident.: PRO-NOR-SOP-70-A-00006544.0001001 / 07 MAY 18

TAKEOFF DATA

L2 For more information, Refer to FCTM/PR-NP-SOP-70 Takeoff Data.

L1 ● **If takeoff conditions changed:**

OIS FINAL TAKEOFF PERF DATA .... RECOMPUTE | BOTH

L2 *The PF and the PM independently compute again the takeoff performance data.*

L1 FMS TAKEOFF DATA .... REVISE | PF

L2 *The PF revises the takeoff data in the FMS. If the flight crew uses the optimum configuration option for the computation, they should pay specific attention to changes to the configuration of the slats/flaps at takeoff.*

L1 OIS FINAL TAKEOFF PERF DATA .... XCHECK WITH AVNCS | PM

L2 *The XCHECK WITH AVNCS function enables the flight crew to automatically check takeoff performance data. For more information, Refer to DSC-46-OIS-20-80-90 Xcheck with Avionics Button. In addition, the PM should compare the runway, T.O shift and the engine-out acceleration altitude from their OIS TAKEOFF PERF application with the T.O panel of the FMS ACTIVE/PERF page.*

Ident.: PRO-NOR-SOP-70-A-00006545.0001001 / 25 APR 14

SEATING POSITION

SEATS, SEAT BELTS, HARNESSES, RUDDER PEDALS, ARMRESTS .... ADJUST | BOTH

L2 *The seat is correctly adjusted when the pilot's eyes are in line with the red ball and the white light. For more information, Refer to FCTM/PR-NP-SOP-70 Seating Position and adjustment of Rudder Pedals.*

Ident.: PRO-NOR-SOP-70-A-00006546.0001001 / 09 MAR 16

HUD

HUD .... DEPLOY | BOTH
HUD knob .... ON | BOTH

L2 *Turn on the HUD and adjust the brightness according to conditions.*

L1 DISPLAY MODE.. AS RQRD | BOTH

L2 *Select the declutter mode as required.*
The flight crew should select the crosswind mode only in flight, when the FPV is not within the display area of the HUD.

Ident.: PRO-NOR-SOP-70-A-00006548.0001001 / 03 JUL 20

AIR CONDITIONING UNITS

AIR CONDITIONING UNITS.......................... CHECK DISCONNECTED | PM

1 EXTERNAL POWER

L2 For additional information on the associated standard callouts, *Refer to PRO-NOR-SCO Summary for Each Flight Phase*.

L1

WARNING	Disconnection of the external power with the EXT pb set to AUTO may cause injury to the ground engineer. Request disconnection of the external power only with the EXT pb set to AVAIL.

EXT pb.. CHECK AVAIL | PM
EXT PWR DISCONNECTION .... REQUEST | PM

Ident.: PRO-NOR-SOP-70-A-00006549.0001001 / 25 APR 14

BEFORE START CHECKLIST DOWN TO THE LINE

BEFORE START C/L down to the line.............................. COMPLETE | BOTH

Refer to PRO-NOR-C-L Before Start.

L2 *For additional information on the associated standard callouts, Refer to PRO-NOR-SCO Summary for Each Flight Phase.*

AT START CLEARANCE

Applicable to: ALL

Ident.: PRO-NOR-SOP-70-B-00006542.0001001 / 25 APR 14

PUSHBACK/START-UP CLEARANCE

PUSHBACK/START-UP CLEARANCE.................................... OBTAIN | PM

L2 *Obtain ATC pushback/start-up clearance and ground crew clearance.*

Ident.: PRO-NOR-SOP-70-B-00020766.0001001 / 05 JUN 18

MFD SURV

- **On the MFD SURV/CONTROLS page:**

SURV DEFAULT SETTINGS.................SELECT | BOTH

L2 *For more information, Refer to SURV Controls Page.*

Ident.: PRO-NOR-SOP-70-B-00006550.0001001 / 03 DEC 15

TAXI VIDEO

TAXI VIDEO.................AS RQRD | BOTH

L2 *As required, set the TAXI video on the PFD or on the SD to see the aircraft vicinity.*

Ident.: PRO-NOR-SOP-70-B-00006551.0001001 / 25 APR 14

DOORS AND SLIDES

DOORS.................CHECK CLOSED | BOTH

L2
- *On the DOOR SD page, check that all doors are closed*
- *When required by local authorities, check that the cockpit door is closed and locked (I.e. OPEN does not appear on the CKPT DOOR light on the pedestal).*

L1 SLIDES.................CHECK ARMED | BOTH

L2 *On the DOOR SD page, check that all slides are armed.*

Ident.: PRO-NOR-SOP-70-B-00006554.0001001 / 25 APR 14

LIGHTS

BEACON sw.................ON | PF

L2 *When cleared for start or pushback, set to ON the BEACON sw.*

Ident.: PRO-NOR-SOP-70-B-00006552.0001001 / 25 APR 14

THRUST LEVERS

THRUST LEVERS.................IDLE | PF

CAUTION	*The engines start regardless of the thrust lever position. If the thrust levers are not set to IDLE, then thrust rapidly increases to the corresponding thrust lever position, causing a hazardous situation.*

Ident.: PRO-NOR-SOP-70-B-00018130.0002001 / 29 NOV 18

ACCU PRESSURE

ACCU pressure indicator.. CHECK | PF

L2 *The GREEN and YELLOW ACCU pressure indications must be in the green band.*

L1
- **If the GREEN pressure indication is not in the green band:**
  - **If APU GEN is ON or two external power units are connected:**
    ACCU REINFLATE pb..PRESS | PM
  - **If APU GEN is OFF and only one external power unit is connected:**
    YELLOW ELEC PMP pb-sw...............PRESS (the white OFF light comes on) | PM
    ACCU REINFLATE pb..PRESS | PM
    YELLOW ELEC PMP pb-sw................. PRESS (the white OFF light goes off) | PM
- **If the YELLOW pressure indication is not in the green band:**
  - **If APU GEN is ON or two external power units are connected:**
    ACCU REINFLATE pb..PRESS | PM
  - **If APU GEN is OFF and only one external power unit is connected:**
    GREEN ELEC PMP pb-sw.................PRESS (the white OFF light comes on) | PM
    ACCU REINFLATE pb..PRESS | PM
    GREEN ELEC PMP pb-sw.................. PRESS (the white OFF light goes off) | PM

Ident.: PRO-NOR-SOP-70-B-00006553.0001001 / 04 MAY 16

PARKING BRAKE, NOSEWHEEL STEERING AND BEFORE START CHECKLIST BELOW THE LINE

■ **If pushback is not required:**

PARK BRK handle .... CHECK ON | PF
PARK BRK indication..CHECK DISPLAYED | PF

L2 *When the parking brake is set to ON and the pressure is effective on brakes, the slats/flaps display shows the PARK BRK indication.*

L1 BEFORE START C/L below the line..COMPLETE | BOTH

Refer to PRO-NOR-C-L Before Start.

L2 *For additional information on the associated standard callouts, Refer to PRO-NOR-SCO Summary for Each Flight Phase.*

L1 ■ **If pushback is required:**

L2 For additional information on the associated standard callouts, *Refer to PRO-NOR-SCO Summary for Each Flight Phase*.

L1 N/W STEER DISC MEMO.. CHECK DISPLAYED | PF

L2 *In the case of a pushback (towbarless or conventional), the ground crew should set the tow pin to the towing position on the steering nose gear panel. The N/W STEER DISC memo on the ECAM indicates this position.*

L1

CAUTION	*If the ECAM does not display the N/W STEER DISC memo, but the ground crew confirms that the tow pin is in the towing position, do not start the engines during pushback in order to avoid possible damage to the nose landing gear upon yellow hydraulic pressurization.* *To dispatch the aircraft in such a case, Refer to MMEL/32–50–02A Towing mode not available when the NWS DISCONNECT switch is in the towing position*

BEFORE START C/L below the line..COMPLETE | BOTH

Refer to PRO-NOR-C-L Before Start.

L2 *For additional information on the associated standard callouts, Refer to PRO-NOR-SCO Summary for Each Flight Phase.*

L1 PARK BRK handle ....OFF | PF

CAUTION	*Do not use the brakes during pushback, unless required due to an emergency.*

- **When pushback is completed:**

  PARK BRK handle ....ON | PF
  PARK BRK indication.. CHECK DISPLAYED | PF

L2 *When the parking brake is set to ON and the pressure is effective on brakes, the slats/flaps display shows the PARK BRK indication.*
Ask the ground crew for towbar disconnection.

AUTOMATIC ENGINE START

Ident.: PRO-NOR-SOP-80-00006556.0002001 / 08 JUL 19

1 **Applicable to: ET-ATQ, ET-AUC, ET-AVB, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB**

L2 For additional information on the associated standard callouts, *Refer to PRO-NOR-SCO Summary for Each Flight Phase*.

L1 ENG START selector ....IGN START | PF

L2 *The ENG SD page appears.*

L1 *Note:* *High tailwinds (higher than 15 kt) may have an adverse effect on start. It may be necessary to reposition the airplane into the wind.*

ENGINE 1 START..........ANNOUNCE | PF

Note: *For any operational reason, engine 2 can be started first.*

- **After all amber crosses and messages have disappeared from the ED and ENG SD page:**
  ENG 1 MASTER lever .... ON | PF

L2 *Note:*
- *Parameter callouts are not mandatory.*
- *During engine start, the oil quantity indication on the ENG SD page decreases due to oil gulping effect. Triggering of the oil quantity advisory may occur during engine start and engine warm-up, and the indication may temporarily reach zero. The flight crew can continue normal engine operations, due to the fact that the oil quantity will increase during the warm-up period.*

On the ED	On the SD
	The corresponding start valve is open. The bleed pressure is green. The engine LP valve is open.
	N3 increases. Oil pressure increases.
	At 25 % N3 and 8 % N2 with EGT < 150 °C: - FF increases - The indication of the active igniter (A or B) appears.
40 s (maximum) after FF increases: - EGT increases - N1 increases.	
	At 48 % N3: - The corresponding start valve is closed - Ignition indication no longer appears.

L1 ● **When the engine reaches idle (i.e. AVAIL appears on the ED):**
ENG IDLE PARAMETERS.......................CHECK | PF

L2 *At ISA, sea level, with bleed off, check that:*
- *THR is approximately 3.7 %*
- *EGT is approximately 450 °C*
- *N1 is approximately 19 %*
- *N2 is approximately 58 %*
- *N3 is approximately 62 %*
- *FF is approximately 700 kg/h (1 543 lb/h).*

L1 ENGINE 2 START.......................ANNOUNCE | PF
ENG 2 MASTER lever.......................ON | PF

Apply the same procedure as indicated for engine 1.

AUTOMATIC ENGINE START

Ident.: PRO-NOR-SOP-80-00006556.0001001 / 08 JUL 19

2 **Applicable to: ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AVC, ET-AVD, ET-AVE, ET-AWM**

L2 For additional information on the associated standard callouts, *Refer to PRO-NOR-SCO Summary for Each Flight Phase*.

L1 ENG START selector.......................IGN START | PF

L2 *The ENG SD page appears.*

L1 Note: *High tailwinds (higher than 15 kt) may have an adverse effect on start. It may be necessary to reposition the airplane into the wind.*

ENGINE 1 START.......................ANNOUNCE | PF

Note: *For any operational reason, engine 2 can be started first.*

● **After all amber crosses and messages have disappeared from the ED and ENG SD page:**
ENG 1 MASTER lever.......................ON | PF

L2 *If the engine master lever is set to ON before all amber crosses and messages have disappeared from the ED and the ENG SD page, the automatic detection of fuel leak may be lost, associated with the FUEL LEAK DET FAULT ECAM alert (Refer to procedure).*

Note:
- *Parameter callouts are not mandatory.*
- *During engine start, the oil quantity indication on the ENG SD page decreases due to oil gulping effect. Triggering of the oil quantity advisory may occur during engine start and engine warm-up, and the indication may temporarily reach zero. The flight crew can continue normal engine operations, due to the fact that the oil quantity will increase during the warm-up period.*

On the ED	On the SD
	The corresponding start valve is open. The bleed pressure is green. The engine LP valve is open.
	N3 increases. Oil pressure increases.
	At 25 % N3 and 8 % N2 with EGT < 150 °C: - FF increases - The indication of the active igniter (A or B) appears.
40 s (maximum) after FF increases: - EGT increases - N1 increases.	
	At 48 % N3: - The corresponding start valve is closed - Ignition indication no longer appears.

L1 ● **When the engine reaches idle (i.e. AVAIL appears on the ED):**
ENG IDLE PARAMETERS..CHECK PF

L2 *At ISA, sea level, with bleed off, check that:*
- *THR is approximately 3.7 %*
- *EGT is approximately 450 °C*
- *N1 is approximately 19 %*
- *N2 is approximately 58 %*
- *N3 is approximately 62 %*
- *FF is approximately 700 kg/h (1 543 lb/h).*

L1 ENGINE 2 START..ANNOUNCE PF
ENG 2 MASTER lever ....ON PF

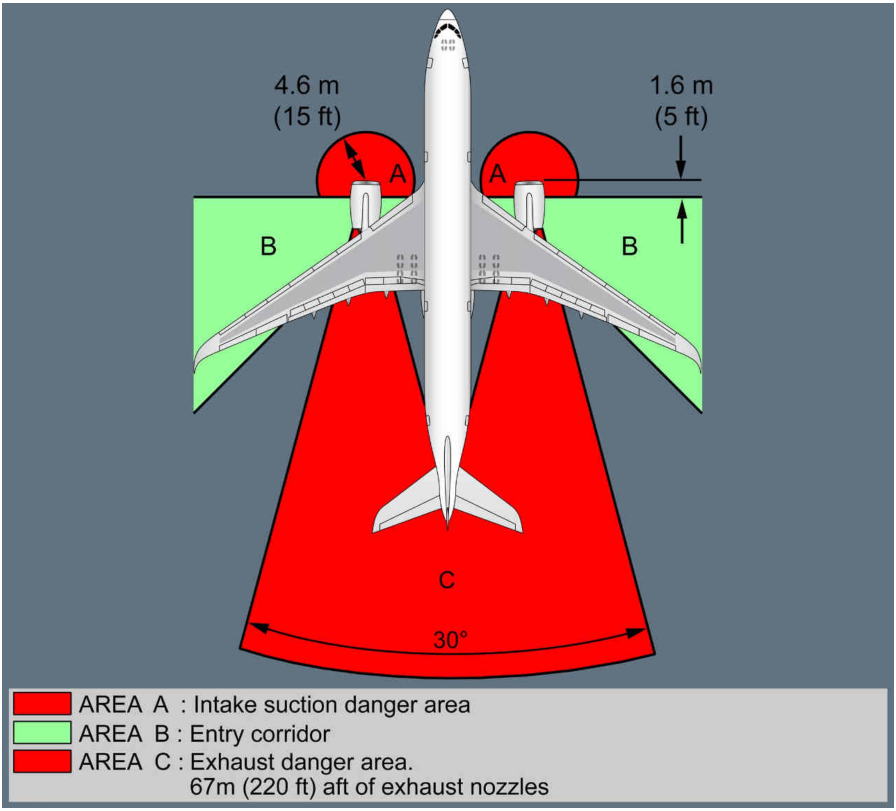
Apply the same procedure as indicated for engine 1.

GROUND RUN UP - DANGER AREAS

Ident.: PRO-NOR-SOP-80-00020902.0001001 / 06 MAY 15
Applicable to: ALL

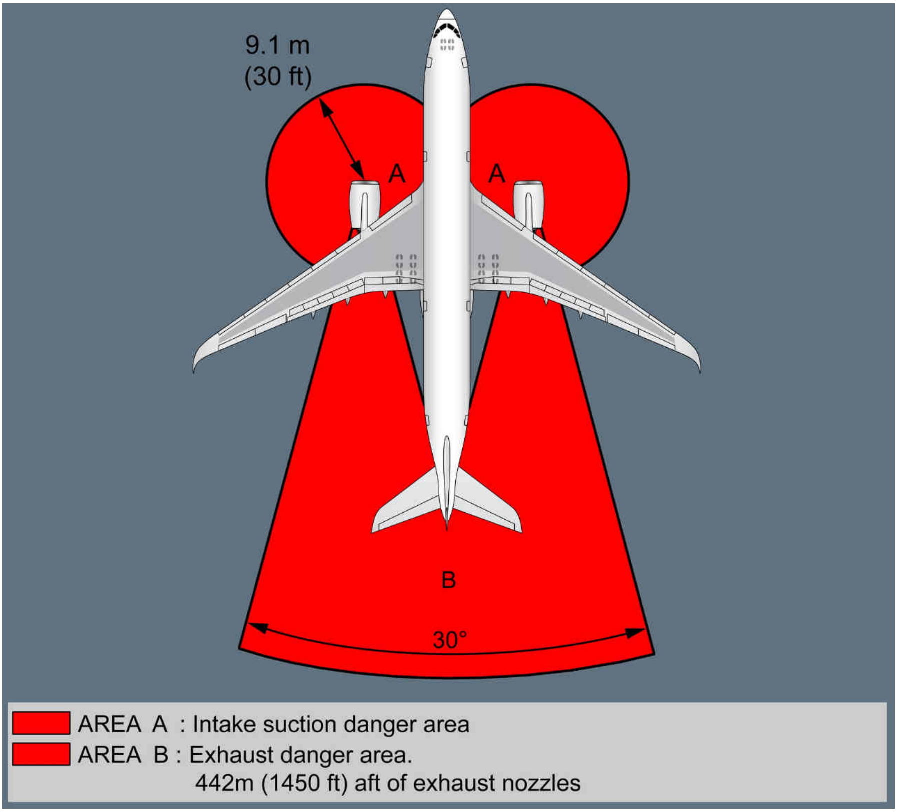
GROUND IDLE THRUST

Ground Idle Thrust


4.6 m
(15 ft)
1.6 m
(5 ft)
A
A
B
B
C
30°
🟥 AREA A : Intake suction danger area
🟩 AREA B : Entry corridor
🟥 AREA C : Exhaust danger area.
67m (220 ft) aft of exhaust nozzles

MAX TAKEOFF THRUST

Max Takeoff Thrust


9.1 m
(30 ft)
A
A
B
30°
🟥 AREA A : Intake suction danger area
🟥 AREA B : Exhaust danger area.
442m (1450 ft) aft of exhaust nozzles

Intentionally left blank

AFTER START

Applicable to: ALL

Ident.: PRO-NOR-SOP-90-90-00006558.0001001 / 27 SEP 18
Impacted by TDU: 00024191 After Start - ENG Start Selector

ENG START SELECTOR

ENG START selector .... NORM | PF

L2 *For more information about engine warm-up time, Refer to LIM-ENG Engine Warm-up Before Takeoff.*

Ident.: TDU / PRO-NOR-SOP-90-90-00024191.0001001 / 27 SEP 18
Impacted DU: 00006558 After Start - ENG Start Selector

ENG START SELECTOR

ENG START selector .... NORM | PF

L2 *For more information about engine warm-up time, Refer to LIM-ENG Engine Warm-up Before Takeoff.*

L1 ENG THRUST LEVERS : KEEP IDLE FOR 30 SECONDS

Ident.: PRO-NOR-SOP-90-90-00006559.0001001 / 25 APR 14

APU BLEED

APU BLEED pb-sw.. OFF | PF

1 Ident.: PRO-NOR-SOP-90-90-00006560.0004001 / 07 JUL 20

ANTI ICE

ENG 1 and 2 ANTI ICE pb-sw .... AS RQRD | PF

- *Set to ON the ENG ANTI ICE pb-sw, if:*
  - *Icing conditions exist or are anticipated, or*
  - *Standing water, slush, ice, or snow is on the taxiways or runway when the OAT is equal to or less than 10 °C (50 °F).*
- *When taxiing in icing conditions, if temperature is less than +1 °C (33.8 °F):*
  - *With FZFG conditions: the flight crew must refer to Engine Operation on Ground in FZFG Refer to procedure.*
  - *Without FZFG conditions: no procedure is required.*

● **At least 15 s after APU bleed is set to off:**
WING ANTI ICE pb-sw .... AS RQRD | PF

L2 *Use of APU bleed air for wing anti-ice is not permitted.*

On ground when wing anti-ice is switched on, the anti-ice valves open for about 20 s (test sequence), then close as long as the aircraft is on ground.

Ident.: PRO-NOR-SOP-90-90-00006561.0001001 / 25 APR 14

APU

- **If the APU is not required:**

  APU MASTER SW pb-sw......OFF | PF

Ident.: PRO-NOR-SOP-90-90-00006562.0001001 / 25 APR 14

GROUND SPOILERS

GND SPLRS......ARM | PM

Ident.: PRO-NOR-SOP-90-90-00006563.0001001 / 25 APR 14

RUDDER TRIM

RUDDER TRIM RESET pb......PRESS | PM

L2 *Press the RESET pb on the RUDDER TRIM panel.*

L1 RUDDER TRIM......CHECK ZERO | PM

L2 *On the PFD, check that the rudder trim is at zero.*

Ident.: PRO-NOR-SOP-90-90-00006564.0001001 / 28 APR 17

FLAPS

FLAPS......SET | PM

L2
- *Set the FLAPS for takeoff*
- *Check the slats and flaps position on the slats/flaps display of the PFD*
- *If taxiing in icing conditions with rain, slush, or snow, maintain the slats/flaps retracted until the aircraft reaches the holding point of the takeoff runway, in order to prevent contamination of the slats/flaps mechanism. The flight crew should perform the flight controls check in the flaps configuration for takeoff.*

Ident.: PRO-NOR-SOP-90-90-00006565.0001001 / 25 APR 14

PITCH TRIM

PITCH TRIM......CHECK | PM

L2 *Check that the pitch trim is set to the takeoff target on the pitch trim display of the PFD.*

Ident.: PRO-NOR-SOP-90-90-00006566.0001001 / 25 APR 14

ECAM STATUS

ECAM STATUS......CHECK | BOTH

L2
- The PM checks and the PF crosschecks that there is no status reminder (STS) on the WD
- If STS appears on the WD, press the STS pb on the ECP to display the STATUS page.

Ident.: PRO-NOR-SOP-90-90-00006567.0001001 / 25 APR 14

N/W STEER DISC **MEMO**

N/W STEER DISC MEMO... CHECK NOT DISPLAYED | PF

CAUTION	If the ECAM still displays the N/W STEER DISC memo, but the ground crew confirms that the tow pin is removed, the NWS Disconnection Function is inoperative. To dispatch the aircraft in such a case, *Refer to MMEL/32–50–02B NWS DISCONNECT panel deactivated*

Ident.: PRO-NOR-SOP-90-90-00006568.0001001 / 05 NOV 15

GROUND CREW

CLEAR TO DISCONNECT..ANNOUNCE | PF

L2
The ground crew:
- *Removes the chocks*
- *Disconnects the interphone*
- *Makes the hand signal on the left or right side.*

For additional information on the associated standard callouts, Refer to PRO-NOR-SCO Summary for Each Flight Phase.

Ident.: PRO-NOR-SOP-90-90-00006570.0001001 / 25 APR 14

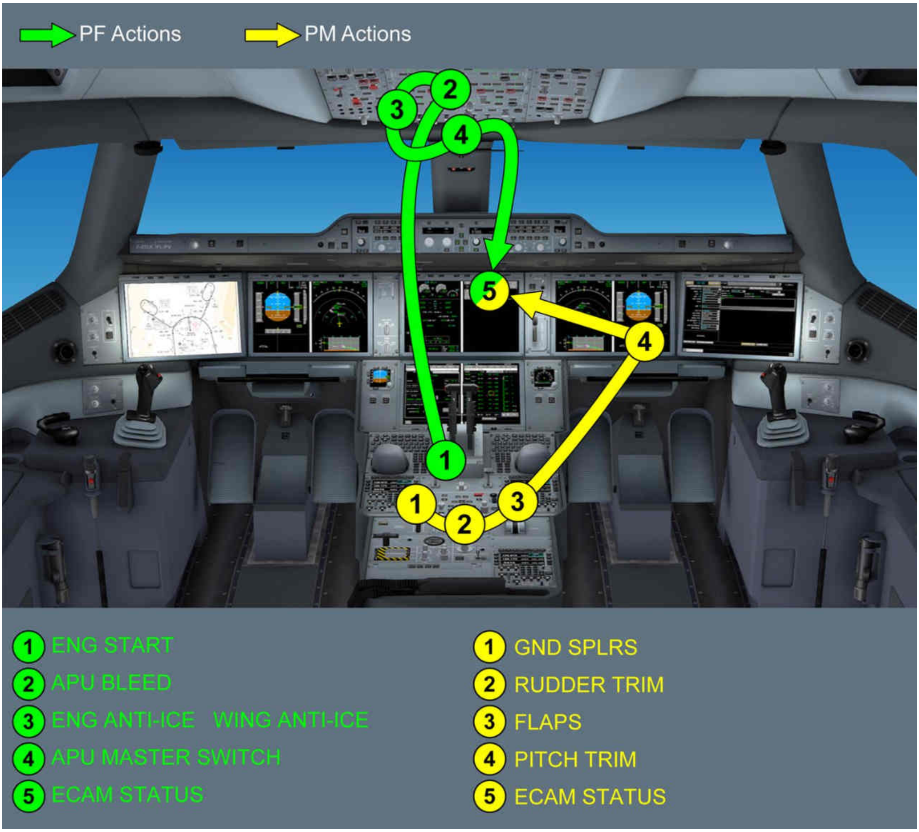
AFTER START CHECKLIST

AFTER START C/L...COMPLETE | BOTH

Refer to PRO-NOR-C-L After Start.

L2
For additional information on the associated standard callouts, Refer to PRO-NOR-SCO Summary for Each Flight Phase.

Ident.: PRO-NOR-SOP-90-90-00020903.0001001 / 06 AUG 14


PF Actions
PM Actions
1
2
3
4
5
1
2
3
4
5
1 ENG START
2 APU BLEED
3 ENG ANTI-ICE WING ANTI-ICE
4 APU MASTER SWITCH
5 ECAM STATUS
1 GND SPLRS
2 RUDDER TRIM
3 FLAPS
4 PITCH TRIM
5 ECAM STATUS

TAXI

Applicable to: ALL

Ident.: PRO-NOR-SOP-100-100-00006574.0001001 / 27 SEP 18

TAXI VIDEO ◁

TAXI pb on EFIS CP .... AS RQRD | BOTH

L2 *For more information, Refer to FCTM/PR-NP-SOP-100 External Taxi Aid Camera System.*

Ident.: PRO-NOR-SOP-100-100-00006571.0001001 / 25 APR 14

CLEARANCE

TAXI CLEARANCE .... OBTAIN | PM

Ident.: PRO-NOR-SOP-100-100-00006575.0001001 / 25 APR 14

AIRPORT NAVIGATION

The ANF is not a guidance system. If the ANF display does not correspond to the outside view, the flight crew must disregard the ANF display.

ND RANGE selector .... ZOOM, AS APPROPRIATE | BOTH

L2 *For more information, Refer to FCTM/PR-NP-SOP-100 Airport Navigation .*

Ident.: PRO-NOR-SOP-100-100-00006577.0001001 / 05 NOV 15

EXTERIOR LIGHTS

L2 During taxi, the PF may request the PM to set the exterior lights.

L1 NOSE sw.................... TAXI | PF

- **When crossing a runway:**
  STROBE sw.................... ON | PF

Ident.: PRO-NOR-SOP-100-100-00006578.0001001 / 25 APR 14

PARK BRK

L2 For additional information on the associated standard callouts, *Refer to PRO-NOR-SCO Summary for Each Flight Phase*.

L1 PARK BRK handle .... OFF | PF

Ident.: PRO-NOR-SOP-100-100-00006580.0001001 / 12 DEC 16

BRAKES

L2 For more information, *Refer to FCTM/PR-NP-SOP-100 Carbon Brake Wear*.

For additional information on the associated standard callouts, *Refer to PRO-NOR-SCO Summary for Each Flight Phase*.

L1 BRAKES..CHECK | PF

CAUTION	If the aircraft was parked in wet conditions for a long time, the first brake application at low speed is less effective.

BRAKE FAN pb ....AS RQRD | PM

L2 *If an arc appears above the brake temperature on the WHEEL SD page, set to ON the BRAKE FAN pb.*

Ident.: PRO-NOR-SOP-100-100-00006581.0001001 / 09 MAR 16

FLIGHT CONTROLS

FLIGHT CONTROLS..CHECK | BOTH

L2 *Check the flight controls at a convenient stage, before or during taxi. For more information, Refer to FCTM/PR-NP-SOP-100 Flight Controls.*

Ident.: PRO-NOR-SOP-100-100-00006582.0001001 / 25 APR 14

ATC CLEARANCE

ATC CLEARANCE..CONFIRM | PM

Ident.: PRO-NOR-SOP-100-100-00006583.0001001 / 07 MAY 18

TAKEOFF DATA

- **If takeoff conditions changed:**

  OIS FINAL TAKEOFF PERF DATA..........................RECOMPUTE | BOTH

  L2 *The PF and the PM independently compute again the takeoff performance data.*

  L1 FMS TAKEOFF DATA..........................REVISE | PM

  L2 *The PM revises the takeoff data in the FMS. If the flight crew uses the optimum configuration option for the computation, they should pay specific attention to changes to the configuration of the slats/flaps at takeoff.*

  L1 OIS FINAL TAKEOFF PERF DATA..........................XCHECK WITH AVNCS | PF

  L2 *The XCHECK WITH AVNCS function enables the flight crew to automatically check takeoff performance data. For more information, Refer to DSC-46-OIS-20-80-90 Xcheck with Avionics Button. In addition, the PF should compare the runway, T.O shift and the engine-out acceleration altitude from their OIS TAKEOFF PERF application with the T.O panel of the FMS ACTIVE/PERF page.*

  L1 FLAPS lever..........................AS APPROPRIATE | PM

Ident.: PRO-NOR-SOP-100-100-00006584.0001001 / 25 APR 14

AFS/FLIGHT INSTRUMENTS

F-PLN (SID, TRANS).. REVISE or CHECK | PM

L2 *Carefully confirm that the ATC clearance agrees with the FMS, if NAV mode is used.*

L1 INITIAL CLIMB SPEED AND SPEED LIMIT.................. REVISE or CHECK | PM

L2 *Revise the SPD panel of the FMS ACTIVE/VERT REV page associated with the departure, or the CLB waypoint.*

L1 MFD.. IN TAKEOFF CONFIGURATION | BOTH

L2 *The PF displays the T.O panel of the FMS ACTIVE/PERF page.*
The PM displays the FMS ACTIVE/F-PLN page.

L1 CLEARED ALTITUDE ON AFS CP.. SET | PM

L2 *On the PFD, crosscheck and confirm the first cleared altitude.*

L1 HDG ON AFS CP.. PRESET, AS RQRD | PM

L2 *If the ATC requires a heading after takeoff, or in the case of a radar vector departure, preset the heading on the AFS CP. NAV disarms. For more information, Refer to DSC-22-FG-110 How to Define a HDG/TRK Preset before Takeoff.*

L1 FD.. CHECK ON | BOTH
PFD/ND.. CHECK | BOTH

L2 *Check that the PFD (e.g. airspeeds, initial target altitude, heading, slats/flaps configuration, FMA modes) and the ND indications (SID) are in accordance with the departure.*

Ident.: PRO-NOR-SOP-100-100-00006585.0001001 / 25 APR 14

TAKEOFF BRIEFING

TAKEOFF BRIEFING.. CONFIRM | PF

L2 *For more information, Refer to FCTM/PR-NP-SOP-100 Takeoff Briefing Confirmation.*

Ident.: PRO-NOR-SOP-100-100-00024774.0001001 / 08 NOV 18

EFIS CP

EFIS OPTIONS (WX pb or TERR pb).. AS RQRD | BOTH

L2 *Consider the following settings:*
- *WX pb set to ON, on the PF side*
- *TERR pb set to ON, on the PM side.*

Note: *When the flight crew presses the WX pb on the EFIS CP, it takes up to 30 s to fill the buffer with radar data, and to have the complete WX display available on the ND and on the VD.*

Ident.: PRO-NOR-SOP-100-100-00006586.0001001 / 25 APR 14

AUTO BRK

A/BRK pb..ARM | PM

L2 *BRK RTO appears on the FMA.*

Ident.: PRO-NOR-SOP-100-100-00006587.0001001 / 25 APR 14

ATC

SQUAWK..CONFIRM/SET | PM

Ident.: PRO-NOR-SOP-100-100-00006588.0001001 / 25 APR 14

FINAL CHECK

T.O CONFIG ....TEST | PM

L2 *Press the T.O CONFIG pb on the ECP, and check that the WD displays the T.O CONFIG NORMAL memo.*

L1 T.O MEMO..CHECK NO BLUE | PM

L2 *Check that the WD does not display any blue line in the T.O memo section.*

Ident.: PRO-NOR-SOP-100-100-00018131.0001001 / 25 APR 14

CABIN

CABIN REPORT..RECEIVE | BOTH

L2 *Check CABIN READY on the WD, or obtain the report from the chief purser.*

Ident.: PRO-NOR-SOP-100-100-00006589.0001001 / 02 APR 15

BEFORE TAKEOFF CHECKLIST DOWN TO THE LINE

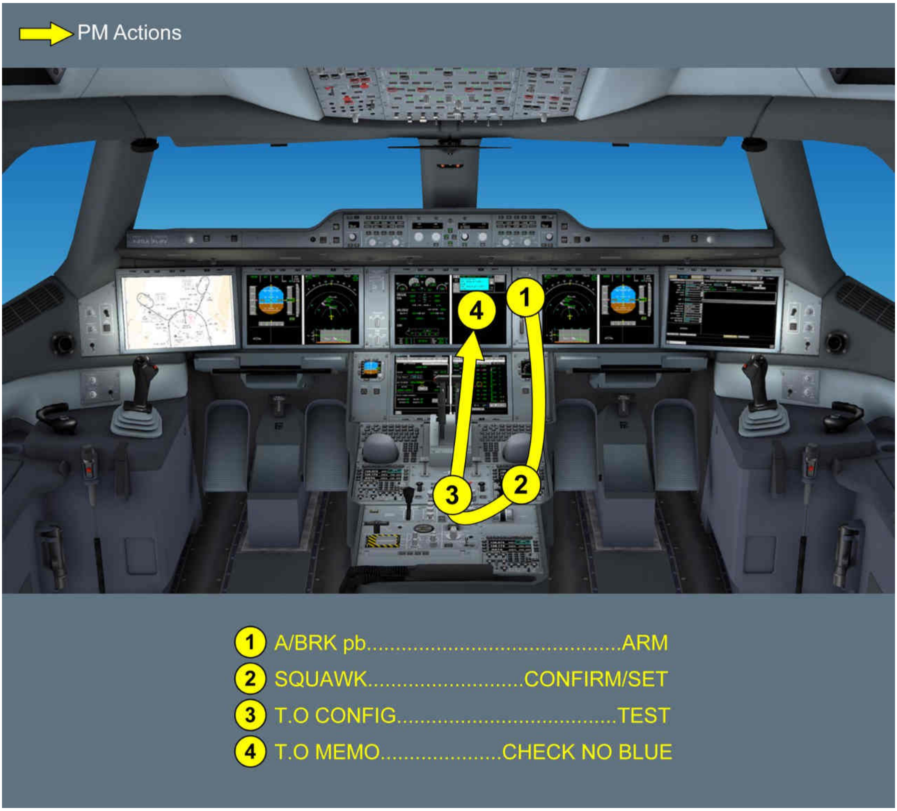
BEFORE TAKEOFF C/L down to the line..COMPLETE | BOTH

Refer to PRO-NOR-C-L Before Takeoff.

L2 *For additional information on the associated standard callouts, Refer to PRO-NOR-SCO Summary for Each Flight Phase.*

Ident.: PRO-NOR-SOP-100-100-00020907.0001001 / 04 DEC 14

FLOW PATTERN



① A/BRK pb..ARM
② SQUAWK..........................CONFIRM/SET
③ T.O CONFIG.....................................TEST
④ T.O MEMO.....................CHECK NO BLUE

Intentionally left blank

BEFORE TAKEOFF

Applicable to: ALL

Ident.: PRO-NOR-SOP-110-110-00006603.0001001 / 29 NOV 18

BRAKE FANS ◁✳

- **If the brake fans are set to ON:**

  BRAKE TEMPERATURE.......................CHECK | PM

  - **If the temperature of one brake is at or more than 150 °C:**

    TAKEOFF.......................DELAY | PM

    L2 *This prevents the display of the BRAKES HOT alert once the BRAKE FAN pb is set to OFF. For more information, Refer to FCTM/PR-NP-SOP-100 Brake Temperature.*

  - L1 **If the temperature of all brakes is below 150 °C:**

    BRAKE FAN pb ....OFF | PM

Ident.: PRO-NOR-SOP-110-110-00006594.0001001 / 25 APR 14

LINE-UP CLEARANCE

LINE-UP CLEARANCE.......................OBTAIN | PM

Ident.: TDU / PRO-NOR-SOP-110-110-00024407.0001001 / 27 OCT 17
Impacted DU: NONE

PARK BRK

- **If the flight crew sets the PARK BRK handle to ON:**

  - **Before the flight crew sets the PARK BRK handle to OFF:**

    BOTH BRAKE PEDALS....................... FULLY PRESS | PF

  PARK BRK handle.......................OFF | PF
  BOTH BRAKE PEDALS....................... RELEASE | PF

Ident.: PRO-NOR-SOP-110-110-00006600.0001001 / 08 NOV 18

EFIS CP

TAXI pb ◁✳ ....OFF | BOTH
ND MODE AND RANGE....................... AS RQRD | BOTH

Ident.: PRO-NOR-SOP-110-110-00006604.0001001 / 25 APR 14

TCAS

TA pb....................... TA ONLY or TA/RA | PM

L2 *TA/RA is the default mode of the TCAS.*

The flight crew may use the TA ONLY mode in specific airports, and for specific procedures (identified by Operators) that may provide resolution advisories that are neither wanted nor appropriate (e.g. closely-spaced parallel or converging runways).

Ident.: PRO-NOR-SOP-110-110-00006601.0001001 / 05 NOV 15

BEFORE ENTERING THE RUNWAY

STROBE sw..ON | PF

L2 *During taxi, the PF may request the PM to set the exterior lights.*

L1 APPROACH PATH..CLEARED OF TRAFFIC | BOTH

L2 *Check that the approach path is clear of traffic, visually and using TCAS display on ND.*

L1 TAKEOFF RUNWAY..CONFIRM | BOTH

L2 *Confirm that the line-up is performed on the intended runway. Useful aids are:*

- *The runway markings*
- *The runway lights*
  Be careful that in low visibility, edge lights could be mixed up with the center line lights
- *The ILS signal*
  If the runway is ILS equipped, the flight crew can press the LS pb: the LOC deviation should be centered after line-up
- *The ND (runway symbol, ANF runway ident box).*

Ident.: PRO-NOR-SOP-110-110-00006595.0001001 / 25 APR 14

CABIN CREW

CABIN CREW..ADVISE | PM

L2 *Advise the cabin crew that takeoff is imminent.*

Ident.: PRO-NOR-SOP-110-110-00006602.0001001 / 25 APR 14

SLIDING TABLE

SLIDING TABLE..STOW | BOTH

Ident.: PRO-NOR-SOP-110-110-00020890.0001001 / 25 APR 14

PACKS

PACK 1 + 2..AS RQRD | PM

L2 *Set the packs according to takeoff data computation.*
For more information, Refer to FCTM/PR-NP-SOP-110 Packs.

Ident.: PRO-NOR-SOP-110-110-00006605.0001001 / 25 APR 14

BEFORE TAKEOFF CHECKLIST BELOW THE LINE

BEFORE TAKEOFF C/L below the line..COMPLETE | BOTH

Refer to PRO-NOR-C-L Before Takeoff.

L2 *For additional information on the associated standard callouts, Refer to PRO-NOR-SCO Summary for Each Flight Phase.*

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TAKEOFF

Applicable to: ALL

Ident.: PRO-NOR-SOP-120-120-00018090.0001001 / 27 SEP 18

TAKEOFF CLEARANCE

TAKEOFF CLEARANCE........OBTAIN | PM

Ident.: PRO-NOR-SOP-120-120-00018091.0001001 / 06 MAR 18

EXTERIOR LIGHTS

LDG sw........ON | PF
NOSE sw........T.O | PF

Ident.: PRO-NOR-SOP-120-120-00006607.0001001 / 08 JUL 19

THRUST SETTING

L2 For more information on thrust setting, *Refer to FCTM/PR-NP-SOP-120 Thrust Setting*.
For more information on takeoff roll, *Refer to FCTM/PR-NP-SOP-120 Takeoff Roll*.
For additional information on the associated standard callouts, *Refer to PRO-NOR-SCO Summary for Each Flight Phase*.

L1 The below procedure is the standard takeoff procedure. However, rolling takeoff is permitted.

TAKEOFF........ANNOUNCE | PF
THR........25 % | PF

L2 *Apply 25 % THR on all engines with brakes set to on. However, the flight crew can release the brakes to perform a rolling takeoff.*

L1
- **If the crosswind is at or below 25 kt and there is no tailwind:**

  SIDESTICK........HALF FORWARD | PF

  L2 *To counter the nose-up effect of setting engine takeoff thrust, apply half forward stick until the airspeed reaches 80 kt.*

  L1 BRAKES........RELEASE | PF
  THRUST LEVERS........FLX or TOGA | PF

  L2 *Once the thrust levers are set to FLX or TOGA detent, the Captain maintains their hand on the thrust levers, until the aircraft reaches V1.*

L1
- **In case of tailwind, or if the crosswind is above 25 kt:**

  SIDESTICK........FULL FORWARD | PF

  L2 *To counter the nose-up effect of setting engine takeoff thrust, apply full forward stick until the airspeed reaches 80 kt.*

L1 BRAKES....................RELEASE | PF
THR....................INCREASE | PF

L2 *Increase THR progressively to reach CL detent at 20 kt ground speed and FLX (or TOGA) detent at 40 kt ground speed.*

L1
- **At 20 kt ground speed:**
  THRUST LEVERS....................CL | PF

  L2 *The ENG THR LEVERS NOT SET ECAM alert may briefly appear. The alert will disappear when the pilot sets the thrust levers to FLX or TOGA at 40 kt.*

L1
- **At 40 kt ground speed:**
  THRUST LEVERS....................FLX or TOGA | PF

  L2 *Once the thrust levers are set to FLX or TOGA detent, the Captain maintains their hand on the thrust levers, until the aircraft reaches V1.*

L1 CHRONO....................START | PM
DIRECTIONAL CONTROL....................USE RUDDER | PF
PFD/ND....................MONITOR | PM

L2 *If NAV PRIMARY LOST, check on the ND the FMS position: i.e. that the aircraft is on the runway centerline.*

Ident.: PRO-NOR-SOP-120-120-00006608.0001001 / 25 APR 14

BELOW 80 KT

L2 For additional information on the associated standard callouts, *Refer to PRO-NOR-SCO Summary for Each Flight Phase*.

L1 TAKEOFF THRUST....................CHECK | PM

L2 *Below 80 kt, check the thrust setting, i.e. check that the actual THR of each engine reached the thrust rating limit and the thrust target indicated by the blue dot.*

L1 THRUST SET....................ANNOUNCE | PM
PFD and ENG indications....................MONITOR | PM

L2 *Scan the airspeed, THR and EGT throughout the takeoff.*

Ident.: PRO-NOR-SOP-120-120-00021498.0001001 / 06 AUG 14

AT 80 KT

SIDESTICK....................RELEASE | PF

L2 *Release the sidestick gradually to reach neutral at 100 kt.*

Ident.: PRO-NOR-SOP-120-120-00006609.0001001 / 25 APR 14

AT 100 KT

L2 For additional information on the associated standard callouts, *Refer to PRO-NOR-SCO Summary for Each Flight Phase*.

L1 ONE HUNDRED KNOTS.......................ANNOUNCE | PM
ONE HUNDRED KNOTS.......................CROSSCHECK | PF

L2
- *Below 100 kt, the Captain can decide to abort the takeoff, depending on the circumstances*
- *Above 100 kt, rejecting the takeoff is a more serious matter.*

Ident.: PRO-NOR-SOP-120-120-00006610.0001001 / 25 APR 14

AT V1

L2 For additional information on the associated standard callouts, *Refer to PRO-NOR-SCO Summary for Each Flight Phase*.

L1 V1.......................MONITOR or ANNOUNCE | PM

Ident.: PRO-NOR-SOP-120-120-00006611.0001001 / 02 OCT 14

AT VR

L2 For more information, *Refer to FCTM/PR-NP-SOP-120 Rotation Technique*.
For additional information on the associated standard callouts, *Refer to PRO-NOR-SCO Summary for Each Flight Phase*.

L1 ROTATION.......................ORDER | PM
ROTATION.......................PERFORM | PF

L2
- *At VR, rotate the aircraft with a positive sidestick input to achieve a continuous rotation rate of about 3 °/s, toward an initial pitch attitude of 12.5 ° (10 ° with one engine inoperative).*
- *Minimize lateral inputs on ground and during the rotation, to avoid spoiler extension. In strong crosswind conditions, small lateral stick inputs may be used, if necessary, to aim at maintaining wings level.*
- *After liftoff, follow the SRS guidance.*

Note: *If a tail strike occurs, the ECAM triggers the TAIL STRIKE alert. For more information, Refer to procedure.*

Ident.: PRO-NOR-SOP-120-120-00006612.0001001 / 30 JUN 14

WHEN POSITIVE CLIMB

L2 For additional information on the associated standard callouts, *Refer to PRO-NOR-SCO Summary for Each Flight Phase*.

L1 POSITIVE CLIMB....................ANNOUNCE | PM

L2 *Announce positive climb, when the vertical speed indication is positive and the radio altitude has increased.*

L1 L/G UP....................ORDER | PF
L/G lever ....SELECT UP | PM
AP....................AS RQRD | PF

L2 *5 s after liftoff, the flight crew can engage AP 1 or AP 2.*

Ident.: PRO-NOR-SOP-120-120-00006613.0001001 / 25 APR 14

AT THE THRUST REDUCTION ALTITUDE (I.E. LVR CLB FLASHING ON THE FMA)

THRUST LEVERS ....CL | PF

L2 *Autothrust automatically activates: A/THR appears on the FMA.*

L1 PACK 1 and 2 (if applicable)....................ON | PM

Ident.: PRO-NOR-SOP-120-120-00006615.0001001 / 25 APR 14

ABOVE THE ACCELERATION ALTITUDE (OR WHEN IN CLB PHASE)

L2

The following procedure ensures that the aircraft correctly accelerates toward the climb speed.
For additional information on the associated standard callouts, *Refer to PRO-NOR-SCO Flaps or Gear Configuration*.

L1 AT F SPEED

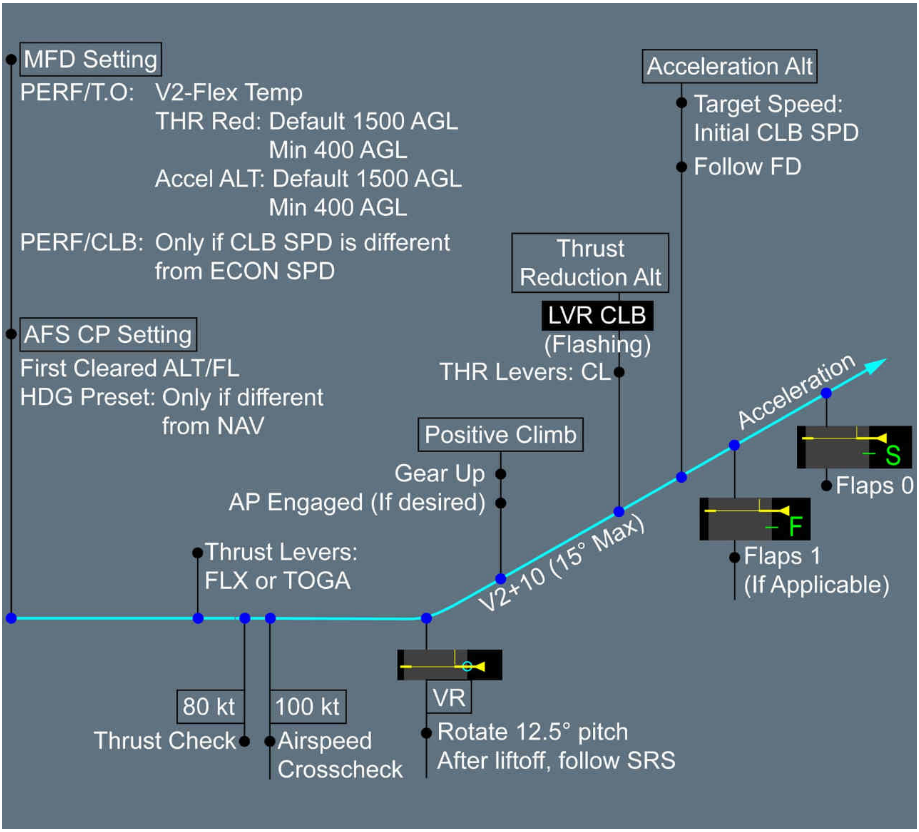
FLAPS 1....................ORDER | PF
FLAPS 1....................SELECT | PM

AT S SPEED

FLAPS ZERO....................ORDER | PF
FLAPS ZERO....................SELECT | PM
GND SPLRS....................DISARM | PM
EXTERIOR LIGHTS....................SET | PM

L2
- *Set to OFF the NOSE sw*
- *The flight crew can maintain the LDG sw set to ON according to the airline policy or regulatory recommendations.*

Normal Takeoff Pattern


MFD Setting
PERF/T.O: V2-Flex Temp
THR Red: Default 1500 AGL
Min 400 AGL
Accel ALT: Default 1500 AGL
Min 400 AGL
PERF/CLB: Only if CLB SPD is different from ECON SPD
AFS CP Setting
First Cleared ALT/FL
HDG Preset: Only if different from NAV
Acceleration Alt
Target Speed: Initial CLB SPD
Follow FD
Thrust Reduction Alt
LVR CLB
(Flashing)
THR Levers: CL
Acceleration
S
Flaps 0
F
Flaps 1
(If Applicable)
Positive Climb
Gear Up
AP Engaged (If desired)
V2+10 (15° Max)
Thrust Levers:
FLX or TOGA
80 kt
Thrust Check
100 kt
Airspeed
Crosscheck
VR
Rotate 12.5° pitch
After liftoff, follow SRS

Intentionally left blank

AFTER TAKEOFF

Applicable to: ALL

Ident.: PRO-NOR-SOP-130-130-00006617.0001001 / 06 MAY 15

APU

- **If the APU was used to supply the air conditioning during takeoff:**

APU BLEED pb-sw	OFF	PM
APU MASTER SW pb-sw	OFF	PM

Ident.: PRO-NOR-SOP-130-130-00006619.0001001 / 25 APR 14

TCAS

- **If the takeoff was performed with TA only:**

TA pb	TA/RA	PM

Ident.: PRO-NOR-SOP-130-130-00006620.0001001 / 25 APR 14

ANTI ICE

ANTI ICE pb-sw	AS RQRD	PM

L2 *The flight crew should set to ON the ENG ANTI ICE pb-sw, when icing conditions are expected with a TAT at, or below 10 °C.*

Ident.: PRO-NOR-SOP-130-130-00006622.0001001 / 25 APR 14

AFTER TAKEOFF/CLIMB CHECKLIST DOWN TO THE LINE

AFTER TAKEOFF/CLIMB C/L down to the line	COMPLETE	BOTH

Refer to PRO-NOR-C-L After Takeoff / Climb.

L2 *For additional information on the associated standard callouts, Refer to PRO-NOR-SCO Summary for Each Flight Phase.*

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CLIMB

Applicable to: ALL

Ident.: PRO-NOR-SOP-140-140-00018094.0001001 / 27 SEP 18

AT THE TRANSITION ALTITUDE

BAROMETRIC REFERENCE.. SET STD/CROSSCHECK | BOTH

L2
- *At the transition altitude, the barometric setting flashes on the PFD. The flight crew should set STD on the EFIS CP and on the ISIS SFD*
- *Crosscheck the barometric settings and the altitude indications*
  For more information on the VD in relation to the barometric reference setting, Refer to FCTM/PR-NP-SOP-140 Vertical Display
- *For additional information on the associated standard callouts, Refer to PRO-NOR-SCO Summary for Each Flight Phase.*

Ident.: PRO-NOR-SOP-140-140-00006624.0001001 / 25 APR 14

INITIAL CLIMB

The usual vertical mode is CLB or OP CLB, with managed speed active.

L2 For more information, *Refer to FCTM/PR-NP-SOP-140 Initial Climb*.

L1 CRZ FL.. SET AS RQRD | PF

L2
- *If the ATC clears the aircraft to the scheduled CRZ FL or above, it is not necessary to modify the CRZ FL that was inserted on the ACTIVE/INIT page during the cockpit preparation. The flight guidance automatically takes into account any altitude that the flight crew selects on the AFS CP above the CRZ FL*
- *If the ATC limits the CRZ FL to a level below the level entered on the ACTIVE/INIT page (or below the level that appears on the PERF page) insert this lower CRZ FL on the PERF page. If the flight crew does not enter this lower CRZ FL on the PERF page, there is no transition to the CRZ phase. Therefore, the managed speed/Mach targets are not modified and A/THR soft mode is not available. In that case, the FMA displays ALT instead of ALT CRZ in the second column.*

L1 CLIMB SPEED MODIFICATIONS..AS RQRD | PF

L2 *For more information, Refer to FCTM/PR-NP-SOP-140 Speed Considerations.*

Ident.: PRO-NOR-SOP-140-140-00006625.0001001 / 25 APR 14

AFTER TAKEOFF/CLIMB CHECKLIST BELOW THE LINE

AFTER TAKEOFF/CLIMB C/L below the line...COMPLETE | BOTH

Refer to PRO-NOR-C-L After Takeoff / Climb.

L2 *For additional information on the associated standard callouts, Refer to PRO-NOR-SCO Summary for Each Flight Phase.*

Ident.: PRO-NOR-SOP-140-140-00006626.0001001 / 25 APR 14

ANTI ICE

ANTI ICE pb-sw	AS RQRD	PM

L2 *The flight crew should set to ON the ENG ANTI ICE pb-sw, when the aircraft encounters icing conditions, unless the SAT is below -40 °C.*

Ident.: PRO-NOR-SOP-140-140-00006627.0001001 / 14 JUN 16

AT 10 000 FT

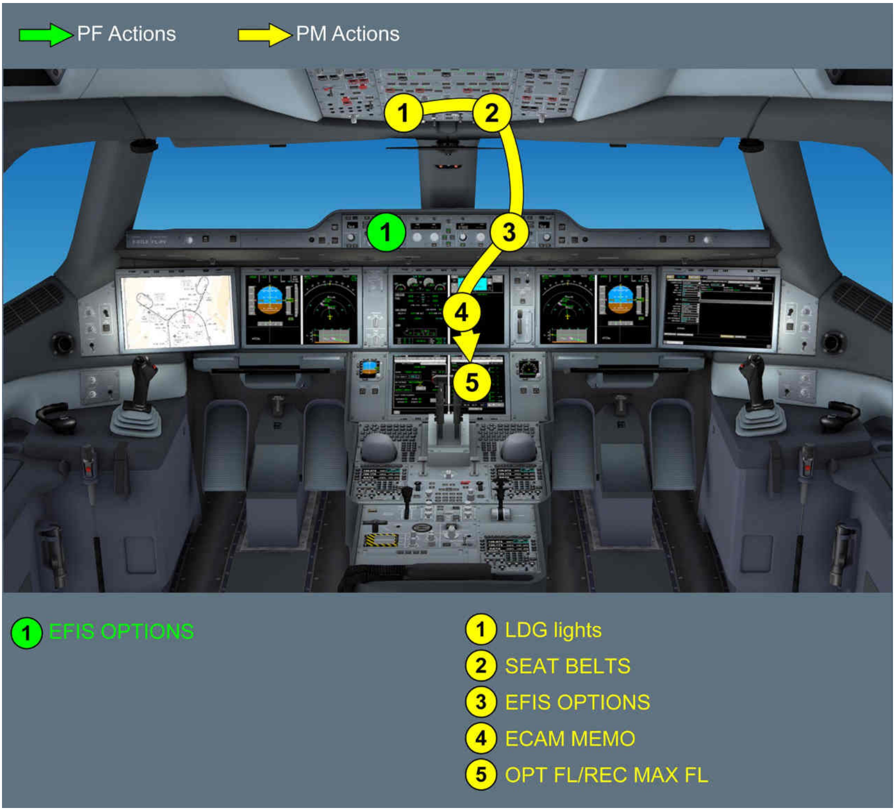
LDG lights sw	OFF	PM
SEAT BELTS sw	AS RQRD	PM
EFIS OPTIONS	AS RQRD	BOTH
ECAM MEMO	REVIEW	PM
NAVAIDS	CLEAR	PM

L2 *Clear the manually tuned NAVAIDS in the TUNED FOR DISPLAY panel of the POSITION/NAVAIDS page.*

L1 OPT FL /REC MAX FL	CHECK	PM

L2 *On the FMS ACTIVE/PERF page, check the optimum and recommended maximum flight levels.*

L1


PF Actions
PM Actions
1
2
1
3
4
5

① EFIS OPTIONS

① LDG lights
② SEAT BELTS
③ EFIS OPTIONS
④ ECAM MEMO
⑤ OPT FL/REC MAX FL

Intentionally left blank

CRUISE

Applicable to: ALL

Ident.: PRO-NOR-SOP-150-150-00006628.0001001 / 27 SEP 18

ALT CRZ

ALT CRZ on FMA	CHECK/ANNOUNCE	PF

L2 *Check that the aircraft flies at the cruise flight level indicated in the FMS ACTIVE/PERF page.*
For more information, Refer to FCTM/PR-NP-SOP-150 FMS Use.

Ident.: PRO-NOR-SOP-150-150-00006629.0001001 / 14 APR 16

ECAM

L2 In cruise, the tasksharing is left to the flight crew's appreciation.

L1

ECAM MEMO	REVIEW	PF
SD PAGES	REVIEW	PF

L2 *Periodically review SD pages and, in particular:*

- *ENG: ENG oil pressure and temperature*
- *BLEED: For bleed parameters*
- *ELEC: For electrical parameters and GEN load*
- *HYD: For fluid quantity. After landing gear retraction, the indicated fluid quantities are above the indicated fluid quantities on ground*
- *F/CTL: Note any abnormal control surface position*
- *FUEL: For fuel quantity and distribution*
- *DOOR/OXYGEN: For oxygen pressure.*

Ident.: PRO-NOR-SOP-150-150-00006630.0001001 / 03 DEC 15

FLIGHT PROGRESS

FLIGHT PROGRESS	CHECK	PF

L2 *Note:* *VLS on the PFD ensures a 0.3 g margin with respect to the buffet onset. No additional margin is necessary in cruise.*

L1 Monitor the flight progress, the navigation, the fuel quantity and the distribution, as usual.

L2 For more information on fuel temperature, *Refer to FCTM/PR-NP-SOP-150 Fuel Temperature*.

L1 **WHEN OVERFLYING A MANUALLY ENTERED WAYPOINT**

- Check the track and distance to the next waypoint
- Check the wind and update it if the current wind is significantly different.

WHEN OVERFLYING A WAYPOINT, OR EVERY 30 MIN

- Check the fuel: Check the FOB on the permanent data, and the fuel predictions in the FMS ACTIVE/FUEL & LOAD page, and compare them with the computerized flight plan.
- Check that there is no fuel leak.
  L2 For more information about the fuel leak detection, *Refer to FCTM/PR-AEP-FUEL Fuel Leak*.
- L1 On the CRUISE page, check the (FOB + FU)-BLOCK.
  If the value is abnormally negative, suspect a fuel leak.
  L2 For more information about the fuel leak detection, *Refer to FCTM/PR-AEP-FUEL Fuel Leak*.
  L1 If the value is abnormally positive, suspect a fuel quantity over read.

Check/compare the DEST EFOB on the F-PLN page with the MIN FUEL AT DEST available on the FUEL & LOAD FMS page.

L2 If the EFOB at destination is below the specified MIN FUEL AT DEST, the DEST EFOB ECAM MEMO appears on the WD, and the DEST EFOB BELOW MIN message appears on the FMS message area. However, the flight crew should be aware that many factors has an effect on the fuel consumption such as the actual flight level, the cruise speed, or weather conditions. The FMS takes into account those parameters to compute the fuel predictions.

Ident.: PRO-NOR-SOP-150-150-00006631.0001001 / 25 APR 14

STEP FLIGHT LEVEL

L2 For more information, *Refer to FCTM/PR-NP-SOP-150 Step Climb*.

L1 STEP FLIGHT LEVEL..AS APPROPRIATE | PF

Ident.: PRO-NOR-SOP-150-150-00006632.0001001 / 25 APR 14

NAVIGATION ACCURACY

● **If NAV PRIMARY LOST:**

NAVIGATION ACCURACY..MONITOR | PF

L2 *Monitor the navigation accuracy, particularly if any of the following occurs:*
- *IRS only navigation*
- *FMS POSITION/MONITOR page displays ACCURACY LOW*
- *The NAV ACCUR DOWNGRADED message appears on the FMS message area, and on the ND.*

Ident.: PRO-NOR-SOP-150-150-00006633.0001001 / 09 JUL 15

OXYGEN MASKS

- **If the oxygen mask was used:**

  OXYGEN MASK .... CHECK | BOTH

L2 *Check that the oxygen mask is correctly stowed. Refer to DSC-35-20-40 How to Stow the Mask.*

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DESCENT PREPARATION

Applicable to: ALL

Ident.: PRO-NOR-SOP-160-160-00006634.0001001 / 27 SEP 18

LANDING INFORMATION

The Descent Preparation and Approach Briefing can take approximately 10 min. Therefore, the flight crew should begin the briefing approximately 80 NM before the top of descent.

WEATHER AND LANDING INFORMATION.....OBTAIN | PM

L2 *Check the weather reports at alternate and destination airports. Airfield data, if any, should include the runway to be used for arrival.*
When the aircraft operates in low OAT conditions, consider altitude corrections for low temperature.

L1 NAV CHARTS CLIPBOARD.....PREPARE | BOTH

L2
- *Each pilot prepares their clipboard independently of the other, or*
- *One pilot prepares the clipboard, and the other pilot imports it.*

Ident.: PRO-NOR-SOP-160-160-00006635.0001001 / 25 APR 14

BAROMETRIC REFERENCE

BAROMETRIC REFERENCE.....PRESET | BOTH

L2 *Preset the QNH (QFE) on the EFIS CP.*

Ident.: PRO-NOR-SOP-160-160-00006636.0001001 / 25 APR 14

ECAM

STATUS PAGE/STATUS MORE PAGE.....CHECK | PM

L2
- *Check the STATUS page before completing the approach briefing. Review the active DEFERRED PROCs (i.e. ALL PHASES, APPR and LDG) and LIMITATIONS, and take particular note of any degradation in landing capability, or any other aspect affecting the approach and landing*
- *Check ALERTS IMPACTING LDG PERF are taken into account by the Landing Performance Application*
- *Review STATUS MORE page (if available) for any additional information.*

Ident.: PRO-NOR-SOP-160-160-00006637.0001001 / 08 JUL 19

LANDING PERFORMANCE

SYNCHRO ECAM button.....CLICK | PF-PM

L2 *Click on the SYNCHRO ECAM button in order to update the last ECAM alerts that occurred during the flight.*

L1 LANDING CONDITIONS....................CONFIRM | PF-PM

Perform an in-flight landing performance assessment if the landing conditions changed compared with the landing distance computation at dispatch, or with a previous computation (e.g. runway, weather conditions, in-flight failure affecting performance, diversion).

L2 *For more information, Refer to FCTM/PR-NP-SOP-160 Landing Performance.*

L1 ● **If landing conditions changed:**

LANDING PERF DATA....................COMPUTE | PF-PM

L2 *The PF and the PM independently compute the landing distance performance data, based on the new conditions at arrival.*

L1 *Note:* 1. *If the weather conditions are expected to change at the landing airport, or in the event of significant precipitation, the flight crew should consider a second calculation of the in-flight landing distance with the worst possible runway condition.*

2. *The selection of REV MAX is the standard practice for landing.*
However, on DRY runways the flight crew may select REV IDLE.
On WET runways (runway surface condition GOOD), the flight crew may select REV IDLE, if all of the following conditions are satisfied:

- *A landing distance assessment has been made with the following parameters for the in-flight landing distance computation:*
  - *MEDIUM TO POOR landing performance level*
  - *No reverser credit.*
- *The result of this in-flight landing distance assessment is within the LDA.*

LANDING PERF DATA....................CROSSCHECK | PF-PM

L2 *The PF and the PM compare their OIS to ensure that the computations are the same. For more information, Refer to FCTM/PR-NP-SOP-160 Content of a Landing Performance Data Crosscheck.*

Ident.: PRO-NOR-SOP-160-160-00006638.0001001 / 03 APR 20

FMS

L2 For more information, *Refer to FCTM/PR-NP-SOP-160 Approach Preparation*.

L1 During the time that the PF prepares the arrival in the FMS, the PF should transfer the controls to the PM.

L2 For more information on the associated standard callouts, *Refer to PRO-NOR-SCO PF/PM Duties Transfer*.

L1 FMS ACTIVE/F-PLN/ARRIVAL page..INSERT/CHECK | PF

L2 *Insert APPR, STAR, TRANS, and APPR VIA, if applicable.*

L1 FMS ACTIVE/F-PLN page...CHECK | PF

L2
- *Check that the F-PLN agrees with the planned approach and missed approach*
- *Check the F-PLN (approach and Missed Approach tracks and distances) vs. the approach charts, using the ND in PLAN mode as necessary*
- *Check speed constraints. Add new speed constraints if required.*
- *Check altitude constraints. Add new altitude constraints if required.*

L3 *Note:* *The FMS may have deleted the altitude constraints that are at or above the CRZ FL, or at or above any previous lower CRZ FL in the case of step climbs (Refer to ALT CSTR).*

In that case:
- *Insert again the affected procedures (STAR, APPR, VIA or TRANS)*
  The FMS keeps the altitude constraints that are below the CRZ FL, and deletes again the altitude constraints that are above current CRZ FL. The FMS may also delete the altitude constraints that are at current CRZ FL, and the altitude constraint windows that have a constraint at or above current CRZ FL.
- *Manually enter the altitude constraints that are below current CRZ FL using the FMS ACTIVE/F-PLN page.*

It is not possible to enter an altitude constraint at the CRZ FL.
In the case of an "AT" or "AT OR ABOVE" altitude constraint at the CRZ FL, ensure that the altitude constraint is met before initiating the descent.

L2
- *In all cases, do not modify the final approach (FAF or FAP to runway or MAP), including altitude constraints.*
- *Insert the winds associated with the descent profile.*

For approaches using FPA guidance:
- Identify the position and the altitude at which the final descent starts
- Check the value of the FPA
- Identify the Missed Approach Point (MAP).

L1 DES panel of the FMS ACTIVE/PERF page.................................... INSERT/CHECK | PF

- *Before the descent, check the MANAGED MACH/SPD*
- *If a speed different from the ECON Mach/speed is required, insert that Mach/speed in the ECON entry fields.*

L2 *The managed speed profile of the descent has a default speed limit of 250 kt below 10 000 ft. The flight crew can delete or modify this speed limit, if necessary, on the SPD panel of the FMS ACTIVE/F-PLN/VERT REV page.*

L1 APPR panel of the FMS ACTIVE/PERF page.................................. INSERT/CHECK | PF

- Enter the destination QNH, temperature, and wind.

L2 Insert the average wind given by the ATC or ATIS. Do not insert the gust values. During approach, the Ground Speed Mini function (managed speed mode), takes into account the instantaneous gust. For more information, Refer to Ground Speed Mini Function.
For example, if the wind is 15020G35KT, insert 150/20.

L1 - Insert the MINIMUM (i.e. BARO or RADIO), as applicable.

L2
  - To avoid undershooting the published MDA (MDH) during a go-around due to the aircraft inertia during the pull-up, some Authorities may require Operators to add a specific number of feet to the published MDA (MDH)
  - In the case of a CAT III approach without DH, the flight crew should enter NONE, NO, NO DH, or NODH in the RADIO entry field of the APPR panel of the ACTIVE/PERF page.

L1 - Check or modify the landing configuration.
- In the case of an in-flight failure that affects the landing performance and increases the VAPP, use the LDG PERF application for VAPP computation. Insert the computed VAPP in the APPR panel of the FMS ACTIVE/PERF page

L2 The flight crew can modify VAPP. The ground speed mini-function takes into account this new value.

L1 - Check or modify the transition flight level.

GA panel of the FMS ACTIVE/PERF page.. CHECK | PF

L2 *Check the THR RED and ACCEL altitudes, and modify them if necessary.*

L1 FMS POSITION/MONITOR page...INSERT | PF

L2 *On the FMS POSITION/MONITOR page, insert the landing runway threshold in the BRG/DIST TO entry field, for position monitoring during descent.*

L1 FMS ACTIVE/FUEL & LOAD page..CHECK | PF

L2 *Check the estimated landing weight, EFOB and extra fuel.*

L1 FMS POSITION/NAVAIDS page...CHECK | PF

L2
- *Set the NAVAIDS, as required, and check the VOR/ ADF ◁ idents on the NDs and the ILS (GLS) ident on the PFDs*
- *For an ILS approach, check the frequency and the course*
- *For a GLS approach ◁ or an approach using SLS function ◁ , check the channel and the course.*

L1 SEC pages..AS RQRD | PF

L2 *The flight crew should prepare a SEC F-PLN before the top of descent, either to an alternative runway for destination, or to the landing runway in the case of circling. In all cases, the routing to the alternate should be available. If there is a last-minute runway change, then the flight crew only needs to activate the appropriate SEC F-PLN, without forgetting to set the new MINIMUM and NAVAIDS.*

L1 FMS PREPARATION..CHECK | PM

L2 *After the PF prepares the FMS, the PM checks all the data entered in the FMS.*

Ident.: PRO-NOR-SOP-160-160-00021000.0001001 / 06 MAY 14

LANDING ELEVATION

LDG ELEVN..CHECK | PF

L2 *Check that LDG ELEVN appears on the CRUISE page, and check the associated value.*

Ident.: PRO-NOR-SOP-160-160-00018776.0002001 / 27 FEB 17
Impacted by TDU: 00025495 Descent Preparation - ROW/ROP

ROW/ROP

RWY COND/BRAKING ACTION selector..PULL | PF

L2 *This enables to display the RWY CONDITION/BRAKING ACTION matrix on ECAM SD.*

L1 RWY COND/BRAKING ACTION..SELECT | PF

L2 *Turn the RWY COND/BRAKING ACTION selector to select the appropriate runway condition or braking action (this enables to correctly configure ROW/ROP).*

L1 RWY COND/BRAKING ACTION selector..PUSH | PF

- **If required (e.g. due to a NOTAM):**
  ND MODE selector..PLAN | PF
  ND RANGE selector..ZOOM | PF
  RUNWAY SHIFT..ENTER | PF

L2 *On the ND (LANDING tab), enter a threshold and/or a runway end shift.*

1 Ident.: TDU / PRO-NOR-SOP-160-160-00025495.0001001 / 28 MAY 20
Impacted DU: 00018776 Descent Preparation - ROW/ROP

ROW/ROP

RWY COND/BRAKING ACTION selector..PULL | PF

L2 *This enables to display the RWY CONDITION/BRAKING ACTION matrix on ECAM SD.*

L1 RWY COND/BRAKING ACTION...SELECT | PF

L2 *Turn the RWY COND/BRAKING ACTION selector to select the appropriate runway condition or braking action (this enables to correctly configure ROW/ROP).*

L1 RWY COND/BRAKING ACTION selector...PUSH | PF

- **If required (e.g. due to a NOTAM):**

ND MODE selector...PLAN | CM2
ND RANGE selector...ZOOM | CM2
RUNWAY SHIFT...ENTER | CM2

L2 *On the ND (LANDING tab), CM2 enters a threshold and/or a runway end shift.*

Ident.: PRO-NOR-SOP-160-160-00006639.0002001 / 27 FEB 17
Impacted by TDU: 00025496 Descent Preparation - Autobrake

AUTOBRAKE

The use of BTV is recommended regardless of the runway condition.

- **If BTV is used:**

ND MODE selector...PLAN | PF
ND RANGE selector...ZOOM | PF
RUNWAY...CHECK | PF
RUNWAY EXIT...SELECT | PF

L2 *On a dry runway, it is recommended to select an exit beyond the WET (or GOOD) line, in order to anticipate a last minute change of the runway condition from dry to wet.*

The flight crew chooses the exit by taking into account:
- *The destination airport gate (if known)*
- *The airport ground circulation*
- *The runway exit configuration, (i.e. high speed turn off on dry runway)*
- *The runway occupancy time displayed on the ND.*

L1 BTV...ARM | PF
RUNWAY LENGTH...CHECK | PF

L2 *The LDA displayed on the ND (left upper corner) must not exceed the LDA published in airport data by more than 35 m (115 ft).*

L1
- **If BRK MED is used:**

BRK MED...ARM | PF

2 Ident.: TDU / PRO-NOR-SOP-160-160-00025496.0001001 / 28 MAY 20
Impacted DU: 00006639 Descent Preparation - Autobrake

AUTOBRAKE

The use of BTV is recommended regardless of the runway condition.

- **If BTV is used and a RUNWAY SHIFT is not entered:**

ND MODE selector........................PLAN PF
ND RANGE selector........................ZOOM PF
RUNWAY........................CHECK PF
RUNWAY EXIT........................SELECT PF

L2 *On a dry runway, it is recommended to select an exit beyond the WET (or GOOD) line, in order to anticipate a last minute change of the runway condition from dry to wet.*

The flight crew chooses the exit by taking into account:
- *The destination airport gate (if known)*
- *The airport ground circulation*
- *The runway exit configuration, (i.e. high speed turn off on dry runway)*
- *The runway occupancy time displayed on the ND.*

L1 BTV........................ARM PF
RUNWAY LENGTH........................CHECK PF

L2 *The LDA displayed on the ND (left upper corner) must not exceed the LDA published in airport data by more than 35 m (115 ft).*

L1
- **If BTV is used and a RUNWAY SHIFT is entered:**

ND MODE selector........................PLAN CM2
ND RANGE selector........................ZOOM CM2
RUNWAY........................CHECK CM2
RUNWAY EXIT........................SELECT CM2

L2 *On a dry runway, it is recommended to select an exit beyond the WET (or GOOD) line, in order to anticipate a last minute change of the runway condition from dry to wet.*

The flight crew chooses the exit by taking into account:
- *The destination airport gate (if known)*
- *The airport ground circulation*
- *The runway exit configuration, (i.e. high speed turn off on dry runway)*
- *The runway occupancy time displayed on the ND.*

L1 BTV........................ARM CM2
RUNWAY LENGTH........................CHECK CM2

L2 *The LDA displayed on the ND (left upper corner) must not exceed the LDA published in airport data by more than 35 m (115 ft).*

L1 ● **If BRK MED is used:**
BRK MED..ARM | PF

Ident.: PRO-NOR-SOP-160-160-00006641.0001001 / 25 APR 14

APPROACH BRIEFING

L2 For more information, *Refer to FCTM/PR-NP-SOP-160 Approach Briefing*.

L1 APPROACH BRIEFING..PERFORM | PF

L2 *The main objective of the approach briefing is for the PF to inform the PM of the planned course of action for the approach.*
It is recommended to use the FMS pages as a guide for the descent and approach briefing.
The briefing should include a review of the "Management of Degraded Navigation" chapter:
Refer to Approach Using XLS guidance - Management of Degraded Navigation, or
Refer to Approach Using FPA Guidance - Management of Degraded Navigation, or
Refer to Approach Using APP-DES Guidance - Management of Degraded Navigation

Ident.: PRO-NOR-SOP-160-160-00006644.0001001 / 27 MAY 14

ANTI ICE

ANTI ICE pb-sw..AS RQRD | PM

L2 *During the descent, set to ON the ENG ANTI ICE pb-sw when icing conditions exist or are anticipated.*
When the engines are at idle, the use of the anti-ice reduces the descent path angle. If needed, the flight crew can compensate this behavior by increasing the descent speed, or by extending the speed brakes, as necessary.

Ident.: PRO-NOR-SOP-160-160-00006643.0001001 / 25 APR 14

DESCENT CLEARANCE

DESCENT CLEARANCE..OBTAIN | PM
CLEARED ALTITUDE ON AFS CP..............................SET | PF

L2 *When the flight crew obtains the ATC clearance, they should set the cleared altitude (FL) on the AFS CP taking into account the safe altitudes.*
If the lowest safe altitude is above the cleared altitude, check with the ATC to determine if this constraint applies.
If the ATC confirms that this constrain applies, set the safe altitude on the AFS CP until it is safe to reach the cleared altitude.

DESCENT

Applicable to: ALL

Ident.: PRO-NOR-SOP-170-170-00006645.0001001 / 27 SEP 18

DESCENT INITIATION

DESCENT.. INITIATE | PF

L2 *The standard method to initiate the descent is to engage the DES mode at the Top of Descent (T/D) computed by the FMS.*

For more information on T/D and profile computation, *Refer to FCTM/PR-NP-SOP-170 Computation Principle*.

- **When the aircraft reaches the T/D:**

  ALT knob ....PUSH | PF

  DES mode engages.

  - **If the ATC requires an early descent:**

    Use the DES mode.

    The DES mode guides the aircraft down to a lower vertical speed, in order to converge with the required descent path. (The flight crew may use a V/S of 1 000 ft/min).

  - **If the ATC delays the descent:**

    Beyond the T/D, the T/D REACHED message appears on the PFD and MFD. This suggests that the flight crew should reduce the speed toward green dot speed with ATC permission.

    When cleared for descent, engage DES mode with the managed speed active.

Ident.: PRO-NOR-SOP-170-170-00006646.0001001 / 08 JUL 19

DESCENT MONITORING

L2 For more information , *Refer to FCTM/PR-NP-SOP-170 Guidance and Monitoring*.

L1 DESCENT..MONITOR | PF

L2 - *When flying in NAV mode, use the DES mode.*

- *Monitor the VERT DEV*
  The VERT DEV appears on the PFD and on the DES panel of the ACTIVE/PERF page.
- *Monitor the speed change that occurs when the aircraft reaches the speed change symbol ● in managed speed.*
- *Monitor the FMA when the aircraft reaches the level-off symbol (i.e. ↘ or ↘)*

  Note: *The NDs display a level-off symbol ↘ along the flight path. The position of this symbol is based on the current active modes: i.e. AP/FD and A/THR.*

- *Monitor the predicted descent point after the next level-off.*

- *When flying in HDG or TRACK mode and therefore, out of the lateral F-PLN, the DES mode is not available. Only V/S / FPA or OP DES mode is available for descent.*
  The target altitude is the AFS CP selected altitude, and the altitude constraints are not taken into account.
  FMS predictions assume a return to the lateral F-PLN and to the descent flight path.

- *Monitor the VERT DEV*
  The PFD displays the VERT DEV. The flight crew can use the VERT DEV to monitor the descent provided that the crosstrack error is less than 5 NM. To monitor the descent, the flight crew should use the level-off symbol ↘ in addition to the energy circle on the ND.
- *Monitor the speed change that occurs, when the aircraft reaches the speed change symbol ● in managed speed.*
- *Monitor the FMA when the aircraft reaches level-off symbol ↘.*
- *Check the predictions before engaging again the DES mode, in order to resume the descent profile.*

Ident.: PRO-NOR-SOP-170-170-00018774.0001001 / 25 APR 14

DESCENT ADJUSTMENT

RATE of DESCENT...ADJUST, AS RQRD | PF

L2 *To increase the rate of descent, increase the descent speed by using the selected speed, if comfort and the ATC permit. It is more cost-effective (Time/Fuel) than using the speed brakes:*

- *Maintain a high speed as long as possible, provided that the ATC permits to fly above the speed limits*
- *If the aircraft is high and at high speed, it is more efficient to keep the high speed until ALT* then to decelerate at level-off, instead of combining descent and deceleration.*

If the aircraft goes below the desired profile, use the selected speed and the V/S mode to adjust the rate of descent.
In the OP DES mode, the flight crew can use the speed brakes to increase the rate of descent. The flight crew can also use the speed brakes to maintain the required rate of descent, when engine anti-ice is used.
In the DES mode, if the aircraft is on, or below the flight path and the ATC requires a higher rate of descent, do not use the speed brakes because the rate of descent is imposed by the planned flight path. Therefore, the A/THR may increase thrust to compensate for the increase in drag. In this case, use the OP DES mode with speed brakes.

Ident.: PRO-NOR-SOP-170-170-00006652.0001001 / 22 JAN 15

EFIS CP

EFIS OPTIONS (WX pb or TERR pb).. AS RQRD | BOTH

L2 *Consider the following settings:*
- *WX pb set to ON, on the PF side*
- *TERR pb set to ON, on the PM side.*

L1 ● **When the aircraft approaches the transition level, and when cleared for an altitude:**
BAROMETRIC REFERENCE.. SET/CROSSCHECK | BOTH

L2 *Set the preset QNH on the EFIS CP and on the ISIS SFD.*
Crosscheck the barometric reference settings and the altitude indications.

Note: *The flight crew must take into account any QNH change on the EFIS CPs, ISIS SFD, and on the APPR panel of the FMS ACTIVE/PERF page.*
For additional information on the associated standard callouts, Refer to PRO-NOR-SCO Summary for Each Flight Phase.

Ident.: PRO-NOR-SOP-170-170-00006654.0001001 / 09 MAR 16

AT 10 000 FT

LDG lights sw..ON | PM

L2 *The flight crew may set to ON the landing lights, depending on the airline policy, or following regulatory recommendations.*

L1 SEAT BELTS sw..ON | PM
CSTR pb on EFIS CP..ON | BOTH
LS pb...AS RQRD | BOTH

L2 *Press the LS pb, if one of the following approaches is planned:*
- *ILS*
- *GLS* ⊲
- *LOC, ILS G/S out, or LOC B/C*

- *Approaches with the FLS function*
- *Approaches with the SLS function* .

L1 NAVAIDS..AS RQRD/CHECK | PF

L2 *Ensure that the appropriate navaids are tuned and identified.*

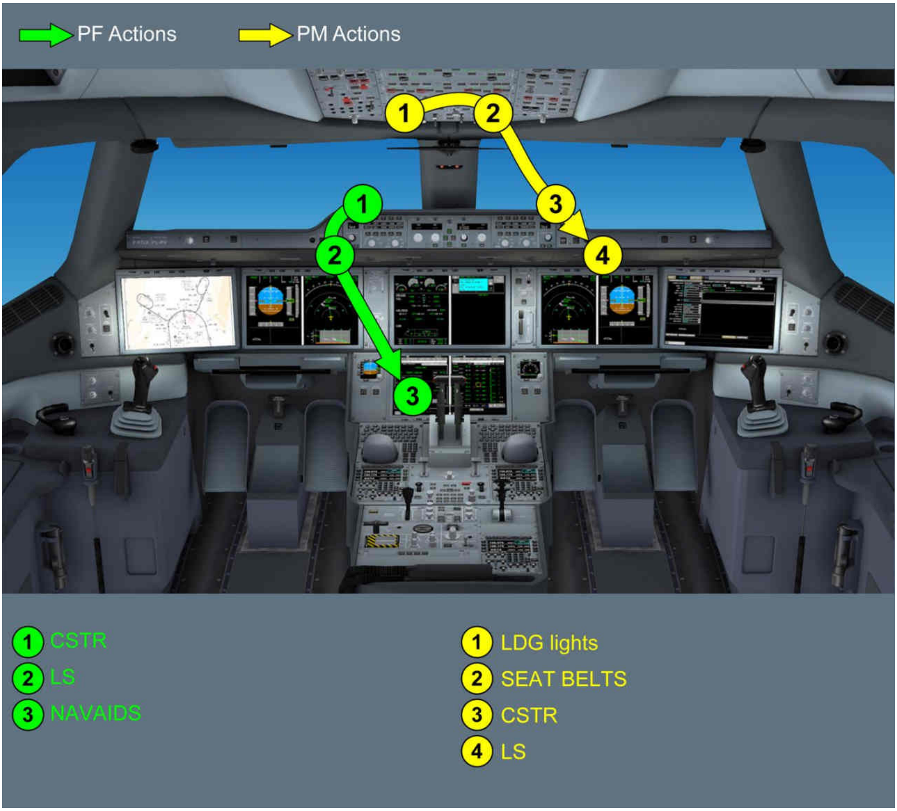
L1 ● **If NAV PRIMARY LOST:**

NAVIGATION ACCURACY..MONITOR | PF

L2 *Crosscheck the navigation accuracy by using the POSITION/MONITOR page (i.e. BRG/DIST TO computed data) and the ND (i.e. VOR/DME raw data).*
The navigation accuracy check determines the autopilot mode that the flight crew should use for the approach, and the type of ND displays.

Ident.: PRO-NOR-SOP-170-170-00018777.0001001 / 03 SEP 14

FLOW PATTERN


PF Actions
PM Actions
1
2
3
4
1
2
3
① CSTR
② LS
③ NAVAIDS
① LDG lights
② SEAT BELTS
③ CSTR
④ LS

Ident.: PRO-NOR-SOP-170-170-00018778.0001001 / 25 APR 14

APPROACH CHECKLIST

APPROACH C/L.. COMPLETE | BOTH

Refer to PRO-NOR-C-L Approach .

L2 *For additional information on the associated standard callouts, Refer to PRO-NOR-SCO Summary for Each Flight Phase.*

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Approach General

INTRODUCTION

Ident.: PRO-NOR-SOP-180-A-00018907.0001001 / 09 MAR 16
Applicable to: ALL

The APPROACH section provides the Standard Operating Procedures (SOP) for the following approach types:

- ILS approaches
- GLS ◁ approaches
- Conventional approaches: VOR, VOR-DME, NDB (with ADF ◁ option), NDB-DME (with ADF ◁ option)
- Approaches based on a LOC signal without any G/S signal: LOC, ILS G/S OUT, LOC B/C
- RNAV approaches including:
  - RNAV(GNSS) approaches with LNAV, LNAV/VNAV, LP (with SLS ◁ option) or LPV (with SLS ◁ option) minima
  - RNAV(RNP) approaches for which Authorization is Required (AR).

Note: *In relation to the names in the ICAO Performance-Based Navigation (PBN) Manual:*
- *"RNP APCH operations" corresponds to RNAV(GNSS) approaches*
- *"RNP AR APCH operations" corresponds to RNAV(RNP) approaches.*

CROSS-REFERENCE TABLE

Ident.: PRO-NOR-SOP-180-A-00020415.0001001 / 09 MAR 16
Applicable to: ALL

This table provides Guidance Modes that may be used depending on the Approach Types.

	Guidance Modes per Approach Types				
	XLS	**NAV - APP DES**	**LOC FPA or LOC B/C FPA**	**NAV FPA**	**TRK FPA**
ILS GLS ◁	*Refer to APPR using xLS*	N/A	N/A	N/A	N/A
LOC ILS G/S OUT LOC B/C	*Refer to APPR using xLS (1)*	N/A	*Refer to APPR using FPA Guidance*	N/A	N/A
RNAV(GNSS) with LNAV minima	*Refer to APPR using xLS (1)*	Not authorized	N/A	*Refer to APPR using FPA Guidance*	Not authorized
RNAV(GNSS) with LNAV/VNAV minima	*Refer to APPR using xLS*	Not authorized	N/A	Not authorized	Not authorized

Continued on the following page

Continued from the previous page

	Guidance Modes per Approach Types				
	XLS	**NAV - APP DES**	**LOC FPA or LOC B/C FPA**	**NAV FPA**	**TRK FPA**
RNAV(GNSS) with LPV minima (with SLS ◁ option)	*Refer to APPR using xLS*	Not authorized	N/A	Not authorized	Not authorized
RNAV(GNSS) with LP minima (with SLS ◁ option)	Not authorized	Not authorized	*Refer to APPR using FPA Guidance*	Not authorized	Not authorized
RNAV(RNP) approach	Not authorized	*Refer to APPR using APP DES*	N/A	Not authorized	Not authorized
VOR VOR-DME NDB (with ADF ◁ option) NDB-DME (with ADF ◁ option)	*Refer to APPR using xLS* (1)	Not authorized	N/A	*Refer to APPR using FPA Guidance*	*Refer to APPR using FPA Guidance*

(1) *The xLS is the recommended guidance mode for this type of approach.*

For Visual Approach, *Refer to PRO-NOR-SOP-180-C Visual Approach - General*.
For Circling Approach, *Refer to PRO-NOR-SOP-180-C Circling Approach - General*.

FLYING REFERENCE

Ident.: PRO-NOR-SOP-180-A-00018917.0001001 / 25 APR 14
Applicable to: ALL

Use the following recommended flying reference:
- In vertical managed modes: HDG-V/S reference
- In vertical selected modes: TRK-FPA reference.

STABILIZATION CRITERIA

Ident.: PRO-NOR-SOP-180-A-00018918.0001001 / 05 DEC 17
Applicable to: ALL

The stabilization height is defined as one of the following:
- 1 000 ft above airfield elevation in Instrument Meteorological Conditions (IMC), or
- 500 ft above airfield elevation in Visual Meteorological Conditions (VMC), or
- Any other height defined in Operator policies or regulations.

In order for the approach to be stabilized, all of the following conditions must be satisfied before, or at the stabilization height:

- The aircraft is on the correct lateral and vertical flight path
- The aircraft is in the desired landing configuration
- Thrust is stabilized, usually above idle, and the aircraft is at target speed for approach

  Note: *In IMC, a later speed and thrust stabilization can be acceptable provided that:*
  - *It is in accordance with Operator policies and regulations*
  - *The aircraft is in deceleration toward the target approach speed*
  - *The flight crew stabilizes speed and thrust as soon as possible and not later than 500 ft AAL.*

- The flight crew does not detect any excessive flight parameter deviation.

If one of the above-mentioned conditions is not satisfied, the flight crew must initiate a go-around, unless they estimate that only small corrections are required to recover stabilized approach conditions.

APPROACH SPEED TECHNIQUE

Applicable to: ALL

Ident.: PRO-NOR-SOP-180-A-B-00018924.0001001 / 25 APR 14

DECELERATED APPROACH

The decelerated approach with FD or AP/FD guidance is the standard technique for approaches using xLS guidance.

Ident.: PRO-NOR-SOP-180-A-B-00018925.0001001 / 08 JUL 19

EARLY STABILIZED APPROACH

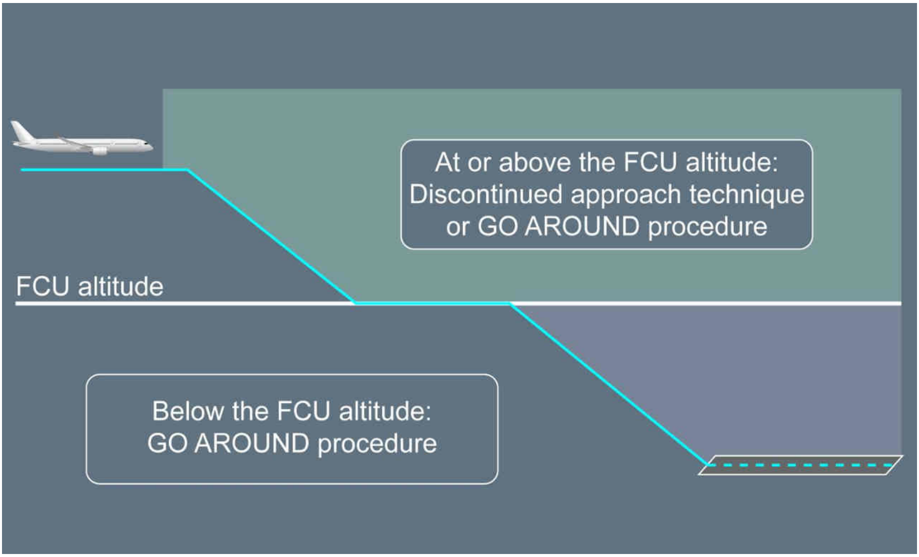
Under certain circumstances, the flight crew may decide to reduce the speed down to VAPP in the landing configuration at the Final Descent Point (i.e. approach via selected guidance, high glide path angle, low altitude intermediate approach, etc.). In order to obtain a valuable deceleration pseudo waypoint and to ensure a timely deceleration, the flight crew should enter VAPP as a speed constraint at the Final Descent Point.

DISCONTINUED APPROACH

Ident.: PRO-NOR-SOP-180-A-00020416.0001001 / 25 APR 14
Applicable to: ALL

In order to discontinue an approach when the aircraft is at or above the altitude selected on the FCU, the flight crew can either:
- Apply the GO AROUND procedure, or
- Apply the discontinued approach technique.

When the aircraft is below the FCU altitude, the flight crew must apply the GO AROUND procedure.


At or above the FCU altitude:
Discontinued approach technique
or GO AROUND procedure
FCU altitude
Below the FCU altitude:
GO AROUND procedure

- **If at or above the FCU altitude:**
  Announce "CANCEL APPROACH".
  To disarm any approach mode, press APPR pb or LOC pb.
  Select lateral mode as required (NAV or HDG mode).
  Select vertical mode as required.
  Select SPEED and adjust.
- **If F-PLN has no destination anymore:**
  Perform a LAT REV at the last waypoint and redefine the destination at the NEW DEST field.

Note:
1. *The FMS does not automatically string the previous flown approach in the active F-PLN. When the last waypoint is sequenced, the FMS has no more destination in the F-PLN.*
2. *Because the thrust levers are not set to TOGA detent, the FMS remains in approach phase.*

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Aircraft Configuration Management

INITIAL APPROACH

Applicable to: ALL

Ident.: PRO-NOR-SOP-180-B-A-00018930.0001001 / 06 MAY 15

GENERAL

The initial approach procedure described here is a general guidance whatever the type of approach expected.

Ident.: PRO-NOR-SOP-180-B-A-00018931.0001001 / 06 AUG 14

INITIAL APPROACH

F-PLN SEQUENCING............ADJUST | PF

L2
- *A good clue to monitor the proper F-PLN sequencing is the TO waypoint on the upper right side of the ND, which should remain meaningful*
- *In NAV mode, the F-PLN will sequence automatically*
- *In HDG or TRACK mode, the F-PLN waypoints will sequence automatically only if the aircraft flies close to the F-PLN route.*

L1 APPROACH PHASE............CHECK/ACTIVATE | BOTH

L2
- *If the aircraft overflies the DECEL pseudo waypoint in NAV mode, the APPR phase activates automatically*
- *If the aircraft is in HDG or TRACK mode, approximately 15 NM from touchdown, activate and confirm the APPR phase on the FMS ACTIVE/PERF page.*

L1 MANAGED SPEED............CHECK | PF
FLIGHT PATH............MONITOR | PF

L2
- *In NAV mode, use the VERT DEV on the PFD and on the DES panel of the ACTIVE/PERF page*
- *In HDG or TRACK mode, use the energy circle on the ND that shows the required distance to land.*

L1 SPEED BRAKES lever..........AS RQRD | PF

L2 *If the flight crew uses the speed brakes to increase the rate of deceleration or to increase the rate of descent, VLS increases. As a result:*

- *The flight crew should check that the speed margin is appropriate before the extension of the speed brakes*
- *If the speed brakes are extended, the flight crew should check that the speed margin is appropriate before the beginning of a turn.*

This will avoid the activation of the Alpha-Floor protection.

L1 NAV ACCURACY..........MONITOR | PM

L2
- *When NAV PRIMARY is available, no NAV ACCURACY monitoring is required*
- *If NAV PRIMARY LOST is displayed, check on FMS POSITION/MONITOR page that the required navigation accuracy is appropriate to the phase of flight*
- *If the accuracy is LOW, at least one ND must be in ROSE LS/VOR depending on the approach.*

INTERMEDIATE/FINAL APPROACH

Applicable to: ALL

Ident.: PRO-NOR-SOP-180-B-B-00018938.0001001 / 27 SEP 18

GENERAL

The intermediate and the final approach procedure described here is a general guidance whatever the type of approach expected.

Ident.: PRO-NOR-SOP-180-B-B-00018939.0001001 / 03 JUL 14

AT GREEN DOT SPEED

FLAPS 1..........ORDER | PF
FLAPS 1..........SELECT | PM

L2
- *FLAPS 1 should be selected more than 3 NM before the Final Descent Point*
- *Check the aircraft deceleration toward S speed*
- *For decelerated approaches, the aircraft must reach or be established on the final descent with FLAPS 1 and S speed at or above 2 500 ft AGL*
- *If the aircraft does not decelerate on the flight path or aircraft speed is significantly above S speed, extend the landing gear in order to slow down. The use of the speed brakes is possible. However, the flight crew should be aware that the use of speed brakes causes an increase in VLS.*

L1 TA pb.......................................TA ONLY or TA/RA | PM

L2 *The flight crew may use the TA ONLY mode in specific airports, and for specific procedures (identified by Operators) that may provide resolution advisories that are neither wanted nor appropriate (e.g. closely-spaced parallel or converging runways).*

Ident.: PRO-NOR-SOP-180-B-B-00018940.0001001 / 06 AUG 14

AT 2500 FT AGL MINIMUM

FLAPS 2.......................................ORDER | PF
FLAPS 2.......................................SELECT | PM

L2 *Check the aircraft deceleration toward F speed.*

- **For approaches using XLS guidance:**
  - If the aircraft intercepts the flight path below 2 500 ft AGL, select FLAPS 2 at one dot below the flight path
  - If the aircraft speed is significantly above F speed on the flight path, or if the aircraft does not decelerate on the flight path, extend the landing gear in order to decelerate the aircraft. The use of the speed brakes is not recommended.

Ident.: PRO-NOR-SOP-180-B-B-00018942.0002001 / 05 NOV 18

WHEN FLAPS ARE AT 2

L/G DOWN.......................................ORDER | PF
L/G lever.......................................SELECT DOWN | PM

L2 *The flight crew should select the L/G lever down as soon as possible when FLAPS are at 2. This ensures that the braking Pre-Land Test (PLT) is complete before touchdown. Aircraft touchdown with the braking PLT in progress may result in tires degradation (flat spots).*
For more information on the braking PLT, Refer to DSC-32-20-10-50 Braking Pre-Land Test (PLT).

L1 RWY COND/BRAKING ACTION.......................................CONFIRM | PM

L2 *Confirm the setting of the RWY COND/BRAKING ACTION selector, in accordance with the latest weather report.*

L1 AUTO BRK.......................................CONFIRM | PM
GND SPLRS.......................................ARM | PM
NOSE sw.......................................T.O | PM

Ident.: PRO-NOR-SOP-180-B-B-00018943.0001001 / 29 NOV 18

WHEN LANDING GEAR IS DOWN

FLAPS 3.......................................ORDER | PF
FLAPS 3.......................................SELECT | PM

L/G DOWNLOCK INDICATION ON PFD .... CHECK | PM

L2 *Check on the PFD Slat/Flap display that the green triangle is displayed.*

L1 FLAPS FULL..ORDER | PF
FLAPS FULL...SELECT | PM

L2 *Check that the aircraft decelerates to VAPP.*

L1 A/THR .... .CHECK IN SPEED MODE OR OFF | PM

L2 *For LAND 3 capability, A/THR must be ON.*

L1 SLIDING TABLE... STOW | BOTH
LDG MEMO.. CHECK NO BLUE | PM
CABIN REPORT .... RECEIVE | BOTH

L2 *Check CABIN READY on the WD, or obtain the report from the chief purser.*

L1 CABIN CREW...ADVISE | PM

L2 *Advise the cabin crew that landing is imminent.*

L1 LANDING C/L .... COMPLETE | BOTH

Refer to PRO-NOR-C-L Landing

L2 *For additional information on the associated standard callouts, Refer to PRO-NOR-SCO Summary for Each Flight Phase.*

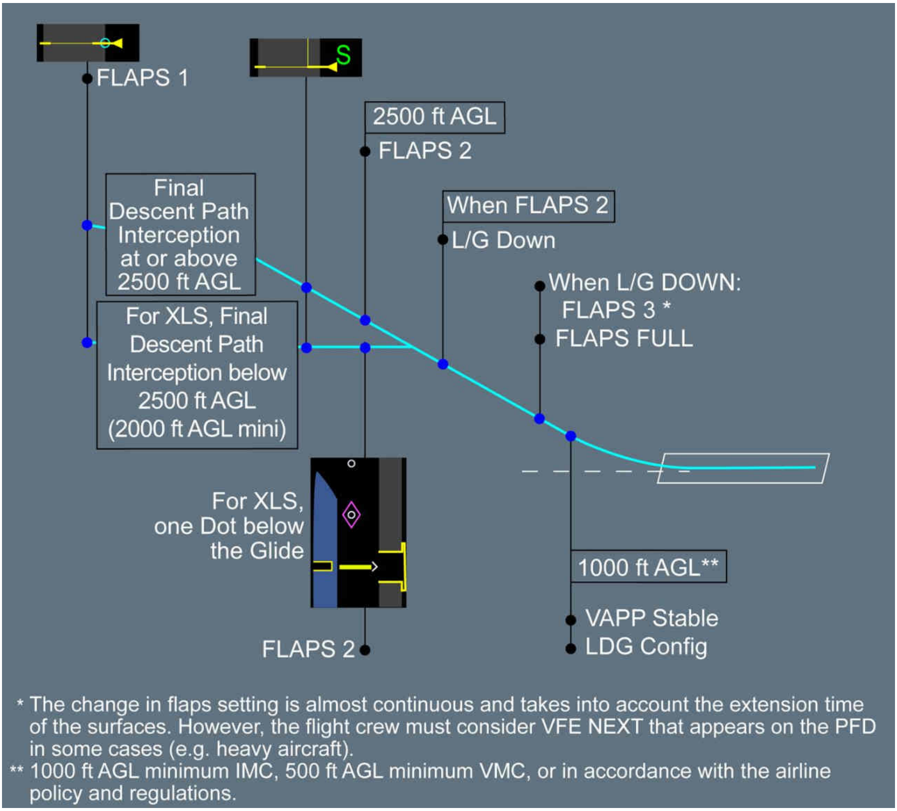
L1 FLIGHT PARAMETERS...MONITOR | PM

L2
- *The PF announces any FMA modification*
- *The PM calls out, if:*
  - *The speed goes below the speed target -5 kt, or goes above the speed target +10 kt*
  - *The pitch attitude goes above 10 °, or below 0 °*
  - *The bank angle goes above 6 °*
  - *The descent rate goes above 1 200 ft/min.*
- *Following PM flight parameter exceedance callout, the suitable PF response will be:*
  - *Acknowledge the PM callout, for proper crew coordination purposes*
  - *Take immediate corrective action to control the exceeded parameter back into the defined stabilized conditions*
  - *Assess whether stabilized conditions will be recovered early enough prior to landing. If not, initiate a go-around.*

Ident.: PRO-NOR-SOP-180-B-B-00018944.0001001 / 06 AUG 14

PATTERN (DECELERATED)

The following approach pattern is based on the assumption that managed speed is used:


FLAPS 1
S
2500 ft AGL
FLAPS 2
Final Descent Path Interception at or above 2500 ft AGL
When FLAPS 2
L/G Down
When L/G DOWN:
FLAPS 3 *
FLAPS FULL
For XLS, Final Descent Path Interception below 2500 ft AGL (2000 ft AGL mini)
For XLS, one Dot below the Glide
FLAPS 2
1000 ft AGL**
VAPP Stable
LDG Config

* The change in flaps setting is almost continuous and takes into account the extension time of the surfaces. However, the flight crew must consider VFE NEXT that appears on the PFD in some cases (e.g. heavy aircraft).

** 1000 ft AGL minimum IMC, 500 ft AGL minimum VMC, or in accordance with the airline policy and regulations.

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Aircraft Guidance Management

APPROACH USING XLS GUIDANCE

Applicable to: ALL

Ident.: PRO-NOR-SOP-180-C-A-00018956.0001001 / 09 MAR 16

GENERAL

The following items are to be performed in addition to previous SOP chapters in the following cases:

- ILS approaches
- GLS ◁ approaches
- RNAV(GNSS) approaches with LPV minima using SLS function ◁
- RNAV(GNSS) approaches with LNAV/VNAV or LNAV minima using FLS function
- Conventional approaches based on VOR or NDB (with ADF ◁ option) using FLS function
- LOC, ILS G/S OUT, LOC B/C approaches using FLS function.

Ident.: PRO-NOR-SOP-180-C-A-00020418.0001001 / 04 SEP 14

AIRCRAFT EQUIPMENT

For RNAV(GNSS) approaches, *Refer to PRO-SPO-PBN Required RNP APCH Equipment*.

Ident.: PRO-NOR-SOP-180-C-A-00020419.0001001 / 29 SEP 16

DESCENT PREPARATION

- **For FLS:**

WEATHER AND LANDING INFORMATION ....OBTAIN | PM

L2 *The FLS vertical beam (F-G/S) computation takes into account the effect of low OAT on obstacle clearance if the destination temperature is correctly inserted on the APPR panel of the FMS ACTIVE/PERF page.*

L1 FMS ACTIVE/F-PLN page..CHECK | BOTH

L2
- *0.1 ° of difference between the MFD and the charted final vertical path is acceptable*
- *1 ° of difference between the MFD and the charted final lateral track is acceptable*
- *3 ° of difference between the MFD and the charted final lateral track is acceptable for approach in overlay to a conventional radio NAVAID.*

L1 FLS DATA....................CHECK | BOTH

L2 *Press the LS pb to display FLS data on the PFD and ND:*

- *Check the following FLS data against the published approach chart:*
  - *The anchor point*
  - *The course of the F-LOC(LOC)(LOC B/C) beam*
  - *The slope of the F-G/S beam*
- *On the ND, check the compatibility of the FLS beam with the final approach leg of the flight plan.*

Note: For ILS G/S out and LOC only approaches, FLS data is only composed of the F-G/S beam.

L1 ● **For CAT II / III:**

FLIGHT CREW QUALIFICATION AND CURRENCY....................CHECK | BOTH
AIRCRAFT TECHNICAL STATUS....................CHECK | PF

L2 *Check:*

- *The technical logbook*
- *The MEL (as appropriate)*
- *The required equipment. For more information, Refer to Required Equipment for LAND 2(3) capability.*

L1 AIRPORT STATUS....................CHECK | PF

L2 *Review NOTAMs to check availability of ILS and runway and approach lighting.*

L1 APPROACH BRIEFING....................PERFORM | PF

L2 *Review the following items:*

- *Tasksharing and callouts*
- *Downgrading options*
- *Expected taxi route.*

L1 ● **For ILS G/S OUT:**

G/S....................DESELECT | PF

L2 *On the FMS POSITION/NAVAIDS page, press the DESELECT GLIDE button.*

L1 ● **For GLS CAT I with autoland:**

REQUIRED EQUIPMENT....................CHECK | PF

L2 *Check the required equipment. For more information, Refer to LIM-AFS-20 Required Equipment for GLS CAT I Approach with Autoland.*

L1 FMS POSITION/MONITOR page.. COMPLETE | BOTH

L2 *Insert the runway threshold in the BRG/DIST TO entry field for position monitoring during approach.*

L1 GO-AROUND STRATEGY...REVIEW | PF

L2 *The briefing should include a review of the "Management of Degraded Equipment" chapter.*

Ident.: PRO-NOR-SOP-180-C-A-00020420.0001001 / 14 APR 16

DESCENT

- **For FLS:**

  FLS CAPABILITY...CHECK | PF

L2
  - *For RNAV(GNSS) approach: check that the FMA displays F-APP*
  - *For VOR, NDB (with ADF ◁ option), LOC, ILS G/S OUT, LOC B/C approaches, check that the FMA displays F-APP or F-APP+RAW.*

L1 BAROMETRIC REFERENCE... SET/CROSSCHECK | BOTH

L2 *The vertical guidance requires a precise baro setting. The maximum acceptable discrepancy between altimeters is 100 ft.*

L1

CAUTION	Obstacle clearance is not guaranteed if erroneous baro setting is selected, or if FLS guidance is used outside the published approach.

Ident.: PRO-NOR-SOP-180-C-A-00018957.0001001 / 07 MAY 18

INITIAL/INTERMEDIATE/FINAL APPROACH

APPR pb on AFS CP...PRESS | PF

L2 *Press the APPR pb when all of the following is applicable:*
- *The aircraft is cleared for approach*
- *The aircraft is on the intercept trajectory for the final approach course*
- *The LOC or F-LOC deviation is available on the PFD.*

Depending on the approach, this arms the F-LOC(LOC)(LOC B/C) and F-G/S(G/S) modes.

L3 *The ICAO defines the envelope in which the quality of the G/S signal ensures a normal capture. This envelope is within 10 NM, +/-8 ° from the centerline of the ILS glide path, and up to 1.75 Θ and down to 0.3 Θ (Θ, being the nominal glide path angle).*
If the approach is armed when the aircraft is far outside from the standard glideslope (G/S) capture envelope, a spurious G/S engagement may occur, due to an incorrect G/S deviation signal. This spurious G/S capture will order a pitch up, if the aircraft is below the glide beam, and a pitch down, if the aircraft is above the glide beam.*
Each time that the flight crew notices pitch movement, or a spurious G/S, or a trajectory deviation, they must immediately disconnect the AP, if engaged, in order to re-establish a normal attitude*

and disengage APPR mode. It is then recommended to arm/rearm the APP (ILS) within the normal capture zone.

L1 F-LOC(LOC)(LOC B/C)....................CHECK ARMED | PF
F-G/S(G/S)....................CHECK ARMED | PF

- **For ILS:**

  AP 1+2....................ON | PF

- **For approaches with autoland:**

  APPROACH AND LANDING CAPABILITY....................CHECK | PM

L2 *Check that the FMA displays the approach and landing capability for the intended approach (LAND1, LAND2 or LAND3).*

L1 F-LOC(LOC)(LOC B/C) CAPTURE....................MONITOR | PF
F-G/S(G/S) CAPTURE....................MONITOR | PF

- **When F-G/S*(G/S*):**

  GO-AROUND ALTITUDE....................SET | PF-PM

L2 *This prevents from an undesired level off at the F-G/S or G/S intercept altitude.*

Ident.: PRO-NOR-SOP-180-C-A-00018958.0001001 / 09 MAR 18

F-G/S(G/S) INTERCEPTION FROM ABOVE

The following procedure should only be applied when established on the F-LOC(LOC)(LOC B/C) beam. The flight crew must react without delay to meet the stabilization criteria.

APPR pb on the AFS CP....................PRESS | PF
AFS CP ALTITUDE....................SET ABOVE A/C ALTITUDE | PF

L2 *Select an altitude above the aircraft altitude, in order to prevent inadvertent ALT* engagement.*

L1 V/S / FPA knob....................ADJUST FOR CAPTURE AND PULL | PF

L2 *Do not exceed -2 000 ft/min.*

Ident.: PRO-NOR-SOP-180-C-A-00018959.0001001 / 06 AUG 14

FINAL APPROACH

FLIGHT PARAMETERS....................MONITOR | PM

L2 *The PM calls out if excessive deviation occurs:*

- *F-LOC(LOC)(LOC B/C): ½ dot*
- *F-G/S(G/S): ½ dot.*

For additional information on the associated standard callouts, Refer to Flight Parameters in Approach.

Ident.: PRO-NOR-SOP-180-C-A-00018961.0001001 / 25 APR 14

AT MINIMUM +100 FT

ONE HUNDRED ABOVE....................MONITOR or ANNOUNCE | PM

Ident.: PRO-NOR-SOP-180-C-A-00018962.0002001 / 08 JUL 19

AT MINIMUM

MINIMUM....................MONITOR or ANNOUNCE | PM

L2 *Below minimum, the visual references must be the primary reference until landing.*

L1 ■ **If visual references are sufficient:**

CONTINUE.................... ANNOUNCE | PF

● **For approaches without autoland:**

When appropriate:

AP ....OFF | PF

For minimum use height of AP, Refer to Auto Flight System Limitations.

L2 *Note:*
- *At 150 ft RA, if the AP is still engaged, the message DISCONNECT AP FOR LDG pulses on the FMA as a reminder to the flight crew that autoland is not available for landing*
- *At 50 ft RA, the FD pitch bar disappears*
- *At 50 ft RA, the FPD disappears (for aircraft with HUD).*

L1 ● **For FLS:**

FD ....AS RQRD | PM

L2 *If needed, the PF orders the PM to set both FDs off.*

L1

CAUTION	From minima, the FDs provide an additional guidance. The FDs must be switched off if the guidance is not relevant or not followed.

■ **If visual references are not sufficient:**

GO AROUND....................ANNOUNCE | PF

MANAGEMENT OF DEGRADED EQUIPMENT

- **For VOR, NDB (with ADF ◁ option), LOC, ILS G/S OUT, LOC B/C approaches:**
  - **If the FLS capability downgrades to F-APP + RAW:**

    The flight crew can continue to use FLS:
    - Confirm the FMS position using NAVAID raw data
    - Crosscheck distances versus altitudes as published on the charts.
  - **If the FLS capability downgrades to RAW only:**

    FLS .... DO NOT USE | BOTH

    - **For VOR and NDB (with ADF ◁ option) approaches:**

      APPR pb .... OFF | PF
      LS pb .... OFF | BOTH

      The flight crew can continue the approach: use TRK-FPA guidance.
    - **For LOC, ILS G/S OUT, LOC B/C approaches:**

      The flight crew can continue the approach: disregard the F-G/S deviation and revert to FPA vertical selected mode (the LOC or LOC B/C deviation remain trustful).
- **For RNAV(GNSS) approaches with LNAV or LNAV/VNAV minima :**

  Discontinue the approach in the following cases, if external visual references are not sufficient to proceed visually:
  - F-APP capability lost
  - F-LOC deviation exceeds 1 dot.
  - **For RNAV(GNSS) approaches with LNAV/VNAV minima:**

    Discontinue the approach if the F-G/S deviation exceeds ½ dot below the F-G/S beam.
- **For CAT II / III approaches:**
  In the case of failure (e.g. caution, landing capability degradation), apply the following strategy:
  - **Above 1 000 ft AGL:**

    The approach may be continued:

    ECAM ACTIONS .... COMPLETE | BOTH
    APPROACH AND LANDING CAPABILITY ON FMA .... CHECK | BOTH
    REQUIRED EQUIPMENT .... CHECK | PM

    L2 *For more information, Refer to Required Equipment for LAND 2(3) capability.*

    L1
    - **If required:**

      RVR .... CHECK | PM

DH .... ADJUST | PM
APPROACH BRIEFING.. UPDATE | PF

- **If the flight crew does not complete all the above actions at 1 000 ft AGL:**
  GO-AROUND.. PERFORM | PF

- **Below 1 000 ft AGL:**

  If external visual references are not sufficient:

  GO-AROUND.. PERFORM | PF

- **Below 200 ft AGL (for LAND 3 DUAL):**

  Automatic approach may be continued unless the **AUTOLAND** light comes on. If the **AUTOLAND** light comes on:

  - **Visual references not sufficient:**
    GO-AROUND.. PERFORM | PF

  - **Visual references sufficient:**

    The approach may be continued manually.

APPROACH USING APP-DES GUIDANCE FOR RNP AR

Applicable to: ALL

Ident.: PRO-NOR-SOP-180-C-B-00018913.0001001 / 04 SEP 14

GENERAL

The following items are to be performed in addition to previous SOP chapters and are generic guidelines for RNAV(RNP) approaches. These items may be tailored by the airline for specific airfields according to their OPS approval.

Note: *If the flight crew selects a RNP AR APPR and a RNP AR VIA, the RNP AR VIA shall be flown with the NAV lateral guidance mode. LDEV and VDEV automatically appear while flying the RNP AR VIA for flight parameters monitoring.*

Ident.: PRO-NOR-SOP-180-C-B-00018914.0001001 / 04 SEP 14

AIRCRAFT EQUIPMENT

Refer to PRO-SPO-PBN Required RNP AR Equipment.

Ident.: PRO-NOR-SOP-180-C-B-00018920.0001001 / 02 APR 15

DESCENT PREPARATION

WEATHER AND LANDING INFORMATION....OBTAIN | PM

L2 - *The FMS vertical profile does not take into account the effect of low OAT. Therefore, vertical managed guidance:*
  - *Must not be used when the actual OAT is below the minimum temperature indicated on the approach chart or defined by the Operator, or*
  - *May not be used when temperature corrections are required (APP-DES mode may not engage).*

- *Verify that wind is within limits.*
- *Use of QNH from a remote station is prohibited.*

L1 F-PLN page....CHECK | BOTH

L2 *Check the RNP value for each leg of the RNAV(RNP) procedure. If necessary, modify the RNP value in the FMS POSITION/MONITOR page.*

L1 GO-AROUND STRATEGY....REVIEW | PF

L2 *The briefing should include a review of the "Management of RNP AR Capability" chapter.*

Ident.: PRO-NOR-SOP-180-C-B-00020063.0001001 / 03 JUL 20

1 DESCENT

RNP AR CAPABILITY....CHECK | PF

L2 *Check that the RNP AR capability is compliant with the selected procedure (Refer to DSC-22-FMS-10-30-50 RNP AR Capability).*

L1 TERR on ND....DISPLAY | BOTH

L2 *Unless weather radar is required on one side, the flight crew selects terrain display on both NDs.*

L1 BAROMETRIC REFERENCE....SET/CROSSCHECK | BOTH

L2 *The vertical guidance requires a precise baro setting. The maximum acceptable discrepancy between altimeters is 100 ft.*

Ident.: PRO-NOR-SOP-180-C-B-00018928.0001001 / 03 JUL 20

2 INITIAL / INTERMEDIATE / FINAL APPROACH

FD or AP/FD....USE FOR APPROACH | PF

L2 *For RNP AR operations with RNP <0.3, one AP must be engaged.*

L1 APPR pb on AFS CP..PRESS | PF

L2 - *Press the APPR pb when cleared for approach and prior to start the RNP AR final approach. When APPR pb is pressed, the APP-DES mode arms provided that the flight crew selected one RNAV(RNP) approach on the FMS ARRIVAL page.*

L1 NAV and APP-DES..CHECK ENGAGED | PF

L2 *The flight crew should make the aircraft converge toward the lateral flight plan (e.g. DIR TO CRS IN) and the vertical flight plan (e.g. OP DES).*

APP-DES engages in the vertical capture zone around the flight plan path:
- *Between -50 ft and +250 ft if the flight plan path is in level off, or*
- *Between -250 ft and +250 ft if the flight plan path is in descent.*

L1 GO-AROUND ALTITUDE..SET | PF
FLIGHT PARAMETERS..MONITOR | BOTH

- *Monitor the LDEV displayed on PFDs and the XTK on the NDs.*

L2 *Note:* *LDEV automatically appears when flying a RNP AR approach. On the PFD, one dot equals to a 0.1 NM. On the NDs, the numerical value of the lateral deviation is displayed as soon as it exceeds 0.02 NM.*

L1 - *The PM announces "LAT DEV" if excessive lateral deviation occurs: ½ dot.*

L2 *Note:* *The LDEV value must be compared to the current RNP value displayed on the F-PLN page or on the bottom of the NDs.*

L1 - *Go-around must be initiated if lateral deviation reaches the current RNP value.*

L2 *Note:* *In this case the LDEV flashes on the PFD and XTK pulses on the ND.*

L1 - *Monitor the VDEV displayed on PFD*

L2 *Note:* *VDEV automatically appears when flying a RNP AR procedure and when the FMS flight phase is DES or APPR. One dot equals to a deviation of 100 ft.*

L1 - *The PM announces "VDEV" if excessive vertical deviation occurs: -50 ft or ½ dot below*
- *Go-around must be initiated if vertical deviation reaches -75 ft or ¾ dot below (after the FAF).*

L2 *Note:* *In this case the VDEV flashes on the PFD.*

Ident.: PRO-NOR-SOP-180-C-B-00018934.0001001 / 04 SEP 14

AT MINIMUM +100 FT

ONE HUNDRED ABOVE..MONITOR or ANNOUNCE | PM

Ident.: PRO-NOR-SOP-180-C-B-00018936.0001001 / 03 MAY 17

AT MINIMUM

MINIMUM..........MONITOR or ANNOUNCE | PM

Below minimum, the visual references must be the primary reference until landing.

■ **If visual references are sufficient:**

CONTINUE..........ANNOUNCE | PF

L2 *Maintain the aircraft on a stabilized flight path down to the flare.*

L1 ● **At the latest at the MAP or minimum use height of AP (whichever occurs first):**

AP ....OFF | PF

For minimum use height of AP, Refer to Auto Flight System Limitations.

L2 *Note: At 150 ft RA, if the AP is still engaged, the message DISCONNECT AP FOR LDG pulses on the FMA as a reminder to the flight crew that autoland is not available for landing.*

L1 FD ....AS RQRD | PM

L2 *If needed, the PF orders the PM to set both FDs off.*

L1

CAUTION	- From minima down to the MAP, the FDs provide an additional guidance. The FDs must be switched off if the guidance is not relevant or not followed. - After the MAP, disregard the FDs as they revert to HDG-V/S.

RUNWAY TRACK..........CHECK/SET | PF

L2 *If needed, the PF orders the PM to set the runway track on the AFS CP.*

L1 ■ **If visual references are not sufficient:**

GO-AROUND..........ANNOUNCE | PF

Ident.: PRO-NOR-SOP-180-C-B-00018937.0001001 / 04 DEC 14

MANAGEMENT OF RNP AR CAPABILITY

L2 The aircraft is by default capable of RNP AR operations down to 0.1 NM. ECAM and/or ND only display indication to the flight crew if a failure affects the RNP AR capability.

L1 ● **In the case of RNP AR capability degradation:**

- ECAM displays RNP AR CAPABILITY DOWNGRADED

■ **For RNAV(RNP) approach with RNP 0.3 minima:**

MINIMUM..........ADJUST | PM

■ **For RNAV(RNP) approach with no RNP 0.3 minima:**
GO-AROUND.......................................PERFORM | PM

- **In the case of RNP AR capability lost:**

  - ND displays **RNP AR CAPABILITY LOST**, or
  - ECAM displays RNP AR CAPABILITY LOST.

  If no visual references:

  GO-AROUND.......................................PERFORM | PF

- **In the case of** SURV TAWS FAULT **or** SURV SYS 1+2 FAULT **or** SURV TERR SYS FAULT, **or** SURV GPWS FAULT**:**

  If no visual references:

  GO-AROUND.......................................PERFORM | PF

- **In the case of inconsistency between the terrain and the flight plan:**

  If no visual references:

  GO-AROUND.......................................PERFORM | PF

APPROACH USING FPA GUIDANCE

Applicable to: ALL

Ident.: PRO-NOR-SOP-180-C-C-00018941.0001001 / 09 MAR 16

GENERAL

The following items are to be performed in addition to previous SOP chapters in the following cases:
- RNAV(GNSS) approaches using mixed NAV FPA guidance with LNAV minima only
- RNAV(GNSS) approaches with LP minima (with SLS ◁ option) using mixed LOC FPA guidance
- Conventional VOR and NDB (with ADF ◁ option) approaches using selected TRK FPA or mixed NAV FPA guidance
- LOC, ILS G/S OUT, and LOC B/C approaches.

Ident.: PRO-NOR-SOP-180-C-C-00018945.0001001 / 25 APR 14

AIRCRAFT EQUIPMENT

For RNAV(GNSS) approaches, one FMS must be operative in NAV PRIMARY.

Ident.: PRO-NOR-SOP-180-C-C-00018922.0001001 / 29 SEP 16

DESCENT PREPARATION

FMS ACTIVE/F-PLN page..CHECK | PF

L2 *For approaches using NAV FPA:*
- *1 ° of difference between the MFD and the charted final lateral track is acceptable*
- *3 ° of difference between the MFD and the charted final lateral track is acceptable for conventional radio NAVAID approach.*

L1 FMS POSITION/MONITOR page..COMPLETE | PF

L2 *Insert the runway threshold in the BRG/DIST TO entry field for position monitoring during approach.*

L1 GO-AROUND STRATEGY..REVIEW | PF

L2 *The briefing should include a review of the "Management of Degraded Navigation" chapter.*

Ident.: PRO-NOR-SOP-180-C-C-00020426.0001001 / 25 APR 14

DESCENT

- **At 10 000 ft:**
  NAV ACCURACY..CHECK | PF
  - **If NAV accuracy is LOW:**
    TRK MODE..USE FOR APPROACH | PF
  - **For RNAV(GNSS) approach:**
    NAV PRIMARY..CHECK | PF

L2 *NAV PRIMARY must be available on at least one FMS.*

Ident.: PRO-NOR-SOP-180-C-C-00018946.0001001 / 07 MAY 18

INITIAL/INTERMEDIATE/FINAL APPROACH

LATERAL GUIDANCE MODE..SET FOR APPROACH | PF

L2 *Arm NAV(LOC)(LOC B/C) mode as appropriate.*

L1
- **For LOC, ILS G/S OUT, LOC B/C and RNAV(GNSS) approaches with LP minima (with SLS ◁ option):**
  LOC pb ....PRESS | PF

L2 *Press the LOC pb when cleared for approach and on the intercept trajectory for the final approach course. Depending on the approach, this arms the LOC or LOC B/C mode.*

Note: *In NAV mode, the aircraft may leave the F-PLN to capture the LOC.*

L1 LOC(LOC B/C)..CHECK ARMED | PF

LATERAL PATH...INTERCEPT | PF

L2 *Monitor NAV(LOC)(LOC B/C) engagement as appropriate.*

L1 TRK-FPA pb ....SELECT | PF
FPA FOR FINAL APPROACH...SET | PF

- **At 0.3 NM from the Final Descent Point:**

  FPA knob ....PULL | PF
  FPA MODE...CHECK ENGAGED | PF

  L2 *Check NAV FPA(TRK FPA)(LOC FPA)(LOC B/C FPA) is engaged.*

  L1 POSITION/FLIGHT PATH...MONITOR / ADJUST | PF

- **When the aircraft is below the go-around altitude:**

  GO-AROUND ALTITUDE...SET | PF-PM

FLIGHT PARAMETERS...MONITOR | PM

L2
- *Crosscheck distances versus altitudes as published on the charts*
- *If approaching on a conventional radio NAVAID procedure, monitor the lateral and vertical guidance using raw data*
- *For approaches using NAV FPA, monitor XTK error on ND to check the lateral guidance*
- *The PM calls out if excessive deviation occurs:*
  - *Approach using NAV MODE: XTK > 0.1 NM*
  - *Approach using LOC or LOC B/C MODE: LOC ½ dot*
  - *Approach using TRK MODE:*
    - *VOR: ½ dot or 2.5 °*
    - *NDB (with ADF option): 5 °.*

Refer to PRO-NOR-SCO Approach

Ident.: PRO-NOR-SOP-180-C-C-00018948.0001001 / 25 APR 14

AT MINIMUM +100 FT

ONE HUNDRED ABOVE...MONITOR or ANNOUNCE | PM

Ident.: PRO-NOR-SOP-180-C-C-00018949.0001001 / 25 APR 14

AT MINIMUM

MINIMUM...MONITOR or ANNOUNCE | PM

L2 *Below minimum, the visual reference must be the primary reference until landing.*

L1
- **If visual references are sufficient:**

  CONTINUE...ANNOUNCE | PF
  AP...OFF | PF

FD..OFF | PM

L2 *The PF orders the PM to set both FD off.*

L1 RUNWAY TRACK..CHECK/SET | PM

L2 *If needed, the PF orders the PM to set the runway track on the AFS CP.*

L1 ■ **If visual references are not sufficient:**

GO AROUND...ANNOUNCE | PF

Ident.: PRO-NOR-SOP-180-C-C-00018950.0001001 / 09 MAR 16

MANAGEMENT OF DEGRADED NAVIGATION

■ **For VOR and NDB (with ADF ◁ option) approaches in NAV FPA, if the lateral guidance is not satisfactory:**

Be prepared to continue the approach with reference to appropriate raw data by reverting to TRK FPA.

■ **For RNAV(GNSS) approaches with LNAV minima:**

Discontinue the approach in the following cases, if external visual references are not sufficient to proceed visually:
- NAV PRIMARY LOST on both ND
- XTK > 0.3 NM
- NAV GNSS / ACFT POS DISAGREE on ECAM.

CIRCLING APPROACH

Applicable to: ALL

Ident.: PRO-NOR-SOP-180-C-D-00018951.0001001 / 06 AUG 14

GENERAL

The circling approach is the visual phase of an instrument approach to bring an aircraft into position for landing on a runway which is not suitably located for a straight-in approach.

CAUTION	The flight crew must conduct the flight within the circling area, while maintaining required visual references at all times.

Ident.: PRO-NOR-SOP-180-C-D-00018952.0001001 / 06 AUG 14

APPROACH PREPARATION

For a circling approach, the approach preparation should include the following additional items:

ACTIVE F-PLN

INSTRUMENT APPROACH.. INSERT | PF

L2 *On the ACTIVE/F-PLN/ARRIVAL page, insert the instrument approach preceding the circling.*

L1 F SPEED CONSTRAINT AT FAF... INSERT | PF

L2 *Insert F speed as constraint at FAF since the circling approach will be flown in configuration 3, landing gear down and F speed.*

L1 SEC F-PLN

F-PLN..IMPORT ACTIVE | PF

L2 *On the SEC INDEX page, click on the IMPORT button and select IMPORT ACTIVE in order to make a copy of the active flight plan.*

L1 LANDING RUNWAY...REVISE | PF

L2
- *On the SEC/F-PLN/ARRIVAL page, insert the appropriate landing runway*
- *Keep the F-PLN discontinuity.*

Ident.: PRO-NOR-SOP-180-C-D-00018953.0001001 / 06 AUG 14

INSTRUMENT APPROACH

The flight crew flies a stabilized approach at F speed, configuration 3 and landing gear down.

Ident.: PRO-NOR-SOP-180-C-D-00018954.0001001 / 29 NOV 18

CIRCLING APPROACH

- **At the circling MDA(H) at the latest:**
  ALT pb...PRESS | PF
- **At MAP, if the flight crew does not obtain required visual references:**
  GO AROUND...ANNOUNCE | PF
- **If the flight crew obtains required visual references:**
  TRK FPA..SELECT | PF

  L2 *Select a track 45 ° away from the final approach course (or as required by the published procedure).*

  L1
  - **When wings are level:**
    CHRONO...START | PF
  - **After 30 s:**
    DOWNWIND TRACK...SELECT | PF

    L2 *Select the downwind track parallel to the landing runway.*

L1

- **During the downwind leg:**

  SEC F-PLN SWAP ACTIVE........................ORDER | PF
  SEC F-PLN........................SWAP ACTIVE | PM

  - **When the aircraft is abeam the landing runway threshold:**

    CHRONO........................START | PM

L2

The time from abeam threshold to the beginning of the base turn depends on the height above touchdown: Approximately 3 s/100 ft.

L1

BASE TURN........................PERFORM

L2

Initially maintain 25 ° bank angle and maintain the altitude until the visual references for the intended runway are distinctly visible and identifiable.

L1

- **When appropriate:**

  FLAPS FULL ....ORDER | PF
  FLAPS FULL........................SELECT | PM

- **When the aircraft is fully configured for landing:**

  LANDING C/L........................COMPLETE | BOTH

- **At the latest before starting the descent toward the runway:**

  AP........................OFF | PF
  FD OFF........................ORDER | PF
  FD ....OFF | PM

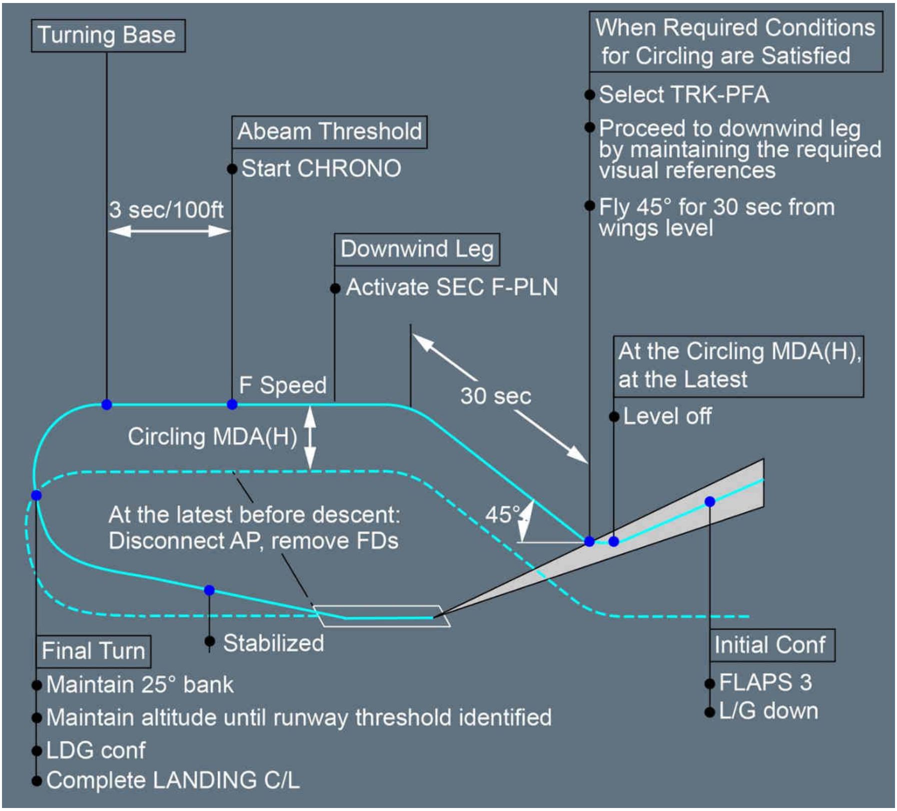
- **At any time during the circling procedure, if the required visual references are lost:**

  GO AROUND........................PERFORM | PF

L2

Initiate a go-around following the missed approach of the initial instrument approach (unless otherwise specified).

L1


Turning Base
Abeam Threshold
Start CHRONO
3 sec/100ft
Downwind Leg
Activate SEC F-PLN
When Required Conditions for Circling are Satisfied
Select TRK-PFA
Proceed to downwind leg by maintaining the required visual references
Fly 45° for 30 sec from wings level
F Speed
30 sec
At the Circling MDA(H), at the Latest
Level off
Circling MDA(H)
At the latest before descent: Disconnect AP, remove FDs
45°
Stabilized
Final Turn
Maintain 25° bank
Maintain altitude until runway threshold identified
LDG conf
Complete LANDING C/L
Initial Conf
FLAPS 3
L/G down

VISUAL APPROACH

Applicable to: ALL

Ident.: PRO-NOR-SOP-180-C-E-00018965.0001001 / 06 AUG 14

GENERAL

Perform the approach on a nominal 3 ° glideslope using visual references. Approach to be stabilized by 500 ft AGL on the correct approach path, in the landing configuration, at VAPP.

Method for visual approach:
- The autopilot is not used
- FDs are OFF

- Use of FPV is recommended
- Use of A/THR is recommended with managed speed.

Bear in mind the possible risk of optical illusions due to hindered night vision.

Ident.: PRO-NOR-SOP-180-C-E-00018966.0001001 / 29 NOV 18

INITIAL/INTERMEDIATE APPROACH

The flight plan selected on the FMS should include the selection of the landing runway.
The downwind leg may also be part of the flight plan. This may be a useful indication of the aircraft position in the circuit on the NDs.

However, the flight crew must use the appropriate visual references.

AT THE BEGINNING OF THE DOWNWIND LEG

APPROACH PHASE ACTIVATION	ORDER	PF
APPROACH PHASE	ACTIVATE	PM
FD OFF	ORDER	PF
FD	OFF	PM
TRK-FPA	ORDER	PF
TRK-FPA	SELECT	PM
A/THR ACTIVE	CHECK	PF

ON THE DOWNWIND LEG

Abeam threshold, extend the downwind leg to 45 s (± wind correction).
Turn into the base leg with a maximum of 30 ° of bank.
Descend with the appropriate FPA in FLAPS 2 at “F” speed.

Ident.: PRO-NOR-SOP-180-C-E-00018967.0001001 / 06 AUG 14

FINAL APPROACH

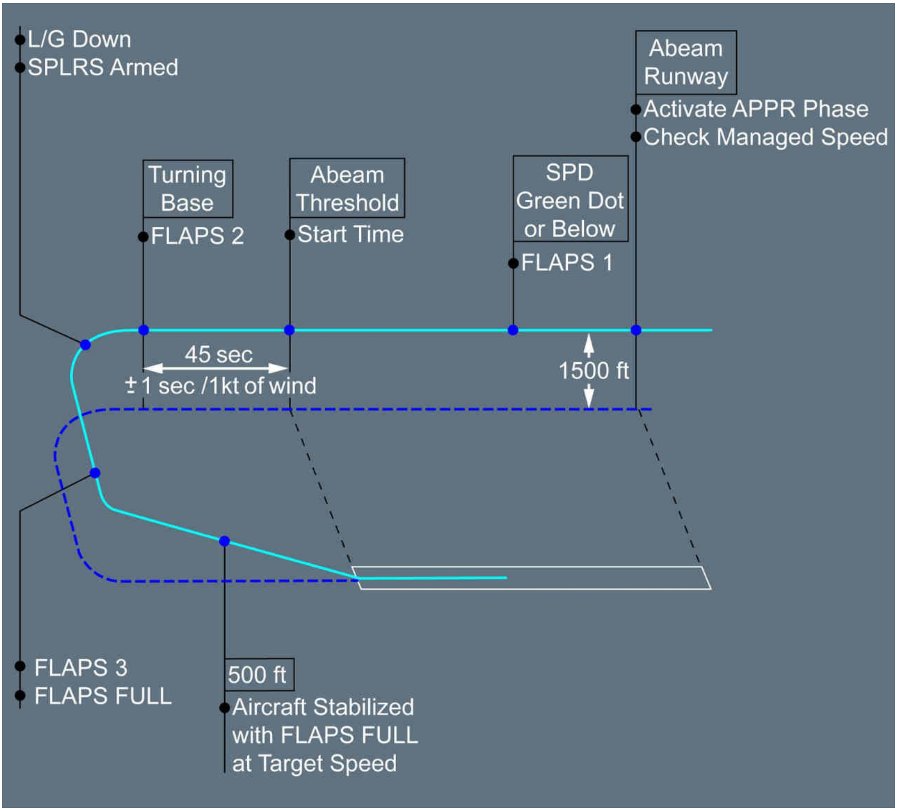
The speed trend arrow and FPV help the flight crew make timely and correct thrust settings (if in manual thrust), and approach path corrections.
Avoid descent through the correct approach path with idle thrust (Late recognition of this situation without a prompt thrust increase may lead to considerable speed decay and altitude loss).
Have the aircraft stabilized by 500 ft AGL, on the correct approach path at VAPP (or ground speed mini) with the appropriate thrust.
If the aircraft is not stabilized on the approach path in landing configuration at 500 ft above airfield elevation, or as restricted by Operator policy/regulations, a go-around must be initiated unless the flight crew estimates that only small corrections are necessary to rectify minor deviations from stabilized conditions due, amongst others, to external perturbations.
Avoid any tendency to “duck under” in the late stages of the approach.

Avoid destabilizing the approach in the last 100 ft to have the best chance of making a good touchdown at the desired position.

Ident.: PRO-NOR-SOP-180-C-E-00018968.0001001 / 06 AUG 14

VISUAL APPROACH PATTERN

The following approach pattern is based on the assumption that managed speed is used:


L/G Down
SPLRS Armed
Abeam Runway
Activate APPR Phase
Check Managed Speed
Turning Base
FLAPS 2
Abeam Threshold
Start Time
SPD Green Dot or Below
FLAPS 1
45 sec
± 1 sec /1kt of wind
1500 ft
FLAPS 3
FLAPS FULL
500 ft
Aircraft Stabilized with FLAPS FULL at Target Speed

If in selected speed, select:
- S speed after FLAPS 1 selection
- F speed after FLAPS 2 selection
- VAPP after FLAPS FULL selection.

RNAV VISUAL APPROACH

Applicable to: ALL

Ident.: PRO-NOR-SOP-180-C-F-00023237.0001001 / 04 MAY 16

GERERAL

The aircraft navigates using the RNAV system, but the position is monitored by visual reference to the ground, obstacles and other traffic.

RNAV visual approach must be stored and retrievable from the Navigation Database.

Ident.: PRO-NOR-SOP-180-C-F-00023239.0001001 / 04 MAY 16

AP/FD GUIDANCE MODE

- **If no required accuracy is published:**

  The use of AP/FD guidance mode is at flight crew discretion.

- **If RNAV 1 or RNP 1 is required on the published approach chart:**

  The flight crew should use adequate AP/FD guidance modes.

Note:
1. *The use of lateral and vertical managed guidance modes reduces the crew workload and improves energy management.*
2. *For RNAV VISUAL approach including Radius to Fix (RF) legs, Refer to FCTM/PR-NP-SOP-190-RF-LEG General for RF leg flying technic.*

Ident.: PRO-NOR-SOP-180-C-F-00023240.0001001 / 04 MAY 16

DESCENT PREPARATION

For approach data insertion in the FMS, keep the MINIMUM entry fields empty on the APPR panel of the FMS ACTIVE/PERF page.

Ident.: PRO-NOR-SOP-180-C-F-00023241.0001001 / 04 MAY 16

DESCENT

For RNAV visual approaches requiring GPS, check that NAV PRIMARY is available on at least 1 FMS.

Ident.: PRO-NOR-SOP-180-C-F-00023242.0001001 / 04 MAY 16

FINAL APPROACH

The flight crew must disconnect the AP at the latest at the minimum height for use of the AP.

L2 For minimum use height of AP, *Refer to Auto Flight System Limitations*.

LANDING

Applicable to: ALL

Ident.: PRO-NOR-SOP-210-A-00006718.0001001 / 30 MAR 17

FOR MANUAL LANDING

AP...OFF | PF

AROUND 40 FT RA

In stabilized approach, the flare height is approximately 40 ft.

FLARE...PERFORM | PF

L2 *For more information, Refer to FCTM/PR-NP-SOP-220 Flare and Touchdown.*

L1 ATTITUDE...MONITOR | PM

L2 *Rely on the "PITCH PITCH" auto callout for pitch monitoring.*
The PM announces “BANK BANK” if the bank angle goes above 6 °.

L1 THRUST LEVERS...IDLE | PF

L2 *Move the thrust levers to idle, and begin a gentle progressive flare to enable the aircraft to touch down without a prolonged float.*
If the autothrust is engaged, it automatically disconnects when all the thrust levers are set to idle detent.
At 20 ft, an automatic “RETARD” callout will trigger, as a reminder.

Note: *Ground spoilers extension is inhibited if one or more thrust levers remain above the IDLE detent.*

L1 DEROTATION

- **As soon as the main landing gear touches down:**
  DEROTATION...INITIATE | PF

Ident.: PRO-NOR-SOP-210-A-00006722.0001001 / 29 NOV 18

FOR AUTOMATIC LANDING

AT 350 FT RA

LAND ON FMA ....CHECK/ANNOUNCE | PF

L2 *If the FMA does not display LAND, perform a go-around, or a manual landing if visual references are sufficient.*

L1 ILS(GLS ◁) COURSE...CHECK | PF

L2 *If the ILS(GLS ◁) course pointer and the runway track differ by more than 5 °, perform a go-around, or a manual landing if visual references are sufficient.*

L1 **AT 200 FT RA, FOR ILS CAT III APPROACH WITHOUT DH**

- **If the flight crew did not detect any failure:**
  CONTINUE....................ANNOUNCE | PF

BETWEEN 50 FT AND 40 FT RA

FLARE ON FMA ....CHECK/ANNOUNCE | PM

L2 *If the FMA does not display FLARE, perform a go-around, or a manual landing if visual references are sufficient.*

L1 FLARE....................MONITOR | PF

L2 *For more information, Refer to FCTM/PR-NP-SOP-220 Flare and Touchdown.*

L1 **AT APPROXIMATELY 30 FT RA**

THR IDLE ON FMA ....CHECK | PM

L2 *The autothrust begins to decrease thrust to idle.*

L1 **AT 10 FT RA**

L2 An automatic "RETARD" callout triggers.

L1 THRUST LEVERS....................IDLE | PF

L2 *The autothrust disconnects.*

L1 LATERAL GUIDANCE....................MONITOR | PF

L2 *Monitor the lateral guidance by using external references.*

L1 **AT TOUCHDOWN**

ROLL OUT ON FMA ....CHECK/ANNOUNCE | PM

- **If AUTO ROLL OUT:**
  AP ....KEEP ON, UNTIL END OF ROLL OUT | PF

Ident.: PRO-NOR-SOP-210-A-00006725.0002001 / 08 JUL 19

LANDING ROLL

L2 For more information, *Refer to FCTM/PR-NP-SOP-220 Roll Out*.
For more information, *Refer to FCTM/Deceleration*.
For additional information on the associated standard callouts, *Refer to PRO-NOR-SCO Summary for Each Flight Phase*.

L1 ALL REVERSER LEVERS....................REV MAX or REV IDLE | PF

The flight crew must select reverse thrust immediately after main landing gear touchdown.

The flight crew must immediately select REV MAX, if any of the following occurs at any time during the landing:
- *An emergency*
- *The deceleration is not as expected*
- *A failure affects landing performance*
- *A long flare or a long touchdown*
- *An unexpected tailwind.*

A small pitch up may occur during thrust reversers deployment before nose landing gear touchdown. However, the flight crew can easily control this pitch up.
As soon as the flight crew selects reverse thrust, they must perform a full-stop landing.

GND SPLRS....................CHECK/ANNOUNCE | PM

L2 *Check the WHEEL page or slats/flaps display on the lower part of the PFD, to ensure that the ground spoilers are extended.*

If no ground spoilers are extended:
- *Check that all thrust levers are set to IDLE detent*
- *Set both thrust reverser levers to MAX REV, and fully press the brake pedals.*

Note: If ground spoilers are not armed, ground spoilers will extend at reverser thrust selection.

L1 REVERSERS....................CHECK/ANNOUNCE | PM

L2 *Check that the ED displays the expected reverser deployment (i.e. REV).*

L1 DIRECTIONAL CONTROL....................MONITOR/ENSURE | PF

L2
- *Monitor directional control, if the rollout is automatic*
- *Ensure directional control, if the rollout is manual. Use the rudder pedals for directional control*
- *During rollout, avoid sidestick inputs (either lateral or longitudinal)*
- *If the flight crew encounters directional control problems, they should reduce the thrust to REV IDLE until directional control is satisfactory.*

L1 *Do not use the nosewheel steering control handle before reaching taxi speed.*

- **If autobrake is selected:**

  AUTO BRK....................CHECK/ANNOUNCE | PM

L2 *Check and announce BTV, BTV CONTAM or BRK MED on the FMA.*

Note: If no ground spoilers are extended, the autobrake will not activate.

L1

WARNING	When landing on a contaminated runway with the autobrake: - BTV CONTAM or BRK MED must be displayed on the FMA - If BTV is displayed on the FMA, the flight crew must immediately apply pedal braking.

- **If landing without autobrake:**

  BRAKES.......... AS RQRD | PF

L2 *If required for performance reasons, braking may begin before the nosewheel touchdown. However, if passenger comfort is the priority, the flight crew should delay braking on dry runways only, until the nosewheel touches down.*

L1 DECELERATION.......... CHECK/ANNOUNCE | PM

L2 *The flight crew feels the deceleration. The flight crew checks the speed trend on the PFD to confirm the deceleration.*

Ident.: PRO-NOR-SOP-210-A-00006726.0001001 / 25 APR 14

AT 70 KT

L2 For Additional information on the associated standard callouts, *Refer to PRO-NOR-SCO Summary for Each Flight Phase*.

L1 SEVENTY KNOTS.......... ANNOUNCE | PM
ALL REVERSER LEVERS.......... IDLE | PF

CAUTION	*Avoid using high levels of reverse thrust at low speed, unless required due to an emergency. This distortion of the airflow caused by gases that re-enter the compressor can cause engine stalls that may result in excessive EGT.*

Ident.: PRO-NOR-SOP-210-A-00024557.0001001 / 04 APR 18

FOR CAT II & CAT III OPERATIONS WITH BTV

- **If the aircraft ground speed is more than 10 kt when the aircraft enters the last 300 m (1 000 ft) of the runway (i.e. the centerline runway lights are continuously red):**

  PEDAL BRAKING.......... APPLY AS RQRD | PF

Ident.: PRO-NOR-SOP-210-A-00006727.0001001 / 30 JUL 15

AT TAXI SPEED

ALL REVERSER LEVERS.......... STOW | PF

L2 *When the aircraft reaches the taxi speed, and before it leaves the runway, stow the reversers. Do not leave the thrust reverser levers in an intermediate position between REV IDLE and FWD IDLE for more than 10 s (to prevent partial stowage of the thrust reversers).*

In the case of partial stowage of the thrust reversers: If conditions permit, recycle the thrust reverser levers to REV IDLE again, then rapidly to FWD IDLE (in less than 10 s).

L1

CAUTION	*Except in an emergency, do not use reverse thrust to control the aircraft speed while on taxiways.*

L2 *On taxiways, the use of reversers, even restricted to idle thrust, may have the following effects:*

- *The engines may ingest fine sand and debris that may be detrimental to the engines and airframe systems*
- *On snow-covered areas, snow will recirculate into the air inlet, and may cause an engine flameout or rollback.*

L1 AUTO BRK..DISARM | PF

L2 *The autobrake may be disarmed at pilot's discretion.*
The flight crew should use one of the A/THR Instinctive Disconnect pb to disarm the autobrake.
If BTV is active and the flight crew did not disarm manually the autobrake, the autobrake disarms automatically at 10 kt.

L1 ● **If AUTO ROLL OUT:**

When vacating the runway:

AP..OFF

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GO-AROUND

Applicable to: ALL

Ident.: PRO-NOR-SOP-220-A-00006729.0001001 / 03 JUL 20

1 GO-AROUND INITIATION

L2 For additional information on the associated standard callouts:
- *Refer to PRO-NOR-SCO Summary for Each Flight Phase*
- *Refer to PRO-NOR-SCO Go-Around*.

L1 Simultaneously apply the following three actions:

THRUST LEVERS.. TOGA THEN FLX/MCT | PF

Set the thrust levers to the TOGA detent to ensure engagement of SRS GA mode. Then, set the thrust levers to FLX/MCT to engage the GA SOFT mode.
At any time, if TOGA thrust is desired, set the thrust levers to TOGA detent.

L2 *Note: If the thrust levers are not briefly set to the TOGA detent, the FMS does not engage the GO-AROUND phase, and when the aircraft flies over, or close to the airport (less than 7 NM) the FMS will sequence the destination waypoint in the F-PLN.*

L1 ROTATION...PERFORM | PF

L2 *Initiate the rotation toward a pitch attitude of 12.5 ° (10 ° if one engine is failed) to obtain a positive rate of climb, then follow the SRS pitch command bar.*
If the go-around is performed with Auto Pilot (AP) check pitch increase.

L1 *When near to the ground, avoid excessive rotation rate in order to prevent a tail strike.*

GO-AROUND.. ANNOUNCE | PF
FLIGHT PARAMETERS...MONITOR | PM

L2 *The PM must monitor flight parameters and announce any deviation. For additional information on the associated standard callouts, Refer to PRO-NOR-SCO Summary for Each Flight Phase.*

If the PM announces a flight parameter deviation, the appropriate PF response must:
- *Acknowledge the PM callout, for appropriate flight crew coordination*
- *Take immediate corrective action to bring the parameter back into the defined stabilized conditions.*

During an RNP AR Go-Around:
- *Monitor the LDEV displayed on PFDs and the XTK on the NDs.*

  Note: LDEV automatically appear when flying an RNP AR procedure. On the PFD, one dot equals to a 0.1 NM. On the NDs, the numerical value of the lateral deviation is displayed as soon as it exceeds 0.02 NM.

- *The LDEV value must be compared to the RNP for the active leg displayed on the F-PLN page or on the bottom of the NDs.*
- *The PM announces "LAT DEV" if excessive lateral deviation occurs: 1/2 dot.*
- *If XTK or LDEV increases toward the current RNP value, take over manually to fly back on the intended flight path and reengage AP as applicable.*

L1 FLAPS... RETRACT ONE STEP | PM
FMA...CHECK/ANNOUNCE | PF

If the FMA does not display MAN GA SOFT or MAN TOGA, immediately set the thrust levers to the TOGA detent.

NAV MODE	CHECK ENGAGED	

L2 *For RNP AR, NAV mode must be engaged immediately.*

L1

POSITIVE CLIMB	ANNOUNCE	PM
L/G UP	ORDER	PF
L/G	UP	PM
NAV or HDG	AS RQRD	PF

Ident.: PRO-NOR-SOP-220-A-00006731.0001001 / 25 APR 14

AT GO-AROUND THRUST REDUCTION ALTITUDE (LVR CLB FLASHING ON FMA)

THRUST LEVERS	CL	PF

Ident.: PRO-NOR-SOP-220-A-00006732.0001001 / 25 APR 14

AT GO-AROUND ACCELERATION ALTITUDE

Monitor that the speed target increases to initial CLB speed.

L2

- **If the speed target does not increase to initial CLB speed:**

AFS CP ALTITUDE	CHECK	PF
ALT pb	PRESS	PF

For additional information on the associated standard callouts, Refer to PRO-NOR-SCO Flaps or Gear Configuration.

L1

FLAPS	ORDER RETRACTION ON SCHEDULE	PF
FLAPS	RETRACT	PM
GND SPLRS	DISARM	PM
EXTERIOR LIGHTS	SET	PM
AFTER TAKEOFF/CLIMB C/L down to the line	COMPLETE	BOTH

Refer to PRO-NOR-C-L After Takeoff / Climb.

L2 *For additional information on the associated standard callouts, Refer to PRO-NOR-SCO Summary for Each Flight Phase.*

L1

- **If necessary, at the transition altitude:**

BAROMETRIC REFERENCE	SET STD/CROSSCHECK	BOTH

L2

- *At the transition altitude, the barometric setting flashes on the PFD*
  The flight crew should set STD on the EFIS CP and on the ISIS SFD.
- *Crosscheck the barometric settings and the altitude indications*
  For more information on the VD in relation to the barometric reference setting, Refer to FCTM/AS-VD General.
- *For additional information on the associated standard callouts, Refer to PRO-NOR-SCO Summary for Each Flight Phase.*

L1 AFTER TAKEOFF/CLIMB C/L below the line..COMPLETE | BOTH

Refer to PRO-NOR-C-L After Takeoff / Climb.

L2 *For additional information on the associated standard callouts, Refer to PRO-NOR-SCO Summary for Each Flight Phase.*

L1 *Fly the published missed approach procedure, or prepare for a second approach, or divert as required.*

- **To fly the published missed approach:**

  Engage the NAV or the HDG mode.

L2 *NAV, HDG, or TRACK modes can be engaged only above 100 ft.*

L1
- **To prepare for a second approach:**

  APPROACH PHASE...ACTIVATE | PF

L2 *Activate the APPR phase on the FMS ACTIVE/PERF page.*

L1
- **To divert to the alternate:**

  FMS..UPDATE

L2
  - *If the flight crew prepared an alternate flight plan, they should use ENABLE ALTN in the revision menu of the TO waypoint on the ACTIVE/F-PLN page*
  - *If the flight crew prepared a SEC/F-PLN to the diversion airfield, they should swap the SEC F-PLN to the ACTIVE F-PLN*
  - *If the flight crew did not prepare any alternate, they should:*
    - *Initiate a selected climb*
    - *Perform a lateral revision to insert the new destination.*

L1
- **When cleared to a waypoint:**

  DIRECT TO..PERFORM

FMS..CROSSCHECK

AFTER LANDING

Applicable to: ALL

Ident.: PRO-NOR-SOP-230-230-00006733.0001001 / 27 SEP 18

GROUND SPOILERS

GND SPLRS..DISARM | PF

Ident.: PRO-NOR-SOP-230-230-00006734.0001001 / 25 APR 14

FLAPS

FLAPS..RETRACT | PM

Retract flaps, unless ice accretion is suspected.

L2
- *Set the FLAPS lever to 0*
- *If the approach was performed in icing conditions, or if the runway was contaminated with slush or snow, do not retract the flaps until after engine shutdown, and after the ground crew confirmed that the flaps and slats are clear of obstruction due to ice.*

Ident.: PRO-NOR-SOP-230-230-00006736.0002001 / 29 NOV 18

APU

APU MASTER SW pb-sw ....ON | PM
APU START pb ....ON | PM

L2 *Note:* *APU start may be delayed until before engine shutdown. Before the flight crew shuts down the engines, they must check that the AVAIL light of the APU START pb is on. If the APU start failed, Refer to DSC-49-40 APU Automatic Shutdown.*

Ident.: PRO-NOR-SOP-230-230-00006738.0001001 / 25 APR 14

ANTI ICE

ENG 1 and 2 ANTI ICE pb-sw..AS RQRD | PM

L2 *If engine anti-ice is used, carefully control taxi speed, particularly on wet or slippery surfaces because ground idle is increased.*

Ident.: PRO-NOR-SOP-230-230-00006739.0001001 / 02 MAR 18

EXTERIOR LIGHTS

L2

During taxi, the PF may request the PM to set the exterior lights.

L1 LDG sw..OFF | PF

■ **When leaving the runway:**

STROBE sw..AUTO | PF

NOSE sw..TAXI | PF

- **When crossing a runway:**

STROBE sw..ON | PF

OTHER EXTERIOR LIGHTS..AS RQRD | PF

Ident.: PRO-NOR-SOP-230-230-00006740.0001001 / 25 APR 14

AIRPORT NAVIGATION

The ANF is not a guidance system. If the ANF display does not correspond to the outside view, the flight crew must disregard the ANF display.

ND RANGE selector..ZOOM, AS APPROPRIATE | BOTH

Ident.: PRO-NOR-SOP-230-230-00006741.0001001 / 08 NOV 18

EFIS CP

TAXI pb ⊲ ....AS RQRD | BOTH
WX pb..CHECK OFF | BOTH

L2 *The weather radar automatically switches off 60 s after landing.*

Ident.: PRO-NOR-SOP-230-230-00006743.0001001 / 12 DEC 16

BRAKE TEMPERATURE

L2 For more information, *Refer to FCTM/PR-NP-SOP-230 Brake Temperature*.

L1 BRAKE TEMPERATURE..MONITOR | PM

L2
- *Check the brake temperature for discrepancies and high temperature on the WHEEL SD page*
- *Maintenance action is due in the following cases:*
  - *The temperature difference between two brakes of a gear is more than 150 °C, and the temperature of one of these brakes is above or equal to 600 °C, or*
  - *The temperature difference between two brakes of a gear is more than 150 °C, and the temperature of one of these brakes is below or equal to 60 °C, or*
  - *The difference between the average temperature of the left gear brakes and right gear brakes is above or equal to 200 °C, or*
  - *The temperature of one brake exceeds 800 °C.*

L1 BRAKE FAN pb ⊲ ....AS RQRD | PM

Ident.: PRO-NOR-SOP-230-230-00006745.0001001 / 25 APR 14

AFTER LANDING CHECKLIST

AFTER LANDING C/L...COMPLETE | BOTH

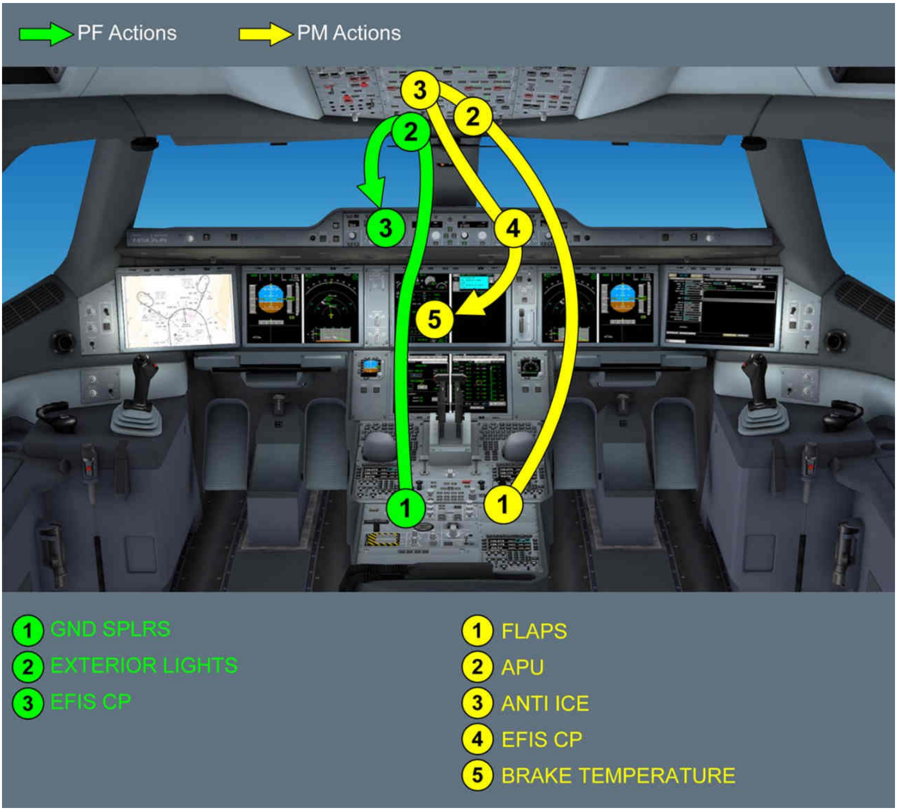
Refer to PRO-NOR-C-L After Landing.

L2 *Ensure that the after-landing checks are completed after the aircraft cleared the runway.*
For additional information on the associated standard callout, Refer to PRO-NOR-SCO Summary for Each Flight Phase.

Ident.: PRO-NOR-SOP-230-230-00020997.0001001 / 06 MAY 15

FLOW PATTERN

L2


PF Actions
PM Actions
3
2
2
3
4
5
1
1
1 GND SPLRS
2 EXTERIOR LIGHTS
3 EFIS CP
1 FLAPS
2 APU
3 ANTI ICE
4 EFIS CP
5 BRAKE TEMPERATURE

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PARKING

Applicable to: ALL

Ident.: PRO-NOR-SOP-250-250-00006746.0001001 / 25 APR 14

ANTI ICE

ANTI ICE pb-sw...OFF | PM

Ident.: PRO-NOR-SOP-250-250-00006747.0001001 / 25 APR 14

APU BLEED

APU BLEED pb...ON | PM

L2 *Set the APU BLEED pb to ON immediately before engine shutdown to prevent engine exhaust fumes from entering the air conditioning.*

Ident.: PRO-NOR-SOP-250-250-00006748.0001001 / 29 NOV 18

PARK BRK

ACCU pressure indicator.. CHECK | PF

L2 *The GREEN and YELLOW ACCU pressure indications must be in the green band. In the case of low accumulator pressure, chocks are required before engine shutdown.*

L1 PARK BRK handle...ON | PF

L2 *If the temperature of one brake is above 500 °C (or above 350 °C with the brake fans ❄ ON), avoid applying the parking brake, unless operationally necessary.*

L1 PARK BRK indication... CHECK DISPLAYED | PF

L2 *When the parking brake is set to ON and the pressure is effective on brakes, the slats/flaps display shows the PARK BRK indication.*

Ident.: PRO-NOR-SOP-250-250-00006749.0001001 / 08 JUL 19

ENG

- **No less than 5 min after high thrust operations:**

  ENG 1, 2 MASTER LEVERS....OFF | PF

L2 *Note: The flight crew must operate the engines at or near idle thrust for a cooling period of 5 min before engine shutdown, in order to thermally stabilize the engines.*

Idle reverse thrust and normal thrust to maneuver during taxi (i.e. at or near idle), are not considered as high thrust operations. Therefore, both of the following applies:
- *If the flight crew uses idle reverse thrust for landing and normal thrust to maneuver during taxi after landing, the cooling period starts when the flight crew retards the thrust lever during the flare*
- *If the flight crew uses maximum reverse for landing, the cooling period starts when the flight crew sets the thrust lever to idle reverse during the landing rollout.*

L1 ENGINE PARAMETERS....CHECK | PF

L2 *Check that engine parameters decrease.*

Ident.: PRO-NOR-SOP-250-250-00006751.0001001 / 25 APR 14

SLIDES

SLIDES....CHECK DISARMED | PF

L2 *Check that the slides are disarmed on the DOOR/OXY SD page.*

Ident.: PRO-NOR-SOP-250-250-00006752.0001001 / 25 APR 14

SEAT BELTS

SEAT BELTS sw....OFF | PF

Ident.: PRO-NOR-SOP-250-250-00006753.0001001 / 25 APR 14

EXTERIOR LIGHTS

BEACON sw....OFF | PF

L2 *Turn off the BEACON lights when all engines spooled down.*

L1 OTHER EXTERIOR LIGHTS....AS RQRD | PF

Ident.: PRO-NOR-SOP-250-250-00006754.0001001 / 25 APR 14

GROUND CONTACT

GROUND CONTACT....................ESTABLISH | PF

L2
- *The flight crew should establish communication with the ground crew*
- *Check that chocks are in place.*

Ident.: PRO-NOR-SOP-250-250-00006755.0001001 / 25 APR 14

FUEL PUMPS

FUEL PUMPS....................OFF | PM

Ident.: PRO-NOR-SOP-250-250-00006757.0001001 / 09 MAR 16

HUD ⊲

HUD....................STOW | BOTH

Ident.: PRO-NOR-SOP-250-250-00019881.0001001 / 13 JAN 15

XPDR

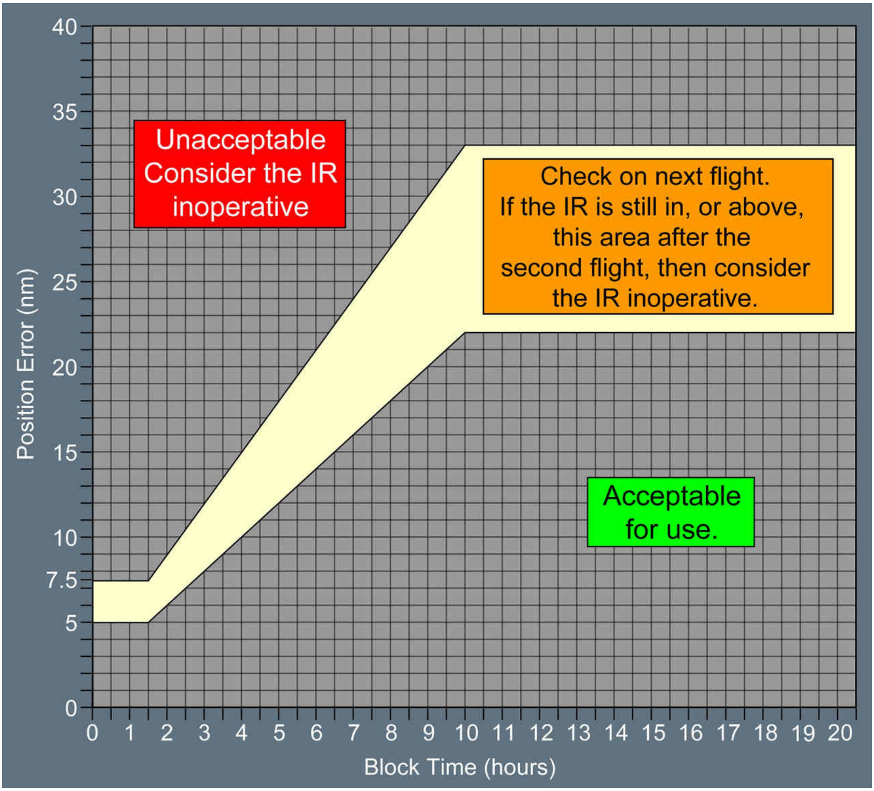
- **On the SURV/CONTROLS page:**
  XPDR....................STBY | PM

Ident.: PRO-NOR-SOP-250-250-00006758.0001001 / 08 JUL 19

IRS PERFORMANCE

IRS PERFORMANCE....................CHECK | PM

On the FMS POSITION/MONITOR page, check that the deviation does not exceed the following:



Ident.: PRO-NOR-SOP-250-250-00006759.0001001 / 25 APR 14

FUEL QUANTITY

FUEL QUANTITY..CHECK | PM

L2 *Check that the sum of the fuel on board and the fuel used is consistent with the fuel on board at departure. If the flight crew detects a discrepancy that is not usual, maintenance action is due.*

Ident.: PRO-NOR-SOP-250-250-00006760.0001001 / 09 MAR 16

BRAKE FANS ⋞

BRAKE FAN pb...AS RQRD | PM

L2 *Turn off the brake fans when they are no longer necessary.*

Ident.: PRO-NOR-SOP-250-250-00006761.0001001 / 02 OCT 14

PARK BRK

PARK BRK handle..AS RQRD | PF

Ident.: PRO-NOR-SOP-250-250-00006764.0001001 / 25 APR 14

PARKING CHECKLIST

PARKING C/L..COMPLETE | BOTH

Refer to PRO-NOR-C-L Parking.

L2 *For additional information on the associated standard callouts, Refer to PRO-NOR-SCO Summary for Each Flight Phase.*

Ident.: PRO-NOR-SOP-250-250-00006763.0001001 / 06 AUG 14

LOGBOOK

DISPCH pb..PRESS | CM1

L2 *Press the DISPCH pb to consult all active dispatch messages.*

L1 LOGBOOK..COMPLETE | CM1

L2 *Complete the logbook according to the active dispatch messages.*

L1 ● **If icing conditions with freezing fog:**

TAXI-IN TIME..RECORD | CM1

L2 *Record in the logbook the taxi-in time performed in freezing fog conditions, in order to determine the remaining allowed taxi-out time for the next flight.*

Ident.: PRO-NOR-SOP-250-250-00018139.0001001 / 03 JUL 20

1 EFB

CLEAR/CLOSE FLIGHT button..CLICK | BOTH

L2 *On the FLT OPS STS page or the FLT OPS MENU, click on the CLEAR/CLOSE FLIGHT button to export all items in the Export Box and to initialize the FLT OPS STS page and all EFB applications for the next flight. For more information, Refer to DSC-46-OIS-20-80-60 CLEAR/CLOSE FLIGHT Button.*

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SECURING THE AIRCRAFT

Applicable to: ALL

Ident.: PRO-NOR-SOP-260-260-00006040.0001001 / 08 JUL 19

GENERAL

The flight crew should apply the following procedure as per company policy.
Airbus recommends performing the following procedure when the aircraft is left unattended: i.e. no qualified flight crew or ground crew are in the cockpit to supervise and monitor the aircraft systems.
If the aircraft is secured for cold soak: *Refer to PRO-NOR-SUP-SUP-ADVWXR Securing the Aircraft for Cold Soak*.

Ident.: PRO-NOR-SOP-260-260-00006042.0001001 / 18 JUN 15

PARK BRK

PARK BRK handle.. ON | CM1
PARK BRK indication.. CHECK DISPLAYED | CM1

L2 *When the parking brake is set to ON and the pressure is effective on brakes, the slats/flaps display shows the PARK BRK indication.*

Ident.: PRO-NOR-SOP-260-260-00006043.0001001 / 25 APR 14

OXYGEN CREW SUPPLY

OXYGEN CREW SUPPLY pb-sw.. OFF | CM2

Ident.: PRO-NOR-SOP-260-260-00006045.0001001 / 25 APR 14

ADIRS

All IR MODE selectors.. OFF | CM1

L2 *The flight crew should not turn off the ADIRS during transits at latitudes above 70 ° N, in order to avoid excessive alignment time.*
After turning off the ADIRS, wait at least 10 s before turning off the electrical supply, in order to ensure that the ADIRS memorize the latest data.

Ident.: PRO-NOR-SOP-260-260-00006046.0001001 / 25 APR 14

EXTERIOR LIGHTS

EXTERIOR LIGHTS.. OFF | CM2

Ident.: PRO-NOR-SOP-260-260-00006047.0001001 / 25 APR 14

GROUND SERVICING

GND SVCE CTL sw....................AS RQRD | CM2

L2 *If the ground crew or the servicing personnel requires electrical power, consider setting to ON the GND SVCE CTL sw (in the forward cabin, near the door 1L), before powering off the aircraft.*

Ident.: PRO-NOR-SOP-260-260-00006048.0001001 / 25 APR 14

APU BLEED

APU BLEED pb-sw....................OFF | CM2

Ident.: PRO-NOR-SOP-260-260-00006049.0001001 / 08 JUL 20

1 EXT POWER

EXT pb....................AS RQRD | CM2

L2 *In order to avoid electrical reconfiguration and the display of spurious dispatch messages:*

- *Keep the EXT PWR 2 if only one electrical power is required*
- *If both electrical powers are disconnected, switch off the EXT PWR 1 and delay the disconnection of the EXT PWR 2 after the batteries are switched off.*

Ident.: PRO-NOR-SOP-260-260-00006050.0001001 / 25 APR 14

APU

APU MASTER SW pb-sw....................OFF | CM2

L2 *Turn off the APU after all passengers disembarked.*

Ident.: PRO-NOR-SOP-260-260-00006052.0001001 / 25 APR 14

EMER LIGHTS AND SIGNS

EMER EXIT LT sw....................OFF | CM2
SIGNS sw....................OFF | CM2

Ident.: PRO-NOR-SOP-260-260-00018281.0001001 / 17 NOV 17

ELECTRONIC FLIGHT BAG (EFB)

ALL EFB LAPTOPS....................SWITCH OFF |CM1-CM2

Ident.: PRO-NOR-SOP-260-260-00006054.0001001 / 25 APR 14

SECURING THE AIRCRAFT CHECKLIST

SECURING THE AIRCRAFT C/L....................COMPLETE |CM1-CM2

Refer to PRO-NOR-C-L Securing the Aircraft.

L2 *For additional information on the associated standard callouts, Refer to PRO-NOR-SCO Summary for Each Flight Phase.*

Ident.: PRO-NOR-SOP-260-260-00006055.0001001 / 27 SEP 18

BAT

ALL BAT pb-sw (BAT 2, BAT EMER 2, BAT EMER 1, BAT 1)..............................OFF | CM2

L2 *Switch off the batteries in this specific order: BAT 2, BAT EMER 2, BAT EMER 1, BAT 1. This prevents the display of spurious dispatch messages.*
Wait until the APU flap is fully closed (FLAP CLOSED indication displayed on APU page during 10 s) before turning off the batteries. This ensures that the APU shutdown sequence is entirely completed.

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INTRODUCTION

Ident.: PRO-NOR-C-L-00017858.0001001 / 25 APR 14
Applicable to: ALL

The following normal checklists illustrate:

- Detected items already completed
- Non-detected items, before they are manually selected with the tick pb on the ECAM Control Panel (ECP).

L2 For more information on the checklist content, *Refer to Checklists*.

BEFORE START

Ident.: PRO-NOR-C-L-00006766.0002001 / 17 NOV 17
Applicable to: ALL

CKPT PREP..COMPLETE (BOTH)
GEAR PINS & COVERS..REMOVE
FUEL QTY..CHECK
T.O DATA..SET
BARO REF.. _____SET (BOTH)
SEAT BELTS ON
ADIRS NAV

DOORS..CLOSE
PARK BRK..AS RQRD
BEACON ON
C/L COMPLETE

AFTER START

Ident.: PRO-NOR-C-L-00006767.0002001 / 08 APR 19
Applicable to: ALL

A-ICE..AS RQRD

- **If ECAM status normal:**

  ECAM STS : NORMAL

- **If ECAM status not normal:**

  ECAM STS..CHECK

PITCH TRIM : T.O
RUDDER TRIM : NEUTRAL

L2 *The rudder trim at neutral is displayed completed (in green) when the rudder trim position is below ±0.35 °.*

L1 C/L COMPLETE

BEFORE TAKEOFF

Ident.: PRO-NOR-C-L-00006768.0003001 / 08 APR 19
Applicable to: ALL

F/CTL...CHECK (BOTH)
FLIGHT INSTRUMENTS..CHECK (BOTH)
BRIEFING..CONFIRM
FLAPS SETTING...CONF _____ (BOTH)
V1 / VR / V2 / THR RATING...................................CHECK (BOTH)
SQUAWK.. _____SET

T.O

SEAT BELTS ON
CABIN : READY ◁✻
GND SPLRs ARM
FLAPS : T.O
AUTO BRK RTO
T.O CONFIG NORMAL

T.O RWY... _____CONFIRM (BOTH)
CABIN CREW..ADVISE
PACK 1+2..AS RQRD
C/L COMPLETE

AFTER TAKEOFF / CLIMB

Ident.: PRO-NOR-C-L-00006769.0001001 / 25 APR 14
Applicable to: ALL

LDG GEAR UP
FLAPS 0
PACK 1+2 ON

BARO REF..._____SET (BOTH)
C/L COMPLETE

APPROACH

Ident.: PRO-NOR-C-L-00006770.0001001 / 25 APR 14
Applicable to: ALL

BRIEFING..CONFIRM

Continued on the following page

APPROACH (Cont'd)

- **If ECAM status normal:**

  ECAM STS : NORMAL

- **If ECAM status not normal:**

  ECAM STS...CHECK

BARO REF...______SET (BOTH)
MINIMUM...______SET (BOTH)
SEAT BELTS ON
C/L COMPLETE

LANDING

Ident.: PRO-NOR-C-L-00006771.0002001 / 07 JUL 16
Applicable to: ALL

CABIN CREW...ADVISE
A/THR...AS RQRD
AUTO BRK...AS RQRD
RWY COND...______ SET

LDG

SEAT BELTS ON
CABIN : READY ◁
LDG GEAR DOWN
GND SPLRs ARM
FLAPS : LDG
C/L COMPLETE

AFTER LANDING

Ident.: PRO-NOR-C-L-00006772.0001001 / 04 NOV 13
Applicable to: ALL

GND SPLRs : DISARM
FLAPS 0
APU : START
C/L COMPLETE

PARKING

Ident.: PRO-NOR-C-L-00006773.0001001 / 25 APR 14
Applicable to: ALL

EXT LT....................AS RQRD
PARK BRK / CHOCKS....................AS RQRD
APU BLEED ON
ALL ENGs OFF
FUEL PMPs OFF
SEAT BELTS OFF
C/L COMPLETE

SECURING THE AIRCRAFT

Ident.: PRO-NOR-C-L-00006774.0001001 / 25 APR 14
Applicable to: ALL

ADIRS OFF
OXYGEN CREW SUPPLY OFF
APU BLEED OFF
EMER EXIT LT OFF
SIGNS OFF
ALL LAPTOPS....................OFF
APU....................OFF
ALL 4 BATs....................OFF
C/L COMPLETE

COMMUNICATIONS AND STANDARD TERMS

Ident.: PRO-NOR-SCO-00020433.0001001 / 25 APR 14
Applicable to: ALL

Standard phraseology is essential to ensure an effective flight crew communication. The phraseology should be concise and exact. The following section lists the callouts that the flight crew should use as standard callouts. They supplement the callouts identified in the SOP. These standard Airbus callouts are also designed to promote situational awareness, and to ensure the flight crew understanding of systems and their use in line operation.

CHECKLIST CALLOUTS

Ident.: PRO-NOR-SCO-00020434.0001001 / 25 APR 14
Applicable to: ALL

- “CHECK” is a command for the other flight crewmember to check an item
- “CHECKED” is a response to indicate that an item is checked
- “CROSSCHECKED" is a callout verifying information from both flight crew's stations.

If a checklist needs to be interrupted, announce “HOLD CHECKLIST AT ___”.
Announce “RESUME CHECKLIST AT ___” for the continuation of the checklist.
After a checklist is completed, announce “__CHECKLIST COMPLETE”.

ACTIONS COMMANDED BY PF

Ident.: PRO-NOR-SCO-00020435.0001001 / 14 JUN 16
Applicable to: ALL

The following commands do not necessarily initiate a guidance mode change, e.g. selected to managed, or managed to selected. The intent is to ensure clear, consistent, and standard communication between crewmembers. All actions performed on the AFS CP and FMS must be checked on the PFD and ND: E.g. “FL 350 blue”, “FL 200 magenta”. The flight crew should ensure that the correct AFS CP control is used, then verify the indications on the PFD/ND.

"SET"

The “SET” command means using an AFS CP knob to set a value, but not to change a mode. "SET" is performed by only rotating the appropriate knob.

Examples:
- ”SET GO AROUND ALTITUDE__FT”
- ”SET QNH __”
- “SET FL __”
- “SET HDG __”.

"MANAGE/PULL"

The “MANAGE” command means pushing an AFS CP knob to engage, or arm, a managed mode or target.
The “PULL” command means pulling an AFS CP knob to engage a selected mode or target.

Examples:
- “PULL HDG 090”: The flight crew pulls and turns the HDG/TRK knob
- "MANAGE NAV": The flight crew pushes the HDG/TRK knob
- “FL 190 PULL”: The flight crew turns and pulls the ALT knob
- “FL 190 MANAGE”: The flight crew turns and pushes the ALT knob
- “PULL SPEED 250 kt ”: The flight crew pulls and turns the SPD/MACH knob
- “MANAGE SPEED”: The flight crew pushes the SPD/MACH knob.

Note: *If the value was previously set, there is no requirement to repeat the figure. Simply announce e.g. "PULL HDG", "PULL SPEED", "FL PULL".*

The V/S / FPA knob has no managed function. The standard callouts for the use of this knob are the following:
- "V/S Plus(Minus) 700 PULL", or
- "FPA Minus 3 ° PULL": The flight crew turns and pulls the V/S / FPA knob, or
- "PUSH TO LEVEL OFF": The flight crew pushes the V/S / FPA knob.

"PRESS ALT"

The ALT pb enables to immediately start a level off. The standard callout for the use of the ALT pb is "PRESS ALT".

"ARM"

The “ARM __” command means arming a system by pushing the specified AFS CP control.

Examples:
- “ARM APPROACH”
- “ARM LOC.”

"ON/OFF"

The simple "ON" or "OFF" command is used for the autopilot, the flight director, the A/THR and the bird (flight path vector). E.g.: BIRD ON (The flight crew pushes the HDG-V/S / TRK-FPA pb to select the TRK-FPA flying reference).

FMA

Ident.: PRO-NOR-SCO-00020436.0001001 / 25 APR 14
Applicable to: ALL

The PF should announce any FMA change, unless specified differently (e.g. CAT II & III task sharing).

Therefore, the PF should announce:
- All armed modes with their associated color (e.g. blue, magenta): E.g. “G/S blue”, “LOC blue”
- All active modes without their associated color (e.g. green, white): E.g. “NAV”, “ALT”.

The PM should check and respond “CHECKED” to all FMA changes announced by the PF.

ALTITUDE

Ident.: PRO-NOR-SCO-00020437.0001001 / 25 APR 14
Applicable to: ALL

The PM announces “ONE THOUSAND TO GO” when passing 1 000 ft before the cleared altitude or FL, and the PF announces “CHECKED”.

FLAPS OR GEAR CONFIGURATION

Ident.: PRO-NOR-SCO-00020438.0001001 / 07 MAY 18
Applicable to: ALL

FLAPS CALLOUTS

FLAPS Configuration	Callout
1	"FLAPS ONE"
1+F	"FLAPS ONE"
0	"FLAPS ZERO"

The flight crewmember replies the following callout when they select the new FLAPS position, e.g.:

	Callout	Remark
PF	″FLAPS ONE″	
PM	″SPEED CHECKED″	The PM checks that the speed is: - Above S or F speed and accelerating, during takeoff - Below VFE next and decelerating during approach.
	″FLAPS ONE″	The PM selects the FLAP lever position. The PM checks the blue FLAPS lever position on the PFD to confirm the correct selection, then replies.

GEAR CALLOUTS

	Callout	Remark
PF	˝GEAR UP(DOWN)˝	
PM	˝GEAR UP(DOWN)˝	The PM selects the landing gear lever position. The PM checks the landing gear indication on the PFD to confirm the landing gear operation, then replies.

FLIGHT PARAMETERS

Applicable to: ALL

Ident.: PRO-NOR-SCO-FLP-00020439.0001001 / 03 JUL 20

1 ## APPROACH

The PM announces:
- “SPEED” if the speed goes below the speed target -5 kt, or goes above the speed target +10 kt
- “SINK RATE” if the descent rate goes above 1 200 ft/min
- “BANK” if the bank angle goes above 6 °
- “PITCH” if the pitch attitude goes above 10 °, or below 0 °
- "LOC” if the LOC, F-LOC or LOC B/C deviation goes above ½ dot
- “GLIDE” if G/S or F-G/S deviation goes above ½ dot
- "CROSS TRACK" if the XTK goes above 0.1 NM
- “COURSE” if the course goes above ½ dot or 2.5 ° (VOR) or 5 ° (ADF ◁✱)
- "__ FT HIGH(LOW)” at altitude checks point.

RNAV(RNP) APPROACH:

The PM announces:
- "LAT DEV" if excessive lateral deviation occurs: ½ dot
- "VDEV" if excessive vertical deviation occurs: -50 ft or ½ dot below.

Ident.: PRO-NOR-SCO-FLP-00024212.0001001 / 30 MAR 17

LANDING

Rely on the "PITCH PITCH" auto callout for pitch monitoring.
The PM announces “BANK BANK” if the bank angle goes above 6 °.

Ident.: PRO-NOR-SCO-FLP-00020440.0001001 / 30 MAR 17

GO-AROUND

The PM announces:
- “PITCH”, if the pitch attitude goes above 20 ° up, or below 10 ° up
- “BANK”, if the bank angle goes above 6 °
- “SINK RATE”, if there is no climb rate.

PF/PM DUTIES TRANSFER

Ident.: PRO-NOR-SCO-00020441.0001001 / 25 APR 14
Applicable to: ALL

Both flight crewmembers must use the following callouts in order to transfer the controls:
To give control: The PF announces “YOU HAVE CONTROL”. The other flight crewmember accepts this transfer by announcing “I HAVE CONTROL”, before assuming the PF duties.
To take control: The PM announces “I HAVE CONTROL”. The other flight crewmember accepts this transfer by announcing “YOU HAVE CONTROL”, before assuming the PM duties.

SUMMARY FOR EACH FLIGHT PHASE

Ident.: PRO-NOR-SCO-00020442.0001001 / 08 JUL 19
Applicable to: ALL

To Remove the External Power Units		
Event	**PF or PM**	**Ground Personnel**
Initial ground contact	GROUND (from) COCKPIT	COCKPIT (from) GROUND
External __ disconnection	REMOVE EXTERNAL __	EXTERNAL__ REMOVED

Before Pushback or Start		
Event	**PF**	**PM**
Before pushback/start up clearance is received	BEFORE START C/L	DOWN TO THE LINE
After pushback/start up clearance is received	BELOW THE LINE	BEFORE START C/L COMPLETE

Pushback/Engine Start		
Event	**PF**	**Ground Personnel**
When ready for pushback, and pushback clearance received from ATC	GROUND (from) COCKPIT, CLEARED FOR PUSH	COCKPIT (from) GROUND, RELEASE BRAKES
Start of pushback	BRAKES RELEASED READY TO PUSH	
When ready to start engines	CLEAR TO START ? STARTING ENG(S)__	CLEAR TO START
When pushback complete	BRAKES SET	SET BRAKES

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Pushback/Engine Start		
Event	**PF**	**Ground Personnel**
When ready to disconnect (i.e. after engine are started and parameters are stabilized)	CLEAR TO DISCONNECT (hand signals on left/right)	DISCONNECTING (hand signals on left/right)

After Engine Start		
Event	**PF**	**PM**
All engines are started and stabilized, and external power units are disconnected	AFTER START C/L	AFTER START C/L COMPLETE

Taxi		
Event	**PF**	**PM**
When taxi clearance obtained	CLEAR LEFT (RIGHT) SIDE	CLEAR RIGHT (LEFT) SIDE
Brake transfer check	BRAKE CHECK	
Flight control check in the following sequence (can be done before start of taxi):	FLIGHT CONTROL CHECK	
1. Elevators		FULL UP, FULL DOWN, NEUTRAL
2. Ailerons/Spoilers		FULL LEFT, FULL RIGHT, NEUTRAL
3. Rudder (1)	RUDDER	FULL LEFT, FULL RIGHT, NEUTRAL
During taxi	BEFORE TAKEOFF C/L	DOWN TO THE LINE
Lining up on the runway	BELOW THE LINE	BEFORE TAKEOFF C/L COMPLETE

(1) *The PM should follow the pedal movements with their feet.*

Takeoff		
Event	**PF**	**PM**
Setting thrust levers to initial stabilization value	TAKEOFF	
Before reaching 80 kt		THRUST SET
At 100 kt	CHECKED	ONE HUNDRED KNOTS
At V1		V1 (1)
At VR		ROTATE
Landing gear retraction	GEAR UP	POSITIVE CLIMB

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Takeoff		
Event	**PF**	**PM**
		GEAR UP
If AP is engaged by PM	AP 1(2) ON	
Checklist	AFTER TAKEOFF/CLIMB C/L	DOWN TO THE LINE
At transition altitude	BELOW THE LINE	AFTER TAKEOFF/CLIMB C/L COMPLETE

(1) *The PM monitors the auto callout, or announces if it is inoperative.*

For more information on callouts associated with a malfunction before V1 at takeoff, *Refer to PRO-ABN-ABN-00 Standards Callouts for Abnormal Operations*.

Altimeter Setting Changes TO/FROM QNH/ QFE ◁ -STD		
Event	**PF**	**PM**
Barometric setting change and subsequent altimeter crosscheck	SET STANDARD (SET QNH/ QFE ◁)	STANDARD CROSSCHECKED (QNH/ QFE ◁) PASSING FL__(__FT) NOW
	CHECKED	

Approach and Landing		
Event	**PF**	**PM**
Approach checklist	APPROACH C/L	APPROACH C/L COMPLETE
Activation of approach phase	ACTIVATE APPROACH PHASE	APPROACH PHASE ACTIVATED
RA alive		RADIO ALTIMETER ALIVE (1) (2)
	CHECKED	
At F-G/S*(G/S*)(APP-DES) or below the go-around altitude for approach with FPA guidance	● **If the PF requests the PM to set the go around altitude:** SET GA ALTITUDE__FT	GA ALTITUDE__SET
	● **If the PF sets the go around altitude:** GA ALTITUDE__SET	CHECKED
FDP		PASSING__(Fix Name),__FT
	CHECKED	
Landing checklist	LANDING C/L	LANDING C/L COMPLETE

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Approach and Landing		
Event	**PF**	**PM**
1 000 ft RA	CHECKED	ONE THOUSAND (2)
100 ft above MDA/DH	CHECKED	ONE HUNDRED ABOVE (2)
Visual references at MDA/DH	CONTINUE	MINIMUM (2)
No visual reference at MDA/DH	GO AROUND - FLAPS	MINIMUM (2)
		ONE HUNDRED (2) FIFTY (2)
After touchdown Ground spoilers extended REV on ED		SPOILERS (3) REVERSE GREEN (4)
Deceleration		DECEL (5)
At 70 kt	CHECKED	SEVENTY KNOTS

(1) *Crew awareness: The flight crew should now keep RA in scan to landing.*

(2) *The PM monitors the pin-programmed auto callouts, or announces if they are inoperative.*

(3) *If the spoilers are not extended, announce "NO SPOILER".*

(4) *If the reverse deployment is not as expected, announce "NO REVERSE ENGINE_" or "NO REVERSE", as appropriate.*

(5) *In the case of failure or no positive deceleration: "NO DECEL"*
"DECEL" callout means that the deceleration is felt by the flight crew, and confirmed by the speed trend on the PFD. It can also be confirmed by the DECEL indication on the PFD, if the autobrake is active.
However, the DECEL indication appears when the current deceleration reaches 80 % of the selected deceleration rate. Therefore it is not an indication of the correct autobrake functioning, but it indicates that the deceleration rate is reached. E.g. the DECEL indication may not appear on a contaminated runway, with the autobrake active, due to the effect of the anti-skid.

Discontinued Approach

Event	PF	PM
DISCONTINUED APPROACH decision	CANCEL APPROACH	

Go-Around

Event	PF	PM
GO AROUND decision	GO AROUND – FLAPS	
Flaps retraction		FLAPS__
Gear retraction	GEAR UP	POSITIVE CLIMB GEAR UP
Checklist	AFTER TAKEOFF/CLIMB C/L	DOWN TO THE LINE
At transition altitude	BELOW THE LINE	AFTER TAKEOFF/CLIMB C/L COMPLETE

After Landing

Event	PF	PM
Checklist	AFTER LANDING C/L	AFTER LANDING C/L COMPLETE

Parking

Event	PF	PM
Checklist	PARKING C/L	PARKING C/L COMPLETE

Securing the Aircraft

Event	PF	PM
Checklist	SECURING THE AIRCRAFT C/L	SECURING THE AIRCRAFT C/L COMPLETE

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SAFETY EXTERIOR INSPECTION

Ident.: PRO-NOR-TSK-00006781.0001001 / 25 APR 14
Applicable to: ALL

CM1	CM2
	WHEEL CHOCKS....................CHECK
	L/G DOORS....................CHECK POSITION
	APU AREA....................CHECK

PRELIMINARY COCKPIT PREPARATION

Applicable to: ALL

Ident.: PRO-NOR-TSK-A-00006782.0001001 / 27 JUN 17

AIRCRAFT SETUP:

CM1	CM2
	ENG 1, 2 MASTER LEVERS....................OFF
	ENG START selector....................NORM
	L/G lever....................DOWN
	Both WIPER selectors....................OFF

Ident.: PRO-NOR-TSK-A-00024367.0001001 / 03 JUL 20

BATTERIES/EXTERNAL POWER:

CM1	CM2
	All BAT....................CHECK
	EXT PB....................AUTO

Ident.: PRO-NOR-TSK-A-00024369.0001001 / 27 JUN 17

COCKPIT LIGHTS:

CM1	CM2
COCKPIT LIGHTS....................AS RQRD	COCKPIT LIGHTS....................AS RQRD

Ident.: PRO-NOR-TSK-A-00006805.0002001 / 30 JUL 15

OIS INITIALIZATION:

<table>
<tr><th>CM1</th><th>CM2</th></tr>
<tr><td colspan="2">ALL EFB LAPTOPS....................START</td></tr>
<tr><td>On FMS ACTIVE/INIT page:
FLT NBR....................INSERT/CHECK</td><td></td></tr>
<tr><td>On FMS DATA/STATUS page:
ACFT STATUS....................CHECK</td><td></td></tr>
</table>

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OIS INITIALIZATION:

CM1	CM2
On FMS ACTIVE/INIT page: FROM/TO....................INSERT/CHECK	
EFB FLT OPS STS page....................CHECK	EFB FLT OPS STS page....................CHECK

Ident.: PRO-NOR-TSK-A-00006806.0001001 / 03 SEP 14

ECAM/LOGBOOK CHECK:

CM1	CM2
RCL ALL pb....................PRESS	
DISPCH pb....................PRESS	
LOGBOOK....................CHECK	LOGBOOK....................CHECK
MEL/CDL ITEMS.............CHECK DISPATCH CONDITIONS	MEL/CDL ITEMS........... CHECK DISPATCH CONDITIONS
AIRCRAFT ACCEPTANCE.................... PERFORM	

Ident.: PRO-NOR-TSK-A-00006807.0001001 / 06 AUG 14

FIRE TEST/APU START:

CM1	CM2
	RMP 1 and 2....................CHECK ON/SET
	FIRE TEST.................... PERFORM
	APU....................START
	•When the APU is AVAIL: AIR panel....................SET
	EXT PWR.................... AS RQRD

Ident.: PRO-NOR-TSK-A-00006809.0001001 / 27 JUN 17

OIS PREPARATION:

CM1	CM2
PRELIMINARY PERFORMANCE DETERMINATION:	
AIRFIELD DATA....................OBTAIN	AIRFIELD DATA....................OBTAIN
MEL/CDL ITEMS....................CHECK ACTIVATED	MEL/CDL ITEMS.................... CHECK ACTIVATED
OIS PRELIM T.O PERF DATA.................... COMPUTE	OIS PRELIM T.O PERF DATA....................COMPUTE
OIS PRELIM T.O PERF DATA....................CROSSCHECK	OIS PRELIM T.O PERF DATA.................... CROSSCHECK
OEB:	
OEB in FCOM.................... CHECK	OEB in FCOM....................CHECK

Ident.: PRO-NOR-TSK-A-00006811.0001001 / 04 MAR 20

BEFORE WALKAROUND:

PF	PM
	RAIN RPLNT LEVEL ❄ ....CHECK
	OXY PRESS..CHECK
	HYD QTY..CHECK
	ENG OIL QTY...CHECK
	FLAPS... CHECK POSITION
	SPEED BRAKES............ CHECK RETRACTED/DISARMED
	ACCU PRESS.. CHECK
	PARK BRK handle...ON
	PARK BRK indication.......................... CHECK DISPLAYED
	EMER EQPT...CHECK
	GEAR PINS and COVERS.............CHECK ONBOARD and STOWED
	FAN COWL DOORS (FCD) KEYS ❄ ....CHECK ONBOARD and STOWED
	EXTERIOR WALKAROUND............................... PERFORM

COCKPIT PREPARATION

Applicable to: ALL

Ident.: PRO-NOR-TSK-B-00006812.0003001 / 15 APR 19

OVERHEAD PANEL:

PF	PM
As a general rule, during the scan sequence: All white lights (except MAINTENANCE panel).............. OFF	
CAPT/CAPT & PURS sw .... AS RQRD	
RCDR GND CTL pb-sw..ON	
ELT.. ARMED	
All IR MODE selectors................................. OFF then NAV	
CKPT EQPT POWER SUPPLY buttons (left side).... CHECK	
RESET buttons (left side)..CHECK	
EXTERIOR LIGHTS.. SET	
SIGNS panel... SET	
PROBE & WINDOW HEAT pb-sw............................ AUTO	
AIR panel..CHECK/SET	
MAINTENANCE panel...CHECK	
CARGO AIR COND panel....................................AS RQRD	
CVR TEST pb... PRESS	

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OVERHEAD PANEL:

PF	PM
CKPT EQPT POWER SUPPLY buttons (right side).. CHECK	
RESET buttons (right side)..CHECK	

Ident.: PRO-NOR-TSK-B-00006813.0001001 / 25 APR 14

CTR INSTRUMENT PANEL:

PF	PM
AIR DATA selector..AUTO	
FMS selector...NORM	
ISIS.. CHECK	
ANTI SKID sw .... ON	

Ident.: PRO-NOR-TSK-B-00006814.0001001 / 29 NOV 18

PEDESTAL:

PF	PM
RMP 1.. CHECK ON/SET	
ACCU PRESS..CHECK	
PARK BRK handle... ON	
PARK BRK indication.......................... CHECK DISPLAYED	
L/G GRVTY EXTN sw..OFF	
THRUST LEVERS..IDLE	
THRUST REVERSER LEVERS........................... STOWED	
ENG 1, 2 MASTER LEVERS..OFF	
ENG START selector.. NORM	
CKPT DOOR sw..NORM	
RMP 2.. CHECK ON/SET	
RMP 3.. CHECK ON/SET	

Ident.: PRO-NOR-TSK-B-00006815.0001001 / 13 JAN 15

PF	PM
MFD ATC COM:	
MSG RECORD.......................... CHECK NO STORED MSG	
•If ADS-C services are expected:	
ADS-C..CHECK ARMED	
MFD SURV:	
XPDR.. STBY	
NAV CHARTS:	
NAV CHARTS CLIPBOARD................................ PREPARE	NAV CHARTS CLIPBOARD................................ PREPARE
FMS PREPARATION:	

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PF	PM
FMS....................PREPARE	
ACTIVE F-PLN....................CHECK/COMPLETE	
SEC F-PLN(s)....................AS APPROPRIATE	
FMS DATA CROSSCHECK:	
	FMS PREPARATION....................CHECK

Ident.: PRO-NOR-TSK-B-00006816.0001001 / 14 APR 16

GLARESHIELD:

PF	PM
•When both flight crewmembers are seated:	
LOUDSPEAKER knob....................SET	LOUDSPEAKER knob....................SET
BAROMETRIC REFERENCE....................SET/CROSSCHECK	BAROMETRIC REFERENCE....................SET/CROSSCHECK
EFIS CP....................SET	EFIS CP....................SET
AFS CP....................CHECK/SET	AFS CP....................CROSSCHECK

Ident.: PRO-NOR-TSK-B-00006817.0001001 / 25 APR 14

LATERAL CONSOLE AND PF/PM INSTRUMENT PANELS:

PF	PM
OXYGEN MASK....................TEST	OXYGEN MASK....................TEST
PFD-ND....................CHECK	PFD-ND....................CHECK

Ident.: PRO-NOR-TSK-B-00006818.0001001 / 25 APR 14

TAKEOFF BRIEFING:

PF	PM
TAKEOFF BRIEFING....................PERFORM	

BEFORE PUSHBACK OR START

Applicable to: ALL

Ident.: PRO-NOR-TSK-C-00006784.0001001 / 04 JUL 17

BEFORE START CLEARANCE:

PF	PM
FINAL LOADSHEET....................CHECK	FINAL LOADSHEET....................CHECK
FUEL ON BOARD....................CHECK	FUEL ON BOARD....................CHECK
•If takeoff conditions changed:	
OIS FINAL T.O PERF DATA....................RECOMPUTE FMS T.O DATA....................REVISE	OIS FINAL T.O PERF DATA....................RECOMPUTE
	OIS FINAL T.O PERF DATA....................XCHECK WITH AVNCS

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BEFORE START CLEARANCE:

PF	PM
SEATING POSITION....................ADJUST	SEATING POSITION....................ADJUST
HUD .... DEPLOY/ADJUST	HUD .... DEPLOY/ADJUST
	AIR CONDITIONING UNITS........CHECK DISCONNECTED
	EXT PWR....................CHECK AVAIL
	EXT PWR DISCONNECTION.................... REQUEST
BEFORE START C/L down to the line............... COMPLETE	BEFORE START C/L down to the line............... COMPLETE

Ident.: PRO-NOR-TSK-C-00006819.0001001 / 29 NOV 18

AT START CLEARANCE:

PF	PM
	PUSHBACK/START-UP CLEARANCE....................OBTAIN
SURV DEFAULT SETTINGS....................SELECT	SURV DEFAULT SETTINGS.................... SELECT
TAXI VIDEO .... AS RQRD	TAXI VIDEO ....AS RQRD
DOORS....................CHECK CLOSED	DOORS.................... CHECK CLOSED
SLIDES....................CHECK ARMED	SLIDES.................... CHECK ARMED
BEACON sw....................ON	
THRUST LEVERS.................... IDLE	
ACCU PRESS.................... CHECK	
•If pushback is not required:	
PARK BRK handle....................CHECK ON	
PARK BRK indication................CHECK DISPLAYED	
BEFORE START C/L below the line....... COMPLETE	BEFORE START C/L below the line.................... COMPLETE
•If pushback is required:	
N/W STEER DISC MEMO.........CHECK DISPLAYED	
BEFORE START C/L below the line....... COMPLETE	BEFORE START C/L below the line.................... COMPLETE
PARK BRK handle....................OFF	
•When pushback is completed:	
PARK BRK handle....................ON	
PARK BRK indication.... CHECK DISPLAYED	

ENGINE START

Ident.: PRO-NOR-TSK-00006785.0001001 / 25 APR 14
Applicable to: ALL

PF	PM
ENG START selector....................IGN START	
ENGINE 1 START.................... ANNOUNCE	
ENG 1 MASTER lever....................ON	

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PF	PM
ENG IDLE PARAMETERS.......................................CHECK	
REPEAT THE START SEQUENCE FOR ENG 2	

AFTER START

Ident.: PRO-NOR-TSK-00006786.0001001 / 18 JUN 15
Applicable to: ALL

PF	PM
ENG START selector..NORM	
APU BLEED pb-sw..OFF	GND SPLRS...ARM
ENG 1 and 2 ANTI ICE pb-sw ....AS RQRD	RUDDER TRIM...CHECK ZERO
WING ANTI ICE pb-sw ....AS RQRD	FLAPS.. SET
•If the APU is not required: APU MASTER SW pb-sw...OFF	PITCH TRIM.. CHECK
ECAM STATUS.. CHECK	ECAM STATUS... CHECK
N/W STEER DISC MEMO........... CHECK NOT DISPLAYED	
CLEAR TO DISCONNECT...............................ANNOUNCE	
AFTER START C/L... COMPLETE	AFTER START C/L... COMPLETE

TAXI

Ident.: PRO-NOR-TSK-00006787.0001001 / 08 NOV 18
Applicable to: ALL

PF	PM
TAXI pb ◁✳ on EFIS CP.................................... AS RQRD	TAXI pb ◁✳ on EFIS CP.................................. AS RQRD
	TAXI CLEARANCE...OBTAIN
ND RANGE selector...................ZOOM, AS APPROPRIATE	ND RANGE selector..................ZOOM, AS APPROPRIATE
EXTERIOR LIGHTS..SET	
PARK BRK handle..OFF	
BRAKES...CHECK	
	BRAKE FAN pb ◁✳ ....AS RQRD
F/CTL..CHECK	F/CTL... CHECK
	ATC CLEARANCE...CONFIRM
•If takeoff conditions changed:	
OIS FINAL T.O PERF DATA..........................RECOMPUTE OIS FINAL T.O PERF DATA........... XCHECK WITH AVNCS	OIS FINAL T.O PERF DATA..........................RECOMPUTE FMS T.O DATA ....REVISE FLAPS lever...AS APPROPRIATE
	F-PLN/SPD.. CHECK
FMS ACTIVE/PERF page...SET	FMS ACTIVE/F-PLN page... SET

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PF	PM
	AFS CP..SET
	FD..CHECK ON
PFD/ND..CHECK	PFD/ND..CHECK
TAKEOFF BRIEFING..CONFIRM	
EFIS CP..AS RQRD	EFIS CP..AS RQRD
	A/BRK pb..ARM
	SQUAWK..CONFIRM/SET
	T.O CONFIG..TEST
	T.O MEMO..CHECK NO BLUE
CABIN REPORT..RECEIVE	CABIN REPORT..RECEIVE
BEFORE TAKEOFF C/L down to the line..........COMPLETE	BEFORE TAKEOFF C/L down to the line..........COMPLETE

BEFORE TAKEOFF

Ident.: PRO-NOR-TSK-00006788.0001001 / 29 NOV 18
Applicable to: ALL

PF	PM
	•If the brake fans are set to ON and the temperature of all brakes is below 150 °C: BRAKE FAN pb..OFF
	LINE-UP CLEARANCE..OBTAIN
EFIS CP..SET	EFIS CP..SET
EXTERIOR LIGHTS..SET	TA pb..TA ONLY or TA/RA
APPROACH PATH........................CLEARED OF TRAFFIC	APPROACH PATH........................CLEARED OF TRAFFIC
TAKEOFF RUNWAY..CONFIRM	TAKEOFF RUNWAY..CONFIRM
	CABIN CREW..ADVISE
SLIDING TABLE..STOW	SLIDING TABLE..STOW
	PACK 1 + 2..AS RQRD
BEFORE TAKEOFF C/L below the line.............COMPLETE	BEFORE TAKEOFF C/L below the line.............COMPLETE

TAKEOFF

Ident.: PRO-NOR-TSK-00006789.0001001 / 25 APR 14
Applicable to: ALL

PF	PM
	TAKEOFF CLEARANCE..OBTAIN
EXTERIOR LIGHTS..SET	
TAKEOFF..ANNOUNCE	
THR..25 %	
BRAKES..RELEASE	

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PF	PM
THRUST LEVERS.. FLX or TOGA	CHRONO... START
The Captain places hand on thrust levers until V1	
DIRECTIONAL CONTROL............................USE RUDDER	
	PFD/ND... MONITOR
•Below 80 kt:	
	TAKEOFF THRUST..CHECK THRUST SET .... ANNOUNCE PFD and ENG indications.................................. MONITOR
•At 100 kt:	
100 kt... CROSSCHECK	ONE HUNDRED KNOTS.................................ANNOUNCE
•At V1:	
	V1... MONITOR or ANNOUNCE
•At VR:	
ROTATION... PERFORM	ROTATION.. ORDER
•When positive climb:	
	POSITIVE CLIMB... ANNOUNCE
L/G UP..ORDER	L/G lever...SELECT UP
AP... AS RQRD	
•At the thrust reduction altitude:	
THRUST LEVERS...CL	PACKS 1 and 2 (if applicable)..ON
•At F speed:	
FLAPS 1...ORDER	FLAPS 1.. SELECT
•At S speed:	
FLAPS ZERO...ORDER	FLAPS ZERO.. SELECT GND SPLRS..DISARM EXTERIOR LIGHTS..SET

AFTER TAKEOFF

Ident.: PRO-NOR-TSK-00006790.0001001 / 25 APR 14
Applicable to: ALL

PF	PM
	•If the APU was used to supply the air conditioning during takeoff: APU BLEED pb-sw.. OFF APU MASTER SW pb-sw... OFF
	•If the takeoff was performed with TA ONLY: TA pb... TA/RA
	ANTI ICE pb-sw...AS RQRD
AFTER TAKEOFF/CLIMB C/L down to the line..COMPLETE	AFTER TAKEOFF/CLIMB C/L down to the line..COMPLETE

CLIMB

Ident.: PRO-NOR-TSK-00006791.0001001 / 25 APR 14
Applicable to: ALL

PF	PM
•At transition altitude:	
BAROMETRIC REFERENCE.......SET STD/CROSSCHECK	BAROMETRIC REFERENCE.......SET STD/CROSSCHECK
AFTER TAKEOFF/CLIMB C/L below the line.....COMPLETE	AFTER TAKEOFF/CLIMB C/L below the line.....COMPLETE
	ANTI ICE pb-sw..AS RQRD
•At 10 000 ft:	
	LDG lights sw...OFF
	SEAT BELTS sw... AS RQRD
EFIS OPTIONS..AS RQRD	EFIS OPTIONS...AS RQRD
	ECAM MEMO...REVIEW
	NAVAIDS...CLEAR
	OPT FL/REC MAX FL.. CHECK

CRUISE

Ident.: PRO-NOR-TSK-00006792.0001001 / 25 APR 14
Applicable to: ALL

PF	PM
ALT CRZ on FMA................................CHECK/ANNOUNCE	
ECAM MEMO/SD PAGES..................................... REVIEW	
FLIGHT PROGRESS...CHECK	
FUEL...MONITOR	
STEP FLIGHT LEVEL............................AS APPROPRIATE	
•If NAV PRIMARY LOST: NAVIGATION ACCURACY.................................. MONITOR	

DESCENT PREPARATION

Ident.: PRO-NOR-TSK-00018759.0001001 / 08 JUL 19
Applicable to: ALL
Impacted by TDU: 00025497 Descent Preparation

PF	PM
	WEATHER AND LANDING INFORMATION............OBTAIN
NAV CHARTS CLIPBOARD.................................PREPARE	NAV CHARTS CLIPBOARD.................................PREPARE
BAROMETRIC REFERENCE.................................PRESET	BAROMETRIC REFERENCE.................................PRESET
	STATUS page/ STATUS MORE page.......................CHECK
SYNCHRO ECAM button..CLICK	SYNCHRO ECAM button..CLICK
LANDING CONDITIONS...CONFIRM	LANDING CONDITIONS...CONFIRM

Continued on the following page

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PF	PM
•If landing conditions changed:	
LANDING PERF DATA.......................................COMPUTE	LANDING PERF DATA.......................................COMPUTE
LANDING PERF DATA.................................CROSSCHECK	LANDING PERF DATA.................................CROSSCHECK
FMS...PREPARE	FMS ....CROSSCHECK
LDG ELEVN...CHECK	
RWY COND/BRAKING ACTION.............................SELECT	
•If required (e.g. due to a NOTAM):	
RUNWAY SHIFT...ENTER	
•If BTV is used:	
ND MODE selector...PLAN	
ND RANGE selector...ZOOM	
RUNWAY...CHECK	
RUNWAY EXIT...SELECT	
BTV..ARM	
RUNWAY LENGTH...CHECK	
•If BRK MED is used:	
BRK MED..ARM	
APPROACH BRIEFING...PERFORM	
	ANTI ICE pb-sw...AS RQRD
	DESCENT CLEARANCE......................................OBTAIN
CLEARED ALTITUDE ON AFS CP.................................SET	

DESCENT PREPARATION

2 Ident.: TDU / PRO-NOR-TSK-00025497.0001001 / 28 MAY 20
Applicable to: ALL
Impacted DU: 00018759 Descent Preparation

PF	PM
	WEATHER AND LANDING INFORMATION.............OBTAIN
NAV CHARTS CLIPBOARD................................PREPARE	NAV CHARTS CLIPBOARD.................................PREPARE
BAROMETRIC REFERENCE................................PRESET	BAROMETRIC REFERENCE................................ PRESET
	STATUS page/ STATUS MORE page.......................CHECK
SYNCHRO ECAM button...CLICK	SYNCHRO ECAM button...CLICK
LANDING CONDITIONS....................................CONFIRM	LANDING CONDITIONS.......................................CONFIRM
•If landing conditions changed:	
LANDING PERF DATA.......................................COMPUTE	LANDING PERF DATA.......................................COMPUTE
LANDING PERF DATA.................................CROSSCHECK	LANDING PERF DATA.................................CROSSCHECK
FMS...PREPARE	FMS ....CROSSCHECK
LDG ELEVN...CHECK	
RWY COND/BRAKING ACTION.............................SELECT	

CM1	CM2
•If required (e.g. due to a NOTAM):	
	RUNWAY SHIFT.......................ENTER
•If BTV is used and a runway shift is entered:	
	ND MODE selector.......................PLAN ND RANGE selector.......................ZOOM RUNWAY.......................CHECK RUNWAY EXIT.......................SELECT BTV.......................ARM RUNWAY LENGTH.......................CHECK
PF	**PM**
•If BTV is used and a runway shift is not entered:	
ND MODE selector.......................PLAN ND RANGE selector.......................ZOOM RUNWAY.......................CHECK RUNWAY EXIT.......................SELECT BTV.......................ARM RUNWAY LENGTH.......................CHECK	
•If BRK MED is used:	
BRK MED.......................ARM	
APPROACH BRIEFING.......................PERFORM	
	ANTI ICE pb-sw.......................AS RQRD
	DESCENT CLEARANCE.......................OBTAIN
CLEARED ALTITUDE ON AFS CP.......................SET	

DESCENT

Ident.: PRO-NOR-TSK-00006794.0001001 / 25 APR 14
Applicable to: ALL

PF	PM
DESCENT.......................INITIATE	
DESCENT.......................MONITOR/ADJUST	
EFIS OPTIONS.......................AS RQRD	EFIS OPTIONS.......................AS RQRD
•When the aircraft approaches the transition level, and when cleared for an altitude:	
BAROMETRIC REFERENCE...............SET/CROSSCHECK	BAROMETRIC REFERENCE...............SET/CROSSCHECK
AT 10 000 FT:	
	LDG lights sw.......................ON
	SEAT BELTS sw.......................ON
CSTR pb on EFIS CP.......................ON	CSTR pb on EFIS CP.......................ON
LS pb.......................AS RQRD	LS pb.......................AS RQRD
NAVAIDS.......................AS RQRD/CHECK	

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PF	PM
•If NAV PRIMARY LOST: NAVIGATION ACCURACY.................................. MONITOR	
APPROACH C/L...COMPLETE	APPROACH C/L...COMPLETE

APPROACH

Applicable to: ALL

Ident.: PRO-NOR-TSK-D-00020428.0001001 / 29 NOV 18

AIRCRAFT CONFIGURATION FOR APPROACH

PF	PM
INITIAL APPROACH:	
F-PLN SEQUENCING.. ADJUST	
APPROACH PHASE............................CHECK/ACTIVATE[(1)]	
MANAGED SPEED...CHECK	
FLIGHT PATH.. MONITOR	NAV ACCURACY..MONITOR
SPEED BRAKES lever.. AS RQRD	
INTERMEDIATE/FINAL APPROACH:	
•At Green Dot Speed:	
FLAPS 1... ORDER	FLAPS 1...SELECT
	TA pb .... TA ONLY or TA/RA
•At 2 500 ft AGL:	
FLAPS 2... ORDER	FLAPS 2...SELECT
•When Flaps 2:	
L/G DOWN... ORDER	L/G lever ....SELECT DOWN
	RWY COND/BRAKING ACTION..........................CONFIRM
	AUTO BRAKE.. CONFIRM
	GND SPLRS... ARM
	EXTERIOR LIGHTS...SET
•When L/G down:	
FLAPS 3... ORDER	FLAPS 3...SELECT
	L/G DOWNLOCK INDICATION ON PFD................. CHECK
•When FLAPS 3:	
FLAPS FULL...ORDER	FLAPS FULL...SELECT
	A/THR......................... CHECK IN SPEED MODE OR OFF
SLIDING TABLE...STOW	SLIDING TABLE...STOW
	LDG MEMO...CHECK NO BLUE
CABIN REPORT...RECEIVE	CABIN REPORT.. RECEIVE
	CABIN CREW...ADVISE

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AIRCRAFT CONFIGURATION FOR APPROACH	
PF	**PM**
LANDING C/L.......COMPLETE	LANDING C/L.......COMPLETE
	FLIGHT PARAMETERS.......MONITOR

(1) *PF if AP is ON, PM if AP is OFF. The PF may request that this action is performed by the PM depending on the situation.*

Ident.: PRO-NOR-TSK-D-00018132.0001001 / 14 APR 16

APPROACH USING XLS GUIDANCE	
PF	**PM**
DESCENT PREPARATION:	
•For FLS: FMS ACTIVE F-PLN page.......CHECK FLS DATA.......CHECK	WEATHER AND LANDING INFORMATION.......OBTAIN FMS ACTIVE F-PLN page.......CHECK FLS DATA.......CHECK
•For CAT II / III: FLIGHT CREW QUALIFICATION AND CURRENCYCHECK AIRCRAFT TECHNICAL STATUS.......CHECK AIRPORT STATUS.......CHECK APPROACH BRIEFING.......PERFORM	FLIGHT CREW QUALIFICATION AND CURRENCY.CHECK
•For ILS G/S OUT: G/S.......DESELECT	
FMS POSITION/MONITOR page.......COMPLETE	FMS POSITION/MONITOR page.......COMPLETE
GO-AROUND STRATEGY.......REVIEW	
DESCENT:	
•For FLS: FLS CAPABILITY.......CHECK BAROMETRIC REFERENCE.......SET/CROSSCHECK	BAROMETRIC REFERENCE.......SET/CROSSCHECK
INITIAL/INTERMEDIATE / FINAL APPROACH:	
APPR pb on AFS CP.......PRESS	
F-LOC(LOC)(LOC B/C).......CHECK ARMED	
F-G/S(G/S).......CHECK ARMED	
•For ILS: AP 1+2.......ON	
	•For approaches with autoland: APPROACH AND LANDING CAPABILITY.......CHECK
F-LOC(LOC)(LOC B/C) CAPTURE.......MONITOR	
F-G/S(G/S) CAPTURE.......MONITOR	
GO-AROUND ALTITUDE.......SET(1)	
FINAL APPROACH:	

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APPROACH USING XLS GUIDANCE

PF	PM
	FLIGHT PARAMETERS..MONITOR
•At minimum + 100 ft:	ONE HUNDRED ABOVE........... MONITOR OR ANNOUNCE
•At minimum: CONTINUE or GO AROUND.............................ANNOUNCE	MINIMUM.................................... MONITOR or ANNOUNCE

(1) *PF if AP is ON, PM if AP is OFF. The PF may request that this action is performed by the PM depending on the situation.*

Ident.: PRO-NOR-TSK-D-00018198.0001001 / 04 MAY 16

APPROACH USING APP-DES GUIDANCE FOR RNP AR

PF	PM
DESCENT PREPARATION:	
	WEATHER AND LANDING INFORMATION.............OBTAIN
F-PLN Page..CHECK	F-PLN Page... CHECK
GO-AROUND STRATEGY.................................... REVIEW	
DESCENT:	
RNP AR CAPABILITY...CHECK	
TERR ON ND.. DISPLAY	TERR ON ND..DISPLAY
BAROMETRIC REFERENCE...............SET/CROSSCHECK	BAROMETRIC REFERENCE.............. SET/CROSSCHECK
INITIAL / INTERMEDIATE / FINAL APPROACH:	
FD or AP/FD...................................USE FOR APPROACH	
APPR pb on AFS CP...PRESS	
NAV and APP-DES............................... CHECK ENGAGED	
GO-AROUND ALTITUDE...SET	
FLIGHT PARAMETERS.......................................MONITOR	FLIGHT PARAMETERS...................................... MONITOR
•At minimum + 100 ft:	
	ONE HUNDRED ABOVE...........MONITOR OR ANNOUNCE
•At minimum:	
CONTINUE or GO-AROUND........................... ANNOUNCE	MINIMUM..................................MONITOR or ANNOUNCE

Ident.: PRO-NOR-TSK-D-00019058.0001001 / 05 NOV 18

APPROACH USING FPA GUIDANCE

PF	PM
DESCENT PREPARATION:	
FMS ACTIVE F-PLN page..CHECK	
FMS POSITION/MONITOR page........................COMPLETE	
GO-AROUND STRATEGY.......................................REVIEW	

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APPROACH USING FPA GUIDANCE

PF	PM
DESCENT:	
•At 10 000 ft: NAV ACCURACY........ CHECK	
•For RNAV(GNSS): NAV PRIMARY........ CHECK	
INITIAL/INTERMEDIATE/FINAL APPROACH:	
LATERAL GUIDANCE MODE........ SET FOR APPROACH	
•For LOC, ILS G/S OUT and LOC B/C approaches: LOC pb........ PRESS LOC(LOC B/C)........ CHECK ARMED	
LATERAL PATH........ INTERCEPT	
TRK-FPA pb........ SELECT	
FPA FOR FINAL APPROACH........ SET	
•At 0.3 NM from the Final Descent Point:	
FPA knob........ PULL	
FPA MODE........ CHECK ENGAGED	
POSITION/FLIGHT PATH........ MONITOR / ADJUST	
GO-AROUND ALTITUDE........ SET(1)	
	FLIGHT PARAMETERS........ MONITOR
•At minimum +100 ft:	
	ONE HUNDRED ABOVE........ MONITOR or ANNOUNCE
•At minimum:	
CONTINUE or GO-AROUND........ ANNOUNCE	MINIMUM........ MONITOR or ANNOUNCE

(1) *PF if AP is ON, PM if AP is OFF. The PF may request that this action is performed by the PM depending on the situation.*

MANUAL LANDING

Ident.: PRO-NOR-TSK-00006797.0001001 / 18 JUN 14
Applicable to: ALL

PF	PM
AP........ OFF	
•Around 40 ft RA: FLARE........ PERFORM THRUST LEVERS........ IDLE	ATTITUDE........ MONITOR
•At touchdown: DEROTATION........ INITATE ALL REVERSER LEVERS........ REV MAX or REV IDLE	

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PF	PM
DIRECTIONAL CONTROL....................................ENSURE	
	GND SPLRS.......................................CHECK/ANNOUNCE
	REVERSERS.......................................CHECK/ANNOUNCE
•If autobrake is selected:	
	AUTO BRK.. CHECK/ANNOUNCE
•If the runway condition is worse than selected during descent preparation:	
PEDAL BRAKING...................APPLY IMMEDIATELY	
•If landing without autobrake:	
BRAKES.. AS RQRD	
	DECELERATION.................................CHECK/ANNOUNCE
•At 70 kt:	
	SEVENTY KNOTS.. ANNOUNCE
ALL REVERSER LEVERS...IDLE	
•At taxi speed:	
ALL REVERSER LEVERS..STOW	
AUTO BRK..DISARM	

AUTOMATIC LANDING

Ident.: PRO-NOR-TSK-00006798.0001001 / 18 JUN 15
Applicable to: ALL

PF	PM
•At 350 ft RA:	
LAND ON FMA...................................CHECK/ANNOUNCE	
ILS(GLS ◁) COURSE.. CHECK	
•At 200 ft RA, for ILS CAT III approach without DH:	
•If the flight crew did not detect any failure:	
CONTINUE...ANNOUNCE	
•Between 50 ft and 40 ft RA:	
	FLARE ON FMA.................................CHECK/ANNOUNCE
FLARE... MONITOR	
•At approximately 30 ft RA:	
	THR IDLE ON FMA..CHECK
•At 10 ft RA: "Retard"	
THRUST LEVERS..IDLE	
LATERAL GUIDANCE...MONITOR	
•At touchdown:	
	ROLL OUT ON FMA........................... CHECK/ANNOUNCE
•If AUTO ROLL OUT:	
AP...................KEEP ON, UNTIL END OF ROLL OUT	
ALL REVERSER LEVERS............... REV MAX or REV IDLE	

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PF	PM
DIRECTIONAL CONTROL.................................MONITOR	
	GND SPLRS..CHECK/ANNOUNCE
	REVERSERS..................................... CHECK/ANNOUNCE
•If autobrake is selected:	
	AUTO BRK...CHECK/ANNOUNCE
•If the runway condition is worse than selected during descent preparation:	
PEDAL BRAKING....................APPLY IMMEDIATELY	
•If landing without autobrake:	
BRAKES.. AS RQRD	
	DECELERATION.................................CHECK/ANNOUNCE
•At 70 kt:	
	SEVENTY KNOTS...ANNOUNCE
ALL REVERSER LEVERS..IDLE	
•At taxi speed:	
ALL REVERSER LEVERS.. STOW	
AUTO BRK.. DISARM	
•If AUTO ROLL OUT:	
When vacating the runway:	
AP..OFF	

GO AROUND

Ident.: PRO-NOR-TSK-00006799.0001001 / 25 APR 14
Applicable to: ALL

PF	PM
•Simultaneously apply the following three actions:	
THRUST LEVERS...........................TOGA THEN FLX/MCT	
ROTATION..PERFORM	FLIGHT PARAMETERS....................................... MONITOR
GO-AROUND.. ANNOUNCE	FLAPS.. RETRACT ONE STEP
FMA..CHECK/ANNOUNCE	
	POSITIVE CLIMB..ANNOUNCE
L/G UP.. ORDER	L/G... UP
NAV or HDG.. AS RQRD	
•At go-around thrust reduction altitude:	
THRUST LEVERS...CL	
•At go-around acceleration altitude:	
SPEED TARGET... MONITOR	
FLAPS.................. ORDER RETRACTION ON SCHEDULE	FLAPS...RETRACT
	GND SPLRS... DISARM
	EXTERIOR LIGHTS...SET
AFTER TAKEOFF/CLIMB C/L down to the line. COMPLETE	AFTER TAKEOFF/CLIMB C/L down to the line.. COMPLETE

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PF	PM
Fly the published missed approach procedure, or prepare for a second approach, or divert as required.	
•If necessary, at transition altitude:	
BAROMETRIC REFERENCE...... SET STD/CROSSCHECK	BAROMETRIC REFERENCE....... SET STD/CROSSCHECK
AFTER TAKEOFF/CLIMB C/L below the line.... COMPLETE	AFTER TAKEOFF/CLIMB C/L below the line..... COMPLETE

AFTER LANDING

Ident.: PRO-NOR-TSK-00006800.0001001 / 08 NOV 18
Applicable to: ALL

PF	PM
GND SPLRS..DISARM	FLAPS.. RETRACT
EXTERIOR LIGHTS... SET	APU...START
	ANTI ICE...AS RQRD
ND RANGE selector...................ZOOM, AS APPROPRIATE	ND RANGE selector..................ZOOM, AS APPROPRIATE
TAXI pb ✳ on EFIS CP.................................. AS RQRD	TAXI pb ✳ on EFIS CP.................................. AS RQRD
WX pb..CHECK OFF	WX pb...CHECK OFF
	BRAKE TEMPERATURE.................................... MONITOR
	BRAKE FAN pb ✳ .... AS RQRD
AFTER LANDING C/L...................................... COMPLETE	AFTER LANDING C/L...................................... COMPLETE

PARKING

Ident.: PRO-NOR-TSK-00006801.0001001 / 29 NOV 18
Applicable to: ALL

PF	PM
ACCU PRESS.. CHECK	ANTI ICE..OFF
PARK BRK handle..ON	APU BLEED pb...ON
PARK BRK indication.......................... CHECK DISPLAYED	
ENG 1, 2 MASTER LEVERS...OFF	
SLIDES..CHECK DISARMED	
SEAT BELTS sw...OFF	
BEACON sw...OFF	
OTHER EXTERIOR LIGHTS................................AS RQRD	FUEL PUMPS.. OFF
HUD ✳ ....STOW	HUD ✳ ....STOW
	XPDR.. STBY
	IRS PERFORMANCE..CHECK
GROUND CONTACT....................................... ESTABLISH	FUEL QUANTITY...CHECK
PARK BRK handle..AS RQRD	BRAKE FAN pb ✳ .... AS RQRD
PARKING C/L...COMPLETE	PARKING C/L..COMPLETE

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PF	PM
LOGBOOK.................... COMPLETE (CM1)	
CLOSE FLIGHT button....................CLICK	CLOSE FLIGHT button....................CLICK

SECURING THE AIRCRAFT

Ident.: PRO-NOR-TSK-00006803.0001001 / 03 JUL 20
Applicable to: ALL

3

CM1	CM2
PARK BRK handle....................ON	OXYGEN CREW SUPPLY pb-sw....................OFF
PARK BRK indication.................... CHECK DISPLAYED	EXTERIOR LIGHTS....................OFF
All IR MODE selectors.................... OFF	GND SVCE CTL sw.................... AS RQRD
	APU BLEED pb-sw....................OFF
	EXT pb.................... AS RQRD
	APU MASTER SW pb-sw....................OFF
	EMER EXIT LT sw.................... OFF
	SIGNS sw.................... OFF
ALL EFB LAPTOPS....................SWITCH OFF	
SECURING THE AIRCRAFT C/L....................COMPLETE	SECURING THE AIRCRAFT C/L....................COMPLETE
	ALL BAT pb-sw (BAT 2, BAT EMER 2, BAT EMER 1, BAT 1) ....OFF

[SUP] SUPPLEMENTARY PROCEDURES

Applicable to: ALL

Ident.: PRO-NOR-SUP-SUP-SUP-SUP-00-00021060.0001001 / 03 DEC 15

ADVERSE WEATHER

[SUP] AIRFRAME DEICING/ANTI-ICING PROCEDURE ON GROUND (*Refer to procedure*)
[SUP] COLD WEATHER PROCEDURES ON GROUND (*Refer to procedure*)
[SUP] OPERATIONS ON AIRPORTS COVERED WITH ASH, SAND or DUST (*Refer to procedure*)
[SUP] ENGINE DEICING ON GROUND IN FZFG (*Refer to procedure*)
[SUP] FLIGHT IN ICING CONDITIONS (*Refer to procedure*)
[SUP] SECURING THE AIRCRAFT FOR COLD SOAK (*Refer to procedure*)

Ident.: PRO-NOR-SUP-SUP-SUP-SUP-00-00021059.0001001 / 27 SEP 18

ENGINE

[SUP] CROSSBLEED ENGINE START (*Refer to procedure*)
[SUP] ENGINE START ON BATTERIES (*Refer to procedure*)
[SUP] ENGINE START WITH EXTERNAL ELECTRICAL POWER (*Refer to procedure*)
[SUP] ENGINE START WITH AIR START UNIT(*Refer to procedure*)
[SUP] MANUAL ENGINE START (*Refer to procedure*)
[SUP] ENGINE START VALVE MANUAL OPERATION (*Refer to procedure*)
[SUP] ENGINE VENTILATION (DRY CRANKING)(*Refer to procedure*)
[SUP] ONE ENGINE TAXI (*Refer to procedure*)

Ident.: PRO-NOR-SUP-SUP-SUP-SUP-00-00021058.0001001 / 03 DEC 15

FUEL

[SUP] SAFETY PRECAUTIONS FOR GROUND FUEL OPERATIONS (*Refer to procedure*)
[SUP] AUTOMATIC REFUELING (*Refer to procedure*)
[SUP] GROUND FUEL TRANSFER (*Refer to procedure*)

Ident.: PRO-NOR-SUP-SUP-SUP-SUP-00-00021377.0001001 / 05 JUN 18

LANDING GEAR

[SUP] FLIGHT WITH GEAR DOWN (*Refer to procedure*)

Ident.: PRO-NOR-SUP-SUP-SUP-SUP-00-00021057.0001001 / 03 DEC 15

MISCELLANEOUS

[SUP] FLIGHT WITHOUT CABIN PRESSURIZATION (*Refer to procedure*)
[SUP] OPERATIONS AT QNH ABOVE 1050 HPA (31.00 INHG) (*Refer to procedure*)
[SUP] HIGH ALTITUDE AIRPORT OPERATIONS - HI ALT ARPT (*Refer to procedure*)

AIRFRAME DEICING/ANTI-ICING PROCEDURE ON GROUND

Ident.: PRO-NOR-SUP-SUP-ADVWXR-00019560.0001001 / 03 JUL 20
Applicable to: ALL

L2 This procedure is applicable at the gate or at the deicing bay. Specific actions linked to the engine status (running or not) are mentioned when required.

1 L1

CAUTION	If possible, avoid APU operation during aircraft deicing/anti-icing. APU operation during aircraft deicing/anti-icing may result in deicing/anti-icing fluid ingestion and cause damage to the APU.

- **BEFORE FLUID SPRAYING:**

DOORS....................CHECK CLOSED
COM WITH GND PERSONNEL....................ESTABLISH
PARK BRK....................ON
ENG BLEED 1+2....................OFF
APU BLEED....................OFF
DITCHING pb ....ON

L3 *Setting the DITCHING pb-sw to ON closes the following:*
- *The outflow valves*
- *The avionics overboard valve*
- *Both pack valves*
- *All the cargo isolation valves*
- *The pack ram air inlets and outlets*
- *The emergency RAM air inlet.*

L2 *This prevents the deicing fluid from entering the aircraft.*
The avionics ventilation remains available, when the avionics ventilation blowing fans are operative.

L1 REC MAX TIME WITHOUT AIR COND: 30 MIN

L2 *On ground, with passengers on board, it is recommended not to exceed 30 min without air conditioning, because comfort may be affected.*

L1
- **When the aircraft is ready for spraying:**

FLUID SPRAYING....................REQUEST

- **AFTER FLUID SPRAYING:**

DITCHING pb ....OFF
OUTFLOW VALVES....................CHECK OPEN

L2 *To avoid any unexpected pressurization, check on the CAB PRESS SD page that both outflow valves are open.*

L1 ● **At least 1 min after fluid spraying:**

ENG BLEED 1+2..ON

● **At least 5 min after fluid spraying:**

APU BLEED..AS RQRD

L2 *Note: There is a risk of fluid ingestion by the APU air intake resulting in odors or smoke alerts. Therefore, the flight crew should consider a takeoff with APU bleed off.*

L1 PROBE & WINDOW HEAT pb ....AUTO
PITOTS AND STATICS (GROUND CREW)..CHECK
GROUND EQUIPMENT..CHECK REMOVED

L2 *After deicing is completed, request the ground personnel to confirm that the aircraft is clear from any ground equipment.*

L1 DEICING/ANTI-ICING REPORT..RECEIVED

L2 *The information from the ground personnel who performed the deicing/anti-icing, and the post-application check must include:*
- *The type of fluid used*
- *The ratio of fluid to water (e.g. 75/25)*
- *The time of the holdover beginning*
- *The result of the post-application check: “Aircraft critical parts are clean”.*

L1 ● **IF ENGINES NOT RUNNING:**

SOP — BEFORE START..RESUME

L2 *For a detailed description of the Before Start SOP, Refer to procedure.*

L1 ● **IF ENGINES RUNNING:**

GND SPLRS..ARM
RUDDER TRIM..NEUTRAL
FLAPS..SET

L2 *If taxiing in icing conditions with rain, slush, or snow, maintain the slats/flaps retracted until the aircraft reaches the holding point of the takeoff runway, in order to prevent contamination of the slats/flaps mechanism. Delay flight controls check accordingly. The flight crew should perform the flight controls check in the flaps configuration for takeoff.*

L1 FLIGHT CONTROLS..CHECK

L2 *In freezing precipitation, perform the appropriate checks to evaluate aircraft icing. The decision on whether to take off, or to deice again the aircraft, depends on the amount of ice that has built up on the critical surfaces since the last deicing. Make an inspection from the inside and outside the aircraft before the holdover time expires, or just before takeoff.*

L1 AFTER START CHECKLIST.. COMPLETE

L2 *If taxiing in icing conditions with rain, slush, or snow, delay BEFORE TAKEOFF C/L until the aircraft reaches the holding point of the takeoff runway.*

L1 SOP — TAXI... RESUME

L2 *For a detailed description of the Taxi SOP, Refer to procedure.*

COLD WEATHER PROCEDURES

Applicable to: ALL

Ident.: PRO-NOR-SUP-SUP-ADVWXR-A-00019462.0001001 / 03 SEP 14

DURING SAFETY EXTERIOR INSPECTION

WINDSHIELD/UPPER COCKPIT FUSELAGE................	CLEAR OF ICE AND SNOW	CM2
APU AIR INTAKE..	CLEAR OF ICE AND SNOW	CM2
PACK RAM AIR INLET AND PACK RAM AIR OUTLETS..	CLEAR OF ICE AND SNOW	CM2
OUTFLOW VALVES..	CLEAR OF ICE AND SNOW	CM2

Ident.: PRO-NOR-SUP-SUP-ADVWXR-A-00019492.0001001 / 03 SEP 14

DURING PRELIMINARY COCKPIT PREPARATION

CAUTION	With ice or snow accumulated on the windshield/upper cockpit fuselage, and if the PROBE/WINDOW HEAT is turned on, melted snow running down from the cockpit windows could re-freeze on the fuselage area below, when the temperature is very low. This could create ice build up on the forward fuselage that could possibly disturb the airflow around the static/MFP probes.

PROBE & WINDOW HEAT pb-sw..ON | CM2

L2 *When no engine is started, window heating operates when the PROBE/WINDOW HEAT pb-sw is set to ON.*

Ident.: PRO-NOR-SUP-SUP-ADVWXR-A-00019524.0001001 / 06 JUN 18

DURING EXTERNAL WALKAROUND

SURFACES..CLEAR OF FROST, ICE AND SNOW | PM

L2 *Critical surfaces must be cleared of frost, ice, and snow:*
- *Leading edges and upper surfaces of the wings*
- *Vertical and horizontal stabilizers*
- *All control surfaces*
- *Slats and flaps*
- *Lower part of the nose fuselage.*

L1 MAX 3 MM OF FROST ON LOWER SIDE OF WING TANK AREA

L2 *Thin hoarfrost is acceptable on the upper surface of the fuselage. On the lower side of the wing tank area, a layer of frost thinner than 3 mm does not penalize aircraft performance during takeoff.*

L3 *Note:* *Thin hoarfrost is a white crystalline deposit that develops uniformly on the exposed aircraft surfaces during cold and cloudless nights. Below the hoarfrost layer, it is possible to distinguish the surface features (e.g. lines or markings).*

L1 EQUIPMENT..CLEAR OF FROST, ICE AND SNOW | PM

L2 *Critical equipment must be cleared of frost, ice, and snow:*
- *Landing gear equipment: Lever locks, tires, and landing gear doors*
- *Engine inlets, inlet lips, fans (check that the fans can rotate), spinners, fan exhaust ducts, reverser equipment*
- *Drains, bleeds, probes, (pitots, static ports, TAT sensors, angle-of-attack sensors)*
- *Fuel tank ventilation*
- *Radome*
- *Air/hydraulic heat exchanger inlet*
- *Commercial water supply must not be frozen, and must have been refilled.*

L1 ● **IF DEICING/ANTI-ICING REQUIRED AND PERFORMED AT THE GATE:**

SOP — COCKPIT PREPARATION...PERFORM

L2 *For a detailed description of the Cockpit Preparation SOP, Refer to procedure.*

L1 AIRFRAME DEICING/ANTI-ICING PROCEDURE ON GROUND.... *REFER TO PROC APPLY*

SOP — BEFORE START..RESUME

L2 *For a detailed description of the Before Start SOP, Refer to procedure.*

Ident.: PRO-NOR-SUP-SUP-ADVWXR-A-00019774.0001001 / 03 DEC 15

AFTER START

PROBE & WINDOW HEAT pb-sw ....AUTO | PF

L2 *When at least one engine is started, window heating operates under automatic control.*

L1 ● **IF TAXI TO A DEICING BAY REQUIRED:**

GND SPLRS: DO NOT ARM UNTIL ACFT DEICED

L2 *The ground spoilers can only be armed, when the aircraft is thoroughly deiced.*

L1 RUDDER TRIM: DO NOT MOVE UNTIL ACFT DEICED

L2 *The flight controls can only be moved, when the aircraft is thoroughly deiced.*

L1 FLAPS LEVER: DO NOT MOVE UNTIL ACFT DEICED

L2 *The flight controls can only be moved, when the aircraft is thoroughly deiced.*

L1 FLIGHT CONTROL SURFACES: DO NOT MOVE UNTIL ACFT DEICED

L2 *The flight crew must not perform the flight controls check until the aircraft is thoroughly deiced.*

L1 AFTER START C/L: DELAY UNTIL ACFT DEICED

L2 *Delay the AFTER START checklist until the aircraft is thoroughly deiced.*

L1
- **AT THE DEICING BAY:**

AIRFRAME DEICING/ANTI-ICING PROCEDURE ON GROUND.... *REFER TO PROC APPLY*
NORMAL SOP.. RESUME

OPERATIONS IN ASH, SAND OR DUST

Applicable to: ALL

Ident.: PRO-NOR-SUP-SUP-ADVWXR-B-00021704.0001001 / 09 MAR 16

L2 In the case of volcanic ash encountered in flight,*Refer to procedure*.

Ident.: PRO-NOR-SUP-SUP-ADVWXR-B-00006953.0001001 / 15 APR 19

DURING PRELIMINARY COCKPIT PREPARATION

APU : AVOID USE

L2 Request ground power for air conditioning and electricity. If ground power is not available, the APU should be used only to start the engines.

L1 WINDSHIELD WIPERS : AVOID USE

L2 Avoid the use of windshield wipers to remove volcanic ash or any particles.

L1 COOLG.. AS RQRD

L2 *Consider to set the supplemental cooling system to OFF, in order to avoid contamination of the heat exchangers.*

L1
- **For takeoff performance:**

BRAKING PERFORMANCE MAY BE DEGRADED

L2 A layer of volcanic ash, sand or dust on the runway may degrade the braking efficiency.

L1 PACK 1+2.. AS RQRD

L2 *Consider to set the packs to OFF in order to avoid contamination of the air conditioning system.*

L1 REC MAX TIME WITHOUT AIR COND: 30 MIN

L2 *On ground, with passengers on board, it is recommended not to exceed 30 min without air conditioning, because comfort may be affected.*

Ident.: PRO-NOR-SUP-SUP-ADVWXR-B-00006954.0001001 / 07 MAY 18

DURING EXTERIOR WALKAROUND

SURFACES AND EQUIPMENT..CHECK FREE OF DEPOSITS

L2 *The ground crew must remove volcanic ash, sand or dust from lubricated surfaces, windshield, and must remove all deposits that could:*

- *Penetrate seals*
- *Enter the engine gas path, air conditioning system, air data probes, access doors and panels, and other openings on the aircraft.*

L1 ENGINE/APU INLETS.. CHECK FREE OF DEPOSITS

L2 *Inspect the inlets, and make sure that the ground crew removes all deposits. The ground crew should also remove the deposits from the area that is within 25 ft (8 m) of the engine inlets.*

Ident.: PRO-NOR-SUP-SUP-ADVWXR-B-00006956.0001001 / 02 MAR 18

ENGINE START

ALL ENGINES..CRANK

L2 *Before engine start, ventilate all engines for 2 min by dry-cranking at the maximum motoring speed to remove any deposit from the booster area.*

L1 ■ **If air start unit is available:**

ENGINE START WITH AN AIR START UNIT................................. *REFER TO PROC APPLY*

■ **If air start unit is not available:**

SOP - ENGINE START...PERFORM

L2 For a detailed description of the Engine Start SOP, *Refer to procedure*.

Ident.: PRO-NOR-SUP-SUP-ADVWXR-B-00006957.0001001 / 29 NOV 18

TAXI

ONE ENGINE TAXI: DO NOT PERFORM

L2 Taxi with both engines running. Minimize thrust during taxi.

L1 ENG 1 BLEED...OFF
ENG 2 BLEED...OFF

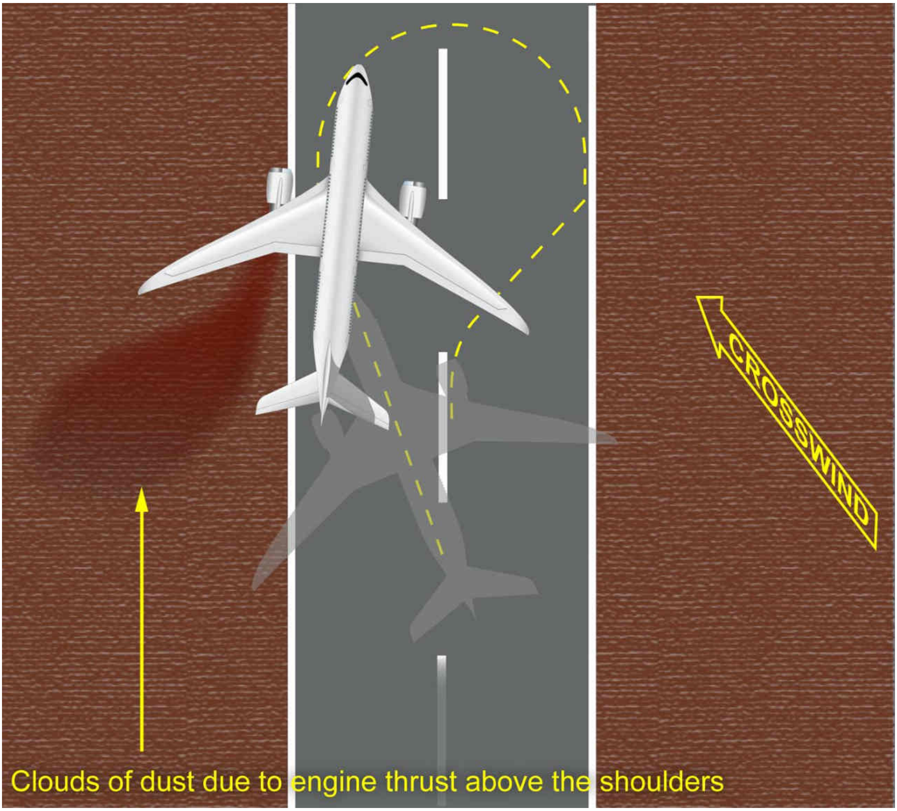
L2 *Keep the engine bleed valves closed during taxi, particularly in volcanic ash conditions.*

L1 TAXI WITH CARE
FOR 180° TURN ON RWY : INITIATE THE TURN DOWNWIND

L2 In order to prevent ash, sand or dust ingestion.

L1

180 Degrees Turn


CROSSWIND
Clouds of dust due to engine thrust above the shoulders

Ident.: PRO-NOR-SUP-SUP-ADVWXR-B-00006958.0001001 / 09 MAR 16

TAKEOFF

ROLLING TAKEOFF.....CONSIDER

Ident.: PRO-NOR-SUP-SUP-ADVWXR-B-00021826.0001001 / 09 MAR 16

AFTER TAKEOFF

ENG 1 BLEED.....ON
ENG 2 BLEED.....ON
COOLG.....AUTO
MINIMIZE TIME IN SAND OR DUST CLOUD

L2 If possible, adapt trajectory (route and altitude) to quickly exit from the cloud. In particular, altitude constraints may be disregarded in coordination with ATC.

Ident.: PRO-NOR-SUP-SUP-ADVWXR-B-00023279.0001001 / 09 MAR 16

IN FLIGHT

AVOID ASH, SAND OR DUST CLOUD

- **If sand or dust cloud encounter:**

  MINIMIZE TIME IN SAND OR DUST CLOUD

  L2 If possible, adapt trajectory (route and altitude) to quickly exit from the cloud. In particular, altitude constraints may be disregarded in coordination with ATC.

L1
- **If volcanic ash encounter:**

  VOLCANIC ASH ENCOUNTER.. *REFER TO PROC APPLY*

Ident.: PRO-NOR-SUP-SUP-ADVWXR-B-00021230.0001001 / 09 MAR 16

DESCENT PREPARATION

SOP — DESCENT PREPARATION...PERFORM

AUTOLAND RECOMMENDED

L2 Deposits on the windshield and on the landing lights may significantly reduce the flight crew's visibility during approach and landing. Therefore, consider a diversion to an airport where an autoland is possible.

L1 BTV : DO NOT USE

BRK MED RECOMMENDED

- **For landing performance:**

  BRAKING PERFORMANCE MAY BE DEGRADED

  L2 A layer of volcanic ash, sand or dust on the runway may degrade the braking efficiency. Adjust the RWY COND / BRK ACTION knob-selector accordingly.

  L1 FOR LDG : CONSIDER IDLE REV

  L2 Consider a possible limited use of the thrust reversers at landing.

L1 SOP — DESCENT PREPARATION.. RESUME

Ident.: PRO-NOR-SUP-SUP-ADVWXR-B-00023281.0001001 / 09 MAR 16

DESCENT

AVOID LEVEL FLIGHT IN ASH, SAND OR DUST CLOUD

L2 If possible, perform holding patterns, and last level off before final descent, outside the cloud.

Ident.: PRO-NOR-SUP-SUP-ADVWXR-B-00006959.0001001 / 03 JUL 20

2 LANDING

- **Before landing:**
  ENG 1 BLEED.......... OFF
  ENG 2 BLEED.......... OFF

L2 *Keep the engine bleed valves closed. Packs will close automatically if APU Bleed is OFF.*

L1 COOLG.......... AS RQRD

L2 *Consider to set the supplemental cooling system to OFF in order to avoid contamination of the heat exchangers.*

L1 PACK 1+2.......... AS RQRD

L2 *Consider to set the packs to OFF in order to avoid contamination of air conditioning system.*

L1 REC MAX TIME IN FLT WITHOUT AIR COND: 10 MIN

L2 *In flight, with passengers on board, it is recommended not to exceed 10 min without air conditioning, because comfort may be affected.*

L1
  - **If a Go-Around is performed:**
    ENG 1 BLEED.......... ON
    ENG 2 BLEED.......... ON

- **During landing roll:**
  ALL REVERSER LEVERS.......... AS RQRD

L2 *If maximum reverse thrust is necessary, apply reverse thrust at Main Landing Gear (MLG) touchdown. Limit the use of thrust reversers as much as possible, because the reverse air flow can stir the volcanic ash, sand, or dust, and reduce visibility.*

L1 REC MAX TIME WITHOUT AIR COND: 30 MIN

L2 *On ground, with passengers on board, it is recommended not to exceed 30 min without air conditioning, because comfort may be affected.*

Ident.: PRO-NOR-SUP-SUP-ADVWXR-B-00021465.0001001 / 29 NOV 18

AFTER LANDING

APU : AVOID USE

L2 Request ground power for air conditioning and electricity.

L1 ONE ENGINE TAXI : DO NOT PERFORM

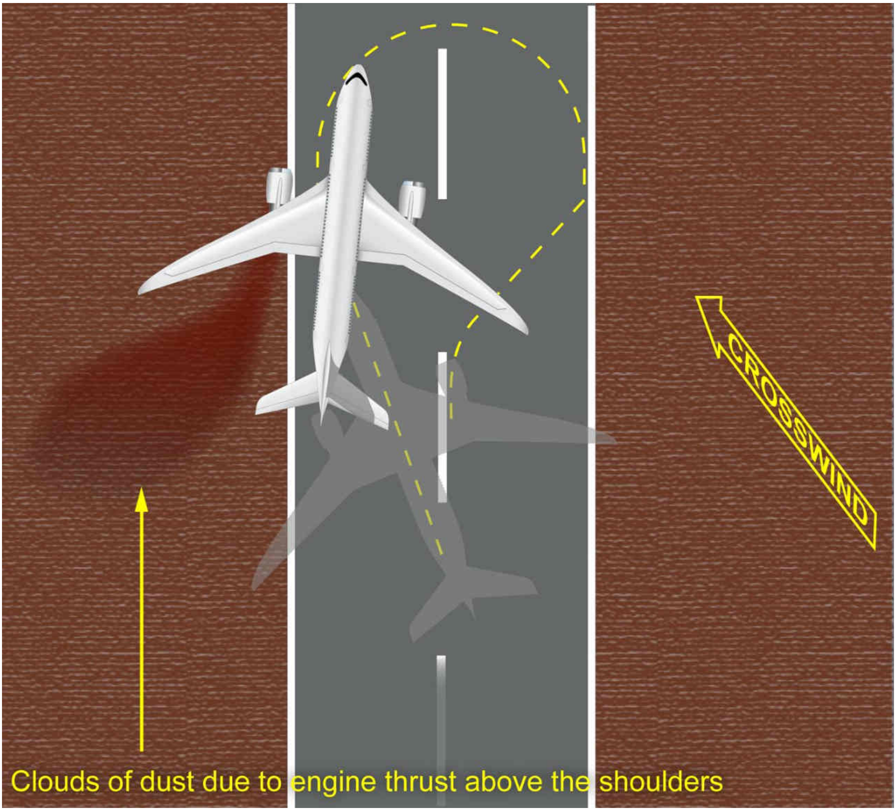
L2 Taxi with both engines running. Minimize thrust during taxi.

L1 TAXI WITH CARE

FOR 180° TURN ON RWY : INITIATE THE TURN DOWNWIND

L2 In order to prevent ash, sand or dust ingestion.

180 Degrees Turn


CROSSWIND
Clouds of dust due to engine thrust above the shoulders

Ident.: PRO-NOR-SUP-SUP-ADVWXR-B-00023259.0001001 / 09 MAR 16

PARKING

LOGBOOK..REPORT ASH, SAND OR DUST CLOUD ENCOUNTER

L2 *Maintenance action is due.*

Ident.: PRO-NOR-SUP-SUP-ADVWXR-B-00006960.0001001 / 07 MAY 18

SECURING THE AIRCRAFT

- **When APU bleed is OFF:**

  DITCHING pb-sw.. ON

L2 *When set to ON, several valves will close, in order to isolate the aircraft from volcanic ash, sand, or dust ingestion.*

L1
- **When all batteries are OFF:**

  DITCHING pb-sw.. OFF

L2 *All the applicable valves will open, at the next power-up.*

L1 PROTECTIVE COVERS INSTALLATION.. REQUEST

L2 *Request ground crews to install protective covers and plugs in order to protect the aircraft from the ash, sand or dust.*

ENGINE OPERATION ON GROUND IN FZFG

Ident.: PRO-NOR-SUP-SUP-ADVWXR-00021364.0001001 / 29 JAN 19
Applicable to: ALL

INTRODUCTION

CAUTION	During taxi in freezing fog (FZFG) conditions, for temperatures below +1 °C (34 °F), ice accretion may affect the fan and core engine parts. Apply the below procedure to prevent potential engine damage.

The purpose of the procedure is to check that the expected taxi time does not exceed the maximum permitted taxi time in FZFG conditions.
For more information, *Refer to LIM-ENG Maximum Taxi Time in FZFG conditions*

PRELIMINARY COCKPIT PREPARATION

TOTAL TAXI TIME IN FZFG..DETERMINE

L2 *The total taxi time is the sum of :*

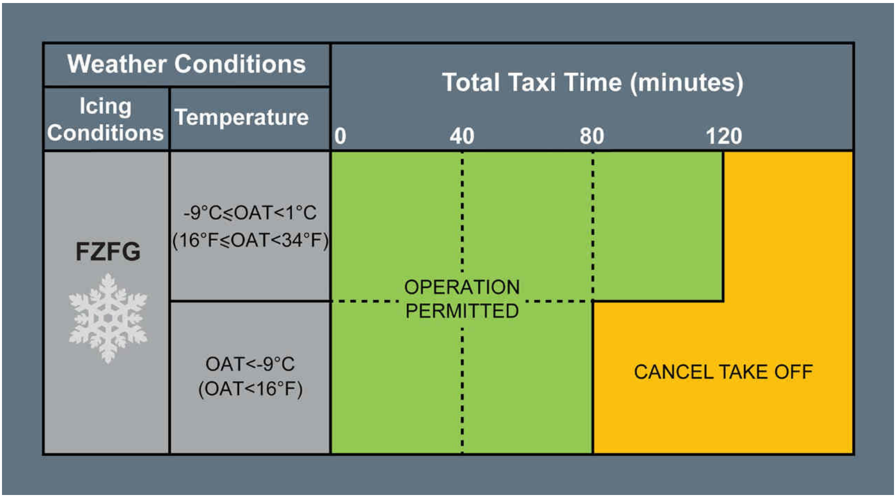
- *The taxi-in time of the previous flight, if performed in freezing fog conditions. It has to be taken into account only if the maintenance crew did not inspect engine icing and/or did not manually deice the engine after the taxi-in.*
- *The taxi-out time of the current flight. It is recommended to estimate this duration with the ATC.*

L1 MAXIMUM TAXI-OUT TIME IN FZFG..CHECK

L2 *The flight crew can consult the following table to check the Maximum Taxi-out time in FZFG according to the expected total taxi time determined in the previous step.*

If the OAT between taxi-in and taxi-out phases varies, i.e. the temperature in FZFG conditions increases or decreases, the most penalizing temperature limitation listed in the table below must be applied by the flight crew.

L1


Weather Conditions
Icing Conditions
Temperature
Total Taxi Time (minutes)
0
40
80
120
FZFG
-9°C≤OAT<1°C
(16°F≤OAT<34°F)
OAT<-9°C
(OAT<16°F)
OPERATION PERMITTED
CANCEL TAKE OFF

DURING TAXI-OUT

TAXI TIME...MONITOR

L2 *Monitor the taxi time to determine when the Maximum Taxi-out time is exceeded.*

L1

- **When Total taxi-time in FZFG conditions is exceeded or** ENG 1(2) STATOR A-ICE VLV CLOSED **alert is displayed on the WD:**

  TAKEOFF...CANCEL

  [LOGBOOK] PROCEDURE...RECORD

L2

Maintenance action is due in accordance with the "Cold Weather Maintenance - Maintenance Practice to Manually Deice the Core Engine" section of the Aircraft Line Maintenance - Maintenance procedure, to:

- Inspect the Variable Inlet Guide Vanes (VIGV) for ice,
- If necessary, manually deice the core engine.

L1 **PARKING**

- **If taxi-in in FZFG conditions:**

  [LOGBOOK] FZFG TAXI-IN TIME....................RECORD

L2 *Record in the logbook the taxi-in time performed in freezing fog (FZFG) conditions, in order to determine the remaining allowed taxi-out time in foreseen FZFG conditions.*

FLIGHT IN ICING CONDITIONS

Ident.: PRO-NOR-SUP-SUP-ADVWXR-00021107.0001001 / 27 FEB 17
Applicable to: ALL

CAUTION	The flight crew should avoid extended flight in icing conditions with the slats extended.

- **WHEN ICING CONDITIONS ARE ANTICIPATED OR ENCOUNTERED:**

L2 For more information about icing conditions, *Refer to GEN Definitions*.

L1 ENGINE ANTI-ICE....................ON

L2 *ENGINE ANTI-ICE must be ON during all ground and flight operations, when icing conditions exist or are anticipated, except during climb and cruise when the SAT is below -40 °C.*
ENGINE ANTI-ICE must be ON before and during a descent in icing conditions, even if the SAT is below -40 °C.

L1 ● **WHEN ICING CONDITIONS ARE ENCOUNTERED:**

■ **IF EVIDENCE OF ICE ACCRETION:**

WING ANTI-ICE....................ON

L2 *The flight crew must turn on the wing anti-ice if there is evidence of ice accretion, such as ice on the visual indicators or on the wipers, or if the alert A-ICE SEVERE ICE DETECTED is displayed. This is to remove any ice accumulation from the wing leading edge.*

L1 ■ **IF CONF CLEAN:**

MIN SPEED : GREEN DOT

■ **IF CONF 3 OR FULL:**

MIN SPEED : VLS + 5

L2 *The minimum speeds take into account ice accretion on non-heated structure, and on de-iced parts of the airframe when anti-ice is inoperative.*

L1 ■ **IF NO EVIDENCE OF ICE ACCRETION:**

WING ANTI-ICE..AS RQRD

L2 *The flight crew may turn on the wing anti-ice to prevent ice accretion on the wing leading edge*

SECURING THE AIRCRAFT FOR COLD SOAK

Ident.: PRO-NOR-SUP-SUP-ADVWXR-00019882.0001001 / 03 JUL 20
Applicable to: ALL

3

Cold soak should be considered in the following conditions:

- The OAT is less than 0 °C (32 °F), and
- No electrical supply and no air conditioning are provided to the aircraft, and
- The temperatures of the aircraft components decrease below 0 °C (32 °F).

WHEN SECURING THE AIRCRAFT

● **After switching off all bleeds, and before switching off the AC power:**

DITCHING pb-sw..ON

L3 *Setting the DITCHING pb-sw to ON closes the following:*

- *The outflow valves*
- *The avionics overboard valve*
- *Both pack valves*
- *All the cargo isolation valves*
- *The pack ram air inlets and outlets*
- *The emergency RAM air inlet.*

L2 *This protects the aircraft from the cold outside temperatures.*

L1 ● **When the chocks are in place:**

PARKING BRAKE..OFF

L2 *When the OAT is below -30 °C, hydraulic fluid may spill, if the parking brakes are pressurized.*

L1 ● **After switching off the batteries:**

DITCHING pb-sw..OFF

L2 *All the applicable valves will open at the next power up.*

L1 PROTECTIVE COVERS INSTALLATION..REQUEST

L2 *Request ground crews to install protective covers and plugs, in order to protect the aircraft wheels and the engines from snow and ice.*

L1 WATER SYSTEM DRAINING..REQUEST

L2 *Request maintenance actions to drain water system, for cold soak prevention purposes.*

Intentionally left blank

CROSSBLEED ENGINE START

Applicable to: ALL

Ident.: PRO-NOR-SUP-SUP-ENG-A-00021227.0001001 / 29 JAN 19

ENGINE START

- **Before second engine start:**

CAUTION	The simultaneous use of engine bleed supply and air start unit is prohibited.

AIR START UNIT DISC ....REQUEST

L2 *Simultaneous use of air start unit and the engine bleed is prohibited to prevent any adverse effect on the bleed system.*

L1 PACK 1+2.. ON

L2 *When both packs are set to ON, engine IDLE power is higher and appropriate for a crossbleed engine start.*

L1 APU BLEED.. CHECK OFF

L2 *The APU BLEED pb-sw is set to OFF to prevent multiple bleed sources that may result in adverse effect on the bleed system.*

L1 ENG BLEED (ENG STARTED)..ON

ENG BLEED (ENG NOT STARTED).. ON

XBLEED SEL..CHECK OPEN

SECOND ENGINE START..PERFORM

Ident.: PRO-NOR-SUP-SUP-ENG-A-00006912.0001001 / 13 MAR 19
Impacted by TDU: 00024193 Crossbleed Engine Start - After Start

AFTER START

- **When both engines are started:**

XBLEED SEL..AUTO

SOP — AFTER START..RESUME

Ident.: TDU / PRO-NOR-SUP-SUP-ENG-A-00024193.0001001 / 05 MAR 20
Impacted DU: 00006912 Crossbleed Engine Start - After Start

AFTER START

ENG THRUST LEVER (LAST ENG STARTED) : KEEP IDLE FOR 30 SECONDS

- **At least 30 seconds after the second engine start (30 seconds after AVAIL indication is displayed on the ED) :**

XBLEED SEL..AUTO

SOP — AFTER START..RESUME

ENGINE START ON BATTERIES

Applicable to: ALL

Ident.: PRO-NOR-SUP-SUP-ENG-B-00016585.0001001 / 09 JUL 15

BEFORE START CLEARANCE

PACK 1+2.....OFF

L2 *Packs are selected off to prevent any possible contamination of the packs by the air start unit.*

L1 APU BLEED.....OFF

L2 *The APU BLEED pb-sw is set to OFF to prevent multiple bleed sources that may result in adverse effect on the bleed system.*

L1 ENG 1 BLEED.....OFF

L2 *Simultaneous use of external pneumatic power and the engine bleed is prohibited to prevent any adverse effect on the bleed system.*

L1 ENG 2 BLEED.....OFF

XBLEED SEL.....OPEN

AIR START UNIT CONNECTION.....REQUEST

L2 *Two ground air start units may be used in parallel, if the pressure/flow relation is expected to be marginal.*

L1 BLEED PRESS > 40 PSI .....CHECK

L2 *The recommended starter air supply pressure is 25 PSI, when the start valve is open.*

L1 SOP — BEFORE START CLEARANCE.....RESUME

Ident.: PRO-NOR-SUP-SUP-ENG-B-00021220.0001001 / 04 APR 17

ENGINE START

CAUTION	During engine start, if a bleed leak is detected, the air start unit must be disconnected only after the engine start sequence is completed or stopped.

Due to engine start on batteries, the engine vibrations indications are displayed **XX** on the ENG SD page.

L2 The Engine Monitoring Unit (EMU) is not electrically supplied on batteries, consequently the engines vibrations indications are not displayed on the ENG SD page.

L1 SOP — ENGINE START.....PERFORM

Ident.: PRO-NOR-SUP-SUP-ENG-B-00021221.0001001 / 09 JUL 15

AFTER START

AIR START UNIT DISC.....REQUEST

XBLEED SEL.....AUTO

ENG 1 BLEED....................ON
ENG 2 BLEED....................ON
PACK 1+2....................ON
SOP — AFTER START.................... RESUME

ENGINE START WITH EXTERNAL ELECTRICAL POWER

Applicable to: ALL

Ident.: PRO-NOR-SUP-SUP-ENG-C-00021103.0001001 / 03 JUL 20

1 BEFORE START CLEARANCE

- **EXTERNAL POWER:**

EXT 2 PB....................CHECK AUTO
EXT 1 PB (IF USED)....................CHECK AUTO
SOP — BEFORE START CLEARANCE....................RESUME

Ident.: PRO-NOR-SUP-SUP-ENG-C-00021326.0001001 / 03 JUL 20

2 ENGINE START

ENGINE 1 START.................... PERFORM

L2 *Note: For any operational reason, engine 2 can be started first.*

L1

WARNING	Disconnection of the external power with the EXT pb set to AUTO may cause injury to the ground engineer. Request disconnection of the external power only with the EXT pb set to AVAIL.

EXT PB.................... CHECK AVAIL
EXT PWR DISC.................... REQUEST
ENGINE 2 START.................... PERFORM

ENGINE START WITH AN AIR START UNIT

Applicable to: ALL

Ident.: PRO-NOR-SUP-SUP-ENG-D-00006911.0001001 / 03 JUL 20

3 BEFORE START CLEARANCE

PACK 1+2....................OFF

L2 *Packs are selected off to prevent any possible contamination of the packs by the air start unit.*

L1 APU BLEED..OFF

L2 *The APU BLEED pb-sw is set to OFF to prevent multiple bleed sources that may result in adverse effect on the bleed system.*

L1 ENG 1 BLEED..OFF

L2 *Simultaneous use of external pneumatic power and the engine bleed is prohibited to prevent any adverse effect on the bleed system.*

L1 ENG 2 BLEED..OFF
XBLEED SEL..OPEN
AIR START UNIT CONNECTION..REQUEST

L2 *Two ground air start units may be used in parallel, if the pressure/flow relation is expected to be marginal.*

L1 BLEED PRESS > 40 PSI .... CHECK

L2 *The recommended starter air supply pressure is 25 PSI, when the start valve is open.*

L1 EXT 1 PB (IF USED)..CHECK AUTO
EXT 2 PB (IF USED)..CHECK AUTO
SOP — BEFORE START CLEARANCE.. RESUME

Ident.: PRO-NOR-SUP-SUP-ENG-D-00021224.0001001 / 13 MAR 19

ENGINE START

CAUTION	During engine start, if a bleed leak is detected, the air start unit must be disconnected only after the engine start sequence is completed or stopped.

ENGINE 1 START.. PERFORM

L2 *Note: For any operational reason, engine 2 can be started first.*

L1
- **If the XBLEED ENGINE START procedure is intended for the 2nd engine start:**
  - **Before second engine start:**

CAUTION	The simultaneous use of engine bleed supply and air start unit is prohibited.

AIR START UNIT DISC ....REQUEST

L2 *Simultaneous use of air start unit and the engine bleed is prohibited to prevent any adverse effect on the bleed system.*

L1 PACK 1+2..ON

L2 *When both packs are set to ON, engine IDLE power is higher and appropriate for a crossbleed engine start.*

L1 APU BLEED....................CHECK OFF

L2 *The APU BLEED pb-sw is set to OFF to prevent multiple bleed sources that may result in adverse effect on the bleed system.*

L1 ENG BLEED (ENG STARTED)....................ON
ENG BLEED (ENG NOT STARTED)....................ON
XBLEED SEL....................CHECK OPEN

SECOND ENGINE START....................PERFORM

Ident.: PRO-NOR-SUP-SUP-ENG-D-00021225.0001001 / 03 JUL 20

4 AFTER START

ENG THRUST LEVER (LAST ENG STARTED) : KEEP IDLE FOR 30 SECONDS

- **If an air start unit was used to start the second engine:**
  AIR START UNIT DISC....................REQUEST
  XBLEED SEL....................AUTO
  ENG 1 BLEED....................ON
  ENG 2 BLEED....................ON
  PACK 1+2....................ON
- **If the XBLEED ENGINE START procedure was used to start the second engine:**
  XBLEED SEL....................AUTO

WARNING	Disconnection of the external power with the EXT pb set to AUTO may cause injury to the ground engineer. Request disconnection of the external power only with the EXT pb set to AVAIL.

EXT 1 PB (IF USED)....................CHECK AVAIL
EXT 2 PB (IF USED)....................CHECK AVAIL
EXT PWR DISC (IF USED)....................REQUEST
SOP — AFTER START....................RESUME

MANUAL ENGINE START

Ident.: PRO-NOR-SUP-SUP-ENG-00016287.0001001 / 01 OCT 15
Applicable to: ALL

ENGINE START

THR LEVERS....................IDLE | PF

CAUTION	*The engines start regardless of the thrust lever position. If the thrust levers are not set to IDLE, the thrust rapidly increases to the corresponding thrust lever position, causing a hazardous situation.*

ENG START SEL..NORM THEN IGN START

L2 *The ENG SD page appears, and all pack valves close.*

Note: The pack valves open again if the ENG MAN START pb-sw is not set to ON within 30 s.

L1 *Note: During a manual engine start, the FADEC has limited control and does not aborts an abnormal manual start, except in the case of rotor overspeed. Therefore, if the flight crew suspects an engine start malfunction, or if an engine-related ECAM alert is triggered, the PF must interrupt the manual start sequence and perform one of the following:*
- *Before the PF sets the ENG MASTER lever to ON, the PF must set the ENG MAN START pb-sw to OFF, or*
- *After the PF sets the ENG MASTER lever to ON, the PF must set the ENG MASTER lever to OFF.*

Then, the PF must announce "ECAM actions", in accordance with the ECAM management philosophy.
Before the flight crew performs another manual engine start, they should consider a dry cranking of the affected engine, if dry cranking is not part of the ECAM procedure (Refer to PRO-NOR-SUP-SUP-ENG Engine Ventilation (Dry Cranking)).
In the case of ENG 1(2) START FAULT [EGT OVERLIMIT] alert, second manual engine start attempt on the affected engine is not permitted.

● **When all engines parameters are available on the ENG SD page:**

ENG 1 MAN START...ON

L2 *Note: For any operational reason, engine 2 can be started first.*

L1 ENG PARAMETERS ....MONITOR

L2 *In manual engine start mode, the FADEC does not automatically abort an abnormal manual start, except in the case of rotor overspeed. However, in the case of any engine malfunction, the FADEC still generates ECAM alerts, as necessary. As a result, the flight crew must closely monitor the manual start sequence, and the PF must be ready to immediately set the master lever of the affected engine to OFF when necessary.*

L1 START VALVE..CHECK IN-LINE
START VALVE PRESSURE...CHECK GREEN
OIL PRESSURE INCREASE..CHECK
N3 INCREASE..CHECK

● **When the maximum motoring speed is reached and the EGT< 150 °C:**

- N2 (8 % minimum)
- N3 (25 % minimum)

L2 The maximum motoring speed is reached when there is no significant increase of N3 and N2.

In order to maximize stable compressor operation at light-off, the EGT should be < 150 °C.
If the manual engine start is aborted, hot air may stagnate in the combustor chamber leading to no light up event. The flight crew has to perform a dry crank if the EGT > 150 °C.

L1 ENG 1 MASTER..ON
CHRONO..START

L2 *The PM starts timing in order to monitor the light-up delay.*

L1 [ENG SD PAGE] IGNITORS A AND B INDICATIONS..CHECK
[ENG SD PAGE] FF INCREASE..CHECK

- **20 s maximum after the ENG 1 MASTER is set to ON:**
  [ENG DISPLAY] N1 INCREASE..CHECK
  [ENG DISPLAY] EGT INCREASE..CHECK

- **When N3 is at, or above 48 % :**
  [ENG SD PAGE] IGNITORS INDICATIONS..CHECK OFF
  [ENG SD PAGE] START VALVE ....CHECK CROSS LINE

- **When idle is reached and AVAIL is displayed:**
  MAIN ENG PARAMETERS..CHECK NORMAL
  SECONDARY ENG PARAMETERS..CHECK NORMAL
  ENG 1 MAN START..OFF
  ENG START SEL..NORM

L2 *After 30 s, the pack valves open again.*

L1
- **If the second engine can be started manually:**
  Apply the same procedure as indicated for engine 1.

- **If the second engine can be started automatically:**
  SOP - AUTOMATIC ENGINE START..PERFORM

ENGINE START VALVE MANUAL OPERATION

Ident.: PRO-NOR-SUP-SUP-ENG-00021218.0001001 / 09 MAR 16
Applicable to: ALL

BEFORE ENGINE START

Advise ground crew to prepare for manual engine start valve operation.

ENGINE START

RMP INT..SELECT

The flight crew can establish communication with ground crew using service interphone at any service area next to the affected engine:
- *Select RMP CAB*
- *Or use the cockpit handset.*

GND CREW CLEARANCE..OBTAIN

- **When ground crew is ready:**

  ENG START SEL..IGN START
  ENG (AFFECTED) MASTER..ON
  ENG START VALVE..REQUEST OPEN

L2 *The ground crew must maintain the valve in the OPEN position until the engine is started. If not, the start valve closes.*

L1
  - **When N3 is at 48 % :**

    ENG START VALVE..REQUEST CLOSE
    SOP — ENGINE START..RESUME

ENGINE VENTILATION (DRY CRANKING)

Ident.: PRO-NOR-SUP-SUP-ENG-00023013.0001001 / 30 JUL 15
Applicable to: ALL

On ground, after a manual engine start attempt that is not successful, the flight crew can perform a dry crank cycle on the affected engine to remove the fuel vapors and to reduce residual EGT to 150 °C.

BEFORE MANUAL DRY CRANK CYCLE

ENG MASTER..CHECK OFF
ENG START SEL..CHECK NORM
ENG MAN START P/B..CHECK OFF

MANUAL DRY CRANK CYCLE

ENG START SEL..CRANK
ENG MAN START P/B..ON

- **When the EGT ≤ 150 °C:**

  ENG MAN START P/B..OFF
  ENG START SEL..NORM

  Note: For manual engine start Refer to PRO-NOR-SUP-SUP-ENG Manual Engine Start.

ONE ENGINE TAXI

Applicable to: ALL

Ident.: PRO-NOR-SUP-SUP-ENG-E-00021974.0001001 / 30 JAN 17

GENERAL

The flight crew should be aware of the following:
- One-engine taxi may require more thrust than normal. Therefore, the flight crew must be careful in order to avoid excessive jet blast and the risk of Foreign Object Damage (FOD).
- Some operational conditions may prevent, or make more difficult one-engine taxi. The following are examples of some of these conditions:
  - Positive slope (i.e. uphill)
  - Slippery taxiway
  - High aircraft gross weight (slow or short-radius turns in the direction of the operating engine may not be possible at high gross weight).

Ident.: PRO-NOR-SUP-SUP-ENG-E-00021111.0001001 / 27 SEP 18

AT DEPARTURE

ENGINE 1..START | PF

L2 *For any operational reason, engine 2 can be started instead of engine 1.*

L1 XBLEED selector..OPEN | PF

L2 *Open the crossbleed valve in order to supply both packs.*

L1 AFTER START SOP..PERFORM | PF-PM

L2 *For a detailed description of the After Start SOP, Refer to After Start.*

L1 AFTER START C/L..DELAY | PF-PM

Delay the After Start checklist until all engines are started.

TAXI SOP..PERFORM | PF-PM

Apply the Taxi SOP, but:
- *Delay the flight controls check until all engines are started*
- *Arm the Autobrake after the flight controls check.*

L2 *For a detailed description of the Taxi SOP, Refer to Taxi.*

L1 ● **At least 5 min before takeoff (2 min if the engines were shut down for less than 1.5 h during transit):**

ENGINE 2..CROSSBLEED START | PF

L2 *For more information, Refer to Crossbleed Engine Start Supplementary Procedure.*

L1 AFTER START C/L..COMPLETE | PF-PM

FLIGHT CONTROLS.....CHECK | PF-PM
A/BRK pb .....ARM | PM

Ident.: PRO-NOR-SUP-SUP-ENG-E-00021975.0001001 / 07 JUL 20

5 AT ARRIVAL

APU.....AS RQRD | PM

- **No less than 5 min after high thrust operations, and when taxiing straight:**
  - **If the flight crew starts the APU before engine shutdown:**
    APU START PB.....CHECK AVAIL | PF

  ENGINE 1 OR 2.....SHUT DOWN | PF
  - **If engine 2 is shut down while the APU is off:**

    Refer to DSC-46-OIS-35 OIS Applications Temporary Loss After ENG 2 Shutdown

EXPECT REVERSION TO DIRECT LAW

L2 A duration longer than approximately 5 min of taxi with one engine after landing will trigger F/CTL DIRECT LAW (PROT LOST) (*Refer to procedure*), followed by ENG GA SOFT FAULT and NAV RNP AR CAPABILITY LOST. This reversion to direct law has no effect on aircraft dispatch.

L1
- **If the APU is off:**
  - **Before the second engine shutdown:**
    EXT 1(2) PB.....CHECK AVAIL | PF
    EXT 1(2) PB.....AUTO | PF

SAFETY PRECAUTIONS FOR GROUND FUEL OPERATIONS

Ident.: PRO-NOR-SUP-SUP-FUEL-00021161.0001001 / 17 NOV 17
Applicable to: ALL

WARNING	1. Prior initiation of any ground fuel operations, obey the below fuel safety precautions. This will prevent injury to people and/or damage to the aircraft. 2. Do not request or perform any ground fuel operations if a fire or engine overheat warning is displayed. 3. If the APU fails during any ground fuel operations, do not restart the APU.

SAFETY PRECAUTIONS..........APPLY

During any ground fuel operations, ensure that:

- *The aircraft is properly bonded to the tanker*
- *The tanker and the aircraft grounding requirement is based on local regulations. Always connect the ground cable to the parking ground point (or to the tanker) before connecting it to the aircraft*
- *The external lighting is not operated except for*
  - *Navigation lights (NAV sw),*
  - *Logo lights (LOGO sw),*
  - *Wing and engine scan lights (WING sw).*

ACCESS PLATFORM..........IN POSITION

CAUTION	Do not use the right wing refuel coupling and the left wing refuel coupling ◁ at the same time.

FUEL TANKER HOSES CONNECTION..........CHECK

One or two fuel hoses can be used to perform a refuel operation.

MAX REFUELING PRESSURE: 55 PSI (3.8 BAR)

AUTOMATIC REFUELING

Ident.: PRO-NOR-SUP-SUP-FUEL-00021924.0002001 / 03 JUL 20
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD

1 [SUP] SAFETY PRECAUTIONS.......... *REFER TO PROC APPLY*

■ **If the aircraft is electrically powered with an EXT PWR or the APU:**

■ **If the refueling is performed from the cockpit via the REFUEL pb-sw ◁ :**

FMS FUEL & LOAD PAGE..........SELECT
BLOCK..........ENTER

L2 *Enter the desired FOB value in the BLOCK entry field and validate.*
The new value must be different from the existing one, if any.

[OVERHEAD PANEL] REFUEL pb-sw .... ON

Start the automatic refuel from the cockpit.
The flight crew should press the REFUEL pb-sw shortly after they enter the BLOCK value in order to avoid that maintenance crew opens the ERP and reset the preselected BLOCK value.

REFUEL IN PROGRESS

The refueling automatically starts as soon as the tests are completed. The REFUEL IN PROGRESS memo appears on the WD.

FUEL SD page .... DISPLAY
FUEL QUANTITY .... MONITOR

On the FUEL SD page, check that the fuel quantity increases.

- **When the END light of the REFUEL pb-sw comes on :**

  FUEL QUANTITY .... CHECK

  On the FUEL SD page, check that the fuel quantity is within 200 kg (440 lb) of the preselected BLOCK value.

  [OVERHEAD PANEL] REFUEL pb-sw .... OFF

  The automatic refueling stops.

■ **If the refueling is performed from the External Refuel Panel (ERP):**

PRESELECT (PFQ) .... SET

Select the total fuel quantity that is required onboard the aircraft at the end of the refueling, with the PRESELECT sw.

REFUEL/DEFUEL VALVES sw .... CHECK SHUT
MODE SELECT .... AUTO REFUEL

Fuel system tests are automatically started, the SHUTOFF TEST label is displayed as long as the test is in progress (approximately 30 s).

AUTO REFUEL

The refueling automatically starts as soon as the tests are completed. The AUTO REFUEL indication appears on the STATUS displays of the ERP, and the REFUEL IN PROGRESS memo appears on the WD in the cockpit.

FUEL QUANTITY .... MONITOR

On the ERP, check that the fuel quantities of the fuel tanks, and the ACTUAL (FOB) value increase.
For aircraft equipped with REFUEL pb-sw , the PFQ is the last entered value between the ERP and the BLOCK value. As a consequence, the PFQ changes if the flight crew updates the BLOCK value of the FMS FUEL & LOAD Page during refueling.

- **When the AUTO REFUEL END message appears on the ERP:**

  FUEL QUANTITY....................CHECK

  The fuel quantity on the ACTUAL (FOB) is within 200 kg (440 lb) of the PRESELECTED (PFQ) value.

  MODE SELECT....................OFF

  The ERP STATUS displays the OFF MODE indication.

■ **If the refueling is performed on batteries:**

MAX REFUEL TIME ON BATTERY: 10 MIN
[ELEC PANEL] BAT 1 pb-sw ....ON
[ELEC PANEL] BAT 2 pb-sw ....ON

- **After 10 s:**

  [ERP] POWER SUPPLY sw ....BATTERY

PRESELECT (PFQ)....................SET

Select the total fuel quantity that is required onboard the aircraft at the end of the refueling, with the PRESELECT sw.

[ERP] REFUEL/DEFUEL VALVES sw ....CHECK SHUT
[ERP] MODE SELECT....................AUTO REFUEL

Fuel system tests are automatically started, the SHUTOFF TEST label is displayed as long as the test is in progress (approximately 20 s).

AUTO REFUEL

The refueling automatically starts as soon as the tests are completed. The AUTO REFUEL indication appears on the STATUS displays of the ERP.

[ERP] FUEL QUANTITY....................MONITOR

On the ERP, check that the fuel quantities of the fuel tanks and the ACTUAL (FOB) value increase.

- **When the AUTO REFUEL END message appears on the ERP:**

  [ERP] FUEL QUANTITY....................CHECK

  The fuel quantity on the ACTUAL (FOB) is within 200 kg (440 lb) of the PRESELECTED (PFQ) value.

  [ERP] MODE SELECT....................OFF

  The ERP STATUS displays the OFF MODE indication.

  BATTERY VOLTAGE ....REGULARLY CHECK

  Check that the battery voltage is sufficient for current operations (engine start or APU start)

  [ELEC PANEL] BAT 1 pb-sw ....OFF

[ELEC PANEL] BAT 2 pb-sw .... OFF

AUTOMATIC REFUELING

Ident.: PRO-NOR-SUP-SUP-FUEL-00021924.0001001 / 03 JUL 20
Applicable to: ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB

2 [SUP] SAFETY PRECAUTIONS.. *REFER TO PROC APPLY*

- **If the aircraft is electrically powered with an EXT PWR or the APU:**
  - **If the refueling is performed from the cockpit via the REFUEL pb-sw ⊲ :**

    FMS FUEL & LOAD PAGE.. SELECT
    BLOCK.. ENTER

    L2 *Enter the desired FOB value in the BLOCK entry field and validate.*
    The new value must be different from the existing one, if any.

    L1 [OVERHEAD PANEL] REFUEL pb-sw .... ON

    L2 *Start the automatic refuel from the cockpit.*
    The flight crew should press the REFUEL pb-sw shortly after they enter the BLOCK value in order to avoid that maintenance crew opens the ERP and reset the preselected BLOCK value.

    L1 REFUEL IN PROGRESS

    L2 The refueling automatically starts as soon as the tests are completed. The REFUEL IN PROGRESS memo appears on the WD.

    L1 FUEL SD page .... DISPLAY
    FUEL QUANTITY.. MONITOR

    L2 *On the FUEL SD page, check that the fuel quantity increases.*

    L1 ● **When the END light of the REFUEL pb-sw comes on :**

    FUEL QUANTITY.. CHECK

    L2 *On the FUEL SD page, check that the fuel quantity is within 200 kg (440 lb) of the preselected BLOCK value.*

    L1 [OVERHEAD PANEL] REFUEL pb-sw .... OFF

    L2 *The automatic refueling stops.*

  - L1 **If the refueling is performed from the External Refuel Panel (ERP):**

    PRESELECT (PFQ).. SET

    L2 *Select the total fuel quantity that is required onboard the aircraft at the end of the refueling, with the PRESELECT sw.*

    L1 REFUEL/DEFUEL VALVES sw .... CHECK SHUT

MODE SELECT..AUTO REFUEL

L2 *Fuel system tests are automatically started, the SHUTOFF TEST label is displayed as long as the test is in progress (approximately 30 s).*

L1 AUTO REFUEL

L2 The refueling automatically starts as soon as the tests are completed. The AUTO REFUEL indication appears on the STATUS displays of the ERP, and the REFUEL IN PROGRESS memo appears on the WD in the cockpit.

L1 FUEL QUANTITY..MONITOR

L2 *On the ERP, check that the fuel quantities of the fuel tanks, and the ACTUAL (FOB) value increase.*
For aircraft equipped with REFUEL pb-sw , the PFQ is the last entered value between the ERP and the BLOCK value. As a consequence, the PFQ changes if the flight crew updates the BLOCK value of the FMS FUEL & LOAD Page during refueling.

L1
- **When the AUTO REFUEL END message appears on the ERP:**

  FUEL QUANTITY..CHECK

  L2 *The fuel quantity on the ACTUAL (FOB) is within 200 kg (440 lb) of the PRESELECTED (PFQ) value.*

  L1 MODE SELECT..OFF

  L2 *The ERP STATUS displays the OFF MODE indication.*

L1 ■ **If the refueling is performed on batteries:**

MAX REFUEL TIME ON BATTERY: 10 MIN
[ELEC PANEL] ALL BAT pb-sw ....CHECK OFF
[ERP] POWER SUPPLY sw ....BATTERY
PRESELECT (PFQ)..SET

L2 *Select the total fuel quantity that is required onboard the aircraft at the end of the refueling, with the PRESELECT sw.*

L1 [ERP] REFUEL/DEFUEL VALVES sw ....CHECK SHUT
[ERP] MODE SELECT..AUTO REFUEL

L2 *Fuel system tests are automatically started, the SHUTOFF TEST label is displayed as long as the test is in progress (approximately 20 s).*

L1 AUTO REFUEL

L2 The refueling automatically starts as soon as the tests are completed. The AUTO REFUEL indication appears on the STATUS displays of the ERP.

L1 [ERP] FUEL QUANTITY....................MONITOR

L2 *On the ERP, check that the fuel quantities of the fuel tanks and the ACTUAL (FOB) value increase.*

L1
- **When the AUTO REFUEL END message appears on the ERP:**

  [ERP] FUEL QUANTITY.................... CHECK

  L2 *The fuel quantity on the ACTUAL (FOB) is within 200 kg (440 lb) of the PRESELECTED (PFQ) value.*

  L1 [ERP] MODE SELECT.................... OFF

  L2 *The ERP STATUS displays the OFF MODE indication.*

  L1 BATTERY VOLTAGE ....REGULARLY CHECK

  L2 *Check that the battery voltage is sufficient for current operations (engine start or APU start)*

GROUND FUEL TRANSFER

Ident.: PRO-NOR-SUP-SUP-FUEL-00021105.0001001 / 04 MAY 16
Applicable to: ALL

L2 Note: *This supplementary procedure may be applied in case of abnormal fuel distribution on ground. For more information, Refer to PRO-ABN-FUEL FUEL ABNORM DISTRIBUTION.*

L1 [SUP] SAFETY PRECAUTIONS.................... *REFER TO PROC APPLY*

WARNING	During the procedure, a flight crewmember must be in the cockpit to stop the pumps when the low pressure FAULT light comes on on the External Refuel Panel [ERP]. This is to prevent the operation of the pump without fuel.

- **In the cockpit:**

  ALL IR MODE selector .... CHECK ON NAV

  L2 *Ensure that all IRs are aligned.*

  L1 FUEL SD page .... DISPLAY
  FUEL QUANTITY (ALL TANKS).................... RECORD

  L2 *Record the fuel quantity in each tank.*

L1
- **On the ERP:**
  - **Perform the FQMS high level shutoff test:**

    [ERP] SHUTOFF TEST pb-sw ....PUSH IN AND MAINTAIN FOR 5 SEC.

    L2 *All the ERP lamps and indicators comes on.*

    L1 [ERP] SHUTOFF TEST pb-sw ....RELEASE

    L2 *The ERP STATUS displays SHUTOFF TEST.*

L1 *Note: The release of the SHUTOFF TEST pb-sw starts the test. The test duration is approx. 30 s.*

At the end of the test, ensure that:
- *The ERP STATUS displays TEST OK for 2 seconds*
- *The FAULT light is not on.*

[ERP] REFUEL/DEFUEL VALVES sw (OF ALL TANKS)................................. CHECK SHUT
[ERP] MODE SELECT...CHECK OFF
[ERP] REFUEL/DEFUEL VALVES sw (OF TANKS TO BE FILLED)...........................OPEN

- **In the cockpit:**

FUEL CROSSFEED A..ON
FUEL CROSSFEED B..ON

L2 *Check that the ON and OPEN lights come on on the corresponding CROSSFEED pb.*

L1 FUEL PMPs (OF THE TANK(s) TO BE DEFUELED)..ON

L2 *Check that the OFF light goes off on the corresponding PMP pb-sw.*

L1 *Note: For fuel transfer from the center tank, use the Left and Right CTR TK pumps. For fuel transfer from the wing tanks, use the associated MAIN or the STBY pump.*

- **On the ERP:**

[ERP] MODE SELECT.. XFR POSITION

L2 *The fuel transfer starts.*

L1 GND XFR IN PROGRESS

L2 The ECAM MEMO message appears on the WD.

L1 [ERP] or [ECAM] FUEL QUANTITY...MONITOR

L2 *On the ERP or on the ECAM FUEL SD page, ensure that the fuel of the tank is transferred.*

L1
- **When the fuel quantity have reached the necessary level, or have decreased to low level:**
  - **On the ERP:**

[ERP] REFUEL/DEFUEL VALVES sw (OF ALL TANKS)...SHUT
[ERP] MODE SELECT.. OFF

L2 *The ERP STATUS displays OFF MODE.*

L1
  - **In the cockpit:**

FUEL CORRESPONDING PMPs ....AS RQRD

L2 *If fuel pumps are set to OFF, check that the OFF light comes on on the corresponding PMPs pb-sw.*

L1 FUEL CROSSFEED A....................OFF

FUEL CROSSFEED B....................OFF

L2 *Check that the ON light goes off on the corresponding CROSSFEED pb.*

FLIGHT WITH GEAR DOWN

Applicable to: ALL

Ident.: PRO-NOR-SUP-SUP-LG-SUP-LG-00022736.0001001 / 09 MAR 16

This chapter applies to dispatch with L/G down. A revenue flight is permitted with the L/G down, and the L/G gear doors closed in the conditions stated below.

Ident.: PRO-NOR-SUP-SUP-LG-SUP-LG-00022734.0004001 / 28 MAY 20

1 FLIGHT PREPARATION - LIMITATIONS

MAX FL : 350
MIN TAT : -38 °C

L2 *This minimum TAT is required to maintain the minimum fluid temperature in the L/G shock absorbers.*

L1 MIN SAT BELOW 21 000 FT : -45 °C
MIN SAT AT OR ABOVE 21 000 FT : -52 °C

L2 *Due to the lower cruise speed, the TAT is more likely to come close to the minimum limit. The minimum values of SAT (depending on the altitude) ensure the capability to maintain this minimum TAT, either by accelerating or descending to a lower altitude.*

L1 MAX FLT TIME : 8 HR
MIN LDG WEIGHT : 150 000 KG (330 700 LBS)

L2 *The aircraft weight must remain more than this minimum weight during the entire flight (that includes diversion to the alternate airport) for handling quality reasons (protection against possible high speed excursion).*

L1 MAX SPEED : 255/.64

L2 *VMO/MMO for a flight with the L/G in the extended position and L/G doors closed is 255 kt/M 0.64.*

L1 RECOMMENDED SPEED : 245/.55

L2 245 kt/M 0.55 is the recommended speed for climb, cruise, and descent.

L1 FLT IN EXPECTED ICING CONDs : NOT PERMITTED

L2 *Due to the possible ice accretion on the L/G, flight is not permitted in expected icing conditions.*

L1 RVSM : NOT PERMITTED
ETOPS : NOT PERMITTED

DITCHING NOT DEMONSTRATED

DISPATCH NOT PERMITTED WITH MEL ITEMS AFFECTING RA, ADIRS, SLATS/FLAPS, F/CTL, BRAKE, TACHOMETER, LGERS COMPUTERS (L/G CTL 1 & 2, CPIOM H61, H62, H63 & H64), CRDC A02, A07, A10, A11, A12 & A13, ENG REVERSER, HYD ENG PMP, AND A/THR

ACCU REINFLATE NOT AVAIL IN FLT : BRAKING ON ACCU DEGRADED

L2 Due to the fact that the L/G remains in the extended position, there is no automatic refill of the brake accumulators in flight. In addition, the hydraulic pressure in the brake accumulators is slightly reduced at landing. This pressure reduction is more significant if the L/G is exposed to outside air temperatures less than -20 °C (-4 °F).

L1 AUTO-DERATE CLB : DO NOT USE

L2 *Because the AUTO-DERATE function is not designed to be used with the L/G in the extended position, the flight crew must select CLB (maximum climb) thrust for climb.*

L1 GA THR : TOGA ONLY

L2 *Because the soft go-around function is not designed to be used with the L/G in the extended position, the flight crew must select TOGA thrust for go-around.*

L1 MANAGED VERTICAL MODES (CLB & DES) : DO NOT USE

L2 *Due to the L/G in the extended position in flight, the FMS vertical guidance is not accurate.*

L1 MANAGED SPEED (EXCEPT IN APPR) : DO NOT USE
FMS PRED (ALT, SPD, TIME & PSEUDO-WPT) : DO NOT USE

Note: *However, in level flight, time predictions at cruise waypoints are correct.*

FUEL CONSUMPT INCRSD

FMS FUEL PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

L2 For more information about FMS fuel penalty value and insertion procedure, *Refer to PRO-NOR-SUP-SUP-LG Flight With Gear Down - Cockpit Preparation*.

L1 SIGNS AUTO MODE : DO NOT USE

L2 *Because the L/G is in the extended position, the signs remain on during the whole flight if the AUTO mode is used.*

L1 REDUCED DME RANGE

L2 The range of the DME antenna is reduced by approximately 75 NM at high altitude (at or above FL 265).

L1 CRUISE SD PAGE NOT AVAIL

L2 Because the L/G is in the extended position, the default SD page is the WHEEL SD page. The flight crew should check the other SD pages more frequently.

L1
- **In the case of** HYD Y SYS PRESS LO **ECAM alert in flight:**

  MAX XWIND FOR LANDING : 20 KT

L2 *As nose wheel steering is lost, and differential braking performance is slightly degraded due to lower accumulator pressure, the lateral control at low speed is ensured for a crosswind up to 20 kt only.*

Ident.: PRO-NOR-SUP-SUP-LG-SUP-LG-00022740.0004001 / 05 JUN 18

DURING PRELIMINARY COCKPIT PREPARATION

L/G LEVER

L/G LEVER COVER.....IN PLACE

L2 *Check that the appropriate cover is in place on the L/G lever.*

L1 ECAM/LOGBOOK CHECK

FLT L/G DOWN MEMO.....CHECK DISPLAYED

L2 *The ground crew should set the VMO/MMO switch on the "L/G DOWN" position. The FLT L/G DOWN memo on the ECAM indicates this position.*

L1 [LOGBOOK] L/G LOCKING DEVICES INSTALLATION (IF RQRD) : CHECK LOGGED

L2 *Depending on the cause of the L/G retraction failure, the installation of L/G locking devices may be required or not. Check in the logbook whether maintenance crew has logged the installation of L/G locking devices instead of the safety pins.*

L1 MEL/CDL ITEMS CHECK

DISPATCH NOT PERMITTED WITH MEL ITEMS AFFECTING RA, ADIRS, SLATS/FLAPS, F/CTL, BRAKE, TACHOMETER, LGERS COMPUTERS (L/G CTL 1 & 2, CPIOM H61, H62, H63 & H64), CRDC A02, A07, A10, A11, A12 & A13, ENG REVERSER, HYD ENG PMP, AND A/THR

TAKEOFF PERF

RECOMMENDED FLAPS : CONF 1+F

L2 CONF 1+F configuration gives the lower drag.

L1 AVOID TAILWIND
T.O PERF WITH L/G DOWN.....COMPUTE

L2 *Takeoff performance is affected, compute takeoff performance with the L/G in the extended position.*

L1 Note: *In the Airbus EFB T.O PERF application, select the "Landing gears position All extended" MEL item.*

LANDING PERF (DISPATCH)

MIN LDG WEIGHT : 150 000 KG (330 700 LBS)

L2 *The aircraft weight must remain more than this minimum weight during the entire flight (that includes diversion to the alternate airport) for handling quality reasons (protection against possible high speed excursion).*

L1 LDG PERF WITH L/G DOWN.. CHECK

L2 *Landing performance (go-around gradient and RLD) is affected, check landing performance with the L/G in the extended position.*

L1 *Note:* *In the Airbus EFB LDG PERF application (DISPATCH computation mode), select the "Landing gears position All extended" MEL item.*

Ident.: PRO-NOR-SUP-SUP-LG-SUP-LG-00023003.0001001 / 09 MAR 16

DURING EXTERIOR WALKAROUND

L/G LOCKING DEVICES..AS APPROPRIATE

L2 *Depending on the cause of the L/G retraction failure, the installation of L/G locking devices may be required or not. Check that the L/G locking devices installation is in accordance with the logbook status.*

Ident.: PRO-NOR-SUP-SUP-LG-SUP-LG-00023004.0001001 / 12 DEC 16

DURING COCKPIT PREPARATION

OVERHEAD PANEL

SIGNS AUTO MODE : DO NOT USE

L2 *Because the L/G is in the extended position, the signs remain on during the whole flight if the AUTO mode is used.*

L1 **MFD FMS PREPARATION**

FMS FUEL PRED UNRELIABLE WITHOUT ACCURATE FMS FUEL PENALTY INSERTION

L2 The fuel consumption is increased. The FUEL PENALTY on the FMS DATA/STATUS page should be updated.

L1 *Note:* *A conservative value for the fuel penalty is provided in the Fuel Penalty INOP SYS TABLE for L/G - L/G RETRACTION - All L/G extended (Refer to PER-IFT-FP Fuel Penalty Tables - Fuel Consumption Increased).*

[FMS-DATA/STATUS PAGE] FUEL PENALTY...INSERT

RECOMMENDED SPEED : 245/.55

L2 245 kt/M 0.55 is the recommended speed for climb, cruise, and descent.

L1 [FMS-ACTIVE/PERF PAGES] PRESEL SPDs .... INSERT
[FMS-ACTIVE/PERF/CLB PAGE] THR — “CLB”..INSERT

L2 *The auto-derate thrust is not designed to be used with the L/G in the extended position. The flight crew must select maximum climb thrust (CLB) for climb.*

Ident.: PRO-NOR-SUP-SUP-LG-SUP-LG-00023005.0001001 / 09 MAR 16

TAKEOFF

WHEN POSITIVE CLIMB

L/G : KEEP DOWN

AT S SPEED

A/BRK RTO....................CHECK DISARMED

L2 *After standard actions, check that BRK RTO does not appear on the FMA.*

Ident.: PRO-NOR-SUP-SUP-LG-SUP-LG-00023006.0001001 / 28 MAY 20

2 DURING CLIMB AND CRUISE

AUTO-DERATE CLB : DO NOT USE

L2 *Because the AUTO-DERATE function is not designed to be used with the L/G in the extended position, the flight crew must select CLB (maximum climb) thrust for climb.*

L1 MAX FL : 350
MIN TAT : -38 °C

L2 *This minimum TAT is required to maintain the minimum fluid temperature in the L/G shock absorbers.*

L1 MIN SAT BELOW 21 000 FT : -45 °C
MIN SAT AT OR ABOVE 21 000 FT : -52 °C
TEMPERATURE (SAT & TAT)....................MONITOR

L2 *Due to the lower cruise speed, the TAT is more likely to come close to the minimum limit. The minimum values of SAT (depending on the altitude) ensure the capability to maintain this minimum TAT, either by accelerating or descending to a lower altitude.*

L1 RVSM : NOT PERMITTED
AVOID ICING CONDs

RECOMMENDED SPEED : 245/.55

L2 245 kt/M 0.55 is the recommended speed for climb and cruise.

L1

CRUISE SD PAGE NOT AVAIL

L2 Because the L/G is in the extended position, the default SD page is the WHEEL SD page. The flight crew should check the other SD pages more frequently.

L1

REDUCED DME RANGE

L2 The range of the DME antenna is reduced by approximately 75 NM at high altitude (at or above FL 265).

Ident.: PRO-NOR-SUP-SUP-LG-SUP-LG-00023007.0001001 / 05 JUN 18

ENGINE FAILURE

EO MAX ALT.. COMPUTE

L2 *The EO MAX ALT displayed by the FMS does not take into account the extended position of the L/G. The flight crew should use an alternate source to determine the EO maximum altitude.*

L1 *Note:* *In the Airbus EFB IN-FLT PERF application (DES (OEI) panel):*
- *Select the "L/G DISPATCH WITH GEAR DOWN" NON STD CONF item*
- *Select DES TYPE: OBSTACLE for a drift-down at Green Dot speed, or DES TYPE: EO STANDARD for a descent at fixed speed.*

GREEN DOT SPD : VLS + 12 KT

L2 The green dot speed displayed by the PFD does not take into account the extended position of the L/G.

Ident.: PRO-NOR-SUP-SUP-LG-SUP-LG-00023009.0002001 / 05 JUN 18

LANDING PERFORMANCE

LDG PERF WITH L/G DOWN.. CONFIRM

L2 *Go-around performance is affected.*

L1 *Note:* *In the Airbus EFB LDG PERF application (IN-FLIGHT computation mode), select the "Landing gears position All extended" MEL item.*

FOR DESCENT AND APPROACH

RECOMMENDED SPEED : 245/.55

L2 245 kt/M 0.55 is the recommended speed for descent.

L1 DESCENT SELECTED V/S MODE.. CONSIDER

L2 *To avoid a high rate of descent due to the L/G in the extended position, consider using selected vertical speed.*

L1 AVOID ICING CONDs

FOR HOLDING : CONF 1 RECOMMENDED

L2 Slats extended is the least penalizing configuration.

L1 ● **In the case of** HYD Y SYS PRESS LO **ECAM alert:**

MAX XWIND FOR LANDING : 20 KT

L2 *As nose wheel steering is lost, and differential braking performance is slightly degraded due to lower accumulator pressure, the lateral control at low speed is ensured for a crosswind up to 20 kt only.*

L1 GA THR : TOGA ONLY

L2 *Because the soft go-around function is not designed to be used with the L/G in the extended position, the flight crew must select TOGA thrust for go-around.*

Ident.: PRO-NOR-SUP-SUP-LG-SUP-LG-00023008.0001001 / 09 MAR 16

GO-AROUND

GO-AROUND INITIATION

ALL THR LEVERS..TOGA

WHEN POSITIVE CLIMB

L/G : KEEP DOWN

Intentionally left blank

FLIGHT WITHOUT CABIN PRESSURIZATION

Applicable to: ALL

Ident.: PRO-NOR-SUP-SUP-MISC-SUP-MIS-01-00021507.0001001 / 06 NOV 14

DURING PRELIMINARY COCKPIT PREPARATION

OXYGEN FOR FLIGHT CREW MEMBERS

CAPT OXYGEN PRESSURE..........CHECK
F/O OXYGEN PRESSURE..........CHECK

L2 To obtain the requirements in oxygen for flight crew members, refer to FAR 121.329 or EU-OPS 1.770, or any other applicable operational regulation.
For more information on oxygen limitations for flight crew members, *Refer to LIM-OXY Minimum Flight Crew Oxygen Pressure*.

L1 OXYGEN FOR CABIN OCCUPANTS

OXYGEN FOR CABIN OCCUPANTS..........CHECK

L2 For flight at cabin pressure altitudes above 10 000 ft, up to and including 14 000 ft, there must be enough oxygen to supply 10 % of the cabin occupants for the flight at those altitudes that lasts more than 30 min.
For flight at cabin pressure altitudes above 14 000 ft, up to and including 15 000 ft, there must be enough oxygen to supply 30 % of the cabin occupants.
For flight at cabin pressure altitudes above 15 000 ft, there must be enough oxygen for all cabin occupants.
Flight crew must refer to more stringent requirements (i.e. local regulations, operator's policies), if applicable.

Ident.: PRO-NOR-SUP-SUP-MISC-SUP-MIS-01-00021747.0001001 / 06 NOV 14

DURING COCKPIT PREPARATION

FLIGHT PLAN INITIALIZATION

MAX SPEED: 250 kt
MAX CRZ FL: 100/MSA

If the altitude of the aircraft cabin reaches 13 800 ft, the cabin oxygen masks will automatically drop.

The flight crew must decide the aircraft altitude, depending on:
- The Minimum Safe Altitude (MSA)
- Oxygen requirements

- Turbulence, that can be uncomfortable for passengers
- Possible low Outside Air Temperature (OAT), that can be uncomfortable for passengers, when the aircraft is ventilated by RAM air only.

● **If aircraft cruise FL is above FL 95:**

EXPECT CAB PRESS EXCESS CAB ALT ALERT

Ident.: PRO-NOR-SUP-SUP-MISC-SUP-MIS-01-00021760.0001001 / 14 FEB 17

AFTER TAKEOFF

FOR PAX AND CREW COMFORT:

AVOID EXCESSIVE RATE OF CLIMB (MAX: +1 500 FT/MIN)
AVOID EXCESSIVE RATE OF DESCENT (MAX: -1 000 FT/MIN)
PACK 1...ON
PACK 2...ON
CABIN ALT MODE...MAN
CABIN ALT TRGT...CRUISE ACFT ALT
CABIN V/S MODE...MAN
CABIN V/S TRGT...FULLY UP

L2 In the case of a door failure or a structural damage, the flight crew must ensure that the differential pressure remains equal to 0 PSI during the whole flight.

L1 **ECAM ALERT**

● **If aircraft/cabin altitude is above 9 550 ft:**

EXPECT CAB PRESS EXCESS CAB ALT ALERT

ECAM CLR...CONSIDER

Ident.: PRO-NOR-SUP-SUP-MISC-SUP-MIS-01-00021754.0001001 / 06 NOV 14

DURING APPROACH

FINAL APPROACH...PERFORM NORMALLY

OPERATIONS AT QNH ABOVE 1050 HPA (31.00 INHG)

Applicable to: ALL

Ident.: PRO-NOR-SUP-SUP-MISC-SUP-MIS-02-00023216.0001001 / 03 DEC 15

FLIGHT PREPARATION / LIMITATIONS

MIN PRESSURE ALT FOR XPDR ALT RPTG : -1 000 FT

L2 *The transponder sends erroneous data if the aircraft standard altitude is below -1 000 ft pressure altitude.*

L1 *Note:* *1. High QNH values may result in pressure altitudes below -1 000 ft during takeoff and landing at low altitude airports. Therefore, the crew should apply the following procedures when the QNH is more than 1 050 hPa (31.00 inHg), and the airport elevation is less than 1 000 ft.*
2. TCAS and ADS-B OUT operations are affected if the above mentioned limitation is not complied with.

Ident.: PRO-NOR-SUP-SUP-MISC-SUP-MIS-02-00023217.0001001 / 03 DEC 15

BEFORE TAKEOFF

[MFD SURV] ALT RPTG...OFF

L2 *Due to the transponder limitation, the flight crew must disconnect the altitude reporting. After the flight crew turn off the altitude reporting, an ALT RPTG OFF memo and a TCAS STBY memo appear on the WD.*
Expect SURV TCAS STBY alert above 1 500 ft RA if the TCAS is not restored before.

L1 ATC...NOTIFY

L2 *Notify the ATC that the altitude reporting is not available.*

Ident.: PRO-NOR-SUP-SUP-MISC-SUP-MIS-02-00023219.0001001 / 03 DEC 15

TAKEOFF

- **ABOVE 1 000 FT QNH, WHEN TIME PERMITS:**
  [MFD SURV] ALT RPTG...ON

L2 *As a result, the TCAS automatically reverts to its previous setting.*

Ident.: PRO-NOR-SUP-SUP-MISC-SUP-MIS-02-00023220.0001001 / 03 DEC 15

INTERMEDIATE/FINAL APPROACH

- **BEFORE FINAL APPROACH:**
  ATC...NOTIFY

L2 *Notify the ATC that the altitude reporting will be turned off.*

L1 [MFD SURV] ALT RPTG.. OFF

L2 *Due to the transponder limitation, the flight crew must disconnect the altitude reporting.*

L1 EXPECT SURV TCAS STBY ALERT

HIGH ALTITUDE AIRPORT OPERATIONS

Applicable to: ALL

Ident.: PRO-NOR-SUP-SUP-MISC-SUP-80-10-00020410.0001001 / 06 NOV 14

TAKEOFF AND/OR LANDING FROM/TO AIRPORT ELEVATION OF 9 000 FT OR ABOVE

PRELIMINARY COCKPIT PREPARATION

CKPT OXYGEN QUANTITY.. CHECK

L2 *The use of the mask increases the oxygen consumption. The minimum flight crew oxygen pressure must be increased: Refer to Minimum Flight Crew Oxygen Pressure*

Ident.: PRO-NOR-SUP-SUP-MISC-SUP-80-10-00018746.0001001 / 06 NOV 14

TAKEOFF ON AIRPORTS WITH AN ELEVATION OF 9 000 FT OR ABOVE

BEFORE TAKEOFF

ONE OXYGEN MASK (AT LEAST ONE PILOT)................................ DON / NORM SELECTION

L2 *At least one pilot must use the oxygen mask from takeoff until the memo HI ALT ARPT disappears.*

L1 CLIMB

- **When the memo HI ALT ARPT disappears:**
  OXYGEN MASK.. REMOVE / 100% SELECTION / STOW

L2 *For more information to stow the mask: Refer to How to Stow the Mask.*

Ident.: PRO-NOR-SUP-SUP-MISC-SUP-80-10-00020411.0001001 / 05 JUL 19

LANDING ON AIRPORTS WITH AN ELEVATION OF 9 000 FT OR ABOVE

DESCENT

- **Below FL 250 and when the memo HI ALT ARPT is triggered:**
  ONE OXYGEN MASK (AT LEAST ONE PILOT)...........................USE / NORM SELECTION

L2 *At least one pilot must use the oxygen mask continuously until landing.*

L1

LANDING

FLARE HEIGHT INCREASE.. CONSIDER

L2 *For more information: Refer to FCTM/Flare and Touchdown*

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PROCEDURES

SPECIAL OPERATIONS

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PRO-SPO-ETOPS Extended Range Operations

Icing Consideration for ETOPS Critical Fuel Reserves........A
Diversion Decision Making........B
Abnormal and Emergency Procedures........C
Maximum Diversion Distance........D

PRO-SPO-PBN PBN

General........A
RNAV 10/RNP 10........B
RNAV 5/B-RNAV........C
RNAV 2/En-Route RNAV........D
RNAV 1/P-RNAV Terminal RNAV........E
RNP 4........F
RNP 2 In Oceanic And Remote Continental Area........G
RNP 2 In Domestic Area........H
RNP 1/Terminal RNP 1 Basic RNP 1........I
RNP APCH/RNAV(GNSS)........J
RNP AR / RNAV(RNP)........K

PRO-SPO-RVSM RVSM

RVSM Requirements........A
RVSM Procedure........B

PRO-SPO-PRM Simultaneous Parallel Approach Operations

Overview........A
Break out Turn and Climb Procedure........B
Break out Turn and Descent Procedure........C

PRO-SPO-PBCS Performance-Based Communication and Surveillance

General........A
Requirements........B
Procedure........C

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Localization Title	Toc Index	ID	Reason
PRO-SPO-PBN Required RNP APCH Equipment	J	1	Correction and harmonization of the list of required minimum navigation equipment to enter RNP APCH airspace.
PRO-SPO-PBN Procedure	K	2	Update of the callout in the case of lateral deviation. "LAT DEV" replaces the previously used "CROSS TRACK" callout.

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ICING CONSIDERATION FOR ETOPS CRITICAL FUEL RESERVES

Ident.: PRO-SPO-ETOPS-00021720.0001001 / 09 MAR 16
Applicable to: ALL

The most critical scenario must be compensated for the greater of:

A. The effect of airframe icing during 10 % of the time during which icing is forecast, including ice accumulation on unprotected surfaces, and the fuel used by engine and wing anti-ice during this period.

B. Fuel for engine and wing anti-ice for the entire time during which icing is forecast.

Note: *The ETOPS icing fuel reserve is always limited by (B).*

Unless a reliable icing forecast is available, icing may be presumed to occur when the Total Air Temperature (TAT) is less than +10 °C (50 °F), or if the outside air temperature is between 0 °C (32 °F) and -20 °C (-4 °F) with a relative humidity of 55 % or more.

DIVERSION DECISION MAKING

Ident.: PRO-SPO-ETOPS-00021456.0001001 / 03 SEP 14
Applicable to: ALL

Diversion is required in the case of only one generator (either one VFG, or APU GEN) remaining available following a multiple failure.

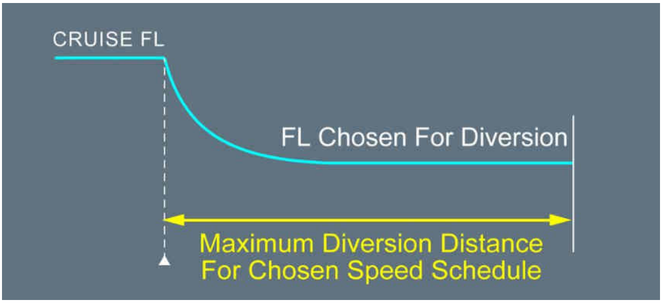
ABNORMAL AND EMERGENCY PROCEDURES

Ident.: PRO-SPO-ETOPS-00021510.0001001 / 03 SEP 14
Applicable to: ALL

● **In the case of failure of one engine or two VFG in ETOPS segment:**
APU GEN (if available)..USE

MAXIMUM DIVERSION DISTANCE

Ident.: PRO-SPO-ETOPS-00021464.0001001 / 04 OCT 17
Applicable to: ALL



The following computation takes into account the below conditions:

- ISA conditions
- No wind
- Optimum diversion level after engine failure
- Single engine diversion speed schedule.

Note: *Obstacles have not to be considered to determine if a route is or is not an ETOPS route.*

MAXIMUM DIVERSION DISTANCE							
SPEED SCHEDULE	**A/C WEIGHT AT CRITICAL POINT (x1000 KG)**	**FL FOR DIVERSION**	**DIVERSION TIME (MIN)**				
			60	**120**	**180**	**300**	**370**
MCT/330KT	170	190	439	866	1294		
	190	180	436	860	1285	2000	2500
	210	170	434	853	1272	2000	2500
	230	160	431	844	1257	2000	2500
	250	150	427	834	1241	2000	2500
	270	140	422	823	1225	2000	2496
MCT/310KT	170	220	431	853	1276		
	190	210	429	849	1268	2000	2500
	210	200	426	839	1252	2000	2500
	230	200	421	830	1242	2000	2500
	250	180	418	819	1220	2000	2489
	270	170	413	808	1203	1992	2453

GENERAL

Applicable to: ALL

Ident.: PRO-SPO-PBN-A-00021688.0001001 / 09 JAN 18

GENERAL

The Performance-Based Navigation (PBN) concept implies that the aircraft follows the defined track with a requested navigation performance. PBN includes several types of operations named RNAV and RNP that apply to all flight phases.
An operational approval from the Operators national authorities is sometimes required for some RNAV or RNP operations.
The AFM provides regulatory compliances associated with PBN operations.

Ident.: PRO-SPO-PBN-A-00021689.0001001 / 08 NOV 18

RNAV/RNP CAPABILITY

Before the aircraft enters a RNAV/RNP airspace, RNAV/RNP capability is based on:

- The required RNAV/RNP equipment that is described in each RNAV/RNP section of the FCOM
- Navigation Accuracy HIGH displayed on the FMS POSITION/MONITOR page for RNAV operations
- NAV PRIMARY displayed on the FMS POSITION/MONITOR page for RNP operations
- RNP AR capability indicated on the ECAM for RNP AR operations
- Any specific local requirements published in the Aeronautical Information Publication (AIP).

RNAV 10/RNP 10

Applicable to: ALL

Ident.: PRO-SPO-PBN-B-00021698.0001001 / 09 JAN 18

GENERAL

RNAV 10 operations correspond to RNP 10 operations.
In RNAV 10 airspace, the aircraft is expected to fly for a long period of time outside radio navaid coverage.
Required equipment and procedures for RNAV 10, described in this section, cover the navigation requirements of the Minimum Navigation Performance Specification (MNPS) operations.

Ident.: PRO-SPO-PBN-B-00006863.0001001 / 09 JAN 18

REQUIRED RNAV 10 EQUIPMENT

The following is a list of the minimum navigation equipment that is required to enter RNAV 10 airspace:

- Two FMS
- Two IRS
- One GPS if the flight time outside radio navaid coverage is longer than either :
  - 6.2 h from the time of IRS ground alignment, or
  - 5.7 h from the time of the last radio position update.

Ident.: PRO-SPO-PBN-B-00021699.0001001 / 09 JAN 18

PROCEDURE

MANAGEMENT OF DEGRADED NAVIGATION

- If one of the following messages appears:
  - NAV PRIMARY LOST on only one ND/MFD
  - NAV ACCURACY DOWNGRADED on only one ND/MFD,

  the flight crew can continue navigation with the side that provides the best position.
- If NAV PRIMARY LOST appears on both NDs/MFDs, RNAV 10 operations can be continued:
  - if radio navaids update is available, there is no time restriction
  - if radio navaids update is not available, then RNAV 10 operations can be continued for 5.7 h from the time of the last position.

  Note: *As per regulation, after 5.7 h, the navigation accuracy shall be considered as downgraded regardless of the current navigation accuracy that is displayed on the FMS POSITION/MONITOR page.*

- If the NAV GNSS/ACFT POS DISAGREE ECAM alert appears, the flight crew should check the position data using the FMS POSITION/MONITOR page. This action permits to identify the side that provides the best position. The flight crew can then continue navigation with the side that provides the best position.
- If NAV ACCURACY DOWNGRADED appears on both NDs/MFDs, all the following is applicable:
  - As per design, the FMS uses the default RNP value. This default value (2 NM in cruise, 1 NM in terminal area) is more restrictive than airspace required navigation performance.
  - The flight crew can modify, on the FMS, the RNP default value and manually select a specific navigation accuracy in accordance with airspace requirement. When the aircraft leaves the airspace, the flight crew should set back the default value.
    - If NAV ACCURACY DOWNGRADED remains displayed, the flight crew should inform the ATC that RNAV 10 capability is lost.

RNAV 5/B-RNAV

Applicable to: ALL

Ident.: PRO-SPO-PBN-C-00021700.0001001 / 09 JAN 18

GENERAL

RNAV 5 operations correspond to European B-RNAV operations.

Ident.: PRO-SPO-PBN-C-00021701.0001001 / 08 NOV 18

REQUIRED RNAV 5 EQUIPMENT

The following is a list of the minimum navigation equipment that is required to enter RNAV 5 airspace:
- One FMS
- One GPS, or one VOR/DME, or two DME for aircraft position update
- One IRS.

Ident.: PRO-SPO-PBN-C-00006868.0001001 / 09 JAN 18

PROCEDURE

MANAGEMENT OF DEGRADED NAVIGATION

- If one of the following messages appears:
  - NAV PRIMARY LOST on only one ND/MFD
  - NAV ACCURACY DOWNGRADED on only one ND/MFD,

  the flight crew can continue navigation with the side that provides the best position.
- If one of the following messages appears:
  - NAV PRIMARY LOST on both NDs/MFDs
  - NAV GNSS/ACFT POS DISAGREE on the ECAM,

  the flight crew should check the position data with navaid raw data using the FMS POSITION/MONITOR page. This action permits to identify the side that provides the best position. The flight crew can then continue navigation with the side that provides the best position.
- If NAV ACCURACY DOWNGRADED appears on both NDs/MFDs, all the following is applicable:
  - As per design, the FMS uses the default RNP value. This default value (2 NM in cruise, 1 NM in terminal area) is more restrictive than airspace required navigation performance.
  - The flight crew can modify, on the FMS, the RNP default value and manually select a specific navigation accuracy in accordance with airspace requirement. When the aircraft leaves the airspace, the flight crew should set back the default value.
    - If NAV ACCURACY DOWNGRADED remains displayed, the flight crew should inform the ATC that RNAV 5 capability is lost.

RNAV 2/EN-ROUTE RNAV

Applicable to: ALL

Ident.: PRO-SPO-PBN-K-00024578.0001001 / 09 JAN 18

GENERAL

RNAV 2 operations correspond to En-Route RNAV operations.
The AIP may specify that GPS equipment is required.

Ident.: PRO-SPO-PBN-K-00024579.0001001 / 09 JAN 18

REQUIRED RNAV 2 / EN-ROUTE RNAV EQUIPMENT

The following is a list of the minimum navigation equipment that is required to enter RNAV 2 airspace:

- One FMS
- One GPS, or one VOR/DME, or two DME for aircraft navigation update
- Two IRS
- One FD in NAV mode.

Ident.: PRO-SPO-PBN-K-00024580.0001001 / 09 JAN 18

PROCEDURE

MANAGEMENT OF DEGRADED NAVIGATION

- If one of the following messages appears:
  - NAV PRIMARY LOST on only one ND/MFD
  - NAV ACCURACY DOWNGRADED on only one ND/MFD,

  the flight crew can continue navigation with the side that provides the best position.
- If one of the following messages appears:
  - NAV PRIMARY LOST on both NDs/MFDs
  - NAV GNSS/ACFT POS DISAGREE on the ECAM,

  the flight crew should check the position data with navaid raw data using the FMS POSITION/MONITOR page. This action permits to identify the side that provides the best position. The flight crew can then continue navigation with the side that provides the best position.
- If NAV ACCURACY DOWNGRADED appears on both NDs/MFDs, the flight crew should inform the ATC that RNAV 2 capability is lost.

RNAV 1/P-RNAV TERMINAL RNAV

Applicable to: ALL

Ident.: PRO-SPO-PBN-D-00021702.0001001 / 09 JAN 18

GENERAL

RNAV 1 operations correspond to P-RNAV - Terminal RNAV operations.
The AIP may specify that GPS equipment is required.

Ident.: PRO-SPO-PBN-D-00006864.0001001 / 09 JAN 18

REQUIRED RNAV 1 EQUIPMENT

The following is a list of the minimum navigation equipment that is required to enter RNAV 1 airspace:
- One FMS
- One GPS, or one VOR/DME, or two DME for aircraft navigation update
- Two IRS
- One FD in NAV mode.

Ident.: PRO-SPO-PBN-D-00021703.0001001 / 09 JAN 18

PROCEDURE

BEFORE THE AIRCRAFT ENTERS RNAV 1 AIRSPACE

The flight crew must crosscheck the terminal procedure from the published charts with the FMS navigation database on the F-PLN page.

IN RNAV 1 AIRSPACE

The flight crew can only modify this terminal procedure if required by the ATC (e.g. DIR TO, radar vectoring, and insertion of waypoints from the navigation database)..

MANAGEMENT OF DEGRADED NAVIGATION

- If one of the following messages appears:
  - NAV PRIMARY LOST on only one ND/MFD
  - NAV ACCURACY DOWNGRADED on only one ND/MFD,

  the flight crew can continue navigation with the side that provides the best position.
- If one of the following messages appears
  - NAV PRIMARY LOST on both NDs/MFDs
  - NAV GNSS/ACFT POS DISAGREE on the ECAM.

  the flight crew should check the position data with navaid raw data using the FMS POSITION/MONITOR page. This action permits to identify the side that provides the best position. The flight crew can then continue navigation with the side that provides the best position.
- If NAV ACCURACY DOWNGRADED appears on both NDs/MFDs, the flight crew should inform the ATC that RNAV 1 capability is lost.

RNP 4

Applicable to: ALL

Ident.: PRO-SPO-PBN-E-00021706.0001001 / 03 SEP 14

GENERAL

In this airspace, the aircraft is expected to fly for a long period of time outside radio navaid coverage.

Ident.: PRO-SPO-PBN-E-00006869.0001001 / 09 JAN 18

REQUIRED RNP 4 EQUIPMENT

The following is a list of the minimum navigation equipment that is required to enter RNP 4 airspace:
- Two FMS
- One GPS
- Two IRS.

Ident.: PRO-SPO-PBN-E-00021707.0001001 / 09 JAN 18

PROCEDURE

MANAGEMENT OF DEGRADED NAVIGATION

- If one of the following messages appears:
  - NAV PRIMARY LOST on only one ND/MFD
  - NAV ACCURACY DOWNGRADED on only one ND/MFD,

  the flight crew can continue navigation with the side that provides the best position.
- If NAV GNSS/ACFT POS DISAGREE ECAM alert appears, the flight crew should check the position data using the FMS POSITION/MONITOR page. This action permits to identify the side that provides the best position. The flight crew can then continue navigation with the side that provides the best position.
- If NAV ACCURACY DOWNGRADED appears on both NDs/MFDs, all the following is applicable:
  - As per design, the FMS uses the default RNP value. This default value (2 NM in cruise, 1 NM in terminal area) is more restrictive than airspace required navigation performance.
  - The flight crew can modify, on the FMS, the RNP default value and manually select a specific navigation accuracy in accordance with airspace requirement. When the aircraft leaves the airspace, the flight crew should set back the default value.
    - If NAV ACCURACY DOWNGRADED remains displayed, the flight crew should inform the ATC that RNP 4 capability is lost.

RNP 2 IN OCEANIC AND REMOTE CONTINENTAL AREA

Applicable to: ALL

Ident.: PRO-SPO-PBN-I-00024575.0001001 / 09 JAN 18

In this airspace, the aircraft is expected to fly for a long period of time outside radio navaid coverage.

Ident.: PRO-SPO-PBN-I-00024576.0001001 / 09 JAN 18

REQUIRED RNP 2 IN OCEANIC AND REMOTE CONTINENTAL AREA EQUIPMENT

The following is a list of the minimum navigation equipment that is required to enter RNP 2 oceanic and remote continental airspace:

- Two FMS
- One GPS
- Two IRS.

Ident.: PRO-SPO-PBN-I-00024577.0001001 / 09 JAN 18

PROCEDURE

MANAGEMENT OF DEGRADED NAVIGATION

- If one of the following messages appears:
  - NAV PRIMARY LOST on only one ND/MFD
  - NAV ACCURACY DOWNGRADED on only one ND/MFD,

  the flight crew can continue navigation with the side that provides the best position.
- If NAV GNSS/ACFT POS DISAGREE ECAM alert appears, the flight crew should check the position data with navaid raw data using the FMS POSITION/MONITOR page. This action permits to identify the side that provides the best position. The flight crew can then continue navigation with the side that provides the best position.
- If NAV ACCURACY DOWNGRADED appears on both NDs/MFDs, the flight crew should inform the ATC that RNP 2 capability is lost.

RNP 2 IN DOMESTIC AREA

Applicable to: ALL

Ident.: PRO-SPO-PBN-J-00024573.0001001 / 09 JAN 18

REQUIRED RNP 2 IN DOMESTIC AREA EQUIPMENT

The following is a list of the minimum navigation equipment that is required to enter RNP 2 domestic airspace:
- One FMS
- One GPS
- Two IRS.

Ident.: PRO-SPO-PBN-J-00024574.0001001 / 09 JAN 18

PROCEDURE

- If one of the following messages appears:
  - NAV PRIMARY LOST on only one ND/MFD
  - NAV ACCURACY DOWNGRADED on only one ND/MFD,

  the flight crew can continue navigation with the side that provides the best position.
- If one of the following messages appears:
  - NAV PRIMARY LOST on both NDs/MFDs
  - NAV GNSS/ACFT POS DISAGREE on the ECAM,

  the flight crew should check the position data with navaid raw data using the FMS POSITION/MONITOR page. This action permits to identify the side that provides the best position. The flight crew can then continue navigation with the side that provides the best position.
- If NAV ACCURACY DOWNGRADED appears on both NDs/MFDs, the flight crew should inform the ATC that RNP 2 capability is lost.

RNP 1/TERMINAL RNP 1 BASIC RNP 1

Applicable to: ALL

Ident.: PRO-SPO-PBN-F-00021708.0001001 / 09 JAN 18

GENERAL

RNP 1 operations correspond to Terminal RNP 1 and Basic RNP 1.

Ident.: PRO-SPO-PBN-F-00021338.0001001 / 09 JAN 18

REQUIRED RNP 1 EQUIPMENT

The following is a list of the minimum navigation equipment that is required to enter RNP 1 airspace:
- One FMS
- One GPS
- Two IRS
- One FD in NAV mode.

Ident.: PRO-SPO-PBN-F-00021709.0001001 / 09 JAN 18

PROCEDURE

BEFORE THE AIRCRAFT ENTERS RNP 1 AIRSPACE

The flight crew must crosscheck the terminal procedure from the published charts with the FMS navigation database on the F-PLN page.

IN RNP 1 AIRSPACE

The flight crew can only modify the procedure if required by the ATC (e.g. DIR TO, radar vectoring, and insertion of waypoints from the navigation database).

MANAGEMENT OF DEGRADED NAVIGATION

- If one of the following messages appears:
  - NAV PRIMARY LOST on only one ND/MFD
  - NAV ACCURACY DOWNGRADED on only one ND/MFD,

  the flight crew can continue navigation with the side that provides the best position.
- If NAV GNSS/ACFT POS DISAGREE ECAM alert appears, the flight crew should check the position data with navaid raw data using the FMS POSITION/MONITOR page. This action permits to identify the side that provides the best position. The flight crew can then continue navigation with the side that provides the best position.
- If NAV ACCURACY DOWNGRADED appears on both NDs/MFDs, the flight crew should inform the ATC that RNP 1 capability is lost.

RNP APCH/RNAV(GNSS)

Applicable to: ALL

Ident.: PRO-SPO-PBN-G-00021710.0001001 / 09 JAN 18

GENERAL

RNP APCH operations correspond to approaches named RNAV(GNSS), or RNAV(GPS), or RNP.

These approaches are also identified by LNAV, LNAV/VNAV, or LPV.

Ident.: PRO-SPO-PBN-G-00006865.0001001 / 03 JUL 20

1 REQUIRED RNP APCH EQUIPMENT

The following is a list of the minimum navigation equipment that is required to enter RNP APCH airspace:
- One FMS
- One GPS
- Two IRS
- One FD in NAV mode.

Ident.: PRO-SPO-PBN-G-00021711.0001001 / 03 SEP 14

PROCEDURE

Refer to PRO-NOR-SOP-180-C Approach Using XLS - General.

RNP AR / RNAV(RNP)

Applicable to: ALL

Ident.: PRO-SPO-PBN-H-00021712.0001001 / 04 SEP 14

GENERAL

RNP AR operations correspond to RNAV(RNP) operations.
For RNP AR operations, the flight crew should refer to the specific procedures published by the airline.
The airline must obtain an operational approval and the flight crew must be qualified for this type of operations. To obtain this operational approval, the airline should refer to the AFM.
The main procedure steps for RNP AR have been introduced in the Procedures of this FCOM and in the paragraph below. This does not relieve the airline from the need to provide the flight crew with tailored procedures when required.

Ident.: PRO-SPO-PBN-H-00021349.0001001 / 08 NOV 18

REQUIRED RNP AR EQUIPMENT

The following table presents the equipment, not monitored by the PRIMs, required to perform RNP AR operations:

Required Equipment Not Monitored by the PRIMs	RNP AR down to RNP 0.1 NM	RNP AR limited to RNP 0.3 NM
MFDs	1	1
TAWS	1	1
KCCU	1 (1)	1 (1)

(1) *It is sufficient that KCCU has either an operative Cursor Control Device (CCD), or an operative keyboard.*

In addition, the following table presents equipment, as monitored by the PRIMs, to compute RNP AR capability:

Required Equipment Monitored by the PRIMs	RNP AR down to RNP 0.1 NM	RNP AR limited to RNP 0.3 NM
FMC	3	2
PRIM with AP ((1)), FD and A/THR available	2	1
EFIS	2	1
ADIRS	3	2
MMR	2	1
FWC	1	1
FCDC	1	1
CP	1 EFIS/AFS CP and 1 MFD FCU backup	1 EFIS/AFS CP or 2 MFD FCU backup

(1) *For RNP AR operations strictly below RNP 0.3 NM, 1 AP must be engaged in NAV mode.*

L2 *Note: The PRIMs also monitor navigation performance.*

If the PRIMs detect a RNP AR capability lost or downgraded, the ECAM and/or the ND display dedicated indications. For more information, *Refer to DSC-22-FMS-10-30-50 RNP AR Capability*.

Ident.: PRO-SPO-PBN-H-00021713.0001001 / 03 JUL 20

2 PROCEDURE

Prior starting a RNP AR instrument procedure, check that:
- A complete alignment of the IRS has been performed before takeoff
- OAT and wind, as applicable, are within limits
- The FMS lateral and vertical F-PLN extracted from the navigation database is in agreement with the instrument procedure chart, particularly check that the correct RNP values displayed on F-PLN page
- The RNP AR capability is in accordance with the intended RNP AR procedure.

Airbus recommends the use of a Ground Based Prediction Program in order to check NAV PRIMARY availability at the estimated time of operation in either of the following cases:
- For RNP AR operations strictly below 0.15 NM and with less than 24 satellites available
- Within constrained environment areas. An environment area is considered constrained in the case of GPS masking in mountainous area (GPS mask angle > 5 °).

L2 Out of the two previous cases, NAV PRIMARY is available 100 % of the time worldwide.

L1 If obstacles, TERR must be selected on both NDs unless weather monitoring is required on one side.

Airspeed and configuration must be adapted for the radius of turns in the procedure.

DEPARTURE

Before takeoff, check that:
- LDEV appears on PFDs,

L2 *Note: When the aircraft is aligned on the runway, the LDEV indication is centered.*

L1
- XTK with two precision digits appears on NDs.

L2 *Note: When the aircraft is aligned on the runway, the XTK value is equal to zero. As a result, the XTK does not appear on the NDs.*

L1 When NAV is indicated armed on FMA and, 5 s after liftoff, select AP ON.
Monitor lateral deviation on PFD or XTK on ND.
Callout "LAT DEV" must be performed when XTK or LDEV is at or above 1/2 dot.
If XTK or LDEV increases toward the current RNP value, take over manually to fly back on the intended flight path and reengage AP as applicable.

L2 XTK pulses if its value is above the current RNP value.

L1 APPROACH

Refer to PRO-NOR-SOP-180-C Approach Using APP-DES Guidance for RNP AR - General.

GO-AROUND

Refer to PRO-NOR-SOP-220 Go-Around - Go-Around Initiation.

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RVSM REQUIREMENTS

Applicable to: ALL

Ident.: PRO-SPO-RVSM-GRVSMR-00021171.0001001 / 02 OCT 14

A350 aircraft systems are designed to comply with the design criteria of the JAA Temporary Guidance Leaflet No. 6 (JAA TGL 6 - EASA Regulations), and the FAA Guidance Material for RVSM operations No. 91 - RVSM.
The AFM provides the statement of RVSM capability.

Ident.: PRO-SPO-RVSM-GRVSMR-00021173.0001001 / 02 OCT 14

In addition to the RVSM capability statement provided in the AFM, Operators must obtain operational approval from their national airworthiness authorities, in order to operate within the RVSM airspace.
The above-mentioned EASA and FAA documents also indicate the requirements for obtaining operational approval.

Ident.: PRO-SPO-RVSM-GRVSMR-00021174.0001001 / 02 OCT 14

The RVSM regulation requires that the following equipment or functions be operative:

- Two ADRs (for altitude indication)
- One transponder
  For associated MEL dispatch conditions, *Refer to MMEL/MI-34-71 Transponder*.
- One autopilot function

  For associated MEL dispatch conditions:
  - *Refer to MMEL/MI-22-10 AP*
  - *Refer to MMEL/MI-22-10 Sidesticks and Rudder Pedal Locking Devices in AP Mode*.

- Two PFDs (for altitude indication)
- One AFS CP channel or AFS CP backup (for the altitude target selection and the OP CLB or OP DES mode engagement)
- One FWS (for the altitude alert function).

Ident.: PRO-SPO-RVSM-GRVSMR-00021175.0001001 / 02 OCT 14

MAXIMUM DIFFERENCES BETWEEN ALTITUDE INDICATIONS

		Comparison of Altitude Indications (ft)	
Flight Level	Speed or Mach Number	Difference between ADRs (on the PFDs)	Difference between ISIS and ADRs (on the PFDs)
FL 50	250 kt	50	100
FL 100	250 kt	50	100
FL 200	320 kt	100	250
FL 290	M 0.85	150	400

Continued on the following page

Continued from the previous page

		Comparison of Altitude Indications (ft)	
FL 350	M 0.85	150	400
FL 430	M 0.85	150	400

RVSM PROCEDURE

Applicable to: ALL

Ident.: PRO-SPO-RVSM-GRVSMP-00021172.0001001 / 02 OCT 14

For flights in RVSM airspace, the flight crew must apply the standard or abnormal and emergency procedures, in addition to the following RVSM procedures:

Ident.: PRO-SPO-RVSM-GRVSMP-00021176.0001001 / 03 JAN 20

FLIGHT PREPARATION

The flight crew must take into account the conditions that may affect operations in RVSM airspace, including:

RVSM APPROVAL..CHECK

L2 *Verify that the aircraft is approved for RVSM operations.*

L1 WEATHER..CHECK

L2 *Review the weather forecasted for the flight route. If severe turbulence is expected, this may affect the ability to maintain aircraft altitude.*

L1 REQUIRED EQUIPMENT FOR RVSM..CHECK

L2 *Check that all the required equipment is operative (MEL).*
The flight crew should review the maintenance logs and forms, in order to ensure that the equipment required for RVSM is satisfactory.

L1 ALTITUDES..CHECK

L2 *Check that the difference between each altitude indication (in the QNH reference) displayed on PFDs and the airport elevation is less than 75 ft.*
Check on PFDs that the indication ADR 1(2)(3) ALT, ISIS ALT, BKUP ALT or GPS ALT is not displayed. For more information, Refer to DSC-31-CDS-40-20-50 Altitude.

Ident.: PRO-SPO-RVSM-GRVSMP-00021177.0001001 / 03 JAN 20

IN FLIGHT

BEFORE ENTERING RVSM AIRSPACE

REQUIRED EQUIPMENT FOR RVSM..OPERATIVE

L2 *If any of the required equipment fails before the aircraft enters RVSM airspace, the flight crew must request new clearance, to avoid this airspace.*

L1 ALTITUDES.. CHECK

L2 *Check that the difference between the altitude indications on PFDs (in the standard baro setting) is less than the specified tolerance. For more information, Refer to PRO-SPO-RVSM Maximum Differences between Altitude Indications.*
Check on PFDs that the indication ADR 1(2)(3) ALT, ISIS ALT, BKUP ALT or GPS ALT is not displayed. For more information,Refer to DSC-31-CDS-40-20-50 Altitude.

L1 **IN RVSM AIRSPACE**

AP.. KEEP ENGAGED

L2 *Ensure that autopilot is engaged for cruise, and for flight level changes.*

L1 AP GUIDANCE.. MONITOR

L2 *During flight level transitions, do not exceed or go below the assigned flight level by more than 150 ft.*

L1 - **Approximately every hour:**

  ALTITUDES..CHECK

L2 *Check that the difference between the altitude indications on PFDs is less than the specified tolerance. For more information, Refer to PRO-SPO-RVSM Maximum Differences between Altitude Indications.*
Regular checks of the flight deck instruments should be sufficient.
Check on PFDs that the indication ADR 1(2)(3) ALT, ISIS ALT, BKUP ALT or GPS ALT is not displayed. For more information, Refer to DSC-31-CDS-40-20-50 Altitude.

Ident.: PRO-SPO-RVSM-GRVSMP-00021178.0001001 / 02 OCT 14

AT THE END OF THE FLIGHT

ANY MALFUNCTIONS or DEVIATIONS... REPORT

L2 *Report any malfunction of the systems that enable the aircraft to maintain altitude, including:*
- *Any malfunction or loss of required equipment*
- *Any deviation involving the functions that enable the aircraft to maintain altitude.*

ABNORMAL AND EMERGENCY PROCEDURES

ATC.. NOTIFY

When the aircraft is in RVSM airspace, the flight crew must notify the ATC of the following situations, because they may affect the aircraft's ability to maintain the flight level:

- *The failure of both autopilots*
- *The loss of altimeter system redundancy:*
  - *The same ADR altitude is displayed on both PFDs. This is indicated with ADR 1(2)(3) ALT indication on PFDs.*
  - *The ISIS altitude is displayed on both PFDs. This is indicated with ISIS ALT indication on PFDs.*
  - *The backup altitude is displayed on both PFDs. This is indicated with BKUP ALT indication on PFDs.*
  - *The backup GPS altitude is displayed on both PFDs. This is indicated with GPS ALT indication on PFDs.*
- *An excessive discrepancy in altitude indications, and no way to identify the valid indication*
- *The failure of any other equipment, that affects the aircraft's ability to maintain the flight level*
- *The encounter of greater than moderate turbulence.*

If the flight crew cannot notify the ATC, or obtain ATC clearance, before deviating from the assigned flight level, they should follow the established contingency procedure and obtain ATC clearance as soon as possible.

L2 *Note: Appendix 4 of the JAA TGL 6 (EASA Regulations), and Appendix 5 of the FAA 91-RVSM (FAA Regulations), provide detailed Operator guidelines, on the content and development of contingency procedures.*

OVERVIEW

Ident.: PRO-SPO-PRM-00022173.0001001 / 03 JAN 20
Applicable to: ALL

Simultaneous Parallel Approach operations permit ILS/RNAV(GNSS)/RNAV(RNP)/GLS instrument approaches to be performed to dual or triple parallel runway configurations.

Two types of simultaneous approaches to parallel or near-parallel instrument runways exist:
- Independent Approaches, where radar separation minima between aircraft on adjacent extended runway center lines are not prescribed and approaches are monitored to ensure aircraft do not enter a No Transgression Zone (NTZ). A Precision Runway Monitor (PRM) system which enables simultaneous close parallel approaches may also be employed. The air traffic controllers use the PRM system to monitor the aircraft position.
- Dependent Approaches, where radar separation minima between aircraft on adjacent extended runway center lines are prescribed and aircraft are staggered to provide separation from the adjacent final course.

To perform Simultaneous Parallel Approach operations:
- The ATC and flight crew must satisfy specific training requirements.
- The ATC and the aircraft equipment must also comply with specific requirements.

BREAK OUT TURN AND CLIMB PROCEDURE

Ident.: PRO-SPO-PRM-00022174.0001001 / 30 JAN 17
Applicable to: ALL

Simultaneously:

AP..OFF | PF
BREAK OUT LEFT(RIGHT), HDG___, ALT___..........ANNOUNCE | PF
THR LEVERS..........................TOGA, and back to CL | PF

L2 *The SRS GA and the GA TRK modes engage. The THR CLB mode engages.*
The speed is managed. The speed target is the aircraft speed at SRS GA engagement.
The FMS GO-AROUND phase becomes active. Thus, the FMS reinserts the approach.

L1 TURN LEFT(RIGHT) AND CLIMB

L2 *As the situation is urgent, the flight crew should temporarily disregard the FD orders.*

L1 HDG___..............................TURN AND PULL | PM

L2 *The GA TRK mode disengages, and the HDG mode engages.*

L1 ALT___..............................TURN AND PULL | PM

L2 *The SRS GA mode disengages, and the OP CLB mode engages. The speed target becomes the FMS speed target of the CLIMB phase.*

L1 SPEED..............................PULL AND ADJUST | PM

L2 *For the initial break out procedure, adjust the speed (e.g.160 kt), in order to avoid a significant acceleration, and an increase in workload.*

L1 ● **When established on the break out path:**
AP..ON | PM

L2 *Before engaging the AP, ensure that the FD bar orders approximately correspond to the aircraft current path.*

L1 SPEED..............................SELECT AS RQRD | PF
FLAPS..AS RQRD | PM
GEAR..AS RQRD | PM
TCAS MODE SEL..........................TA/RA AS RQRD | PM

BREAK OUT TURN AND DESCENT PROCEDURE

Ident.: PRO-SPO-PRM-00022176.0001001 / 06 NOV 14
Applicable to: ALL

Simultaneously:

AP..OFF | PF
TURN LEFT(RIGHT) AND MAINTAIN RATE OF DESCENT
BREAK OUT LEFT(RIGHT), HDG___, ALT___..................ANNOUNCE | PF

L2 *As the situation is urgent, the flight crew should temporarily disregard the FD orders.*

L1 HDG___..................................TURN AND PULL | PM

L2 *The HDG mode engages. The vertical mode reverts to the V/S mode. The vertical speed target is the aircraft vertical speed at V/S engagement.*

L1 ALT___..................................TURN AND PULL | PM

L2 *This action defines an altitude target. The OP DES mode and the THR IDLE mode engage. The speed target does not change.*

L1 V/S..MONITOR | PM

CAUTION	*Depending on the speed target, the vertical speed may become excessive. If the rate of descent exceeds 1 000 ft/min, engage the V/S mode and limit the rate of descent to 1 000 ft/min.*

- **When established on the break out path:**

  AP..ON | PM

L2 *Before engaging the AP, ensure that the FD bar orders approximately correspond to the aircraft current path.*

L1
- **When cleared by ATC:**

  ALT___....................................TURN | PF

L2 *Select an altitude target for go-around, in accordance with the ATC clearance.*

L1 THR LEVERS........................TOGA, and back to CL | PF

L2 *The SRS GA and the GA TRK modes engage. The THR CLB mode engages.*
The speed is managed. The speed target is the aircraft speed at SRS GA engagement.
The FMS GO-AROUND phase becomes active.

L1 HDG___....................................PULL | PF

L2 *The GA TRK mode disengages, and the HDG mode engages. The SRS GA mode remains engaged, until ALT* engagement.*

L1 SPEED..............................SELECT AS RQRD | PF
FLAPS..AS RQRD | PM
GEAR...AS RQRD | PM

TCAS MODE SEL.. TA/RA AS RQRD | PM

GENERAL

Ident.: PRO-SPO-PBCS-00024647.0001001 / 08 JUL 19
Applicable to: ALL

GENERAL

The Performance-Based Communication and Surveillance (PBCS) concept provides performance requirements for communication and surveillance operations. PBCS supports the required performance for Air Traffic Management (ATM).

The PBCS concept sets the following performance parameters:
- The Required Communication Performance (RCP) specification that defines performance requirements associated to a communication transaction. A communication transaction is performed between the ATC controller and the flight crew (clearance, flight information, or request).
  Performance requirements are specified for each part of the communication chain (aircraft, air/ground network, and ATC). The RCP specification impacts CPDLC and SATCOM voice communications on the aircraft.
- RCP specification is identified by a designator (e.g. RCP 240, RCP 400) where the value refers to the maximum time (in seconds) for the ATC controller to initiate an ATC clearance and receive the response from the flight crew.
- The Required Surveillance Performance (RSP) specification that defines performance requirements associated to the delivery of surveillance data. Performance requirements are specified for each part of the communication chain (aircraft, air/ground network, and ATC). The RSP specification impacts ADS-C and SATCOM voice communications on the aircraft.

RSP specification is identified by a designator (e.g. RSP 180, RSP 400) where the value refers to a maximum time (in seconds) to deliver the surveillance data (e.g. aircraft position) to the ATC.
The RCP and/or RSP specifications apply to a defined airspace, route, or procedure with optimized operations (e.g. reduced separations).

REQUIREMENTS

Ident.: PRO-SPO-PBCS-00024648.0001001 / 08 NOV 18
Applicable to: ALL

REQUIREMENTS

Aircraft Performance Capability for Communication and Surveillance	**Required Onboard Configuration to Maintain Aircraft Performance Capability**	
	Applications that Support Aircraft Performance Capability	**Communication Means that Support Applications**
RCP 240	CPDLC	VHF datalink or SATCOM datalink
RCP 400	CPDLC	HF datalink

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Aircraft Performance Capability for Communication and Surveillance	**Required Onboard Configuration to Maintain Aircraft Performance Capability**	
	Applications that Support Aircraft Performance Capability	**Communication Means that Support Applications**
RSP 180	ADS-C	VHF datalink or SATCOM datalink
RSP 400	ADS-C	HF datalink

PROCEDURE

Ident.: PRO-SPO-PBCS-00024649.0001001 / 02 MAR 18
Applicable to: ALL

MANAGEMENT OF DEGRADED DATALINK COMMUNICATION AND SURVEILLANCE

In PBCS airspace with RCP/RSP requirements, if the ATC datalink application or the communication means associated to a required RCP/RSP level are lost, the flight crew should notify ATC that RCP and/or RSP capability are lost.

LIMITATIONS

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LIM-INT Introduction

LIM-AG Aircraft General

LIM-AIR Air BLEED/COND/PRESS/VENT

LIM-AFS Auto Flight System

LIM-APU Auxiliary Power Unit

LIM-CAB Cabin Systems

LIM-CDS Control and Display System

LIM-COM Communication

LIM-DOORS Doors

LIM-ENG Engines

LIM-F-CTL Flight Controls

LIM-FUEL Fuel

LIM-ICE_RAIN Ice and Rain Protection

LIM-LG Landing Gear

LIM-LT Lights

LIM-NAV Navigation

LIM-OIS Onboard Information System

LIM-OXY Oxygen

LIM-ROW-ROP ROW/ROP - BTV

LIM-SURV Surveillance

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LIM-T-PED Transmitting Portable Electronic Device

M	Localization	DU Title	DU identification	DU date

No Temporary Documentary Unit

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LIMITATIONS

INTRODUCTION

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Introduction....................A

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INTRODUCTION

Ident.: LIM-INT-00022265.0001001 / 17 AUG 17
Applicable to: ALL

This FCOM chapter contains operational limitations, related to the aircraft and associated systems.
All references to airspeed, Mach and altitude relate to indicated airspeed, indicated Mach, and pressure altitude, unless otherwise noted.

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LIMITATIONS

AIRCRAFT GENERAL

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LIM-AG-F_CTL Flight Maneuvering Load Acceleration Limits

Flight Maneuvering Load Acceleration Limits.......... A

LIM-AG-OPS Operational Parameters

Environmental Envelope.......... A
Airport Operations and Wind Limitations.......... B

LIM-AG-SPD Speeds

Maximum Flaps/Slats Speeds.......... A
Maximum Operating Speed VMO/MMO.......... B
Maximum Speeds with the Landing Gear Extended.......... C
Maximum Tire Speed.......... D
Minimum Control Speeds.......... E
Wipers Maximum Operating Speed.......... F

LIM-AG-WGHT Weights

Weight Limitations.......... A
Takeoff Weight Limitations.......... B

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FLIGHT MANEUVERING LOAD ACCELERATION LIMITS

Ident.: LIM-AG-F_CTL-00022150.0001001 / 06 NOV 14
Applicable to: ALL

Clean configuration	-1 g to +2.5 g
Other configurations	0 g to +2.0 g

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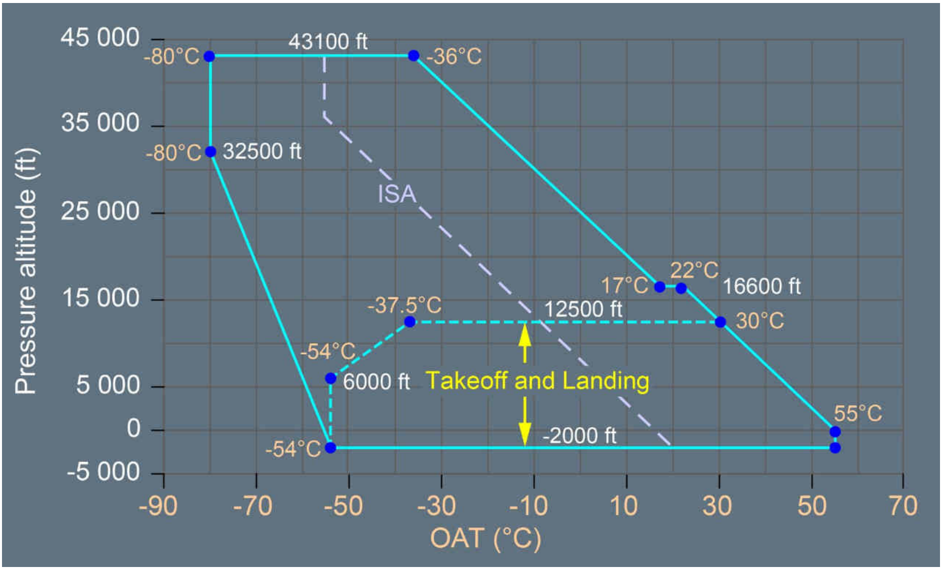
ENVIRONMENTAL ENVELOPE

Applicable to: ALL

Ident.: LIM-AG-OPS-ENV-00016262.0001001 / 06 NOV 14

Environmental Envelope



Ident.: LIM-AG-OPS-ENV-00022282.0001001 / 06 NOV 14

Minimum TAT.. -52 °C

AIRPORT OPERATIONS AND WIND LIMITATIONS

Applicable to: ALL

Ident.: LIM-AG-OPS-ARPT_WIND-00022298.0001001 / 06 NOV 14

RUNWAY SLOPE

Runway slope (mean) ....± 2 %

Ident.: LIM-AG-OPS-ARPT_WIND-00022323.0001001 / 08 JUL 19

MAXIMUM CROSSWIND FOR TAKEOFF AND LANDING

Runway Surface Conditions		**Maximum Crosswind for Takeoff (Gust included)**	**Braking Performance Level FOR LANDING**	**Maximum Crosswind for Landing (Gust included)**
Runway State or / and Runway Contaminant	**PiRep***(3)* **or ESF***(4)*			
Dry	-	35 kt *(1)*	6 - DRY	40 kt *(1)*
Damp **Wet:** Up to 3 mm (1/8") of water **Slush:** Up to 3 mm (1/8") **Dry Snow:** Up to 3 mm (1/8") **Wet Snow:** Up to 3 mm (1/8") **Frost**	GOOD	35 kt *(1)*	5 - GOOD	40 kt *(1)*
Compacted Snow: OAT at or below -15 °C	GOOD TO MEDIUM	27 kt *(2)*	4 - GOOD TO MEDIUM	27 kt *(2)*
Dry Snow: More than 3 mm (1/8"), up to 100 mm (4") **Wet Snow:** More than 3 mm (1/8"), up to 30 mm (6/5") **Compacted Snow:** OAT above -15 °C **Dry Snow over Compacted Snow** **Wet Snow over Compacted Snow** **Slippery Wet**	MEDIUM	20 kt *(2)*	3 - MEDIUM	20 kt *(2)*

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Runway Surface Conditions		**Maximum Crosswind for Takeoff (Gust included)**	**Braking Performance Level FOR LANDING**	**Maximum Crosswind for Landing (Gust included)**
Runway State or / and Runway Contaminant	**PiRep(3) or ESF(4)**			
Water: More than 3 mm (1/8”), up to 15 mm (3/5”) **Slush:** More than 3 mm (1/8”), up to 15 mm (3/5”)	MEDIUM TO POOR	20 kt *(2)*	2 - MEDIUM TO POOR	20 kt *(2)*
Ice (cold and dry)	POOR	15 kt *(2)*	1 - POOR	15 kt *(2)*

(1) *Maximum certified crosswind values. For maximum wind limitations for automatic approach, landing and roll-out,* Refer to LIM-AFS-20 General*.*

(2) *For contaminated runways, the maximum crosswind values given in the above table are recommended values based on computations.*

(3) *PiRep: Pilot Report of Braking Action*

(4) *ESF: Estimated Surface Friction*

Ident.: LIM-AG-OPS-ARPT_WIND-00022286.0002001 / 04 DEC 14

MAXIMUM TAILWIND FOR TAKEOFF

Maximum tailwind for takeoff.. 15 kt

Ident.: LIM-AG-OPS-ARPT_WIND-00022294.0001001 / 06 NOV 14

MAXIMUM TAILWIND FOR LANDING

Maximum tailwind for landing.. 10 kt

Ident.: LIM-AG-OPS-ARPT_WIND-00022287.0001001 / 06 NOV 14

MAXIMUM WIND FOR CABIN AND CARGO DOORS OPERATION

Maximum wind for cabin and cargo doors operation .... 40 kt
The cabin and cargo doors must be closed before the wind reaches 60 kt.

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MAXIMUM FLAPS/SLATS SPEEDS

Ident.: LIM-AG-SPD-00005762.0001001 / 06 MAY 15
Applicable to: ALL

FLAPS Lever Position	Configuration on Slat/Flap display	Max Speed	Flight Phase
0		VMO/MMO	CRUISE
1	1	255 kt	HOLDING
	1+F	220 kt (1)	TAKEOFF / APPROACH
2	2	212 kt	TAKEOFF / APPROACH
3	3	195 kt	TAKEOFF / APPROACH / LANDING
FULL	FULL	186 kt	LANDING

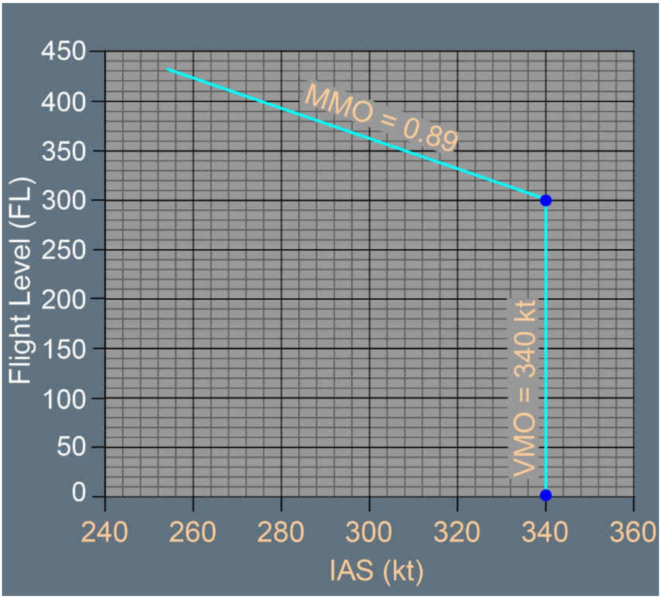
(1) *In CONF 1+F, when the aircraft reaches a speed of 210 kt, the Automatic Retraction System (ARS) automatically retracts the flaps to CONF 1.*

MAXIMUM OPERATING SPEED VMO/MMO

Ident.: LIM-AG-SPD-00005760.0001001 / 06 NOV 14
Applicable to: ALL

VMO...340 kt
MMO...0.89

VMO/MMO



The maximum operating limit speed VMO/MMO must not be intentionally exceeded in any regime of flight.

MAXIMUM SPEEDS WITH THE LANDING GEAR EXTENDED

Ident.: LIM-AG-SPD-00005764.0003001 / 02 MAY 18
Applicable to: ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYA, ET-AYB

Maximum speed with the landing gear extended (VLE/MLE)..250 kt / M 0.55
Maximum speed with the landing gear operating (VLO/MLO).......................................250 kt / M 0.55
Maximum speed for landing gear gravity extension (VLO/MLO)..................................220 kt / M 0.48

MAXIMUM SPEEDS WITH THE LANDING GEAR EXTENDED

Ident.: LIM-AG-SPD-00005764.0001001 / 17 NOV 17
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD

Maximum speed with the landing gear extended (VLE/MLE)..250 kt / M 0.55
Maximum speed with the landing gear operating (VLO/MLO).......................................250 kt / M 0.55
Maximum speed for landing gear gravity extension (VLO/MLO=VLE/MLE)................... 220 kt / M 0.48

MAXIMUM TIRE SPEED

Ident.: LIM-AG-SPD-00022117.0001001 / 06 NOV 14
Applicable to: ALL

Maximum ground speed...204 kt

MINIMUM CONTROL SPEEDS

Ident.: LIM-AG-SPD-00005763.0001001 / 05 JUN 18
Applicable to: ALL

MINIMUM CONTROL SPEED FOR LANDING (VMCL)

VMCL...122 kt

MINIMUM CONTROL SPEEDS IN THE AIR (VMCA) AND ON THE GROUND (VMCG)

Altitude (ft)	VMCA (kt IAS)	VMCG (kt IAS)		
		CONF 1+F	CONF 2	CONF 3
-2 000	131	131	131	130
0	131	131	130	130
2 000	128	126	126	125
4 000	126	124	123	123
6 000	122	119	119	118
8 000	118	114	113	113
10 000	113	107	106	106
12 000	109	102	101	101
14 000	105	97	97	96

WIPERS MAXIMUM OPERATING SPEED

Ident.: LIM-AG-SPD-00022119.0001001 / 06 NOV 14
Applicable to: ALL

Maximum speed...230 kt

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WEIGHT LIMITATIONS

Ident.: LIM-AG-WGHT-00016264.0034001 / 03 JAN 19
Applicable to: ET-AWM, ET-AWN, ET-AWO, ET-AWP

Multiple Weight Variants are certified.
A placard installed in the cockpit must indicate the current MTOW.

Weight Variant: WV 016		
Maximum Taxi Weight	278 900 kg	614 869 lb
Maximum Takeoff Weight (MTOW)	278 000 kg	612 885 lb
Maximum Landing Weight (MLW)	207 000 kg	456 356 lb
Maximum Zero Fuel Weight (MZFW)	195 700 kg	431 444 lb
Minimum Weight for Takeoff	144 000 kg	317 466 lb
Minimum Weight for Landing and in Flight	127 000 kg	279 987 lb

Note:
- *MTOW, MLW, and MZFW vary with the center of gravity.*
- *In exceptional conditions (in-flight turnback or diversion), an immediate landing at a weight above maximum landing weight is permitted, provided that the flight crew follows the overweight landing procedure.*

Weight Variant: WV 011		
Maximum Taxi Weight	255 900 kg	564 162 lb
Maximum Takeoff Weight (MTOW)	255 000 kg	562 178 lb
Maximum Landing Weight (MLW)	207 000 kg	456 356 lb
Maximum Zero Fuel Weight (MZFW)	195 700 kg	431 444 lb
Minimum Weight at Takeoff	144 000 kg	317 465 lb
Minimum Weight at Landing and in Flight	127 000 kg	279 987 lb

Note:
- *MTOW, MLW, and MZFW vary with the center of gravity.*
- *In exceptional conditions (in-flight turnback or diversion), an immediate landing at a weight above maximum landing weight is permitted, provided that the flight crew follows the overweight landing procedure.*

WEIGHT LIMITATIONS

Ident.: LIM-AG-WGHT-00016264.0033001 / 10 SEP 18
Applicable to: ET-AYA, ET-AYB

Weight Variant: WV 016		
Maximum Taxi Weight	278 900 kg	614 869 lb

Continued on the following page

Continued from the previous page

Maximum Takeoff Weight (MTOW)	278 000 kg	612 885 lb
Maximum Landing Weight (MLW)	207 000 kg	456 356 lb
Maximum Zero Fuel Weight (MZFW)	195 700 kg	431 444 lb
Minimum Weight for Takeoff	144 000 kg	317 466 lb
Minimum Weight for Landing and in Flight	127 000 kg	279 987 lb

Note:
- *MTOW, MLW, and MZFW vary with the center of gravity.*
- *In exceptional conditions (in-flight turnback or diversion), an immediate landing at a weight above maximum landing weight is permitted, provided that the flight crew follows the overweight landing procedure.*

WEIGHT LIMITATIONS

Ident.: LIM-AG-WGHT-00016264.0009001 / 14 APR 16
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE

Multiple Weight Variants are certified.
A placard installed in the cockpit must indicate the current MTOW.

Weight Variant: WV 001		
Maximum Taxi Weight	275 900 kg	608 255 lb
Maximum Takeoff Weight (MTOW)	275 000 kg	606 271 lb
Maximum Landing Weight (MLW)	207 000 kg	456 356 lb
Maximum Zero Fuel Weight (MZFW)	195 700 kg	431 444 lb
Minimum Weight for Takeoff	144 000 kg	317 465 lb
Minimum Weight for Landing and in Flight	127 000 kg	279 987 lb

Note:
- *MTOW, MLW, and MZFW vary with the center of gravity.*
- *In exceptional conditions (in-flight turnback or diversion), an immediate landing at a weight above maximum landing weight is permitted, provided that the flight crew follows the overweight landing procedure.*

Weight Variant: WV 011		
Maximum Taxi Weight	255 900 kg	564 162 lb
Maximum Takeoff Weight (MTOW)	255 000 kg	562 178 lb
Maximum Landing Weight (MLW)	207 000 kg	456 356 lb
Maximum Zero Fuel Weight (MZFW)	195 700 kg	431 444 lb
Minimum Weight at Takeoff	144 000 kg	317 465 lb
Minimum Weight at Landing and in Flight	127 000 kg	279 987 lb

Note:
- *MTOW, MLW, and MZFW vary with the center of gravity.*
- *In exceptional conditions (in-flight turnback or diversion), an immediate landing at a weight above maximum landing weight is permitted, provided that the flight crew follows the overweight landing procedure.*

TAKEOFF WEIGHT LIMITATIONS

Ident.: LIM-AG-WGHT-00024408.0003001 / 04 JUN 18
Applicable to: ALL

TAKEOFF WEIGHT LIMITATIONS

Condition	Limitation
TOW below 160 t (352 750 lb) and crosswind above 25 kt	D12, D16, D20, or D24 derated takeoff is mandatory
TOW below 175 t (385 809 lb) and takeoff performed in CONF 3	FLEX takeoff is not permitted

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LIMITATIONS

AIR BLEED/COND/PRESS/VENT

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APU Bleed Use with HP Air Start Unit........ A
Differential Pressure........ B
Packs Use with LP Air Conditioning Unit........ C
Ram Air Inlet........ D

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APU BLEED USE WITH HP AIR START UNIT

Ident.: LIM-AIR-00022007.0001001 / 06 NOV 14
Applicable to: ALL

Do not use bleed air from the APU BLEED and from the HP Air Start Unit at the same time, to prevent any adverse effect on the Bleed Air System (BAS).

DIFFERENTIAL PRESSURE

Ident.: LIM-AIR-00017979.0001001 / 06 NOV 14
Applicable to: ALL

Maximum positive differential pressure... 10.29 PSI
Maximum negative differential pressure..-0.72 PSI

L2 These two operating limitations correspond to the settings of the Negative Relief Valve and the Overpressure Relief Valve.

PACKS USE WITH LP AIR CONDITIONING UNIT

Ident.: LIM-AIR-00018078.0001001 / 06 NOV 14
Applicable to: ALL

Do not use conditioned air from the packs and from the LP Air Conditioning Unit at the same time, to prevent any adverse effect on the Air Conditioning system.

RAM AIR INLET

Ident.: LIM-AIR-00018064.0001001 / 06 NOV 14
Applicable to: ALL

The ram air inlet opens, only if the differential pressure is below 2 PSI.

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LIMITATIONS

AUTO FLIGHT SYSTEM

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LIM-AFS-10 General

General....................A
Use of FLS and FLS Capability....................B
Use of APP-DES Mode....................C
Use of NAV mode....................D

LIM-AFS-20 Automatic Approach, Automatic Landing and Automatic Roll-Out

General....................A
Special Authorization CAT I (SA CAT I)....................B
Lower Than Standard CAT I (LTS CAT I)....................C
ILS CAT I and ILS CAT II/III with no LVP....................D
GLS CAT I....................E
Special Authorization CAT II (SA CAT II)....................F
Other Than Standard CAT II (OTS CAT II)....................G
ILS CAT II/III....................H
Required Equipment for GLS ◁ CAT I Approach with Autoland....................I
Required Equipment for ILS CAT II/III Approach with Autoland....................J

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LIMITATIONS

AUTO FLIGHT SYSTEM

PRELIMINARY PAGES - SUMMARY OF HIGHLIGHTS

Localization Title	Toc Index	ID	Reason
LIM-AFS-20 General	A	1	Typo error correction - removal of one "Refer to" label that was duplicated.
LIM-AFS-20 ILS CAT II/III	H	2	Introduction of the "Alert height" for CAT III A operations, to be in accordance with the ICAO definition.

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GENERAL

Applicable to: ALL

Ident.: LIM-AFS-10-G10-00013044.0001001 / 06 NOV 14

AUTOPILOT

The autopilot can be used with the following minimum values:

At takeoff	At least 5 s after lift-off
After manual go-around	100 ft AGL
In approach with F-G/S mode	200 ft AGL
In approach with V/S or FPA mode	200 ft AGL
In approach with APP-DES mode	200 ft AGL
In approach with G/S mode and APPR1 on FMA	160 ft AGL
In approach with G/S mode and one of the following on FMA: - LAND1 - LAND2 - LAND3 SINGLE - LAND3 DUAL.	0 ft AGL if autoland 80 ft AGL if manual landing (1)
In all other flight phases	500 ft AGL

(1) *This value is an operating limitation recommended by Airbus (not an AFM limitation).*

The use of AP or FD in OP DES or DES is not permitted, if the AFS CP selected altitude is set below MDA(H)/DA(H), or 500 ft AGL, whichever is higher.

Ident.: LIM-AFS-10-G10-00005745.0001001 / 06 NOV 14

AUTOTHRUST

All AP/FD modes may be used with or without autothrust, except if specified.
Autothrust may be used with, or without AP/FD, in selected or managed speed/Mach.

Ident.: LIM-AFS-10-G10-00022271.0002001 / 06 NOV 14

FLIGHT MANAGEMENT

- The FMS lateral and vertical navigation is approved for after takeoff, en route and terminal area operations and for instrument approach procedures and missed approach procedures.
- The FLS (FMS Landing System) function is certified for instrument approach procedures using FMS navigation alone or FMS navigation associated with LOC, or ILS (G/S out), or LOC-BC. The FLS function is not certified for ILS, GLS, IGS, LDA, and SDF approaches or for RNAV(GNSS) final approaches with LP/LPV Minimum.
- The SLS function is certified for RNAV(GNSS) final approaches with LP/LPV Minimum.

- The FMS lateral navigation (NAV mode) is certified for instrument approach procedures except ILS, GLS, IGS, ILS (G/S out), LOC, LOC-BC, LDA, SDF final approaches and RNAV(GNSS) final approaches with LNAV/VNAV Minimum or LP/LPV Minimum.
- Approval of the FMS is based on the assumption that the navigation database is validated for intended use. The airworthiness approval does not account for database accuracy or compatibility.
  Obstacle clearance and adherence to airspace constraints remains a flight crew responsibility.
  Fuel, time predictions/performance information is provided for advisory purpose only.
  For instrument procedures not coded in the WGS 84 coordinate system, the GPS must be deselected, unless the shift between the local coordinate system and the WGS 84 is found acceptable for the intended operation.

  Note: *1. The assessment of this shift can be done:*

  - *In flight, monitoring the navaid raw data in non RNAV procedures*
  - *On ground performing a GNSS survey of the procedure waypoints.*

  2. The navigation performance for RNAV(GNSS) procedures is demonstrated based on WGS 84 coordinates.

Ident.: LIM-AFS-10-G10-00021668.0001001 / 06 NOV 14

NAVIGATION PERFORMANCE

For Advanced RNP operations with RF leg capability requiring RNP strictly below 1 NM, the FD and/or AP must be engaged and the numerical cross track deviations must be monitored on navigation display.
The above limitation does not concern RNP AR operations.

■ **With NAV PRIMARY:**
The RNP accuracy is:

	With AP ON - In NAV (all phases) - In F-LOC (approach phase)	**With AP OFF and FD ON** - In NAV (all phases) - In F-LOC (approach phase)	**With AP OFF and FD OFF**
En route	1 NM	1 NM	1 NM
Terminal area	0.5 NM	0.5 NM	0.5 NM
In approach	0.3 NM	0.3 NM	0.5 NM with F-LOC deviation. Not authorized without F-LOC deviation.

- **For RNP AR:**

  The minimum approved/certified RNP AR level is 0.10 NM. RNP AR performance requires AP ON and the following modes:
  - Departure in NAV mode
  - Initial / Intermediate approach in NAV mode
  - Final approach in NAV and APP-DES modes
  - Missed approach in NAV mode.

  Note: *1. For RNP AR operations limited to RNP 0.3 NM only, the flight crew may consider AP OFF and FD ON. However, Airbus recommends the use of AP for all RNP AR operations.*
  2. The transition from a RNP AR VIA to an approach which is not RNP AR is submitted to operational approval.

■ **Without NAV PRIMARY**

The navigation accuracy is demonstrated provided that the appropriate RNP value is checked or entered on the MFD and HIGH accuracy is displayed.

USE OF FLS AND FLS CAPABILITY

Applicable to: ALL

Ident.: LIM-AFS-10-20-00022273.0001001 / 06 NOV 14

APPROACH BASED ON RADIO NAVAIDS

A navaids approach (e.g. VOR/DME) may be flown with the FLS provided that:
- F-APP capability is displayed on FMA.
  In this case, the reference navaids may be unserviceable, or the airborne radio equipment may be inoperative, or not installed, provided an operational approval is obtained.
- F-APP + RAW capability is displayed on FMA.
  In this case, the reference navaids and the corresponding airborne radio equipment must be serviceable, tuned and monitored during the approach.

An ILS (G/S out), ILS-BC (G/S out), LOC, LOC-BC approach may be flown with the lateral LOC (LOC-BC) mode and with the F-G/S mode of FLS function provided that:
- F-APP capability is displayed on FMA.
  In this case, the reference navaids used for the vertical path validation must be tuned and checked at final descent point.
- F-APP + RAW capability is displayed on FMA.
  In this case, the reference navaids used for the vertical path validation must be tuned and checked at final descent point and monitored during the approach.

RNAV(GNSS) APPROACH

An RNAV(GNSS) approach with LNAV minimum may be flown with the FLS provided that the F-APP capability is displayed on FMA.
An RNAV(GNSS) approach with LNAV/VNAV minimum must be flown with the FLS provided that the F-APP capability is displayed on FMA.

Note: *The RNAV(GNSS) approach limitations and procedures must be used to perform an RNAV approach for which the GNSS is not required.*

Ident.: LIM-AFS-10-20-00022275.0001001 / 06 NOV 14

FLS CAPABILITY

The following table presents the FLS capability, as monitored by the FG, in accordance with required conditions:

Required Conditions	FLS Capability		
	RAW ONLY	F-APP + RAW	F-APP
FMC	1	1	1
Navigation Accuracy	No requirement	ACCURACY HIGH in one FMS	NAV PRIMARY in one FMS
MMR With FLS function	1	1	1
MMR With GNSS reception	0	0	1
ADIRU	1	1	2
FMS and GNSS position consistency	No requirement	Yes	Yes

USE OF APP-DES MODE

Ident.: LIM-AFS-10-00022277.0001001 / 06 NOV 14
Applicable to: ALL

The use of APP-DES vertical mode is certified for RNAV(RNP) final approaches, provided that the RNP AR capability is compliant with the selected procedure.
The use of APP-DES vertical mode is not permitted for RNAV(GNSS) with LNAV or LNAV/VNAV or LP/LPV minima, or for approaches based on navaids.

USE OF NAV MODE

Ident.: LIM-AFS-10-00022272.0001001 / 06 NOV 14
Applicable to: ALL

AFTER TAKEOFF

NAV mode may be used after takeoff provided that:
- NAV PRIMARY is available, or
- The flight crew check of FMS runway position update.

IN TERMINAL AREA

NAV mode may be used in terminal area provided that:
- NAV PRIMARY is available, or
- HIGH accuracy is displayed and the appropriate RNP is checked or entered on the MFD, or
- Aircraft navigation is crosschecked with navaids.

APPROACH BASED ON RADIO NAVAIDS

A navaids approach (e.g. VOR/DME) may be flown in NAV mode provided that:
- NAV PRIMARY is available.
  In this case, the reference navaids may be unserviceable, or the airborne radio equipment may be inoperative, or not installed, provided that an operational approval is obtained
- NAV PRIMARY is not available.
  In this case, the reference navaids and the corresponding airborne radio equipment must be serviceable, tuned and monitored during the approach.

RNAV(GNSS) APPROACH

An RNAV(GNSS) approach with LNAV minimum may be flown in NAV mode provided that NAV PRIMARY is available.

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GENERAL

Ident.: LIM-AFS-20-00021666.0004001 / 03 JUL 20
Applicable to: ALL

For automatic landing, one autopilot at least must be engaged in APPR mode, LAND1, LAND2 or LAND3 SINGLE or LAND3 DUAL capability must be displayed on the FMA and the configuration must be CONF 3 or CONF FULL.

Note: *Automatic approach and automatic landing have been demonstrated with one engine inoperative in CONF 3 and CONF FULL, if engine out procedures are completed before reaching 1 000 ft in approach.*

Minimum aircraft weight: 140 000 kg (308 647 lb).

Note: *Depending on the situation (e.g. emergency or other) and provided that the runway is approved for automatic landing, the flight crew can decide to perform an autoland up to the maximum takeoff weight.*

AIRPORT CONDITIONS

Automatic landing is demonstrated, as follows:
- With an airport elevation up to 9 200 ft
- With a glide slope angle between -2.5 ° and -3.5 °.

1 RUNWAY CONDITIONS

CAT IIIB operation is not authorized on contaminated runways.
The performance of the ROLL OUT mode is demonstrated on dry and wet runways (up to 3 mm of water). The roll out performance on contaminated runways has not been demonstrated and cannot be assured.

Therefore, if the flight crew aims to keep AP engaged during rollout on a contaminated runway, they must apply all of the following:
- Consider the maximum crosswind value that is the most restrictive (associated either with the runway condition, or with autoland)
  L2 For more information on the maximum crosswind value for landing associated with the runway condition, *Refer to FCOM/Maximum Crosswind for Takeoff and Landing*.
- L1 Be prepared to disengage the AP and take over manually should ROLL OUT directional control become inadequate.

WEATHER CONDITIONS

Maximum wind conditions:
- Maximum tailwind: *Refer to LIM-AG-OPS Maximum Tailwind for Landing*
- Maximum headwind: 40 kt
- Maximum crosswind: 30 kt

Note: *Wind limitation is based on the surface wind reported by the tower. If the ND indicates a current wind speed that exceeds the above-noted autoland limitations, but the tower reports a surface wind speed within the limitations, then the flight crew can perform an automatic landing. If the tower reports a surface wind speed beyond the limits, the flight crew can only perform a CAT I or CAT II automatic approach without autoland.*

SPECIAL AUTHORIZATION CAT I (SA CAT I)

Ident.: LIM-AFS-20-00022924.0001001 / 06 NOV 18
Applicable to: ALL

APPLICABLE TO AIRCRAFT EQUIPPED WITH HUD ◁

Minimum decision height..150 ft
At least one autopilot must be engaged down to DH in APPR mode and LAND2, LAND3 SINGLE or LAND3 DUAL must be displayed on the FMA.
The flight crew must use the HUD to monitor the approach.
The flight crew should perform a manual landing.

LOWER THAN STANDARD CAT I (LTS CAT I)

Ident.: LIM-AFS-20-00022925.0001001 / 06 NOV 18
Applicable to: ALL

APPLICABLE TO AIRCRAFT EQUIPPED WITH HUD ◁

Minimum decision height..200 ft
The flight crew must use the HUD to monitor the approach.
The flight crew should perform a manual landing.

ILS CAT I AND ILS CAT II/III WITH NO LVP

Ident.: LIM-AFS-20-00022354.0001001 / 06 NOV 14
Applicable to: ALL

Automatic landing system performance is demonstrated with CAT II and CAT III ILS airport installation. However, ILS CAT I automatic landing can be performed on ILS CAT I airport installation, or on CAT II/III airport installation when Low Visibility Procedure (LVP) are not applicable, provided that the following precautions are taken:

- The airline checked that the ILS beam quality, and the effect of the terrain profile before the runway have no adverse effect on autopilot guidance. Particularly, the effect of terrain profile within 300 m before the runway threshold must be evaluated
- The flight crew is aware that LOC or G/S beam fluctuations, independent of the aircraft system, may occur. The PF is prepared to immediately disconnect the autopilot, and to take the appropriate action, should not satisfactory guidance occur
- At least LAND2 capability is displayed on the FMA and the flight crew use CAT II/III procedures
- Visual references are obtained at a DH appropriate for the ILS CAT I approach. If not, a go-around must be performed.

GLS CAT I

Ident.: LIM-AFS-20-00021664.0001001 / 06 NOV 18
Applicable to: ALL

GLS CATEGORY I APPROACH

Minimum decision height ....200 ft

- **Without automatic landing**
  One AP and/or FD must be engaged in APPR mode and APPR1 or LAND1 approach and landing capability must be displayed on FMA.
- **With automatic landing**
  One AP at least must be engaged in APPR mode and LAND1 approach and landing capability must be displayed on FMA.

SPECIAL AUTHORIZATION CAT II (SA CAT II)

Ident.: LIM-AFS-20-00022926.0001001 / 06 NOV 18
Applicable to: ALL

Minimum decision height...100 ft

At least one autopilot must be engaged in APPR mode and LAND2, LAND3 SINGLE or LAND3 DUAL must be displayed on the FMA.

With HUD ◁ , the flight crew must use the HUD to monitor the approach and perform an automatic landing or a manual landing. If the flight crew performs an automatic approach without automatic landing, the autopilot must be disengaged no later than at 80 ft AGL.

Without HUD, the flight crew must perform an automatic landing.

OTHER THAN STANDARD CAT II (OTS CAT II)

Ident.: LIM-AFS-20-00022927.0001001 / 06 NOV 18
Applicable to: ALL

Minimum decision height..100 ft
At least one autopilot must be engaged in APPR mode and LAND2, LAND3 SINGLE or LAND3 DUAL must be displayed on the FMA.
With HUD ◁ , the flight crew must use the HUD to monitor the approach and perform an automatic landing or a manual landing. If the flight crew performs an automatic approach without automatic landing, the autopilot must be disengaged no later than at 80 ft AGL.
Without HUD, the flight crew must perform an automatic landing.

ILS CAT II/III

Ident.: LIM-AFS-20-00021665.0001001 / 07 JUL 20
Applicable to: ALL

CATEGORY II AUTOMATIC APPROACH WITH OR WITHOUT AUTOMATIC LANDING

Minimum decision height ....100 ft
One AP at least must be engaged in APPR mode and LAND2, LAND3 SINGLE or LAND3 DUAL approach and landing capability must be displayed on FMA.

2 CATEGORY III WITH DH AT OR ABOVE 50 FT AUTOMATIC APPROACH WITH AUTOMATIC LANDING

Minimum decision height..50 ft
Alert height (if LAND3 DUAL is displayed on FMA)........................200 ft AGL
One AP at least must be engaged in APPR mode and LAND3 SINGLE or LAND3 DUAL approach and landing capability must be displayed on FMA.

CATEGORY III WITH DH BELOW 50 FT OR NO DH AUTOMATIC APPROACH WITH AUTOMATIC LANDING

Decision height..Below 50 ft or no DH
Alert height..200 ft AGL
Two AP must be engaged in APPR mode and LAND3 DUAL approach and landing capability must be displayed on FMA.

REQUIRED EQUIPMENT FOR GLS ◁ CAT I APPROACH WITH AUTOLAND

Ident.: LIM-AFS-20-00021785.0001001 / 30 JAN 18
Applicable to: ALL

Prior to initiating a CAT I GLS approach ◁ with autoland, the flight crew should check that the equipment or functions below-listed are available:

Required Equipment Not Monitored by FG	GLS With Autoland
AP pb, or CAPT sidestick pushbutton, or F/O sidestick pushbutton	2
Autoland light	1
AP OFF alert	Available
DA/DH Indication	1 for PM
Attitude indication on PFD	2
Attitude indication on standby instrument	1
Windshield wiper, or rain repellent	1 for PF
Windshield heating	1 for PF

In addition, the Flight Guidance (FG) monitors other required equipment, and computes the approach capability. The loss of a required equipment, monitored by the FG, is announced by an assigned alert (e.g. NAV RA SYS A+B+C FAULT), or by the AUTO FLT APPROACH CAPABILITY DOWNGRADED alert.

L2 The following table presents equipment, monitored by the FG, required to perform a GLS CAT I approach with autoland:

Required Equipment Monitored by FG	GLS LAND1
AP	1 AP engaged
PRIM	1
Normal law for yaw, pitch, and roll	Available
Rudder trim and rudder position	Available
AFS CP, or CAPT AFS CP backup, or F/O AFS CP backup	1
PFD display	2
RA and MMR display on PFD	Available
FWS, including the audio function	1
Ground spoilers	Available
Radio Altimeter	1
MMR tuned with GLS channel	2
ADR	2
IRS in NAV mode	2

REQUIRED EQUIPMENT FOR ILS CAT II/III APPROACH WITH AUTOLAND

Ident.: LIM-AFS-20-00005757.0005001 / 07 JUN 19
Applicable to: ET-AWO, ET-AWP, ET-AYA, ET-AYB

Prior to initiating an ILS CAT II/III approach with autoland, the crew should check that the equipment or functions listed in the following table are available:

Required Equipment Not Monitored by FG	LAND2	LAND3 SINGLE	LAND3 DUAL
AP pb, or CAPT sidestick pushbutton, or F/O sidestick pushbutton	2	2	2
Autoland light	1	1	1
AP OFF alert	Available	Available	Available
DH Indication	1 for PM	1 for PM	1 for PM
Attitude indication on PFD	2	2	2
Attitude indication on standby instrument	1	1	1
Windshield wiper, or rain repellent	1 for PF	1 for PF	1 for PF
Windshield heating	1 for PF	1 for PF	1 for PF

In addition, the FG monitors other required equipment, and computes the approach capability. The loss of a required equipment, monitored by the FG, is announced by an assigned alert (e.g. NAV RA SYS A+B+C FAULT), or by the AUTO FLT APPROACH CAPABILITY DOWNGRADED alert.

L2 The following table presents equipment, monitored by the FG, required to perform an ILS CAT II or CAT III approach with autoland:

L23

Required Equipment Monitored by FG	LAND2	LAND3 SINGLE	LAND3 DUAL
AP	1 AP engaged	1 AP engaged	2 APs engaged
A/THR	Not required	Active	Active
PRIM	1	1	2
SEC	SEC 2 or SEC 3	SEC 2 or SEC 3	SEC 2 or SEC 3
North reference	MAG	MAG	MAG
Slat and Flap Systems	(SLAT SYS 1 and FLAP SYS 1) or (SLAT SYS 2 and FLAP SYS 2) (4)	(SLAT SYS 1 and FLAP SYS 1) or (SLAT SYS 2 and FLAP SYS 2) (4)	(SLAT SYS 1 and FLAP SYS 2) or (SLAT SYS 2 and FLAP SYS 1) (4)
Elevator	1	1	1
Rudder actuation, rudder position and rudder trim	Available	Available	Available
Normal or Alternate law	Available	Available	Available
Hydraulic circuit	1	1	2
AFS CP, or CAPT AFS CP backup, or F/O AFS CP backup	1	1	1
PFD display	2	2	2

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Required Equipment Monitored by FG	LAND2	LAND3 SINGLE	LAND3 DUAL
FWS, including the audio function	1	1	2
FCDC	1	1	2
Braking Systems (BCS)	Not required	Not required	1
Symetrical braking	Not required	Not required	Available
Antiskid	Not required	Not required	Available and ON
Nosewheel Steering *(1)*	Not required	Not required	Available
Ground spoilers	Available	Available	Available
Radio Altimeter	1	2	2
MMR tuned with ILS frequency *(2)*	2	2	2
ADR	2	2	2
IRS in NAV mode	2	2	3
Angle of Attack	2	2	3
Engine	1	1	1
AC busbar	*(3)*	*(3)*	4
Supply of AC busbars	*(3)*	*(3)*	2 independent AC busbars
Supply of DC busbars	*(3)*	*(3)*	2 independent DC emergency busbars

(1) *In LAND3 DUAL, the nosewheel steering must be able to receive AP guidance orders.*

(2) *In addition, the tuning of both ILS must be consistent.*
If the tuning of both ILS in MMR is not consistent, the NAV LS TUNING DISAGREE alert triggers.

(3) *In accordance with the failure, and the associated equipment loss, capability downgrade may occur.*

(4) *The approach and landing capability downgrades to APPR1 if all of the following are applicable:*
- *A failure leads to the loss of the Slat system (i.e. F/CTL SLAT SYS 1+2 FAULT) or to the loss of the Flap system (i.e. F/CTL FLAP SYS 1+2 FAULT)*
- *The configuration is not set to CONF 3 or CONF FULL.*

REQUIRED EQUIPMENT FOR ILS CAT II/III APPROACH WITH AUTOLAND

Ident.: LIM-AFS-20-00005757.0002001 / 31 MAY 18
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN

Prior to initiating an ILS CAT II/III approach with autoland, the crew should check that the equipment or functions listed in the following table are available:

Required Equipment Not Monitored by FG	**LAND2**	**LAND3 SINGLE**	**LAND3 DUAL**
AP pb, or CAPT sidestick pushbutton, or F/O sidestick pushbutton	2	2	2
Autoland light	1	1	1
AP OFF alert	Available	Available	Available
DH Indication	1 for PM	1 for PM	1 for PM
Attitude indication on PFD	2	2	2
Attitude indication on standby instrument	1	1	1
Windshield wiper, or rain repellent	1 for PF	1 for PF	1 for PF
Windshield heating	1 for PF	1 for PF	1 for PF

In addition, the FG monitors other required equipment, and computes the approach capability. The loss of a required equipment, monitored by the FG, is announced by an assigned alert (e.g. NAV RA SYS A+B+C FAULT), or by the AUTO FLT APPROACH CAPABILITY DOWNGRADED alert.

L2 The following table presents equipment, monitored by the FG, required to perform an ILS CAT II or CAT III approach with autoland:

L23

Required Equipment Monitored by FG	**LAND2**	**LAND3 SINGLE**	**LAND3 DUAL**
AP	1 AP engaged	1 AP engaged	2 APs engaged
A/THR	Not required	Active	Active
PRIM	1	1	2
SEC	SEC 2 or SEC 3	SEC 2 or SEC 3	SEC 2 or SEC 3
North reference	MAG	MAG	MAG
Slat and Flap Systems	(SLAT SYS 1 and FLAP SYS 1) or (SLAT SYS 2 and FLAP SYS 2) *(4)*	(SLAT SYS 1 and FLAP SYS 1) or (SLAT SYS 2 and FLAP SYS 2) *(4)*	(SLAT SYS 1 and FLAP SYS 2) or (SLAT SYS 2 and FLAP SYS 1) *(4)*
Elevator	1	1	1

Continued on the following page

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Required Equipment Monitored by FG	LAND2	LAND3 SINGLE	LAND3 DUAL
Rudder actuation, rudder position and rudder trim	Available	Available	Available
Normal or Alternate law	Available	Available	Available
Hydraulic circuit	1	1	2
AFS CP, or CAPT AFS CP backup, or F/O AFS CP backup	1	1	1
PFD display	2	2	2
FWS, including the audio function	1	1	2
FCDC	1	1	2
Braking Systems (BCS)	Not required	Not required	1
Symetrical braking	Not required	Not required	Available
Antiskid	Not required	Not required	Available and ON
Nosewheel Steering *(1)*	Not required	Not required	Available
Ground spoilers	Available	Available	Available
Radio Altimeter	1	2	2
MMR tuned with ILS frequency *(2)*	2	2	2
ADR	2	2	2
IRS in NAV mode	2	2	3
Angle of Attack	2	2	3
Sideslip angle	2	2	2
Engine	1	1	1
AC busbar	*(3)*	*(3)*	4

Continued on the following page

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Required Equipment Monitored by FG	LAND2	LAND3 SINGLE	LAND3 DUAL
Supply of AC busbars	(3)	(3)	2 independent AC busbars
Supply of DC busbars	(3)	(3)	2 independent DC emergency busbars

(1) *In LAND3 DUAL, the nosewheel steering must be able to receive AP guidance orders.*

(2) *In addition, the tuning of both ILS must be consistent.*
If the tuning of both ILS in MMR is not consistent, the NAV LS TUNING DISAGREE alert triggers.

(3) *In accordance with the failure, and the associated equipment loss, capability downgrade may occur.*

(4) *The approach and landing capability downgrades to APPR1 if all of the following are applicable:*
- *A failure leads to the loss of the Slat system (i.e. F/CTL SLAT SYS 1+2 FAULT) or to the loss of the Flap system (i.e. F/CTL FLAP SYS 1+2 FAULT)*
- *The configuration is not set to CONF 3 or CONF FULL.*

LIMITATIONS

AUXILIARY POWER UNIT

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LIMITATIONS

AUXILIARY POWER UNIT

PRELIMINARY PAGES - TABLE OF CONTENTS

General..A
APU Start/Shutdown During Refueling/Defueling..B
Operational Envelope..C

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GENERAL

Applicable to: ALL

Ident.: LIM-APU-10-00022309.0001001 / 13 JAN 15

OIL QUANTITY

The APU may be started and operated even if the OIL LEVEL LO ECAM advisory is displayed. Maintenance action is required within 20 h of APU operation.

Ident.: LIM-APU-10-00022308.0001001 / 06 NOV 14

APU START

After three consecutive APU start attempts, the flight crew must wait 60 min before a new start attempt.

Ident.: LIM-APU-10-00022310.0001001 / 06 NOV 14

ROTOR SPEED

Maximum N speed.. 106 %

Ident.: LIM-APU-10-00022311.0001001 / 06 NOV 14

EGT

Maximum EGT for APU start.. 1 260 °C
Maximum EGT for APU running..680 °C

APU START/SHUTDOWN DURING REFUELING/DEFUELING

Ident.: LIM-APU-00021937.0001001 / 06 NOV 14
Applicable to: ALL

An APU start is not permitted during a refuel/defuel procedure if the APU has failed to start or an automatic shutdown has occurred.
A normal APU shutdown must be completed if a fuel spill has occurred during the refuel/defuel procedure.

OPERATIONAL ENVELOPE

Ident.: LIM-APU-00013182.0001001 / 06 NOV 14
Applicable to: ALL

APU ELECTRIC GENERATOR

The electric generator of the APU can operate in the entire flight envelope.

APU BLEED

Max altitude to assist engine start.. 25 000 ft

Max altitude for air conditioning and pressurization (single pack operation)........................ 25 000 ft
Max altitude for air conditioning and pressurization (dual pack operation)...........................22 500 ft
Use of APU bleed air for wing anti-ice is not permitted.

LIMITATIONS

CABIN SYSTEMS

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LIMITATIONS

CABIN SYSTEMS

PRELIMINARY PAGES - TABLE OF CONTENTS

ON-BOARD MOBILE TELEPHONY SYSTEM (OMTS)........ A
POWER SUPPLY FOR PORTABLE ELECTRONIC DEVICE (PED)........ B

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ON-BOARD MOBILE TELEPHONY SYSTEM (OMTS)

Ident.: LIM-CAB-00022293.0001001 / 04 MAY 18
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB

The use of mobile phones is prohibited in toilets, crew rest areas and cockpit when the aircraft is moving.

POWER SUPPLY FOR PORTABLE ELECTRONIC DEVICE (PED)

Ident.: LIM-CAB-00022295.0002001 / 03 AUG 16
Applicable to: ALL

The power supply for the Portable Electronic Device (PED carried by the passengers) must be turned off during takeoff and landing.

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LIMITATIONS

CONTROL AND DISPLAY SYSTEM

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LIMITATIONS

CONTROL AND DISPLAY SYSTEM

PRELIMINARY PAGES - TABLE OF CONTENTS

Head Up Display (HUD)........ A
Vertical Display (VD)........ B

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HEAD UP DISPLAY (HUD)

Ident.: LIM-CDS-00022237.0001001 / 01 MAR 17
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB

The use of the Head Up Display (HUD) is approved for all phases of flight with the following limitations:

MANUAL APPROACH

The HUD may be used for visual, or CAT I approaches, provided that the selected slope is between -2 ° and -4 °

AUTOMATIC APPROACH, LANDING AND ROLLOUT

The HUD may be used for monitoring an automatic approach, landing and rollout.

Note: *Following automatic approach and landing, the HUD is approved as a reversionary means for rollout in the event of untimely autopilot disconnection or failure of a system affecting automatic rollout.*

VERTICAL DISPLAY (VD)

Ident.: LIM-CDS-00022279.0001001 / 06 NOV 14
Applicable to: ALL

The Vertical Display (VD) is provided for advisory purpose only. It is not a primary means of vertical navigation.

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LIMITATIONS

COMMUNICATION

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HF Communication... A

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HF COMMUNICATION

Ident.: LIM-COM-00008842.0001001 / 06 NOV 14
Applicable to: ALL

During ground fuel operations (i.e. refueling, defueling, fuel transfer), do not use HF communication.

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LIMITATIONS

DOORS

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Maximum Wind for Cabin and Cargo Doors Operation.. A

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MAXIMUM WIND FOR CABIN AND CARGO DOORS OPERATION

Ident.: LIM-DOORS-00022288.0001001 / 06 NOV 14
Applicable to: ALL

Refer to LIM-AG-OPS Maximum Wind for Cabin and Cargo Doors Operation.

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LIMITATIONS

ENGINES

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LIMITATIONS

ENGINES

PRELIMINARY PAGES - TABLE OF CONTENTS

Thrust Setting/EGT LIMITS.......... A
Shaft Speeds.......... B
OIL.......... C
Starter.......... D
Reverse Thrust.......... E
Reduced Thrust Takeoff.......... F
Derated Takeoff.......... G
Soft Go-Around.......... H
Maximum Taxi Time in FZFG conditions.......... I
Engine Warm-up Before Takeoff.......... J

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Localization Title	Toc Index	ID	Reason
LIM-ENG OIL	C	1	Correction of a typo error.

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THRUST SETTING/EGT LIMITS

Ident.: LIM-ENG-00016268.0001001 / 04 DEC 14
Applicable to: ALL

Operating Conditions		Time Limit	EGT Limit
Takeoff and Go-around	All engines operative	5 min	900 °C
	One engine inoperative	10 min	
Maximum Continuous Thrust (MCT) (1)		Not limited	850 °C
Starting	On ground		700 °C
	In flight		850 °C

(1) *Applicable to engine failure.*

SHAFT SPEEDS

Ident.: LIM-ENG-00016270.0004001 / 03 JAN 19
Applicable to: ALL

Maximum N1 (FAN MARK I)......98.1 %
Maximum N1 (FAN MARK II)......99.1 %

L2 *Note:* *The N1 Red Limit value that appears on the Engine Display is set according to the maximum N1. In the case of an engine intermix (between Fan Mark I and Fan Mark II), the Engine Display may indicate a different N1 Red Limit for each engine.*

L1 Maximum N2...... 100.4 %
Maximum N3...... 98.8 %

OIL

Ident.: LIM-ENG-00016269.0001001 / 03 JUL 20
Applicable to: ALL

OIL TEMPERATURE

Maximum continuous temperature...... 180 °C
Minimum starting temperature......-40 °C
Minimum temperature before takeoff...... 50 °C

OIL PRESSURE

Minimum oil pressure......25 PSI

1 OIL QUANTITY

Minimum oil quantity......13 quarts

Note: One of the following actions or oil system characteristics can cause indications of reduced oil quantity on the ENG SD page:
- *If oil drains from the oil tank to the engine after oil servicing, or*
- *If an engine crank or an engine run is performed on the engine before the flight.*

As a result, if the oil quantity indicated on the ENG SD page is less than the minimum oil quantity defined above, perform one of the following:
- *Check that the oil tank level, that is reported in the technical logbook, is above the minimum oil quantity, or*
- *Check in the technical log book that the oil tank was fully filled.*

STARTER

Ident.: LIM-ENG-00016271.0001001 / 31 JUL 18
Applicable to: ALL

Maximum continuous starter operation is 5 min:
- Two consecutive cycles of 3 min maximum, plus one additional cycle of 1 min, with a run down to zero N3 and wait 30 s between each cycle, or
- One 5 min cycle.

Wait 30 min after the last cycle to allow the starter to cool.
No running engagement of the starter when the N3 is above 10 % on ground, or 30 % in flight.

REVERSE THRUST

Ident.: LIM-ENG-00008852.0001001 / 06 NOV 14
Applicable to: ALL

- Selection of the reverse thrust is prohibited in flight
- Backing the aircraft with reverse thrust is not permitted
- Maximum reverse should not be used below 70 kt (or when the indication starts to fluctuate). Idle reverse is allowed down to aircraft stop.

REDUCED THRUST TAKEOFF

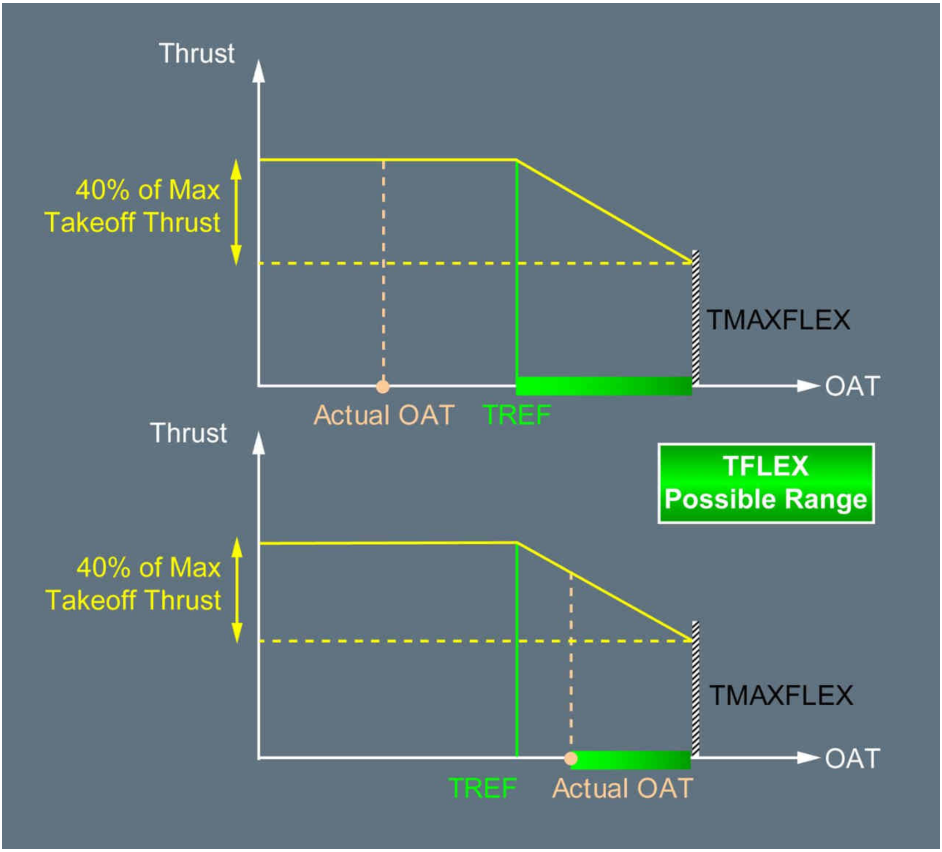
Ident.: LIM-ENG-00008853.0001001 / 04 MAY 16
Applicable to: ALL

Takeoff at reduced thrust, so-called as FLEX takeoff, is allowed only if the airplane meets all performance requirements at the takeoff weight, with the operating engines at the thrust available for the flexible temperature (TFLEX).
Takeoff at reduced thrust is allowed with any inoperative item affecting the performance only if the associated performance shortfall has been applied to meet the above requirements.
FLEX takeoff is not permitted on contaminated runways.

TFLEX cannot be:

- Higher than TMAXFLEX, equal to ISA + 60. TMAXFLEX corresponds to a reduction of 40 % from the full rated takeoff thrust.
- Lower than the flat rating temperature (TREF), equal to:
  - ISA + 15, for pressure altitudes below 2 000 ft
  - ISA + 10, for pressure altitudes between 4 000 ft and 8 000 ft
  - ISA + 15, for pressure altitudes above 10 000 ft
  - For pressure altitudes between 2 000 ft and 4 000 ft, and for pressure altitudes between 8 000 ft and 10 000 ft, TREF is determined by linear interpolation between ISA + 10 and ISA + 15.
- Lower than the actual OAT.

TFLEX Limitations


Thrust
40% of Max
Takeoff Thrust
TMAXFLEX
OAT
Actual OAT
TREF
Thrust
TFLEX
Possible Range
40% of Max
Takeoff Thrust
TMAXFLEX
OAT
TREF
Actual OAT

DERATED TAKEOFF

Ident.: LIM-ENG-00019848.0002001 / 24 MAY 17
Applicable to: ALL

Selection of TOGA thrust is not permitted when a derated takeoff is performed, except when requested in any abnormal or emergency procedures.
The use of reduced thrust takeoff (FLEX takeoff) is not permitted in conjunction with derated takeoff.
The use of derated takeoff is permitted regardless of the runway condition (dry, wet or contaminated).

SOFT GO-AROUND

Ident.: LIM-ENG-00019849.0001001 / 06 NOV 14
Applicable to: ALL

The use of GA SOFT mode is prohibited with one engine inoperative.

MAXIMUM TAXI TIME IN FZFG CONDITIONS

Ident.: LIM-ENG-00024239.0001001 / 29 JAN 19
Applicable to: ALL

Outside Air Temperature (OAT)	Engine Stator A-ICE Valve Operative or Failed Open	Engine Stator A-ICE Valve Failed Closed
-9 °C (16 °F) ≤ OAT < 1 °C (34 °F)	120 min max engines operation	No Dispatch (1)
OAT below -9 °C (16 °F)	80 min max engines operation	

(1) *Cancel takeoff and request the maintenance crew to perform:*
- *An engine section stator anti-ice valve inspection,*
- *The VIGV inspection, and if necessary a manual engine core deicing.*

ENGINE WARM-UP BEFORE TAKEOFF

Ident.: LIM-ENG-00024061.0001001 / 13 DEC 16
Applicable to: ALL

The engines must warm up at idle or taxi thrust before takeoff.

IF ENGINES WERE SHUT DOWN 90 MIN OR LESS:

Warm-up Time.. 2 min

IF ENGINES WERE SHUT DOWN MORE THAN 90 MIN:

Warm-up Time.. 5 min

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LIMITATIONS

FLIGHT CONTROLS

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LIMITATIONS

FLIGHT CONTROLS

PRELIMINARY PAGES - TABLE OF CONTENTS

Flight Maneuvering Load Acceleration Limits........ A
Maximum Altitude Flaps/Slats Extended........ B
Maximum Flaps/Slats Speeds........ C
Use of Flight Controls........ D

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FLIGHT MANEUVERING LOAD ACCELERATION LIMITS

Ident.: LIM-F-CTL-00005772.0001001 / 06 NOV 14
Applicable to: ALL

Refer to LIM-AG-F_CTL Flight Maneuvering Load Acceleration Limits.

MAXIMUM ALTITUDE FLAPS/SLATS EXTENDED

Ident.: LIM-F-CTL-00022289.0001001 / 06 NOV 14
Applicable to: ALL

Maximum operating altitude with slats and/or flaps extended..20 000 ft

MAXIMUM FLAPS/SLATS SPEEDS

Ident.: LIM-F-CTL-00022227.0001001 / 06 NOV 14
Applicable to: ALL

Refer to LIM-AG-SPD Maximum Flaps/Slats Speeds.

USE OF FLIGHT CONTROLS

Ident.: LIM-F-CTL-00022229.0001001 / 06 NOV 14
Applicable to: ALL

CAUTION	Rapid and large alternating control inputs, especially in combination with large changes in pitch, roll and yaw (e.g. large sideslip angles) may result in structural failures at any speed.

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LIMITATIONS

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Certified Fuel....A
Fuel Temperature.... B
Maximum Allowed Fuel Imbalance.... C

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Localization Title	Toc Index	ID	Reason
LIM-FUEL Maximum Allowed Fuel Imbalance	C	1	Minor correction, change from i.e. into e.g. because other abnormal conditions such as engine failure can be considered.

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CERTIFIED FUEL

Ident.: LIM-FUEL-00021938.0001001 / 06 NOV 14
Applicable to: ALL

The fuel system has been certified with: JET A, JET A1, JP5, JP8, N°3 Jet Fuel, RT and TS-1, in accordance with engine manufacturers and fuel specifications.

FUEL TEMPERATURE

Ident.: LIM-FUEL-00021477.0001001 / 23 OCT 17
Applicable to: ALL

MAXIMUM FUEL TEMPERATURE

Maximum fuel temperature : JET A, JET A1, JP 5, JP 8, N°3 JET, RT and TS-1 : +55 °C.

MINIMUM FUEL TEMPERATURE

Minimum fuel temperature : Freezing point

If the actual fuel freezing point of the fuel being used for the flight is unknown, the fuel specification freezing point provided hereafter must be used :

JET A	JET A1	JP 5	JP 8	N°3 JET	TS-1	RT
-40 °C	-47 °C	-46 °C	-47 °C	-47 °C	-50 °C	-50 °C

FUEL MIXABILITY

Note: *The various types of fuel can be mixed in all proportions. However, in the case of fuel mixture, the minimum fuel specification values provided in the table above are no longer applicable.*

MAXIMUM ALLOWED FUEL IMBALANCE

Ident.: LIM-FUEL-00021939.0001001 / 03 JUL 20
Applicable to: ALL

1 The table indicates the maximum allowed wing imbalance at takeoff, in flight and at landing.

Tanks	Maximum Asymmetry	
Left Tank / Right Tank	3 000 kg	6 613 lb

Note: *In abnormal conditions (e.g. fuel system failures) the above-mentioned maximum fuel imbalance values may be exceeded without significantly affecting the aircraft handling qualities. The aircraft remains fully controllable in all phases of the flight.*

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LIMITATIONS

ICE AND RAIN PROTECTION

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Rain Repellent .... A
Wipers Maximum Operating Speed........ B

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RAIN REPELLENT

Ident.: LIM-ICE_RAIN-00022324.0001001 / 30 JAN 18
Applicable to: ALL

Use the rain repellent in the case of heavy rain only.

CAUTION	Rain repellent must not be used as a windshield washer, and never be applied on a dry windshield.

WIPERS MAXIMUM OPERATING SPEED

Ident.: LIM-ICE_RAIN-00022113.0001001 / 06 NOV 14
Applicable to: ALL

Refer to LIM-AG-SPD Wipers Maximum Operating Speed.

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LIMITATIONS

LANDING GEAR

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LIMITATIONS

LANDING GEAR

PRELIMINARY PAGES - TABLE OF CONTENTS

Braking System....A
Brake Pivot Turn....B
Brake Temperature....C
Landing Gear Gravity Extension Reset....D
Maximum Speeds with the Landing Gear Extended....E
Maximum Tire Speed....F
Parking Brake....G
Taxi with Deflated or Damaged Tires....H
Backup Steering Function....I

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BRAKING SYSTEM

Ident.: LIM-LG-00022002.0001001 / 06 NOV 14
Applicable to: ALL

The braking system is not designed to hold the aircraft in a stationary position when a high thrust level is applied on at least one engine. During ground procedures that require a thrust increase with braking, the flight crew must ensure that the aircraft remains stationary.

BRAKE PIVOT TURN

Ident.: LIM-LG-00022306.0001001 / 06 NOV 14
Applicable to: ALL

Braked pivot turn is prohibited (i.e. differential braking cannot be used to fully stop one main gear).

BRAKE TEMPERATURE

Ident.: LIM-LG-00022001.0001001 / 06 NOV 14
Applicable to: ALL

Maximum brake temperature for takeoff... 300 °C

LANDING GEAR GRAVITY EXTENSION RESET

Ident.: LIM-LG-00022356.0001001 / 06 NOV 14
Applicable to: ALL

The landing gear gravity extension reset function must not be used in flight.

CAUTION	The landing gear gravity extension must be reset only on ground by maintenance personnel.

MAXIMUM SPEEDS WITH THE LANDING GEAR EXTENDED

Ident.: LIM-LG-00022098.0001001 / 06 NOV 14
Applicable to: ALL

Refer to LIM-AG-SPD Maximum Speeds with the Landing Gear Extended.

MAXIMUM TIRE SPEED

Ident.: LIM-LG-00022112.0001001 / 06 NOV 14
Applicable to: ALL

Refer to LIM-AG-SPD Maximum Tire Speed.

PARKING BRAKE

Ident.: LIM-LG-00022332.0001001 / 06 NOV 14
Applicable to: ALL

Use of parking brake while aircraft is moving is prohibited unless in emergency.

TAXI WITH DEFLATED OR DAMAGED TIRES

Ident.: LIM-LG-00023092.0001001 / 07 JAN 16
Applicable to: ALL

To vacate the runway or taxi with one or more deflated or damaged tires all of the following limitations apply:

- Maximum taxi speed: 3 kt
- Maximum nosewheel steering angle: 30 °
- No more than one affected tire on the nose landing gear
- No more than two affected tires on each main landing gear provided that the affected tires are not on the same axle.

In addition, if tire damage is suspected, the flight crew must ask for an aircraft inspection prior to vacate the runway or taxi. If the ground crew suspects that a tire burst may damage the landing gear, maintenance action is due.
For more information, *Refer to FCTM/PR-AEP-LDG Taxi with Deflated Tires*.

BACKUP STEERING FUNCTION

Ident.: LIM-LG-00022548.0001001 / 03 OCT 17
Applicable to: ALL

The Backup Steering Function (BSF) must not be used:

- On contaminated runways,
- For more than 90 ° turns,
- To perform more than 2 turns.

When the BSF activates, do not use manual differential braking or differential thrust to steer the aircraft unless required for controllability at the end of the rollout.

LIMITATIONS

LIGHTS

Exterior Lights..A

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EXTERIOR LIGHTS

Ident.: LIM-LT-00022304.0001001 / 06 NOV 14
Applicable to: ALL

During any ground fuel operations, do not use the exterior lights, except for:
- Navigation lights (NAV sw),
- Logo lights (LOGO sw),
- Wing and engine scan lights (WING sw).

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LIMITATIONS

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LIMITATIONS

NAVIGATION

PRELIMINARY PAGES - TABLE OF CONTENTS

Airport Navigation Function (ANF).. A
Inertial Reference System (IRS).. B

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AIRPORT NAVIGATION FUNCTION (ANF)

Ident.: LIM-NAV-00022281.0001001 / 06 NOV 14
Applicable to: ALL

GENERAL

The use of the airport moving map is approved for certain flight phases only.

Note: *Direct visual observation out of the cockpit windows remains the primary means of taxiing. The flight crew must always use external reference indications during aircraft taxi. They must never use the ANF instead of these external reference indications.*

TAXI

The use of the airport moving map is authorized on both PF and PM displays.

TAKEOFF

The use of the airport moving map is not authorized on PF display.

GO-AROUND, CRUISE, DESCENT AND APPROACH UNTIL TOUCHDOWN

The use of the airport moving map is authorized on either PF or PM display for BTV.

ROLL OUT AFTER TOUCHDOWN

The use of the airport moving map is authorized on both PF and PM displays.

INERTIAL REFERENCE SYSTEM (IRS)

Ident.: LIM-NAV-00022305.0001001 / 06 NOV 14
Applicable to: ALL

IR GROUND ALIGNMENT

Ground alignment of the IRS is possible in latitudes between 82 ° North and 78.25 ° South.

MAGNETIC (MAG) / TRUE REFERENCE

In NAV mode, the IR will not provide valid magnetic heading and magnetic track angle:
- North of 82 ° North
- North of 73 ° North between 90 ° and 120 ° West (magnetic polar region)
- South of 60 ° South.

When flying at latitudes beyond these limits, TRUE reference must be selected.

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LIMITATIONS

ONBOARD INFORMATION SYSTEM

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Printers...A

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PRINTERS

Ident.: LIM-OIS-00018028.0001001 / 06 NOV 14
Applicable to: ALL

The reference information is the information that appears on the different display units.
In the case of a discrepancy between the printed and displayed information, the flight crew should use the displayed information for flight and fuel planning, ATC communication, etc.

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LIMITATIONS

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PRELIMINARY PAGES - TABLE OF CONTENTS

Minimum Flight Crew Oxygen Pressure.....A

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MINIMUM FLIGHT CREW OXYGEN PRESSURE

Ident.: LIM-OXY-00019742.0003001 / 09 JUL 15
Applicable to: ALL

The following table provides the minimum oxygen pressure. It is the responsibility of the Operator to ensure that the minimum oxygen pressure complies with the intended aircraft operations.

Flight Crewmembers	Minimum Oxygen Pressure displayed on DOOR SD page (PSI)	
	CAPT Indication	F/O Indication
CAPT + F/O	750	750
CAPT + F/O + 3rd Occupant	750	1050
CAPT + F/O + 4th Occupant	1050	750
CAPT + F/O + 3rd Occupant + 4th Occupant	1050	1050

For more information on the third and fourth occupant seats, *Refer to Cockpit Seats*.

FLIGHT ABOVE FL 410

For FAA-certified aircraft, and in accordance with FAR 121.333, if flight above FL 410 is expected:

- Before departure, the flight crew must increase the minimum oxygen bottle pressure. The amount of the increase is based on the amount of time that the aircraft will be above FL 410. For calculation purposes, the minimum oxygen pressure must be increased by 150 PSI per hour
- When the aircraft goes above FL 410, one flight crewmember must don the oxygen mask, and set the regulator to normal position (diluted oxygen).

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LIMITATIONS

ROW/ROP - BTV

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BTV.. A
ROW/ROP...B

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BTV

Ident.: LIM-ROW-ROP-00020512.0002001 / 03 APR 17
Applicable to: ALL

For landing on a contaminated runway, the flight crew must set the LDG PERF CODE at or below 4 (COMP SNOW - GOOD TO MEDIUM), regardless of the available airport reports (e.g. Pilot Report of Braking Action = Good or Estimated Surface Friction = Good).

Note: *The flight crew must pay attention to the validity of the reported depth of contamination at the time of landing.*

L2 For more information about:
- The definition of the landing performance equivalent to wet, *Refer to PER-LDG-30 Contaminated Runway*
- The runway condition assessment matrix, *Refer to PER-LDG-30 Runway Condition Assessment Matrix for Landing*
- The selection of a runway condition, *Refer to DSC-34-32-20-20-70 RWY CONDITION/BRAKING ACTION Matrix*.

ROW/ROP

Applicable to: ALL

Ident.: LIM-ROW-ROP-10-00020511.0002001 / 03 APR 17

The ROW/ROP is certified :
- On dry, wet and contaminated runways,
- With thrust reversers available,
- Without failure affecting landing performance.

Note: *In the case of a failure affecting landing performance, the ROW/ROP alerts are available. The ROW/ROP alerts are based on landing performance that does not take into account the performance penalties linked to the alert that impacts the landing performance. The flight crew must always follow the ROW/ROP alerts.*

Ident.: LIM-ROW-ROP-10-00022329.0001001 / 05 JUN 18

Operations where the ROW landing distance is above the LDA ("TOO SHORT" indication displayed on the ND) must not be conducted unless a specific authorization is obtained from the appropriate authority to deactivate the ROW/ROP for these operations.

In this case, the flight crew must deactivate the ROW/ROP via either:

- The ROW/ROP pb-sw ◁ on the SURV overhead panel ◁ , or
- The TERR SYS button on the MFD SURV page, if the ROW/ROP pb-sw ◁ is not installed. In this case, the flight crew must deactivate the ROW/ROP when the aircraft position is less than 15 NM from the airfield.

Ident.: LIM-ROW-ROP-10-00024128.0002001 / 05 JUN 18

CONTAMINATED RUNWAY

LDG PERF CODE SELECTION

For landing on a contaminated runway, the flight crew must set the LDG PERF CODE at or below 4 (COMP SNOW - GOOD TO MEDIUM), regardless of the available airport reports (e.g. Pilot Report of Braking Action = Good or Estimated Surface Friction = Good).

Note: *The flight crew must pay attention to the validity of the reported depth of contamination at the time of landing.*

LIMITATIONS

SURVEILLANCE

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Terrain Awareness and Warning System (TAWS)....A
Transponder....B

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TERRAIN AWARENESS AND WARNING SYSTEM (TAWS)

Ident.: LIM-SURV-00022107.0001001 / 06 NOV 14
Applicable to: ALL

Aircraft navigation is not to be predicated upon the use of the terrain display.
The terrain display is intended to serve as a situation awareness tool only, and may not provide the accuracy on which to solely base terrain avoidance maneuvering.

The TAWS function should be inhibited (TERR SYS button set to OFF on the MFD SURV/CONTROLS page):

- For operations from/to runways not incorporated into the TAWS database
- For specific approach procedures, which have previously been identified as potentially producing false terrain alerts. The TAWS should be inhibited when the aircraft position is less than 15 NM from the airfield.

TRANSPONDER

Ident.: LIM-SURV-00023221.0001001 / 03 DEC 15
Applicable to: ALL

Minimum pressure altitude for transponder altitude reporting..-1 000 ft

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LIMITATIONS

TRANSMITTING PORTABLE ELECTRONIC DEVICE

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Transmitting Portable Electronic Device.. A

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TRANSMITTING PORTABLE ELECTRONIC DEVICE

Ident.: LIM-T-PED-00024157.0001001 / 27 FEB 17
Applicable to: ALL

The Transmitting Portable Electronic Device (T-PED) can be used in the cabin and the cargo area.

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PERFORMANCE

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PER-PN1 Pitch-N1 Tables

PER-OPS Operating Speeds

PER-TOF Takeoff

PER-IFT In-Flight

PER-LDG Landing

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M	Localization	DU Title	DU identification	DU date

No Temporary Documentary Unit

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PERFORMANCE

PITCH-N1 TABLES

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CLIMB IN CLEAN CONF..... B
LEVEL FLIGHT IN CLEAN CONF.....C
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LEVEL FLIGHT WITH CONF.....E
APPROACH ON A SLOPE OF MINUS 3 DEGREES.....F

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INTRODUCTION

Ident.: PER-PN1-00024296.0001001 / 06 FEB 18
Applicable to: ALL

The main goal of the Pitch/N1 tables is to reinforce flight crew awareness about the pitch/N1 thrust value. This is in order to safely fly in the complete domain of flight in normal and abnormal situations. All tables have been computed for a CG of 30 %.

For extreme CG values, expect maximum variations in terms of both of the following:
- For forward CG: +2 % N1 and +5 kt.
- For aft CG: -2 % N1 and -5 kt.

CLIMB IN CLEAN CONF

Ident.: PER-PN1-00023760.0001001 / 06 FEB 18
Applicable to: ALL

The resultant speed is between VLS+10 and VMAX.

		170 t (375 klb)	220 t (485 klb)	270 t (595 klb)
FL	**THRUST LEVERS**	**PITCH**		
Above FL 300	CLB position	4 °	4 °	4 °
FL 300		6 °	5 °	5 °
FL 200				
FL 100		10 °	8 °	7 °
FL 050				

LEVEL FLIGHT IN CLEAN CONF

Ident.: PER-PN1-00023761.0001001 / 06 FEB 18
Applicable to: ALL

CLEAN CONF - GEAR UP

		170 t (375 klb)	220 t (485 klb)	270 t (595 klb)
FL	**PITCH**	**N1 % (Resultant speed)**		
FL 400	3 °	83 % (238 kt)	88 % (259 kt)	MCT
FL 350		77 % (242 kt)	83 % (273 kt)	87 % (291 kt)
FL 300		73 % (244 kt)	79 % (278 kt)	84 % (306 kt)
FL 250	4 °	67 % (220 kt)	73 % (253 kt)	79 % (280 kt)
FL 200		62 % (220 kt)	69 % (252 kt)	74 % (282 kt)
FL 150	5 °	57 % (202 kt)	64 % (230 kt)	69 % (257 kt)
FL 100		53 % (203 kt)	60 % (231 kt)	65 % (257 kt)

Note: A deviation of 0.5 ° pitch may result in a speed variation of 15 kt.

DESCENT IN CLEAN CONF

Ident.: PER-PN1-00023768.0001001 / 06 FEB 18
Applicable to: ALL

The resultant speed is below VMAX.

	170 t (375 klb)	220 t (485 klb)	270 t (595 klb)
THRUST LEVERS	**PITCH**		
Idle position	0 °	0.5 °	1 °

LEVEL FLIGHT WITH CONF

Applicable to: ALL

Ident.: PER-PN1-002-00023763.0001001 / 03 JAN 19

CONF 1 - GEAR UP

		170 t (375 klb)	220 t (485 klb)	270 t (595 klb)
FL	PITCH	N1 % (Resultant speed)		
FL 150	9 °	58 % (160 kt)	65 % (183 kt)	70 % (202 kt)
FL 125		56 % (160 kt)	63 % (183 kt)	68 % (202 kt)
FL 100		54 % (160 kt)	61 % (183 kt)	66 % (203 kt)
FL 075		52 % (160 kt)	58 % (183 kt)	64 % (203 kt)
FL 050		50 % (160 kt)	56 % (183 kt)	62 % (203 kt)
FL 025		48 % (160 kt)	55 % (183 kt)	60 % (203 kt)

Note: *For landing gear down (average correction), apply both of the following:*
- *N1: Add 8 %*
- *Speed: Subtract 4 kt*

Ident.: PER-PN1-002-00023764.0001001 / 06 FEB 18

CONF 1+F - GEAR UP

		170 t (375 klb)	220 t (485 klb)	270 t (595 klb)
FL	PITCH	N1 % (Resultant speed)		
FL 150	5 °	59 % (157 kt)	66 % (179 kt)	72 % (198 kt)
FL 125		57 % (157 kt)	64 % (179 kt)	69 % (198 kt)
FL 100		55 % (157 kt)	62 % (179 kt)	67 % (199 kt)
FL 075		53 % (157 kt)	60 % (179 kt)	65 % (199 kt)
FL 050		51 % (157 kt)	58 % (179 kt)	63 % (199 kt)
FL 025		49 % (157 kt)	56 % (179 kt)	61 % (199 kt)

Note: *For landing gear down (average correction), add 6 % to N1.*

Ident.: PER-PN1-002-00023765.0001001 / 06 FEB 18

CONF 2 - GEAR UP

		170 t (375 klb)	220 t (485 klb)	270 t (595 klb)
FL	**PITCH**	**N1 % (Resultant speed)**		
FL 150	5 °	60 % (150 kt)	67 % (171 kt)	72 % (189 kt)
FL 125		58 % (150 kt)	65 % (171 kt)	70 % (189 kt)
FL 100		55 % (150 kt)	62 % (171 kt)	68 % (190 kt)
FL 075		53 % (150 kt)	60 % (171 kt)	66 % (190 kt)
FL 050		52 % (150 kt)	58 % (171 kt)	64 % (190 kt)
FL 025		50 % (150 kt)	56 % (171 kt)	62 % (190 kt)

Note: For landing gear down (average correction), add 6 % to N1.

Ident.: PER-PN1-002-00024297.0001001 / 06 FEB 18

CONF 3- GEAR UP

		170 t (375 klb)	220 t (485 klb)	270 t (595 klb)
FL	**PITCH**	**N1 % (Resultant speed)**		
FL 150	5 °	63 % (142 kt)	70 % (162 kt)	76 % (180 kt)
FL 125		61 % (142 kt)	68 % (162 kt)	74 % (180 kt)
FL 100		59 % (141 kt)	66 % (162 kt)	71 % (180 kt)
FL 075		56 % (141 kt)	64 % (162 kt)	69 % (180 kt)
FL 050		55 % (141 kt)	61 % (161 kt)	67 % (180 kt)
FL 025		53 % (141 kt)	59 % (161 kt)	65 % (179 kt)

Note: For landing gear down (average correction), apply both of the following:
- *N1: Add 5 %*
- *Speed: Add 1 kt*

APPROACH ON A SLOPE OF MINUS 3 DEGREES

Applicable to: ALL

Ident.: PER-PN1-003-00023769.0001001 / 06 FEB 18

CONF 3 - GEAR DOWN

		150 t (330 klb)	170 t (375 klb)	190 t (419 klb)	210 t (463 klb)
ALTITUDE	PITCH	N1 % (Resultant speed)			
9 000 ft	4 °	42 % (125 kt)	45 % (133 kt)	47 % (141 kt)	49 % (148 kt)
6 000 ft		41 % (125 kt)	43 % (133 kt)	45 % (141 kt)	47 % (148 kt)
3 000 ft		39 % (125 kt)	41 % (133 kt)	43 % (141 kt)	46 % (148 kt)
1 000 ft		38 % (125 kt)	40 % (133 kt)	42 % (141 kt)	44 % (148 kt)

Ident.: PER-PN1-003-00023770.0001001 / 03 JAN 19

CONF FULL - GEAR DOWN

	150 t (330 klb)	170 t (375 klb)	190 t (419 klb)	210 t (463 klb)
PITCH	2 °	4 °		
ALTITUDE	N1 % (Resultant speed)			
9 000 ft	47 % (128 kt)	50 % (128 kt)	52 % (135 kt)	55 % (142 kt)
6 000 ft	45 % (127 kt)	48 % (128 kt)	50 % (135 kt)	52 % (142 kt)
3 000 ft	43 % (127 kt)	46 % (128 kt)	48 % (135 kt)	50 % (142 kt)
1 000 ft	42 % (127 kt)	44 % (128 kt)	47 % (135 kt)	49 % (142 kt)

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PERFORMANCE

OPERATING SPEEDS

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OPERATING SPEEDS DURING APPROACH

Ident.: PER-OPS-00018568.0001001 / 01 OCT 15

Applicable to: ALL

OPERATING SPEEDS DURING APPROACH (KT)			
Weight (1 000 kg)	**S (CONF 1)**	**F (CONF 2)**	**F (CONF 3)**
110	142	137	132
130	142	137	132
150	150	138	132
170	160	147	141
190	170	156	149
210	179	164	156
230	188	172	163
250	197	179	170
270	206	187	177
290	207	190	181

VLS DURING APPROACH

Ident.: PER-OPS-00021584.0001001 / 01 OCT 15
Applicable to: ALL

VLS DURING APPROACH (KT)					
Weight (1 000 kg)	**CONF 1**	**CONF 1+F**	**CONF 2**	**CONF 3**	**CONF FULL**
110	122	122	122	122	122
130	123	122	122	122	122
150	132	128	127	122	122
170	141	136	136	131	128
190	149	144	143	138	135
210	157	151	150	145	142
230	165	158	158	152	148
250	173	166	165	158	155
270	181	173	172	165	161
290	189	180	179	171	167

L2 Speed brakes effect (full speed brakes extension):

VLS Increase (kt)				
CONF	**0 ft**	**5 000 ft**	**10 000 ft**	**15 000 ft**
0	34	34	34	34
1	27	27	27	27
1+F	26	28	32	32
2	26	28	32	32
3	17	17	19	21
3+S	16	16	18	20
FULL	16	16	16	16

GREEN DOT SPEEDS

Ident.: PER-OPS-00021585.0001001 / 01 OCT 15
Applicable to: ALL

GREEN DOT - ALL ENGINES OPERATIVE

GREEN DOT (KT) ALL ENGINES OPERATIVE				
Weight (1 000 kg)	**At or below FL 100**	**FL 200**	**FL 300**	**FL 400**
110	149	150	154	164
130	161	161	168	187
150	171	174	183	213
170	181	186	198	236
190	190	197	218	246
210	200	209	237	246
230	210	220	255	246
250	219	232	271	
270	229	245	281	
290	239	259	291	

GREEN DOT - ONE ENGINE INOPERATIVE

GREEN DOT (KT) ONE ENGINE INOPERATIVE				
Weight (1 000 kg)	**FL 100**	**FL 200**	**FL 300**	**FL 400**
110	140	143	147	172
130	152	157	163	200
150	164	170	178	221
170	175	183	192	237
190	186	202	212	242
210	197	214	238	246
230	207	218	259	246
250	220	231	281	
270	238	247	290	
290	248	263	298	

VLS CONF 0

Ident.: PER-OPS-00021588.0001001 / 01 OCT 15
Applicable to: ALL

VLS CONF 0 (KT)					
Weight (1 000 kg)	**FL 0**	**FL 100**	**FL 200**	**FL 300**	**FL 400**
110	131	131	133	136	147
130	142	143	145	150	165
150	153	154	157	166	185
170	163	165	169	181	203
190	172	175	181	196	216
210	182	185	192	210	226
230	190	195	205	225	237
250	199	204	217	242	
270	208	213	228	256	
290	216	223	240	266	

L2 Speed brakes effect (full speed brakes extension):

VLS Increase (kt)					
Weight (1 000 kg)	**FL 0**	**FL 100**	**FL 200**	**FL 300**	**FL 400**
130	22	24	24	21	11
160	26	28	27	20	13
190	29	29	26	20	22
220	32	30	23	21	23
250	34	31	20	28	0
270	33	30	19	29	0

PERFORMANCE

TAKEOFF

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PER-TOF-10 Takeoff Performance Optimization

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Takeoff Parameters....B

PER-TOF-20 Thrust Options

PER-TOF-20-10 Takeoff at Maximum Thrust

TOGA Thrust....A

PER-TOF-20-20 Flexible and Derated Takeoff

PER-TOF-20-20-10 General

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Flexible Takeoff Principle....B
Flexible Takeoff Limitations....C

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PER-TOF-30-10 Takeoff on Dry Runway

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1 PER-TOF-30-20 Takeoff on Wet Runway

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PER-TOF-30-30 Takeoff on Contaminated Runway

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PER-TOF-40 Takeoff with MEL or CDL Item

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PER-TOF-50 Takeoff Recommendations

Takeoff Recommendations....................A

Localization Title	Toc Index	ID	Reason
PER-TOF-PLP-TOC Takeoff on Wet Runway		1	Documentation update: The "Takeoff on Damp and Wet Runways" table of content entry renamed in "Takeoff on Wet Runway"
PER-TOF-30-10 Description	A	1	Update of the description of dry runway in order to be in line with ICAO standard.
PER-TOF-30-20 Descriptions	A	1	Documentation update: Deletion of information.
PER-TOF-30-20 Descriptions	A	2	Update of the description of wet and damp runway in order to be in line with ICAO standard.
PER-TOF-30-20 Performance Calculation	B	3	Removal of reference to damp runway, now considered as wet runway as per ICAO standard.

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GENERAL

Ident.: PER-TOF-10-00017742.0001001 / 06 AUG 14
Applicable to: ALL

The takeoff performance optimization is the process which aims at obtaining:
- The maximum performance limited takeoff weight (MTOW (perf))
- The optimum takeoff thrust for a given weight.

The takeoff performance is optimized for a given runway, the associated obstacles, the flaps setting, the prevailing outside conditions (temperature, wind, and QNH) and the aircraft status.

The takeoff performance optimization process:
- Takes into account the parameters that affect takeoff performance
- Optimizes the parameters for which there is a possible range of values or settings

L2 The takeoff performance optimization process is made with the takeoff performance (T.O PERF) application.
For more information on the T.O PERF application, *Refer to DSC-46-OIS-20-80-90 T.O PERF*.

TAKEOFF PARAMETERS

Ident.: PER-TOF-10-00021524.0001001 / 03 JAN 19
Applicable to: ALL

The takeoff performance parameters are:
- The characteristics of the runway

L2
  - Declared lengths (TORA, TODA, ASDA)
  - Elevation
  - Slope
  - Obstacles.

L1
- The regulatory requirements
- The line up distances as applicable
- The outside conditions

L2
  - Outside Air Temperature (OAT)
  - Wind

L3
    Maximum tailwind is limited to a certified value. There is no maximum certified value for headwind, however a headwind higher than 40 kt brings no additional performance credit.
    As per regulation, the computation is based on 150 % of the entered tailwind, and 50 % of the entered headwind.
    A maximum crosswind component is associated with each runway condition.
    For more information on crosswind limitations, *Refer to LIM-AG-OPS Maximum Crosswind for Takeoff and Landing*.
    In addition, the flight crew applies a different thrust setting technique during the takeoff procedure when the crosswind component exceeds a threshold value, which affects the calculation of the takeoff distance.
    For more information on the takeoff procedure, *Refer to PRO-NOR-SOP-120 Takeoff - Thrust Setting*.

L2
  - QNH
  - Runway condition.

L1
- The aircraft configuration

L2
  - Aerodynamic configuration
  - Air conditioning setting
  - Anti-ice selection
  - Thrust setting.

L1
- The aircraft status

L2
  - MEL items
  - CDL items.

L1 - The takeoff speeds.

L2
- V1
- VR
- V2.

L1 The following parameters can be optimized:
- Aerodynamics configuration
- Air conditioning
- Thrust setting

L2
- TOGA
- FLEX
- Derate levels.

L1 - Takeoff speeds.

L2 Among the takeoff performance parameters that can be optimized, the takeoff speeds optimization has the largest potential for gain of takeoff weight. The range for optimization varies from 0.84 to 1.0 for V1/VR ratio and from 1.13 to 1.4 for V2/VS1G ratio.

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TOGA THRUST

Ident.: PER-TOF-20-10-00017759.0001001 / 06 AUG 14
Applicable to: ALL

TOGA is the maximum thrust certified for takeoff.
When all engines are operative, the TOGA thrust rating must not be used more than 5 min.
In the case of one engine out, the TOGA thrust rating may be used for a maximum of 10 min.

The flight crew must use TOGA thrust for takeoff if at least one of the following conditions applies:
- Maximum power is required
- Performance reasons
- Flexible takeoff and derated takeoff are not permitted.

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General

GENERAL

Ident.: PER-TOF-20-20-10-00017760.0001001 / 06 AUG 14
Applicable to: ALL

The actual takeoff weight of the aircraft is often lower than the maximum regulatory takeoff weight. In this case, it may be possible to takeoff at a thrust less than the maximum takeoff thrust. This allows to increase the engine life, improve the engine reliability and reduce the maintenance costs.

Two categories of takeoff at reduced thrust exist:
- The use of flexible temperature concept referred to as flexible takeoff
- The use of a fixed derated thrust level referred to as derated takeoff.

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Flexible Takeoff

FLEXIBLE TAKEOFF DEFINITION

Ident.: PER-TOF-20-20-20-00017761.0001001 / 06 AUG 14
Applicable to: ALL

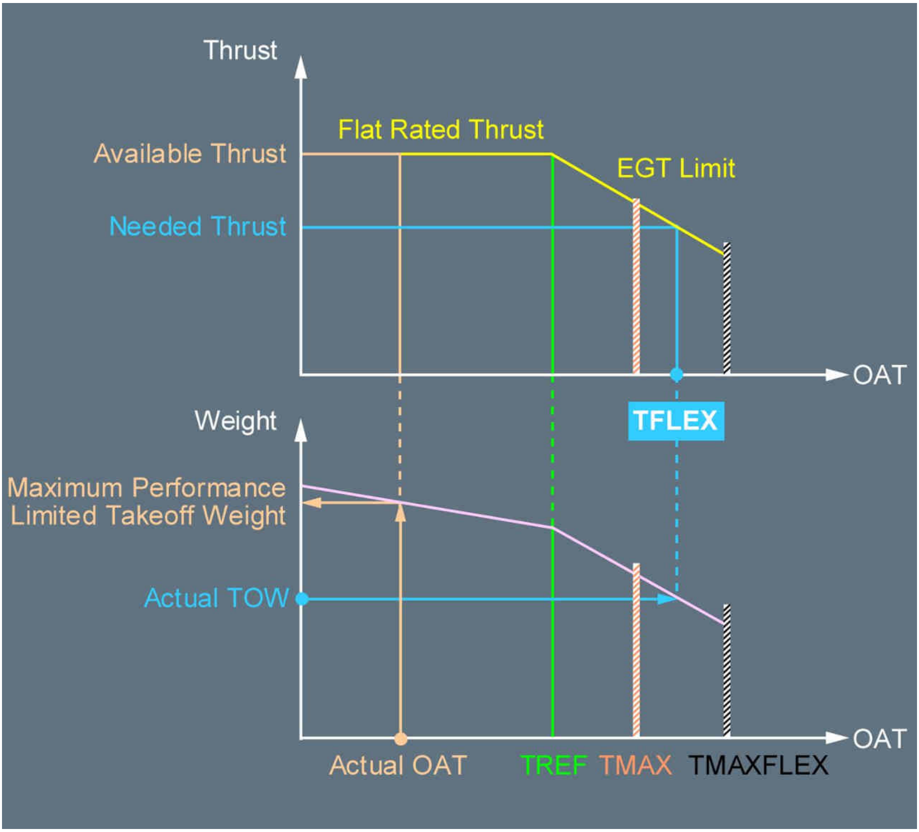
When the actual takeoff weight is lower than the maximum performance limited takeoff weight, the aircraft may comply with the regulatory requirements with a reduced thrust, called flexible takeoff thrust.
This takeoff operation is the FLEX takeoff.

FLEXIBLE TAKEOFF PRINCIPLE

Ident.: PER-TOF-20-20-20-00021543.0001001 / 06 AUG 14
Applicable to: ALL

The FLEX takeoff principle is based on the change in maximum available thrust with OAT.
The maximum performance limited takeoff weight depends on the maximum available takeoff thrust, therefore it is possible to determine a temperature at which the actual takeoff weight would be limited by performance.
This temperature is referred to as TFLEX (Flex Temperature).

Flexible Takeoff Principle


Thrust
Flat Rated Thrust
Available Thrust
EGT Limit
Needed Thrust
OAT
TFLEX
Weight
Maximum Performance Limited Takeoff Weight
Actual TOW
OAT
Actual OAT
TREF
TMAX
TMAXFLEX

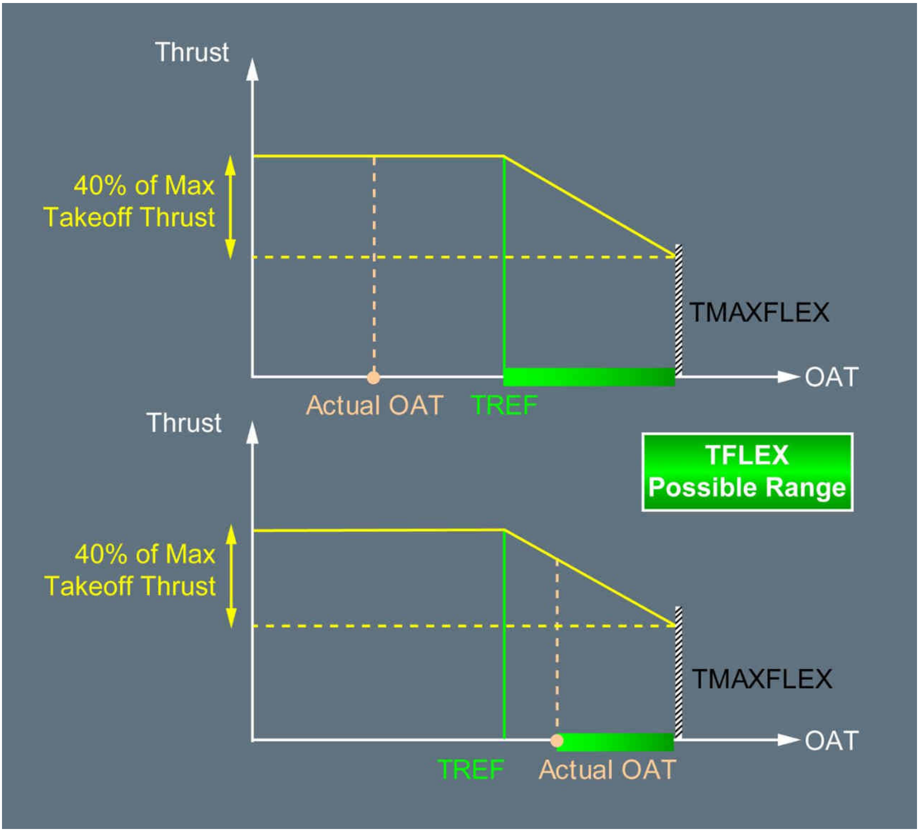
FLEXIBLE TAKEOFF LIMITATIONS

Ident.: PER-TOF-20-20-20-00017762.0001001 / 06 SEP 17
Applicable to: ALL

Takeoff at reduced thrust, so-called as FLEX takeoff, is allowed only if the airplane meets all performance requirements at the takeoff weight, with the operating engines at the thrust available for the flexible temperature (TFLEX).

TFLEX cannot be:
- Higher than TMAXFLEX, equal to ISA + 60. TMAXFLEX corresponds to a reduction of 40 % from the full rated takeoff thrust.
- Lower than the flat rating temperature (TREF), equal to:
  - ISA + 15, for pressure altitudes below 2 000 ft
  - ISA + 10, for pressure altitudes between 4 000 ft and 8 000 ft
  - ISA + 15, for pressure altitudes above 10 000 ft
  - For pressure altitudes between 2 000 ft and 4 000 ft, and for pressure altitudes between 8 000 ft and 10 000 ft, TREF is determined by linear interpolation between ISA + 10 and ISA + 15.
- Lower than the actual OAT.

TFLEX Limitations


Thrust
40% of Max
Takeoff Thrust
TMAXFLEX
OAT
Actual OAT
TREF
Thrust
TFLEX
Possible Range
40% of Max
Takeoff Thrust
TMAXFLEX
OAT
TREF
Actual OAT

FLEX takeoff is not permitted on contaminated runways.
Some items listed in the MEL and CDL do not permit a flexible takeoff.

L2 The operator should check the maximum thrust (TOGA) by:

- Performing full-rated takeoffs at regular intervals, in order to detect a reduced EGT margin, or
- Maintaining an adequate engine monitoring program, in order to follow-up on the engine parameters.

Derated Takeoff

DERATED TAKEOFF DEFINITION

Ident.: PER-TOF-20-20-30-00017764.0001001 / 06 MAR 15
Applicable to: ALL

A derated takeoff is defined as the takeoff operation at a thrust setting lower than TOGA, for which the AFM provides a set of takeoff limitations and performance data.
Six derate levels are available (04, 08, 12, 16, 20 and 24 %).

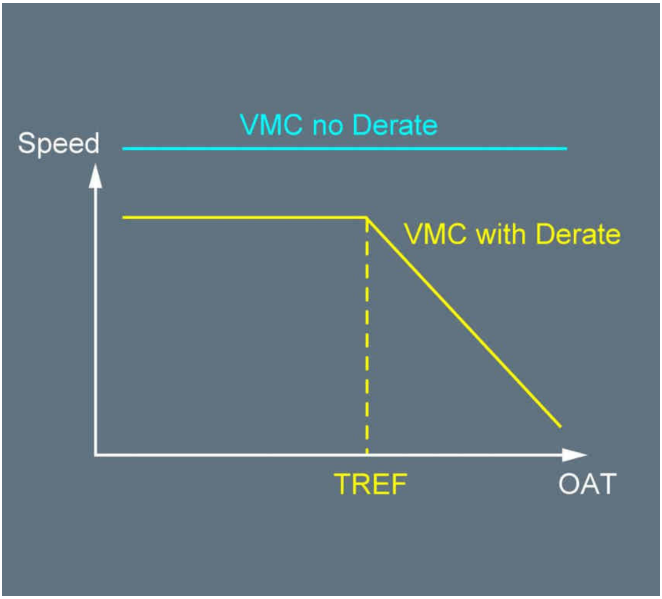
DERATED TAKEOFF PRINCIPLE

Ident.: PER-TOF-20-20-30-00017765.0001001 / 06 AUG 14
Applicable to: ALL

The derated takeoff enables to improve the takeoff performance if the TOW is limited by VMCG. VMCG limitation usually occurs on short and/or contaminated runways. The principle is to impose a lower engine rating to benefit from lower minimum control speeds.

L2 In the case of derated takeoff, the minimum control speeds (VMCG and VMCA) are decreased because:
- The derated thrust is lower than the maximum takeoff thrust
- The effect of temperature on maximum available thrust is taken into account.

Derated Takeoff Principle



VMCG LIMITING

VMCG only has an impact on the ASD that includes an acceleration and a deceleration phase. The decrease in VMCG allows to use lower V1 values in the speed optimization, which shortens both the acceleration and the deceleration distances.

The weight decrement linked to the derated thrust is largely compensated by the benefit of shorter ASD. As a consequence, if takeoff performance is limited by the VMCG limited weight, an overall improvement can be achieved by derating.

VMCA LIMITING

The penalizing effect on climb gradient of the decrease in thrust outweighs the advantage of a lower VMCA.
Therefore derated takeoff would not improve the takeoff weight if VMCA limited.

DERATED TAKEOFF LIMITATIONS

Ident.: PER-TOF-20-20-30-00017766.0001001 / 04 DEC 14
Applicable to: ALL

It is not permitted to combine a derated takeoff and a FLEX takeoff.
When a derated takeoff is performed, the selection of full takeoff thrust, by setting thrust levers to TOGA, is not permitted below the speeds specified in the "Engine Failure After V1 - Continued Takeoff Operating Technique". The only exception is the Recovery Technique at takeoff after the penetration of unforecast windshear.

L2 For more information on the specified speeds, *Refer to FCTM/PR-AEP-ENG Procedure*.

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Flexible Takeoff vs Derated Takeoff

FLEXIBLE TAKEOFF VS DERATED TAKEOFF

Ident.: PER-TOF-20-20-40-00021525.0001001 / 17 NOV 17
Applicable to: ALL

	Flexible Takeoff	Derated Takeoff
Takeoff parameters calculation	TOGA with OAT = TFLEX	Derate level
Thrust level limitations for VMC	TOGA	Derate level
Runway state	Dry and wet only	All
TOGA Selection	Possible at any moment	Possible above F speed
Performance improvement	None	For short and contaminated runways (VMCG limited)
Benefits	Engine life saving	Engine life saving

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DESCRIPTION

Ident.: PER-TOF-30-10-00021528.0001001 / 03 JUL 20
Applicable to: ALL

1 A runway is dry when its surface is:
- Free of visible moisture
- Not contaminated.

PERFORMANCE CALCULATION

Ident.: PER-TOF-30-10-00015893.0001001 / 06 AUG 14
Applicable to: ALL

Takeoff performance is calculated without the benefit of thrust reversers, as per regulation.
Flexible takeoff and derated takeoff are allowed for a takeoff from a dry runway.

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DESCRIPTIONS

Ident.: PER-TOF-30-20-00011356.0001001 / 03 JUL 20
Applicable to: ALL

1 2 WET RUNWAY

A runway is considered as wet, when the surface is covered by any visible moisture or water up to and including 3 mm (1/8") depth. When the water film does not exceed 3 mm (1/8"), there is no significant danger of hydroplaning.

Note: *A damp runway is considered wet, regardless of whether or not the surface has a shiny appearance.*

PERFORMANCE CALCULATION

Ident.: PER-TOF-30-20-00014338.0001001 / 03 JUL 20
Applicable to: ALL

3 Takeoff performance on a wet runway can be calculated with the benefit of thrust reversers. However, it is not allowed to take off at a weight higher than the weight on dry runway.
Flexible takeoff and derated takeoff are allowed for a takeoff from a wet runway.

L2 For information on contaminants equivalent to wet runway, *Refer to PER-TOF-30-30 Performance Calculation*.

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DESCRIPTIONS

Ident.: PER-TOF-30-30-00014339.0001001 / 07 NOV 16
Applicable to: ALL

A runway is contaminated when more than 25 % of its surface is covered with:
- A layer of fluid contaminant not considered as thin
- A hard contaminant.

FLUID CONTAMINANT

In terms of performance, a contaminated runway is a runway covered by a fluid contaminant with a depth of more than 3 mm (1/8"). The fluid contaminant can be either:
- Dry snow
- Wet snow
- Standing water
- Slush.

Fluid Contaminants reduce friction forces, and cause:
- Precipitation drag
- Hydroplaning.

L2 Fluid contaminants descriptions:
- Dry snow is snow that, if compacted by hand, does not stay compressed when released. The wind can blow dry snow. The density of dry snow is approximately 0.2 kg/l (1.7 lb/US Gal).
- Wet snow is snow that, if compacted by hand, stays compressed when released, and with which snowballs can be created. The density of wet snow is approximately 0.4 kg/l (3.35 lb/US Gal).
- Standing water occurs due to heavy rain and/or not sufficient runway drainage. Standing water has a depth of more than 3 mm.
- Slush is snow soaked with water, which spatters when stepped on firmly. Slush occurs at temperatures of approximately 5 °C, and has a density of approximately 0.85 kg/l (7.1 lb/US Gal).

L1 HARD CONTAMINANT

In terms of performance, a contaminated runway is a runway covered by a hard contaminant that can be either:
- Compacted snow,
- Ice (Cold and Dry)
- Wet ice.

Hard contaminants only reduce friction forces.

L2 Hard contaminants descriptions:
- Compacted snow: the maintenance personnel use a snow groomer to compress the snow on a runway in order to obtain a hard surface

- Ice (Cold and Dry): situation in which ice occurs on the runway in cold and dry conditions
- Wet ice: when the ice on a runway melts, or there are loose/fluid contaminants on top of the ice, the ice is referred to as "wet ice". When there is wet ice on a runway, braking and directional control are difficult or not possible, because the runway surface is very slippery.

PERFORMANCE CALCULATION

Ident.: PER-TOF-30-30-00015894.0001001 / 08 JUL 19
Applicable to: ALL

Takeoff performance on contaminated runways can be calculated with the benefit of thrust reversers. However, it is not allowed to take off at a weight higher than the weight on a dry runway.

For fluid contaminants, takeoff performance data are provided up to the following depths:
- Dry snow: 100 mm (4")
- Wet snow: 20 mm (4/5")
- Standing water: 15 mm (3/5")
- Slush: 15 mm (3/5").

L2 The following assumptions are considered for the calculation:
- The contaminant covers the entire length of the runway in a layer that has a uniform depth and density.
- The friction coefficient is based on studies, and verified by tests
- The screen height at the end of the takeoff segment is 15 ft, instead of 35 ft.

L1 Derated takeoff is allowed on contaminated runways.

EQUIVALENCES

In terms of performance:
- A fluid contamination is equivalent to wet, up to a maximum depth of 3 mm (1/8") of:
  - dry snow
  - wet snow
  - standing water
  - slush.
- "Frost" is equivalent to wet, unless a lower runway performance code is reported.

RESTRICTIONS

Ident.: PER-TOF-30-30-00021544.0001001 / 06 AUG 14
Applicable to: ALL

FLEX takeoff is not permitted on contaminated runways.
Dispatch from and to a runway covered with wet ice is not permitted, unless an effective friction coefficient at or higher than 0.07 is demonstrated.

TAKEOFF WITH MEL OR CDL ITEM

Ident.: PER-TOF-40-00014680.0001001 / 06 MAR 15
Applicable to: ALL

The aircraft can be dispatched with deferred MEL or CDL items.

MEL or CDL items that affect takeoff performance are:
- MEL items that reduce braking capabilities (brakes, spoilers, thrust reversers)
- MEL items that have an effect on thrust available (engine anti-ice valve stuck open)
- MEL items that may lead to a reduced systems efficiency (rudder actuator, DFS, EDP)
- CDL items that increase aircraft drag (seals, fairings).

L2 CDL items are divided in two categories: negligible and non-negligible items.
If the number of negligible CDL items is less or equal to three, no penalty applies.
If the number of negligible CDL items is more than three, a drag increase for each item is applied.

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TAKEOFF RECOMMENDATIONS

Ident.: PER-TOF-50-00017758.0001001 / 06 AUG 14
Applicable to: ALL

TAKEOFF CONFIGURATION

As a general rule, CONF 1+F gives better performance on long runways (better climb gradient), whereas CONF 3 gives better performance on short runways (shorter takeoff distances).
Sometimes, other parameters, such as obstacles can interfere. In this case, a compromise between climb and runway performance is requested, making CONF 2 the optimum configuration for takeoff.
Environmental takeoff conditions may also impact the choice of the takeoff configuration.
The following takeoff configuration is then recommended:

OUTSIDE CONDITIONS	FLAPS SETTINGS	OBJECTIVE
Dry or wet, well-paved runway	Use the flaps setting that provides the optimum performance. If takeoff weight is not limited by performance, consider using the higher flaps setting. *Note:* *Corresponds to OPT CONF selection in T.O PERF*	To extend engine life and save maintenance costs
High altitude takeoff	Use CONF 2 or CONF 3	To improve comfort
Badly-paved runway, or accelerate stop distance limited runway	Use CONF 2 or CONF 3	To improve comfort and stopping distance

FLEXIBLE TAKEOFF

Flexible takeoff is the recommended method for takeoff at reduced thrust on dry and wet runways.
The highest flexible temperature (TFLEX) extends engine life and saves maintenance costs.
However, if a high TFLEX is reduced by a few degrees only, the engines are not significantly affected.
The highest TFLEX will usually be obtained at the lowest flap setting. However, a higher flaps setting provides a lower decision speed (V1) and more comfort.
To extend engine life and to save maintenance costs, the use of flaps setting that provides the highest TFLEX is recommended. However, when the difference (in terms of TFLEX) between two configurations is low, the highest of both takeoff configurations is preferable.

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PERFORMANCE

IN-FLIGHT

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PER-IFT-10 In-Flight Performance Calculation

In-Flight Performance Calculation.......... A

PER-IFT-20 All Engines Operative Operations

PER-IFT-20-10 Climb

PER-IFT-20-10-10 General

General.......... A

PER-IFT-20-10-20 Climb Thrusts

Auto-Derated Climb Thrust.......... A
Maximum Climb Thrust.......... B

PER-IFT-20-20 Cruise

PER-IFT-20-20-10 Speeds

Economic Mach Number (ECON Mach).......... A
Long Range Cruise Speed (LRC).......... B
Fixed Speed.......... C
Turbulence Speed.......... D
Maximum Speed.......... E

PER-IFT-20-20-20 Altitude/Ceilings

Definitions.......... A
Altitude Optimization.......... B

PER-IFT-20-30 Descent

General.......... A

PER-IFT-20-40 Holding

General.......... A

PER-IFT-30 One Engine Inoperative Operations

One Engine Inoperative Strategies.......... A
Long Range Cruise Speed.......... B
EO MAX Altitude.......... C
Holding.......... D
Severe Icing.......... E

PER-IFT-FP Fuel Penalty Tables - Fuel Consumption Increased

Fuel Penalty Tables - Fuel Consumption Increased.......... A

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IN-FLIGHT PERFORMANCE CALCULATION

Ident.: PER-IFT-10-00020638.0001001 / 03 SEP 14
Applicable to: ALL

Performance data are split by flight phases: climb, cruise, descent, and holding.
In-flight performance calculation is made with the in-flight performance application (IN-FLT PERF).
For more information on IN-FLT PERF application, *Refer to DSC-46-OIS-20-80-100 IN-FLT PERF*.

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General

GENERAL

Ident.: PER-IFT-20-10-10-00020641.0001001 / 03 SEP 14
Applicable to: ALL

The climb phase starts at the end of takeoff and ends at the initial cruise level.

The available thrust options are:
- AUTO-DERATE: the FMS automatically computes the appropriate reduced level of climb thrust,
- CLB: maximum climb thrust.

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Climb Thrusts

AUTO-DERATED CLIMB THRUST

Ident.: PER-IFT-20-10-20-00020642.0001001 / 05 NOV 18
Applicable to: ALL

The AUTO-DERATE function automatically reduces the thrust during the climb phase. The reduced thrust level is computed by the FMS to have similar performance level as a reference case, corresponding to the climb to REC MAX ALT at MTOW with MCL thrust.
The function reduces as much as possible the thrust to give the same time to climb to the cruise altitude as the reference case. It guarantees also a minimum climb capability and a limited impact on the fuel consumption.
The level of thrust is optimized by the FMS as a function of the aircraft weight (TOW or GW), the target cruise altitude (CRZ FL) and the ISA deviation at cruise altitude (CRZ TEMP).
The AUTO-DERATE function is selected by default in the FMS. It corresponds to the option AUTO-DERATE in the CLB THR list of the FMS ACTIVE/PERF page. The auto-derated climb thrust mode is engaged when it is selected in the FMS ACTIVE/PERF page and the thrust levers are set to CL detent position.

If necessary, the flight crew can disengage the auto-derated climb thrust mode during PREFLIGHT, T.O or CLB FMS flight phases by one of the following actions:
- To move the thrust levers from CL to MCT detent and back to CL, or
- To select CLB in the CLB THR list of the FMS ACTIVE/PERF page.

The AUTO-DERATE option does not affect the climb ceiling as the Maximum Climb thrust (MCL) is automatically recovered before reaching the REC MAX ALT.

The AUTO-DERATE function allows to systematically reduce the thrust during the climb phase and has the following economical advantages:
- Increased engine life
- Improved engine reliability
- Reduced direct maintenance costs.

MAXIMUM CLIMB THRUST

Ident.: PER-IFT-20-10-20-00021743.0001001 / 03 SEP 14
Applicable to: ALL

The “Maximum Climb” thrust rating is the maximum thrust approved for normal climb.
The FADEC commands this rating when the thrust lever is on the CL detent and the flight crew has selected CLB in the CLB THR list of the FMS ACTIVE/PERF page.

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Speeds

ECONOMIC MACH NUMBER (ECON MACH)

Ident.: PER-IFT-20-20-10-00019551.0001001 / 01 OCT 15
Applicable to: ALL

COST INDEX

The Cost index (CI) is defined as the ratio between Cost of Time per time unit (CT) and Cost of Fuel per mass unit (CF).
The CI value is expressed in kilograms per minute (kg/min), or hundreds of pounds per hour (100 lbs/hr).
The purpose of the CI concept is to reduce Direct Operating Costs (DOC).

ECON MACH

For a given CI, ECON Mach is defined as the Mach for which DOC are minimum.

LONG RANGE CRUISE SPEED (LRC)

Ident.: PER-IFT-20-20-10-00019552.0001001 / 03 SEP 14
Applicable to: ALL

The Long Range Cruise speed (LRC) is defined as the Mach number for which the specific range is equal to 99 % of the maximum specific range.
L2 For more information, *Refer to DSC-22-FMS-10-50-20 FMS Speed Mode (ECON/LRC)*.

FIXED SPEED

Ident.: PER-IFT-20-20-10-00019553.0001001 / 03 SEP 14
Applicable to: ALL

The fixed speed is either a Mach or a CAS.

TURBULENCE SPEED

Ident.: PER-IFT-20-20-10-00019555.0001001 / 03 SEP 14
Applicable to: ALL

Turbulence speeds are recommended when the aircraft flies in a turbulent atmosphere.
The recommended turbulence speed is between Green Dot and 300 kt/M 0.85.
The MAX TURB function indicated on the MFD PERF CRZ page displays the maximal speed/Mach not to exceed according to this recommendation.

MAXIMUM SPEED

Ident.: PER-IFT-20-20-10-00019556.0001001 / 03 SEP 14
Applicable to: ALL

Maximum speed is either:

- The Maximum Operating Mach (MMO), or
- The Maximum Operating speed (VMO), or
- The speed limited by the available thrust.

L2 For more information on Maximum Speed, *Refer to LIM-AG-SPD Maximum Operating Speed VMO/MMO*.

Altitude/Ceilings

DEFINITIONS

Ident.: PER-IFT-20-20-20-00019557.0001001 / 03 SEP 14
Applicable to: ALL

OPTIMUM ALTITUDE

The optimum altitude (OPT ALT) is the altitude at which the SR is maximum.

REC MAX

Maximum altitude is defined as the lower of:
- Maximum altitude at maximum cruise thrust in level flight
- Maximum altitude at maximum climb thrust with 300 ft/min vertical speed
- Maximum certified altitude
- 1.3 g buffet limited altitude.

ALTITUDE OPTIMIZATION

Ident.: PER-IFT-20-20-20-00019558.0001001 / 05 NOV 18
Applicable to: ALL

The optimum altitude definition depends on the cruise type.
The optimum altitude (OPT) displayed on the FMS-PERF page and the optimum altitude (OPTIMUM ALT) determined by the OIS IN-FLT PERF Cruise computation for a given Cost Index (CI) are the result of a minimum cost analysis. To determine these optimum altitudes, both the FMS and IN-FLT PERF calculate the value of the Cost Function (CF) based on the CI at 500 ft increment altitudes. The altitude that provides the lowest value for the CF is displayed as OPT on the FMS-PERF page and as OPTIMUM ALT on the OIS IN-FLT PERF.
These optimum altitude computations take into account a large number of parameters. The FMS and the OIS consider some of these parameters in a different manner. Therefore, OPT on the FMS and OPTIMUM ALT on the OIS may differ.

L2 The main contributor to any difference between OPT on the FMS and OPTIMUM ALT on the OIS is the wind.

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GENERAL

Ident.: PER-IFT-20-30-00020649.0001001 / 03 SEP 14
Applicable to: ALL

The descent phase starts at the top of descent and ends at landing or level off.
In the case of an emergency descent, MMO/VMO is the best speed profile as it gives high rate of descent, which can be increased by extending the speed brakes, if needed.

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GENERAL

Ident.: PER-IFT-20-40-00020650.0001001 / 03 SEP 14
Applicable to: ALL

The holding phase, when required, starts before the landing phase above the destination or alternate airport.
In CONF CLEAN, the standard holding speed is the green dot speed + 20 kt, as it is a good approximation of the maximum endurance speed.

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ONE ENGINE INOPERATIVE STRATEGIES

Ident.: PER-IFT-30-00019545.0001001 / 03 SEP 14
Applicable to: ALL

For more information about One Engine Inoperative Strategies, *Refer to FCTM/PR-AEP-ENG Engine Failure During Cruise*.

LONG RANGE CRUISE SPEED

Ident.: PER-IFT-30-00019546.0001001 / 03 SEP 14
Applicable to: ALL

If the EO mode of the FMS is active, the FMS takes the engine failure into account to compute the EO-LRC speed/ Mach.

EO MAX ALTITUDE

Ident.: PER-IFT-30-00019547.0001001 / 04 MAY 16
Applicable to: ALL

The FMS Engine Out Maximum (EO MAX) altitude is a precomputed value, function of the aircraft gross weight and DISA, displayed on all the PERF pages if one engine is inoperative.

L2 **EO MAX** altitude respects the following criteria:
- It can be flown with LRC speed
- It can be held in level flight with:
  - The operating engine at "Maximum Continuous Thrust" rating
  - The failed engine in windmilling
  - Anti-ice OFF
- It can be reached before buffeting with a margin of 0.3 g
- It is less than the maximum certified altitude.

HOLDING

Ident.: PER-IFT-30-00020652.0001001 / 03 SEP 14
Applicable to: ALL

In CONF CLEAN, the standard EO holding speed is the green dot speed + 20 kt.

SEVERE ICING

Ident.: PER-IFT-30-00021742.0001001 / 06 SEP 17
Applicable to: ALL

If severe icing conditions are encountered, ice may build up on non heated structure. In these conditions:

- The minimum speed is Green Dot in clean configuration
- The nominal gross OEI Level off is reduced by:
  - 4 800 ft for weights less than 188 t (414 500 lb)
  - 9 000 ft for weights more than 280 t (617 300 lb)
  - linear interpolation between 4 800 ft and 9 000 ft for intermediate values of weights.

L2 The nominal gross Level off is calculated at Green Dot speed, engines at MCT, and Anti-ice Off. The reduction in altitude takes into account the effect of activation of Engine and Wing Anti-ice, in addition to ice accretion.

FUEL PENALTY TABLES - FUEL CONSUMPTION INCREASED

Applicable to: ALL

Ident.: PER-IFT-FP-FPF-00019614.0001001 / 27 FEB 17
Applicable to: ALL

USE OF THE FUEL PENALTY TABLES

L2 For more information, *Refer to FCTM/PR-AEP-FUEL Fuel Penalty*.

L1
- **If an ECAM procedure displays FUEL CONSUMPT INCRSD :**

ECAM STATUS PAGE.......SELECT
INOP SYS.......CHECK
FCOM FUEL PENALTY TABLE.......CHECK
TOTAL FUEL PENALTY.......COMPUTE

L2 *Add together all the applicable fuel penalties determined with the fuel penalty table.*

L1 FMS DATA/STATUS PAGE.......SELECT
FMS FUEL PENALTY UPDATE.......CONSIDER

L2 *If the fuel penalty value is determined from the FCOM FUEL PENALTY TABLE, this value must be added to the existing value (if any) on the FMS DATA/STATUS page.*

L1 FOR BETTER RANGE : REDUCE CRZ MACH/SPD

MIN CRZ SPD : GREEN DOT
FUEL CONSUMPTION.......MONITOR

L2 *The flight crew must still monitor and assess the real fuel consumption.*
Consider the FMS fuel penalty adjustment, if required.

Ident.: PER-IFT-FP-FPF-00023881.0001001 / 17 NOV 17
Applicable to: ALL

FUEL PENALTY TABLE

L2 The fuel penalty values of the FCOM table are conservative, and provided as a guideline for both of the following:

- Increase flight crew awareness, particularly when the fuel penalty associated with the failure may change during the flight
- Help the decision making.

L1 Fuel penalties less than 3 % are neither leading to the FUEL CONSUMPT INCRSD display on the ECAM nor included in the table.
The list of INOP SYS appears in the same order of priority as it appears on the STATUS page on the ECAM.

TOTAL FUEL PENALTY : ADD TOGETHER ALL APPLICABLE LINES		
INOP SYS or ECAM Alert	**REASON FOR FUEL CONSUMPT INCRSD**	**FUEL PENALTY**
STABILIZER	Stabilizer locked	Up to 65 % (Not Variable) *(3)*
PRIM 1+2+3	Outer ailerons slightly extended	5 %
RUDDER	Rudder jammed	Up to 35 % (Not Variable) *(3)*
L(R) ELEVATOR	Left or right elevator partly extended	6 %
L(R) INR AILERON	1 inner aileron partly extended	40 %
	1 inner aileron fully extended	55 %
	2 inner ailerons partly extended	40 %
L(R) OUTR AILERON	1 outer aileron partly extended	25 %
	1 outer aileron fully extended	55 %
	2 outer ailerons partly extended	30 %
PART SPLRs	1 spoiler inoperative as per MEL item 27-64-01 to 27-64-06. For more information, *Refer to FCTM/FCTM/Fuel Penalty.*	Refer to MEL
	1 spoiler in runaway position (fully extended)	55 % *(2)*
	1 spoiler or 1 pair of spoilers inoperative and suspected extended	Variable Max 15 % *(1)*
	2 spoilers or 2 pairs of spoilers inoperative and suspected extended	Variable Max 25 % *(1)*

Continued on the following page

FUEL PENALTY TABLE (Cont'd)

TOTAL FUEL PENALTY : ADD TOGETHER ALL APPLICABLE LINES		
INOP SYS or ECAM Alert	**REASON FOR FUEL CONSUMPT INCRSD**	**FUEL PENALTY**
	3 spoilers or 3 pairs of spoilers inoperative and suspected extended	Variable Max 35 % *(1)*
MOST SPLRs	4 spoilers or 4 pairs of spoilers inoperative and suspected extended	Variable Max 40 % *(1)*
	5 spoilers or 5 pairs of spoilers inoperative and suspected extended	Variable Max 47 % *(1)*
	6 spoilers or 6 pairs of spoilers inoperative and suspected extended	Variable Max 50 % *(1)*
	7 spoilers or 7 pairs of spoilers inoperative and suspected extended	Variable Max 55 % *(1)*
DIFF FLAP SETTING	Flaps slightly extended and locked after flap deployment in cruise	Up to 12 % (Not Variable) *(3)*
L/G RETRACTION	All L/G extended	115 %
	One main L/G extended	55 %
	Nose L/G extended	25 %
L/G DOORS	All L/G doors open	15 %
	One main L/G door open	6 %
	Nose L/G door open	3 %
FUEL WINGS NOT BALANCED	F/CTL surfaces partly extended to compensate the lateral imbalance	Above 6 t (13 klb), *Refer to Graph*.
F/CTL RUDDER PEDAL JAMMED F/CTL RUDDER TRIM RUNAWAY	If the AP is not available: See RUDDER	
Abnormal Configuration	CONF 1	15 %
	CONF 1+F	25 %
	CONF 2	55 %
	CONF 3 (Takeoff)	60 %
	CONF 3 (Landing)	85 %
	CONF FULL	135 %
	RAT Extended	3 %

(1) *In the case of spoiler(s) failure, the affected spoiler(s) may gradually extend during the flight up to the balanced position. The fuel penalty may therefore increase during the flight.*

(2) *A visual inspection from the cabin, if time permits, can confirm the extension of the spoiler.*

Continued on the following page

FUEL PENALTY TABLE (Cont'd)

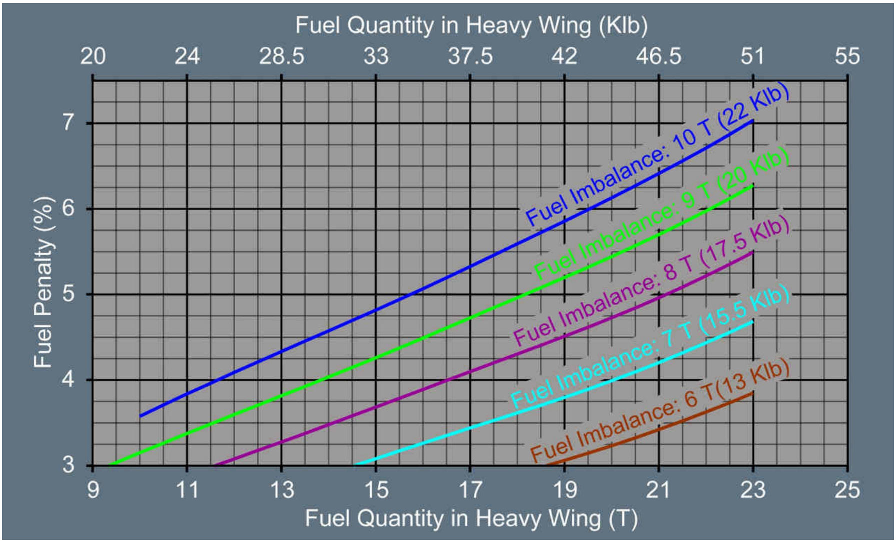
(3) *Depending on the position of the flight control surface at the time of the failure, the flight crew must determine the fuel penalty within the specified range.*

Ident.: PER-IFT-FP-FPF-00022530.0001001 / 07 NOV 16
Applicable to: ALL

FUEL PENALTY - IMBALANCE

The following graph provides the fuel penalty factor that depends on both the fuel imbalance, and the fuel quantity in the heaviest wing tank.
When the fuel imbalance is below 6 000 kg (13 klb), the associated fuel penalty is below 3 %.

Lateral Imbalance



PERFORMANCE

LANDING

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PER-LDG-10 Landing Performance Calculation

General....A
Landing Parameters....B

PER-LDG-20 Landing Speeds and Distances Definitions

Landing Speeds....A
Landing Distances Definitions....B

PER-LDG-30 Runway Conditions

Dry Runway....A
Wet Runway....B
Contaminated Runway....C
Runway Condition Assessment Matrix for Landing....D

PER-LDG-40 Dispatch Requirements

General....A
Dispatch on Dry Runway....B
Dispatch on Wet Runway....C
Dispatch on Contaminated Runway....D
Dispatch with MEL or CDL Item....E
In-Flight Landing Distance Crosscheck....F
ROW Landing Distance Crosscheck....G

PER-LDG-50 In-Flight Performance Assessment

General....A
Landing Performance without In-Flight Failure....B
Landing Performance following In-Flight Failure....C
ROW Landing Distance Crosscheck....D

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Localization Title	Toc Index	ID	Reason
PER-LDG-30 Dry Runway	A	1	Update of the description of dry runway in order to be in line with ICAO standard.
PER-LDG-30 Wet Runway	B	2	Update of the description of wet and damp runway in order to be in line with ICAO standard.
			Documentation update: Deletion of information.
PER-LDG-30 Wet Runway	B	3	Update of the description of wet and damp runway in order to be in line with ICAO standard.

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GENERAL

Ident.: PER-LDG-10-00021541.0001001 / 03 SEP 14
Applicable to: ALL

The landing performance calculation enables:

- At dispatch, to check that the aircraft can land at destination for the predicted conditions, in compliance with the regulatory requirements
- During flight, to check that the aircraft can land at destination for the actual conditions.

L2 The calculation is made in compliance with the recommendations coming from the FAA Takeoff And Landing Performance Assessment Aviation Rulemaking Group (called TALPA ARC).

The landing performance calculation is made with the landing performance (LDG PERF) application. For more information on the LDG PERF application, *Refer to DSC-46-OIS-20-80-110 LDG PERF*.

LANDING PARAMETERS

Ident.: PER-LDG-10-00016750.0001001 / 05 NOV 18
Applicable to: ALL

The landing performance parameters are:

- The characteristics of the runway
  - L2 Landing Distance Available (LDA)
  - Elevation
  - Slope
  - Missed approach gradient.
- L1 The regulatory requirements
- The outside conditions
  - L2 Wind

    L3 As per regulation, the computation is based on 150 % of the entered tailwind, and 50 % of the entered headwind.

    The crosswind component does not affect the calculation of the landing distance. However, a maximum crosswind component is associated with each runway condition.

    For more information about crosswind limitation, *Refer to LIM-AG-OPS Maximum Crosswind for Takeoff and Landing*.
  - L2 Outside Air Temperature (OAT)
  - Sea level atmospheric pressure (QNH)
  - Icing conditions (anti-ice selection)
  - Runway condition, or landing performance level.
- L1 The aircraft configuration
  - L2 Landing Weight (LW)
  - Aerodynamic configuration
  - Air conditioning setting
  - Aircraft CG position
  - Approach speed and go-around speed.
- L1 The aircraft status.
  - L2 MEL items
  - CDL items
  - Abnormal and emergency configuration (ABN EMER) for in-flight computation only.

L1 The following parameters can be optimized:

- Aerodynamics configuration
- Go-around speed.

L2 For more information about the go-around speed, *Refer to PER-LDG-20 Landing Speeds*.

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LANDING SPEEDS

Ident.: PER-LDG-20-00016524.0001001 / 03 SEP 14
Applicable to: ALL

LOWEST SELECTABLE SPEED (VLS)

VLS is the lowest selectable speed. VLS is used to determine the Final Approach Speed (VAPP) in normal conditions.
For more information about VLS, *Refer to DSC-22-27-10-20 VLS*.

REFERENCE SPEED (VREF)

VREF is equal to the VLS of CONF FULL. VREF is used to determine the Final Approach Speed (VAPP) when a system failure affects the landing performance.
For more information about VREF, *Refer to DSC-22-27-10-10 VREF*.

FINAL APPROACH SPEED (VAPP)

VAPP is the speed of the aircraft when crossing the runway threshold. The flaps/slats are in the landing configuration, and the landing gears are extended.
For more information about VAPP, *Refer to DSC-22-27-10-20 VAPP*.

GO-AROUND SPEED

In the case of a missed approach, the go-around climb gradient is calculated at the go-around speed.
The standard go-around speed is 1.23 VS1G of the go-around configuration. For approaches with a decision height at or above 200 ft, where approach climb performance is found restrictive, the go-around speed can be increased up to 1.3 VS1G of the go-around configuration.

LANDING DISTANCES DEFINITIONS

Ident.: PER-LDG-20-00021576.0001001 / 03 APR 17
Applicable to: ALL

REQUIRED LANDING DISTANCE (RLD)

The RLD is the regulatory reference to be used for dispatch landing performance computation.

The RLD is the factored certified landing distance based on:
- Maximum manual braking initiated immediately after main gear touchdown
- Prompt selection of max reverse thrust, maintained to 70 kt, and idle thrust to full stop (when credit is used)
- Antiskid system and all ground spoilers operative
- The regulatory dispatch factor.

Note: *The Required Landing Distance calculation considers the effect of the MEL/CDL items that affects the landing performance.*

IN-FLIGHT LANDING DISTANCE (LD)

The In-Flight Landing Distance reflects the performance achievable in a typical operational landing without margin.

The In-Flight Landing Distance calculation assumes:
- An airborne phase of 7 s from threshold to touchdown
- In the case of manual braking: maximum manual braking initiated immediately after main gear touchdown
- In the case of autobrake: normal system delays in braking activation
- Antiskid system and all ground spoilers operative
- Prompt selection of max reverse thrust, maintained to 70 kt, and idle thrust to full stop (when credit is used).

Note: *The In-Flight Landing Distance calculation considers the effect of the inoperative system(s) following:*

- *An MEL/CDL dispatch that affects the landing performance*
- *An in-flight failure (ECAM alert) that affects the landing performance.*

FACTORED IN-FLIGHT LANDING DISTANCE (FLD)

The definition of the In-Flight Landing Distance does not include any margin. The In-Flight Landing Distance is a realistic distance achievable in nominal conditions, i.e. the actual conditions during the landing are those used for the computation.

it is recommended to apply an appropriate margin to the In-Flight Landing Distance (either determined with or without failure) in order to cover:
- The variability in flying techniques (e.g. flare execution, delay in application of the deceleration means)
- Unexpected conditions at landing (e.g. real runway friction vs. reporting, turbulence, crosswind).

L2 The Factored In-Flight Landing Distance is defined as:
- The In-Flight Landing Distance multiplied by a Factor, or
- The In-Flight Landing Distance plus an Increment.

L1 It is the Airlines responsibility to define the margins (and their applicability) to apply on top of the In-Flight Landing Distance.
The recommended margin is a Factor of 1.15 on the In-Flight Landing Distance. Under exceptional circumstances, the flight crew may decide to disregard this margin.

ROW LANDING DISTANCE

The ROW landing distance is calculated by the PRIMs and displayed on the ANF.
For more information about the ROW system, *Refer to DSC-34-32-20-10 ROW*.

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DRY RUNWAY

Ident.: PER-LDG-30-00021599.0001001 / 03 JUL 20
Applicable to: ALL

1 A runway is dry when its surface is:
- Free of visible moisture
- Not contaminated.

WET RUNWAY

Ident.: PER-LDG-30-00021600.0001001 / 03 JUL 20
Applicable to: ALL

2

3 WET RUNWAY

A runway is considered as wet, when the surface is covered by any visible moisture or water up to and including 3 mm (1/8") depth. When the water film does not exceed 3 mm (1/8"), there is no significant danger of hydroplaning.

Note: *A damp runway is considered wet, regardless of whether or not the surface has a shiny appearance.*

CONTAMINATED RUNWAY

Ident.: PER-LDG-30-00021602.0001001 / 08 JUL 19
Applicable to: ALL

A runway is contaminated when more than 25 % of its surface is covered with:
- A layer of fluid contaminant not considered as thin
- A hard contaminant.

DESCRIPTION OF FLUID CONTAMINANTS

In terms of performance, a contaminated runway is a runway covered by a fluid contaminant with a depth of more than 3 mm (1/8"). The fluid contaminant can be either:
- Dry snow
- Wet snow
- Standing water
- Slush.

Fluid Contaminants reduce friction forces, and cause:
- Precipitation drag
- Hydroplaning.

L2 Fluid contaminants descriptions:
- Dry snow is snow that, if compacted by hand, does not stay compressed when released. The wind can blow dry snow. The density of dry snow is approximately 0.2 kg/l (1.7 lb/US Gal).
- Wet snow is snow that, if compacted by hand, stays compressed when released, and with which snowballs can be created. The density of wet snow is approximately 0.4 kg/l (3.35 lb/US Gal).
- Standing water occurs due to heavy rain and/or not sufficient runway drainage. Standing water has a depth of more than 3 mm.
- Slush is snow soaked with water, which spatters when stepped on firmly. Slush occurs at temperatures of approximately 5 °C, and has a density of approximately 0.85 kg/l (7.1 lb/US Gal).

L1 DESCRIPTION OF HARD CONTAMINANTS

In terms of performance, a contaminated runway is a runway covered by a hard contaminant that can be either:
- Compacted snow,
- Ice (Cold and Dry)
- Wet ice.

Hard contaminants only reduce friction forces.

L2 Hard contaminants descriptions:
- Compacted snow: the maintenance personnel use a snow groomer to compress the snow on a runway in order to obtain a hard surface

- Ice (Cold and Dry): situation in which ice occurs on the runway in cold and dry conditions
- Wet ice: when the ice on a runway melts, or there are loose/fluid contaminants on top of the ice, the ice is referred to as "wet ice". When there is wet ice on a runway, braking and directional control are difficult or not possible, because the runway surface is very slippery.

L1 LANDING PERFORMANCE CALCULATION

L2 COMPUTATION ASSUMPTIONS

The following assumptions are considered for the calculation:
- The contaminant covers the entire length of the runway
- For fluid contaminants, the landing distance calculation does not take credit of the precipitation drag.

L1 EQUIVALENCES

In terms of performance:
- A fluid contamination is equivalent to wet, up to a maximum depth of 3 mm (1/8") of:
  - dry snow
  - wet snow
  - standing water
  - slush.
- "Frost" is equivalent to wet, unless a lower runway performance code is reported
- "Slippery Wet" is equivalent to 10 mm (2/5") of dry snow.

RESTRICTIONS

For maximum depth of fluid contaminants, *Refer to PER-LDG-30 Runway Condition Assessment Matrix for Landing*.
Dispatch from and to a runway covered with wet ice is not permitted, unless an effective friction coefficient at or higher than 0.07 is demonstrated.

RUNWAY CONDITION ASSESSMENT MATRIX FOR LANDING

Ident.: PER-LDG-30-00018439.0001001 / 08 JUL 19
Applicable to: ALL

RUNWAY SURFACE CONDITIONS		**Observations on Deceleration and Directional Control**	**Related Landing Performance**		**Maximum Crosswind (Gust included)**
Runway State or / and Runway Contaminant	**ESF***(1)* **or PiRep***(2)*		**Code**	**Level**	
Dry	-	-	6	DRY	40 kt
Damp **Wet:** Up to 3 mm (1/8”) of water **Slush:** *(3)* Up to 3 mm (1/8”) **Dry Snow:** *(3)* Up to 3 mm (1/8”) **Wet Snow:** *(3)* Up to 3 mm (1/8”) **Frost**	Good	Braking deceleration is normal for the wheel braking effort applied. Directional control is normal.	5	GOOD	40 kt
Compacted Snow: OAT at or below -15 °C	Good to Medium	Braking deceleration and controllability is between Good and Medium.	4	GOOD TO MEDIUM	27 kt *(4)*
Dry Snow: *(3)* More than 3 mm (1/8”), up to 100 mm (4”) **Wet Snow:** *(3)* More than 3 mm (1/8”), up to 30 mm (6/5”) **Dry Snow over Compacted Snow***(3)* **Wet Snow over Compacted Snow***(3)* **Compacted Snow:** OAT above -15 °C **Slippery Wet**	Medium	Braking deceleration is noticeably reduced for the wheel braking effort applied. Directional control may be reduced.	3	MEDIUM	20 kt *(4)*
Water: More than 3 mm (1/8”), up to 15 mm (3/5”) **Slush:** *(3)* More than 3 mm (1/8”), up to 15 mm (3/5”)	Medium to Poor	Braking deceleration and controllability is between Medium and Poor. Potential for Hydroplaning exists.	2	MEDIUM TO POOR	20 kt *(4)*

Continued on the following page

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Ice (cold and dry)	Poor	Braking deceleration is significantly reduced for the wheel braking effort applied. Directional control may be significantly reduced.	1	POOR	15 kt (4)
Wet Ice **Water on top of Compacted Snow** **Dry Snow(3) or Wet Snow(3) over Ice**	Less than Poor	Braking deceleration is minimal to non-existent for the wheel braking effort applied. Directional control may be uncertain.	-	-	-

(1) *ESF: Estimated Surface Friction*

(2) *PiRep: Pilot Report of Braking Action*

(3) *For loose contaminants (Dry Snow, Wet Snow or Slush), the friction measurements are unreliable and should not be considered for the landing performance assessment.*

(4) *Maximum recommended value based on computations*

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GENERAL

Ident.: PER-LDG-40-00018372.0001001 / 13 JAN 15
Applicable to: ALL

LANDING PERFORMANCE CALCULATION

The landing performance calculation is made with the landing performance (LDG PERF) application, with the computation type set to DISPATCH.

L2 For more information on the LDG PERF application, *Refer to DSC-46-OIS-20-80-110 LDG PERF*.

L1 REQUIREMENT ON THE LANDING DISTANCE

The Landing Distance Available (LDA) at destination must be at least equal to the Required Landing Distance (RLD) for the planned landing weight.

REQUIREMENT ON THE GO-AROUND PERFORMANCE

The go-around climb gradient must be at least equal to:
- 2.1 %
- The gradient published in the airport approach chart.

Note: *EU-OPS requires a minimum go-around climb gradient of 2.5 % for instrument approaches with decision heights below 200 ft.*

DISPATCH ON DRY RUNWAY

Ident.: PER-LDG-40-00016506.0001001 / 03 SEP 14
Applicable to: ALL

Landing performance is calculated without the benefit of thrust reversers, as per regulation.

L2 For information, the AFM publishes the autoland landing distance increments on dry runways.

DISPATCH ON WET RUNWAY

Ident.: PER-LDG-40-00016509.0001001 / 03 SEP 14
Applicable to: ALL

Landing performance is calculated without the benefit of thrust reversers, as per regulation.
The RLD for a wet runway is the RLD for the dry runway multiplied by 1.15.

DISPATCH ON CONTAMINATED RUNWAY

Ident.: PER-LDG-40-00016511.0001001 / 03 SEP 14
Applicable to: ALL

Landing performance can be calculated with the benefit of the thrust reversers.
For operators complying with EU-OPS regulation, the landing weight on a contaminated runway cannot exceed the landing weight on a wet runway.

DISPATCH WITH MEL OR CDL ITEM

Ident.: PER-LDG-40-00016512.0001001 / 06 MAR 15
Applicable to: ALL

The aircraft can be dispatched with deferred MEL or CDL items. In this case, the LDA must be at least equal to the RLD calculated with the applicable MEL or CDL item selected.

MEL or CDL items that affect landing performance are:
- MEL items that reduce braking capabilities (brakes, spoilers, thrust reversers if applicable)
- MEL items that have an impact on thrust available for go-around (engine anti-ice valve stuck open)
- CDL items that increase aircraft drag (seals, fairings).

L2 CDL items are divided in two categories: negligible and non-negligible items.
If the number of negligible CDL items is less or equal to three, no penalty applies.
If the number of negligible CDL items is more than three, a drag increase for each item is applied.

IN-FLIGHT LANDING DISTANCE CROSSCHECK

Ident.: PER-LDG-40-00019134.0001001 / 03 SEP 14
Applicable to: ALL

The Factored In-Flight Landing Distance may, in some cases, and in particular on contaminated runway, exceed the RLD considered at dispatch.
The requirements for dispatch remain unchanged and are based on the RLD. However, when arrival conditions are expected to be marginal it is recommended to make a preliminary calculation of In-Flight Landing Distance or Factored In-Flight Landing Distance at dispatch in order to nominate suitable destination alternates.
The landing performance calculation may also check that the aircraft can land at destination in compliance with In-Flight Landing Distance.
In this case, the landing distance considered for dispatch is the maximum of the RLD and the Factored In-Flight Landing Distance.

ROW LANDING DISTANCE CROSSCHECK

Ident.: PER-LDG-40-00021304.0001001 / 04 DEC 14
Applicable to: ALL

The ROW landing distance may, in some cases, exceed the RLD considered at dispatch.
The requirements for dispatch remains unchanged and are based on the RLD. However, if the conditions remain unchanged, the flight crew will not be authorized to initiate an approach (unless a specific authorization is obtained from the appropriate authority to deactivate the ROW/ROP).
As a consequence, the dispatch conditions should be adapted in order to prevent a ROW alert to be triggered.

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GENERAL

Ident.: PER-LDG-50-00018097.0001001 / 03 SEP 14
Applicable to: ALL

During flight, the flight crew performs a landing performance computation if the landing conditions changed compared with the landing performance computation at dispatch, or with a previous computation (e.g. runway, weather conditions, in-flight failure affecting performance, diversion).
The landing performance calculation is made with the landing performance (LDG PERF) application, with the computation type set to IN-FLIGHT.

L2 For more information on the LDG PERF application, *Refer to DSC-46-OIS-20-80-110 LDG PERF*.

L1 The landing distance used for this computation is the Factored In-Flight Landing Distance (FLD). The flight crew uses the RCAM to determine the runway landing performance and code.
If the aircraft has been dispatched with deferred MEL or CDL items, the In-Flight Landing Distance and Factored In-Flight Landing Distance must be calculated with the applicable MEL or CDL items selected.
Under exceptional circumstances, the flight crew may decide to disregard the Factored In-Flight Landing Distance. In this case the flight crew must check that the In-Flight Landing Distance is shorter than the LDA at the destination or diversion airport.

L2 For more information on In-Flight Landing Distances, *Refer to PER-LDG-20 Landing Distances Definitions*.

LANDING PERFORMANCE WITHOUT IN-FLIGHT FAILURE

Ident.: PER-LDG-50-00019790.0001001 / 13 JAN 15
Applicable to: ALL

LANDING PERFORMANCE CALCULATION

The flight crew enters the expected landing conditions and calculates the landing performance.

L2 For more information on the LDG PERF application, *Refer to DSC-46-OIS-20-80-110 LDG PERF*.

L1 FLAPS LEVER POSITION

The FLAPS lever position for landing is at flight crew's discretion.

VAPP DETERMINATION

VAPP is calculated by the FMS and is displayed on the APPR panel of the FMS PERF page.

L2 The VAPP is calculated by the FMS as the maximum of:
- VMCL + 5 kt
- 1.23*VS1G + (5 ≤ headwind/3 ≤ 15)

LANDING PERFORMANCE FOLLOWING IN-FLIGHT FAILURE

Ident.: PER-LDG-50-00018101.0001001 / 13 JAN 15
Applicable to: ALL

LANDING PERFORMANCE ECAM INDICATIONS

After an aircraft system failure that occurs in flight, the flight crew follows the associated ECAM procedure.
When required, the ECAM displays landing performance indications in the applicable procedure.
The ECAM alert items are displayed on the ECAM STATUS page. The ECAM displays LDG DIST AFFECTED or LDG PERF AFFECTED if an ECAM alert item affects landing performance.
L2 LDG DIST AFFECTED means that only the landing distance is affected.
LDG PERF AFFECTED means that both approach speed and landing distance are affected.

L1 LANDING PERFORMANCE CALCULATION

The ECAM alert items that affect landing performance are automatically sent to the LDG PERF application. The LDG PERF application displays these items in the ACFT STATUS panel.
The flight crew enters the expected landing conditions and calculates the landing performance.
L2 For more information on the LDG PERF application, *Refer to DSC-46-OIS-20-80-110 LDG PERF*.

L1 FLAPS LEVER POSITION

The flight crew selects the FLAPS lever position requested by the ECAM.

Note: *If there are no ECAM instructions, the FLAPS lever position for landing is at flight crew's discretion.*

VAPP DETERMINATION

- **If the ECAM displays LDG DIST AFFECTED:**
  The flight crew uses the VAPP calculated by the FMS.
- **If the ECAM displays LDG PERF AFFECTED:**
  The flight crew enters into the FMS - PERF - APPR page the VAPP value computed by the LDG PERF application.

ROW LANDING DISTANCE CROSSCHECK

Ident.: PER-LDG-50-00021305.0001001 / 04 DEC 14
Applicable to: ALL

The ROW landing distance may, in some cases, exceed the factored in-flight landing distance (FLD). The flight crew will not be authorized to initiate an approach if a ROW alert is expected (unless a specific authorization is obtained from the appropriate authority to deactivate the ROW/ROP).
If a ROW alert is expected, and the flight crew is not authorized to deactivate the ROW/ROP, the flight crew should request to change the runway, or initiate a diversion.

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OPERATIONS ENGINEERING BULLETINS

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M(1)	Identification	T(2)	E(3)	Rev. Date	Title
E	OEB9 issue 3	R	N	09 APR 20	Not commanded engine shutdown due to liquid spillage on the center pedestal - Updated Procedure v3
E	Criteria: XW **Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP**				
	OEB1 issue 3	W	N	17 OCT 19	RA Height Disturbance when Overflying Another Aircraft
	Criteria: 34-P018, L42959, L48016, XW **Applicable to: ALL**				
	OEB8 issue 1	W	N	04 SEP 19	AFS CP Altitude Knob Use
	Criteria: XW **Applicable to: ALL**				

(1) Evolution code : N=New, R=Revised, E=Effectivity
(2) Type of OEB: R=Red, W=White
(3) Affects ECAM: Y=Yes, N=No

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M	Localization	DU Title	DU identification	DU date

No Temporary Documentary Unit

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OPERATIONS
ENGINEERING BULLETINS

INTRODUCTION

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INTRODUCTION

Ident.: OEB-000-00020937.0001001 / 29 MAR 17
Applicable to: ALL

DEFINITION

Airbus issues an **Operations Engineering Bulletin (OEB)** to rapidly inform Operators of any deviations from initial design objectives that have a significant operational effect. An OEB provides Operators with technical information and temporary operational procedures that address these deviations.

TYPES OF OEB

OEBs can be either red or white, depending on their level of priority.

Red OEBs	:	Are issued to indicate that non-compliance with the recommended procedures may have a significant impact on the safe operation of the aircraft .
White OEBs	:	Are issued to indicate that non-compliance with the recommended procedures may have a significant impact on aircraft operation.

Airbus strongly recommends that all Operators rapidly apply the OEB corrective actions as soon as they become available, particularly for red OEBs.
The information in OEBs is recommended by Airbus, but may not be approved by Airworthiness Authorities. However, in case of red OEB, Airbus also issues a Temporary Revision (TR) of the Airplane Flight Manual (AFM). If the procedures contained in the red OEB differ from the procedures in the AFM TR, the approved AFM TR remains the reference.

OEB CONTENT AND MANAGEMENT

An OEB:
- Is a part of the Flight Crew Operating Manual (FCOM)
- Is temporary, and usually focuses on one operational subject only
- Remains applicable, until the appropriate corrective actions are applied
- Is filed in increasing order.

The content of each OEB includes:
- The reason for issue
- Technical explanations of the deviation from the initial design objectives
- The operational effect, if the flight crew does not apply the OEB procedure
- The conditions to apply the OEB procedures:
  - Cockpit effect
  - Flight phases
  - Specific events.

- The OEB operational procedure(s) the flight crew must apply
- The corrective actions (i.e. the SB(s) modification) that cancel the OEB, as soon as these corrective actions become available.

If necessary, there are links to the FCOM sections for which the OEB is applicable, and these sections are usually in the format of a Temporary Documentary Unit (TDU).

OEB AND ECAM ABNORMAL & EMERGENCY PROCEDURES

OEBs do not normally apply to ECAM abnormal/emergency procedures.
The Airbus Temporary Quick Change (ATQC) database is used to urgently make any required updates or changes to an ECAM abnormal and emergency procedures.
L2 For more information on the ATQC database, *Refer to DSC-31-CDS-60-10-20 FWS*.

L1 REVIEW OF THE OEB

In accordance with the Standard Operating Procedures (SOPs), and before each flight, the flight crew must review all OEBs that are applicable to their aircraft. If the OEB conditions are applicable, the flight crew must apply the operational procedure(s) that is in the OEB.
L2 For more information on OEB review in the SOPs, (*Refer to PRO-NOR-SOP-40 OIS Preparation - Operations Engineering Bulletins (OEB)*) .

L1 DISTRIBUTION

OEB are distributed to all affected Operators. It is the Operators responsibility to ensure the distribution of the OEB to all their applicable flight crews.

OPERATIONS
ENGINEERING BULLETINS

RA HEIGHT DISTURBANCE WHEN OVERFLYING ANOTHER AIRCRAFT

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RA Height Disturbance when Overflying Another Aircraft..........A

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RA HEIGHT DISTURBANCE WHEN OVERFLYING ANOTHER AIRCRAFT

Applicable to: ALL

OEB1 Issue 3
RA HEIGHT DISTURBANCE WHEN OVERFLYING ANOTHER AIRCRAFT

Ident.: OEB-OEB1-OEB1-00021420.0001001 / 17 OCT 19

APPROVAL REFERENCE

APPROVED BY: Head of Airbus Flight Operations and Training Support
Approval date: 17 OCT 19
Approval reference: 20191017

- This OEB covers a significant operational issue. Non-compliance with this OEB may have a significant impact on the operations of the aircraft. Airbus recommends that the operators apply this OEB within 30 days from the date of issue of this OEB.
- Airbus recommends that all operators rapidly incorporate the corrective Service Bulletins that cancel this OEB when they become available.

Reason for issue:	This OEB is issued to provide operational recommendations in the case of an erroneous RA height during an aircraft overfly.
Applicable to:	All A350 aircraft.
Cancelled by:	Future RA standard or FCGS standard.

Note: The interchangeability code, given in the Illustrated Part Catalog (IPC), indicates the conditions for interchangeability of equipment. After installation of corrective modification(s)/SB(s), if an Operator reinstalls any equipment affected by this OEB, it is the Operator's responsibility to ensure that the recommendations given in this OEB are applied again for the applicable aircraft.

Operations Engineering Bulletins are issued by Airbus, as the need arises, to quickly transmit technical and procedural information. They are distributed to all FCOM holders and to others who need advice of changes to operational information.
The information in the OEB is recommended by Airbus, but may not be approved by Airworthiness Authorities. If the procedures contained in this OEB differ from the procedures in the AFM, the AFM remains the reference.

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RA HEIGHT DISTURBANCE WHEN OVERFLYING ANOTHER AIRCRAFT (Cont'd)

M	Localization	T	DU Title	DU identification	DU date
	OEB-OEB1		**RA Height Disturbance when Overflying Another Aircraft**	PG02419	
	OEB-OEB1		**RA Height Disturbance when Overflying Another Aircraft**	00021420.0001001	17 OCT 19
	Criteria: 34-P018, L42959, L48016, XW **Applicable to: ALL**				
	OEB-OEB1		**RA Height disturbance when Overflying Another Aircraft - Bulletin**	00021421.0001001	17 OCT 19
	Criteria: 34-P018, L42959, L48016, XW **Applicable to: ALL**				

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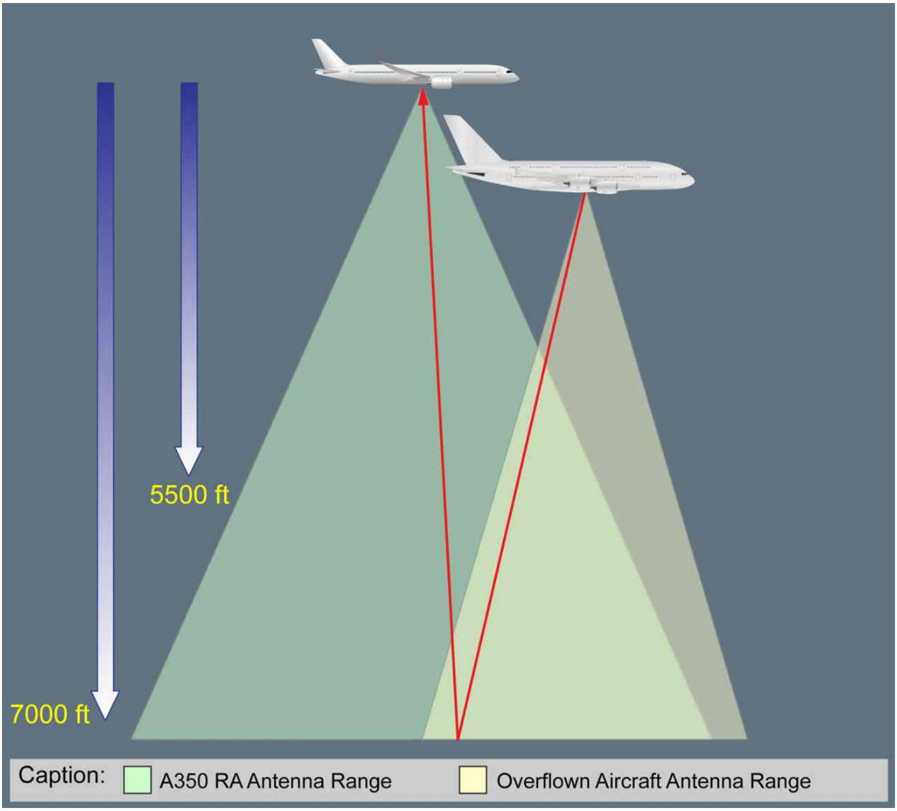
RA HEIGHT DISTURBANCE WHEN OVERFLYING ANOTHER AIRCRAFT (Cont'd)

Ident.: OEB-OEB1-OEB1-00021421.0001001 / 17 OCT 19

DESCRIPTION

Above 7 000 ft AGL, when an A350 overflies another aircraft that is less than 5 500 ft below, the A350 RA (Radio Altimeter) signals may be disturbed due to the returns of the RA signals from the overflown aircraft.

Overfly Phase


5500 ft
7000 ft
Caption:
🟩 A350 RA Antenna Range
🟨 Overflown Aircraft Antenna Range

- **During the overfly:**
  The RA indication fluctuates within its operational range.

Continued on the following page

RA HEIGHT DISTURBANCE WHEN OVERFLYING ANOTHER AIRCRAFT (Cont'd)

As a consequence, depending on the RA height indication, some of the following cockpit effects may be triggered:

- Spurious L/G GEAR NOT DOWN ECAM alert
- Spurious altitude auto callouts
- Spurious TAWS aural alerts
- Reversion of the TCAS mode to TA ONLY mode associated with the inhibition of "TRAFFIC TRAFFIC" aural alert
- Inhibition of the AP/FD TCAS function with AUTO FLT TCAS MODE FAULT ECAM alert
- Temporary loss of the BTV function associated with the BRAKES BTV FAULT ECAM alert
- Temporary loss of the ROW/ROP function associated with the SURV ROW / ROP LOST ECAM alert
- Temporary loss the Autoland capability associated with the AUTO FLT APPROACH CAPABILITY DOWNGRADED ECAM alert
- Temporary loss of the reactive windshear detection associated with the SURV REACTIVE W/S DET FAULT ECAM alert.

● **After the overfly and above 5 500 ft AGL :**

When the RA antenna of the overflown aircraft is out of the A350 RA antenna range, the RA indication disappears.

Normal behaviors of the ECAM alerts, auto callouts and TCAS Traffic Advisory / Resolution Advisory mode is recovered.

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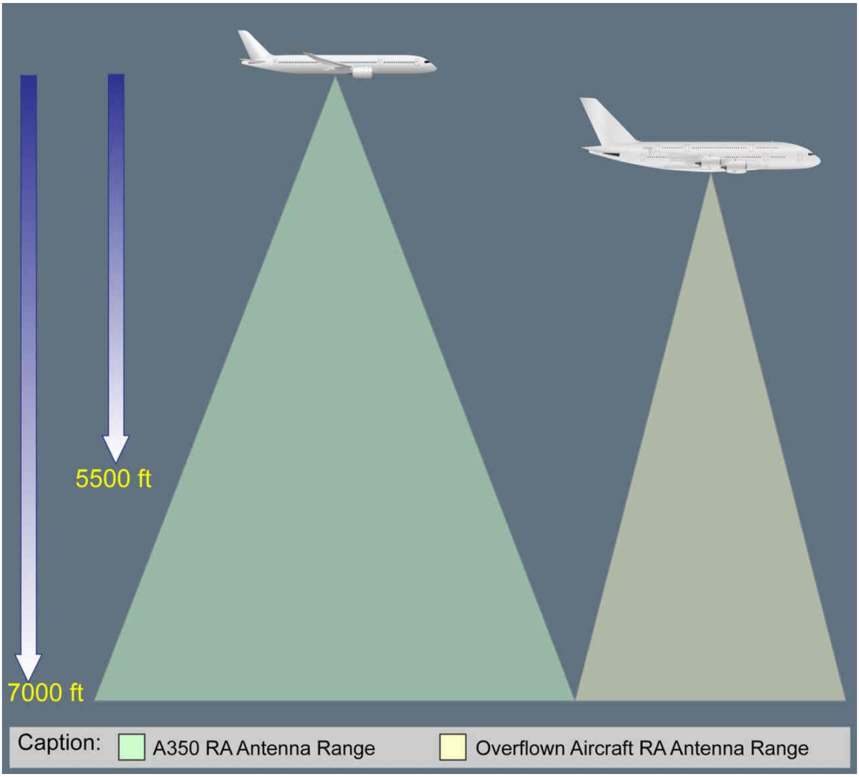
RA HEIGHT DISTURBANCE WHEN OVERFLYING ANOTHER AIRCRAFT (Cont'd)

After Overfly Phase


5500 ft
7000 ft
Caption:
🟩 A350 RA Antenna Range
🟨 Overflown Aircraft RA Antenna Range

However, after such event, RA are rejected by the PRIMs.
As a consequence, the following cockpit effects are triggered until the A350 descends below 5 500 ft AGL:

- Inhibition of the AP/FD TCAS function with AUTO FLT TCAS MODE FAULT ECAM alert
- Temporary loss of the ROW/ROP function associated with the SURV ROW / ROP LOST ECAM alert

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RA HEIGHT DISTURBANCE WHEN OVERFLYING ANOTHER AIRCRAFT (Cont'd)

- Temporary loss the Autoland capability associated with the AUTO FLT APPROACH CAPABILITY DOWNGRADED ECAM alert
- Temporary loss of the reactive windshear detection associated with the SURV REACTIVE W/S DET FAULT ECAM alert.

● **Below 5 500 ft AGL:**
Normal operation of the RA is recovered.
Normal behavior of the all ECAM alerts, landing capability and guidance mode is recovered.

PROCEDURE

● **During the overfly:**
Above 7 000 ft AGL, if the flight crew observes some of the above behaviors when overflying an aircraft with fluctuations of the RA height indication, the flight crew may suspect that the alerts and auto callouts are spurious.
Therefore, the flight crew may disregard the aural alerts and auto callouts, and clear or cancel the ECAM alerts.
In addition, the flight crew must carefully monitor traffics on the ND for possible threats, since TCAS may revert to TA ONLY without aural alert, until the Traffic Advisory / Resolution Advisory mode is recovered (TA ONLY message disappears on ND).

● **After the overfly:**
The following cockpit effects remain triggered until the aircraft descends below 5 500 ft AGL:

- Inhibition of the AP/FD TCAS function with AUTO FLT TCAS MODE FAULT ECAM alert
- Temporary loss of the ROW/ROP function associated with the SURV ROW / ROP LOST ECAM alert
- Temporary loss the Autoland capability associated with the AUTO FLT APPROACH CAPABILITY DOWNGRADED ECAM alert
- Temporary loss of the reactive windshear detection associated with the SURV REACTIVE W/S DET FAULT ECAM alert.

● **For approach:**
Unless other failure that affects the approach capability occurred during the flight, the aircraft will retrieve its normal approach capability below 5 500 ft AGL.
In order to retrieve the correct approach capability, the flight crew should wait below 5 500 ft AGL to press the AFS CP APPR pushbutton to arm the approach.

Continued on the following page

RA HEIGHT DISTURBANCE WHEN OVERFLYING ANOTHER AIRCRAFT (Cont'd)

Note:

1. Above 5 500 ft AGL, If the flight crew press the APPR pushbutton to arm the approach, the approach capability displayed on the FMA will remain APPR1 with no update.
In order to retrieve the correct approach capability, the flight crew should pull the V/S knob to disengage the approach and wait below 5 500 ft AGL to press the APPR pushbutton to arm the approach again.

2. Above 5 500 ft AGL, the flight crew could press the LOC pushbutton to arm lateral guidance.

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OPERATIONS
ENGINEERING BULLETINS

AFS CP ALTITUDE KNOB USE

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AFS CP Altitude Knob Use........ A

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AFS CP ALTITUDE KNOB USE

Applicable to: ALL

OEB8 Issue 1
AFS CP ALTITUDE KNOB USE

Ident.: OEB-OEB8-OEB8-00025231.0001001 / 04 SEP 19

- This OEB covers a significant operational issue. Non-compliance with this OEB may have a significant impact on the operations of the aircraft. Airbus recommends that the operators apply this OEB within 30 days from the date of issue of this OEB.
- Airbus recommends that all operators rapidly incorporate the corrective Service Bulletins that cancel this OEB when they become available.

Reason for issue:	This OEB is issued to provide operational recommendations on the use of the AFS CP Altitude Knob.
Applicable to:	A350 aircraft.
Cancelled by:	Under investigation.

Note: The interchangeability code, given in the Illustrated Part Catalog (IPC), indicates the conditions for interchangeability of equipment. After installation of corrective modification(s)/SB(s), if an Operator reinstalls any equipment affected by this OEB, it is the Operator's responsibility to ensure that the recommendations given in this OEB are applied again for the applicable aircraft.

Operations Engineering Bulletins are issued by Airbus, as the need arises, to quickly transmit technical and procedural information. They are distributed to all FCOM holders and to others who need advice of changes to operational information.
The information in the OEB is recommended by Airbus, but may not be approved by Airworthiness Authorities. If the procedures contained in this OEB differ from the procedures in the AFM, the AFM remains the reference.

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AFS CP ALTITUDE KNOB USE (Cont'd)

M	Localization	T	DU Title	DU identification	DU date
	OEB-OEB8		**AFS CP Altitude Knob Use**	PG02616	
	OEB-OEB8		**AFS CP Altitude Knob Use**	00025231.0001001	04 SEP 19
	Criteria: XW **Applicable to: ALL**				
	OEB-OEB8		**AFS CP Altitude Knob Use - Desc - Bulletin**	00025232.0001001	04 SEP 19
	Criteria: XW **Applicable to: ALL**				
	OEB-OEB8		**AFS CP Altitude Knob Use- Proc - Bulletin**	00025233.0001001	04 SEP 19
	Criteria: XW **Applicable to: ALL**				

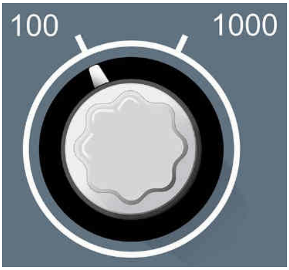
Continued on the following page

AFS CP ALTITUDE KNOB USE (Cont'd)

Ident.: OEB-OEB8-OEB8-00025232.0001001 / 04 SEP 19

EXPLANATION

Operators reported some events of not commanded AFS CP altitude change.
Investigations indicates that internal mechanical components of the AFS CP ALT Knob might have sensitivity weakness.



The ALT Knob is made of:
- An outer knob that has two positions: 100 and 1000, to set the target altitude in increments of 100 ft or 1 000 ft.
- A button that the flight crew can turn, push and pull to define a new target altitude, and use the managed or selected mode.

The possible sensitivity weakness could lead to an offset of only one increment of not commanded altitude change, i.e.(100 ft or 1 000 ft depending on the outer knob setting.
As a result, in order to limit the possible not commanded altitude change, a new procedure is introduced.
Flight crew should set the outer knob of the AFS CP ALT knob to the 100 position after each use.

AFS CP ALTITUDE KNOB USE- PROC - BULLETIN

Ident.: OEB-OEB8-OEB8-00025233.0001001 / 04 SEP 19

PROCEDURE

- **After each use of the AFS CP ALT knob:**

  ALT outer knob..SET 100

L2 *The 1000 position of the ALT outer knob can be used for altitude target selection. However, the flight crew should ensure that the ALT outer knob is set to the 100 position after each use.*

END OF OEB8

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OPERATIONS ENGINEERING BULLETINS

NOT COMMANDED ENGINE SHUTDOWN DUE TO LIQUID SPILLAGE ON THE CENTER PEDESTAL - UPDATED PROCEDURE V3

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Not commanded engine shutdown due to liquid spillage on the center pedestal - Updated Procedure V3.............A

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Localization Title	Toc Index	ID	Reason
OEB-OEB9 Not commanded engine shutdown due to liquid spillage on the center pedestal - Updated Procedure v3	A	1	Effectivity update: The information no longer applies to all ACN.
OEB-OEB9 Not commanded engine shutdown due to liquid spillage on the center pedestal	A	2	Effectivity update: The information no longer applies to all ACN.
OEB-OEB9 Not commanded engine shutdown due to liquid spillage on the center pedestal	A	3	Effectivity update: The information no longer applies to all ACN.

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NOT COMMANDED ENGINE SHUTDOWN DUE TO LIQUID SPILLAGE ON THE CENTER PEDESTAL - UPDATED PROCEDURE V3

Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP

OEB9 Issue 3
NOT COMMANDED ENGINE SHUTDOWN DUE TO LIQUID SPILLAGE ON THE CENTER PEDESTAL - UPDATED PROCEDURE V3

Ident.: OEB-OEB9-OEB9-00025399.0001001 / 09 APR 20

1

- This OEB covers a significant operational issue. Non-compliance with this OEB may have a significant impact on the safe operations of the aircraft. The operators shall distribute its content to all flight crews without delay.
- Airbus recommends that all operators rapidly incorporate the corrective Service Bulletins that cancel this OEB when they become available.

Reason for revision:	To introduce the use of a cover that protects the ENG START panel and ECAM Control Panel To indicate that a crewmember can cross the liquid prohibited zone in order to provide beverage to the CM2.
Reason for issue:	This OEB provides operational recommendations in order to protect the ENG START panel and the ECAM Control Panel from liquid spillage.
Applicable to:	All A350 aircraft.
Cancelled by:	Under investigation.

Note: The interchangeability code, given in the Illustrated Part Catalog (IPC), indicates the conditions for interchangeability of equipment. After installation of corrective modification(s)/SB(s), if an Operator reinstalls any equipment affected by this OEB, it is the Operator's responsibility to ensure that the recommendations given in this OEB are applied again for the applicable aircraft.

Continued on the following page

NOT COMMANDED ENGINE SHUTDOWN DUE TO LIQUID SPILLAGE ON THE CENTER PEDESTAL - UPDATED PROCEDURE V3 (Cont'd)

Operations Engineering Bulletins are issued by Airbus, as the need arises, to quickly transmit technical and procedural information. They are distributed to all FCOM holders and to others who need advice of changes to operational information.
The information in the OEB is recommended by Airbus, but may not be approved by Airworthiness Authorities. If the procedures contained in this OEB differ from the procedures in the AFM, the AFM remains the reference.

Continued on the following page

NOT COMMANDED ENGINE SHUTDOWN DUE TO LIQUID SPILLAGE ON THE CENTER PEDESTAL - UPDATED PROCEDURE V3 (Cont'd)

M	Localization	T	DU Title	DU identification	DU date
R	OEB-OEB9		**Not commanded engine shutdown due to liquid spillage on the center pedestal - Updated Procedure V3**	PG02626	
E	OEB-OEB9		**Not commanded engine shutdown due to liquid spillage on the center pedestal - Updated Procedure v3**	00025399.0001001	09 APR 20
E	Criteria: XW **Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP**				
	OEB-OEB9		**Not commanded engine shutdown due to liquid spillage on the center pedestal**	00025401.0001001	09 APR 20
E	Criteria: XW **Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP**				
	OEB-OEB9		**Not commanded engine shutdown due to liquid spillage on the center pedestal**	00025403.0001001	09 APR 20
E	Criteria: XW **Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP**				

Continued on the following page

NOT COMMANDED ENGINE SHUTDOWN DUE TO LIQUID SPILLAGE ON THE CENTER PEDESTAL - UPDATED PROCEDURE V3 (Cont'd)

Ident.: OEB-OEB9-OEB9-00025401.0001001 / 09 APR 20

2

EXPLANATION

Operators reported few events of not commanded In Flight Shut Down (IFSD) a few minutes after inadvertent liquid spillage on the ENG START panel or ECAM Control Panel (ECP) of the pedestal. Several engine relight attempts were not successful.
Investigations indicate an abnormal operation of the components of the ENG START panel.
As a result, a protective cover is introduced in order to protect the ENG START panel and ECAM Control Panel.
When the protective cover is installed on the ENG START panel and ECAM Control Panel, the flight crew can access to the SD Page pushbuttons without the removal of the cover (e.g. periodic check of the SD pages).
In order to interact with the other controls of the ENG START panel and ECAM Control Panel, the flight crew must remove the protective cover (e.g. handling of ECAM procedure...).
Precautionary procedures are introduced in addition to standard practices for the handling of liquids in the cockpit as commonly applied by Operators.
During the preliminary cockpit preparation, the flight crew must advise the cabin crew about the standard practices for the handling of liquids in the cockpit. Flight and cabin crews must respect the following liquid prohibited zone:

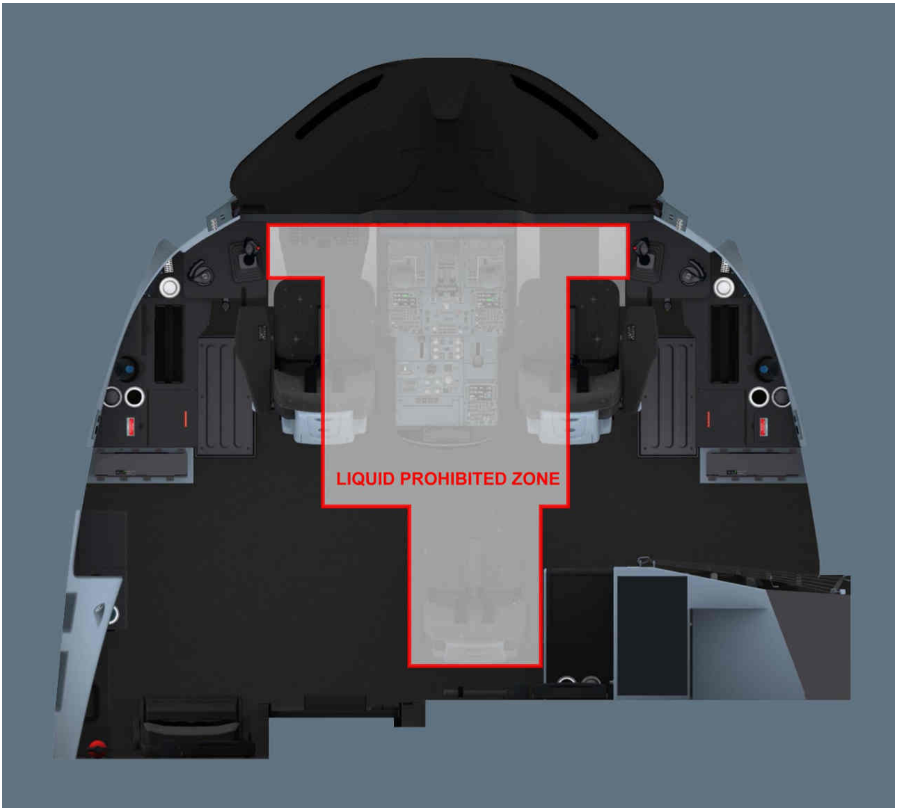
- Center pedestal
- Sliding tables of CM1 and CM2
- Inboard sides of CM1 and CM2 seats
- Third occupant seat.

However, a crewmember can cross the liquid prohibited zone in order to provide beverage to the CM2. In this case:

- Before beverage delivery, the flight crew should ensure that the cover is installed on the ENG START panel and ECAM Control Panel
- The crewmember passes in front of the third occupant seat, and behind the CM2 seat to deliver the beverage via the right lateral console.

Continued on the following page

NOT COMMANDED ENGINE SHUTDOWN DUE TO LIQUID SPILLAGE ON THE CENTER PEDESTAL - UPDATED PROCEDURE V3 (Cont'd)



In flight, the flight crew should:

- Consider landing at the nearest suitable airport (LAND ANSA), in the case of inadvertent liquid spillage on ENG START panel or on ECAM Control Panel
- Land as soon as possible (LAND ASAP) at the nearest airport at which a safe landing can be made, in the case of inadvertent liquid spillage on ENG START panel or on ECAM Control Panel, and one engine shutdown.

Continued on the following page

NOT COMMANDED ENGINE SHUTDOWN DUE TO LIQUID SPILLAGE ON THE CENTER PEDESTAL - UPDATED PROCEDURE V3 (Cont'd)

In the case of liquid spillage on the pedestal, the flight crew must report the event in the logbook after landing. A maintenance action is required.

NOT COMMANDED ENGINE SHUTDOWN DUE TO LIQUID SPILLAGE ON THE CENTER PEDESTAL

Ident.: OEB-OEB9-OEB9-00025403.0001001 / 09 APR 20

3

PROCEDURES

PRELIMINARY COCKPIT PREPARATION

CABIN CREW..ADVISE

The flight crew must advise the cabin crew about the standard practices for the handling of liquids in the cockpit.

PROTECTIVE COVER..REMOVE

Remove with care the cover from the ENG START panel and ECAM Control Panel.

PROTECTIVE COVER..CHECK STATE AND STOW

Check if the cover is in a good state for operations (e.g. no hole, no tearing).
Stow with care the cover in one of the lateral consoles.

CLIMB - AT 10 000 FT

PROTECTIVE COVER..INSTALL

Install with care the cover on the ENG START panel and ECAM Control Panel, and ensure that the cover is correctly positioned and adjusted at each corner of the ENG START panel and ECAM Control Panel.
The flight crew can access to the SD Page pushbuttons without the removal of the cover.

DESCENT PREPARATION

PROTECTIVE COVER..REMOVE AND STOW

Remove with care the cover from the ENG START panel and ECAM Control Panel.
Stow with care the cover in one of the lateral consoles.

Continued on the following page

NOT COMMANDED ENGINE SHUTDOWN DUE TO LIQUID SPILLAGE ON THE CENTER PEDESTAL - UPDATED PROCEDURE V3 (Cont'd)

PARKING

- **When the PARKING procedure is completed:**

  PROTECTIVE COVER..INSTALL

  Install with care the cover on the ENG START panel and ECAM Control Panel, and ensure that the cover is correctly positioned and adjusted at each corner of the ENG START panel and ECAM Control Panel.

ABNORMAL AND EMERGENCY PROCEDURES

Handling of ECAM Procedures

- **In the case of ECAM management:**

  PROTECTIVE COVER..REMOVE AND STOW

  Remove with care the cover from the ENG START panel and ECAM Control Panel. Stow with care the cover in one of the lateral consoles.

- **When the ECAM management is completed:**

  PROTECTIVE COVER..INSTALL

  Install with care the cover on the ENG START panel and ECAM Control Panel, and ensure that the cover is correctly positioned and adjusted at each corner of the ENG START panel and ECAM Control Panel.

LIQUID SPILLAGE ON THE CENTER PEDESTAL

- **If the cover is removed or damaged, and in the case of inadvertent liquid spillage on ENG START panel or on ECAM Control Panel:**

  LAND ANSA
  DIVERSION..CONSIDER

  - **In the case of one engine shutdown:**

    LAND ASAP
    DIVERSION..INITIATE

- **In the case of inadvertent liquid spillage on the pedestal:**

  LOGBOOK..REPORT LIQUID SPILLAGE ON PEDESTAL

  Maintenance action is due.

END OF OEB9

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TEMPORARY ABNORMAL BEHAVIORS

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TEMPORARY ABNORMAL BEHAVIORS

PRELIMINARY PAGES

TABLE OF CONTENTS

1 Temporary Abnormal Behaviors Table........A

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Localization Title	Toc Index	ID	Reason
TAB-PLP-TOC Temporary Abnormal Behaviors Table		1	Documentation update: Deletion of the "00023667 A-ICE - Wing Anti-Ice Valve Blocked due to Frozen Water" table of content entry.
			Documentation update: Deletion of the "00023667.0001001 A-ICE - Wing Anti-Ice Valve Blocked due to Frozen Water" documentary unit.
TAB AUTO FLT - FMC reset due to F-PLN with 2 waypoints very closed from each other	A	1	Modification of the column width and alignment in order to standardize the format with other TABs in the table. No technical change.
TAB Discrepancy Between WHEEL SD Page and ECAM Alerts - A-SKID Indication	A	2	Correction of a typo. No technical change.
TAB Erroneous BRAKES AFT(FWD) WHEELS BRK LOST after landing gear retraction	A	3	Modification of the column width and alignment in order to standardize the format with other TABs in the table. No technical change.

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TEMPORARY ABNORMAL BEHAVIORS TABLE

Ident.: TAB-TABT-00023159.0001001 / 07 JUL 16
Applicable to: ALL

The table below provides a list of all Temporary Abnormal Behaviors.

Ident.: TAB-TABT-00023121.0001001 / 07 JUL 16
Applicable to: ALL

System	Temporary Abnormal Behavior	Link

Ident.: TAB-TABT-00025374.0001001 / 03 JUL 20
Applicable to: ALL

1 AUTO FLT	FMC reset due to F-PLN with two WPT very closed from each other	*Refer to link*

Ident.: TAB-TABT-00023726.0001001 / 07 JUL 16
Applicable to: ALL

AUTO FLT	Erroneous Altitude Constraint after SID or STAR Selection Change	*Refer to link*

Ident.: TAB-TABT-00024161.0001001 / 27 FEB 17
Applicable to: ALL

AUTO FLT	Erroneous Fuel & Load Values Following RECEIVED CPNY F-PLN	*Refer to link*

Ident.: TAB-TABT-00023834.0001001 / 01 SEP 16
Applicable to: ALL

AUTO FLT	Erroneous Trajectory while in HDG(TRK) Mode during Procedures with a Turn Direction on a Leg with an Altitude Termination	*Refer to link*

Ident.: TAB-TABT-00024991.0001001 / 08 JUL 19
Applicable to: ALL

AUTO FLT	Erroneous Vertical Guidance in Approach Subsequent to a DIR TO Performed when near the Top of Descent	*Refer to link*

Ident.: TAB-TABT-00023147.0001001 / 03 JUL 20
Applicable to: ALL

2 BRAKES	Discrepancy Between WHEEL SD page and ECAM Alerts - A-SKID Indication	*Refer to link*

Ident.: TAB-TABT-00023146.0001001 / 07 JUL 16
Applicable to: ALL

BRAKES	Erroneous Indication of Time to A-SKID Loss During Climb and First Hour of Cruise	*Refer to link*

Ident.: TAB-TABT-00025348.0001001 / 03 JUL 20
Applicable to: ALL

3 BRAKES	Erroneous BRAKES AFT(FWD) WHEELS BRK LOST after landing gear retraction	*Refer to link*

Ident.: TAB-TABT-00024305.0001001 / 29 MAY 17
Applicable to: ALL

BRAKES	Discrepancy Between WHEEL SD page and ECAM alerts - Released Indication.	*Refer to link*

Ident.: TAB-TABT-00024455.0001001 / 26 OCT 17
Applicable to: ALL

BRAKES	Low Level of Residual Braking Pressure after Parking Brake Release.	*Refer to link*

Ident.: TAB-TABT-00024951.0001001 / 03 JAN 19
Applicable to: ET-ATQ, ET-ATR, ET-ATY, ET-AUA, ET-AUB, ET-AUC, ET-AVB, ET-AVC, ET-AVD, ET-AVE, ET-AWM, ET-AWN, ET-AWO, ET-AWP, ET-AYB

CAB PRESS	Abnormal Cabin Altitude Increase in Climb due to Erroneously Open OFV	*Refer to link*

Ident.: TAB-TABT-00023791.0001001 / 08 JUL 19
Applicable to: ALL

COM	Loss of HF voice or HF datalink	*Refer to link*

Ident.: TAB-TABT-00024740.0001001 / 04 MAY 18
Applicable to: ALL

DOORS	Erroneous Activation of the CABIN PRESSURE WARNING Lights without Real Residual Differential Pressure	*Refer to Link*

Ident.: TAB-TABT-00023145.0001001 / 07 JUL 16
Applicable to: ALL

HYD	Discrepancy Between WHEEL SD page and ECAM Alerts in the case of Hydraulic Failure - NORM Indication	*Refer to link*

Ident.: TAB-TABT-00025461.0003001 / 03 APR 20
Applicable to: ET-AYA

ROW/ROP	"Too Short Selection" Indication Not Displayed on the RWY CONDITION / BRAKING ACTION Matrix for LDG PERF CODE 5 (WET - GOOD)	*Refer to link*